





ST EUSTATIUS CLIMATE PLAN

EXECUTIVE SUMMARY

PART 1 | **2026**











Commissioned by the Government of St. Eustatius
Prepared by Persoonlijke gegevens
Director, Reimpact Studio B.V.
www.reimpact.studio | Persoonlijke gegevens

REIMPACT
reinvent, reawaken, regenerate

OBJECTIVE OF THE CLIMATE PLAN

The Climate Plan for St. Eustatius has been developed through a deeply participatory and consultative process—driven by the island, for the island. This inclusive approach brought together government, civil society, the private sector, and the wider community, ensuring that the Plan is rooted in Statia's lived realities, informed by local knowledge, and aligned with the island's priorities and ongoing initiatives. Its core objective is to provide a clear and actionable pathway for how Statia can not only withstand the accelerating impacts of climate change but also build a self-reliant, climate-resilient future by implementing targeted mitigation and adaptation measures.

The Climate Plan is organised into three interrelated parts, each serving a distinct purpose:

1. Executive Summary highlights the island's key climate challenges and presents the priority flagship interventions needed to strengthen climate resilience and disaster preparedness.
2. Climate Plan Overview provides additional background on current and future climate impacts, introduces the cross-cutting interventions, associated flagship projects (including budget breakdowns), and additional priority actions required over the next five years.
3. Integrated Climate Framework provides a comprehensive, multi-horizon roadmap and action agenda across all seven domains of island life and governance. Its purpose is to help domain holders understand how climate change intersects with their responsibilities and to guide inter-ministerial alignment of policies, plans, and investments with Statia's climate resilience objectives.

IMPACTS OF CLIMATE CHANGE

Climate change is not a future scenario for St Eustatius (Statia)—it is a lived reality marked by rising temperatures, shifting rainfall patterns, more frequent droughts, more intense rainfall events, stronger tropical storms and hurricanes, rising sea levels, and rapidly warming oceans. Hotter days and nights, combined with more frequent heatwaves are driving up energy and water demand, impacting household budgets, and heightening public health risks. These shifts, together with more erratic rainfall and recurring droughts, are placing growing pressure on the island's water security and reducing the viability of local food production.

Statia is experiencing stronger storms and increasingly severe hurricanes that form more quickly, bring heavier rainfall, and generate higher category wind speeds. These events are driving soil loss, cliff and coastal erosion, sedimentation of reefs, and a higher risk of large-scale damage to infrastructure, the built environment, and the island's ecosystems. Lower Town is particularly exposed, with the harbour (supply chains), critical utilities (the power plant, reverse-osmosis plant, and fuel storage facility), cultural heritage sites, tourism and recreation businesses, and the beach becoming progressively more vulnerable to cliff erosion, higher storm surges, and flooding.

Sea levels, already 15–20 cm higher than in the 1990s, continue to rise, leading to beach loss, coastal flooding, and risks to cultural heritage and critical services. At the same time, warming seas and marine heatwaves are damaging coral reefs, fisheries, and the tourism economy. Together, these changes are driving up the cost of living, worsening economic and environmental vulnerability, and exposing community wellbeing, infrastructure, and supply chains, to escalating climate risks.

ECONOMIC COST OF CLIMATE CHANGE

While the physical impacts of climate change are already evident, their economic implications are equally far-reaching. Climate pressures translate into rising infrastructure and supply-chain costs, growing socio-economic burdens on households and public services, and environmental losses that directly affect key sectors such as tourism, fisheries, and agriculture. The next section explores these economic costs and their implications for Statia's resilience.

Infrastructure Costs

The 2025 AEF study *Klein Gebied, Grote Opgave* predicts that a Category 5 hurricane within 250 km of Statia would cause up to US $130.9 million in damage, with a 0.93 probability of such an event by 2050—equating to an expected cumulative loss of US $121 million, or US $3.4 million annually in average damage. These figures are conservative, and do not explicitly take into account the increased costs created by supply chain disruption. The report does explicitly note that it underestimates real costs, as they exclude the replacement value of cost-covering infrastructure such as the energy grid, telecoms and water systems. Based on AEF's assumptions, up to 25–50 percent of key assets could require replacement following a major hurricane:

Infrastructure Category	Expected Damage (% of Replacement Value)
Airport / Harbour / Utilities / Buildings	25 % each
Roads & Parking Lots	12.5 %
Fuel Storage, Energy Grid	50 %
Cultural Heritage & Agriculture	25 %

The costs presented above do not account for the increasing damage caused by more intense rainfall during regular storm events, which is accelerating land and cliff erosion. To date, USD 7.5 million has been invested in erosion control, with a further USD 12.5 million committed for the next phase. An additional USD 30 million is still required to stabilise the cliff that threatens the island's critical infrastructure, namely the power plant and the fuel bunkerage and storage facility, against ongoing erosion and rockfalls. When these are incorporated, Statia's potential fiscal exposure far exceeds the baseline estimate.

In addition to these mounting costs, the 2025 AEF study furthermore identifies a US $98 million infrastructure backlog on Statia, concentrated in roads, the airport and port upgrades. Between 2025 and 2030, total infrastructure investment needs amount to approximately US $92.6 million, generating US $47.9 million in depreciation and US $48.6 million in maintenance obligations.

Rather than viewing this backlog as a liability, it represents a *strategic window* to embed climate-resilient design and materials into every major project. Decisions taken in the next five years will determine whether Statia's infrastructure development will become a continuing fiscal burden—or a durable, self-financing asset base capable of withstanding future shocks.

Social, Economic and Environmental Costs

Beyond the direct costs of repairing damaged infrastructure, climate change imposes far-reaching social, economic and environmental burdens that remain largely unquantified. These losses span market-valued assets such as goods, services and productive sectors including agriculture and tourism, as well as non-economic dimensions such as cultural heritage, ecosystems and community wellbeing. Non-economic losses are especially difficult to capture. For example, assigning a monetary value to a damaged heritage site in Statia does not reflect its cultural significance, emotional importance, contribution to identity, or experiential and economic value for tourism development.

The 2017 hurricanes illustrate how these wider losses unfold. Irma, Jose and Maria crippled St. Maarten's harbour and airport—severing Statia's main supply chain route—while also damaging Statia's airport and blocking its harbour with debris, preventing relief vessels from docking for weeks. The resulting isolation extended far beyond food and water shortages, disrupting fuel and medical supplies, household goods, building materials needed for recovery, and access to healthcare, telecommunications and electricity.

At the same time, damage to forests and coral reefs weakened coastal protection and diminished the natural assets that support Statia's tourism sector. Together, these cascading disruptions across supply chains, essential services, livelihoods, environmental assets and tourism show that the true cost of a major climate event extends far beyond the immediate infrastructure and built-environment costs.

An even larger gap exists in understanding the impacts of slow-onset climate stresses. While some economic estimates exist for hurricanes, there is virtually no quantification of the losses associated with rising temperatures, heatwaves, erratic rainfall, prolonged droughts, groundwater salinisation, ocean warming and acidification, land degradation or biodiversity decline. These are already undermining local food production, degrading vital ecosystems, raising water and electricity costs, and increasing the price of imported goods. All of which is impacting the cost of living, and placing additional strain on limited household budgets, especially those of vulnerable groups. Yet, because these impacts accumulate gradually and remain unmeasured, they contribute to a growing but largely invisible layer of loss and damage that significantly adds to Statia's long-term socio-economic vulnerability.

Climate change is also affecting Statia's prospects for economic development. Tourism is one of the island's most promising pathways for growth, drawing on its exceptional cultural heritage, natural beauty and biodiversity. However, this potential is being steadily eroded by rising temperatures, coral reef decline, coastal erosion and damage to cultural heritage sites—all of which weaken Statia's ability to build a resilient, tourism-driven economic base. Protecting cultural and natural heritage is therefore both a preservation imperative and a core economic and resilience strategy.

Public health impacts add further long-term costs. Rising temperatures, heatwaves and shifting disease patterns heighten risks from heat stress, vector-borne and zoonotic diseases. High rates of non-communicable diseases and limited healthcare surge capacity compound these vulnerabilities, meaning that even a small outbreak or extreme heat event can place significant pressure on the health system and increase long-term care costs.

Taken together, these social, economic and environmental costs illustrate that the financial impacts of climate change extends far beyond visible infrastructure damage. Much of Statia's climate-related damage remains unquantified, yet it is already impacting household resilience, economic opportunity and the island's ability to pursue sustainable development.

Preventing these losses from compounding requires timely action to strengthen disaster preparedness and build resilience to both current and future climate risks. Evidence compiled by the UN Office for Disaster Risk Reduction indicates that investment in climate adaptation remains consistently more cost effective than post climate disaster recovery. In their estimations, every US $1 invested in prevention can save between US $4 and US $7 in recovery and reconstruction costs (UNDRR, 2021).

PRIORITY INTERVENTIONS

Through a participatory and consultative process, government, institutions, civil society, and community stakeholders identified where climate risk intersects most critically with daily life, essential services, and long

term development prospects. This process resulted in four priority cross cutting interventions: Lower Town Climate Proofing; Supply Chain Resilience; Intra Regional Collaboration; and Climate Integration Across All Domains. Together, they provide the organising framework for strengthening resilience across the environmental, social, economic, and institutional dimensions of island life.

Within this framework, three flagship projects have been identified as the island's immediate priorities. These projects focus on protecting the primary supply gateway, strengthening food security by reducing exposure to vulnerable external supply routes, and reinforcing emergency coordination and regional response capacity. Collectively, they introduce redundancy into critical systems and reduce the likelihood that disruption in one location or service results in cascading impacts across the island. The three flagship projects are set out below:

1. SUPPLY CHAIN RESILIENCE - CLIMATE-RESILIENT FOOD SECURITY FLAGSHIP

Statia is almost entirely dependent on external supply chains for food, feed, and essential goods, leaving the island highly vulnerable to climate shocks, port disruptions in Miami/Florida and St. Maarten, shipping delays, and rising freight costs. Limited shipping frequency, no redundancy in feeder routes, and a lack of shaded handling areas or cold-chain facilities further heighten the risk of spoilage, shortages, and high household costs. These pressures also constrain local agriculture, which relies on expensive imported inputs and has no means to process or preserve surplus crops.

As climate impacts intensify, these vulnerabilities will deepen, undermining food security, emergency preparedness, and the affordability of living on the island. Yet Statia currently lacks an integrated, climate-resilient system to safeguard its food supply from harbour arrival through to storage, distribution, and value-added production.

The Climate-Resilient Food Security Flagship provides the island's first end-to-end solution. By protecting the cold chain at the harbour, establishing a four-week on-island buffer of food and feed, and enabling small-scale agri-processing, the flagship reduces dependency on external supply chains, strengthens emergency readiness, lowers spoilage and costs, and supports the conditions for stronger local agriculture and small-business development. Together, these interventions create a more secure, climate-resilient and affordable food system for Statia.

Key Components

a. Shaded harbour reefer-handling area
   - Covered structure with reefer plug-in points
   - Protects frozen and chilled imports during offloading and inspection
   - Ensures HACCP compliance and reduces spoilage
   - Minimises worker exposure to extreme heat

b. Four-week inland Food Security Storage Facility
   - Frozen storage using 40' reefer containers under canopy
   - 1,050 m² dry-goods and animal feed warehouse
   - Backup power through diesel and optional solar/battery systems
   - Refrigerated trucks for safe island-wide distribution

c. Modular agri-processing unit
   - Small-scale facility adjacent to the storage site
   - Equipment for washing, slicing, cooking/pasteurising, drying, milling and packaging
   - Converts surplus produce into shelf-stable, higher-value products

- Supports training and small business development

Expected Outcomes

a. **Improved household food security**
   - Four-week buffer reduces vulnerability to shipping delays and climate-induced shortages
   - Cold chain integrity prevents spoilage and ensures food safety

b. **Reduced cost of living and supply-chain volatility**
   - Stabilises prices, particularly during hurricane season
   - Reduces exposure to regional port disruptions and global market shocks

c. **Strengthened local agriculture and entrepreneurship**
   - Provides farmers with reliable outlets for surplus crops
   - Creates opportunities for food-based SMEs and value-added production
   - Supports economic diversification

d. **Greater self-sufficiency and disaster preparedness**
   - Reduces reliance on imported staples
   - Ensures continuity of food supply during disasters

Budget Overview

Table 2: Estimated Climate Resilient Food Security Flagship Project Budget

Estimated Climate Resilient Food Security Flagship Budget			
Component	**Option & Notes**	**Cost Range (USD)**	**Notes**
A. Shaded Harbour Reefer-Handling Area	Option A – Hurricane-Resilient	USD175k – USD265k	*Engineered to survive major storms (Cat 4/5) with minimal damage*
	Option B1 – Demountable Shade-Net + Mini Roof	USD124k – USD190k	*Designed to be quickly unbolted or to shed non-critical parts and be re-erected after the storm*
	Option B2 – Demountable Light-Sheeting	USD137k – USD209k	
B. Food Security Storage Facility (4-Week Buffer)	Option A – Diesel Backup Generator Only	USD2.02M – USD2.30M	*Costing including diesel backup generator*
	Option B – Solar + Battery Backup (Full Resilience)	USD2.22M – USD2.53M	*Costing including solar PV and battery storage*
C. Agri-processing Facility	USD 250k – 350k	USD91k – USD174k	*60 m², scalable*
Total Estimated Cost:	**USD 2.8M – 4.3M**	*Total estimated cost for all components—based on the lowest- and highest-cost configurations*	

2. LOWER TOWN CLIMATE PROOFING - HARBOUR ACCESS FLAGSHIP PROJECT

Statia's harbour is the island's primary lifeline: every essential good—from food and fuel to medical supplies and construction materials—enters through Lower Town. Yet access to the harbour relies entirely on a single, climate-exposed road. If this road is blocked or damaged, the island loses not only its supply-chain access but also its ability to operate critical services, mobilise emergency personnel, and receive relief support. This single point of failure remains one of Statia's highest climate-risk exposures.

The Harbour Access Flagship addresses this vulnerability by providing a secondary, climate-resilient access route that remains operational even when Oranjebaaiweg is damaged or impassable. A mechanical lift system, supported by a secure receiving platform and fully integrated with the island's Emergency Operations Centre (EOC), ensures the uninterrupted movement of essential goods, personnel, and emergency equipment between the harbour and Upper Town. This system introduces essential redundancy into Statia's lifeline infrastructure: it

safeguards supply-chain access, enables rapid repairs and operation of critical utilities, and supports continuous emergency response and EOC functioning when the primary access road fails.

Key Components

a. **Climate-resilient harbour access lift system**
   - Heavy-duty vertical or inclined mechanical lift
   - Designed for hurricane resistance and rapid post-storm restart
   - Backup power for continuous operation after extreme weather
   - Capacity to transport small pallets, emergency cargo, equipment, fuel drums, and essential personnel (harbour staff, STUCO, utilities)

b. **Cliff-top receiving and transfer platform**
   - Secure hardstand for receiving goods and relief supplies
   - Safe loading area for trucks, trailers, and EOC vehicles
   - Controlled-access system for emergency versus routine operations
   - Space for temporary staging of urgent goods during disasters

c. **Full operational integration with the EOC**
   - Dedicated emergency-use mode for rapid relief logistics
   - Supports movement of generators, medical kits, shelter supplies, and utility repair teams
   - Ensures continuity of operations for critical infrastructure in Lower Town
   - Strengthens Statia's capacity to coordinate regional disaster support

Expected Outcomes

a. **Strengthened climate and disaster resilience**
   - Eliminates the single point of failure between the harbour and Upper Town
   - Maintains access to essential goods and services even when the road collapses or floods
   - Ensures emergency logistics function reliably under extreme conditions

b. **Harbour and lifeline continuity**
   - Protects the island's supply chain during disruptions
   - Enables rapid deployment of utility and repair crews
   - Reduces downtime for critical infrastructure and services

c. **Regional emergency-response capability**
   - Enhances Statia's role as a Dutch Caribbean disaster-response hub
   - Improves readiness to receive and distribute humanitarian and military support

d. **Future-proofing essential infrastructure**
   - Delivers a scalable, cost-effective resilience solution
   - Reduces long-term operational costs compared to constructing a new road

Budget Overview

Table 1: Estimated Harbour Access Flagship Project Budget

Estimated Harbour Flagship Budget			
Component	Option A *(Vertical Goods Lift)*	Option B *(Inclined Rail Lift)*	Notes
Harbour Access Lift System	USD 1.2M – 1.8M	USD 2.0M – 3.2M	*Depends on lift height, load capacity, geotechnical stabilisation*

Cliff Stabilisation & Structural Works	USD 300k – 500k	USD 400k – 650k	*Geotechnical anchors, retaining structures, corrosion-resistant materials*
Cliff-Top Logistics Receiving Platform	USD 500k – 650k	USD 500k – 650k	*Hardstand, fencing, loading zone, safety systems*
Backup Power (Generator + optional battery)	USD 75k – 150k	USD 75k – 150k	*Required for post-storm operation*
Systems Integration (EOC, CCTV, comms, access controls)	USD 100k – 200k	USD 100k – 200k	*Connectivity to EOC and harbour systems*
Professional Fees & Project Management (Engineering, design)	USD 250k – 350k	USD 300k – 450k	*15–20% of capital cost*
Contingency (20–25%)	USD 375k – 650k	USD 550k – 900k	*Extra allowance for additional costs associated with hurricane-risk environment*
Total Estimated Cost:	**Option A (Vertical Lift): USD 2.8M – 4.3M**		
	Option B (Inclined Rail Lift): USD 3.92M – 6.2M		

3. INTRA-REGIONAL COLLABORATION - REGIONAL EMERGENCY OPERATIONS CENTRE (EOC) FLAGSHIP PROJECT

Climate change is driving more frequent and intense hurricanes across the Dutch Caribbean, increasing the pressure on emergency response systems. Although Statia hosts the Dutch Caribbean EOC, the current facility lacks the infrastructure, stockpiles, trained personnel, and cooperation mechanisms needed to manage the increasing scale and intensity of hurricane-related emergencies driven by climate change. The 2017 Irma, Jose, and Maria events highlighted these gaps, revealing the absence of a permanent coordination base capable of supporting multiple islands during widespread disruption.

The Regional EOC Flagship Project addresses this vulnerability by strengthening Statia's capacity to prepare for, respond to, and recover from disasters while formalising its role as a Regional Disaster Preparedness and Response Hub. By expanding the EOC facility, establishing dedicated stockpiles, building specialised human capacity, and securing cooperation agreements with St Kitts, St. Maarten, and regional agencies, Statia will be able to sustain operations during prolonged disruptions and coordinate relief efforts across the wider Dutch Caribbean.

This flagship transforms Statia from a locally focused emergency centre into a forward-operating hub capable of supporting multi-island response. It reduces reliance on ad hoc external deployments, accelerates recovery, and enhances collective climate resilience across the region.

Key Components

a. Expanded EOC infrastructure and emergency stockpiles

- Logistics warehouse for emergency rations, medical supplies, tarpaulins, chainsaws, and repair materials
- Secondary facility for lumber and roofing materials
- Reinforced storage designed for climate resilience
- Partially funded expansion adjacent to the existing EOC

b. Strengthened human capacity for emergency management

- Policy and Planning Officer to maintain preparedness plans and procedures
- Logistics Manager to coordinate supply chains and emergency deployment
- Damage Assessment Specialist for infrastructure, ecosystem, and livelihood assessments (potentially within a shared regional pool)

c. Regional coordination and diplomatic agreements

- MOUs with neighbouring islands and Caribbean disaster frameworks

- Joint training, mutual aid protocols, and coordinated response procedures
- Alignment with BES/CAS planning for interoperable emergency operations

Expected Outcomes

a. **Enhanced disaster preparedness and response**
   - Faster emergency mobilisation and clearer operational roles
   - Reliable on-island reserves for immediate relief needs
   - Reduced reliance on ad hoc or external support during crises

b. **Stronger regional response leadership**
   - Statia operates as a staging point for multi-island emergencies
   - Improved coordination with Saba, St. Maarten, and regional partners
   - Supports Dutch military and humanitarian deployments

c. **Operational and economic benefits**
   - Shorter recovery times after major events
   - More efficient restoration of utilities, services, and community functions
   - Long-term institutional capacity for climate-intensified emergencies

Budget Overview

Table 3: Estimated Regional Emergency Operations Centre (EOC) Flagship Project Budget

Estimated Regional Emergency Operations Centre (EOC) Flagship Budget			
Component	**Description**	**Cost Range (USD)**	**Notes**
EOC Logistics Warehouse & Emergency Stockpile Facility	Single reinforced warehouse adjacent to existing EOC	USD 350k – 400k	*Climate-resilient structure with racking, stockpile organisation, secure storage areas. Partially funded by Ministry of Justice & Safety; climate-resilience co-financing may be required.*
Secondary Industrial-Area Storage Facility	Additional reinforced storage for lumber, zinc, and construction materials	Included within overall estimate above	*Supports rapid post-hurricane home, utility, and infrastructure repair.*
Emergency Stockpiles (Core Materials)	Rations, medical supplies, tarpaulins, chainsaws, fasteners, basic repair kits	Not included within overall estimate above	*Stockpile composition aligned with EOC and Military protocols; replenishment cycles required.*
Human Capacity Strengthening for Emergency Management	Policy & Planning Officer; Logistics Manager; Damage Assessment Specialist	Not included in cost estimate	*Recurring staffing costs (OPEX). Required to operationalise the expanded EOC and ensure effective emergency planning, logistics, and multi-sector impact assessment.*
Total Estimated Cost:	**USD 350k – 400k**	*Total estimated cost for built infrastructure only*	

CLIMATE INTEGRATION ACROSS DOMAINS

The flagship interventions outlined above address Statia's most immediate and high-risk climate exposures. They strengthen harbour access, enhance food security, and reinforce emergency coordination — all critical to maintaining continuity of essential services.

However, the impacts and economic pressures described earlier in this Executive Summary demonstrate that climate change affects every domain of island life and governance. It influences water and food security, energy demand, social wellbeing and household affordability, ecosystem health, spatial development, economic development, and the protection of cultural and maritime heritage. Long term resilience therefore depends on

systematically integrating climate considerations into policy making, planning, and investment decisions across sectors.

This cross cutting integration is set out in Part 3 of the Climate Plan, the St Eustatius Integrated Climate Framework. The Framework provides the domain level implementation structure for the Climate Plan. It translates climate risks into domain priorities, supports alignment of ongoing initiatives with resilience objectives, and defines coordinated action across seven thematic areas.

To maintain continuity and accountability over time, the Framework is anchored by an Integrated Climate Roadmap. This roadmap aligns immediate actions with short, medium, and long-term milestones, guiding investment sequencing and coordinated delivery across sectors, and establishes the foundation for adaptive management.

The table below summarises the immediate term actions to be initiated while financing is being secured for the flagship projects, together with the short-term targets to be delivered by 2030. For the full explanation of the Domains and Action Agendas, please refer to *Part 3: St Eustatius Integrated Climate Framework: Integrating Climate Across All Island Domains.*

Table 4: Integrated Climate Roadmap Across all Domains

Domains and Focus Areas	2030 Short term Targets *Tangible outcomes that should be delivered within the next five years to stay on course.*	2026 Immediate Term Actions *Implementation-ready priority projects and enabling actions to be initiated in the immediate term.*
DOMAIN 1: WATER AND FOOD SECURITY *Drought resilience, water access, climate-smart farming, sustainable livestock, and fisheries.*	• Climate Resilient Food Security Flagship Project completed. • 5% of crops, 100% of eggs, 50% of chicken, 100% of goat meat, and 30% of fish is supplied locally. • Roll-out of the supply chain diversification project, resulting in 20% of fresh produce being regionally sourced. • Agrivoltaics project scales up. • Construction of climate-proof agri-processing facilities, cold storage, dry good and feed storage facilities. • Establish one pilot 'circular' project. • Plant 2 new food forest zones in collaboration with STENAPA	• Raise financing for the Climate Resilient Food Security Flagship Project. • Launch at least 4 sustainable agriculture, livestock and fisheries business cases. • Advancement in the phase-out of free-roaming livestock. • Minimum of four livestock enclosures to be built. • Bio-secure guinea grass supply chain piloted with St Kitts for livestock feed. • Agrivoltaic pilot project is up and running. • Construction of the fish processing plant constructed
	• Build at least 1 centralised sewerage plant, and supply water to at least 3 farms. • Pilot greywater recycling to provide additional water for agriculture. • Construction of critical grey and green water management infrastructure. • Introduce legislation that requires cisterns to be built under all new buildings, linked to green financing mechanisms to improve affordability.	• Complete phase 1 of the solar park water harvesting upgrade, with runoff stored in a 180 m^3 cistern for agricultural use. • Installation of rainwater harvesting at the sports hall to feed into agriculture projects. • Restoration of at least 5 wells for agriculture.
DOMAIN 2: ECOSYSTEM MANAGEMENT *Management, protection and restoration of land,*	• Scaling up of reforestation projects on erosion-prone coastal zones using resilient native species (Atlantic Seawall). • Expansion of the Lower Town cliff stabilisation project.	• Continuation of reforestation project in Zeelandia. • Initiation of 2 major cliffside stabilisation projects to protect at risk cultural heritage and critical infrastructure sites. • Identify financing for the development of an easy-to-use green infrastructure GIS map for the

Domains and Focus Areas	2030 Short term Targets *Tangible outcomes that should be delivered within the next five years to stay on course.*	2026 Immediate Term Actions *Implementation-ready priority projects and enabling actions to be initiated in the immediate term.*
reefs, and biodiversity to strengthen natural climate defences.		island (including tree-planting, reforestation, bioswales, etc)
	• Multi-year structuring financing for ecosystem management is in place. • Shift to less dominance of macroalgae on the pilot reef sites. • Deployment of urchins, and other potential herbivore species across key reef sites. • Enforce policy that all new development must be screened for ecological impact. • Identify potential land mechanisms and financing to enable reforestation and food forest planting in partnership with landowners.	• Identification of potential sources for multi-year structural financing for ecosystem management. • Identify two priority reef zones for data monitoring stations (water quality and temperature). • Establishment and roll-out of the sea urchin hatchery pilot project to control macroalgae at 2 pilot reef sites.
DOMAIN 3: RISK, DISASTER AND CRISIS MANAGEMENT *Reducing risk and strengthening readiness, response, and recovery capacity.*	• Climate resilience measures implemented in Lower Town, with priority rainwater management, erosion control systems, and initial climate-proofing of critical utilities underway. • Lower Town Integrated Climate-proofing Plan developed.	• Raise financing to initiate the Lower Town Flagship Project – Harbour Access. • Construction of the harbour seawall expansion project. • Supply Chain Climate Risk Analysis completed, assessing Statia's supply-chain vulnerability to climate change.
	• Roll-out of the supply chain resilience program. • Regional disaster preparedness and crisis response system in place. • Shared emergency response protocols and regional data platforms established. • Improved Regional Integration (CARICOM and OECS Programmes & Institutions)	• Regional Emergency Operations Centre (EOC) Flagship Project initiated. • Regional disaster response collaboration talks initiated with neighbouring islands. • Plan developed to make the airport climate resilient including transition to a renewable energy system, with battery backup, generators as a fail-safe, and electric ground handling vehicles.
DOMAIN 4: LIVEABLE ENVIRONMENT *Climate-proof infrastructure, renewable energy, and sustainable mobility.*	• Adopt and implement a Green Infrastructure Policy that requires that nature-based adaptation mechanisms and climate resilience be integrated in all infrastructure projects. • Allocate a dedicated "green budget line" in infrastructure projects to cover trees, landscape restoration, and water management.	• Integrate tree planting and shade planning at the airport and Lower Town using low maintenance, drought-resilient species. • Integration of climate resilience in priority infrastructure backlog projects.
	• Construction initiated on at least 30 new social housing units to climate-resilient and accessible standards. • Launch a green finance mechanism enabling 50 households to retrofit homes with cisterns, solar, energy efficient cooling, or insulation.	• Upgrade of the sports hall including climatic design and rainwater harvesting. • Develop and adopt an updated Building Code with guidelines and minimum construction standards for climate resilience and accessibility. • Develop and roll-out training programs for local builders on the building codes and low-tech climate solutions. • Develop a financial mechanism that supports households to reduce thermal gains, decrease cooling demand, and increase cooling efficiency.
	• Initiation of Phase 4 of the Solar Park, including expanded battery storage. To increase renewable share to 85–90% of power generation = 20-22hrs a day of renewable power production.	• Install Statia's first high-capacity (≥50kW) EV charging station at the solar park, linked to daytime solar surplus. • Begin procurement of electric vehicles for the public sector.

Domains and Focus Areas	2030 Short term Targets *Tangible outcomes that should be delivered within the next five years to stay on course.*	2026 Immediate Term Actions *Implementation-ready priority projects and enabling actions to be initiated in the immediate term.*
	• Install centralised public EV charging stations in 3 locations, with a utility-controlled smart grid interface to manage demand. • Train at least 5 certified EV mechanics to support vehicle transition. • Develop regulations and permitting for household EV chargers to prevent grid overload. • Pilot an affordable, electric island-wide public transport service, with a subsidised voucher scheme for vulnerable groups.	
DOMAIN 5: ECONOMIC RESILIENCE *Resilient livelihoods, green industries, entrepreneurship, and a circular economy.*	• Develop a support program to help agri-businesses tap into the EU loan facility. • Develop a startup support program targeting 5 new climate/green businesses, with microfinancing, training and incubation support. • 90% households have high speed, affordable internet connectivity. • Develop an island wide strategy to develop a circular economy. • Pilot a returnee incentive program to support locals relocating back to Statia with startup support, internships, affordable housing or employment placement.	• Implementation of the new Tourism Masterplan • Development of a youth climate entrepreneur incubator • Create a community registry of fruit trees to capture seasonal surplus for agri-processing.
	• Improve inter-island airlift availability and affordability by securing agreements for lower-cost flights to St. Maarten, and introduction of flights to Curacao/Bonaire, Saba and St. Kitts. • Improved ferry connectivity, affordability, and service linking St Maarten, Saba, Statia and St Kitts.	• Conduct an air connectivity and air freight feasibility study to assess: demand, viability, partnership models, and incentives for affordable flights/freight linking Statia to regional hubs.
DOMAIN 6: COMMUNITY & CULTURE *Community wellbeing, cultural heritage and maritime heritage protection*	• Run a continuous public awareness campaign on climate resilience, food sovereignty, energy conservation, tree planting, drought adaptation, spatial planning and sustainable living.	• Implementation of climate communication and community engagement plan.
	• Development of a Statia Heritage Trail, integrating restored forts, sugar mills, and cliffside cultural sites into a community-owned tourism experience. • Lower Town Cultural Heritage Project initiated. • Support the listing and preservation of heritage assets, including UNESCO recognition of key sites like the burial ground.	• Restoration of the theatre and installation of the underwater slave memorial for Statia Day 2026.
DOMAIN 7: HEALTH & EDUCATION *Accessible care, preventive health, and climate-smart education and skills development.*	• Retrofit clinics and community centres with backup power, cooling, and storm-proof design to ensure care continuity during extreme weather events. • Establish an on-island clinical laboratory for basic diagnostics, reducing the need to travel for routine testing. • Expand community health programs on nutrition, lifestyle disease prevention, and vector-borne disease control — with the goal to sustain low incidence rates of dengue and chikungunya.	• Initiation of the hospital upgrade project.

Domains and Focus Areas	2030 Short term Targets *Tangible outcomes that should be delivered within the next five years to stay on course.*	2026 Immediate Term Actions *Implementation-ready priority projects and enabling actions to be initiated in the immediate term.*
	• Integrate nature and climate education into all primary and secondary school curricula and community programming.	• Integrate agriculture into all primary and secondary school curricula and community programming

**For the full explanation of the Domains and Action Agendas please refer to Part 3 - St Eustatius Integrated Climate Framework: Integrating Climate Across All Island Domains*

CONCLUSION: FROM PLAN TO ACTION

Statia has reached a critical point where the impacts of climate change are already driving up costs, straining critical infrastructure, and placing communities, livelihoods, and ecosystems at risk. Without timely and coordinated action, these pressures and the financial, social, and environmental liabilities they generate will intensify. This Climate Plan provides a clear and practical pathway to reduce these risks, protect essential services, strengthen self-reliance, and support equitable and sustainable development.

Statia's Climate Plan is structured in three parts: identifying climate risks, prioritising targeted interventions, and establishing an integrated implementation framework. This structure ensures that immediate measures are embedded within a coherent and comprehensive long term strategy.

The flagship projects address the island's most critical exposure points — harbour access, food supply resilience, and emergency coordination — reducing the risk of cascading disruption during extreme events. Beyond these priority investments, four cross-cutting interventions define Statia's overarching approach: Lower Town Climate Proofing; Supply Chain Resilience; Intra Regional Collaboration; and Climate Integration Across All Domains. Together, they establish the priorities for strengthening resilience across the environmental, social, economic, and institutional dimensions of island life.

The Framework establishes the island's multi-horizon roadmap for climate resilience. It sets out domain level Action Agendas across seven thematic areas and aligns immediate measures with short, medium, and long term milestones. In doing so, it provides a structured basis for guiding investment, sequencing action, and coordinating implementation across mandates over time. Effective implementation of the Climate Plan will require:

1. **Sustainable financing mechanisms,** including multi-year funding to deliver the flagship projects and dedicated structural financing to advance long term adaptation objectives;
2. **Interministerial alignment,** ensuring that climate resilience is systematically integrated into new policies, programmes, and capital projects; and
3. **Structural coordination** within the Kingdom, recognising that safeguarding resilience in the Caribbean Netherlands is a shared responsibility requiring coordinated action and sustained cooperation.

With these conditions in place, the Climate Plan will be operationalised through a governance, monitoring, and reporting framework embedded within Statia's administrative structure. This framework will support coordinated planning, guide the sequencing of investments, clarify institutional responsibilities, and enable continuous adaptive management and transparent reporting of progress.

The decisions taken in the coming years will shape Statia's long term resilience trajectory. This three part Climate Plan provides the strategic direction, prioritised investments, and institutional framework required to strengthen

adaptive capacity, protect essential systems, and support equitable and sustainable development within the Kingdom.

For further details and supporting analysis, refer to:

Part 2- St Eustatius Climate Plan Overview: A Roadmap to a Climate-Resilient and Self-Reliant Statia

Provides background on current and future climate impacts, elaborates on the cross -cutting interventions and flagship projects including budget breakdowns, and outlines the priority actions required over the next five years.

Part 3- St Eustatius Integrated Climate Framework: Integrating Climate Across All Island Domains

Sets out the integrated implementation framework, including a multi-horizon roadmap and domain level Action Agendas across all seven domains, to support alignment of policies, plans, and investments with Statia's climate resilience objectives.



St. Eustatius Climate Plan
Part 1: Executive Summary
Commissioned by the
Government of St. Eustatius

Prepared by Persoonlijke gegevens
Director, Reimpact Studio B.V.
www.reimpact.studio
Persoonlijke gegevens

RE3IMPACT
reinvent, reawaken, regenerate







ST EUSTATIUS CLIMATE PLAN

OVERVIEW

PART 2 | **2026**











Commissioned by the Government of St. Eustatius
Prepared by Persoonlijke gegevens
Director, Reimpact Studio B.V.
www.reimpact.studio | Persoonlijke gegevens

REIMPACT
reinvent, reawaken, regenerate

Contents

INTRODUCTION 3

Purpose of the Climate Plan **4**

Background **4**

Plan Development Process **5**

How To Use This Document **8**

CLIMATE CHANGE IMPACTS 9

Trends and Predictions **10**

Current and Future Impacts **12**

Economic Cost of Climate Change **17**

PRIORITY CROSS-CUTTING INTERVENTIONS 22

1. LOWER TOWN CLIMATE PROOFING **23**
Lower Town: Short-Term Climate Resilience Priorities 26
Lower Town Flagship Project – Harbour Access 27
Lower Town Integrated Climate-Proofing Plan 30
Lower Town Cultural Heritage Project 31

2. SUPPLY CHAIN RESILIENCE **32**
Supply Chain: Short Term Climate Resilience Priorities 35
Climate Resilient Food Security Flagship Project 35
Supply Chain Climate Risk Analysis 37
Supply Chain Diversification 38

3. INTRA-REGIONAL COLLABORATION **39**
Intra-regional Collaboration: Short Term Climate Resilience Priorities 39
Regional Emergency Operations Centre (EOC) Flagship Project 40
Improved Regional Integration 42

4. CLIMATE INTEGRATION ACROSS ALL DOMAINS **45**

CONCLUSION: FROM PLAN TO ACTION 50

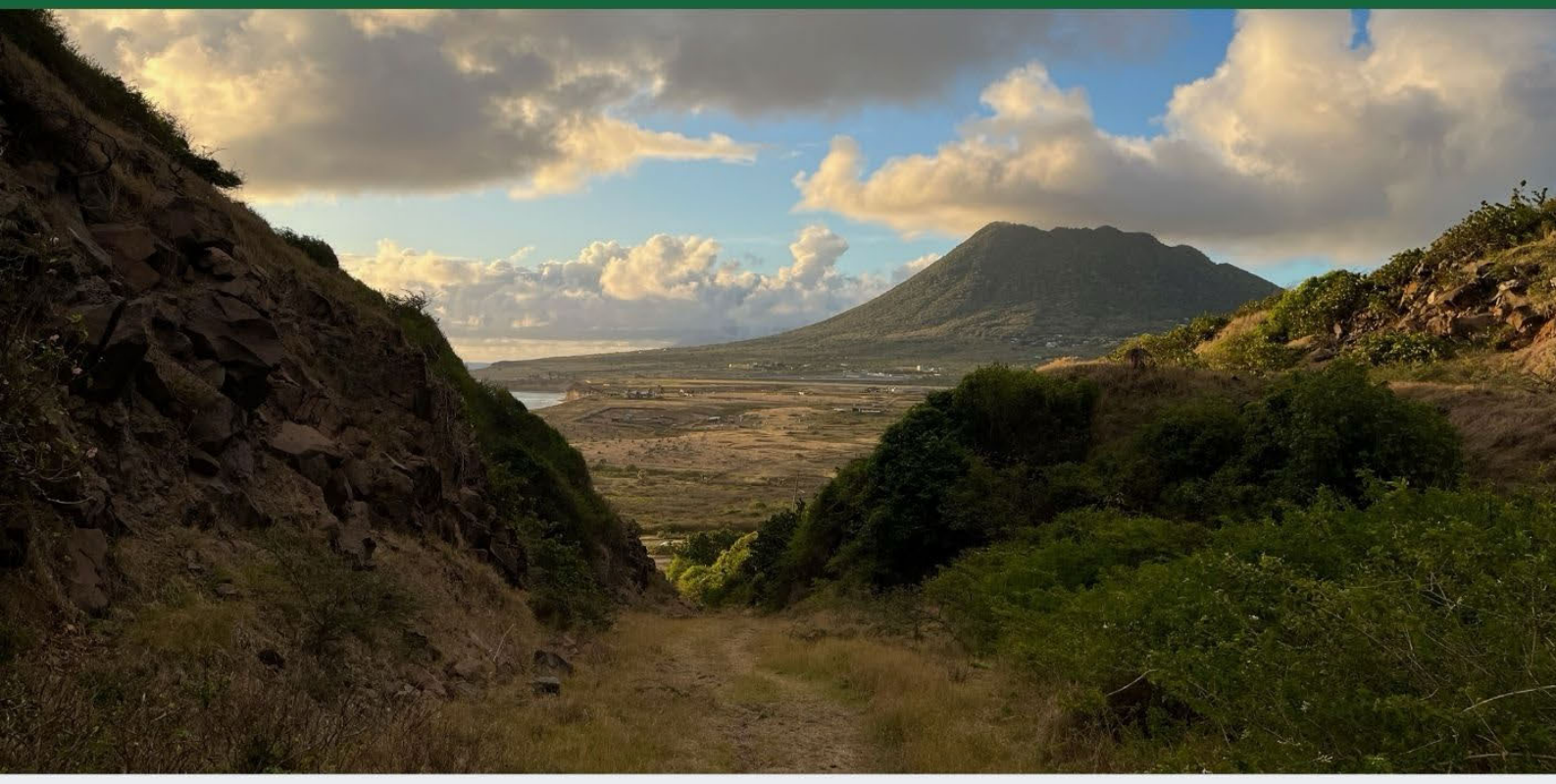
APPENDIX A – LOWER TOWN FLAGSHIP BUDGET 53

APPENDIX B – CLIMATE RESILIENT FOOD SECURITY FLAGSHIP BUDGET 57

INTRODUCTION







Purpose of the Climate Plan

St. Eustatius (Statia) is becoming increasingly vulnerable to the impacts of climate change due to its small size and geographic location in the hurricane-prone Lesser Antilles. The island is already grappling with more frequent and prolonged droughts, putting pressure on freshwater supplies and affecting agriculture and food security. At the same time, stronger storms and hurricanes are accelerating land erosion—putting Lower Town, key infrastructure, and the island's cultural heritage at risk. Erosion runoff, combined with rising sea temperatures, is degrading vital coral reefs, seagrass beds, and marine ecosystems—further impacting local livelihoods, fisheries, and the island's untapped potential for ecotourism.

In recent years, the Openbaar Lichaam St. Eustatius (OLE) has made meaningful progress in strengthening the island's ability to cope with these challenges. Studies and projects in enhancing water management, renewable energy, sustainable farming, erosion control, and nature conservation have laid important foundations for improving the island's resilience to climate change.

This Climate Plan builds on this momentum to provide a shared roadmap for local government, national ministries, NGOs, institutional partners, and the wider community to work together in developing adaptation measures that reduce risks and vulnerabilities while strengthening Statia's overall resilience. The plan's core purpose is to serve as an action-oriented framework that will help the island to:

- Build environmental, social, and economic resilience—now and into the future;
- Increase self-sufficiency and reduce dependence on external resources;
- Identify the enabling conditions and partnerships needed for effective adaptation;
- Help the island not only cope with climate risks, but thrive in the face of them.
- Not only cope with the changing climate, but thrive in the face of it.

Background

Although Statia's carbon footprint is relatively small, with no large industrial base, intensive agriculture, or other high-emitting sectors, the island has nevertheless made notable progress in recent years on climate mitigation, particularly through its renewable energy transition. Investments of €33.6 million in the Caribbean Netherlands, supported by SDE++ funds and Region Deals, have helped Statia reduce its reliance on imported fossil fuels and increase renewable energy generation.

At the same time, it has become increasingly clear that Statia's most pressing climate challenge lies in adaptation as the island faces significant and growing exposure to climate-related hazards, including increasingly intense tropical storms and hurricanes, storm surge, drought, erosion, and ecosystem degradation. Addressing these risks requires a dedicated framework, clear priorities, and structural financing—elements that, until recently, were not in place for the BES[1] islands.

This gap was highlighted in 2023 by *It Is Never Too Late*, the report of Ed Nijpels, Quartermaster of the Bonaire Climate Table. Commissioned by the Dutch government and Public Entity Bonaire, and presented to Parliament, the report concluded that: *"There has been a lot of talk and far too little action from the European Netherlands"* in supporting climate resilience in the Caribbean Netherlands.[2] Unlike the European

[1] The BES islands are the "bijzondere gemeenten" (special municipalities of the Netherlands) of Bonaire, St Eustatius and Saba, otherwise known as the Caribbean Netherlands or Dutch Caribbean.
[2] Nijpels, E. (2023). Advisory Report on Bonaire Climate Table: It is never too late.

Netherlands—with its Delta Programme and National Climate Adaptation Strategy—the BES islands lacked an equivalent plan underpinned by dedicated resources and long-term structural financing.

In response, the Public Entities and Dutch Government committed to developing climate plans for each island, with €1 million in initial funding provided by the Ministries of Infrastructure and Water Management, the Interior, Economic Affairs and Climate Policy (now Climate and Green Growth). This Climate Plan for Statia gives effect to that commitment and provides an important step toward establishing a structured and locally grounded approach to resilience.

The plan has been developed in parallel with Saba's climate plan, with each reflecting the distinct vulnerabilities, priorities, and ambitions of its island. Their joint development has encouraged cross-island learning, improved alignment, and a stronger collective voice in national dialogue. Together, the two plans are timed to inform the 2026 revision of the Netherlands' National Adaptation Strategy (NAS), providing an opportunity for the Caribbean Netherlands to be more clearly represented within the wider adaptation framework of the Dutch Kingdom.

These island-level plans are also embedded within the Climate Agenda for the Caribbean Netherlands, jointly launched in 2024 by the Dutch government and all six Caribbean islands of the Kingdom—Bonaire, Saba, Statia, Aruba, Curaçao, and St Maarten. The Agenda sets out eight shared priorities, including accelerating the energy transition, strengthening climate-resilient infrastructure, securing water resources, protecting ecosystems, fostering sustainable economies, and expanding access to climate finance (EZK, 2024). It also emphasises monitoring, knowledge-sharing, and inclusive governance as foundations for implementation (Kingdom of the Netherlands, 2024).

Within this broader policy landscape, Statia's Climate Plan is both a locally grounded initiative and a contribution to regional and national priorities. It provides a structured framework for adaptation and mitigation that reflects local realities while building on earlier progress in renewable energy. Above all, it represents a commitment to ensure that Statia will not only be able to withstand the impacts of climate change going forwards, but will be able to thrive as an environmentally, economically and socially resilient island.

Plan Development Process

The Climate Plan for St. Eustatius has been developed through a deeply participatory, and consultative process—driven by the island, for the island. This approach brought together voices from across government, civil society, the private sector, and the wider community—ensuring that the Plan is grounded in local knowledge, builds on what is already happening, and responds to Statia's unique vulnerabilities, needs, and priorities.

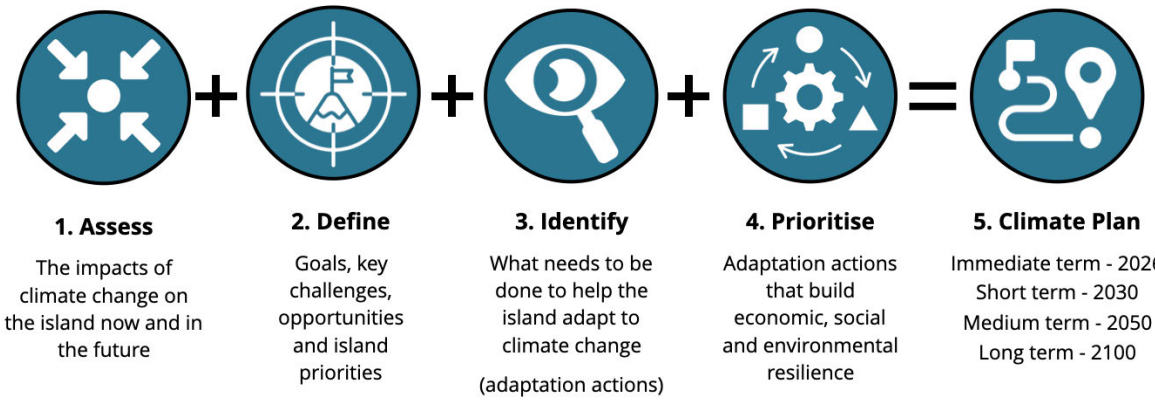
While locally driven, the participatory planning process also includes extensive consultations with key ministries in The Hague to ensure that the plan i) aligns with national strategies and priorities. ii) Feeds into the 2026 Netherlands' National Adaptation Strategy process. iii) Catalyses the identification of available resources to support implementation. iv) And establishes a shared foundation for collective, inclusive, and coordinated action. This two-way process—underpinned by continuous feedback and iteration—bridges bottom-up insights with top-down coordination—ensures the plan is both deeply rooted in local realities and strategically positioned for implementation and long-term support.

Diagram 1: The Climate Plan Approach



In February and April 2025, on-island workshops, focus groups, town halls, and stakeholder meetings brought together a broad cross-section of the community—including government, civil society, businesses, youth, elders, and community leaders—to contribute to the climate plan. Guided by a series of questions, participants shaped the plan through the participatory process outlined in the diagram below.

Diagram 2: The Climate Plan Process



In order to set the plan up for success, there needs to be a united vision for what the objective of the plan is, and what it should seek to achieve for the island. This structure supported inclusive and meaningful conversations—ensuring everyone could contribute, regardless of background or technical knowledge. It created space for knowledge sharing and co-creation, helping build buy-in and local ownership of the planning process. It also facilitated the emergence of a shared vision for the island, along with concrete objectives, adaptation actions, and clear targets that reflect Statia's priorities.

During the course of the participatory planning and validation process stakeholders defined the overarching goal and ambition of the plan as follows:



The Climate Plan for Statia aims to build a **climate-resilient self-reliant island,** where every resident plays a meaningful role in shaping and sustaining their future.

It seeks to **safeguard Statia's cultural heritage alongside its natural ecosystems, strengthen local capacity and economic independence, protect public health and wellbeing**, and ensure that adaptation efforts reflect the lived realities, knowledge, and priorities of the Statian people.

This plan is not just about coping with climate change—it is a roadmap for creating **a thriving island that is grounded in community ownership, equity, and long-term sustainability**.

To achieve this objective, the six core priorities underlying the Climate Plan are the following:

1. **Self-reliance:** Strengthen local resources, the economy, and inter-island trade to improve food and water security, supply chains, and disaster response capacity.
2. **Action:** Deliver real practical solutions that address both immediate and future risks and vulnerabilities, and create opportunities for the island.
3. **Investment:** Secure sustainable funding and structural financing that allows for both urgent action and long-term, strategic infrastructure investments. Establish multi-year climate budgets that integrate adaptation measures into broader development planning.
4. **Cooperation:** at a local level, within the Dutch Caribbean, and Kingdom of the Netherlands. And critically at a regional level with neighbouring islands, the Lesser Antilles (OECS) and Caribbean Region (CARICOM). [3]
5. **Preparedness:** Enhance the island's capacity to anticipate, respond to, and recover from climate-related risks and hazards by strengthening climate resilience, disaster readiness, emergency response mechanisms, and recovery planning.
6. **Ownership:** Enable meaningful and real participation by ensuring that local people not only have a voice, but influence over decisions and outcomes. Ensuring that solutions supported by external resources are rooted in local knowledge and lived experience.

To ensure that this plan delivers on the desired outcomes for Statia, the five guiding principles underlying the plan and its actions are:

[3] The Caribbean Community (CARICOM) is a regional intergovernmental organization that fosters economic integration, cooperation and coordination in the Caribbean Region. CARICOM institutions that focus on climate resilience, that would provide benefit to Statia include: the Caribbean Community Climate Change Centre (CCCCC), Caribbean Disaster Emergency Management Agency (CDEMA), Caribbean Meteorological Organisation (CMO), Caribbean Institute for Meteorology and Hydrology (CIMH) Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE), Caribbean Agricultural Health and Food Safety Agency (CAHFSA), Caribbean Agricultural Development Institute (CARDI), Caribbean Regional Fisheries Mechanism (CRFM), and the Caribbean Public Health Agency (CARPHA).

The Organisation of Eastern Caribbean States (OECS) is an international inter-governmental organisation dedicated to regional integration in the Eastern Caribbean. OECS programmes that Statia would gain benefit from include Climate and Disaster Resilience; Sustainable Ocean Management; Sustainable Energy; Chemical, Waste and Pollution; Trade Policy Unit; Agriculture Programme; and the Tourism Programme which includes a focus on the Blue Tourism, Heritage Tourism, Climate Action in Tourism, and Community-based Tourism.

Both CARICOM and the OECS makes provision for Overseas Territories to become Associate Members. Current Associate Members of CARICOM include Curaçao, and the British Overseas Territories of Bermuda, British Virgin Islands, Cayman Islands, Anguilla, and Turks and Caicos. Current associate members of the OECS include the British Overseas Territories of Anguilla and the British Virgin Islands, while Montserrat is a full member. The French Départements of Martinique, Guadeloupe and Saint Martin are also associate members.

1. **Resilience:** Prioritise climate adaptation actions that strengthen economic, social, and environmental resilience, ensuring an integrated approach that safeguards livelihoods, protects natural resources, and enhances community well-being.
2. **Inclusivity:** Solutions must be locally driven, community-focused, affordable, accessible and promote continued community engagement and participation.
3. **Adaptability:** The plan and actions must be dynamic and adaptive to shocks, hazards, disruptions, as well as changing data, forecast and needs.
4. **Integration:** Climate resilience must be embedded across all sectors including infrastructure, spatial planning, farming, ecotourism etc. Adaptation strategies must account for interconnected risks (e.g., erosion, drought, intense rainfall and deforestation).
5. **Accountability:** Climate change impacts everyone, requiring collective action from the community, government, and the Kingdom to strengthen the island's ability to adapt and thrive amid these challenges.

How To Use This Document

Statia's Climate Plan is presented as three interrelated parts. Each part has a distinct function and level of detail, but together they form a coherent package to guide climate action, policy development, and implementation.

Part 1: Executive Summary

- Highlights the island's key climate challenges and the priority interventions needed to strengthen climate resilience and disaster preparedness.
- Provides a concise overview to support quick understanding and high-level engagement with the core issues and strategic needs.

Part 2: Climate Plan Overview *(this document)*

- Provides background on current and future climate impacts, risks, and vulnerabilities.
- Introduces the cross-cutting interventions identified as critical for strengthening climate resilience.
- Details the flagship projects, associated budget breakdowns, and subsequent priority actions to be undertaken over the next five years.

Part 3: Integrated Climate Framework

- Sets out the multi-horizon roadmap and action agenda across all seven domains of island life and governance.
- Presents domain specific assessments and vulnerabilities, together with the priority actions developed through participatory processes.
- Supports domain holders in understanding how climate change intersects with their responsibilities and in aligning policies, plans, and investments with Statia's climate resilience objectives.
- Provides a practical tool to strengthen climate integration and coordination across domains and guide detailed planning and implementation.

Each part can be read on its own, depending on the level of detail required. Together, they provide a clear progression from high-level priorities, to the supporting analysis and near-term interventions, and finally to the long-term implementation roadmap and domain specific action agendas. This structure enables users to navigate the Climate Plan according to their responsibilities while remaining anchored to a shared framework for strengthening climate resilience on Statia.

CLIMATE CHANGE IMPACTS



Trends and Predictions

In 2023, the KNMI released the first climate scenario predictions for the BES islands, warning of a future defined by rising temperatures (up to 3.2°C by 2100 under high-emissions scenarios), sea level rise (up to 126 cm), and increased intensity of hurricanes, droughts, and extreme rainfall events. The climate modelling for the BES islands was notably less detailed and less certain than for the European Netherlands, as KNMI's modelling relied on low-resolution models extrapolated with regional measurements, due to the absence of good data available for the BES islands themselves. [4]

The current data limitations highlight the need for comprehensive monitoring systems across the islands to improve forecast models and climate assessments that capture local conditions. Addressing this need will require national investment in climate research and data collection for the BES islands, as emphasised in the Witteveen+Bos report (2024), to provide the scientific foundation for informed decision-making and planning at both local and national levels. [5]

While KNMI only published its first analysis of climate scenarios for the Dutch Caribbean in 2023, climate change has been a sustained focus in the wider Caribbean region for almost three decades. Since the early 1990s, regional governments and institutions have been closely tracking the impacts of climate change on small island states—culminating in the establishment of the Caribbean Community Climate Change Centre (CCCCC) in 2005 to coordinate regional adaptation and mitigation efforts.[6]

The unique vulnerabilities of Caribbean SIDS to rising temperatures, shifting rainfall patterns, sea-level rise, and intensifying hurricanes have long been recognised—not just as environmental concerns, but as threats to economic stability, public health, and national sovereignty. These concerns gained political urgency with the adoption of the Liliendaal Declaration on Climate Change in 2009, in which CARICOM heads of government declared that "*...climate change poses the most serious threat to the sustainable development, livelihoods, and wellbeing of our peoples and the security and territorial integrity of our states.*"[7]

The KNMI 2023 report outlines four climate scenarios in their projections for the BES islands. These scientific data points can be difficult to interpret in practical terms. To make these projections more tangible, the following table incorporates the above mentioned 30 years of regional climate data, linking historical trends with projected future conditions to paint a more comprehensive picture. This combined view highlights how climate change is already affecting the region and what these shifts are likely to mean going forward.

Table 1: Summary of climate trends and projections

Climate Variable and KNMI Climate Scenarios	Regional Historical Trends	Projected Future Conditions
Air Temperature 2050 annual temperature increase = 28.6 °C (+0.8 °C)-29.1 °C (+1.2 °C) in a low and high emissions scenario.	There has been an increasing trend in hot days and hot nights for the Caribbean as a whole (an increase of approximately 15% or 34 more days between 1981 and 2010). The greatest increase for warm days and warm nights was observed in the Lesser Antilles. 7% decrease in the annual frequency of cool days and 10% decrease in cool nights. For cool days	Minimum, maximum and mean temperatures will continue to increase irrespective of scenario Further intensification of the hot season along with more frequent and more intense heatwaves. The frequency of hot days and nights is projected to increase sharply, becoming nearly year-round by the 2040s.

[4] Royal Netherlands Meteorological Institute (2023). KNMI'23 Climate Scenarios for the Netherlands.
[5] Witteveen+Bos, (2024). Climate change and adaptation efforts BES islands. Final report, 21 October 2024 for the Ministry of Infrastructure and Water Management.
[6] Pulwarty, R.S., Nurse, L.A. and Trotz, U.O. (2010) 'Caribbean Islands in a Changing Climate', ***Environment: Science and Policy for Sustainable Development***, 52(6), pp. 16–27. doi:10.1080/00139157.2010.522460.
[7] CARICOM (2009) ***Liliendaal Declaration on Climate Change and Development***. Caribbean Community Secretariat. Available at: https://caricom.org.

2100 annual temperature increase = 28.5 °C (+0.7 °C) - 31.0 °C (+3.2 °C) in a low and high emissions scenario.	and cool nights, the greatest decrease over the period 1980 to 2011 was for the Lesser Antilles Coolest and hottest day and night temperatures have already increased by roughly 1°C (1980-2011). Extreme heat more common, with recorded events rising fivefold between 1981–2010.	Cool days and nights may become virtually absent as early as during the 2020s. The number of extreme heat events will likely rise by 15–40% during the 2020s. Increased heat stress as a local expression of global warning (virtually certain)
Rainfall Total annual rainfall in 2050 will decrease by 6%-12% in a low and high emissions scenario. By 2100, total annual rainfall will decrease by 5%-44% in a low and high emissions scenario.	The number of consecutive dry days is increasing, as well as the amount of rainfall during rainfall events. El Niño episodes are associated with pronounced heat and drought, while La Niña brings extreme rainfall.	Changes in precipitation are more difficult to project, but a slight decrease in total annual rainfall is anticipated despite the climate scenario, while single rain events will become more intense. Overall PRECIS RCM Rainfall Projections for the region are: ⇒ -5.76% in the 2020s ⇒ -11.88% by 2050s ⇒ -29.40% (2081-2098) Droughts are expected to become more frequent and intense, especially from the 2050s onward (high confidence). Dry spells are all expected to become more frequent (medium confidence). Regional Climate Model (RCM) predict that the Lesser Antilles will be the most severely impacted by dry periods and droughts.
Tropical Storms and Hurricanes Hurricanes of the most severe category are expected to occur more frequently. Once every 20 to 34 years from 2015 to 2050, compared to once every 39 years from 1980 to 2017.	The peak of the North Atlantic season is from mid-August to late October, with a primary peak around September 10th. A secondary peak occurs around the middle of October, which is mainly for the Caribbean Sea and the Gulf of Mexico region, after which the number of storms drops off quickly through the end of the season. Significant increase in frequency and duration of Atlantic hurricanes since 1995. Increase in Category 4 and 5 hurricanes; rainfall intensity, and associated peak wind intensities since 1995. Hurricanes are developing more rapidly. Historically it would take 36 hours, today hurricanes develop similar wind speeds within 24 hours which is impacting disaster readiness preparation.	No change or slight decrease in frequency of hurricanes during hurricane season. However, there will be an increase in the frequency of Category 4 and 5 hurricanes by 25%–30% by the end of the 21st century (medium confidence) due to rising sea surface temperatures. The A1B scenario predicts up to an 80% increase in Category 4 and 5 hurricanes over the next 80 years. Rainfall rates inside hurricanes are also predicted to increase by between 20% and 30%, increasing flash flood potential (medium confidence). There will be a shift toward stronger tropical storms by the end of the century as measured by maximum wind speed increases of +2 to +11% (medium confidence). Storm surges when added to higher sea level rise will increase storm tide impacts and damage.
Sea Level Sea levels are expected to rise in 2050 between 13 cm-34 cm in a low and high emissions scenario. Sea levels are expected to rise in 2100 by 29-126cm in a low and high emissions scenario.	Sea level in the Caribbean has been rising at rates of 1.8 mm per year between 1950 and 2009. The figure for the OECS[8] region is 2.5 to 3.5 mm per year, with rates between 2 mm per year around Guadeloupe in the Leeward Islands, and up to more than 2.5 mm per year around the British Virgin Islands. In the Windward Islands, rates have been around 1 mm per year near Grenada and the Grenadines, gradually increasing northwards to near 2 mm per year near Dominica.	Even if global warming is halted in the foreseeable future, sea levels will continue to rise (virtually certain). Predictions are of a sea level rise of 10 to 40 cm by 2050 and up to 1 m by 2090 compared to a 1986–2005 baseline. Rising seas combined with stronger winds in the strongest storms substantially increase the impact potential of storm surge and coastal inundation.
Sea Surface Temperature (SST) No data was included in the KNMI Climate Scenarios for Sea	Average sea surface temperature range is between 25°C to 30°C, with the lower temperatures in December/ January and the highest temperatures in July. Increase in the occurrence and intensity of "marine heatwaves" e.g. 2005 and 2010 which	Even if global warming is halted in the foreseeable future surface sea temperatures (SST) will continue to warm (virtually certain). The mean rate of SST warming will increase from 0.13°C for the 30-year period 2000-2029 to 0.31°C

[8] OECS = Organisation of Eastern Caribbean States

Surface Temperature increases which impact coral reefs, the marine ecosystem, fisheries sectors, sargassum inundations and hurricanes.	led to widespread and severe coral bleaching events.	for 2030-2059, and eventually reach 0.41°C for 2070-2099 i.e., SST warming will intensify. Sea temperatures are expected to rise in 2050 to between 28.5°C- 29.5°C in a low and high emissions scenario. By 2100 sea temperatures are expected to reach between 29.0°C- 31.5°C in a low and high emissions scenario. By mid-century, the expanding and contracting of the Atlantic Warm Pool (AWP) will be replaced by a "blanket" of uniformly warm ocean temperatures across the Caribbean Sea throughout the entire year feeding both increasing sargassum blooms and more intense hurricanes. By the end of the century, the projected SST will exceed 28°C across the entire Caribbean Sea year-round. With the coolest projected SSTs falling within the range of the warmest years presently recorded. It is also expected that the frequency and length of heatwave events will increase.
Table references listed in the footnotes below[9]		

Current and Future Impacts

Although climate change is often discussed in terms of future risks and long-term planning, stakeholders throughout the participatory process made it clear that for Statia climate change is an immediate and tangible reality that is already impacting daily life, livelihoods, self-sufficiency, infrastructure, and the island's natural and cultural resources. These on-the-ground observations highlight the critical importance and urgency of implementing integrated adaptation actions that both address current challenges and help the island build resilience to prepare for what lies ahead.

Diagram 3: Summary of climate change observations on island



[9] Table 1 sources include: OECS Commission (2019) *Climate Trends and Projections for the OECS Region: AdaptAction Technical Report*. Organisation of Eastern Caribbean States. Available at: https://www.oecs.org/climate-and-disaster-resilience/resources/scientific-documents.html.
World Meteorological Organisation, (2024). State of the Climate in Latin America and the Caribbean 2023. WMO-No. 1351. WMO, Geneva, Switzerland.
Climate Studies Group Mona (Eds.). 2020. "The State of the Caribbean Climate". Produced for the Caribbean Development Bank.
Zermoglio, F., Bonnin Roncerel, A., Clarke, J., Solana, C., Le Dissez, A., Thomas S., McCue, J., Van Meerbeeck, C.,
Nurse, L., (2021). OECS Climate Change Adaptation Strategy and Action Plan 2021-2026. French Development Agency Adapt'Action Facility.
Royal Netherlands Meteorological Institute (2023). KNMI'23 Climate Scenarios for the Netherlands.
Witteveen+Bos, (2024). Climate change and adaptation efforts BES islands. Final report, 21 October 2024 for the Ministry of Infrastructure and Water Management.

Stakeholders identified three critical areas of vulnerability where climate change is already affecting the island and is expected to intensify over time. These areas represent the island's most pressing climate concerns and highlight where targeted, coordinated action is needed to strengthen Statia's resilience across its people, economy, and environment. They are outlined as follows:

Diagram 4: Pressing Climate Concerns



1. Rising Cost of Living

- Escalating costs of food, water, and energy, worsened by climate change and external dependencies.
- Increasing transport costs due to monopolistic dependence on Winair and Makana
- Water shortages due to increasing droughts, and declining groundwater levels.
- Risk of energy disruptions caused by increasing demand and utility infrastructure vulnerability

2. Economic Vulnerability

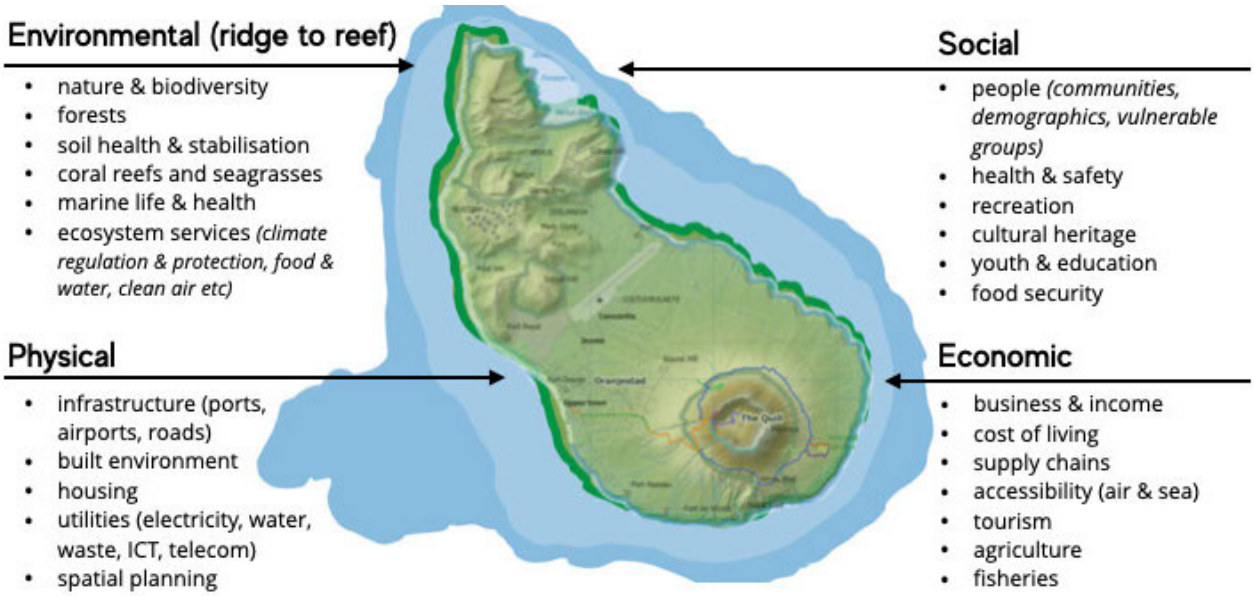
- Severe land and cliff erosion, threatening infrastructure, essential utilities, cultural heritage sites and farmland.
- Marine degradation, with sediment runoff harming coral reefs, fisheries, and tourism
- Declining local food production due to high farming costs, lack of water and low engagement.
- Limited economic opportunities, especially for youth, worsening the brain drain.
- Lower Town is at high risk with rockfalls, storm surges, and coastal erosion threatening utility infrastructure, businesses, cultural heritage, beach and leisure areas, tourism and the harbour.

3. Transportation & Supply Chain Vulnerability

- Import dependence on St. Maarten and Miami for food, fuel, and building supplies, etc., make the island highly vulnerable to supply chain disruptions.
- Limited accessibility and connectivity, restricting mobility, tourism, trade and emergency and disaster response.
- Hurricane-related flight cancellations, restricting medical evacuations and emergency aid.

These climate-related changes are having and are expected to have even more far-reaching physical, environmental, social, and economic impacts on Statia when you take into account the climate scenarios and future predictions outlined in the previous section. These impacts are not isolated to the environment as the critical areas of vulnerability illustrate, they cut across the island's physical infrastructure, social systems, and economic wellbeing.

Diagram 5: The environmental, social, physical and economic impacts of climate change



The table below expands on the climate change impacts currently being experienced on the island, correlates these observations with 2024 climate data, and outlines the expected primary, secondary, and tertiary impacts that stakeholders anticipate may occur if investments are not made to address the island's vulnerabilities, and strengthen its climate resilience.

Table 2: Current climate change observations and expected impacts and knock-on effects

Climate Variable	Current Climate Change Observations & Experiences	Local/ Regional Weather Data	Primary Impacts *(Immediate & Direct Effects)*	Secondary Impacts *(Knock-On Effects & Adjustments)*	Tertiary Impacts *(Long-Term & Systemic Effects)*
Air Temperature	**It's Getting Hotter** *Increase in average & extreme temperatures, especially experienced during summer periods.* You never used to need the air conditioner all of the time. It's pushing up electricity bills. Increasingly hot days are affecting people's desire to be outdoors; there is definitely higher car usage, people are not walking places as much as they used to.	2024 witnessed the highest average & extreme (heatwave) temperatures[10] recorded since 1850[11]	• Higher household cooling demand & AC costs. • Increased heat stress, dehydration, & health risks (elderly, infants, vulnerable groups). • Cistern water warming, promoting bacterial growth. • Heat stress in livestock; altered feeding & reproduction. • Turtle nesting failures due to overheated sand & eggs. • Plants scorched by heat, reduced agriculture yields & higher water needs. • Reduced outdoor play & reduced outdoor activity among children & adults.	• Rising electricity use for cooling, raising costs. • Solar panel inefficiency under high heat, increasing outage risks. • Higher water demand straining supply. • Reduced outdoor work hours & productivity. • Increase in numbers of overweight persons, & health impacts of sedentary lifestyles. • Growth in vector-borne diseases, pests, & crop diseases. • Increased road & infrastructure maintenance costs.	• Strain on energy & water systems. • More frequent power outages & water shortages. • Long-term reduction in agricultural productivity. • Loss of biodiversity due to thermal stress across species. • Collapse of Elfin & lowland forests. • Increased land degradation as vegetation fails to regenerate.
Rainfall	**It's Getting Drier** *Decrease in rainfall, longer dry seasons.* Water shortages during drought periods. Cisterns are running dry more often, there is an increasing reliance on expensive reverse-osmosis water. Wells are becoming increasingly brackish, & you can't plant or build with brackish water.	Although 2024 was an exceptionally wet year, the Caribbean has been facing increasing droughts[12] over the past decade.[13]	• Reduced water availability for farming & livestock. • Cisterns running dry, increasing reliance on RO facilities. • Wells turning brackish from overuse & salinisation. • Lack of groundwater for agriculture & construction. • Reduced crop yields, threatening local food production. • Increased desertification & soil compaction in the Lowlands. • Worsening water scarcity across the island.	• Rising water costs, straining vulnerable households. • Soil erosion, especially in overgrazed areas increasing sediment run-off into the ocean. • Droughts followed by heavy rain leading to flash floods. • Compacted soil unable to absorb water, preventing groundwater recharge, & increasing sediment run-off into the ocean. • Increased wildfire risk from dry brush. • Declining food security as crop production & livestock is impacted. • Increased construction costs & delays due to water scarcity.	• Long-term land degradation & reduced arable land. • Forest loss disrupting microclimates & accelerating desertification. • Decline in endemic species & biodiversity. • Loss of traditional farming knowledge. • Drop in nature-based tourism. • Groundwater salinisation.
Storms	**It's Getting Stormier** *Increase in storm intensity & heavy rainfall events* Storm surges are worsening impacting the harbour & Lower Town. Water kicks up even when a	2024 Hurricane Season included 18 tropical storms 11 of which developed into hurricanes. 5 of which	• Soil erosion, especially in rural areas with sparse vegetation. • Increased sedimentation & polluted stormwater runoff into the sea. • Flash flooding, localised flooding on Sandy Road, near the library, Whitehall Road & Bay Catchment.	• Loss of fertile topsoil, reducing yields. • Increased maintenance costs for roads & infrastructure. • Unpaved roads washed away. • Erosion threatening cultural heritage sites. • Reef & marine life loss due to sedimentation & pollution run-off.	• Decline in fish stocks & tourism as marine ecosystems degrade from sedimentation. • Long-term land instability, raising landslide risks. • Higher government costs for erosion control & water management. • Wider supply chain disruptions (food,

[10] Higher average temperatures combined with higher relative humidity compared to the average, and reduced wind, lead to a higher perceived temperature (KNMI, 2025. The State of our Climate in 2024: Weather in the Dutch Caribbean in a Changing Climate).
[11] Copernicus Climate Changes: https://climate.copernicus.eu/global-climate-highlights-2024
[12] According to KNMI, the dry season at the beginning of 2024 was drier than average for all the Dutch Caribbean islands (KNMI, 2025. The State of our Climate in 2024: Weather in the Dutch Caribbean in a Changing Climate).
[13] Climate Studies Group Mona (Eds.). 2020. "The State of the Caribbean Climate". Produced for the Caribbean Development Bank

	storm or hurricane passes 100miles away.	reached Category 3 or stronger. On average, there are 14 storms per year, including 7 hurricanes & 3 major hurricanes.	• Utilities (RO plant, power plant) directly at risk from erosion & storm surges. • Infrastructure damage to buildings & roads. • Flight & ferry cancellations.	• Increased vector-borne diseases. • Animals suffering foot rot.	medicine, fuel, construction materials). • Heightened vulnerability of food, water, & energy security. • Dependence on medical travel to St. Maarten threatened by climate-related flight cancellations.
Hurricanes	**Hurricanes are Getting Stronger** *& are less predictable, & the season is starting earlier.* Hurricanes are getting stronger, they picking up more water & bringing more intense rainfall. Hurricane Irma dropped so much sea water the Quill went brown. Hurricanes, tropical storms & intense rainfall events are worsening the problem of land & coastal erosion.	On July 2, Hurricane Beryl became the earliest hurricane ever in the season to reach Category 5.[14]	• Severe coastal erosion, especially in Lower Town. • Stronger storm surges causing coastal flooding & infrastructure damage. • Damage to roads, utilities, homes, & buildings. • Damage to historic sites & burial grounds.	• Businesses closing, particularly in Lower Town. • Loss of agriculture, crops, & forests. • Increased cost of living & increasing household debt – cost of rebuilding. • Reliance on external aid when local capacity is overwhelmed.	• Permanent land loss from coastal erosion. • Repeated rebuilding draining the economy & public budgets. • Reforestation efforts repeatedly set back. • Psychological stress & uncertainty from repeated storms. • Loss of jobs & livelihoods.
Sea Surface Temperature (SST)	**Sea is Getting Hotter** *Increase in ocean temperature & marine heatwaves.* The coral reefs are being impacted by bleaching events reducing marine biodiversity, & impacting the tourism industry. Warmer seas are also affecting fish migration & fish stocks.	2024 witnessed the highest average ocean temperatures & extreme ocean heatwaves recorded since 1979[15]	• Coral bleaching, reef loss & seagrass bed decline. • Fish migration shifts, reducing key species. • Thermocline changes affecting reef species. • Increase in coral & sponge diseases (e.g. barrel sponge, spiny coral). • Rising acidification threatening conch & lobster stocks. • Increasing sargassum on the Atlantic side, disrupting turtle nesting.	• Declining fisheries, reducing food security & fisher livelihoods. • Potential marine viruses affecting fish populations. • Weakened coastal defences as reefs die. • Loss of dive tourism as coral reefs degrade.	• Collapse of marine ecosystems, with biodiversity loss. • Long-term decline of the blue economy (fisheries & tourism). • Greater reliance on imported seafood, raising food costs. • Loss of seagrass & reef habitats, reducing fish nurseries & turtle populations.
Sea Level	**Sea level is Changing** *Rising sea levels & increased storm surges.* You used to be able to stand on the ledge/wall & your head would be above water, now it's under water. Coastal erosion is worsening; there is a lot less beach than there used to be. Cultural heritage sites on the shoreline are now at risk.	Sea level change between 1993-2023 = 15- 20cm. In 2024 the average sea level rise in the region was 7 cm.[16]	• Coastal erosion & flooding, especially in Lower Town. • Harbour at risk, threatening supply chains, ferry docking, & dive tourism. • Complete loss of beaches, including turtle nesting sites. • Saltwater intrusion into wells, affecting agriculture & drinking water. • Utilities (power plant, RO facility) at risk from inundation.	• Businesses in Lower Town destabilised by flooding & erosion. • Cultural heritage loss, including burial sites & historic buildings. • Transport & logistics frequently disrupted higher storm surge. • Depth changes altering coral reef habitats.	• Permanent displacement of Lower Town. • Major land use & zoning changes, requiring relocation of businesses & infrastructure. • Significant fiscal burden associated with relocating utilities & rebuilding harbour infrastructure. • Rising cost of living potentially exceeding what households can afford.

[14] Royal Netherlands Meteorological Institute (2024). The State of our Climate in 2024: Weather in the Dutch Caribbean in a Changing Climate.
[15] Copernicus Climate Changes: https://climate.copernicus.eu/global-climate-highlights-2024
[16] Lindsey, R. (2023). NOAA Climate Change: Global Sea Level. Retrieved from: https://www.climate.gov/news-features/understanding-climate/climate-change-global-sea-level#:~:text=In%202023%2C%20global%20mean%20sea,start%20of%20the%20satellite%20record

Economic Cost of Climate Change

Nowhere is the financial case for investment in climate resilience more compelling than in the Caribbean. The region faces some of the world's most severe macro-fiscal shocks from extreme weather events. Small islands like Statia, which are completely dependent on imports, and have limited resources, narrow economic bases, and constrained human capital, are particularly vulnerable. Every storm, drought, or hurricane carries outsized economic consequences. Yet, the full scale of these costs remains largely unquantified. This chapter therefore draws on regional data to provide an overview of both the current and projected costs of climate change—the so-called "costs of inaction."[17]

Current Loss and Damage

For decades, Caribbean small island states have borne the brunt of climate-induced loss and damage. As global average temperatures rise—now over 1.3°C above pre-industrial levels—the economic toll continues to grow. An IMF study of 12 Caribbean countries found that repeated exposure to disasters significantly hampers long-term growth, deters investment, and weakens overall macroeconomic performance.[18]

Between 2000 and 2022, climate change accounted for 39%—or US $41.3 billion—of total economic losses recorded across small island developing states. When measured against national output, the disparity is stark: disasters cost small island states 4.5 times more, as a share of GDP, than they do large economies—and this rises to sixfold for the Caribbean. To compound this, the Caribbean is struck by natural disasters twice as often as other small island regions and seven times as frequently as large economies. [19]

In many countries, insurance helps offset the cost of private property damage. But in the Caribbean, as climate events grow in frequency and intensity, insurance premiums have become unaffordable for many. This shifts the financial burden onto governments, who are then forced not only to repair public infrastructure but also to fund or subsidise rebuilding efforts for affected communities.

Understanding 'Loss and Damage'

The UNFCCC (2018) defines "loss and damage" as the adverse effects resulting from both sudden-onset climate hazards (such as hurricanes, floods, heatwaves, and storm surges) and slow-onset events (including sea-level rise, desertification, salinisation, ocean acidification, biodiversity loss, and land degradation).[20] Although the terms are often used interchangeably, this dual framing helps illustrate the wide-ranging—and often compounding—impacts of climate change on vulnerable economies.

Table 3: The difference between economic and non-economic losses

Economic and Non-Economic Losses				
Economic Losses		Non-Economic Losses		
Physical Assets	Income	Individuals	Society	Environment
Infrastructure Property	Business Operations Tourism Agriculture	Life Health Human Mobility	Territory Cultural Heritage Indigenous Knowledge Societal/Cultural Identity	Biodiversity Ecosystem Services

[17] Panwar, V., Noy, I., Wilkinson, E. and Corbett, J. (2023) The Costs of Inaction: Calculating climate change-related loss and damage from extreme weather in Small Island Developing States. ODI Working Paper. London.
[18] Otker, I., Srinivasan, K. (2018). Bracing for the Storm. IMF Finance and Development Magazine, March 2018.
[19] (Panwar et al., 2023)
[20] UNFCC, (2018). Loss and Damage: Online guide. Retrieved from: https://unfccc.int/sites/default/files/resource/Online_guide_on_loss_and_damage-May_2018.pdf

The concept of loss and damage includes both direct and indirect losses. Direct losses refer to physical destruction or disruption caused by sudden-onset events, while indirect losses capture the ripple effects that may persist long after damaged assets and services have been restored.[21] It also encompasses both economic losses (those with a market value) and non-economic losses, which relate to lives, cultural heritage, ecosystems, and other values that cannot be easily priced.[22]

Non-economic losses, in particular, are difficult to fully quantify. For instance, assigning a monetary "replacement" value to a destroyed heritage site fails to capture its social and cultural significance, its emotional meaning to the community, and its role in shaping collective identity.

Table 4: Definition of Damage and Loss

Dimension	Direct	Indirect
Economic	Immediate damage to market-valued assets, goods and services (e.g. houses, harbour, Lower Town, energy, solar and reverse osmosis infrastructure).	Secondary financial effects that ripple through the local economy until those assets and services are fully restored (e.g. cancelled dive-tourism bookings, increased energy and water prices, higher import costs).
Non-economic	Immediate harm to non-market goods and services (e.g. heritage sites, historic buildings, hiking trails and coral reefs) that can be described but are hard to price.	Long-term or intangible impacts that emerge after the event—mental-health stress, loss of cultural identity if historic buildings or burial grounds are lost, and declines in biodiversity that undermine the islands' tourism attraction.

Clearly distinguishing between different aspects of loss and damage is essential, as initial repair costs reflect only a small portion of the total economic impact. Long-term fiscal strain and cascading economic losses often far exceed both the immediate repair bills and the upfront investment required to climate-proof infrastructure, services, housing, and other critical systems.[23] For example, when Hurricanes Irma, Jose and Maria hit in close succession in 2017, it crippled St. Maarten's harbour and airport—severing the main supply route to Statia. At the same time, Statia's own airport was damaged, and its harbour was choked with debris, preventing relief vessels and ferries from docking for weeks.

The consequences extended beyond food and water shortages, it impacted fuel supplies, medical supplies, and essential building materials needed for recovery and reconstruction. It also impacted access to healthcare, with St. Maarten's hospital out of commission, medical care and evacuations had to be rerouted via Bonaire. Telecommunication and electricity lines were also knocked out. Full repairs to the breakwater and coastal infrastructure took months to complete, which further impacted supply chain and economic recovery. Large scale erosion especially by the airport and Fort Oranje had to be managed, while environmental damage required coral and forest restoration.

The threat to Statia extends beyond direct landfalls. Tropical storms or hurricanes passing through the Eastern Caribbean can also cause severe disruption. According to an IMF study, nearly half of the Caribbean's costliest hurricanes did not make landfall. Tropical-storm-force winds can extend up to 240 km from the storm's centre, and in some cases, nearly 900 km. Hurricane Lenny (1999) exemplifies this risk: though its centre passed 370

[21] Newman J. & Noy I. (2023) 'The cascading nature of indirect disaster losses', *Economic Modelling*, 120, 106171.
[22] Thomas A. et al. (2018) 'Exploring loss and damage in the Caribbean', *Regional Environmental Change*, 18(8), 2367-2381.
[23] Acevedo S. (2016) *Gone with the Wind: Estimating Hurricane and Climate Change Costs in the Caribbean*. IMF Working Paper WP/16/199.

km north of Dominica and 660 km from Grenada, it still caused US $272 million in damage in Dominica (68% of GDP) and US $94 million in Grenada.[24]

Econometric analysis confirms the threat—each 1% increase in maximum wind speed raises the damage-to-GDP ratio by 2% for offshore storms, compared to 3% for direct hits.[25] Additional risks stem from the island's dependence on supply chains routed through St. Maarten and Miami. A hurricane striking either of these hubs would not only disrupt the flow of essential goods—such as food, fuel, and medical supplies—but also drive up their cost, exacerbating economic vulnerability.

Future Loss and Damage

Climate projections indicate a steady rise in the intensity and unpredictability of hurricanes and tropical storms in the coming decades. Under a warming scenario of 2°C by 2046–2065 and 3.7°C by 2081–2100, average annual hurricane-related damages in the region are expected to increase by 22–77%. Even under a 2.5°C warming scenario, damages are projected to rise by 18–31%. The lower end of these ranges reflects damages from storms that do not make landfall, while the higher end reflects direct hits.[26] AEF (2024) estimates in their "Klein Gebied Grote Opgave" [27] report that a category 5 hurricane within a radius of 250km from Statia would result in the following infrastructure damage:

Table 5: Estimated cost of category 5 hurricanes expected until 2050 (AEF, 2024)

Estimated	Statia
Cost per Hurricane	US $130,897,144
Number of Category 5 hurricanes until 2050	0.93
Costs up until 2050	US $121,201,059
Average costs per year	US $4,848,042

The report further notes that these costs are an underestimation, for they do not include the replacement value for cost-covering infrastructure that may be damaged during a hurricane. The proportion of assets expected to be damaged is outlined in the following table:

Table 6: Assumption of proportion of assets that will need to be replaced (AEF, 2024)

Infrastructure category	Percentage damage
Airport	25%
Harbour	25%
Roads & parking lots	12.5%
Public transport	25%
Water management & drinking water	25%
Waste water	25%
Waste processing	25%
Telecom sea cable & fixed connection	25%
Fuel storage	50%
Energy generation (solar park)	25%
Energy grid	50%

[24] Otker, Srinivasan, 2018
[25] Acevedo, 2016
[26] Panwar et al., 2023
[27] AEF (2024) *Klein gebied, grote opgave: de financiële opgave van de fysieke infrastructuur in Caribisch Nederland*. Rapport opgeleverd aan het Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 13 februari.

Buildings	25%
Recreation	25%
Agriculture	25%
Cultural Heritage	25%

While these tables provide an indication of the expected cost of a category 5 hurricane on the island, the expected cost of future losses and damages caused by the increasing frequency of intense rainfall, droughts, heatwaves, groundwater salinisation, ocean acidification, and land and forest degradation—remains unquantified for Statia. In the absence of island-specific estimates, regional projections from the Caribbean provide a useful indication of the scale of these impacts.

Damages from increasingly intense rainfall and storms in the Caribbean region are projected to reach US $40.4 billion under a 2°C scenario and US $38.5 billion under a 1.5°C scenario by 2050. Flash floods and flooding could cause an additional US $13.4 billion in damages under 2°C, or US $12 billion under 1.5°C. On average, annual losses from storms, flooding, and landslides between 2023 and 2045 are expected to be 11% higher than in the previous 23 years (2000–2022). Cumulatively, under a 2°C warming scenario, total losses and damages in island states could reach US $56 billion by 2045.[28]

In addition to storm-related damages, the limited data available on fisheries and agriculture point to significant economic risks. Annual losses in landed fish values across Latin America and the Caribbean are projected to reach between US $1.21 billion under a mild climate scenario and US $2.72 billion under a more severe one. Economic losses from climate-induced declines in agricultural production are expected to total between US $14.7 and $31.4 billion from 2015 to 2050.[29] In the Caribbean alone, projected losses exceed US $1.8 billion between 2011 and 2050 under various climate scenarios.[30]

Required Investment

Despite the limitations in available data, the data does indicate that Statia will be unable to absorb these climate-related losses through the island budget without severely undermining development progress and compromising the OLE's ability to deliver basic services and social welfare programmes. Current financing mechanisms—such as the free allowance, local levy and 'special purpose grants'[31] are also inadequate for funding the long-term, integrated, structural, cross-sectoral adaptation measures required to strengthen the island's resilience and mitigate the forecasted economic costs of climate change.

According to the Vereniging van Nederlandse Gemeenten (VNG), municipalities across the Netherlands are struggling to implement critical climate adaptation interventions. The challenge arises from a structural mismatch between the long-term nature of adaptation and the short-term, sector-specific funding mechanisms currently available. In order to combat this bottleneck, the VNG has highlighted the need for stable, multi-annual (structural) climate adaptation funding.[32]

[28] Panwar et al., 2023
[29] Panwar et al., 2023
[30] Sircar A. et al. (2024) *A Review of Loss and Damage in the Caribbean (1994–2024)*. Climate Analytics.
[31] Incidental funds allocated by Ministries for specific projects and objectives.
[32] Vereniging van Nederlandse Gemeenten (VNG) Vereniging van Nederlandse Gemeenten (VNG) 2021, *Klimaat-adaptieve Gemeenten – Positie papier*, VNG, Den Haag. Retrieved from: https://vng.nl/sites/default/files/2021-10/position-paper-klimaatadaptieve-gemeenten.pdf
Van Dorresteijn, D., Mommers, V., 2021, *Klimaatadaptatie van project naar proces – samenwerken aan een integrale aanpak (resultaten van één jaar ondersteuningsprogramma)*, Vereniging van Nederlandse Gemeenten (VNG), Den Haag. Retrieved from: https://vng.nl/sites/default/files/2021-07/klimaatadaptatie-van-project-naar-proces.pdf.

The VNG further advocates for breaking down siloed budgets at national and regional levels so these can be pooled and aligned for adaptation purposes. In addition, to stronger investment in regional implementation capacity, with particular support for smaller municipalities. To be effective, this capacity would need to be matched with an enabling legislative environment for implementation for Statia as a “bijzondere gemeente.” Combined, these actions are critical not only for enabling adaptation but for mitigating the severe and escalating economic impacts of climate change—impacts that will otherwise place an unsustainable burden on national government.

PRIORITY CROSS-CUTTING INTERVENTIONS

The participatory workshop process revealed that Statia's most critical climate vulnerabilities are too complex to be addressed through traditional sectoral approaches, individual department budgets, or incidental funding. Instead, four strategic, cross-cutting priority interventions have been identified—each targeting interconnected challenges that require integrated solutions underpinned by dedicated structural financing, technical implementation support, capacity building, and enabling legislative and institutional frameworks.

These priority cross-cutting interventions have been identified by stakeholders as follows:

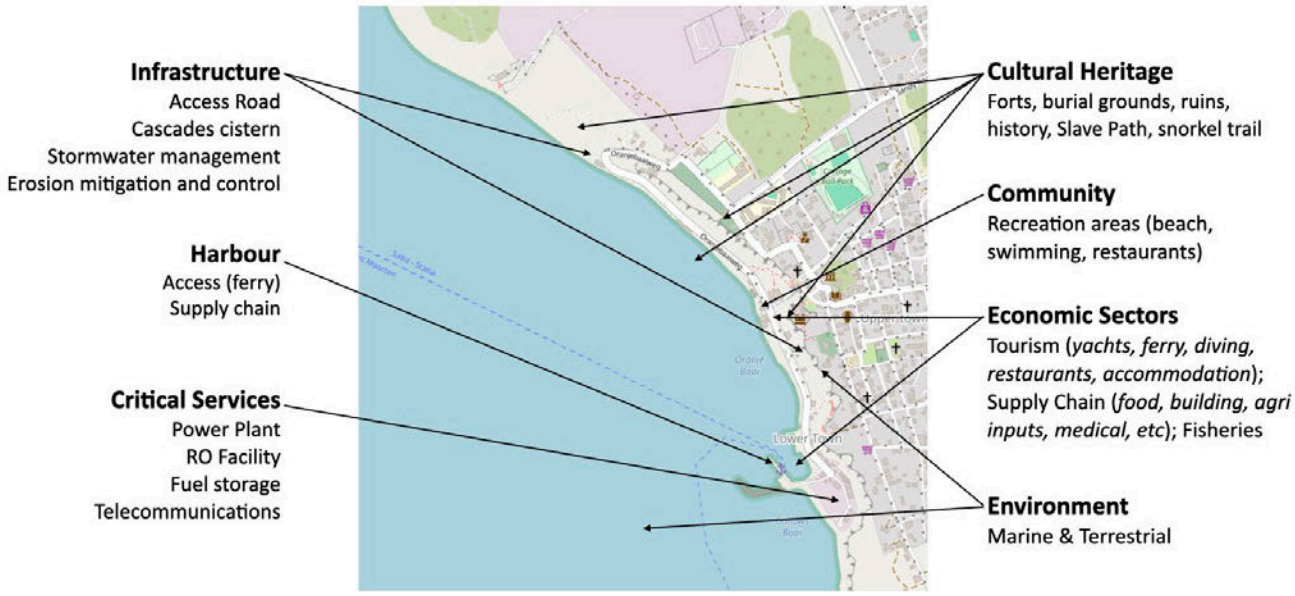
1. Lower Town Climate-Proofing
2. Building Supply Chain Resilience
3. Intra-Regional Collaboration
4. Climate Integration Across All Domains



1. LOWER TOWN CLIMATE PROOFING

Lower Town is not only Statia's most climate-vulnerable area, it is also the island's most indispensable. As the gateway for nearly all economic activity, essential services, and daily life, the island cannot function, nor recover from disasters, without a resilient and operational Lower Town. Yet this crucial area faces the highest and fastest-escalating risks from increasingly intense storms and hurricanes, storm surge, coastal erosion, and rising sea levels.

Diagram 6: List of assets, sectors, critical services and infrastructure located in Lower Town



Located in a low-lying coastal zone, Lower Town is fundamental to Statia's survival and day-to-day functioning because it contains:

1. Statia Harbour
    a. The harbour serves as Statia's essential lifeline, enabling the import of all food, essential goods, fuel, medical supplies, household items, and construction materials.
    b. The harbour also supports key economic sectors such as fisheries and tourism, particularly dive and yacht tourism, and serves as a key point of passenger arrivals and departure via the ferry.
    c. Any disruption to the harbour—or to the access route leading to it—would cut Statia off from its ocean supply lines, immediately halting the flow of food and essential goods, and critically undermining the island's ability to respond to or recover from climate events and disasters.

2. Seawater Reverse Osmosis Plant
    a. The island's seawater reverse osmosis (RO) plant, which provides a critical share of Statia's freshwater supply, is situated at the base of the cliff on the right-hand side of the harbour, in close proximity to the breakwater.
    b. The facility is elevated on a 1-metre platform intended to reduce exposure to storm surge. However, it remains unclear whether this protection—together with the existing breakwater—is sufficient under future climate conditions. No comprehensive assessment has yet been conducted to determine the plant's resilience to Category 5 hurricanes, more extreme storm surge events caused by climate change, or projected sea-level rise.

3. Power Plant and Fuel Bunkerage

    a. Both the island's Power Plant and the fuel storage and distribution bunkerage, are situated across the road from the harbour, and directly underneath an eroding cliff. A protective net has had to be installed to protect these facilities from falling rocks.

    b. The power plant was upgraded in 2017 to withstand Category 4 hurricanes, however the plant is not designed to withstand the increasing risk of Category 5 hurricanes.

    c. Storm surge already enters the power plant yard area, as a result the power plant engine has been raised on a 1 meter high platform to protect it from current storm surge levels. No comprehensive assessment has yet been conducted to determine whether the height of this platform is sufficient to protect the facility from more extreme storm surge events caused by climate change, or projected sea-level rise.

4. Telecommunications

    a. Statia relies on a single connection point to the Saba–Statia Sea Cable (SSCS), its only undersea telecommunications link. If this connection is damaged during a climate event, the island's entire digital communication system will be severed.

    b. While satellite infrastructure helps maintain external emergency communication and the EOC can continue coordinating via radio, the loss of the island's digital and mobile network still leaves residents without contact and makes island-wide coordination far more difficult. Communication across the island becomes significantly more challenging and complex at the very moment when clear, timely information is most critical.

5. Oranjebaaiweg

    a. The harbour and the island's critical infrastructure are connected to the rest of Statia by a single access road — Oranjebaaiweg.

    b. If this road is blocked during a climate event, the island is effectively cut off from the harbour and all critical utilities. Currently, there is no alternative route for transporting food, essential goods, or building materials from the harbour into the island, nor for personnel to easily reach the harbour, the reverse osmosis plant, the power plant, or the fuel storage facility. This would make urgent repairs extremely difficult to carry out.

6. Cultural Heritage

    a. Beyond its infrastructural significance, Lower Town is the historic heart of St. Eustatius. Once the gateway to the "Golden Rock"—one of the Caribbean's most prominent trading centres in the eighteenth century—the area retains a concentration of cultural assets on land and underwater, including archaeological sites, historic ruins, and notable landmarks such as Fort Oranje, the Slave Path linking Upper and Lower Town, and the remnants of Fort Amsterdam.

    b. Preserving and rehabilitating Lower Town's cultural heritage is essential to Statia's cultural identity and to its long-term sustainable and regenerative tourism ambitions. The island's unique history is embodied in the heritage landscape of Lower Town, giving it the potential to anchor Statia's heritage tourism offering. Protecting this area from climate impacts is therefore not only about safeguarding a vital expression of the island's identity, but also about securing a core pillar of its future economic development.

7. Community Recreation Spaces

    a. Lower Town also functions as one of Statia's primary social and recreational hubs, hosting restaurants, bars, public gathering spaces, and the island's only swimmable beach. It is a focal point for community life, local enterprise, and visitor activity.

    b. Safeguarding these spaces in the face of climate change is essential. Lower Town is the only area where residents can safely access the sea and find relief from rising temperatures, and its public spaces play a central role in sustaining community wellbeing and social cohesion. Losing this area to climate impacts would remove one of the island's few shared recreational environments and significantly diminish quality of life for Statia's residents.

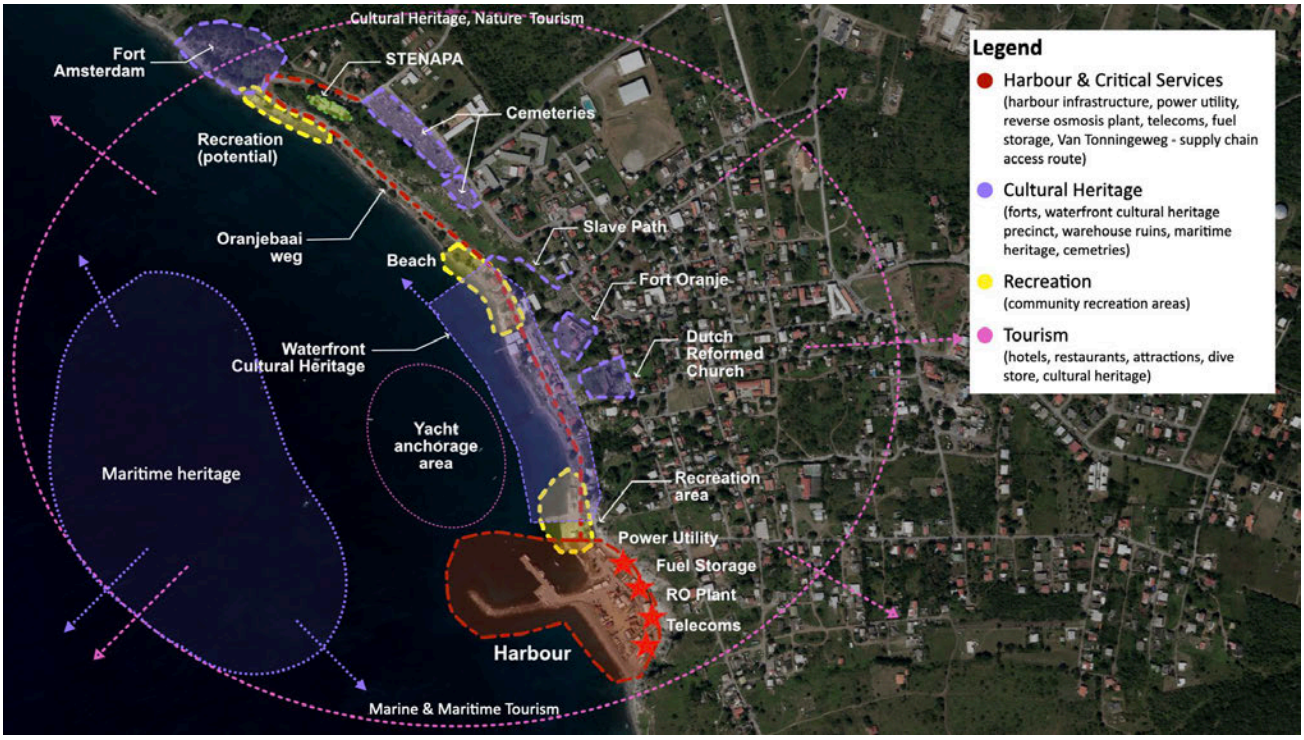
8. Tourism

    a. Lower Town is where Statia's cultural identity, community life, and visitor experience converge. It holds the heritage that differentiates the island, the social spaces that animate it, and the tourism infrastructure that enables visitors to arrive and explore the island.

        i. This infrastructure includes the island's dive operator, the departure point for the island's diving experiences, the ferry arrival point, yacht docking, a cultural heritage snorkel trail, and a boutique hotel.

    b. Protecting this area and its cultural heritage is central to maintaining Statia's appeal and securing the future growth of a sustainable, regenerative tourism sector.

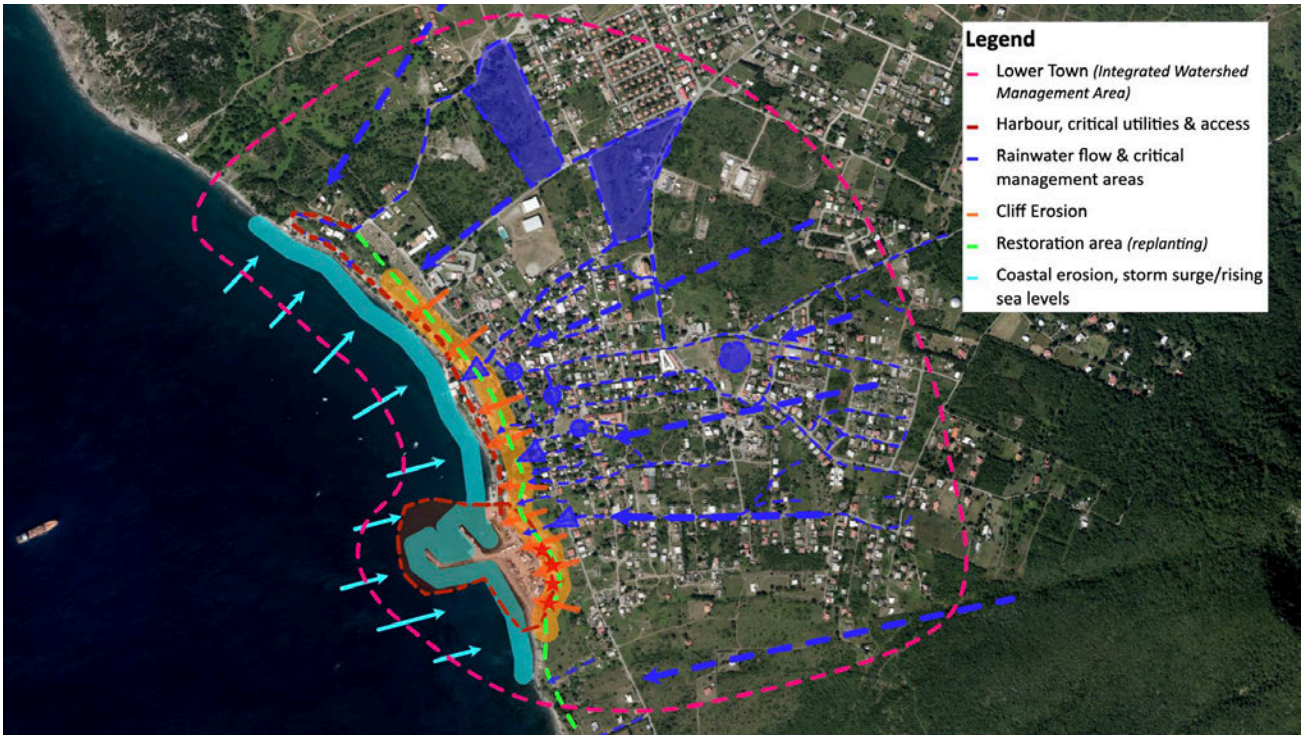
Diagram 7: Mapping of assets, infrastructure and services located in Lower Town



The mapping below illustrates how multiple climate hazards converge in this area: the coastal zone is threatened by storm surge and sea-level rise, while the steep cliff-face that borders it continues to erode and has already required stabilisation works near Fort Oranje following Hurricanes Irma, Jose, and Maria. This erosion is being aggravated by stormwater runoff and land instability within the watershed above, creating a

direct link between processes occurring in Upper Town and the risks faced in Lower Town. The concentration of high-risk critical assets—such as the power plant, reverse osmosis (RO) facility, telecoms, and fuel storage—at the base of this unstable cliff face and in a low-lying coastal zone further heightens the potential for climate events to lead to disruption, damage, and cascading economic and social impacts.

Diagram 8: Mapping of climate impacts on the Lower Town area



The combined exposure of critical infrastructure, supply-chain functions, economic activity, and cultural and social assets makes climate-proofing Lower Town an island priority. Climate-proofing is about designing, adapting, and managing infrastructure and spatial development so that essential services—and the places that shape Statia's identity and economic future—remain safe, functional, and viable under changing climate conditions.

Lower Town concentrates the systems and assets most critical to Statia's resilience and development: its harbour and utilities, its historic landscape, and the cultural and recreational spaces that support community life and future tourism growth. Protecting this area is therefore essential for safeguarding both the island's daily functioning and its long-term economic potential.

In practice, this requires ensuring that Lower Town's lifeline systems—including the harbour, RO facility, power station, fuel bunkerage, and telecommunications—can continue operating reliably as hurricanes, storm surge, extreme rainfall, flooding, cliff instability, and sea-level rise intensify. It also demands targeted measures to secure cultural heritage sites and public recreation areas, which underpin community wellbeing and Statia's tourism offering, enabling long-term development that is resilient, sustainable, and grounded in the island's identity.

Lower Town: Short-Term Climate Resilience Priorities

Accordingly, the next five years will require targeted investment in the following priority interventions to strengthen the climate resilience of Lower Town:

⇒ Lower Town Flagship Project – Harbour Access
⇒ Lower Town Integrated Climate-proofing Plan
⇒ Lower Town Cultural Heritage Project

Lower Town Flagship Project – Harbour Access

The Harbour Access Project has been identified as the flagship initiative because it delivers the most immediate and far-reaching benefits for disaster readiness, emergency access, supply-chain resilience, and the protection of critical functions located in Lower Town. By ensuring Statia can maintain safe and continuous access to its harbour—the island's primary lifeline—during and after major storms, hurricanes, flooding, or cliff instability, the project directly addresses one of the island's highest climate-risk exposures.

Currently, Oranjebaaiweg serves as the only road connection between the harbour and Upper Town, which means that if this road is blocked, damaged or washed away, Statia will lose access to its supply chain and essential utilities, and its emergency response capacity will be severely hampered. A climate-resilient lift system provides a reliable secondary connection that can continue operating even when the road is blocked or damaged, enabling the movement of essential goods, emergency equipment, and personnel between the harbour and Upper Town.

By creating an independent, mechanical access route integrated with the Emergency Operations Centre (EOC), Statia reduces the risk of isolation, strengthens its disaster-response capabilities, and safeguards the continuity of critical services, imports, and emergency logistics as climate risks intensify.

The intervention integrates three critical components:

1. A climate-resilient harbour access lift system enabling vertical or inclined transport between the harbour and Upper Town;

2. A secure cliff-top receiving platform for safe transfer of goods, supplies, and emergency equipment; and

3. Direct operational integration with the Emergency Operations Centre (EOC) to ensure uninterrupted disaster logistics in the event of road failure.

Together, these upgrades provide Statia with an essential redundancy system, ensuring access to the harbour even under extreme climate conditions and enhancing the island's ability to function as a regional disaster-response hub.

1. Harbour Access Lift System (Vertical or Inclined Mechanical Transport)

A compact, climate-resilient lift system provides a secondary access route from the harbour to Upper Town, overcoming the vulnerability of Oranjebaaiweg, which currently serves as the sole lifeline linking the island to incoming goods, medical supplies, fuel, and building materials. The lift system can take the form of a heavy-duty vertical freight lift or a short inclined rail lift, depending on geotechnical conditions. Both designs allow safe movement of goods, personnel, small equipment, and emergency supplies even during road closures. This is not just important for the movement of goods but also for the movement of personnel needed to man the harbour, customs, power plant, reverse osmosis facility, fuel storage etc. This is particularly important after a

severe storm when personnel need to be able to access the harbour area to conduct repairs on critical infrastructure.

Key features

- Capacity for small pallets, emergency equipment, fuel drums, medical supplies, and disaster-relief cargo, as well as harbour/STUCO personnel etc
- Compact footprint on both harbour and cliff-top sides
- Hurricane- and corrosion-resistant design
- Backup power for post-storm/hurricane functionality
- Modular design with potential for future expansion
- Seamless integration with harbour and critical infrastructure operations and emergency logistics

2. Upper Logistics Receiving Platform (Emergency Transfer Point)

A secure cliff-top platform provides a safe transfer point between the lift system and vehicles in Upper Town. This platform supports both routine and emergency operations and ensures continuity of essential services.

Key features

- Hardstand platform for receiving goods and emergency cargo
- Safe loading area for pickup trucks, trailers, and EOC vehicles
- Controlled access for emergency vs routine operations
- Temporary storage space for relief supplies during disasters
- Potential integration with solar lighting, CCTV, and communications systems

3. EOC Integration and Disaster Response Connectivity

The lift system becomes a core component of Statia's Emergency Operations Centre (EOC) capability, enabling emergency supplies and personnel to move freely between the harbour and Upper Town when conventional access is compromised. This is essential for Statia's ambition to function as a Dutch Caribbean Disaster Response Hub.

Key features

- Dedicated EOC access mode for emergency use
- Able to transport generators, shelter supplies, medical kits, and relief goods
- Ensures continuity of operations for utilities located in Lower Town
- Maintains emergency logistics and critical services functioning even during road collapse or flooding
- Supports rapid offloading and movement of regional relief supplies

The integrated benefits of this flagship intervention include the following:

a. Climate and Disaster Resilience
   - Ensures uninterrupted access to the harbour during extreme weather or road failure
   - Reduces the risk of complete supply-chain and critical services disruption after hurricanes
   - Guarantees continuity of emergency logistics and response capacity

- Enhances overall resilience of Lower Town's critical infrastructure

b. Harbour and Lifeline Functionality

- Provides a reliable secondary route for essential goods, fuel, and medical supplies
- Increases operational resilience of harbour-dependent sectors
- Supports faster post-storm recovery and utility access and repair

c. Strengthening Statia as a Regional EOC Hub

- Enables rapid movement of emergency equipment between the harbour and EOC
- Supports Statia's role in regional disaster preparedness and response
- Improves readiness to receive Dutch military and humanitarian support

d. Future-Proofing Critical Infrastructure

- Designed for hurricane resilience and rapid restart after storms
- Modular system which can scale cost effectively if required
- Strengthens national resilience as climate impacts intensify

Budget Overview

A vertical or inclined harbour access lift system provides Statia with a climate-resilient, cost-effective, and technically feasible secondary access route. With an estimated cost of USD 2.6M–6.0M, the flagship is both affordable and achievable. In contrast, constructing a new engineered road would cost between USD 10M–18M. It would require extensive excavation and land negotiations, and would still remain highly vulnerable to storms, flooding, and erosion. Such a road would also incur significant ongoing costs, with annual maintenance estimated at USD 150k–300k for drain clearing, slope repairs, and resurfacing—while post-hurricane repairs can run into the millions.

A lift system, by comparison, requires approximately USD 20k–40k per year for routine maintenance, including periodic servicing and anti-corrosion treatment, and can be brought back online rapidly after a storm. The lift system therefore delivers greater reliability, significantly lower costs, and markedly higher resilience, making it the most effective option for securing Statia's harbour access as climate risks intensify.

Table 7: Estimated Harbour Access Flagship Project Budget

Estimated Harbour Flagship Budget *(See Appendix A for the budget breakdown)*			
Component	**Option A *(Vertical Goods Lift)***	**Option B *(Inclined Rail Lift)***	**Notes**
Harbour Access Lift System	USD 1.2M – 1.8M	USD 2.0M – 3.2M	*Depends on lift height, load capacity, geotechnical stabilisation*
Cliff Stabilisation & Structural Works	USD 300k – 500k	USD 400k – 650k	*Geotechnical anchors, retaining structures, corrosion-resistant materials*
Cliff-Top Logistics Receiving Platform	USD 500k – 650k	USD 500k – 650k	*Hardstand, fencing, loading zone, safety systems*
Backup Power (Generator + optional battery)	USD 75k – 150k	USD 75k – 150k	*Required for post-storm operation*

Systems Integration (EOC, CCTV, comms, access controls)	USD 100k – 200k	USD 100k – 200k	*Connectivity to EOC and harbour systems*
Professional Fees & Project Management (Engineering, design)	USD 250k – 350k	USD 300k – 450k	*15–20% of capital cost*
Contingency (20–25%)	USD 375k – 650k	USD 550k – 900k	*Extra allowance for additional costs associated with hurricane-risk environment*
Total Estimated Cost:	**Option A (Vertical Lift): USD 2.8M – 4.3M**		
	Option B (Inclined Rail Lift): USD 3.92M – 6.2M		

Lower Town Integrated Climate-Proofing Plan

Several important interventions have already been taken to reduce immediate risks in Lower Town over the short term. Measures include:

- Oranjebaaiweg road improvement project.
- The current restoration and remediation of the Cascades rainwater catchment.
- Initial implementation of the Blue Circle stormwater project.
- Initiation of the NEPP project to reduce free-roaming goats and combat erosion.
- Plans are also advancing to upgrade the harbour seawall, expand cliff stabilisation works, and install a centralised septic tank to prevent wastewater from Lower Town entering the coastal zone.

While these incremental upgrades are addressing some of the immediate vulnerabilities facing Lower Town, their cumulative impact remains limited without an overarching framework. There is a high risk that opportunities for spatial coherence, cost and resource efficiency, climate resilience, environmental regeneration, and tourism development may be missed if each intervention proceeds in isolation.

Therefore, the next priority intervention required to strengthen the climate resilience of Lower Town is the development of an Integrated Climate-Proofing Plan. The objective of this plan is to bring all ongoing and planned measures into a single coordinated framework, maximising the impact of current investments and ensuring that short-term actions meaningfully contribute to long-term resilience. This long-term framework would align today's interventions with Statia's evolving climate risks and development priorities. It would integrate coastal protection, cliff stabilisation, and watershed management with targeted spatial planning; strengthened or relocated utilities; harbour and infrastructure upgrades; heritage conservation; sensitive urban and tourism development; and long-term ecosystem restoration.

The integrated plan should not be treated as a conventional engineering masterplan. The interconnected nature of Lower Town demands a broader, spatially integrated approach that balances engineering resilience with liveability, accessibility, environmental stewardship, heritage conservation, and economic development. Each intervention designed to enhance the area's usability, environmental quality, and tourism appeal while strengthening its resilience to future climate impacts over the medium and long term.

This integration would provide the strategic foundation needed to guide investment decisions over time. By establishing a clear approach for financing and maintenance, including medium and long-term cost modelling,

coordinated investment planning, and structured budgeting across ministries, departments, and utilities, it ensures that resources are used efficiently, synergies are realised, and interventions reinforce rather than duplicate one another. This coordination will create the conditions for Lower Town to evolve from a series of fragmented and reactive upgrades into a coherent, climate resilient, culturally grounded, and economically catalytic district for the island.

This comprehensive approach offers an opportunity for Lower Town to become a model for regenerative, landscape-based planning, demonstrating how climate, economic, environmental, and socio-cultural resilience can be achieved through a single integrated climate proofing design framework.

Lower Town Cultural Heritage Project

Statia's cultural heritage is of tremendous value to the island and the region. Lower Town contains some of Statia's significant cultural and historical assets, yet these same assets are increasingly exposed to erosion and storm surge. These cultural sites, archaeological areas, and the historic waterfront all require protection and rehabilitation so they can withstand future climate impacts and continue to contribute to the island's identity and long-term economic development.

Anchored in the Integrated Climate Proofing Plan for Lower Town, and the Tourism Master Plan for St. Eustatius, the Cultural Project will focus on three core objectives.

- First, it will support the protection and rehabilitation of historical structures, archaeological zones, and culturally significant landscapes, integrating climate adaptation measures such as storm surge-resistant design, shoreline protection, and improved drainage to reduce long-term risk.
- Second, it will strengthen the liveability and functionality of Lower Town by expanding shaded, accessible, and multi-use public spaces that provide social, recreational, and cultural value for residents and visitors.
- Third, it will create a platform for new economic activity by enabling public-private partnerships for waterfront revitalisation, heritage interpretation, small-scale enterprise development, and culturally grounded tourism products.

By protecting the stories, structures, and landscapes that define Statia's heritage, and by creating public spaces and cultural experiences that are resilient, accessible, and economically productive, the project ensures that cultural heritage plays a central role in the broader climate-proofing effort. In doing so, it positions Lower Town's heritage as a living asset that supports community wellbeing and sustainable development for generations to come.

2. SUPPLY CHAIN RESILIENCE

Linked to the harbour is one of Statia's most critical yet under-addressed vulnerabilities: its near-total dependence on external supply chains, which are highly sensitive to climate risks and shocks, natural disasters, geopolitical disruptions, and global market fluctuations. This dependence extends beyond food imports to include fuel, medical supplies, construction materials, and other essentials that sustain public services and daily life.

Building a more robust and climate resilient supply chain for the island is critical for food security, disaster response, to mitigate the increasing costs of construction and infrastructure projects, as well as to help manage the escalating cost of living on island (which is a key concern of the Social Domain). Without a more resilient supply-chain system, Statia remains exposed to structural weaknesses that undermine its climate resilience, constrain socio-economic development, and limit progress toward greater self-sufficiency and long-term sustainability.

Supply Chain Route

During the seventeenth and eighteenth centuries, Statia served as a major trans-shipment hub between Europe, Africa, and the Americas. Its deep, naturally sheltered harbour and central position at the crossroads of Atlantic trade routes made it one of the Caribbean's busiest free ports. That same geography remains strategically significant today, as Statia lies within a dense network of regional maritime routes linking the Leeward Islands to the wider Caribbean and global markets.

Despite its favourable geographic position, Statia's modern logistics network has become almost entirely dependent on St Maarten and Miami. Most imports — including food, construction materials, and household goods — originate from Miami and are routed through St Maarten, which functions as the island's primary trans-shipment and wholesale hub. A smaller volume of goods, particularly technical materials and government supplies, originate directly from the Netherlands, but these shipments are infrequent and often still pass through St Maarten before reaching the island.

From there, goods are delivered to Statia by two feeder vessels. Mutty's Pride, departing from Marigot on the French side of St Maarten every Tuesday evening, calls at Saba early Wednesday morning before continuing to Statia; the vessel is equipped with refrigerated containers, making it critical for perishable goods. Orion, which departs from Philipsburg on the Dutch side on Tuesdays, primarily transports dry cargo as it lacks refrigerated capacity[33]

[33] Ecorys (2017a) *Onderzoek naar prijzen in Caribisch Nederland. Deel I: Hoofdrapport*. Rotterdam: Ecorys.
- Ecorys (2017b) *Onderzoek naar prijzen in Caribisch Nederland. Deel II: Bijlagen*. Rotterdam: Ecorys.
- Grant Thorton, (2025). Navigating the logistics chain between Colombia and the islands of Bonaire, St. Eustatius, and Saba A study commissioned by the Cabinet of the Special Envoy Final Report – 24 March 2025 – Reference: LB/A-00061
- Mak, M., van Buiren, K., Bronkhorst, K., and Nanne, J., (2024). Steep island, high prices. Study into the causes of and solutions to the high cost of living on Saba. Amsterdam Bureau for Economics (Economisch Bureau Amsterdam)
- Simmons, J., (2021). Pilot: Saba fresh produce: Piloting an alternative supply line from Miami to Saba.
- Van Geelen, T. (2020). Food Supply Chain & Logistics *Bonaire, Sint Eustatius and Saba. Netherlands Enterprise Agency* (RVO) internship research.



Diagram 9: Supply chain routes to the BES Islands – orange=container ship; yellow = feeder ship (Image Source: Van Geelen, 2020)

In 2022, Tropical Shipping[34] introduced a third, more expensive, supply route that carries both refrigerated cargo and dry goods in full-container loads and less-than-container load (LCL).[35] Statia is serviced by the Tropic Carib and Tropic Unity which depart Palm Beach, Florida on a Wednesday and arrive in Statia on a Tuesday (6 days transit).

The Tropic Hope and Tropic Lissete which also service Statia receive consolidated goods at three ports along their route, including Halifax Canada, Palm Beach Florida and San Juan Puerto Rico. Tropic Hope and Tropic Lissette leave Halifax on a Monday, arrive in Palm Beach on a Friday and San Juan on the Monday to receive additional goods, and arrive in Statia the following Tuesday (15 days transit from Halifax, 11 days transit from Florida, 7 days transit from Puerto Rico).

All four ships also stop in the Dominican Republic, and Philipsburg, St Maarten on their route to Statia, in addition to Kingstown, St Vincent and Crown Bay, St Thomas. While the Tropic Carib and Tropic Unity also stop in Basseterre, St Kitts and Roseau, Dominica.

Key Supply Chain Vulnerabilities

Statia's supply chain is highly concentrated, with Miami and Florida serving as the main origin point for most imported goods and St. Maarten functioning as the primary trans-shipment hub. This creates multiple but closely linked points of vulnerability. Any disruption in St. Maarten—such as hurricanes, tropical storms, or storm surge—can halt onward shipments to Statia. The aftermath of Hurricanes Irma and Maria in 2017, when St Maarten's port was damaged, demonstrated how quickly such interruptions can isolate the island and impact

[34] https://www.tropical.com/; https://www.tropical.com/news/2022/tropical-shipping-announces-a-new-service-into-st-eustatius

[35] Tropical Shipping offer less-than-container load (LCL) refrigerated and frozen cargo as a service which would be highly beneficial to Statia, currently the service is only available for The Bahamas, Barbados, Cayman Islands and Turks and Caicos https://www.tropical.com/services/shipping/refrigerated-cargo

food, fuel, building and medical supplies.[36] While, disruptions in Miami or Florida can affect the availability of goods before they even enter the regional transport system. Together, these dependencies leave Statia exposed to significant supply chain risk.

Limited shipping frequency and the absence of redundancy in the Orion and Mutty's Pride feeder routes amplify these risks. In addition, any delay or mechanical failure with the Mutty's Pride directly impacts food security and food safety. Statia's limited storage and handling capacity, lack of shaded/temperature-controlled areas for goods sorting, and lack of cold-chain facilities restrict the island's ability to maintain buffer stocks, protect produce from exposure to the elements, and maintain the integrity of the cold chain.[37]

The ability of the island to offset its dependence on imported fresh produce through local agriculture is also constrained by this supply chain. Farmers depend on imported seeds, feed, fertilisers, and equipment, but high shipping costs and unreliable logistics make these inputs more expensive which has a direct impact on the cost of farming on island. These heightened costs reduce the viability of scaling up local production, reinforcing dependence on imports and limiting opportunities to strengthen food security through domestic agriculture.[38]

The dependency on St Maarten also has direct consequences on the cost of living and building on island, as it increases logistics costs due to handling fees, storage charges, and customs processing. In addition, capacity constraints at St Maarten's port during peak seasons often result in shipment delays, driving up the logistical costs of goods destined for Statia and causing construction projects to become more expensive due to prolonged delivery times for required building materials.[39]

Further compounding costs is the cumulative "tax-on-tax" effects along the supply chain, which is often described by stakeholders as the "triple ABB." This is comprised of 5% BBO in St Maarten, and 6% ABB in Statia which is levied over the CIF value of the product, meaning both the cost of the product and the cost of freight is taxed. In addition, broker clearance fees are frequently calculated as a percentage of the ABB paid, further compounding costs for both businesses and consumers.[40]

The Grant Thornton (2025) study notes that absence of coordinated logistics planning across the BES islands further weakens supply-chain resilience. This fragmentation limits opportunities to pool volumes, negotiate favourable freight terms, or build collective contingency capacity for disruptions. The Ecorys (2017a, 2017b) research similarly found that the small scale of individual island markets and their reliance on separate import channels reduce purchasing power and make logistics highly cost-sensitive.

An additional, unquantified risk is the extent to which climate change will amplify existing vulnerabilities and increase both the cost of living and the cost of infrastructure projects on the island. More frequent and severe storms, disruptions to regional shipping routes, and damage to critical port infrastructure in St. Maarten or Miami/Florida will intensify the risk of delays, shortages, and escalating costs. Yet no dedicated assessment has been undertaken to quantify these impacts or the additional risk premiums and economic losses they may create. This absence of analysis leaves policymakers without the evidence needed to plan for resilience and exposes the island to compounding shocks affecting its supply chain lifeline.

[36] Bäck, L., (2022). Emergency Response and Reconstruction in Sint Maarten, Sint Eustatius and Saba Synthesis Report, 31 October 2022. Policy Review of Article 8 of the Budget of Kingdom Relations Netherlands Ministry of the Interior and Kingdom Relations (BZK).

[37] Grant Thorton, 2025.

[38] Ecorys, 2017; Van Geelen, 2020.

[39] Grant Thorton, 2025.

[40] Ecorys, 2017; Mak et al., 2024.

The absence of regional coordination further weakens supply chain resilience. Both Ecorys (2023) and Grant Thornton (2022) highlight that while Saba and Statia share similar import patterns and logistical dependencies, there is no formal mechanism for joint procurement, warehousing, or emergency stock management. This lack of integration prevents economies of scale and limits the islands' ability to build collective resilience or negotiate better freight terms with suppliers and carriers.

Supply Chain: Short Term Climate Resilience Priorities

Statia's pathway to a climate-resilient supply chain over the next five years begins with establishing secure on-island food security capacity, which forms the foundation for reducing vulnerability to external shocks. To ensure these investments deliver long-term impact, the island must also develop a clearer understanding of how climate change will affect future supply reliability and costs, and complement this with diversified sourcing and routing to reduce dependency risks. Together, these three interventions, namely:

⇒ Climate Resilient Food Security Flagship Project

⇒ Supply Chain Climate Risk Analysis

⇒ Supply Chain Diversification

provide the structural basis for safeguarding access to essential goods, stabilising prices, and strengthening Statia's resilience in an increasingly volatile climate and market environment.

Climate Resilient Food Security Flagship Project

This flagship has been prioritised because it provides the most comprehensive and immediate solution to Statia's food security vulnerabilities, creating the island's first end-to-end system that protects the supply chain from harbour arrival through to storage, distribution, and value-added agri-processing. The intervention integrates three critical components:

1. A compact shaded reefer-handling area at the harbour to safeguard frozen and chilled imports during offloading and customs checks;
2. A 4-week inland Food Security Storage Facility providing reliable frozen, dry-goods and feed reserves;
3. A modular agri-processing unit enabling farmers and local entrepreneurs to reduce waste, process surplus crops, and create locally branded food products.

Together, these upgrades will significantly strengthen Statia's resilience to climate impacts, supply chain shocks, shipping delays, and rising food prices. While, simultaneously supporting local agriculture and job creation.

1. Shaded Harbour Reefer-Handling Area (Cold Chain Integrity)

A compact, efficient shading structure with 4 reefer plug-in points and 1 dry-goods inspection bay protects incoming frozen and chilled goods from heat and rain during the highest-risk stage of the supply chain. Trucks reverse into a short, shaded bay, complete customs checks under cover, and drive out—requiring very little space. The structure reduces spoilage, prevents temperature excursions, improves food safety, and reduces worker exposure to heat.

Key features

- 5 shaded reefer bays (+1 dry/inspection bay)

- 5 reefer plug-in points for immediate temperature stabilisation (included in the harbour upgrade)
- Compact 170–210 m² canopy footprint
- Fast-offload reversing bay (no turning required)
- Optional modular or hurricane-resilient design
- Reduced spoilage and improved food safety and HACCP compliance

2. Food Security Storage Facility (4-Week Buffer)

An inland facility provides Statia with a full month of food and feed reserves, reducing vulnerability to shipping delays and supply chain disruptions. Frozen storage uses 12 container reefers under a simple canopy; dry goods and feed are stored in a 1,050 m² steel warehouse. Refrigerated trucks will help ensure the cold chain is maintained both to the storage facility as well as to local supermarkets, increasing food safety and decreasing food spoilage.

Key features

- 12 × 40' reefers (≈360 frozen pallets/month)
- 1,050 m² dry-goods + feed warehouse (≈600 pallets)
- Backup power (diesel + solar + optional battery storage)
- 1–2 refrigerated delivery trucks for safe distribution
- Anchored, modular, and highly cost-effective

3. Small-Island Agri-processing Centre (Value-Add & Waste Reduction)

A 60 m² modular agri-processing unit adjacent to the main storage building enables farmers and small businesses to transform surplus produce into shelf-stable, higher-value products. This reduces food waste, increases farmer income, agri-entrepreneurship possibilities and supports local economy diversification.

Key features

- Multi-use equipment: washing, slicing, cooking/pasteurising, drying, milling, packaging
- Capable of producing sauces, pickles, juices, dried fruit/veg, flours, chips, relishes
- Energy-efficient (gas kettles, solar dryers, low-load electric equipment)
- Scalable: add a second module or additional equipment as demand grows
- Supports training, SME development, and local branding

Flagship Integrated Benefits

Food Security & Emergency Preparedness

- Ensures 4-week food and feed buffer during hurricane season, to mitigate shipping delays, and market disruptions
- Protects cold chain integrity from ship → harbour → inland storage → stores
- Minimises spoilage and improves food safety standards

Reduced Food Waste and Increased Circularity

- Harbour shading prevents heat/rain damage during offloading
- Agri-processing converts excess produce into value-added products
- Reduces risk of total reliance on imports through local production

Stronger Local Agriculture & Economy

- Provides farmers with the ability to sell their excess during harvests – increasing income opportunities
- Supports entrepreneurs to create locally branded food items
- Enables micro-enterprises in sauces, dried goods, flours, and snacks

Energy & Climate Resilience

- Designed to withstand hurricanes
- Solar PV + backup generator ensures safe operation during outages and after hurricanes
- Reduces diesel dependency and operational costs

Budget Overview

Table 8: Estimated Climate Resilient Food Security Flagship Project Budget

Estimated Climate Resilient Food Security Flagship Budget *(See Appendix B for the breakdown of costs and explanation of options)*			
Component	**Option & Notes**	**Cost Range (USD)**	**Notes**
A. Shaded Harbour Reefer-Handling Area	Option A – Hurricane-Resilient	USD175k – USD265k	*Engineered to survive major storms (Cat 4/5) with minimal damage*
	Option B1 – Demountable Shade-Net + Mini Roof	USD124k – USD190k	*Designed to be quickly unbolted or to shed non-critical parts and be re-erected after the storm*
	Option B2 – Demountable Light-Sheeting	USD137k – USD209k	
B. Food Security Storage Facility (4-Week Buffer)	Option A – Diesel Backup Generator Only	USD2.02M – USD2.30M	*Costing including diesel backup generator*
	Option B – Solar + Battery Backup (Full Resilience)	USD2.22M – USD2.53M	*Costing including solar PV and battery storage*
C. Agri-processing Facility	USD 250k – 350k	USD91k – USD174k	*60 m^2, scalable*
Total Estimated Cost:	**USD 2.8M – 4.3M**	*Total estimated cost for all components—based on the lowest- and highest-cost configurations*	

Supply Chain Climate Risk Analysis

Statia's supply chain is acutely vulnerable to climate impacts, with rising risks of disruption at external hubs such as St. Maarten and Miami/Florida. These vulnerabilities directly affect food security, access to essential goods, building supplies, medical supplies, and the cost of living. Yet the island lacks a quantitative assessment of how climate change will shape future supply reliability, costs, and system failure risks. The Supply Chain Climate Risk Analysis that will be conducted by IPDC fills this gap by providing the evidence base needed for strategic, long-term resilience planning. It will model climate risks, quantify economic impacts, evaluate the cost of inaction, and identify cost-effective pathways for strengthening Statia's supply-chain resilience.

The IPDC project will deliver:

- A System Dynamics model showing how external supply chains interact with critical island systems.
- A climate stress-testing framework to identify points of failure under KNMI/IPCC scenarios.
- A cost-effectiveness assessment of priority adaptation measures, including optimisation feedback into supply chain diversification planning.
- A cost-of-inaction analysis to inform investment and governance decisions.

This analysis will enable Statia to quantify supply-chain vulnerability for food, building materials, and medical supplies; assess the effectiveness and cost-efficiency of adaptation options under future climate conditions; and generate the scientific evidence required to guide investment prioritisation. In doing so, it will directly strengthen the island's ability to plan, prioritise, and invest in a more resilient and adaptive supply chain.

Supply Chain Diversification

The Supply Chain Climate Risk Analysis will provide the evidence needed for Statia to make informed decisions about how, when, and where to diversify its supply routes. By quantifying climate risks, modelling dependencies on hubs such as St. Maarten and Miami/Florida, and estimating the economic impacts of delays and disruptions, the analysis will lay the groundwork for prioritising the most cost-effective and climate-resilient diversification pathways.

Potential diversification pathways include:

a) Re-establishing intra-regional short-sea supply chains for fresh produce and agricultural inputs utilising Tropical Shipping, or schooners with onboard cold storage capacity or equipped with small-scale reefers (refrigerated container), aligned with the CARICOM "25 by 25 + 5"initative.[41]

b) Multi-hub diversification outside the region. Depending on the climate risk modelling, Statia may consider exploring additional hubs such as Colombia, Panama, or Puerto Rico to reduce over-reliance on the current single supply route.

c) Strengthening disaster-readiness through alternative emergency routes. As part of diversification, contingency planning may involve securing intra-regional agreements with St. Kitts or the Caribbean Regional Logistics Hub & Centre of Excellence in Barbados. These arrangements could provide rapid response capacity if St. Maarten were temporarily out of service due to hurricanes, port damage, or operational shutdowns. This would complement the Emergency Operations Center's preparedness planning.

d) Coordinated logistics planning with neighbouring islands. Past pilots—including the 2020 (Covid Response) Saba supply-chain pilot—show that coordinated logistics can reduce costs, shorten lead times, and improve product quality by pooling orders and bypassing intermediary wholesalers. Building on this experience, Statia may consider mechanisms to aggregate weekly orders with neighbouring islands into a scheduled refrigerated shipment. Shared ordering calendars, minimum-pallet commitments, cost-sharing arrangements, and pre-sorted sealed pallets could make this system viable over time.

e) Exploring trade facilitation arrangements with CARICOM to enable Statia to benefit from certain CARICOM trade preferences, which could enhance sourcing flexibility and help reduce food prices. This would require engagement at the national level but may offer structural advantages to the island's diversification strategy.

[41] The "25 by 25" initiative is a CARICOM regional agri-food security program to reduce the region's food import bill, boost intra-regional trade of agricultural and food products, strengthen regional value chains, and reduce trade barriers within CARICOM through policy and regulatory harmonisation and institutional reforms (CARICOM Secretariat, 2025).

3. INTRA-REGIONAL COLLABORATION

Statia's strategic position at the heart of Caribbean maritime and trade routes continues to shape its future as much as it defined its past. The island's capacity for climate resilience and long-term self-reliance will depend on how effectively it can leverage this strategic position to collaborate with its neighbours. In a region of small markets, fragile supply chains, and shared vulnerabilities, no island can achieve self-sufficiency in isolation. Working collectively allows small islands to pool resources, share infrastructure, and build the redundancy needed to withstand shocks. This includes developing complementary food-security programmes and inter-island trade that reduce dependence on distant suppliers; strengthening joint emergency systems that expand disaster preparedness; and coordinating investment in connectivity that lowers costs and improves access to markets, healthcare, and education, and supports improved economic development.

Statia already plays a pivotal role in regional crisis management through hosting the Dutch Caribbean Emergency Operations Centre (EOC), which serves as the coordination hub for emergency response across the BES islands and, at times, for neighbouring territories such as St. Maarten. Strengthening this leadership position—through expanded capacity, formalised mutual-aid protocols, and joint training—will be essential to ensuring an effective collective response during regional emergencies. The experience of Hurricanes Irma, Jose and Maria in 2017, when Statia required emergency assistance from St. Kitts, underscored the importance of having pre-agreed regional arrangements and accessible lines of communication before crises occur. Formalising these relationships within a structured regional framework will enhance Statia's ability both to provide and to receive assistance when needed.

Intra-regional collaboration is also a direct enabler of supply-chain resilience, as described in the preceding section. Many of Statia's logistical and affordability challenges cannot be solved in isolation: stable access to food, fuel, building materials, and medical supplies depends on shared transport routes, coordinated procurement, and regional storage and distribution systems. Strengthening inter-island connectivity—both physical and institutional—therefore underpins not only emergency readiness but also the everyday affordability and continuity of essential goods and services.

Regional collaboration is already showing tangible benefits. Joint tourism promotion, such as St. Kitts' marketing of *St. Kitts, Nevis, Statia, and Saba* as a combined destination, demonstrates how coordinated branding can extend visitor stays and distribute economic benefits more evenly across islands. Similarly, participation in regional food-system initiatives, early-warning and climate-change networks, and shared programmes in education, health, entrepreneurship, and logistics will strengthen the resilience of the key sectors identified throughout this Climate Plan.

Through deliberate engagement at multiple levels—Intra-BES, Intra-SSS, and wider Caribbean partnerships—Statia can re-establish the cooperative networks that once supported its prosperity. In doing so, the island transforms its connections into resilience, ensuring that geography once again serves as a foundation for security, opportunity, and sustainable progress.

Intra-regional Collaboration: Short Term Climate Resilience Priorities

To translate the benefits of intra-regional collaboration into practical gains for Statia over the next five years, two targeted interventions are required:

⇒ Regional Emergency Operations Centre (EOC) Flagship Project

⇒ Improved Regional Integration (CARICOM and OECS Programmes & Institutions)

First, the Regional Emergency Operations Centre (EOC) Flagship Project will strengthen Statia's leadership in regional crisis coordination and ensure the island is better supported during major climate and disaster events. Second, improved integration with CARICOM and OECS programmes will enable Statia to benefit from regional cooperation frameworks, tap into regional value chains, strengthen food security, access climate and hazard intelligence, participate in coordinated disaster-response mechanisms, and engage in regional marine and ecosystem management initiatives. Together, these interventions will enable Statia to turn regional cooperation into tangible, long-term resilience outcomes.

Regional Emergency Operations Centre (EOC) Flagship Project

This flagship strengthens Statia's capacity to prepare for, respond to, and support recovery from disasters by formalising the island's role as a Regional Disaster Preparedness and Response Hub. The intervention addresses critical gaps in infrastructure, logistics, human capacity, and inter-island coordination, ensuring Statia can operate as a central staging and support point for Saba, St. Maarten, and potentially other Caribbean islands. By expanding the existing EOC facility, building dedicated stockpiles, and establishing a stronger cooperation framework with regional partners, Statia will be equipped to manage increasingly intense hurricanes and climate-related emergencies while also supporting wider Dutch Caribbean response operations.

The vision for this flagship is grounded in lessons learned from the 2017 Irma, Jose and Maria hurricane events, when the Dutch military provided support for Statia, Saba, St Maarten and Dominica, but lacked a permanent Caribbean coordination base. By investing in infrastructure, logistics capability, and a skilled disaster-management workforce, Statia can fill this long-standing gap and offer a forward operating location for emergency response across the region.

The flagship integrates three critical components:

1. Expansion of the EOC facility and establishment of dedicated emergency stockpiles;
2. Strengthening human capacity to support policy, planning, logistics, and damage assessment functions; and
3. Formalisation of regional cooperation and diplomatic agreements to operationalise Statia's role as a disaster-response hub.

Together, these interventions significantly enhance local preparedness, accelerate recovery after major events, and improve resilience across the wider Dutch Caribbean.

1. EOC Infrastructure Expansion and Emergency Stockpiles

The Executive Council has already approved the expansion of the existing EOC, adjacent to the current facility, to support Statia's development as a regional transport, logistics, and storage hub for disaster response. This core investment establishes the infrastructure needed for coordinated emergency operations, warehousing, and rapid mobilisation of relief supplies which will be complemented by the Food Security Storage Facility.

Key features

- Central logistics warehouse and stockpile for emergency rations, medication, and immediate relief goods (tarpaulins, chainsaws, fasteners, basic repair materials)

- Secondary facility in the industrial area for lumber, zinc, and other construction materials to support rapid post-hurricane home and infrastructure repair
- Reinforced storage with climate-proofing features to protect critical supplies during extreme events
- Estimated cost USD 350,000–400,000; partly funded by the Ministry of Justice and Safety, with potential for climate-related co-financing where gaps remain

These facilities create a reliable disaster-response reserve for Statia while enabling the island to support neighbouring territories during emergencies.

2. Human Capacity Strengthening for Emergency Management

Current EOC staffing is limited, with key operational responsibilities falling primarily on the crisis advisor. To develop a robust and effective emergency management system, additional specialised roles are essential.

Key features

- Policy and Planning Officer to manage preparedness plans, emergency procedures, and scenario-based planning
- Logistics Manager to oversee supply chains, transport coordination, and mobilisation of assets before, during, and after an event
- Damage Assessment Specialist trained to assess impacts across multiple sectors, including critical infrastructure, ecosystems, biodiversity, agriculture, and livelihoods. Potential for this role to be part of a shared rotational capacity pool with Saba, St. Maarten, and the CAS islands to strengthen regional readiness and reduce staffing burden

These roles ensure that Statia has the expertise needed to manage complex emergencies and coordinate response effectively at both local and regional levels.

3. Regional Coordination and Diplomatic Collaboration

To operationalise Statia's role as a Regional Disaster Preparedness and Response Hub, formalised cooperation with neighbouring islands and regional bodies is required. Current engagement in regional networks is limited, with Dutch representatives often attending meetings without systematic follow-up or integration at the island level.

Key features

- Formalised cooperation agreements (MOUs) with Saba, St. Maarten, and broader Caribbean regional frameworks such as CDEMA
- Clear protocols for joint training, mutual aid, and coordinated response deployment
- Alignment with BES/CAS emergency planning efforts to ensure seamless interoperability
- Strengthened diplomatic channels to reduce fragmentation and enhance disaster response capacity.
- These mechanisms ensure that investments in infrastructure and capacity translate into operational readiness and coordinated regional response.

Flagship Integrated Benefits

Climate and Disaster Resilience

- Stronger preparedness and rapid response capability after hurricanes and climate-related disasters

- Reliable stockpiles of essential disaster response and recovery materials to reduce disruption and improve recovery speed
- Enhanced multi-sectoral assessment capacity to guide evidence-based recovery planning

Regional Response Leadership

- Establishes Statia as a forward operating location for Dutch Caribbean disaster response
- Improves regional coordination with Saba, St. Maarten, and Caribbean agencies
- Supports deployment of relief supplies and personnel across the region

Operational and Economic Benefits

- Reduces dependency on ad hoc support and improves self-sufficiency
- Supports rapid reactivation of utilities and community services after storms
- Builds long-term institutional capacity
- Creates an integrated infrastructure and logistics system designed for climate-intensified emergencies
- Supports the Dutch Military in their disaster response time and capacity.

Budget Overview

Table 9: Estimated Regional Emergency Operations Centre (EOC) Flagship Project Budget

Estimated Regional Emergency Operations Centre (EOC) Flagship Budget			
Component	**Description**	**Cost Range (USD)**	**Notes**
EOC Logistics Warehouse & Emergency Stockpile Facility	Single reinforced warehouse adjacent to existing EOC	USD 350k – 400k	*Climate-resilient structure with racking, stockpile organisation, secure storage areas. Partially funded by Ministry of Justice & Safety; climate-resilience co-financing may be required.*
Secondary Industrial-Area Storage Facility	Additional reinforced storage for lumber, zinc, and construction materials	Included within overall estimate above	*Supports rapid post-hurricane home, utility, and infrastructure repair.*
Emergency Stockpiles (Core Materials)	Rations, medical supplies, tarpaulins, chainsaws, fasteners, basic repair kits	Not included within overall estimate above	*Stockpile composition aligned with EOC and Military protocols; replenishment cycles required.*
Human Capacity Strengthening for Emergency Management	Policy & Planning Officer; Logistics Manager; Damage Assessment Specialist	Not included in cost estimate	*Recurring staffing costs (OPEX). Required to operationalise the expanded EOC and ensure effective emergency planning, logistics, and multi-sector impact assessment.*
Total Estimated Cost:	**USD 350k – 400k**	*Total estimated cost for built infrastructure only*	

Improved Regional Integration

For Statia to strengthen its climate resilience, economic opportunities, and long-term self-reliance, deeper engagement with Caribbean regional institutions is essential. The island's small size, limited domestic markets, and exposure to climate and economic shocks mean that collaboration beyond its borders is not optional—it is a critical enabler of resilience. Improved integration into CARICOM and the OECS will allow Statia to access regional knowledge systems, technical expertise, early-warning and climate intelligence networks, food-security and agricultural programmes, renewable energy initiatives, marine and fisheries management frameworks, public-health systems, and coordinated disaster-response mechanisms.

The Caribbean Community (CARICOM) is a regional intergovernmental organisation that promotes economic integration, policy coordination, and cooperation across the Caribbean. CARICOM works to strengthen resilience, support sustainable development, harmonise trade and regulatory frameworks, and enhance collective action on shared regional challenges such as climate change, disaster management, food security, and public health.

Overseas Territories may join CARICOM as associate members. Current associate members include Curaçao and the British Overseas Territories of Bermuda, British Virgin Islands, Cayman Islands, Anguilla, and Turks and Caicos. Montserrat, in contrast is a full member of CARICOM despite being a territory.

Organisation of Eastern Caribbean States (OECS) is a regional intergovernmental organisation promoting deeper economic integration, coordinated governance, and shared development initiatives among Eastern Caribbean states. The OECS permits Overseas Territories to participate as associate or full members. The British Overseas Territory of Montserrat for example is a full member, while Anguilla and the British Virgin Islands are associate members. The French Départements of Martinique, Guadeloupe, and Sint Martin are also associate members.

Both CARICOM and the OECS offer well-established governance structures, specialised agencies, and sectoral programmes that directly support the priorities outlined in this Climate Plan. By positioning itself to participate more fully in these frameworks—whether through formal associate membership, programme-level cooperation, or technical partnerships—Statia can leverage regional resources that would otherwise remain out of reach for a small island operating alone. Strengthening these links will not only enhance climate adaptation, food security, and disaster preparedness, but also create pathways for economic diversification, knowledge exchange, and heritage- and nature-based development.

Below is an overview of the CARICOM and OECS institutions and programmes most relevant to Statia, which highlights how deeper regional integration can reinforce the island's resilience across multiple sectors.

CARICOM institutions and programmes highly relevant to Statia include:

- Caribbean Community Climate Change Centre (CCCCC): Leads regional climate change programming, climate modelling, and access to climate finance.
- Caribbean Disaster Emergency Management Agency (CDEMA): Coordinates disaster preparedness, response, and recovery across the region.
- Caribbean Meteorological Organisation (CMO): Supports regional meteorological services, forecasting, and climate monitoring.
- Caribbean Institute for Meteorology and Hydrology (CIMH): Provides training, research, and operational support for weather, climate, and hydrological services.
- Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE): Promotes renewable energy adoption and energy-efficiency improvements.
- Caribbean Agricultural Health and Food Safety Agency (CAHFSA): Strengthens plant and animal health standards and regional food safety systems.
- Caribbean Agricultural Research and Development Institute (CARDI): Supports climate-smart agriculture, crop research, and food security initiatives.
- Caribbean Regional Fisheries Mechanism (CRFM): Advances sustainable fisheries management and marine ecosystem resilience.

- Caribbean Public Health Agency (CARPHA): Leads regional public health surveillance, disease control, and emergency health response.

Relevant OECS Programmes for Statia include:

- Climate and Disaster Resilience: supports adaptation planning, hazard mitigation, and resilient infrastructure.
- Sustainable Ocean Management: focuses on marine spatial planning, blue economy development, and coastal resilience.
- Sustainable Energy: promotes renewable energy adoption and energy efficiency.
- Chemical, Waste and Pollution: addresses waste management, pollution reduction, and environmental health.
- Trade Policy Unit: supports harmonised trade frameworks and regional market access.
- Agriculture Programme: strengthens climate-smart agriculture, regional value chains, and food security.
- Tourism Programme: supports Blue Tourism, Heritage Tourism, Climate Action in Tourism, and community-based tourism development.

4. CLIMATE INTEGRATION ACROSS ALL DOMAINS

Through the participatory process that guided the development of this Climate Plan, Statia's government, institutions, and community stakeholders agreed that lasting climate resilience cannot be achieved by any single sector or department. It requires the integration of climate considerations across all domains of governance and development. This collective decision reflects a shared understanding that climate change affects every system sustaining life on the island—from water and food to health, infrastructure, and livelihoods. By embedding climate considerations into the core of policy-making, planning, and investment, Statia will be able to ensure that every sector contributes to a coordinated, long-term approach to resilience and sustainable development.

Together stakeholders identified the following seven domains of island life, development and governance that climate change is impacting:

Table 10: Island Domains and Focus Areas

Domain 1	**Water and Food Security**	*Drought resilience, water access, climate-smart farming, sustainable livestock, and fisheries.*
Domain 2	**Ecosystem Management**	*Management, protection and restoration of land, reefs, and biodiversity to strengthen natural climate defences.*
Domain 3	**Risk, Disaster and Crisis Management**	*Reducing risk and strengthening readiness, response, and recovery capacity.*
Domain 4	**Liveable Environment**	*Climate-proof infrastructure, renewable energy, and sustainable mobility.*
Domain 5	**Economic Resilience**	*Resilient livelihoods, green industries, entrepreneurship, and a circular economy.*
Domain 6	**Community and Culture**	*Community wellbeing, cultural heritage and maritime heritage protection*
Domain 7	**Health and Education**	*Accessible care, preventive health, and climate-smart education and skills development.*

Climate integration across these seven domains is itself a priority intervention. Without structured alignment, sectoral plans risk duplication, gaps, and conflicting investments that undermine resilience outcomes. Embedding climate considerations systematically across water, ecosystems, risk management, infrastructure, economic development, community wellbeing, and health ensures that resilience is built coherently rather than incrementally.

The detailed operationalisation of this cross-cutting intervention is set out in **Part 3 – St Eustatius Integrated Climate Framework**, which serves as the domain-level implementation framework of the Climate Plan. Its purpose is to help government departments, agencies, and partners clearly see how climate change influences their specific areas of responsibility—and to guide them in aligning plans, policies, programmes and investments with the island's broader resilience objectives.

For each domain, the **Integrated Climate Framework** identifies the most pressing climate-related challenges and underlying vulnerabilities, maps the policies and projects already underway, and highlights where critical gaps remain. The ***Domain Action Agendas*** contained in the Integrated Framework build on this analysis. These Action Agendas that have been identified for each domain were co-created with domain holders during the

participatory workshops. They define the overarching goals and priority actions that stakeholders consider essential to strengthen climate resilience within their respective sectors. Together, these agendas form the foundation for coordinated, cross-sectoral implementation.

Since conditions, priorities, and opportunities will inevitably evolve according to changing conditions, the Framework is designed as a living document that can be revised as projects advance, new partnerships emerge, or external shocks such as hurricanes arise. To maintain alignment over time, an **Integrated Climate Roadmap** has been developed with domain holders to provide short, medium and long-term direction, continuity, and accountability.

This roadmap connects near-term actions to Statia's long-term vision for 2100—to be *a self-reliant and climate-resilient island, and a proven model of what it means to be 100% Green.* It establishes what milestones need to be achieved by 2050 (medium term), the targets established for 2030 (short term), and the immediate priorities for 2026.

By defining clear milestones across these four timeframes, the roadmap ensures that every initiative contributes to a coherent, long-term pathway toward resilience and sustainability. Just as importantly, it provides an agile and iterative structure—enabling actions to evolve and adapt as circumstances change, while remaining anchored to Statia's shared vision and long-term goals.

Over the next five years, the priority actions for each domain identified in the **Integrated Climate Roadmap** are as follows:

Table 1: Integrated Climate Roadmap Across all Domains

	2030 Short term Targets *Tangible outcomes that should be delivered within the next five years to stay on course.*	2026 Immediate Term Actions *Implementation-ready priority projects and enabling actions to be initiated in the immediate term.*
DOMAIN 1: WATER AND FOOD SECURITY	• Climate Resilient Food Security Flagship Project completed. • 5% of crops, 100% of eggs, 50% of chicken, 100% of goat meat, and 30% of fish is supplied locally. • Roll-out of the supply chain diversification project, resulting in 20% of fresh produce being regionally sourced. • Agrivoltaics project scales up. • Construction of climate-proof agri-processing facilities, cold storage, dry good and feed storage facilities. • Establish one pilot 'circular' project. • Plant 2 new food forest zones in collaboration with STENAPA	• Raise financing for the Climate Resilient Food Security Flagship Project. • Launch at least 4 sustainable agriculture, livestock and fisheries business cases. • Advancement in the phase-out of free-roaming livestock. • Minimum of four livestock enclosures to be built. • Bio-secure guinea grass supply chain piloted with St Kitts for livestock feed. • Agrivoltaic pilot project is up and running. • Construction of the fish processing plant constructed
	• Build at least 1 centralised sewerage plant, and supply water to at least 3 farms. • Pilot greywater recycling to provide additional water for agriculture. • Construction of critical grey and green water management infrastructure. • Introduce legislation that requires cisterns to be built under all new buildings, linked to green financing mechanisms to improve affordability.	• Complete phase 1 of the solar park water harvesting upgrade, with runoff stored in a 180 m^3 cistern for agricultural use. • Installation of rainwater harvesting at the sports hall to feed into agriculture projects. • Restoration of at least 5 wells for agriculture.

	2030 Short term Targets *Tangible outcomes that should be delivered within the next five years to stay on course.*	2026 Immediate Term Actions *Implementation-ready priority projects and enabling actions to be initiated in the immediate term.*
DOMAIN 2: ECOSYSTEM MANAGEMENT	• Scaling up of reforestation projects on erosion-prone coastal zones using resilient native species (Atlantic Seawall). • Expansion of the Lower Town cliff stabilisation project.	• Continuation of reforestation project in Zeelandia. • Initiation of 2 major cliffside stabilisation projects to protect at risk cultural heritage and critical infrastructure sites. • Identify financing for the development of an easy-to-use green infrastructure GIS map for the island (including tree-planting, reforestation, bioswales, etc)
	• Multi-year structuring financing for ecosystem management is in place. • Shift to less dominance of macroalgae on the pilot reef sites. • Deployment of urchins, and other potential herbivore species across key reef sites. • Enforce policy that all new development must be screened for ecological impact. • Identify potential land mechanisms and financing to enable reforestation and food forest planting in partnership with landowners.	• Identification of potential sources for multi-year structural financing for ecosystem management. • Identify two priority reef zones for data monitoring stations (water quality and temperature). • Establishment and roll-out of the sea urchin hatchery pilot project to control macroalgae at 2 pilot reef sites.
DOMAIN 3: RISK, DISASTER AND CRISIS MANAGEMENT	• Climate resilience measures implemented in Lower Town, with priority rainwater management, erosion control systems, and initial climate-proofing of critical utilities underway. • Lower Town Integrated Climate-proofing Plan developed.	• Raise financing to initiate the Lower Town Flagship Project – Harbour Access. • Construction of the harbour seawall expansion project. • Supply Chain Climate Risk Analysis completed, assessing Statia's supply-chain vulnerability to climate change.
	• Roll-out of the supply chain resilience program. • Regional disaster preparedness and crisis response system in place. • Shared emergency response protocols and regional data platforms established. • Improved Regional Integration (CARICOM and OECS Programmes & Institutions)	• Regional Emergency Operations Centre (EOC) Flagship Project initiated. • Regional disaster response collaboration talks initiated with neighbouring islands. • Plan developed to make the airport climate resilient including transition to a renewable energy system, with battery backup, generators as a fail-safe, and electric ground handling vehicles.
DOMAIN 4 DOMAIN 4: LIVEABLE ENVIRONMENT	• Adopt and implement a Green Infrastructure Policy that requires that nature-based adaptation mechanisms and climate resilience be integrated in all infrastructure projects. • Allocate a dedicated "green budget line" in infrastructure projects to cover trees, landscape restoration, and water management.	• Integrate tree planting and shade planning at the airport and Lower Town using low maintenance, drought-resilient species. • Integration of climate resilience in priority infrastructure backlog projects.
	• Construction initiated on at least 30 new social housing units to climate-resilient and accessible standards. • Launch a green finance mechanism enabling 50 households to retrofit homes with cisterns, solar, energy efficient cooling, or insulation.	• Upgrade of the sports hall including climatic design and rainwater harvesting. • Develop and adopt an updated Building Code with guidelines and minimum construction standards for climate resilience and accessibility. • Develop and roll-out training programs for local builders on the building codes and low-tech climate solutions. • Develop a financial mechanism that supports households to reduce thermal gains, decrease cooling demand, and increase cooling efficiency.
	• Initiation of Phase 4 of the Solar Park, including expanded battery storage. To increase renewable share to 85–90% of power generation = 20-22hrs a day of renewable power production.	• Install Statia's first high-capacity (≥50kW) EV charging station at the solar park, linked to daytime solar surplus. • Begin procurement of electric vehicles for the public sector.

	2030 Short term Targets *Tangible outcomes that should be delivered within the next five years to stay on course.*	2026 Immediate Term Actions *Implementation-ready priority projects and enabling actions to be initiated in the immediate term.*
	• Install centralised public EV charging stations in 3 locations, with a utility-controlled smart grid interface to manage demand. • Train at least 5 certified EV mechanics to support vehicle transition. • Develop regulations and permitting for household EV chargers to prevent grid overload. • Pilot an affordable, electric island-wide public transport service, with a subsidised voucher scheme for vulnerable groups.	
DOMAIN 5: ECONOMIC RESILIENCE	• Develop a support program to help agri-businesses tap into the EU loan facility. • Develop a startup support program targeting 5 new climate/green businesses, with microfinancing, training and incubation support. • 90% households have high speed, affordable internet connectivity. • Develop an island wide strategy to develop a circular economy. • Pilot a returnee incentive program to support locals relocating back to Statia with startup support, internships, affordable housing or employment placement.	• Implementation of the new Tourism Masterplan • Development of a youth climate entrepreneur incubator • Create a community registry of fruit trees to capture seasonal surplus for agri-processing.
	• Improve inter-island airlift availability and affordability by securing agreements for lower-cost flights to St. Maarten, and introduction of flights to Curacao/Bonaire, Saba and St. Kitts. • Improved ferry connectivity, affordability, and service linking St Maarten, Saba, Statia and St Kitts.	• Conduct an air connectivity and air freight feasibility study to assess: demand, viability, partnership models, and incentives for affordable flights/freight linking Statia to regional hubs.
DOMAIN 6: COMMUNITY & CULTURE	• Run a continuous public awareness campaign on climate resilience, food sovereignty, energy conservation, tree planting, drought adaptation, spatial planning and sustainable living.	• Implementation of climate communication and community engagement plan.
	• Development of a Statia Heritage Trail, integrating restored forts, sugar mills, and cliffside cultural sites into a community-owned tourism experience. • Lower Town Cultural Heritage Project initiated. • Support the listing and preservation of heritage assets, including UNESCO recognition of key sites like the burial ground.	• Restoration of the theatre and installation of the underwater slave memorial for Statia Day 2026.
DOMAIN 7: HEALTH & EDUCATION	• Retrofit clinics and community centres with backup power, cooling, and storm-proof design to ensure care continuity during extreme weather events. • Establish an on-island clinical laboratory for basic diagnostics, reducing the need to travel for routine testing. • Expand community health programs on nutrition, lifestyle disease prevention, and vector-borne disease control — with the goal to sustain low incidence rates of dengue and chikungunya.	• Initiation of the hospital upgrade project.

	2030 Short term Targets *Tangible outcomes that should be delivered within the next five years to stay on course.*	2026 Immediate Term Actions *Implementation-ready priority projects and enabling actions to be initiated in the immediate term.*
	• Integrate nature and climate education into all primary and secondary school curricula and community programming.	• Integrate agriculture into all primary and secondary school curricula and community programming

For more information and detail about the Domains and Action Agendas please refer to the following document:
St Eustatius Integrated Climate Framework: Integrating Climate Across All Island Domains, Climate Plan Part 3.

CONCLUSION: FROM PLAN TO ACTION



Statia is already experiencing the impacts of climate change. Rising temperatures, shifting rainfall patterns, more intense storms and hurricanes, coastal and land erosion, and marine ecosystem degradation are increasingly evident. These changes are placing growing pressure on infrastructure, supply chains, public services, the cost of living, and the island's natural and cultural heritage. As these climatic trends continue and intensify, their cumulative effects are expected to place increasing strain on the island's social, environmental, infrastructural, and economic systems.

This Climate Plan Overview (Part 2), building on the Executive Summary (Part 1), identifies current and projected climate impacts, associated risks, and priority vulnerabilities. Through a participatory and consultative process, government, institutions, civil society, and community stakeholders examined where climate risk intersects most critically with daily life, essential services, and long-term development prospects.

The four priority cross-cutting interventions — Lower Town Climate-Proofing; Supply Chain Resilience; Intra-Regional Collaboration; and Climate Integration Across All Domains — respond directly to these interconnected vulnerabilities. Together, they establish the strategic direction and priorities for strengthening resilience across the environmental, social, economic, and institutional dimensions of island life.

The flagship projects represent the island's immediate priorities for safeguarding essential lifelines in the near term. Improving harbour access protects the island's primary supply gateway. Establishing a climate-resilient food security system reduces dependence on vulnerable external supply chains and introduces buffer capacity. Strengthening and formalising the Regional Emergency Operations Centre enhances preparedness, coordination, and regional response capability. Collectively, these interventions introduce redundancy into critical systems, strengthen response capacity, and reduce the likelihood that disruption in a single location or service results in cascading impacts across the island.

At the same time, building long-term climate resilience requires a system-level approach that extends beyond immediate disaster risk. It depends on coordinated action across all domains of island governance and sustained alignment of policies, planning, and investment decisions with evolving climate conditions.

For this reason, the detailed articulation of climate integration across all domains is set out separately in Part 3 as the Integrated Climate Framework. The Framework establishes the island's multi-horizon roadmap for climate resilience. It sets out domain-level Action Agendas across seven thematic areas and aligns immediate measures with short-, medium-, and long-term milestones. In doing so, it provides the structured basis for guiding investment, sequencing action, and coordinating implementation across mandates over time.

The next phase of the Climate Action process is the operationalisation of this integrated framework in conjunction with the cross-cutting priorities and flagship projects identified in this Overview. Operationalisation translates this structure into coordinated delivery and will focus on institutional alignment, enabling conditions, and structured coordination.

Institutional alignment will involve clarifying responsibilities across directorates and ensuring that priority actions are aligned with existing mandates, policy instruments, programmes, and planning cycles. Many interventions intersect multiple domains; managing these interdependencies will be central to coherent implementation.

Effective delivery also rests on enabling conditions that support this integrated approach. Structured financing, aligned with sequencing and lifecycle considerations, will be required to deliver priority investments and sustain operations over time. Equally important is institutional capacity — including sufficient human resources, technical expertise, and appropriate organisational arrangements — to support directorates and units in embedding climate risk within their mandates and day-to-day decision-making.

Interministerial alignment will further strengthen implementation. Systematically incorporating climate resilience into new policies, programmes, spatial planning decisions, and capital investments will support the operationalisation of the Integrated Climate Framework and ensure that actions undertaken within individual domains contribute to shared resilience objectives.

Structured coordination, monitoring, and periodic review will maintain coherence across the Action Agendas and roadmap milestones. Progress will be assessed not only against delivery targets, but also against indicators that reflect the broader intent of the Climate Plan — including resilience of critical infrastructure, service continuity, affordability, ecosystem stability, and long-term risk reduction. Embedding monitoring within the coordination structure will support informed decision-making and ongoing refinement as conditions evolve.

In this way, the Climate Plan moves from strategic prioritisation to embedded and sustained implementation, supporting a coherent and integrated approach to climate resilience across all domains of island life and governance.

APPENDIX







Appendix A – Lower Town Flagship Budget

Lower Town Harbour Flagship Detailed Budget Breakdown

A vertical or inclined harbour access lift system provides Statia with a climate-resilient, cost-effective, and technically feasible secondary access route. With an estimated cost of USD 2.6M–6.0M, the flagship is both affordable and achievable.

Budget Overview

Estimated Harbour Flagship Budget *(See Appendix A for the budget breakdown)*			
Component	**Option A *(Vertical Goods Lift)***	**Option B *(Inclined Rail Lift)***	**Notes**
Harbour Access Lift System	USD 1.2M – 1.8M	USD 2.0M – 3.2M	*Depends on lift height, load capacity, geotechnical stabilisation*
Cliff Stabilisation & Structural Works	USD 300k – 500k	USD 400k – 650k	*Geotechnical anchors, retaining structures, corrosion-resistant materials*
Cliff-Top Logistics Receiving Platform	USD 500k – 650k	USD 500k – 650k	*Hardstand, fencing, loading zone, safety systems*
Backup Power (Generator + optional battery)	USD 75k – 150k	USD 75k – 150k	*Required for post-storm operation*
Systems Integration (EOC, CCTV, comms, access controls)	USD 100k – 200k	USD 100k – 200k	*Connectivity to EOC and harbour systems*
Professional Fees & Project Management (Engineering, design)	USD 250k – 350k	USD 300k – 450k	*15–20% of capital cost*
Contingency (20–25%)	USD 375k – 650k	USD 550k – 900k	*Extra allowance for additional costs associated with hurricane-risk environment*
Total Estimated Cost:	**Option A (Vertical Lift): USD 2.8M – 4.3M**		
	Option B (Inclined Rail Lift): USD 3.92M – 6.2M		

Detailed Budget Breakdown

1. Lift System (Harbour → Upper Town)
Option A: Vertical Freight Lift (Most Compact, Most Cost-Effective)
USD 1.2M – 1.8M

- 1.5–2.5 tonne load capacity
- 40–60 m lift height
- Enclosed stainless-steel or galvanised shaft
- Marine-grade corrosion protection
- Wind- and hurricane-rated
- Requires minimal footprint at harbour level

Option B: Inclined Rail Lift (Funicular-Style)*
USD 2.0M – 3.2M

- 2–3 tonne railcar system

- Requires a clear slope alignment
- Higher civil works (tracks, anchors, slabs)
- Greater land disturbance

**Used only if geotechnical surveys show a vertical lift is infeasible.*

---

2. Cliff-Top Logistics Receiving Platform

USD 500k – 650k

- Purchase of land from private owners
- 150–250 m² hardstand
- Safety barriers, bollards, loading area
- Access control
- CCTV + lighting
- Stormwater drainage
- Slope protection

---

3. Backup Power & Energy System

USD 75k – 150k

Includes:

- 30–60 kVA diesel generator
- Switchgear & housing
- Optional battery storage for silent operations
- Connection to machine room and lift motors

This ensures operation immediately after a hurricane.

---

4. Structural & Geotechnical Works

USD 300k – 500k (vertical)

USD 400k – 650k (inclined)

- Rock bolting and anchoring
- Foundation slabs
- Retaining walls
- Corrosion-resistant framing
- Drainage and cliff-edge barriers

---

5. Systems Integration

USD 100k – 200k

Systems Integration transforms the lift system from a simple mechanical device into a disaster-ready, secure, and fully coordinated emergency access asset. It ensures the lift can operate safely, reliably, and remotely during and after severe storms—when access to the harbour is most critical.

- Remote operation from the EOC, enabling use even when the harbour is unsafe or inaccessible
- Automated emergency-priority mode, ensuring the lift defaults to emergency use during crises
- CCTV and remote monitoring, allowing operators to assess conditions and ensure safe loading without exposing staff to hazard
- Secure access control for harbour personnel, STUCO, customs, police, and EOC staff
- Redundant communications and weatherproof control systems, ensuring reliable operation during power outages and communication failures
- Hazard and status monitoring, including wind, obstruction, and system alerts to prevent unsafe operation

---

6. Professional Fees & Project Management

USD 250k – 450k

- Engineering design
- EIA / permitting

- Construction supervision
- Mechanical and electrical engineering
- Safety certification

Total with Contingency

- Option A (Vertical Lift): USD 2.55M – 4.05M
- Option B (Inclined Rail Lift): USD 3.67M – 5.95M

Appendix B – Climate Resilient Food Security Flagship Budget

Climate Resilient Food Security Flagship Detailed Budget Breakdown

This flagship is the cornerstone of Statia's supply-chain resilience because it establishes the island's first end-to-end food security system—from the moment imported food arrives at the harbour through to local storage, distribution, and value-added agri-processing.

Budget Overview

Estimated Climate Resilient Food Security Flagship Budget *(See Appendix B for the breakdown of costs and explanation of options)*			
Component	**Option & Notes**	**Cost Range (USD)**	**Notes**
A. Shaded Harbour Reefer-Handling Area	Option A – Hurricane-Resilient	USD175k – USD265k	*Engineered to survive major storms (Cat 4/5) with minimal damage*
	Option B1 – Demountable Shade-Net + Mini Roof	USD124k – USD190k	*Designed to be quickly unbolted or to shed non-critical parts and be re-erected after the storm*
	Option B2 – Demountable Light-Sheeting	USD137k – USD209k	
B. Food Security Storage Facility (4-Week Buffer)	Option A – Diesel Backup Generator Only	USD2.02M – USD2.30M	*Costing including diesel backup generator*
	Option B – Solar + Battery Backup (Full Resilience)	USD2.22M – USD2.53M	*Costing including solar PV and battery storage*
C. Agri-processing Facility	USD 250k – 350k	USD91k – USD174k	*60 m², scalable*
Total Estimated Cost:	**USD 2.8M – 4.3M**	*Total estimated cost for all components—based on the lowest- and highest-cost configurations*	

Detailed Budget Breakdown

1. SHADED HARBOUR REEFER-HANDLING AREA (COLD CHAIN INTEGRITY)

Components

- 5 reefer plug points (4 active, 1 spare), 32–40A 3-phase, marine-grade pedestals, lockable breakers, small monitoring panel.
- Concrete container pads with anchors/tie-downs and trench drainage.
- Compact dry/inspection bay under cover.
- LED lighting, safety bollards/rails, line-marking.
- Design/engineering.
- Costs assume compact footprint with reverse-in bay and no turning under cover.
- Marine environment: hot-dip galvanised steel, 316 SS critical fixings, IP66 pedestals, surge protection, raised plinths.

Two roofing options have been provided.

Option A: Hurricane-resilient (stay-in-place) – engineered to survive major storms (Cat 4/5) with minimal damage

Option B: Demountable canopy (fail-safe & fast to repair) – designed to be quickly unbolted or to shed non-critical parts and be re-erected after the storm

Option A — Hurricane-resilient (Cat 4/5, stay-in-place)

Engineered steel canopy (standing-seam / interlocking roof), heavier columns/bracing, deeper footings, enclosed eaves, stainless fixings, surge/lightning protection, raised pedestals.

Line item	Cost range (USD)
Cat 4/5 canopy (190–230 m² @ USD320–USD400/m²)	USD60k–USD92k
Electrical: 5 plugs + DB + monitoring + cabling/transformer allowance	USD60k–USD75k
Pads, anchors & drainage	USD25k–USD45k
Customs inspection fit-out (benches, lighting, sockets)	USD10k–USD18k
Safety (bollards/rails/LED)	USD10k–USD15k
Design/engineering/permitting	USD10k–USD20k
Estimated total (Option A)	**USD175k–USD265k**

Pros: *Minimal post-storm downtime; best rain protection; longest life.*
Cons: *Higher CAPEX; heavier civils.*

Option B — Demountable Shade Canopy

Primary steel sized to keep the frame; roof cladding **removed pre-storm** and re-installed post-storm. Two practical variants:

B1) Shade-net canopy (opaque, heavy-duty net)

- Very quick to demount; excellent solar heat reduction; not rain-tight.
- To protect inspection activities in rain, a small solid mini-roof is added just over the inspection bay.

Line item	Cost range (USD)
Shade-net canopy (190–230 m² @ USD120–USD180/m²)	USD23k–USD41k
Mini solid roof over inspection bay (25–35 m²)	USD8k–USD15k
Electrical: 5 plugs + DB + monitoring + cabling/transformer allowance	USD60k–USD75k
Pads, anchors & drainage	USD18k–USD35k
Safety (bollards/rails/LED)	USD8k–USD12k
Design/engineering/permitting	USD7k–USD12k
Estimated total (Option B1)	**USD124k–USD190k**

Pros: *Lowest CAPEX; fastest to de-rig/re-rig; great shading/heat reduction.*
Cons: *Rain can penetrate net; hence the solid inspection bay add-on is recommended.*

B2) Light-gauge sheeting (demountable panels)

- Thin interlocking sheets with quick-release hardware; better rain protection than netting; still demountable.

Line item	Cost range (USD)
Demountable sheeting canopy (190–230 m² @ USD180–USD260/m²)	USD34k–USD60k
Electrical: 5 plugs + DB + monitoring + cabling/transformer allowance	USD60k–USD75k
Pads, anchors & drainage	USD18k–USD35k
Customs inspection fit-out	USD10k–USD15k
Safety (bollards/rails/LED)	USD8k–USD12k
Design/engineering/permitting	USD7k–USD12k
Estimated total (Option B2)	**USD137k–USD209k**

Pros: *Good shade* ***and*** *rain protection; still modular; moderate CAPEX.*
Cons: *Longer de-rig/re-rig time than net; more storage volume for panels.*

2. FOOD SECURITY STORAGE FACILITY (4-WEEK BUFFER)

The costing has been based on using modular refrigerated containers (reefers) instead of a fixed cold room, because this solution is significantly more cost-effective, far more resilient, and inherently fail-safe. Reefers provide distributed independent cooling systems, meaning a failure affects only one unit rather than the entire food reserve. They are faster to repair, easier to replace, and can be expanded or reduced seasonally—including renting additional units during hurricane season to temporarily increase the island's buffer. This modular, scalable approach offers optimal value for money and the highest operational reliability for Statia's food security.

Benefits of the modular reefer approach:

- Lower upfront and operating costs than a fixed cold room- eliminates the need for expensive insulated buildings, large compressor plants, and complex refrigeration infrastructure.
- Easier procurement, quicker to install, easier to service, and far cheaper to maintain.
- No single point of failure; each unit operates independently- fast repair or replacement if one unit goes offline.
- Scalable capacity and seasonal flexibility- add/remove units as needed to expand reserves during hurricane season.

Scope included in this costing

- Hurricane-resilient design for a Category 4/5 hurricane wind loads
- 12 × frozen reefers (purchased, not leased)
- Reefer canopy (shaded, anchored)
- 1,050 m² dry + feed warehouse
- Electrical infrastructure + transformer allowance
- Backup diesel generator
- Solar (100 kWp) + battery (optional)
- 1 or 2 small refrigerated trucks

Cold storage area (frozen goods- 4 week buffer)

Component	Unit/Size	Cost range (USD)
12 × 40' reefers	USD18k each	USD216k
Reefer canopy (540 m²)	Cat 4/5 steel	USD155k – USD170k
Electrical (12 outlets, DB, cabling, transformer allowance, surge)	Marine-grade	USD110k – USD130k
Pads, drainage, anchoring	Heavy-duty hurricane-rated	USD45k – USD65k
SUBTOTAL: Cold Storage Area		USD526k – USD581k

Dry + feed storage warehouse (1,050 m²)

Component	Unit/Size	Cost range (USD)
Steel warehouse (Cat 4/5)	1,050 m² @ USD620–680/m²	USD650k – USD715k
Light racking, pick faces		USD20k – USD30k
Forklift + pallet jacks		USD55k – USD60k
Office / QC / utilities fit-out		USD25k – USD40k
SUBTOTAL: Warehouse		USD750k – USD845k

Distribution vehicles (4-pallet mini-reefer trucks)

Component	Quantity	Cost range (USD)
Mini-reefer truck (4 pallet)	1 truck	**USD75k – USD110k**
Mini-reefer truck (optional redundancy)	2 trucks	**USD150k – USD220k**

Back-up power supply (choose a or b) (essential for risk mitigation)

Option A — Diesel Backup Generator ONLY

Component	Unit/Size	Cost range (USD)
Diesel generator + ATS + tank	~250 kVA	USD200k – USD230k
Integration, switchgear		included
SUBTOTAL: Power (Option A)		**USD200k – USD230k**

Option B — Solar + Battery Backup System (Full Resilience)

Component	Unit/Size	Cost range (USD)
Solar PV	100 kWp	USD170k – USD190k
Battery storage	200 kWh	USD190k – USD220k
Inverters, switchgear, BMS		included
SUBTOTAL: Power (Option B)		**USD360k – USD410k**

Programme on-costs (applied to all)

+30% = siteworks (10%) + contingency (15%) + island logistics premium (5%)

Food storage costing summary (phased into options)

Option A — Diesel Backup Generator Only *(Most cost-effective resilience option)*

Cost Component	Cost Range (USD)
Cold Storage	USD526k – USD581k
Warehouse	USD750k – USD845k
1 Mini-Truck	USD75k – USD110k
Diesel Backup	USD200k – USD230k
DIRECT SUBTOTAL	**USD1.55M – USD1.77M**
+ 30% On-Costs	USD465k – USD531k
TOTAL OPTION A	**USD2.02M – USD2.30M**

If a second refrigerated truck is added:
→ +USD97k – USD143k (incl. on-costs)
→ Revised total: ***USD2.12M – USD2.44M***

Option B — Solar + Battery (No Diesel Generator) *(Highest resilience, lowest OPEX, strongest climate co-benefits)*

Cost Component	Cost Range (USD)
Cold Storage	USD526k – USD581k
Warehouse	USD750k – USD845k
1 Mini-Truck	USD75k – USD110k
Solar + Battery	USD360k – USD410k
DIRECT SUBTOTAL	**USD1.71M – USD1.95M**
+ 30% On-Costs	USD513k – USD585k
TOTAL OPTION B	**USD2.22M – USD2.53M**

If a second refrigerated truck is added:
→ +USD97k – USD143k (incl. on-costs)
→ Revised total: ***USD2.32M – USD2.67M***

---

3. 60 M² SCALABLE AGRIPROCESSING FACILITY

A. Small Food-Safe Building (Modular & Scalable)

A **60 m² facility**, two rooms:

- Processing room (main room)
- Dry storage & packaging (second room)
- Food-grade washable walls
- Basic ventilation
- Handwash & drainage

Could be designed as a:

- *a converted shipping container, or*
- *a small modular prefab, or*
- *a block building*

Cost: USD45k – USD90k

* Scales by adding a second module later.

B. Prep & Processing Efficiency Tools (small electric)

- Small vegetable washer / bubble washer (100–150 kg/hr)
- Electric peeler (10–15 kg/batch)
- Electric slicer/chopper

Cost: USD12k – USD22k

C. Multi-Use Cooking + Pasteurisation Unit

- 50–100L jacketed kettle (gas or electric)
- Integrated mixer
- Temperature control
- Can pasteurise juices, cook sauces, make pickling brine, precook root crops

Cost: USD15k – USD25k

D. Small Electric Dehydrators + Improved Solar Dryer

- 1–2 small mechanical dehydrators (10–20 trays each)
- Upgraded solar tunnel dryer

Cost: USD6k – USD15k

E. Micro Milling & Chips Line (Compact, High-Impact)

- Mini mill / grinder
- Electric sifter
- Small chips fryer + de-oiler (10–20L size)
- Electric slicer (already included above)

Cost: USD8k – USD15k

* Enables flour, chips, and snack products with high local value-add.

F. Small Semi-Automatic Packaging Units

- Semi-auto bottle filler (for sauces/juices/syrups)
- Semi-auto capping machine
- Heat sealer + small bag filler
- Basic labelling machine

Cost: USD5k – USD12k

TOTAL AGRI-PROCESSING FACILITY ESTIMATED COST = USD91k – USD174k USD

What This Version Can Produce (Consistently)

- Hot sauces
- Pickles & preserves
- Jams & syrups
- Juices (pasteurised)
- Fruit & vegetable chips
- Breadfruit/plantain/cassava flour
- Dried fruit & veg
- Dried herbs/spices
- Small snack products
- Basic baked/dried snack packs
- Condiments & relishes

Benefits

1. Small footprint, low consumption

- Low electricity draw
- Gas-powered kettle = low cost
- Solar dryer = no energy cost

2. Scalable design

Add one new unit at a time:

- additional kettle
- second dryer
- second grinder
- second packaging machine
- full cold chain room later
- small blast freezer later

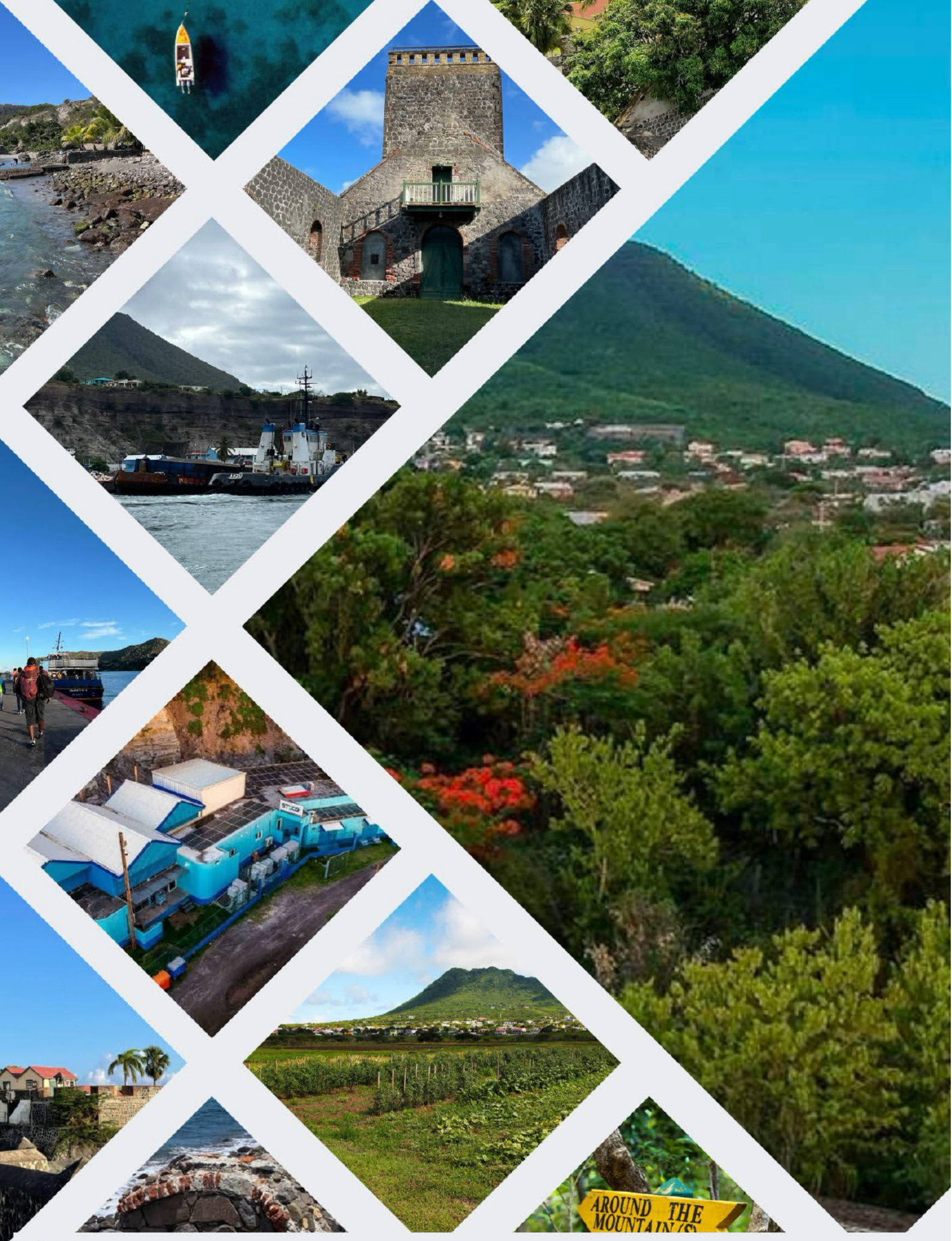
3. Lower maintenance

All equipment is compact and simple — no steam boilers, no heavy machinery.

4. Multi-product flexibility

Easily switches between:

- sauces → syrups → juices
- flour → chips → dried products
- pickles → relishes



St. Eustatius Climate Plan
Part 2: Climate Plan Overview
Commissioned by the
Government of St. Eustatius

Prepared by Persoonlijke gegevens
Director, Reimpact Studio B.V.
www.reimpact.studio
Persoonlijke gegevens

REIMPACT
reinvent, reawaken, regenerate







ST EUSTATIUS CLIMATE PLAN

INTEGRATED CLIMATE FRAMEWORK

PART 3 | **2026**











Commissioned by the Government of St. Eustatius
Prepared by Persoonlijke gegevens
Director, Reimpact Studio B.V.
www.reimpact.studio | Persoonlijke gegevens

REIMPACT
reinvent, reawaken, regenerate

Contents

INTRODUCTION 3

Background 4
Integrated Climate Roadmap 7
Action Agenda Summary 12

DOMAINS AND ACTION AGENDAS 15

Domain 1: Water and Food Security 16
Overview 16
Action Agenda 19

Domain 2: Ecosystem Management 24
Overview 24
Action Agenda 28

Domain 3 - Risk, Disaster and Crisis Management 31
Overview 32
Action Agenda 36

Domain 4 – Liveable (Urban) Environment 39
Overview 40
Action Agenda 44

Domain 5 – Economic Resilience 47
Overview 48
Action Agenda 56

Domain 6 – Community and Culture 59
Overview 60
Action Agenda 65

Domain 7 – Health and Education 67
Overview 68
Action Agenda 74

FROM FRAMEWORK TO IMPLEMENTATION 76

REFERENCES 79

INTRODUCTION







Background

This *Integrated Climate Framework* is the third part of the St Eustatius Climate Plan. It provides the island's first comprehensive, multi-horizon roadmap for climate action and resilience across all domains of island life. The Climate Plan was developed in response to Statia's growing exposure to climate-related risks such as more frequent heat waves, droughts, stronger storms and hurricanes, accelerated erosion, and the degradation of marine ecosystems. It outlines how the island can not only withstand the impacts of a changing climate but also thrive in the face of it by implementing targeted mitigation and adaptation measures.

Climate Plan Structure

Statia's Climate Plan is presented as three interrelated parts. Each part has a distinct function and level of detail, but together they form a coherent package to guide climate action investment, policy development, and implementation.

The three components of the Climate Plan are as follows:

Part 1: Executive Summary

- Highlights the island's key climate challenges and the priority flagship interventions needed to strengthen climate resilience and disaster preparedness.
- Provides a concise overview to support quick understanding and high-level engagement with the core issues and strategic needs.

Part 2: Climate Plan Overview

- Provides background on current and future climate impacts, risks, and vulnerabilities.
- Introduces the cross-cutting interventions identified as critical for strengthening climate resilience.
- Details the flagship projects, associated budget breakdowns, and subsequent priority actions to be undertaken over the next five years.

Part 3: Integrated Climate Framework *(this document)*

- Sets out the multi horizon roadmap and action agenda across all seven domains of island life and governance.
- Presents domain specific assessments and vulnerabilities, together with the priority actions developed through participatory processes.
- Supports domain holders in understanding how climate change intersects with their responsibilities and in aligning policies, plans, and investments with Statia's climate resilience objectives.
- Provides a practical tool to strengthen climate integration and coordination across domains and guide detailed planning and implementation.

Together, they provide a clear progression from high-level priorities, to the supporting analysis and near-term interventions, and finally to the long-term implementation roadmap and domain specific action agendas. This structure enables users to navigate the Climate Plan according to their responsibilities while remaining anchored to a shared framework for strengthening climate resilience on Statia.

Participatory Approach

The Climate Plan was developed through a deeply participatory process that placed Statian knowledge and priorities at its centre. Extensive workshops, focus groups, and consultations with government departments,

NGOs, and community representatives ensured that local voices shaped the vision, objectives, and actions it contains. At the same time, the Plan is closely aligned with the Netherlands' National Adaptation Strategy (NAS) and the Climate Agenda for the Caribbean Netherlands, creating a bridge between local action and national and regional climate goals. This dual orientation—locally grounded and nationally aligned—ensures that Statia's plan can both mobilise community ownership and attract the structural financing and partnerships required for implementation.

Guided by the principles of resilience, inclusivity, adaptability, integration, and accountability, the Climate Plan's overarching ambition is to institutionalise climate resilience within all aspects of island governance and development. This ***Integrated Framework*** translates the Climate Plan's strategic vision into practical, coordinated implementation. It identifies how climate change affects each major domain of life and governance—from water and food security to infrastructure, livelihoods, and culture—and outlines the actions, policies, and partnerships required to strengthen resilience within and across these areas.

Designed as both a strategic reference and a practical planning tool, the Framework enables departments and partners to align programmes, budgets, and investments under a unified direction for climate action. It will continue to evolve as new data, lessons, and opportunities emerge—ensuring that Statia's pathway to resilience remains coherent, evidence-based, adaptive and responsive to changing conditions.

The Integrated Framework is structured around seven key domains:

Domain 1	**Water and Food Security**	*Drought resilience, water access, climate-smart farming, sustainable livestock, and fisheries.*
Domain 2	**Ecosystem Management**	*Protection, restoration and management of land, reefs, and biodiversity to strengthen natural climate defences.*
Domain 3	**Risk, Disaster and Crisis Management**	*Reducing risk and strengthening readiness, response, and recovery capacity.*
Domain 4	**Liveable Environment**	*Climate-proof infrastructure, renewable energy, and sustainable mobility.*
Domain 5	**Economic Resilience**	*Resilient livelihoods, green industries, entrepreneurship, and a circular economy.*
Domain 6	**Community and Culture**	*Community wellbeing, cultural heritage and maritime heritage protection*
Domain 7	**Health and Education**	*Accessible care, preventive health, and climate-smart education and skills development.*

The **Integrated Climate Framework** provides a structured overview of how climate change affects each of these major domains of life and governance on Statia. For every domain, it identifies the most pressing climate-related challenges and underlying vulnerabilities, maps the policies and projects already underway, and highlights where critical gaps remain.

Its purpose is to help government departments, agencies, and partners clearly see how climate change influences their specific areas of responsibility—and to guide them in aligning plans, policies, and investments with the island's broader resilience objectives.

The **Domain Action Agendas**, co-created with domain holders during the participatory workshops, build on this analysis. They define the overarching goals and priority adaptation and mitigation actions that stakeholders consider essential to strengthen climate resilience within their respective sectors. Firstly, the core adaptation

challenges are outlined. For each challenge, stakeholders defined key adaptation objectives—the desired outcomes that will reduce risk and strengthen system resilience. These objectives are supported by a set of key actions, which include new measures, ongoing projects and initiatives, as well as recommendations drawn from relevant policy documents to ensure alignment, coordination, and continuity. Together, these agendas form the foundation for coordinated, cross-sectoral implementation of climate mitigation and adaptation measures.

Defining Mitigation and Adaptation

In the context of this Plan, climate mitigation refers to strategies and actions taken to reduce greenhouse gas emissions. Key mitigation strategies include shifting from fossil fuels to renewable energy and sustainable transport systems. As well as the implementation of actions that reduce overall energy consumption, for example via energy efficient appliances and building envelopes. These measures play an important role in helping the island become more self-sufficient, by decreasing Saba's dependence on imported fossil fuels, which are subject to price volatility and supply disruptions, and help reduce cost of living pressures.

Climate adaptation, on the other hand, refers to the strategies and actions taken to adjust to the actual or expected effects of climate change. It involves reducing the vulnerability of people, ecosystems, and infrastructure to climate-related risks, while enhancing their capacity to cope with and recover from the impacts. Adaptation can be reactive—responding to changes already underway—or proactive, preparing for future risks based on climate projections[1].

Adaptation actions come in many forms, including nature-based solutions, such as restoring coral reefs, planting trees, or improving soil health to increase water filtration. It can also include engineering measures, like upgrading water infrastructure, strengthening coastal defences, or retrofitting buildings to withstand stronger storms. Often, the most effective strategies are a hybrid of both grey (engineering) and blue/green (nature-based) approaches.

At its core, adaptation is about protecting what matters most. This includes safeguarding access to essential services such as water, food, energy, health care, and transport, as well as preserving the island's ecosystems, biodiversity, and cultural heritage. But adaptation is not only about minimizing risks—it also presents opportunities to reimagine and strengthen local systems. For example, it can support the shift to climate-resilient agriculture, restore degraded landscapes through food forests, create green jobs in ecotourism, and reduce reliance on imports by reinforcing local supply chains. In this way, adaptation becomes a driver of both resilience and sustainable development.

Successful adaptation depends on building adaptive capacity—the ability of communities, ecosystems, and economies to anticipate, respond to, and recover from climate disruptions. Enhancing this capacity reduces vulnerability and supports more flexible, informed, and locally relevant responses to both gradual slow-onset climate change (e.g. increasing temperatures and decreasing rainfall) and sudden shocks from climate hazards (e.g. hurricanes and heatwave events). It also underpins resilience—the ability of people, institutions, and systems to absorb impacts, adjust to changing conditions, and continue functioning under pressure.

Bringing these elements together, the aim of adaptation is not simply to withstand the impacts of climate change. It is to build systems—both human and natural—that can adapt, improve, and grow stronger over time.

---

[1] Intergovernmental Panel on Climate Change (IPCC, 2022) IPCC 2022. Climate Change 2022: How to adapt to a changing climate, summary for all. Working Group II team of the Sixth IPCC Assessment Cycle

Adaptation is ultimately about creating the foundations for a future where communities, ecosystems, and local economies can thrive, even in the face of ongoing climate change and increasing uncertainty.

Integrated Climate Roadmap

Since conditions, priorities, and opportunities will inevitably evolve, the Framework is designed as a living document that will be continuously revised and updated as projects advance, new partnerships emerge, or climate shocks such as severe drought or hurricanes arise. To maintain alignment over time, an Integrated Climate Roadmap (see table below) has been developed with domain holders to provide the island with long-term direction, continuity, and accountability.

This roadmap connects near-term actions to Statia's long-term vision for 2100—to be *a self-reliant and climate-resilient island, and a proven model of what it means to be 100% Green.* By working backward from 2100, the roadmap ensures that every decision and investment made today contributes directly to the island's long-term resilience, prosperity, and identity. It provides a shared timeline through which government, communities, and partners can coordinate efforts, prioritise resources, and track progress over time.

By defining clear milestones across the four timeframes:

- Long-Term Vision (2100): *The "ideal state" the island collectively aspires to achieve.*
- Medium-Term Milestones (2050): *Key achievements and measurable progress to be reached within 25 years.*
- Short-Term Targets (2030): *Tangible outcomes that should be delivered within the next five years to stay on course.*
- Immediate Term Actions (2026): *Implementation-ready priority projects and enabling actions to be initiated in the immediate term.*

The roadmap creates a coherent, long-term pathway toward resilience while providing an agile structure that allows actions to evolve as conditions change. Anchored in Statia's shared vision, it ensures that short-term priorities meaningfully contribute to lasting outcomes and maintains coherence across all adaptation and mitigation efforts. In this way, the roadmap establishes a clear and adaptable foundation for planning, prioritisation, and accountability on Statia's journey toward a climate-resilient future.

Table 1: Integrated Climate Roadmap Across all Domains

	2100 Long-term Vision	2050 Medium Term Milestones	2030 Short term Targets	2026 Immediate Term Actions
DOMAIN 1: WATER AND FOOD SECURITY	***At least 60% of Statia's food is locally produced and the rest regionally sourced, with 80% of the agri-value chain running in closed loops powered by renewables; organic waste is fed back into production, and surplus is traded regionally to cut the island's import-export footprint.***	• At least 30% of total fresh produce is local. • 70% of fresh produce comes from a diversified and resilient regional supply chain. • Regenerative agriculture practiced on 100% of cultivated land. • 40% of the agriculture value chain operates in a closed loop. • Backyard farming reintroduced in at least 50% of households. • Fruit bearing plants planted along at least 50% of roads. • Scaling of agri-processing capacity.	• Climate Resilient Food Security Flagship Project completed. • 5% of crops, 100% of eggs, 50% of chicken, 100% of goat meat, and 30% of fish is supplied locally. • Roll-out of the supply chain diversification project, resulting in 20% of fresh produce being regionally sourced. • Agrivoltaics project scales up. • Construction of climate-proof agri-processing facilities, cold storage, dry good and feed storage facilities. • Establish one pilot 'circular' project. • Plant 2 new food forest zones in collaboration with STENAPA	• Raise financing for the Climate Resilient Food Security Flagship Project. • Launch at least 4 sustainable agriculture, livestock and fisheries business cases. • Advancement in the phase-out of free-roaming livestock. • Minimum of four livestock enclosures to be built. • Bio-secure guinea grass supply chain piloted with St Kitts for livestock feed. • Agrivoltaic pilot project is up and running. • Construction of the fish processing plant constructed
	95% of rainwater is captured and all wastewater is reused through a green–grey integrated system that recharges aquifers and sustains households, farms, and forests.	• At least 60% of annual rainfall is captured through distributed retention and catchment systems for domestic, agricultural, and ecological use. • Greywater reuse system installed in Oranjestad. • Expansion of sewerage treatment plant/s supply treated water for agriculture and construction etc.	• Build at least 1 centralised sewerage plant, and supply water to at least 3 farms. • Pilot greywater recycling to provide additional water for agriculture. • Construction of critical grey and green water management infrastructure. • Introduce legislation that requires cisterns to be built under all new buildings, linked to green financing mechanisms to improve affordability.	• Complete phase 1 of the solar park water harvesting upgrade, with runoff stored in a 180 m^3 cistern for agricultural use. • Installation of rainwater harvesting at the sports hall to feed into agriculture projects. • Restoration of at least 5 wells for agriculture.
DOMAIN 2: ECOSYSTEM MANAGEMENT	***Erosion — once a major threat — has been eliminated.***	• Stabilise 50% of cliffs overall and 100% of critical areas and at-risk cliff-edge heritage sites.	• Scaling up of reforestation projects on erosion-prone coastal zones using resilient native species (Atlantic Seawall). • Expansion of the Lower Town cliff stabilisation project.	• Continuation of reforestation project in Zeelandia. • Initiation of 2 major cliffside stabilisation projects to protect at risk cultural heritage and critical infrastructure sites. • Identify financing for the development of an easy-to-use green infrastructure GIS map for the island (incl: tree-planting, reforestation, bioswales, etc)
	Reefs and fisheries have recovered through active management and restocking. Fast-growing trees and traditional plants restore the landscape, strengthen biodiversity, and create new economic opportunities.	• 100% of critical marine and terrestrial ecosystems under active restoration or management. • Reef health index improved by 40%, due to coral and herbivore restocking and runoff control. • Ecologically functional forest and plant cover increased by 30%, using native species.	• Multi-year structuring financing for ecosystem management is in place. • Shift to less dominance of macroalgae on the pilot reef sites. • Deployment of urchins, and other potential herbivore species across key reef sites. • Enforce policy that all new development must be screened for ecological impact. • Identify potential land mechanisms and financing to enable reforestation and food forest planting in partnership with landowners.	• Identification of potential sources for multi-year structural financing for ecosystem management. • Identify two priority reef zones for data monitoring stations (water quality and temperature). • Establishment and roll-out of the sea urchin hatchery pilot project to control macroalgae at 2 pilot reef sites.

	2100 Long-term Vision	2050 Medium Term Milestones	2030 Short term Targets	2026 Immediate Term Actions
DOMAIN 3: RISK, DISASTER AND CRISIS MANAGEMENT	***Statia is a model of climate resilience, equipped with robust disaster planning, climate-proof critical infrastructure, secure supply chains, and strong regional partnerships—ensuring the island can withstand, respond to, and recover quickly from any climate crisis.***	• Climate-proofing of Lower Town and critical infrastructure completed (including the harbour, RO plant, power plant, and telecoms).	• Climate resilience measures implemented in Lower Town, with priority rainwater management, erosion control systems, and initial climate-proofing of critical utilities underway. • Lower Town Integrated Climate-proofing Plan developed.	• Raise financing to initiate the Lower Town Flagship Project – Harbour Access. • Construction of the harbour seawall expansion project. • Supply Chain Climate Risk Analysis completed, assessing Statia's supply-chain vulnerability to climate change.
		• Statia is fully integrated into a regional disaster preparedness, response and recovery network. • The island has achieved a resilient, diversified, and climate-proof supply chain that strengthens economic stability and adaptability.	• Roll-out of the supply chain resilience program. • Regional disaster preparedness and crisis response system in place. • Shared emergency response protocols and regional data platforms established. • Improved Regional Integration (CARICOM and OECS Programmes & Institutions)	• Regional Emergency Operations Centre (EOC) Flagship Project initiated. • Regional disaster response collaboration talks initiated with neighbouring islands. • Plan developed to make the airport climate resilient including transition to a renewable energy system, with battery backup, generators as a fail-safe, and electric ground handling vehicles.
DOMAIN 4: LIVEABLE ENVIRONMENT	***The built environment is climate proof and shaped by green infrastructure and nature-based solutions.***	• 50% of the island's infrastructure (including roads, drainage, and public buildings) have been upgraded to meet climate-resilient and green design standards. • All new and upgraded roads include stormwater catchment and greening.	• Adopt and implement a Green Infrastructure Policy that requires that nature-based adaptation mechanisms and climate resilience be integrated in all infrastructure projects. • Allocate a dedicated "green budget line" in infrastructure projects to cover trees, landscape restoration, and water management.	• Integrate tree planting and shade planning at the airport and Lower Town using low maintenance, drought-resilient species. • Integration of climate resilience in priority infrastructure backlog projects.
		• Green financing has enabled at least 50% of residents to climate-proof their houses. • 100% of social housing retrofitted for climate resilience.	• Construction initiated on at least 30 new social housing units to climate-resilient and accessible standards. • Launch a green finance mechanism enabling 50 households to retrofit homes with cisterns, solar, energy efficient cooling, or insulation.	• Upgrade of the sports hall including climatic design and rainwater harvesting. • Develop and adopt an updated Building Code with guidelines and minimum construction standards for climate resilience and accessibility. • Develop and roll-out training programs for local builders on the building codes and low-tech climate solutions. • Develop a financial mechanism that supports households to reduce thermal gains, decrease cooling demand, and increase cooling efficiency.
	Statia is 100% fossil fuel free and runs on a reliable mix of renewable power, with a smart, hurricane-proof grid and charging stations that support a 100% green mobility system.	• At least 90% of total energy comes from a mix of renewables, supported by a smart grid and battery storage. • 100% of the island's electricity grid is underground and climate-proof. • Final plans initiated to phase out diesel generators.	• Initiation of Phase 4 of the Solar Park, including expanded battery storage. To increase renewable share to 85–90% of power generation = 20-22hrs a day of renewable power production. • Install centralised public EV charging stations in 3 locations, with a utility-controlled smart grid interface to manage demand. • Train at least 5 certified EV mechanics to support vehicle transition.	• Install Statia's first high-capacity (≥50kW) EV charging station at the solar park, linked to daytime solar surplus. • Begin procurement of electric vehicles for the public sector.

	2100 Long-term Vision	2050 Medium Term Milestones	2030 Short term Targets	2026 Immediate Term Actions
		• 100% green low-cost public mobility system - with universal access for elderly and disabled residents. • 100% of government vehicles and 50% of private vehicles on island are electric	• Develop regulations and permitting for household EV chargers to prevent grid overload. • Pilot an affordable, electric island-wide public transport service, with a subsidised voucher scheme for vulnerable groups.	
DOMAIN 5: ECONOMIC RESILIENCE	***Statia's resilient, inclusive economy rests on four interconnected pillars: circular agriculture; high value low impact tourism; blue economy; and the digital economy.***	• Agriculture and agri-processing contribute to 20% of employment. • Digital, green and blue economy initiatives make up 15% of local employment. • Tourism sector contributes >25% of GDP through low-impact, high-value eco- and heritage tourism. • Statia is recognized as a regional pilot site for at least 5 clean, climate, food, health tech or climate innovation partnerships. • Innovation centre operational, hosting testbeds for agriculture, agri-processing, renewable energy, water reuse, resilient design, etc.	• Develop a support program to help agri-businesses tap into the EU loan facility. • Develop a startup support program targeting 5 new climate/green businesses, with microfinancing, training and incubation support. • 90% households have high speed, affordable internet connectivity. • Develop an island wide strategy to develop a circular economy. • Pilot a returnee incentive program to support locals relocating back to Statia with startup support, internships, affordable housing or employment placement.	• Implementation of the new Tourism Masterplan • Development of a youth climate entrepreneur incubator • Create a community registry of fruit trees to capture seasonal surplus for agri-processing.
	Statia is regionally integrated, easily accessible, and connected to neighbouring islands, the BES and CAS islands, and the greater Caribbean region.	• Statia is regionally connected with affordable daily ferry and flight options available to St Kitts, Saba, St Maarten, Barbados and Bonaire/Curacao. • Statia is part of at least three formal regional cooperation platforms focused on trade, tourism, agriculture, supply chains, education, climate resilience, research and innovation.	• Improve inter-island airlift availability and affordability by securing agreements for lower-cost flights to St. Maarten, and introduction of flights to Curacao/Bonaire, Saba and St. Kitts. • Improved ferry connectivity, affordability, and service linking St Maarten, Saba, Statia and St Kitts.	• Conduct an air connectivity and air freight feasibility study to assess: demand, viability, partnership models, and incentives for affordable flights/freight linking Statia to regional hubs.
DOMAIN 6: COMMUNITY & CULTURE	***Statia is no longer defined by what it lacks, but by what it has built: a complete, green island rooted in rich heritage and lived culture. It is a place where people are proud to live, and where young people stay — not because they have to, but because they choose to.***	• Climate awareness and literacy are the norm, as residents of all ages participate in adaptation projects and cultural events that celebrate local solutions and foster community pride.	• Run a continuous public awareness campaign on climate resilience, food sovereignty, energy conservation, tree planting, drought adaptation, spatial planning and sustainable living.	• Implementation of climate communication and community engagement plan.
		• 100% of cultural heritage sites are restored, and integrated into the built environment and tourism economy.	• Development of a Statia Heritage Trail, integrating restored forts, sugar mills, and cliffside cultural sites into a community-owned tourism experience. • Lower Town Cultural Heritage Project initiated. • Support the listing and preservation of heritage assets, including UNESCO recognition of key sites like the burial ground.	• Restoration of the theatre and installation of the underwater slave memorial for Statia Day 2026.
DOMAIN 7: HEALT	***Statia's tech-enabled healthcare system provides comprehensive***	• Statia operates a digitally connected hospital offering essential diagnostic, specialist services and remote care, reducing medical travel off-island by at least 60%.	• Retrofit clinics and community centres with backup power, cooling, and storm-proof design to ensure care continuity during extreme weather events.	• Initiation of the hospital upgrade project.

	2100 Long-term Vision	2050 Medium Term Milestones	2030 Short term Targets	2026 Immediate Term Actions
	specialist and preventive care, with minimal need for off-island treatment. Low rates for non-communicable diseases are sustained	• Non-communicable disease rates and obesity reduced by 50% through nutrition and prevention programs.	• Establish an on-island clinical laboratory for basic diagnostics, reducing the need to travel for routine testing. • Expand community health programs on nutrition, lifestyle disease prevention, and vector-borne disease control — with the goal to sustain low incidence rates of dengue and chikungunya.	
	Education equips Statians with locally grounded, globally relevant, future-focused skills. Young Statians are leading change at home and connecting with networks across the Caribbean and beyond.	• School curriculum includes climate adaptation, entrepreneurship, and digital skills. • 100% of secondary school graduates have access to climate-resilience focused vocational training or higher education, on-island or via partnerships. • A new technical institute, linked regionally, offers tracks in clean energy, agri-tech, climate tech, and the circular economy. • Youth internship pathways created with regional and international partners.	• Integrate nature and climate education into all primary and secondary school curricula and community programming.	• Integrate agriculture into all primary and secondary school curricula and community programming

Action Agenda Summary

A summary of the action agendas developed to achieve the objectives of this roadmap for each domain can be found below for ease of reference. These are outlined in more detail in the Action Agendas that contained within each Domain of the integrated framework.

Table 2: Action Agenda Domain 1: Water and Food Security

Domain 1: Water and Food Security		
Challenge	**Objective**	**Action Agenda**
1.1 Water scarcity	1.1 Ensure access to clean, affordable water – Expansion of rainwater storage capacity and improved groundwater recharging	1.1.1 Expand household and public cistern capacity
		1.1.2 Improve water availability for agriculture and livestock farming
		1.1.3 Improve integrated water infrastructure
1.2 Compounded pressures limiting local food production	1.2 Increase access and availability of affordable, high-quality fresh produce – agriculture, fisheries, and livestock	1.2.1 Develop climate-resilient agriculture
		1.2.2 Support sustainable livestock farming
		1.2.3 Support climate-adaptive fisheries and fish nursery protection
		1.2.4 Develop community farming programmes
1.3 Supply chain risks	1.3 Diversify the food and agriculture input supply chain and value chain; increase inter-island trade	1.3.1 Establish disaster-resilient market, storage, agri-processing and packaging facilities
		1.3.2 Establish inter-island food trade links
		1.3.3 Educate consumers about regional/local alternatives
1.4 Wastewater pollution	1.4 Improved wastewater management and pollution control – Prevent contamination of groundwater aquifers and coastline	1.4.1 Implement a wastewater solution for Lower Town
		1.4.2 Implement wastewater solutions at household level

Table 3: Action Agenda Domain 2: Ecosystem Management

Domain 2: Ecosystem Management		
Challenge	**Objective**	**Actions**
2.1 Land degradation and cliff erosion	2.1 Erosion control and cliff stabilisation – Address cliff erosion, mitigate land degradation, prevent further topsoil loss	2.1.1 Initiate cliffside stabilisation projects
		2.1.2 Stabilise erosion-prone cliffs using nature-based methods
		2.1.3 Enforce ecological impact screening for new developments
2.2 Long-term financing	2.2 Embed ecosystem management as a foundational pillar of climate resilience	2.2.1 Develop and secure a multi-year financing for ecosystem management
2.3 Loss of forest cover and degraded soils	2.3 Restore forest and vegetation cover and regenerate soils – Scale up reforestation and soil restoration	2.3.1 Reforest the coastline (10-year initiative)
		2.3.2 Develop GIS reforestation plan
		2.3.3 Succession planting in food forests
		2.3.4 Use organic and traditional methods for soil restoration
		2.4.1 Launch & scale Coral Reef Restoration Lab

2.4 Degraded marine ecosystems	2.4 Protect and restore coral reefs and seagrasses – Support marine system resilience to climate shocks	2.4.2 Increase coral cover via restoration
		2.4.3 Conserve marine key habitats (Yarari Sanctuary)

Table 4: Action Agenda Domain 3: Risk, Disaster and Crisis Management

Domain 3: Risk, Disaster and Crisis Management		
Challenge	**Objective**	**Actions**
3.1 Increased disaster risk	3.1 Enhance disaster preparedness & crisis response – Strengthening climate disaster planning	3.1.1 Strengthen disaster planning and emergency response
		3.1.2 Build a regional response network (Joint crisis preparation, response, recovery)
3.2 Vulnerable critical infrastructure	3.2 Climate-proof critical infrastructure – Safeguard utilities and facilities against extreme events	3.2.1 Develop integrated resilience plan for Lower Town
		3.2.2 Fortify and climate-proof core utilities
		3.2.3 Relocate or upgrade vulnerable assets
		3.2.4 Establish climate-proof backup systems
3.3 Fragile supply chains	3.3 Strengthen regional collaboration to improve accessibility, disaster response, and supply chain resilience	3.3.1 Create contingency supply strategies
		3.3.2 Diversify supply routes and logistics partnerships

Table 5: Action Agenda Domain 4: Livable (Urban) Environment

Domain 4: Liveable Urban Environment		
Challenge	**Objective**	**Actions**
4.1 Increasing energy load	4.1 Upgrade and expand green energy infrastructure – Sustainably meet higher energy demand and reduce emissions	4.1.1 Expand solar and renewable energy
		4.1.2 Upgrade energy infrastructure (grid, smart systems)
		4.1.3 Build local maintenance capacity
4.2 Vulnerable built environment	4.2 Climate-resilient buildings – Retrofit and ensure new developments integrate adaptation	4.2.1 Enforce resilient building codes & retrofits
		4.2.2 Incentivise passive design and water-smart upgrades
4.3 Untapped potential for climate-resilient urban spaces	4.3 Climate responsive urban spaces – Expand and green public spaces for resilience	4.3.1 Install green/shaded infrastructure (trees, bioswales, parks)
		4.3.2 Promote walkability and accessible, shaded public zones
4.4 Transport emissions	4.4 Clean mobility: expand EVs, shared transit – Reduce transport emissions & car-dependency	4.4.1 Develop Green Mobility Plan
		4.4.2 Install public EV charging stations
		4.4.3 Launch affordable, electric shared transit

Table 6: Action Agenda Domain 5: Economic Resilience

Domain 5: Economic Resilience		
Challenge	**Objective**	**Actions**
5.1 Limited accessibility and connectivity	5.1 Improve inter-island air and sea connectivity – Build resilient and flexible logistics and links	5.1.1 Upgrade port/air connections
		5.1.2 Remove trade/tax bottlenecks
		5.1.3 Strengthen ferry/airline partnerships
5.2 Limited digital connectivity	5.2 Improve digital infrastructure – Expand reliable, affordable broadband	5.2.1 Invest in broadband expansion
		5.2.2 Promote digital inclusion and skills

5.3 Ecotourism potential underexploited	5.3 Unlock and sustain ecotourism potential – Diversify and boost climate-resilient tourism	5.3.1 Develop new ecotourism products (e.g. trails, adventure, dark sky, history experiences)
		5.3.2 Strengthen destination marketing
5.4 Entrepreneur support	5.4 Leverage adaptation opportunities to foster entrepreneurship – Create support for new climate & green businesses	5.4.1 Launch start-up support programmes (incubation, financing, skills)
		5.4.2 Incentivise youth & returnee entrepreneurship

Table 7: Action Agenda Domain 6: Community and Culture

Domain 6: Community & Culture		
Challenge	**Objective**	**Actions**
6.1 Cultural heritage at risk	6.1 Cultural heritage protection – Safeguard and valorise local tangible and intangible land-based and maritime cultural heritage	6.1.1 Protect and list key heritage sites (legal recognition)
		6.1.2 Create Statia Heritage Trail
		6.1.3 Use murals, art, and interactive cultural education in schools to reconnect youth with their heritage and strengthen cultural tourism narratives.
6.2 Lack of climate awareness & inequitable access	6.2 Increased public awareness and equitable access to public goods – Engage and inform all groups in resilience	6.2.1. Climate launch and community engagement catalysation.
		6.2.2. Create public awareness on climate change
		6.2.1. Organise community-led climate adaptation projects to ensure participation and long-term success.
6.3 Social Safeguards in Climate Implementation	6.3: Ensure socially equitable climate implementation- Embed social safeguards and vulnerability considerations across climate measures.	6.3.1. Establish a structured coordination mechanism between the Climate Plan implementation team and the Social Domain.
		6.3.2.Introduce Social Impact Screening for Climate Measures
		6.3.3. Strengthen Monitoring of Social Resilience Outcomes

Table 8: Action Agenda Domain 7: Health and Education

Domain 7: Health & Education		
Challenge	**Objective**	**Actions**
7.1 Vulnerable healthcare system & health gaps	7.1 Improve health and healthcare resilience – Boost accessibility to health, prevention, and emergency care	7.1.1 Invest in climate-resilient clinics & public health
		7.1.2 Expand prevention programmes and access
7.2 Education not preparing for climate future	7.2 Youth education for future resilience – Integrate climate and sustainability into curricula	7.2.1 Curriculum reforms (climate/sustainability)
		7.2.2 Develop partnerships for lifelong learning

DOMAIN 1:
WATER & FOOD SECURITY



Domain 1: Water and Food Security

Drought resilience, water access, climate-smart farming, sustainable livestock, and fisheries

Overview

Challenges and Vulnerabilities

Climate change is widely recognised as a major global threat to food security[2]— and for Statia, this threat is particularly acute. The island relies on imports for nearly 90% of its food supply, resulting in high retail prices and low quality of perishable goods. This reliance makes Statia highly vulnerable to external shocks that hike prices, such as trade tariff increases, geopolitical conflicts, and climate impacts (e.g. droughts or avian flu outbreaks) in supplier countries.

The threat is compounded by the island's dependence on a limited supply route via St. Maarten and Miami, both of which are increasingly exposed to extreme weather events, storm surges, and hurricanes. As such, one of the cornerstones of Statia's climate adaptation agenda is to reduce this vulnerability by both strengthening supply chain resilience and significantly boosting local food production capacity.

Currently, agricultural production is largely small-scale, informal, and subsistence-based, with very few individuals formally employed in the sector. Key constraints include limited access to land and water, high start-up and operating costs, and damage from free-roaming livestock. These structural barriers are compounded by weak institutional capacity, a lack of training and agricultural support services, and a general perception of agriculture as an unattractive livelihood — particularly among the youth.

Increasingly frequent dry periods and prolonged droughts have severely undermined the viability of rain-fed agriculture on Statia. Compounding this challenge is the lack of affordable and accessible water for irrigation, which has consistently hindered the success of agricultural initiatives. These interlinked vulnerabilities are why food and water security are treated as a single, integrated domain in this Climate Adaptation Plan.

Water access is one of the most persistent barriers to productive agriculture. Increasingly unpredictable rainfall, prolonged dry periods, severe droughts and a lack of affordable, fit-for-purpose irrigation water have undermined the viability of many agricultural initiatives. This is why food and water security are treated as a single, integrated domain in this Climate Adaptation Plan.

With no natural freshwater sources, the island has historically relied on a fragile system of rainwater harvesting (cisterns) and shallow groundwater wells. To strengthen this limited supply, the Public Entity constructed a reverse-osmosis drinking-water plant in 2004—operated by STUCO. Initially built as a stand-alone facility to refill household cisterns by truck, it became part of a piped distribution network in 2013.

[2] Rising temperatures, combined with increased droughts, are expected to result in decreased yields, increased pests and diseases, increased likelihoods of short-run crop failures and long-run production and reproduction declines UNECLAC, 2011).

This system is now under mounting pressure. Longer dry periods are causing wells and cisterns to run dry more frequently. Degraded soils and overgrazed slopes accelerate stormwater runoff, reducing groundwater recharge. During heatwaves and droughts, demand frequently exceeds STUCO's desalination capacity—such as during the 2019 water crisis. Moreover, desalinated water is costly (up to USD 17 per m^3), further burdening households and making irrigation prohibitively expensive. Meanwhile, well water has been found to contain high levels of bacteria and E. coli, due to contamination from soakaways and unregulated wastewater discharge.

This situation is set to compound with climate change. Climate projections show that rainfall on Statia could decline an additional 12% by 2050 and up to 44% by 2100 under high-emissions scenarios (KNMI'23), with the steepest drops expected in the wet season—when aquifer recharge and rainwater harvesting are most critical. Combined with rising temperatures and evaporation, this will place even greater strain on desalination capacity and water security. Inadequate wastewater treatment further exacerbates contamination risks, threatening public health and marine ecosystems, especially during heavy rainfall.

Building a Resilient Foundation: Ongoing Programs and Policy Anchors

Despite these compounding challenges, Statia has laid strong foundations to tackle food and water insecurity. Three cornerstone policy frameworks—the **Nature and Environmental Policy Plan (NEPP)**, the **Vision for Sustainable Agriculture**, and the **Strategic Action Plan for Sustainable Agriculture (SAPSA)**—provide a strategic foundation for resilience through integrated land, water, and food system transformation. While the **2019 Water Management Plan** outlines the key infrastructure upgrades required to improve water retention on island.

1. NEPP and the Implementation Agenda (2020–2030)

The NEPP (2020–2030) prioritises climate-smart land and water management, reforestation, sustainable agriculture, and the removal of free-roaming livestock to halt erosion and enable ecosystem restoration. The island-specific Implementation Agenda, adopted in 2021, provides concrete pathways for delivery, including the Land Restoration Programme and watershed rehabilitation projects.

Critically, the NEPP explicitly ties rainfall retention to both environmental and agricultural goals: reducing runoff and sedimentation, replenishing groundwater, and storing water for use during dry periods. Rainwater harvesting and the halting of untreated sewage discharge are framed as twin priorities to protect reefs and enable food production.

2. Vision for Sustainable Agriculture (2022)

Adopted by the Executive Council, this vision document promotes a regenerative, circular, and nature-inclusive model of agriculture. It aligns with FAO's five principles of sustainable food systems[3] and emphasises the need for:

- Efficient resource use and agroecological practices,
- Livelihood support and decent rural incomes,
- Ecosystem conservation and biodiversity,
- Resilient communities, and

[3] FAO's five principles for sustainable food systems include: 1) resource-use efficiency, 2) protecting natural ecosystems, 3) protecting rural livelihoods, 4) enhancing the resilience of people, communities, and ecosystems, and 5) promoting good governance.

- Good governance.

This vision underpins the SAPSA and is essential to long-term food security and economic diversification.

3. Strategic Action Plan for Sustainable Agriculture (SAPSA) (2025–2030)

SAPSA provides a concrete roadmap for transforming Statia's food systems, addressing both climate risks and structural constraints in local agriculture and fisheries. It outlines priority interventions such as:

- Climate-smart agriculture practices e.g. agroecology, intercropping, integrated crop-livestock systems, syntropic agroforestry, organic soil fertility management, animal feed efficiency, and water-efficient irrigation technologies
- Fencing and livestock control via the Roaming Animals Project which kicked-off in 2022 aims to eliminate free-roaming goats by 2027, and support the transition to more professional and sustainable animal husbandry practices.
- Infrastructure upgrades including water harvesting and irrigation systems, shade houses, composting units, processing and cold storage facilities, and upgrading the slaughter facility.
- Access to inputs e.g. climate-adapted seeds and planting material, organic soil amendments, animal fencing, and veterinary supplies, which will require improved supply chains.
- Fisheries support, including a new fish processing facility, sustainable species targeting, and fishermen capacity building,
- Knowledge systems and capacity building of LVV, the Farmers and Fishers Foundations, farmers and fishermen including hands-on learning and knowledge exchange.
- Embedding circular principles, like water harvesting and reuse, reusing organic waste through composting and using animal manure as fertiliser, will help reduce reliance on imported inputs and decrease the environmental footprint of farming.
- Development of business cases including Chicken production: layers and broilers, Goat production: meat and dairy, Fisheries: processing and packaging, Crop production, using e.g. syntropic farming, and Crop production, using hydroponics.

SAPSA also prioritises resolving land tenure issues and the securing of government land for agriculture[4], and updating the island's water resources management plan—two of the most urgent enablers of climate-resilient production. While, the LVV restructuring programme aims to add additional capacity to support implementation.

4. 2019 Water Management Plan

The Water Management Plan developed by Royal Haskoning outlines the critical large-scale interventions required to reduce erosion, improve water management and water security. It includes short-term, shovel-ready measures (within land availability and minimal constraints) and longer-term interventions (requiring archaeological assessments, land acquisition, or further planning). Recommended interventions include:

[4] A rough estimate of the government land available for agriculture and livestock production is 150 ha, including 16 hectares marked as LVV terrain.

- Integrated Drainage System: Design and implementation of a proper drainage network across Oranjestad and surrounding areas to manage stormwater and reduce runoff-related erosion, especially around Fort Oranje and the airport.
- Water Retention and Reuse Infrastructure: Construction of multiple detention and retention ponds, including underground and stepped storage basins (e.g., at Sandy Road, Solar Park, and Cemetery), designed to slow down, store, and infiltrate rainwater—improving both erosion control and water availability for reuse.
- Cascade System Improvements: Rehabilitation and capacity enhancement of the historic Claes Gut cascade to safely channel high stormwater flows and reduce downstream sediment transport.
- Airport and Coastal Drainage: Measures around the airport and coastal zones to address uncontrolled gully formation and erosion, including drainage channels and retention buffers.
- Multi-functional Buffers: Prioritised "dual-function" buffers like those at Sandy Road and Solar Park, which serve both flood control and water storage for reuse (e.g. agriculture, landscaping).

Regional Partnership Opportunities

Statia is not alone in dealing with these challenges, across the Caribbean, small island states face similar vulnerabilities. According to the University of Notre Dame's Global Adaptation Initiative (ND-GAIN) Country Index, Caribbean food systems (including agriculture, fisheries and supply chains) are among the most climate vulnerable in the world (Ewing-Chow, 2024). In response, a number of regional initiatives have emerged to promote local food production, strengthen fisheries, and build more resilient intra-regional supply chains. For example, the CARICOM 25x25 Initiative which aims to reduce food imports by 25% by the year 2025.

Recently, the Caribbean Agricultural Research and Development Institute (CARDI) has developed a strategic plan to further support the future-proofing of food systems in the Caribbean which includes the propagation of climate-resilient crop varieties suitable for the Caribbean; farmer extension raining programs; programs to increase youth engagement and involvement in agriculture, and the development of competitive and sustainable regional food value chains, among others.

These programs, resources and cross-island knowledge exchanges offer tangible opportunities for Statia to integrate into a broader regional network—strengthening both food security and supply chain resilience. Regional collaboration can also help Statia overcome the limitations of scale it faces as a small island by enhancing the economic viability of local agriculture and fisheries. Via the possibility of developing complementary growing programs, shared propagation systems, and coordinated logistics, which will decrease costs, increase production diversity and help reduce US import dependency.

Action Agenda

Core Adaptation Challenge 1.1: Water scarcity

Statia has no freshwater sources. The island relies on rain-fed cisterns and a coastal reverse-osmosis (RO) plant that is vulnerable to rockfalls, hurricanes, storm surge, and sea-level rise. With increasing droughts and erratic rainfall, aquifer recharge is declining, wells are salinizing, and cisterns run dry more frequently.

Adaptation Objective 1.1: Ensure access to clean, affordable water → Expansion of rainwater storage capacity and improved groundwater recharging.

Identified Key Actions:

1.1.1. Expand household and public cistern capacity.

a. Community household cistern upgrade support mechanism. Including building second cisterns to capture shower and sink (grey) water, which can be easily filtered and reused for backyard farms or to flush toilets.

b. Develop and introduce legislation that requires cisterns to be built under all new buildings, linked to green financing mechanisms to improve affordability.

c. Build a network of public/community cisterns & reservoirs with integrated drainage systems (NEPP 1.1.2).

i. Rehabilitation of the Lower Town Cascade and cistern.

1.1.2. Improve water availability for agriculture and livestock farming

a. Restoration of water wells (SAPSA Activity 3.2.3)

ii. Continuous monitoring of water quality, water levels and saltwater intrusion in wells (NEPP).

b. Installation of a rainwater catchment and retention system at the Solar Park (NEPP 1.2.2; SAPSA 3.2.1)

ii. Construction of water retention ponds.

iii. Complete the solar park water harvesting upgrade (expand guttering across the entire solar array).

c. Installation of gutters and a cistern to harvest rainwater from the sports hall roof.

d. Installation of a comprehensive wastewater system to enable the recycling and reuse of greywater and blackwater.

1.1.3. Improve integrated water infrastructure

a. Improve drainage, infiltration ponds, and water catchments for groundwater recharge and to reduce rainwater run-off and mitigate erosion (NEPP 1.1.2; Water Management Plan/ Master Plan Drainage Phase 2).

b. Introduce grey and green infrastructure in roadworks to slow runoff, guide stormwater into public cisterns and groundwater recharge systems (NEPP 1.1.2).

Core Adaptation Challenge 1.2: Compounded pressures limit local food production

Unpredictable rainfall, prolonged dry periods and extreme droughts have severely affected Statia's rain-fed agricultural systems. High input and running costs, combined with poor soils, and free-roaming livestock, undermine agriculture production, farming viability, and food self-sufficiency.

Fisheries are also under threat. Rising sea temperatures are impacting spawning patterns and species distribution. Sediment runoff (exacerbated by erosion, intense rainfall and insufficient rainwater retention capacity), particularly from areas around Fort Oranje and the Quill, is suffocating coral reefs and sea grass beds - impacting fish nurseries, lobster and conch stocks.

Adaptation Objective 1.2: Increase access and availability of affordable, high-quality fresh produce → Agriculture, Fisheries and Livestock.

Identified Key Actions:

1.1.4. Develop climate resilient agriculture.

a. Develop and implement business cases for crop production (SAPSA Activity 2.2.2).

b. Establish feasibility of Agrivoltaics for diversifying crop production and increase land use efficiency (Agrivoltaics Project)

c. Promote syntropic agroforestry farming techniques as well as other climate smart farming techniques among local farmers including water conservation (SAPSA Activity 2.2.3 and 3.2.2)

d. Incentivise succession planting for drought-resilient crops and long-term food forests.

e. Expand land access for agriculture and resolve land tenure issues (SAPSA Activity 2.2.1)

ii. Create mapping of agroecological suitability by zone (ties in NEPP 1.1.2; SAPSA Activity 1.1.3 Develop and adopt a sustainable agriculture land use and zoning plan)

1.1.5. Support sustainable livestock farming to produce affordable quality meat, chicken and eggs.

a. Eliminate roaming livestock and transition to enclosed animal husbandry. (NEPP 1.1.1; SAPSA 2.1)

i. Construction of pilot model livestock pen and roll-out of livestock enclosures for livestock business cases.

b. Develop and implement business cases for livestock production (e.g. chicken, eggs) (NEPP Milestone C; SAPSA Activity 2.1.3, 2.2.2).

c. Investigate sustainable, affordable, and biosecure fodder alternatives (e.g. Guinea grass from St Kitts) (SAPSA Activity 2.2.2)

d. Introduce circular compost-based feed alternatives (e.g. fish waste, black soldier fly larvae etc) (help decrease the cost of inputs) (SAPSA Activity 2.2.2)

1.1.6. Support climate-adaptive fisheries and fish nursery protection (NEPP 3.1)

a. Construction of a fish processing plant.

b. Support the development of a fisheries business case.

c. Support local fishermen to target pelagic species to minimise impact on coral reef ecosystems (NEPP 3.1)

1.1.7. Develop community farming programs

a. Launch backyard farming campaigns with starter kits and training (potential link to wastewater reuse).

b. Revitalise school gardens and program.

c. Establish community food forests.

d. Develop “Two to Mango” a registry for harvestable community fruit trees to reduce food waste and unlock income generating opportunities.

a. Support value-added agri-processing (e.g. mango chutney from excess mangos that would otherwise go to waste)

Core Adaptation Challenge 1.3: Supply chain risks

The complete dependence of the island on the Maltese Pride and Orion for 90% of food and agricultural inputs-shipped via St Maarten and Miami—leaves the island highly vulnerable to climate change impacts, supply disruptions, trade tariff wars, and price hikes.

Adaptation Objective 1.3: Diversify the food and agriculture input supply chain and value chain → increase inter-island trade.

Identified Key Actions:

1.3.1. Establish disaster-resilient market, storage, agri-processing and packaging facilities (SAPSA Activity 3.1.1)

   a. Build additional cold storage capacity at the harbour (initiated as part of the Harbour upgrade project).
   b. Construction of climate-proof agri-processing facilities to improve circularity and agricultural value chains (e.g. bottling, juicing, preserving, freezing, drying, freeze-drying).
   c. Construction of climate proof dry good and feed storage facilities.

1.3.2. Establish inter-island food trade links (e.g. with St. Kitts, DR, Dominica, Anguilla etc.)

   a. Address double/triple taxation issues and regulations bottlenecks that is inhibiting trade and hiking prices.

1.3.3. Educate consumers about regional/local alternatives and reduce dependency on US imports (e.g. buying healthier cereal options than popular processed, high sugar US options).

Core Adaptation Challenge 1.4: Wastewater pollution

Inadequate wastewater systems (soak aways) threaten groundwater quality, well water quality, and coastal marine health. The impacts of high levels of runoff and wastewater discharge will escalate under a changing climate.

Adaptation Objective 1.4: Improved wastewater management and pollution control → To prevent contamination of groundwater aquifers and the coastline.

Identified Key Actions:

1.4.1. Implement a wastewater solution for Lower Town (NEPP 1.2.1)

1.4.2. Implement wastewater solutions at a household level.

   a. Replace soak-aways at a household level
      i. Either with septic tanks to be pumped to a centralised facility
      ii. Or low maintenance, low-cost 'biotanks' that can recycle wastewater into water for backyard farming (NEPP 1.2.1).
   b. Build centralised sewerage plant/s to manage wastewater recycling.

1.4.3. Implement a water quality monitoring plan.

   a. Implement regular well water testing (eg. Ecoli and other harmful bacteria, toxins) (NEPP 1.2.1).
   b. Monitor coastal water quality, particularly for wastewater and other pollutants, as well as the location and intensity of sediment flows from land to inform stormwater runoff management plans and interventions (NEPP Milestone 1.2.1).

DOMAIN 2: ECOSYSTEM MANAGEMENT



Domain 2: Ecosystem Management

Protect and restore land, reefs, & biodiversity to strengthen natural climate defences

Overview

Challenges and Vulnerabilities

Terrestrial and marine ecosystems are central to Statia's capacity to manage climate risk. Forests and vegetated slopes absorb rainfall, limit soil erosion, and reduce flood exposure, while coral reefs and seagrass beds buffer the coastline from storms and sustain marine productivity. On a small island such as Statia, these natural systems play a direct role in maintaining water security, food production, coastal stability, and the resilience of critical infrastructure. Effective ecosystem management therefore underpins the island's long-term climate resilience and economic viability.

Statia's ecosystems, however, are already under sustained pressure. The island's volcanic ash and mudstone soils are inherently fragile, making erosion one of its most persistent environmental challenges. Along the exposed east coast—particularly around Zeelandia—cliff instability, historic vegetation clearance, and overgrazing have left slopes highly vulnerable to erosion. In Boven and the lowlands, uncontrolled grazing and soil compaction have reduced soil fertility, constrained natural regeneration, and contributed to declining plant biodiversity. Invasive species such as Coralita are spreading, displacing endemic vegetation and further weakening ecological recovery. As vegetation cover declines, landscapes lose their capacity to absorb rainfall and retain moisture, increasing runoff and sediment transport into coastal waters. In some areas, these dynamics are contributing to progressive land degradation.

The upper slopes of the Quill—including rare habitats such as the Elfin Forest—face additional pressures. Rising temperatures, prolonged droughts, erratic rainfall, and more intense storms are affecting regeneration in ecosystems that host endangered and endemic species, including the bridled quail-dove, Lesser Antillean iguana, and Statia milkweed. Reduced resilience in these high-elevation systems has implications not only for biodiversity, but also for watershed regulation and long-term landscape stability.

Marine ecosystems face parallel stressors. Coral reef cover has declined significantly over the past two decades, affected by bleaching events, coral and sponge diseases, nutrient loading, macroalgal overgrowth, and physical damage from tanker anchoring. Seagrass beds—critical for seabed stabilisation and as habitat for fish nurseries, conch, and green turtles—are also under strain. Sediment runoff from degraded land, illegal dumping, and wastewater seepage further exacerbate marine decline. As reef and seagrass systems deteriorate, fisheries productivity is reduced, natural coastal protection weakens, marine biodiversity diminishes, and the attractiveness of Statia for dive tourism is affected.

Climate change intensifies these existing vulnerabilities. Rising temperatures, prolonged droughts, and more extreme rainfall events place additional pressure on fragile terrestrial systems, while stronger storms increase physical damage to slopes, vegetation, reefs, and coastal areas. Ocean warming and acidification further reduce coral recovery capacity. As disturbance frequency increases and regeneration slows, ecosystems become progressively less able to recover, heightening the risk of long-term ecological decline.

These ecological trends carry direct economic and infrastructural consequences. Tourism depends on healthy reefs and intact landscapes. Food security relies on fertile soils, functioning watersheds, fisheries productivity, and pollination systems. Coastal infrastructure depends on reef and vegetation buffers to reduce storm surge

and erosion. Without functioning ecosystems, investments in infrastructure, economic diversification, and community wellbeing become increasingly exposed to climate risk and fiscal loss.

For this reason, nature-based climate adaptation forms a critical component of Statia's climate strategy. It involves strengthening and managing natural systems so that they continue to perform their protective and regulatory functions under changing climatic conditions. On a small island such as Statia, forests, vegetated slopes, reefs, and seagrass beds perform roles as important as engineered infrastructure: they reduce runoff and erosion, attenuate wave energy, stabilise coastlines, and sustain livelihoods.

Replanting of degraded slopes, improved watershed and grazing management, coral reef rehabilitation, strengthened marine protection, and integrated spatial planning are therefore structural elements of the island's resilience approach. By addressing underlying drivers of vulnerability, these measures complement engineered investments and reduce system-wide exposure to climate hazards. They also open up new blue and green economic opportunities for the island, ranging from regenerative agriculture and circular production to mariculture and the creation of local employment in areas such as plant and coral nurseries, agroforestry, ecotourism, and marine resource management.

Institutional and Policy Anchors for Long-Term Ecosystem Management

As established in the preceding section, ecosystem management is foundational to Statia's climate adaptation strategy. The sustained functioning of terrestrial and marine ecosystems therefore constitutes a permanent public responsibility within the Kingdom governance framework, linked to statutory obligations for biodiversity conservation and climate adaptation.

Effective ecosystem management requires continuous ecological monitoring, regulatory enforcement, spatial planning integration, invasive species control, and ongoing land and marine management. Several policy instruments and implementation agendas are currently in place to support these functions.

1. *Nature and Environment Policy Plan (NEPP) for the Caribbean Netherlands (2020–2025)*

The Nature and Environment Policy Plan for the Caribbean Netherlands (NEPP-CN) provides the overarching BES-wide framework for nature and environmental policy across Bonaire, Saba, and St. Eustatius. It aligns local conservation needs with international biodiversity targets, sustainable development goals, and lays the strategic foundation for the island's Nature & Environment Policy Implementation Agenda (NEPP).

For St. Eustatius, the NEPP-CN highlights the following critical areas of action for ecosystem restoration:

- Prevent erosion and sedimentation—a major threat to coral reefs—by removing free-roaming animals, restoring vegetation, and improving road drainage and slope stability.
- Stop the release of untreated or partially treated sewage along the coastline to protect nearshore marine ecosystems and improve coral reef health.
- Restore coral reefs and associated species, including active coral out-planting and the reintroduction of sea urchins, which play a critical role in reef regeneration and algae control.
- Promote reforestation to support soil regeneration, reduce erosion, and rebuild natural buffers against drought and storm impacts.

2. *Implementation Agenda for Nature and Environment Policy (NEPP) on Sint Eustatius (2020–2030)*

Statia's Implementation Agenda translates the BES-wide NEPP CN into concrete, island-specific actions, aligned with Statia's ecological vulnerabilities and development needs. This agenda serves as the local execution plan

to reverse environmental decline. It is structured around four strategic goals; each subdivided into clear priority areas of action which are aligned with many of the priority areas identified in the Climate Plan, which demonstrates the extent to which these two documents work hand-in-hand.

- Strategic Goal 1: Reversing coral reef degradation to create healthy, resilient and restored coral reefs
    - Control erosion and runoff: Eliminating roaming livestock and transitioning to enclosed animal husbandry; improving rainwater management; incorporating nature conservation in spatial development plans.
    - Improve wastewater management and water quality: Develop sustainable waste and wastewater treatment systems, especially along the coast.
    - Coral reef restoration: Support active coral out-planting programs and the reintroduction of key species such as Diadema sea urchins.
- Strategic Goal 2: Restore and conserve Statia's unique habitats and species
    - Conservation and restoration of key habitats: Increasing protected areas and conservation of protected species and breeding areas.
    - Conserve keystone and flagship species: E.g. Bridled Quail-Dove, Lesser Antillean Iguana, tropic bird, sea urchin, queen conch, spiny lobster etc.
    - Control of invasive species: Improve biosecurity and develop invasive species management plans, etc.
- Strategic Goal 3: Promote sustainable land and water use for local economic development
    - Invest in sustainable fisheries: Implement the Sustainable Fisheries Policy Plan 2024; monitoring, management and capacity building for a sustainable and profitable fishing industry.
    - Tourism industry in balance with nature conservation: Carrying capacity research and regulation development, including fiscal incentives to support conservation efforts.
    - Invest in sustainable food production: Stimulate the circular production and consumption of local produce; develop guidelines for sustainable agriculture, etc.
- Strategic Goal 4: Create the enabling conditions for effective nature management and sustainable use
    - Education and training: Develop school curriculum; targeted education programs for stakeholders; training courses and initiatives that link youth to nature conservation.
    - Awareness: Run public awareness campaigns and outreach programs to engage the community and gain their buy-in and support.

The Nature and Environmental Policy Plan (NEPP) was initially conceived as a multi-year programme, with an indicative implementation horizon of approximately seven years. To date, Phase 1 has been financed through 2026. At the time of writing, funding for subsequent phases has not yet been confirmed. While phased implementation is not uncommon in public policy, the current funding profile highlights a broader structural consideration. Ecosystem pressures on Statia are ongoing and climate projections indicate that they will intensify over time (KNMI, 2023). Effective ecosystem management therefore requires continuity beyond discrete project cycles.

Terrestrial and marine ecosystem management involves permanent functions: monitoring ecological condition, maintaining soil stabilisation works, enforcing land-use and anchoring regulations, controlling invasive species, and adapting management approaches in response to changing climate conditions. These are not one-off restoration activities, but continuous governance responsibilities. Establishing a multi-year structural financing

model would align ecosystem management with long-term statutory obligations under Kingdom nature policy and climate adaptation frameworks and ensure that stewardship functions are treated as core public services rather than discretionary project expenditures.

Accordingly, the identification of sustainable, multi-year financing mechanisms for ecosystem management is identified as an immediate-term priority under Domain 2. Establishing predictable structural funding would support the transition from project-based restoration toward integrated, ongoing ecosystem stewardship as a core pillar of climate resilience.

Additional plans and recommendations related to ecosystem management include:

3. *Erosion Control Action Plan for St. Eustatius (2023)*

Linked the NEPP, this plan directly addresses one of the main drivers of ecosystem degradation: erosion and sediment runoff. Focus areas include:

- Reforestation of vulnerable slopes, particularly around Lower Boven and Zeelandia.
- Improved drainage and water retention, such as vegetated swales, terraces, and gully stabilisation.
- Demonstration sites and nurseries for native vegetation propagation.
- Community engagement, particularly with livestock owners and private landholders.
- Capacity building to improve coordination among local actors and enforce land-use controls.

4. *DCNA Climate Action Plan (2023)*

This regional plan outlines how ecosystem-based adaptation can build climate resilience across the Dutch Caribbean. It emphasises also the need for regional collaboration across the Dutch Caribbean to share knowledge, align efforts, and advocate jointly for resources and policy support from The Hague. For Statia, the following recommendations are made:

- Reducing pressures on ecosystems by tackling free-roaming livestock, controlling invasive species, and improving waste and water management practices to prevent land and marine degradation.
- Scaling up nature-based solutions, such as reforestation, slope stabilisation, and sustainable agriculture, to reduce erosion, improve water retention, and regenerate degraded landscapes.
- Coral reef health monitoring through standardised protocols and local participation.
- Support for local NGO-led initiatives, particularly those working on education and marine protection.
- Development of sustainable financing instruments, such as blue carbon credits, conservation levies or ecosystem service payments, to ensure long-term investment in climate adaptation and biodiversity conservation.

5. *WWF Spatial Planning and Nature Policy Goals in the Caribbean Netherlands (2023)*

WWF's spatial planning guidance underscores the need to integrate nature into land-use and development decisions. Statia-specific highlights include the following recommendations:

- Protection of Zeelandia Beach, a key sea turtle nesting site, from cliff dumping and coastal development.
- Safeguarding the ecological function of the Quill, including erosion control and trail planning.
- Enhancement of the Botanical Garden as a centre for native species conservation and education.

- Zoning policies to prevent habitat fragmentation, especially in areas under development pressure.

Taken together, these policy instruments provide an important foundation for ecosystem management on Statia. However, given the foundational role of terrestrial and marine ecosystems in climate risk reduction, their long-term functioning requires governance arrangements that reflect their statutory significance within the Kingdom framework. Aligning ecosystem management more explicitly with long-term biodiversity and climate adaptation obligations, and ensuring continuity of financing and institutional capacity, will strengthen coherence between nature policy and climate policy and support the transition toward ecosystem management as a permanent public function.

Action Agenda

Core Adaptation Challenge 2.1: Land degradation and cliff erosion

Statia's steep volcanic terrain, combined with deforestation, roaming livestock, and intense rainfall, has led to severe erosion and cliff instability. Fragile soils and lack of vegetative cover have accelerated topsoil loss, degraded dryland ecosystems, and increased sediment runoff into the sea which is which is damaging coral reefs and impacting fish nurseries. As climate change drives more frequent droughts, intense rainfall, and stronger hurricanes, the threats of cliff failure and ecosystem degradation will become more severe.

Adaptation Objective 2.1: Erosion control and cliff stabilisation → Address cliff erosion, mitigate land degradation, prevent further top-soil loss, and reduce sediment flow into the sea.

Identified Key Actions:

2.1.1. Initiation of major cliffside stabilisation projects to protect at risk cultural heritage and critical infrastructure sites.

2.1.2. Stabilise erosion prone cliffs across the island and restore topsoil using affordable, nature-based methods.

   a. Launch large-scale reforestation projects on erosion-prone coastal zones using resilient non-invasive species – focusing first on the Atlantic Wind Break.

   b. Implement vegetation buffers and water retention features in erosion-prone areas (NEPP 1.1.1, 2.1, 1.1.2).

   c. Address erosion from livestock overgrazing by fencing and transitioning to managed animal systems (NEPP 1.1.1; SAPSA 2.1).

2.1.3. Enforce policy that all new development must be screened for ecological impact.

Core Adaptation Challenge 2.2: Long-term financing

Ecosystem restoration and conservation efforts on Statia have delivered important progress through targeted, time-bound programmes. However, ecosystem management is a continuous function. Terrestrial and marine systems require sustained restoration, protection, monitoring, and enforcement in order to maintain their climate resilience functions. Where financing is structured around discrete project cycles, continuity can be constrained. This misalignment between ongoing ecological needs and time-bound funding arrangements poses a risk to maintaining ecosystem functions over the long term.

Adaptation Objective 2.2: Embed ecosystem management as a foundational pillar of climate resilience → Secure the long-term functioning of terrestrial and marine systems.

Identified Key Actions:

2.2.1. Develop and secure a multi-year financing framework to support continuous terrestrial and marine ecosystem management, including restoration, monitoring, and enforcement.

Core Adaptation Challenge 2.3: Loss of forest cover and degraded soils

Statia has experienced widespread deforestation and vegetation loss due to overgrazing, historic land clearing, and drought. The decline in tree cover has accelerated erosion, weakened soil structure, and reduced the land's ability to retain water and support biodiversity. As a result, large areas of the lowlands and hillsides remain degraded, with little natural regeneration. Without intervention, the continued loss of forest ecosystems threatens agricultural viability, ecosystem services, and climate resilience.

Adaptation Objective 2.3: Restore forest and vegetation cover and regenerate soils → Scale up reforestation and replanting to support long-term ecosystem recovery.

Identified Key Actions:

2.3.1. Reforest the entire coastline as part of a 10-year government-led initiative (NEPP 2.1).

2.3.2. Develop an easy-to-use tree-planting (GIS) map and reforestation plan that identifies suitable species by zone, integrating both environmental (microclimates, soils, erosion, growth rates and water) and built environment layers (infrastructure, buildings, and land tenure).

   a. Identify potential land and mechanisms to enable reforestation and food forest planting in partnership with landowners.
   b. Designate green servitudes and setbacks in spatial plans to legally mandate tree planting.
   c. Identify species with tap roots suitable to be planted next to roads, walls, buildings etc.
   d. Encourage the growing of herbaceous species used in traditional bush medicine, such as paracetamol bush, in food forests and peoples' backyards to support biodiversity and cultural heritage preservation.
   e. Develop a budget line and incentives for tree planting in all new infrastructure and road projects.
   f. Identify potential sources for multi-year structural financing for terrestrial ecosystem restoration.
   g. Plan for reforestation in Boven and the Quill, integrating ecological restoration with erosion control (NEPP 2.1).

2.3.3. Outplant 2,000+ trees already in STENAPA's nursery stock across schools, cliffs, and public lands (NEPP 2.1, 2.2, 2.3).

   a. Continue and expand STENAPA's "Adopt-a-Tree" campaign (already distributed 1,200 trees).
   b. Include trees in school planting and awareness projects, with at least four schools engaged (builds on NEPP 4.1).

2.3.4. Prioritise succession planting in food forests across 4-month to 10-year timescales, using drought-resilient and productive species.

2.3.5. Use organic methods like anaerobic composting, and pioneer species like nitrogen-fixing Acacia to restore degraded soils and support agroforestry systems.

   a. Analyse the heavy metal content of sargassum to determine its potential for composting and to identify any alternative circular-use applications that may be appropriate.

Core Adaptation Challenge 2.4: Degraded marine ecosystems

Statia's coral reefs have declined from approximately 25% to less than 2% live coral cover over the past two decades, due to bleaching, disease, sedimentation, and physical damage from anchoring and runoff. Seagrass beds—critical fish nurseries and coastal buffers—are also under stress. As ocean temperatures rise, storms intensify, and water quality declines, these marine ecosystems will face even greater pressure and lose their ability to protect the coastline or support tourism and fisheries.

Adaptation Objective 2.4: Protect and restore coral reefs and sea grasses → support the ability of the marine ecosystem to better withstand climate shocks.

Identified Key Actions:

2.4.1. Open and scale the Coral Reef Restoration Lab (officially launching 2025) (NEPP 1.3).

a. Grow and release sea urchins at scale to control macroalgae and restore reef balance (NEPP 1.3).

b. Explore the use of king crab for reef resilience as an alternative grazer (NEPP 1.3).

2.4.2. Increase coral cover via active coral restoration (resilient species), deployment of herbivore species and improved water quality (NEPP 1.3).

a. Identify two at least priority reef zones for coral monitoring stations to monitor the impact of climate change and the success of restoration efforts.

2.4.3. Implement effective conservation of key marine habitats and the Yarari Marine Mammal and Shark Sanctuary (NEPP 2.1).

DOMAIN 3: RISK, DISASTER AND CRISIS MANAGEMENT



Domain 3 - Risk, Disaster and Crisis Management

Reducing climate risks, strengthening readiness, response, and recovery capacity

Overview

Challenges and Vulnerabilities

Statia is no stranger to disaster preparedness, having developed a robust crisis management framework to cope with the annual threat of hurricanes. The purpose of this domain is not to restate these existing systems, but to highlight the additional risks and pressures brought on by climate change—which the island must now manage in addition to the recurring hurricane hazard. Climate change is amplifying existing threats and introducing new ones: from more intense and unpredictable hurricanes to compound weather events and cascading failures across critical systems. These evolving risks call for targeted physical risk mitigation measures, system redundancies, and the development of structural financing mechanisms to reduce exposure and build long-term resilience.

Climate Change Is Compounding Existing Risks

One of the clearest trends noted by stakeholders is that hurricanes are becoming less predictable. Due to warmer seas, storms are not only intensifying faster but also shifting paths and behaviour in shorter timeframes—sometimes within 24 hours. The island's reliance on forecasts from KNMI and the U.S. National Hurricane Centre provides limited regional nuance and has, at times, led to significant underestimations of storm intensity. For example, Tropical Storm Ernesto was forecasted as mild but struck as a Category 1 hurricane, causing significant damage. Moreover, the standard system of hurricane categorization—based only on wind speed—fails to capture the impacts of extreme rainfall, which can lead to devastating flooding, erosion, and infrastructure failure.

This unpredictability has also created communication challenges. Over-preparing for moderate storms can lead to public complacency and mistrust when warnings are not followed by severe impacts. Local authorities face a difficult balance: how to mobilise an effective response without triggering public backlash or "warning fatigue."

Compound Events Are Introducing New Disaster Scenarios

Beyond intensifying hurricanes, climate change is increasing the occurrence of compound events—multiple climate hazards that occur simultaneously or in close succession. These can include extreme heat followed by intense rainfall, or concurrent weather events that interact to amplify risk. The IPCC (2023) defines compound events as two or more climate-related hazards occurring together, while Singh (2025) describes compound risks as "the combination of multiple drivers and/or hazards that contributes to societal or environmental risk."

One of the most concerning patterns is extreme heat followed by heavy rainfall (or vice versa)—a sequence that is becoming more frequent, longer-lasting, and more severe (Singh, 2025). For Statia, this presents a serious challenge. If for example, a heatwave depletes water reserves and is followed by a storm or hurricane that disables the RO plant, the island could face a critical water shortage. Preparing for such cascading scenarios will require built-in system redundancy, decentralised infrastructure, and more climate-resilient planning to reduce the risk of total service disruption.

Critical Infrastructure at Risk from Erosion and Storm Surge

These risks are further compounded by the physical exposure of essential utilities to climate change threats. The STUCO water plant, power plant, telecommunication connection, and diesel storage tanks—are located directly beneath an eroding cliff and in low-lying coastal areas, making them highly vulnerable to rockfalls, hurricanes, storm surge, sea-level rise, and potential tsunamis.

A failure at this site could shut down both electricity and water supply across the island. The overland electrical grid is equally exposed, with above-ground lines susceptible to hurricane-force winds and falling debris. Despite chronic water insecurity, it is still not mandatory for buildings to include rainwater cisterns, leaving many households without backup during service disruptions. This lack of redundancy and decentralisation in critical systems increases the risk of cascading failures during extreme weather or compound events.

Fragile Supply Chains and Isolation During Crises

Furthermore, if Statia's harbour infrastructure were to be taken out by a storm, the island would effectively lose its import lifeline. Compounding this is the vulnerability of Statia's supply chain which emerged as a major concern during the workshop, particularly given the island's heavy dependence on imported food, fuel, medical supplies, and building materials. Most goods are routed from Miami through St. Maarten—a hub that is itself highly exposed to hurricanes and suffers from inadequate land-use planning and frequent flooding.

The 2017 hurricane season starkly revealed the fragility of this system. When Hurricane Irma struck, followed days later by Maria, St. Maarten's harbour was destroyed—cutting off Statia's primary supply route. At the same time, Statia's own harbour was choked with debris, preventing relief vessels and ferries from docking for weeks. Telecommunications were knocked out, severing contact with the outside world. As food and water supplies dwindled, the island relied on goods being brought over from St Kitts, and Dutch military air-drops for survival. Fuel shortages persisted for over a month, and with St. Maarten's hospital out of commission, medical care and evacuations had to be rerouted via Bonaire. Full repairs to the breakwater and coastal infrastructure took months to complete, underscoring just how vulnerable Statia remains in the absence of resilient logistics systems and regional alternatives.

In addition, the island is completely dependent essentially on the Maltese Pride for fresh produce, and the Orion for dry goods. This monopoly makes the island completely vulnerable, which means in December of 2024 when the Maltese Pride decided it would not run for 2 weeks without prior warning, the island was without access to fresh produce.

Low Community Resilience and Preparedness

At the household and community level, there are serious gaps in disaster readiness. Farmers and fishermen have no access to agricultural or fisheries insurance or replanting or repair funds, leaving them economically exposed after each storm. A basic self-funded disaster pool—where a portion of income goes toward emergency recovery—was suggested as a possible solution.

Households also worry about securing essential items like baby formula, medications, and clean water during prolonged periods of supply chain disruption. As well as the vulnerability of regional air access and ferry access to and from the island which is completely dependent also on St Maarten and a.

Ecosystem Damage and Natural Barrier Loss

Finally, the ecological impacts of disasters are often overlooked in response and recovery planning. Even distant hurricanes can cause extensive environmental damage: Hurricane Irma, for example, dropped so much saltwater on the island that the Quill turned brown and vegetation died back dramatically. Because trees and forest cover take decades to recover, their loss significantly diminishes the island's ability to retain water, buffer

strong winds, absorb environmental shocks, and mitigate erosion. Erosion, already a major concern, is intensifying due to both storm runoff and the degradation of natural buffers. This poses further risks to utilities, road infrastructure, and food systems.

Investing in Disaster Resilience

At the core of effective disaster risk management is investment in disaster-resilient infrastructure, the enforcement of land-use and zoning regulations, that limit deforestation, control erosion, and reduce damage to critical assets. And the adoption of appropriate building standards not only in response to increasingly intense hurricanes, but also increasing temperature and droughts.

This investment is critical because preparing for disasters is significantly more cost-effective than responding to them after the fact. Designing adaptation measures that reduce the likelihood and cost of climate-related disasters not only protects lives and assets but also helps safeguard the public budget and economy over time. To complement these measures, the island needs a fiscal buffer or structural financing mechanism—so that in years when disaster does not strike, reserves can be built to offset the economic burden when it inevitably does.

Enabling Regional Collaboration in Risk and Resilience Management

While many climate-related risks can be reduced through local adaptation measures, not all disaster risks can be fully averted—particularly for small islands like Statia. The financial and logistical burden of preparing for and responding to major disasters often exceeds the capacity of any single island to manage on its own. Recognising this, the Caribbean region has increasingly invested in regional cooperation, shared mechanisms, and collective resilience financing to lessen the impact of disasters and strengthen response capabilities across member states.

Although Statia has an agreement with Curaçao, who station marines on island if a tropical storm or hurricane is going to come in close proximity to the island. There are currently no formal mutual aid agreements in place that would allow the island to quickly mobilise support from neighbouring territories during disasters or prolonged disruptions. Strengthening ties with St. Kitts & Nevis, in particular, was flagged by stakeholders as a high priority for both disaster preparedness and long-term economic resilience. Additionally, Bonaire's emergency services—such as fire and police—could play a vital support role for Statia and Saba during hurricane season, but no structured collaboration or protocol currently exists. This lack of operational coordination leaves Statia more isolated than necessary during times of crisis and increases its vulnerability to supply chain breakdowns, delayed relief, and service disruptions.

To address this, legislative and policy action will be required to enable Statia's full participation in regional disaster risk management mechanisms, and to establish the legal frameworks needed for joint planning, information sharing, and mutual aid. This includes aligning with regional protocols and building institutional capacity to coordinate effectively with partners both before and after an emergency.

Key regional mechanisms that offer significant value include:

- The Caribbean Catastrophe Risk Insurance Facility (CCRIF SPC)
  Launched in 2007, CCRIF offers parametric insurance for earthquakes, tropical cyclones, and excess rainfall. It provides rapid liquidity to participating governments after disasters, helping to manage immediate costs and speed up recovery. For small islands with limited fiscal buffers, CCRIF reduces the financial shock of disasters and supports continuity of essential services. It also produces key data on hazard exposure and economic risk in the region.

- Caribbean Disaster Emergency Management Agency (CDEMA)
  CDEMA is the primary regional intergovernmental agency responsible for comprehensive disaster management across the Caribbean. It coordinates disaster response efforts, facilitates mutual assistance among member states, and supports capacity-building for early warning, emergency operations, and recovery. Through CDEMA, Statia could gain access to regional surge support, technical assistance, and operational resources during major events.
- Caribbean Disaster Risk Information Management System (CADRIM)
  As CDEMA's knowledge and data platform, CADRIM supports member states with risk communication, disaster data management, and information sharing. It offers tools for disaster scenario mapping, training, and public education—resources that could significantly improve Statia's preparedness and outreach capacities, particularly at the community level.
- The Caribbean Community Climate Change Centre (CCCCC)
  Established in 2005 by CARICOM Heads of Government, the CCCCC acts as the region's technical coordinating body for climate change. It provides decision-makers with access to climate data, risk tools, and scenario planning platforms—including the Caribbean Climate Online Risk and Adaptation Tool (CCORAL), which helps governments screen investments and policies through a climate resilience lens.
- The Coral Reef Early Warning System (CREWS) Network
  Supported by the EU-GCCA and NOAA, the CREWS network installs climate and ocean monitoring stations across the Caribbean. These stations feed real-time data into regional climate services and provide critical insights into coral reef health, water temperature, and storm activity—helping to anticipate and respond to marine-based risks.
- Caribbean Institute for Meteorology and Hydrology (CIMH)
  CIMH provides regional climate and weather forecasting, hydrological monitoring, and impact-based early warning services. It also trains national meteorological services and supports disaster risk reduction through drought monitoring, seasonal outlooks, and scenario-based forecasting tools.
- Caribbean Development Bank (CDB) – Disaster Risk Management and Climate Resilience Programmes
  The CDB funds disaster-resilient infrastructure, emergency response, and national adaptation planning. It offers technical assistance, concessional finance, and grant facilities for vulnerable countries and territories. CDB also manages the Disaster Risk Reduction Trust Fund and provides post-disaster recovery support, including for infrastructure and social services.
- Caribbean Public Health Agency (CARPHA) – Climate and Health Programme
  CARPHA supports health emergency coordination and climate-related risk surveillance. It works on climate-sensitive diseases, water safety, and extreme heat impacts—linking disaster preparedness to public health resilience. CARPHA also provides regional disease early warning systems and emergency health protocols.
- CARICOM - Regional Airlift and Logistics Coordination
  Although not a formal "mechanism," CARICOM has been exploring the establishment and strengthening of regional logistics hubs, joint procurement, and emergency supply chains through regional aviation/maritime cooperation (especially post-COVID and post-Irma/Maria).

Together, these regional platforms offer technical expertise, early warning systems, and disaster response mechanisms that far exceed what Statia could develop alone. Enabling access to and alignment with these

mechanisms will be essential to improving the island's disaster preparedness, response, and recovery capacities. In the face of escalating climate risks, regional collaboration must move from aspiration to operational reality—and Statia's full integration into the Caribbean's disaster risk architecture should be seen as a core adaptation priority.

Action Agenda

Core Adaptation Challenge 3.1: Increased Disaster Risk

Statia's hurricane preparedness is strong, but climate change is increasing and complicating the island's risk profile. It is amplifying existing threats and adding new ones—from more intense, less predictable storms and hurricanes, to compound events, and increased risk of cascading failures across critical systems.

Adaptation Objective 3.1: Enhance Disaster Preparedness & Crisis Response → Strengthening climate disaster planning and response capacity.

Identified Key Actions:

3.1.1. Strengthen Statia's overall disaster planning and emergency response systems, including readiness for tropical storms, hurricanes, tsunamis, and pandemics.

a. Develop emergency response protocols and conduct disaster drills for schools, healthcare, and key public services.

b. Establish public education campaigns to improve community understanding of climate risks and disaster procedures.

c. Increase storage capacity on island for food, water, medical and building supplies.

d. Identify and prioritise alternate access routes and landing points for emergency supplies or medical evacuations in case of disruptions to the main harbour or airport.

3.1.2. Build a regional response network for joint crisis preparedness, crisis response and recovery (e.g., Saba, St. Kitts, St. Maarten, Anguilla, Bonaire etc)

Core Adaptation Challenge 3.2: Vulnerable Critical Infrastructure

Statia's critical infrastructure is highly exposed to climate hazards. The harbour, airport, and core utilities are not designed to withstand Category 5 hurricanes. In addition, the core utilities are clustered beneath an eroding cliff in a low-lying coastal zone, leaving the RO facility, power plant, telecom link, and diesel storage tanks vulnerable to rockfalls, storm surge, hurricanes, sea-level rise, and tsunamis.

Adaptation Objective 3.2: Climate-proofing Critical Infrastructure → Safeguard critical infrastructure and utilities against hurricanes, erosion, rockfalls, storm surges and rising sea levels.

Identified Key Actions:

3.2.1. Develop a multi-year integrated climate resilience plan for Lower Town.

a. Strengthen the climate-resilience of the harbour to ensure accessibility and continuity of services after extreme events.

b. Assess and manage risk exposure of critical infrastructure (e.g. power stations, telecom towers, water facilities) to climate-related hazards such as flooding, rockfalls, and storm surges.

i. Prioritise investments in protective climate defence infrastructure (e.g., flood defences, erosion and rockfall barriers, etc) for key facilities.

ii. Conduct feasibility studies to compare relocation versus fortification (e.g. flood defences, retaining walls) of critical assets in vulnerable areas.

c. Climate-proof all critical infrastructure to hurricane category 5 level.

d. Establish emergency backup systems for energy, water and ICT to ensure continuity of services after extreme events (e.g. backup generators, solar-battery systems, satellite back-up etc).

3.2.2. Fortify and climate-proof core utilities.

a. Develop a utility emergency response plan with clear protocols for rapid recovery and service restoration.

i. Investigate the feasibility of creating decentralised or mobile emergency backup systems for utilities (e.g., microgrids, rooftop solar, mobile desalination, battery backup).

ii. Develop utility redundancies (through decentralisation, fail-safes and continuity plans)

b. Relocate all overhead power and telecom lines underground to enhance resilience and cut damage and outage risk during extreme weather.

c. Strengthen the resilience of communication networks to remain operational after climate events, including satellite backup and antenna reinforcement.

d. Integrate resilience requirements into procurement and maintenance contracts.

3.2.3. Climate-proof the airport to hurricane category 5 level.

a. Plan developed to make the airport climate resilient including transition to a renewable energy system, with battery backup and generators as a fail-safe, and electric ground handling vehicles.

3.2.4. Coordinate infrastructure upgrades with land-use and environment planning to avoid development in high-risk zones.

a. Establish minimum climate resilience standards for new infrastructure investments.

b. Coordinate infrastructure adaptation planning with land use and spatial development frameworks.

c. Use smart road design to make utilities accessible and direct runoff into cisterns and retention systems.

3.2.5. Enhance climate data collection and monitoring of infrastructure performance and environmental stressors to inform adaptive management.

Core Adaptation Challenge 3.3: Fragile Supply Chains

Statia's supply chain is highly vulnerable to climate change. As a lifeline for imported food, fuel, medical supplies, and building materials, it depends on a single primary gateway and a small number of carriers, with most goods routed through regional hubs that are themselves exposed to hurricanes and flooding. As storms intensify and disruptions become more frequent, interruptions to sea and air links are likely to increase, prolonging delivery times, constraining cargo capacity, and causing periodic shortages of essential goods.

Adaptation Objective 3.3: Strengthen regional collaboration → to improve accessibility, disaster response, and supply chain resilience.

Identified Key Actions:

3.3.1. Diversify air transport options to leverage the proximity to St Kitts and its international airport to reduce the vulnerability of only having St. Maarten as the only gateway.

a. Feasibility study initiated on airlift and airfreight expansion

3.3.2. Roll out of a Supply Chain Resilience Program.

a. Study completed on affordable and climate resilient supply chain alternatives to reduce the vulnerability of the supply chain to climate change.

b. Strengthen trade and logistics connections with St. Kitts, Antigua, Dominica, Dominican Republic, Colombia and other Leeward and Windward Islands, especially for food, building, and fuel supplies.

c. Explore options for small inter-island ferries or cargo vessels to improve the regular movement of goods across the Leeward Islands.

d. Improve coordination with neighbouring islands and regional partners on emergency logistics, including fuel and food reserves.

3.3.3. Regional trade and disaster response talks initiated and collaboration agreements signed.

DOMAIN 4: LIVEABLE ENVIRONMENT



Domain 4 – Liveable (Urban) Environment

Climate-proof built environment and infrastructure, renewable energy, and sustainable mobility

Overview

Challenges and Vulnerabilities

Creating a liveable environment on Statia means more than just building for today—it requires designing for tomorrow. As the impacts of climate change become more visible and frequent, the island's infrastructure, energy systems, public spaces, and mobility patterns must be reimagined to improve resilience, reduce emissions, and enhance daily life for residents.

The climate crisis is compounding existing vulnerabilities in Statia's built environment. Rising temperatures and extreme weather events are placing growing pressure on homes, schools, and public buildings—many of which were not designed for this reality. Cooling costs are rising, power infrastructure is being pushed to its limits, and the lack of passive design and natural ventilation in new developments is driving up dependency on air conditioning. At the same time, building codes remain outdated or inconsistently applied, and many homes are still being built without cisterns or basic water management systems, despite the island's long-standing dependence on rainwater harvesting.

Statia also faces a shortage of green, shaded, and inclusive public spaces. Parks and playgrounds are limited, with few areas offering shelter from the heat or inviting communal gathering places. The urban fabric of Oranjestad lacks trees, pavements, and accessible shaded recreation spaces—resulting in environments that are not only vulnerable to climate stressors but also offer limited opportunities for social connection, wellbeing, and leisure. Meanwhile, uncoordinated infrastructure investments—ranging from roads to drainage systems—have sometimes exacerbated risks to cultural heritage, marine ecosystems, and water quality, due to insufficient local involvement and context-sensitive design.

On the energy front, Statia is leading the way. Solar now accounts for over 50% of electricity generation. STUCO's priority is to secure funding for Phase 4 of the Solar Park, including expanded battery storage. This project will increase renewable share to 85–90% of power generation, which translates to 20-22hrs a day of renewable power production. The estimated cost of this Phase is USD 20–25 million, which is an investment that cannot be carried by a population as small as Statia's. Structural funding and long-term subsidies—from national and regional sources—are essential to ensure affordability and to avoid overburdening households and businesses, when electricity affordability is already a concern for many on island.

Climate change is accelerating demand for air conditioning, placing strain on grid infrastructure and increasing household energy costs. Without forward planning, energy demand will outpace supply, pushing up prices and threatening access to essential cooling and water services. To prevent this, Statia must adopt an integrated approach that couples renewable energy expansion with energy efficiency, passive cooling, and building retrofits. Innovative models—such as decentralised solar for air conditioning or micro-loans for green home upgrades—could reduce load on the grid while improving quality of life. Structuring this transition in a way that benefits both the utility and the end-user is key to building a climate-resilient and inclusive energy future.

Moving forward, this domain's mitigation and adaptation efforts focus on three mutually reinforcing goals:

1. Climate-proofing infrastructure and the built environment through better codes, passive design, water-smart construction, and resilient public facilities;
2. Greening urban spaces by integrating nature-based solutions into roads, housing, and public areas to reduce heat, manage stormwater, and improve quality of life;
3. Accelerating the energy transition and sustainable mobility by enabling fair, affordable access to renewable energy and electrified transport, while strengthening the capacity and governance needed to manage this transition locally.

It is important for stakeholders that this transformation is grounded in local ownership. This requires empowering communities, builders, and decision-makers with the tools, training, and policies to implement context-appropriate solutions, and fostering an enabling environment that unlocks investment while respecting culture and ecology. A climate-resilient and liveable Statia is possible—but it must be deliberately designed, and inclusively built.

Building a Resilient Foundation: Spatial Planning and Infrastructure Policy Anchors

St. Eustatius is working to strengthen liveability and climate resilience through integrated spatial planning, infrastructure investment, and energy transition policies. But the island faces deep-rooted challenges: ageing infrastructure, rising construction costs, and limited funding mechanisms. National and local policies—such as the BES Spatial Development Program, Strategic Development Plan, ROP2023, and energy frameworks—provide a shared foundation to turn this backlog into opportunity, embedding climate adaptation across the built environment.

1. Spatial Development Program Caribbean Netherlands (2020–2025)

The BES-wide Spatial Development Program sets out the national framework for physical development in Bonaire, St. Eustatius, and Saba. It guides local spatial development plans, such as Statia's Strategic Development Plan and ROP2023, and promotes sustainable development that balances environmental quality, liveability, and economic opportunity. Key contributions to the Liveable Environment domain include:

- Prioritising climate-resilient land use by requiring critical infrastructure (e.g. energy, water, emergency services) to be built in safe locations and by climate-proofing essential and sensitive functions such as homes and schools.
- Supporting future-proof housing development by aligning construction with actual population needs and affordability goals. Housing construction targets include at least 66% affordable rental and middle-income units.
- Reinforcing water management and erosion control through spatial strategies that buffer rainwater, reduce runoff damage, and designate zones for greywater, drainage, and retention.
- Encouraging integration of green infrastructure—such as parks and tree canopy—to combat heat stress, increase liveability, and support nature-inclusive design.
- Preserving the urban and archaeological heritage of Oranjestad, including its status as a conservation area and protection of archaeological value zones along the coast and inland.
- Encouraging compact and coordinated development to reduce land pressure and support walkable, service-connected neighbourhoods.

- Calling for integrated policy development across sectors (e.g. energy, housing, agriculture) and structured consultation between the OLE and national government to shape coherent, climate-adaptive spatial policies.

2. Strategic Development Plan for Sint Eustatius (Herziening SDP, 2022–2023)

The revised Strategic Development Plan serves as the long-term development vision for the island, establishing sustainability and resilience as cross-cutting priorities across housing, mobility, energy, water, heritage, and natural resource use. It aims to deliver spatial equity, reduce social vulnerability, and better align physical development with the island's environmental realities. Key elements relevant to the Liveable Environment include:

- Compact and Climate-Smart Development: Advocates for spatial densification in core areas, reducing pressure on infrastructure and enhancing access to services.
- Balanced Land Use: Emphasises the need to safeguard natural areas, agricultural land, and heritage zones while accommodating housing and economic growth.
- Green Public Space and Recreation: Supports the creation of parks, shaded gathering spaces, and multi-functional public infrastructure to improve liveability and community wellbeing.
- Heritage Protection: Prioritises the integration of cultural and archaeological assets into spatial planning processes.
- Community-Based Planning: Encourages participatory processes and co-design approaches in spatial development and housing interventions.
- Climate Integration: Calls for mainstreaming climate adaptation into land-use, water management, construction techniques, and mobility strategies—especially given risks such as erosion, drought, and storm surge.

3. Ruimtelijk Ontwikkelingsplan Sint Eustatius (Spatial Development Plan , ROP2023)

Statia's zoning and spatial planning framework—ROP2023—translates the Strategic Development Plan into concrete regulatory and land-use instruments. It determines where and how development can occur and introduces environmental safeguards to ensure long-term sustainability. Key features and critical actions include:

1. Climate-Resilient Housing and Urban Form

- Minimum 260 new homes needed in the next 10 years.
- Consolidation of residential zoning into "Residential Area 1" and "2," allowing more compact and higher-density building.
- Introduction of a subdivision plan requirements for developments of 3+ lots, which must:
    - Provide quality public infrastructure and green spaces
    - Address water management, nature protection, and cultural heritage
    - Prevent erosion and incorporate climate-smart design

2. Green Public Space and Urban Cooling

- Green and sport functions are now integrated within residential areas to reduce fragmentation.

- Policies emphasise the need for shaded, accessible public areas and multi-functional third spaces in both Upper and Lower Town.
- Road and public space design must balance climate adaptation and community use, with tree planting and permeable surfacing promoted (but enforcement depends on future policy development).

3. Integrated Infrastructure and Climate Adaptation

- Infrastructure upgrades must now **explicitly consider climate risks**, including:
    - Cliff and coastal erosion control
    - Stormwater drainage
    - Passive cooling and ventilation in public buildings
    - Resilience of utility infrastructure (e.g., water and electricity)
- General regulations (Article 31) introduce requirements for construction near coastlines, cliffs, and in erosion-prone areas, and stricter permitting for earthworks (Article 33).

4. Sustainable Energy and Waste Systems

- New zoning category introduced: Mixed Use – Business / Agriculture / Energy around the airport.
    - Allows decentralised renewable energy, agricultural activity, and waste management within a coordinated master plan.
- This zone supports integrated utility infrastructure while enabling energy innovation and local economic development.

5. Mobility and Accessibility

- While transport-specific zoning is limited, the ROP encourages clustering of services and government functions to reduce travel needs.
- The future relocation of the freight port closer to the airport is being considered, promoting logistical efficiency and minimizing environmental disruption.

4. Infrastructure Deficit Report '*Bijlage 1 Rapport Klein Gebied Grote Opgave*' (AEF, 2024)

Commissioned by the Ministry of the Interior and Kingdom Relations (BZK), this report quantifies the scale of Statia's infrastructure backlog and its implications for development, climate resilience, and affordability. It calls for structural reform in how infrastructure is financed, maintained, and climate-proofed. Key findings include:

- **Chronic underinvestment** in roads, drainage, utilities, and public buildings threatens liveability and economic potential.
- **High costs** due to small scale, remote location, and harsh tropical conditions; construction costs have risen 30–40% since 2021.
- **Statia-specific needs** include $17 million annually in investments between 2025–2030, and over $98 million in total uncovered infrastructure expenditures through 2050.
- **Maintenance deficits** are rising sharply—from $7 million in 2025 to $23 million by 2050, largely unfunded under current arrangements.
- **Utilities are unaffordable without subsidies**, as costs cannot be distributed across a large enough population.

- Opportunity: the backlog presents a unique chance to embed climate adaptation and green infrastructure in all new investments.

5. Energy Transition Policy Framework

The BES-wide energy transition policy (2016 onwards) outlines how Statia and the other islands can shift from diesel dependence to clean, reliable, and affordable energy. It is anchored in national climate targets and recognises the unique financing, capacity, and infrastructure constraints of small islands. Strategic priorities include:

- Scaling Solar Energy: Statia currently meets ~55% of its energy needs through solar (Phases 1–3), with Phase 4 expected to bring renewable penetration to 80–90%.
- Battery Storage: Supports grid stability and energy shifting; underutilised midday solar generation can support EV charging and reduce diesel use.
- Tariff Reform & Subsidies: Ensures affordability through regulated tariffs and Dutch subsidies, especially for grid operation and maintenance.
- Integrated Planning: Encourages linking energy planning with housing design (e.g. solar-powered air conditioning), cooling needs, and water supply systems.
- Decentralised Solutions: Highlights potential for rooftop solar, solar airco microloans, and EV charging networks—especially if backed by institutions like the ECDB.
- Climate Resilience: Emphasises the need to assess and climate-proof critical energy infrastructure such as the RO plant and grid components near the coast.

Action Agenda

Mitigation Challenge 4.1: Increasing Energy Load

Statia's energy system is increasingly affected by climate change. Higher temperatures during both the day and night, combined with more frequent heat waves, are driving increased demand for cooling almost year-round. This increase in demand is placing strain on grid infrastructure, driving higher fossil fuel use at night, and increasing household energy costs.

Mitigation Objective 4.1: Upgrade and expand green energy infrastructure→ Sustainably meet higher energy demand and reduce emissions

Identified Key Actions:

4.1.1. Transition to a reliable, 100% renewable, fossil-free electricity system.

a. Expand the solar park to reach 80–90% renewable energy by Phase 4.

b. Conduct a feasibility and viability study into the optimal renewable energy mix to enable the island to transition away from fossil fuels, and develop a staged implementation roadmap covering resource assessments, grid upgrades, storage, regulatory reforms, and financing.

4.1.2. Upgrade energy infrastructure to be able to handle increased demand loads, peaks and bidirectional power flow through for e.g. smart grids, and decentralised battery storage systems.

4.1.3. Develop local maintenance capacity to reduce reliance on external contractors and systems not designed for Statia's climate.

Core Adaptation Challenge 4.2: Vulnerable Built Environment

The climate crisis is compounding existing vulnerabilities in Statia's built environment. Rising temperatures and extreme weather events are placing growing pressure on homes, schools, and public buildings—many of which were not designed for this reality.

Adaptation Objective 4.2: Climate-Resilient Buildings → Retrofit existing buildings and ensure new developments integrate climate adaptation measures.

Identified Key Actions:

4.2.1. Develop green financing mechanisms (e.g. subsidies, incentives, loans, mortgages) to support climate-proofing the built environment, including.

a. Mechanisms to support households to reduce thermal gains, decrease cooling demand, and increase cooling efficiency.
b. Mechanisms to support households in improving the hurricane resilience of buildings.
c. Mechanisms to support household installation of hurricane-proof solar with battery storage and solar-water heaters.
d. Energy coaching to help households decrease their energy consumption and lower their household energy bills.
e. Green mortgage mechanisms that enable new house owners to retrofit existing buildings or integrate climate resilience into new building construction.

4.2.2. Develop and adopt an updated Building Code with guidelines and minimum construction standards for climate resilience and accessibility.

a. Develop and roll-out training programs for local builders on the building codes and low-tech climate solutions.
b. Construct all new social housing units to climate-resilient and accessible standards.
c. Retrofit the sports facility to decrease the interior temperature via passive and active cooling, and ensure all new public facilities integrate climate resilience.
d. Retrofit existing buildings, starting with social housing and public buildings, to climate-resilient and accessible standards.
e. Ensure new housing developments are built according to the updated Building Code and include sufficiently sized cisterns; green, passive and low-tech climate and hurricane-proof design.

Core Adaptation Challenge 4.3: Rising Temperatures

Oranjestad's urban fabric offers few accessible shaded public spaces, recreational areas, or walking routes, leaving residents without adequate refuge from the heat. This shortage amplifies the impacts of rising temperatures and the urban heat island effect, diminishing Oranjestad's liveability.

Adaptation Objective 4.3: Climate Responsive Urban Spaces → Utilise green infrastructure and shading to counter rising temperatures.

Identified Key Actions:

4.3.1. Install green infrastructure (e.g. tree-lined streets, planting, bioswales) to reduce urban heat, manage runoff and improve walkability.

   a. Install shading at the children's playgrounds, public parks, and along main walking routes.

   b. Apply sponge city principles to public space design to support water retention and flood control.

4.3.2. Support beautification of public areas to enhance community pride and tourism value.

4.3.3. Develop shaded pedestrian pathways, i.e. linking Upper and Lower Town, and within the historic centre of Upper Town.

Core Mitigation Challenge 4.4: Transport Emissions

Statia's transport system remains heavily car-dependent and dominated by fossil-fuel vehicles, with few safe, clean, and accessible alternatives. Without strategic investment in sustainable mobility—anchored in a robust Green Mobility Plan—the island risks losing vital opportunities to cut transport emissions, reduce parking pressures, and transform its streets into walkable, people-friendly spaces."

Mitigation Objective 4.4: Clean mobility → expand electric vehicles, and shared transit systems to make travel safe, clean, and accessible.

4.4.1. Development of a Green Mobility Plan to support:

   a. The island transition to electric vehicles, reduce car dependency, alleviate the parking problem, and enable the development of more "walkable" and permeable streets.

   b. Implementation of an affordable, electric public transport service, with a subsidised voucher scheme for vulnerable groups.

4.4.2. Installation of high-capacity centralised public EV charging stations, with a utility-controlled smart grid interface to manage demand.

   a. Development of regulations and permitting for household EV chargers to prevent grid overload.

4.4.3. Transition of the government vehicle fleet to EV.

4.4.4. Train at least 5 certified EV mechanics to support vehicle transition.

DOMAIN 5: ECONOMIC RESILIENCE



Domain 5 – Economic Resilience

Resilient livelihoods, green industries, entrepreneurship, and circular economy

Overview

Challenges and Vulnerabilities

Once hailed as the "Golden Rock" of the Caribbean, Statia has a long history as a regional trade hub. In the eighteenth century, its natural harbour and strategic location along transatlantic shipping routes supported significant commercial activity. While today's economic context is fundamentally different, the island's geographic position continues to offer potential for trade, logistics, and niche economic development.

At present, however, Statia's economy remains relatively narrow in structure and constrained in scale. It is heavily reliant on a limited number of sectors and exhibits limited resilience to external economic and climate-related shocks. Strengthening economic diversification and adaptive capacity will be important to enhance long-term stability and opportunity.

Statia's location continues to provide latent potential for regional trade, economic diversification, and innovation. However, this potential remains only partially realised due to structural and external constraints. These include limited air and maritime connectivity, a small domestic market with limited absorptive capacity, infrastructure gaps, and increasing exposure to climate-related risks. Community aspirations for economic self-reliance and opportunity underscore the importance of building a more diversified and resilient economic base that can leverage the island's geographic, cultural, maritime and natural assets under changing climate conditions.

A Narrow Economic Base

In recent years, economic growth has been limited. In 2022, GDP contracted by 11%, largely due to a decline in oil transshipment activity at the GTI terminal (CBS, 2024). Although the oil sector accounts for over 60% of GDP, its direct multiplier effects within the local economy are relatively modest. Profits are largely repatriated, and local employment levels have declined since the sale of NuStar in 2019. Reductions in subcontractor activity have further constrained spillover effects (The Daily Herald, 2020; BES Reporter, 2024).

Outside of oil and public sector employment, private sector activity is concentrated in construction, food services, small-scale retail, and freight logistics. Many of these enterprises operate on thin margins within a limited domestic market. Business owners frequently report limited retained earnings and constrained capacity to reinvest in training, expansion, or innovation.

Limited domestic demand and the absence of scalable sectors continue to restrict employment growth and upward mobility, particularly for youth, women, and single-income households. A need was identified by many stakeholders to strengthen vocational training, apprenticeship programmes, and sector-aligned skills development in areas such as climate-resilient agriculture, tourism services, renewable energy, and technical trades.

Structural Barriers to Entrepreneurship and Local Innovation

Entrepreneurial interest, particularly among youth, is evident. However, structured pathways from education to enterprise or skilled employment remain limited. While initiatives such as entrepreneurship clubs and

competitions exist, they often operate with modest resources and without sustained mentoring, network development, or seed financing mechanisms.

Stakeholders expressed the belief that the enabling environment for business development requires strengthening. Access to finance is consistently cited as a major constraint. Commercial interest rates for business loans can reach approximately 9.75%, and loan sizes are typically capped at around USD 50,000. Historically low repayment rates in publicly supported loan programmes have contributed to a more cautious lending environment. As a result, credit conditions remain relatively conservative, and risk appetite among financial institutions is limited. This constrains access to working capital and start-up finance, even for viable ventures.

Compared to the European Netherlands, Statia has limited access to structured subsidies, grants, and early-stage business support mechanisms. For example, agricultural producers in the Netherlands benefit from EU subsidies, input support schemes, and risk insurance instruments. Equivalent support structures are largely absent on Statia, despite the higher costs associated with having to import all inputs including seeds, irrigation equipment, animal feed, fertilisers, etc. These heightened osts, combined with vulnerability to drought, market volatility, and diseconomies of scale, limits the competitiveness of local producers and the viability of their businesses.

Institutional support infrastructure for enterprise development is also underdeveloped. There is currently no dedicated investment promotion function, structured incubation or acceleration programme, comprehensive SME support system, or targeted instrument to mobilise diaspora or regional capital. In the absence of such mechanisms, investment flows tend to be fragmented and reactive rather than strategically coordinated.

These constraints are compounded by the absence of a consolidated economic development strategy that aligns sectoral priorities, public investment, and private sector growth. Without such a framework, institutional fragmentation persists and potential synergies across tourism, agriculture, infrastructure, and youth development remain under-leveraged (PSO, 2024; Statia Plan 2024–2027). Greater strategic coherence would strengthen the alignment between public investment and private sector opportunity, and provide clearer pathways for enterprise engagement.

Connectivity Deficits: Air, Sea, Freight, and Digital

Statia's economic resilience is further constrained by limited physical and digital connectivity. These limitations affect not only mobility, but also business viability, cost structures, and prospects for economic diversification.

- Air access remains limited in frequency and relatively costly. Statia relies on a single carrier, Winair, which operates a restricted flight schedule primarily to St. Maarten. Ticket prices are high relative to average household incomes and business margins, and the short runway limits the ability to accommodate larger aircraft, thereby constraining passenger and cargo volumes (PSO, 2023). Limited availability and affordability of air transport affects inbound tourism as well as outbound access to markets, services, and professional networks.
- Sea access via the Makana ferry has expanded regional connections with Saba, St. Maarten, and St. Kitts. However, pricing levels, service frequency, and schedule coordination continue to limit consistent utilisation. The service has not yet developed into a fully reliable platform for regional trade, business mobility, or day-trip tourism.

- Freight logistics remain indirect and relatively costly. Statia has no direct cargo links and imports most goods through transshipment via St. Maarten or Miami. This results in extended lead times and higher transport costs, with potential quality loss for perishable goods. Cold-chain infrastructure requires strengthening, and warehousing facilities remain limited relative to the requirements of modern supply chains. These factors increase operating costs for businesses and constrain production scaling and service reliability.
- Digital infrastructure remains comparatively underdeveloped. Statia lags behind several regional peers, including Anguilla, in internet affordability, reliability, and access to e-commerce platforms (EBA, 2024). There is currently no comprehensive digital infrastructure strategy to support remote work, online business registration, digital public services, or export-oriented innovation.

Taken together, these connectivity constraints further limit economic dynamism. Businesses remain largely dependent on a small domestic consumer base, and limited access to neighbouring markets such as Saba, St. Maarten, and St. Kitts restricts opportunities for scaling. High transport costs, irregular freight and ferry services, and comparatively weak digital infrastructure constrain participation in regional trade, e-commerce, and remote service markets. These structural conditions reinforce diseconomies of scale and contribute to elevated operating costs.

Entrepreneurs face difficulty accessing larger markets or benefiting from regional economies of scale, while residents encounter higher prices for food, construction materials, and services due to transport and logistics costs. Education, healthcare access, and business development are similarly affected by the limited and costly means of connecting to external institutions and markets.

Digital infrastructure represents a particularly important enabling condition. Limited access to affordable, high-speed internet, e-governance platforms, and digital business services restricts participation in remote work, online commerce, and e-learning. This constrains enterprise development and limits youth access to contemporary skills and employment pathways (EBA, 2024).

Tourism is among the sectors most directly influenced by these connectivity conditions. Limited airlift capacity and infrequent ferry services restrict visitor flows, particularly overnight stays and multi-island travel packages. At the same time, elevated logistics costs increase input prices for hospitality businesses and affect the availability and quality of goods and services required to serve visitors. Without improvements in physical and digital connectivity, the island's ability to fully realise its tourism potential and strengthen a resilient visitor economy will remain constrained, particularly in the context of climate and market volatility.

Underdeveloped and Climate-Vulnerable Tourism Sector

Tourism is one of Statia's most promising pathways for economic diversification, community development, and green job creation. The island offers a unique blend of natural beauty, biodiversity, and rich cultural history—including one of the oldest Jewish cemeteries in the Western Hemisphere, the Quill volcano, 19 historical forts and batteries, centuries-old ruins, and exceptional dive sites. These assets position Statia well for niche tourism segments such as diving, ecotourism, heritage tourism, scientific research tourism, and even emerging opportunities like dark sky tourism (Statia Tourism Vision Plan, 2024; Stokkermans, 2025).

However, this potential remains largely untapped. As detailed in the PSO report (2023) and the Tourism Vision Plan (2024), the island's current tourism system is underperforming due to systemic underinvestment, weak

institutional coordination, and growing environmental threats. The sector remains small in scale, shallow in economic impact, and extremely vulnerable to climate-related degradation.

Underutilised Cultural Heritage.

Statia's cultural and historical assets are exceptional but significantly underleveraged. Sites such as the Honen Dalim synagogue (the second-oldest in the Western Hemisphere), Jewish burial grounds, slave trade heritage landmarks, Dutch Reformed church ruins, and the Golden Rock-era merchant trail system have immense potential for heritage tourism. Yet these sites are largely inaccessible, poorly maintained, or unmarked. Many lack basic visitor infrastructure such as signage, paths, safety measures, or interpretive content.

The underinvestment in cultural heritage infrastructure and promotion is a critical gap—one that limits the island's ability to tell its story, attract meaningful visitors, and generate inclusive livelihoods. There is currently no site restoration program, no heritage tourism development strategy, and no promotional effort targeting visitors interested in colonial, Jewish, or maritime history. The opportunity cost is high: these assets could attract culturally motivated travellers, regional and diaspora visitors, academic researchers, and cruise-based day trippers—particularly if bundled into thematic packages with nearby islands (e.g. a Jewish heritage trail across Statia, St. Kitts, and St. Thomas) (Statia Tourism Vision Plan, 2024). As climate change further pressures the natural systems that support dive and eco-tourism, revitalizing and diversifying Statia's tourism offer leveraging the island's rich cultural heritage becomes not just an opportunity, but a necessity for long-term economic resilience.

Natural Capital and Climate Risk

Natural assets, particularly the island's coral reefs and trail systems, are also under threat. Coral cover has dropped from 30% in 2000 to under 1% in 2023 due to bleaching, stony coral tissue loss disease, rising sea temperatures, and hurricane events (Statia 2026, 2025). As a result, dive tourism—one of Statia's signature draws—will be increasingly compromised. Many divers come specifically to experience the marine biodiversity and wreck sites, and as reef health declines, the island's comparative advantage in this segment will be impacted. While, more intense rainfall events and droughts will intensify erosion problems, impacting trails, and nature-based ecotourism offerings.

Tourism infrastructure constraints

Visitor flows are influenced by the current limitations in air and sea connectivity. Limited inter-island connectivity reduces opportunities for overnight stays and multi-island travel, which are important components of regional tourism dynamics. While the Makana ferry represents an important step toward strengthening regional linkages, its schedule times and frequency currently limit its ability to enhance visitor flows.

Accommodation supply remains relatively limited, at the same time, investment in new accommodation is closely linked to demand levels, creating a cyclical dynamic in which constrained visitor numbers limit expansion, while limited supply in turn restricts growth.

Due to limited visitor flows, visitor services are underdeveloped, and local entrepreneurs struggle to offer activities, guided tours, or packaged experiences due to high costs, limited demand and limited training (PSO, 2024).

Marketing Constraints

Tourism governance is under-resourced, with the Tourism Foundation operating with a modest annual budget of $300,000, of which only $100,000 is allocated to marketing (PSO, 2024). Destination branding, coordinated marketing campaigns, and integrated digital platforms targeting niche traveller segments remain

underdeveloped. Strengthening investment in branding, product development, heritage restoration, and visitor access would support the island's ability to advance tourism as a sustainable and climate-compatible component of economic diversification.

In addition, tourism data systems require strengthening. Limited data on visitor preferences, satisfaction, expenditure, and motivations constrains evidence-based planning and impact measurement. The absence of a consolidated tourism master plan or implementation roadmap reduces coordination across product development, conservation, marketing, and infrastructure investment, with activities often occurring in parallel rather than within a unified strategic framework (Statia Tourism Vision Plan, 2024).

Missed Opportunities

Multiple reports identify substantial opportunities for Statia in:

- Scientific and educational tourism, leveraging the Quill and Boven National Park, reef studies, and unique geological formations;
- Community-based tourism, including farm visits, artisanal production, and homestays;
- Astro-tourism, capitalizing on the island's dark skies and low light pollution;
- Eco-wellness tourism, combining nature retreats, hikes, healthy food, and quietude;
- Cultural festivals and heritage interpretation, including partnerships with neighbouring islands like St Kitts, diaspora communities and thematic heritage trails.

Yet without strategic coordination, investment, and improvements in connectivity and accessibility, these segments remain aspirational rather than actionable.

Responding to Structural Vulnerabilities: Existing and Recommended Mechanisms

In response to Statia's systemic economic vulnerabilities, a number of policy processes and strategic interventions are already underway, while others have been proposed in recent reports and sectoral assessments. Ongoing initiatives such as the development of a comprehensive Tourism Strategy and the Public Service Obligation (PSO) subsidy for inter-island connectivity represent important progress.

At the same time, a growing body of analysis which includes the 2023 *Impact van het PSO op de Bovenwindse Eilanden* report (2024), the *Statia Tourism Vision Plan (2024)*, The Promotion Plan developed in 2025, the *Intentiebrief Economische Ontwikkeling Caribisch Nederland (2023)*, *Kamerbrief Economische Ontwikkeling en Zelfredzaamheid* (2025), and recent stakeholder consultations—offers a clear and coherent roadmap for tackling structural constraints and enabling transformation.

The following section summarises both the current actions and the structural recommendations proposed to improve connectivity, unlock Statia's tourism potential, strengthen logistics, and enable broader private sector development.

Sint Eustatius Tourism Vision Plan (2024)

This strategic document lays the groundwork for long-term, sustainable tourism development and proposes a number of structural recommendations to position tourism as a resilient and diversified economic pillar:

- Develop a Sustainable Tourism Master Plan
    - Create a detailed implementation roadmap aligned with Statia's ecological carrying capacity and community development goals.

    - Prioritise climate-proofing of natural and cultural tourism assets.
    - Diversify offerings beyond diving, including heritage, scientific, eco-wellness, and astro-tourism.

- Restore and Promote Cultural Heritage
    - Fund the restoration and maintenance of key cultural landmarks, including Jewish cemeteries, Dutch forts, colonial ruins, and maritime trails.
    - Develop heritage tourism packages, especially for diaspora and regional niche markets.
    - Integrate cultural storytelling and interpretation into visitor experiences.
- Strengthen Institutional Capacity
    - Expand the mandate and budget of the Tourism Foundation, especially for product development and destination marketing.
    - Create a tourism data observatory to collect and analyse data on visitor profiles, behaviour, expenditure, and environmental pressures.
- Improve Access and Infrastructure
    - Upgrade the harbor to accommodate small cruise vessels and passenger ferries.
    - Increase ferry and airlift frequency and affordability through PSO expansion.
    - Improve eco-accommodation options, trail signage, safety infrastructure, and sanitation.

Discover Statia Promotional Campaign (2025)

This campaign, led by the Tourism Foundation and supported by regional stakeholders, aims to boost short-term visibility and reposition Statia as a niche, low-impact destination:

- Targeted Marketing and Branding
    - Develop thematic promotional materials around diving, nature, culture, and quietude.
    - Position Statia as an “untouched gem” for scientific, heritage, and eco-focused travellers.
- Improve Digital Presence
    - Overhaul the Statia tourism website and social media to reflect the island’s current offer and storytelling.
    - Integrate booking tools, itineraries, and thematic trails.
- Community Engagement
    - Involve local businesses, guides, and storytellers in shaping tourism narratives.
    - Promote youth engagement through training in guiding, hospitality, and digital storytelling.
- Short-Term Infrastructure and Service Enhancements
    - Focus on low-cost, high-impact improvements such as signage, trail safety, and customer service training.

Statia Tourism Strategy (In Development- 2025)

A comprehensive Tourism Strategy is currently being developed, offering a critical opportunity to transform Statia’s tourism sector from a vulnerable, low-capacity system into a climate-smart engine of sustainable growth. The strategy is expected to:

- Define Statia’s **tourism identity and value proposition**, focusing on niche segments;
- Set clear **growth targets** that balance visitor numbers with ecological carrying capacity;
- Establish a roadmap for **product development, marketing, and institutional reform**;
- Integrate **climate risk management**, ensuring assets, infrastructure, and experiences are future-proofed;

- Position tourism as a core pillar of Statia's economic diversification and community development agenda.

"Impact van het PSO op de Bovenwindse Eilanden" (Impact of the PSO on the Windward Islands, 2023)

This report assesses the effects of the Public Service Obligation (PSO) subsidy on inter-island connectivity between St. Maarten, Saba, and St. Eustatius. The PSO was introduced to improve regional accessibility and reduce travel costs by supporting the Makana ferry service.

While the subsidy has delivered important gains—particularly for mobility between the islands—the report finds that major structural barriers remain. These include limited air and sea connections, high freight and travel costs, outdated infrastructure, and fragmented transport systems. These challenges continue to constrain Statia's economic potential, access to essential services, and regional integration.

To address these issues, the report sets out a series of targeted recommendations focused on strengthening transport infrastructure, improving logistics, expanding affordable connectivity, and creating a more integrated and resilient mobility system for the Windward Islands. These include:

1. Structural Investment in Transport Infrastructure
    - Upgrade and climate-proof the airport runway, terminal, and safety facilities to improve air connectivity and allow for larger aircraft.
    - Expand and modernise the harbour, including a dedicated terminal for inter-island passenger and freight traffic, and climate-resilient infrastructure for storm surge protection.
2. Support to Strengthen Ferry Services
    - Continue subsidizing and optimizing the Makana ferry schedule to increase frequency, reliability, and integration with health, education, and tourism needs.
    - Explore public-private partnerships for expanding ferry connectivity with additional islands.
3. Freight and Logistics Reform
    - Invest in cold chain logistics, storage, and warehousing facilities at the harbour.
    - Support regional shipping links that bypass intermediaries and reduce dependency on St. Maarten for all cargo.
4. Policy and Institutional Measures
    - Create a coordinated transport and logistics plan for the Windward Islands.
    - Develop a connectivity subsidy mechanism to make essential travel (for medical, educational, or economic reasons) more affordable.
    - Establish a permanent transport authority or unit within the public administration to oversee service quality, competition, and integration across transport modes.

"Intentiebrief Economische Ontwikkeling Caribisch Nederland" (Letter of Intent on Economic Development in the Caribbean Netherlands, 2023)

This policy brief from the Ministry of BZK outlines national-level commitments to support the economic resilience of Statia. Key recommendations include:

1. Strengthen Governance for Economic Development
    - Support the creation of local economic development strategies with capacity-building, coordination platforms, and shared governance mechanisms.

- Define the role of the national government in removing barriers and supporting implementation.

2. Facilitate Entrepreneurship and Access to Finance
    - Extend Qredits' financial and training services to Statia, including agriculture, sustainability, and culture-linked ventures.
    - Expand eligibility for national subsidy programs and facilitate broader access to EU funds and the National Growth Fund.
3. Stimulate Sectoral Development
    - Prioritise agriculture (with targeted subsidies, infrastructure upgrades, and institutional reform).
    - Advance tourism development focused on nature and heritage, with community involvement and local SME integration.
    - Explore circular and digital economy models with targeted support for micro-enterprises.
4. Modernise Infrastructure
    - Prioritise investments in harbour and airport upgrades.
    - Support digital infrastructure development with public funding and policy reform, enabling remote work, e-commerce, and online service delivery.
5. Launch a Centre for Entrepreneurship
    - Establish a one-stop physical and digital support centre for entrepreneurs (modelled after Bonaire's incubator) to provide business advice, training, and network access.

"Kamerbrief Economische Ontwikkeling en Zelfredzaamheid" (Parliamentary Letter on Economic Development and Self-Reliance, 2025)

This Kamerbrief reinforces the structural recommendations that have been made and identifies five national-level priorities:

1. Improve Connectivity and Infrastructure
    - Invest in transport infrastructure to reduce trade costs, increase tourism flows, and facilitate service delivery.
    - Address bottlenecks in inter-island freight, air transport, and harbour modernization.
2. Enable Digital and Financial Access
    - Expand banking and digital payment systems to lower transaction costs and improve business viability.
    - Support a digital economy strategy that includes training, broadband access, and regulatory modernisation.
3. Reduce Regulatory Burdens
    - Simplify customs, tax procedures, and permit processes—especially those affecting entrepreneurs and inter-island trade.
    - Promote harmonization of import/export regimes to reduce pricing distortions.
4. Align Education with Economic Needs
    - Strengthen vocational education, school-to-work pipelines, and internship programs aligned to priority sectors like tourism and agriculture.

From Recommendations to Resilience

As climate change accelerates and global economic dynamics shift, Statia's small size and geographic isolation will continue to magnify the impacts of every disruption. The implementation of these recommendations—alongside the priority actions identified in this Climate Adaptation Plan—is essential not just for recovery or growth, but for long-term survival and self-reliance. A resilient economy is one that can absorb shocks, generate meaningful livelihoods, and safeguard its people, culture, and ecosystems against future risks.

These efforts aim to lay the foundation for a more connected, inclusive, and climate-resilient economy—one that builds on Statia's natural and cultural strengths, but is also supported by strong institutions, modern infrastructure, and targeted incentives.

I. Community & Culture (Community wellbeing, and cultural heritage protection)

II. Health and Education (Accessible care, preventive health, climate-smart education, and skills development)

Action Agenda

Core Adaptation Challenge 5.1: Limited Accessibility and Connectivity

Statia's economic resilience is further constrained by critical deficiencies in air and sea connectivity. Air access is limited, expensive, and inefficient. The schedule, pricing, restrictions, and limited frequency of the Makana ferry remain barriers to consistent use. While freight logistics rely on expensive transshipment through St. Maarten or Miami, with weak infrastructure driving up costs and reducing efficiency.

Adaptation Objective 5.1: Improve inter-island air and sea connectivity to strengthen regional trade and tourism, by implementing a public service obligation.

Identified Key Actions:

5.1.1. Improve inter-island sea and air connectivity to reduce dependency on St. Maarten and stimulate regional trade and tourism arrivals.

a. Conduct an air connectivity feasibility study to assess demand, route viability, partnership models, and incentives for affordable flights linking Statia to regional hubs for example St Kitts Robert Bradshaw International Airport.

b. Improve inter-island airlift availability and affordability by securing agreements for lower-cost flights to St. Maarten, and introduction of flights to Curacao/Bonaire, Saba and St. Kitts.

c. Improved ferry connectivity, affordability, and service linking St Maarten, Saba, Statia and St Kitts.

5.1.2. Develop trade relationships and regional cooperation agreements with Leeward, Windward and South American countries.

a. Harmonise regulations, taxation and policies amongst the BES and SSS islands to facilitate trade.

b. Promote cross-border exchanges and joint ventures with Dutch Caribbean, neighbouring islands, and OECS partners.

c. Pilot the introduction of shared procurement models for supermarkets to reduce import costs and build volume efficiency.

Core Adaptation Challenge 5.2: Limited Digital Connectivity

Statia faces challenges with internet speed, affordability, and reliability. The absence of high speed digital infrastructure hampers opportunities for remote work, e-commerce, digital service delivery, export-driven innovation, and the island's ability to adopt technology-enabled healthcare solutions.

Adaptation Objective 5.2: Improve digital infrastructure→ to enhance business viability and build the foundation for a digital economy

5.2.1. Explore the viability of building a (green) data centre for the region.

5.2.2. Improve high-speed connectivity, digital access, affordability, and reliability in order to:

a. Enable the development of a digital nomad program.

b. Open up opportunities for youth for remote work and online learning.

c. Enable the healthcare system to leverage tele-health services and reliable remote diagnostics.

Core Adaptation Challenge 5.3: Underdeveloped Tourism Sector

Tourism represents one of Statia's most promising avenues for economic diversification, community development, and green job creation. Despite its potential, the sector remains under-developed, facing limitations in connectivity and accessibility, persistent underinvestment, and weak institutional coordination. Furthermore, tourism is highly exposed to the risks posed by climate change, threatening both its growth and sustainability.

Adaptation Opportunity 5.3: Unlock and sustain the island's ecotourism potential (nature, marine and cultural heritage-based tourism) leveraging the island's history, natural and cultural assets.

Identified Key Actions:

5.3.1. Implementation of the new Tourism Strategy.

5.3.2. Investment in a strong tourism marketing and branding strategy positioning Statia as a destination for high-value, low-impact tourism (not high-volume mass tourism).

a. Promote Statia's marine life and reefs as a unique ecological asset; improve reef protection and restoration as a foundation for sustainable dive tourism.

b. Market niche eco-tourism offerings and signature events to attract regional and diaspora tourism.

c. Collaborate with St Kitts, Nevis and Saba in promoting and marketing inter-island travel packages.

5.3.3. Invest in diversified product development to increase the sector's climate resilience.

a. Invest in snorkel trails and cultural-nature interpretation sites in collaboration with Stenapa and the Culture Department.

b. Develop additional hiking trails, leveraging the island's natural assets and explore eco-adventure infrastructure, such as forest zip lines and nature-based adventure courses.

c. Develop niche eco-tourism offerings such as: Dark sky tourism (with the new planetarium), heritage tourism (slave history- "gate of entry"), agri-tourism (e.g. farm-to-table experiences), and wellness tourism

d. Host signature events (e.g. Taste of Culture, Easter festival, Cannon celebrations) to attract regional and diaspora tourism.

5.3.4. Launch community-based tourism programs to ensure local people benefit from tourism development and guide the narrative.

Core Adaptation Challenge 5.4: Lack of Entrepreneur Support

Climate adaptation has the potential to create new economic opportunities for Statians. However, in order to realize this potential, ongoing constraints—such as limited access to finance, high input costs, and the absence of essential business support infrastructure—must be addressed.

Adaptation Opportunity 5.4: Leverage the economic opportunities created by climate adaptation to foster entrepreneurship and drive sustainable development on the island.

Identified Key Actions:

5.4.1. Roll-out a business support program to train and nurture the development of agri-businesses.

a. Train agripreneurs in farming, agri-processing, and business.

b. Help agripreneurs tap into available financing such as the EU loan facility.

5.4.2. Develop a startup support program targeting the development of new climate/green businesses.

a. Provide incubation, training and facilitating access to financing.

b. Train entrepreneurs in financial literacy, digital skills, and business planning to reduce loan default risks and enhance viability.

5.4.3. Introduce incentive schemes for climate-smart MSMEs, including tax benefits or innovation challenges.

5.4.4. Develop an island wide strategy to develop a circular economy.

c. Promote “Trash to Cash” initiatives like upcycled crafts, sargassum-based products, and local cosmetics.

5.4.5. Facilitate youth climate entrepreneurship

a. Develop a climate entrepreneurship program to enable youth to unlock climate adaptation business opportunities.

b. Support a youth climate entrepreneur competition, with mentoring and seed funding.

c. Create a youth business mentorship platform, matching local business leaders with young entrepreneurs.

5.4.6. Pilot a returnee incentive program to support locals relocating back to Statia with startup support, internships, affordable housing or employment placement.

DOMAIN 6: COMMUNITY & CULTURE



Domain 6 – Community and Culture

Community wellbeing, cultural heritage and maritime heritage protection

Overview

Challenges and Vulnerabilities

Community and culture represent core dimensions of Statia's resilience. Beyond infrastructure and economic systems, the island's long-term stability depends on the wellbeing of its households, the continuity of its cultural heritage, and the stewardship of its maritime and coastal legacy.

This domain therefore addresses three distinct but interrelated components. **Community wellbeing** concerns the conditions that enable households and social groups to maintain quality of life and access functional public spaces under changing climate conditions. **Cultural heritage** encompasses both tangible and intangible assets that reflect Statia's historical development, identity, and lived traditions, as well as the institutional arrangements required for their protection and activation. **Maritime heritage** reflects the island's historic relationship with its harbour and coastal environment, including waterfront landscapes and underwater cultural resources that remain central to Statia's identity.

Many of these cultural and maritime assets are spatially concentrated in Lower Town and along the coastal zone, areas identified as climate-exposed. At the same time, institutional capacity constraints influence the island's ability to safeguard heritage assets and maintain social infrastructure over time. Strengthening resilience in this domain therefore requires an integrated approach that recognises the interaction between social systems, cultural continuity, and climate exposure, without treating these elements as interchangeable.

Community Wellbeing

Statia's economy is small, open, and structurally import-dependent. Nearly all food, fuel, construction materials, and consumer goods are imported, which leaves residents highly vulnerable to external price shocks, and contributes to a persistently high cost of living. The 2011 switch to the US dollar halved real purchasing power, with retail prices doubling but wages remaining largely stagnant (PSO, 2024). Income taxes above 30% are levied even on modest incomes, suppressing household savings and investment. Despite high labour participation, many residents work multiple jobs and still struggle to make ends meet. In 2024, 32% of the population reported difficulty covering basic expenses, and 28% of children were at risk of poverty (CBS, 2024).

These challenges are now being exacerbated by climate change, which is steadily driving up the cost of daily life. Rising temperatures are making air conditioning a year-round necessity, even during the Caribbean winter, increasing household energy bills. At the same time, longer dry periods and more frequent droughts are forcing families to rely more heavily on reverse-osmosis (RO) water when cisterns run dry. Unlike rainwater, RO water is a utility service that carries an additional financial cost for households.

The combined increase in electricity and water expenditure resulting from climate change is placing added financial strain on households. This burden falls most heavily on lower-income households, those living in poorly insulated housing, and seniors on fixed incomes, who have limited capacity to absorb rising utility costs.

Many residential buildings on Statia were not originally designed for sustained higher temperatures, and similar conditions apply to several churches, playgrounds, and community facilities. Where insulation, shading, or natural ventilation are limited, indoor environments can become uncomfortable during peak heat periods

without air-conditioning. At present, there are limited design standards promoting passive cooling or natural airflow in public buildings.

As a result, indoor spaces intended to support social interaction—such as halls, meeting rooms, and learning environments—may be difficult to use during the hottest parts of the day or year, or may incur higher operational costs where air conditioning is required. Stakeholders indicated that this can constrain access for community groups seeking functional spaces for recreation, education, or gatherings.

During consultations, the Sports Hall was cited as an example where high indoor temperatures limit daytime use. Its enclosed structure restricts airflow, and without air conditioning the space can become uncomfortable for extended activities. In contrast, stakeholders noted that the restored Community Centre is equipped with air conditioning but requires a daily rental fee of approximately $250. For after-school programmes or youth groups, this cost was described as a potential barrier to regular use. Taken together, stakeholders suggested that thermal comfort and cost considerations may limit the effective use of certain public buildings, particularly for youth and community activities during warmer periods.

Some stakeholders felt that rising heat is not just a physical health issue but also a social one, as many children prefer to stay inside under air conditioning instead of playing in the streets or outdoor courts. Other stakeholders observed that neighbourhoods have grown quieter as people spend less time outdoors during hot periods. Some older residents felt that there were less outdoor informal gatherings happening that once brought people together due to the increasing heat.

A new approach is needed to design cooler community public space will help enable Statia's built environment to evolve to match the new climate reality. This means investing in retrofitting community buildings to improve ventilation, insulation, and passive cooling. It means designing all new infrastructure with natural airflow, shade, and durability in mind. And it means creating more outdoor spaces of respite—cool, shaded, and inclusive areas where people can meet, rest, and recover from the heat.

Cultural Heritage

Statia's cultural heritage—both tangible and intangible—faces a combination of long-standing structural challenges and increasing climate exposure. Stakeholder consultations and the CultuurAgenda (2024) indicate that aspects of local cultural identity and heritage representation may require further strengthening. Some stakeholders expressed the view that colonial narratives remain prominent within educational frameworks, while greater emphasis on Statia's Afro-Caribbean identity, the history of enslavement and resistance, and traditional cultural practices could be further developed.

During consultations, several stakeholders noted that younger generations may have fewer structured opportunities to engage with local history and traditional knowledge systems. Some participants observed that intergenerational transmission of knowledge—relating to land, food traditions, rituals, and healing practices—may be more limited than in previous decades. Long-term residents recalled earlier periods in which traditions were more consistently passed on through storytelling and practice. At present, certain practices remain under-documented and lack formal institutional recognition.

The institutional and cultural infrastructure required to support heritage protection and activation remains constrained. The Department of Culture and Events (DCE) operates with limited staffing and mandate relative to the scope of heritage assets on island. There is currently no formal cultural tourism route, open-air museum, or structured intergenerational education programme linking young people to place. Public events such as Statia Day present opportunities for cultural storytelling and community engagement; however, stakeholders indicated

that these are not yet embedded within a comprehensive cultural development strategy. In addition, a number of cultural sites remain without formal mapping, designation, or protection status.

Climate change introduces additional exposure risks. Lower Town and the cliffs above it contain concentrations of tangible heritage, including Jewish cemeteries, colonial ruins, and former plantation sites. These areas are exposed to rockfall, erosion, sea-level rise, and storm surge. Stakeholders noted that certain infrastructure interventions, including road ramps and drainage works, have affected nearby heritage assets where heritage-sensitive planning mechanisms were limited. Historic buildings, trees of significance, and unmarked burial grounds may remain vulnerable where formal designation or preservation measures are not in place. Coastal cemeteries may face increasing exposure to storm surge and saline intrusion over time.

According to the AEF (2024) study, 38 heritage objects have been identified as requiring protection, 29 of which are owned by the OLE. Of these, eight are officially designated monuments. Three are privately owned, and ownership of six forts remains unclear. Fourteen objects face maintenance backlogs, and some forts require structural repairs to prevent further deterioration. Two buildings are identified as being at risk of collapse, and one monumental building was destroyed by fire and would require reconstruction. Two forts are included in the Regional Deal programme, and certain government-owned buildings are undergoing renovation.

Protecting cultural heritage involves both preservation and resilience considerations. These sites contribute to Statia's historical continuity and collective identity and form part of the island's spatial and tourism development context. Integrating heritage considerations into spatial planning, climate adaptation, and tourism strategies would support alignment between conservation objectives and long-term resilience planning. Strengthening documentation, institutional coordination, and sustained investment may be required to ensure that cultural heritage remains supported under changing environmental conditions.

Maritime Heritage

Statia's maritime heritage forms a distinct and significant component of its cultural landscape. In the eighteenth century, St. Eustatius functioned as a major free port in the Caribbean, facilitating transatlantic trade between Europe, Africa, and the Americas. The island's harbour and surrounding waters contain archaeological remains associated with this period, including documented shipwrecks and submerged artefacts. These underwater cultural resources are part of the Statia National Marine Park and are recognised within regional maritime archaeology research.

Maritime heritage also includes historic harbour infrastructure, anchorage areas, and the coastal landscape of Lower Town, which together reflect the island's historic role in regional trade networks. These assets contribute to both cultural identity and the island's tourism economy, particularly through diving and heritage interpretation.

Climate change presents specific risks to these maritime heritage assets. Rising sea temperatures, coral reef degradation, increased storm intensity, sedimentation from cliff erosion, and sea-level rise may affect the condition and accessibility of underwater archaeological sites. In addition, storm surge and coastal erosion threaten the integrity of historic waterfront areas and associated onshore heritage structures.

Addressing Community and Culture: Key Recommendations

Climate adaptation and mitigation measures will have differentiated social effects across households on Statia. Changes in energy systems, housing standards, water management, mobility, supply chains, and economic structures may influence affordability, access to services, and the capacity of residents to benefit from resilience

investments. Climate implementation therefore has direct implications for household stability, preventive services, and social equity.

The Social Domain Directorate holds the institutional responsibility for safeguarding vulnerable households, coordinating preventive support, and ensuring equitable access to public goods. Within the context of the Climate Plan, this positions the Social Domain Directorate as a steward of social resilience across climate implementation. Its role is to ensure that adaptation and mitigation measures are translated into lived resilience outcomes, and that social impacts are anticipated and managed alongside technical and infrastructural interventions.

To fulfil this function, social policy safeguards will need to be embedded within climate policy implementation. This includes ensuring that climate measures are designed and delivered in a manner that does not unintentionally widen inequality, create barriers to access, or generate unfunded expectations within the social system.

The Strong Roots Masterplan and the St. Eustatius Cultural Agenda provide the primary strategic policy frameworks through which this stewardship function can be operationalised. These instruments anchor preventive programming, community support structures, institutional coordination, and cultural governance. Aligning climate implementation with these frameworks will help ensure that resilience-building efforts reinforce social cohesion, protect vulnerable residents, and sustain cultural identity as foundational components of long-term climate resilience.

1. Strong Roots Masterplan for the Social Domain – 2020–2025

This masterplan, developed by the Public Entity of St. Eustatius, outlines a medium-term strategy to strengthen the island's social infrastructure and ensure that every Statian has access to the support, protection, and opportunities needed to live with dignity and independence. The plan focuses on integrated service delivery, improved institutional coordination, and building a more inclusive and people-centred social system. It is currently under revision for the 2026–2029 period. Priority Recommendations include the following:

Shift to Integrated, Citizen-Centred Services

- Transition from siloed service delivery to a "one-family, one-plan" model that addresses interconnected needs holistically.
- Develop a central intake and case management system that allows departments to coordinate support based on individual and family circumstances.

Build Capacity Across the Social Sector

- Invest in upskilling social workers, care professionals, and frontline staff.
- Provide practical training in integrated care models, trauma-informed support, and participatory approaches.

Strengthen Community-Based Support Structures

- Empower local organizations, churches, and civic groups to serve as first-line partners in identifying and addressing social needs.
- Create more accessible and inclusive community hubs that serve both social and developmental purposes.

Improve Access to Basic Services and Social Rights

- Expand access to housing, education, and mobility, especially for vulnerable groups such as the elderly, persons with disabilities, and youth.

- Remove bureaucratic and financial barriers that prevent residents from accessing the support they are entitled to.

Make the Social Domain More Future-Proof

- Prepare the social sector to address emerging issues such as climate-related stress, rising living costs, and mental health.
- Promote preventive measures that reduce long-term dependency, including energy coaching, financial literacy, and healthy lifestyle programs.

Promote Youth Engagement and Talent Development

- Involve youth more directly in policymaking and community initiatives.
- Support programs that foster identity, purpose, and self-reliance, including after-school activities, mentorship, and entrepreneurial training.

Develop Clear Governance and Monitoring Structures

- Establish an implementation unit within the social domain team with oversight responsibility.
- Introduce clear targets, accountability mechanisms, and citizen feedback loops to track progress and adjust where needed.

2. St. Eustatius Cultural Agenda – Priorities 2024–2028

This policy document, developed jointly by the Public Entity of St. Eustatius and the Dutch Ministry of Education, Culture, and Science (OCW), outlines a multi-year plan to strengthen the island's cultural infrastructure, improve access to national policy instruments, and anchor heritage in social and economic development. Priority Recommendations include the following:

Strengthen the Department of Culture and Events (DCE)

- Build institutional capacity, increase staffing and knowledge of heritage law and policy.
- Position DCE as a cross-sectoral actor in spatial planning and climate adaptation (Cultuuragenda, p.5–6).

Expand Cultural Infrastructure and Access

- Establish community cultural centres and creative hubs with year-round programming.
- Provide artists with physical spaces and professionalization opportunities (e.g. entrepreneurship training).

Develop Participatory Cultural Policy

- Use participatory tools (e.g. gebiedsbiografieën) to co-create a polyvocal narrative of Statian identity.
- Align with Faro Convention principles by integrating community-led heritage priorities.

Improve Visibility and Accessibility of Cultural Funding

- Simplify grant procedures and allow English-language applications.
- Establish local points of contact and guidance for funding applicants (Cultuuragenda, p.9–10).

Integrate Heritage into Climate and Spatial Planning

- Mandate inclusion of cultural heritage in all major infrastructure and environmental planning processes.
- Protect underwater archaeology and cliffside sites, and complete monument listing processes.

Invest in Cultural Education and Youth Talent Development

- Implement a regional canon that reflects local heritage in school curricula.

- Provide structural funding for talent development, including music, drama, and digital arts (Cultuuragenda, p.17–18).

Advance Sustainable Cultural Tourism

- Promote cultural tourism focused on diving, heritage walks, oral histories, and flora/fauna.
- Leverage Statia Day 2026 to build year-round cultural visibility and economic opportunity.

Action Agenda

Core Adaptation Challenge 6.1: Cultural Heritage at Risk

Statia's cultural heritage—both tangible and intangible—is at risk from neglect, weak cultural infrastructure, and the accelerating impacts of climate change. With few cultural programs, no formal heritage tourism routes, and limited institutional capacity and investment, many practices and sites remain undocumented, unprotected, and vulnerable to development, decay, erosion, and climate impacts.

Adaptation Objective 6.1: Cultural Heritage Protection → Safeguard and valorise local tangible and intangible heritage

Identified Key Actions:

6.1.1. Protection of cultural heritage

a. Safeguarding historic sites, burial grounds, and landmarks in Lower Town from erosion and flooding.

b. Develop and implement legislation and programs to protect- and relocate if necessary- vulnerable cultural heritage sites.

c. Support the listing and preservation of heritage assets, including UNESCO recognition of key sites like the burial ground.

6.1.2. Valorisation of cultural heritage

a. Revitalise and promote historical and cultural sites such as Jewish heritage, ruins, forts, monuments, and theatre

b. Support the Cultural Heritage Department's planned underwater heritage monument honouring enslaved ancestors.

c. Development of a Statia Heritage Trail, integrating restored forts, sugar mills, and cliffside cultural sites into a community-owned tourism experience.

d. Support the Cultural Heritage Department in the creation of content, product and storytelling for heritage tourism.

6.1.3. Use murals, art, and interactive cultural education in schools to reconnect youth with their heritage and strengthen cultural tourism narratives.

Core Adaptation Challenge 6.2: Lack of Climate Awareness

A major challenge facing Statia is the lack of public awareness about climate risks and adaptation strategies. Many residents are not fully informed about how climate change can impact their lives and the community, nor are they aware of the solutions and opportunities available.

Adaptation Objective 6.2: Increased public awareness → ensuring people understand climate risks solutions and opportunities.

Identified Key Actions:

6.2.1. Climate launch and community engagement catalysation.

6.2.2. Create public awareness on climate change

a. Implementation of climate communication and community engagement plan.

b. Run a continuous public awareness campaign on climate resilience, nature, tree planting, spatial planning and sustainable living across different platforms.

c. Use art, music, murals, and storytelling to communicate climate adaptation and cultural pride.

6.2.3. Organise community-led climate adaptation projects to ensure participation and long-term success.

a. Include climate-focused components in festivals like Taste of Culture and Cannon Celebrations, embedding climate messages.

Core Adaptation Challenge 6.3: Social Safeguards in Climate Implementation

Climate adaptation and mitigation measures implemented across sectors may have uneven social impacts. Without structured coordination and embedded social safeguards, climate interventions risk creating access barriers or unintended pressures on vulnerable groups. Strengthening the interface between climate implementation and the Social Domain is therefore necessary to ensure equitable and effective resilience outcomes.

Adaptation Objective 6.3: Ensure socially equitable climate implementation → Embed social safeguards and vulnerability considerations across climate measures.

Identified Key Actions:

6.3.1. Establish a structured coordination mechanism between the Climate Plan implementation team and the Social Domain.

6.3.2. Introduce Social Impact Screening for Climate Measures

a. Develop a simple screening framework to assess potential social impacts of major climate adaptation and mitigation interventions.

b. Identify potential access barriers or disproportionate impacts on vulnerable households prior to implementation.

6.3.3. Strengthen Monitoring of Social Resilience Outcomes

a. Incorporate social resilience indicators (e.g., access, affordability, participation) into Climate Plan monitoring frameworks.

b. Align climate implementation with preventive and community-based programming under the Strong Roots framework.

DOMAIN 7: HEALTH & EDUCATION



Domain 7 – Health and Education

Accessible care, preventive health, climate-smart education, and skills development

Overview

Challenges and Vulnerabilities

Climate change is already placing new pressures on St. Eustatius' health and education systems—two foundational pillars of a resilient society. As the island contends with rising temperatures, shifting disease patterns, and more frequent extreme weather events, these sectors will increasingly shape the island's capacity to adapt. Yet both are already marked by significant structural weaknesses. High rates of non-communicable diseases (NCDs), widespread physical inactivity, limited educational opportunity, and the erosion of traditional knowledge have left large parts of the population more vulnerable—not just to the direct impacts of climate change, but also to its knock-on effects on food and water security, income generation, and community well-being. This is why this domain of health and education is so important in Statia, both to mitigate existing risks and to build a future-ready generation capable of thriving in a changing world.

Climate and Chronic Disease

The current public health profile of Statia is deeply shaped by imported food systems and sedentary lifestyles. These vulnerabilities are now being amplified by the warming climate. The majority of foods consumed on the island are imported and often cheaper than healthier alternatives. As a result, diets have shifted toward calorie-dense products high in sugar, salt, and trans fats—undermining traditional foodways and accelerating the rise of NCDs (CARDI, 2025).

This nutritional shift is not without consequences. Today, 94% of Statians are overweight or obese, with only 6% of the adult population maintaining a healthy body weight (Public Entity St. Eustatius, 2024). Among children aged 2 to 17, more than 40% are classified as overweight or obese, with a full 25% considered obese. These rates are among the highest in the Caribbean Netherlands.

The health consequences of these trends are already significant. More than one in five Statians lives with hypertension, over 13% have high cholesterol, and nearly 12% have diabetes (Public Entity St. Eustatius, 2024). Chronic respiratory diseases such as asthma and COPD affect more than 11% of the population. These conditions not only reduce quality of life and increase long-term healthcare costs, but they also heighten vulnerability to extreme heat, infectious disease outbreaks, and food insecurity.

The compounded stress of climate events—whether in the form of heatwaves, storms, or supply chain disruptions—disproportionately impacts those with chronic illness, while climate change simultaneously worsens underlying environmental determinants of health. Rising temperatures, brackish groundwater, and increasing exposure to Saharan dust are linked to higher incidences of respiratory and gastrointestinal illness.

Rise in Vector Borne and Novel Diseases

Climate change is reshaping the distribution, seasonality, and intensity of vector-borne and zoonotic diseases across the Caribbean. Rising temperatures, changing rainfall patterns, and prolonged periods of drought followed by intense rainfall create ideal conditions for mosquitoes, ticks, snails, and other vectors to expand their geographic range and increase reproduction rates. Warmer temperatures also accelerate pathogen development within vectors, increasing transmission risk and extending disease seasons. For small islands with

limited public health systems, these changes translate into heightened vulnerability and rising pressure on health services, surveillance systems, and community outreach.

Across the Caribbean region, climate-sensitive vector-borne diseases of concern include dengue, chikungunya, Zika, leptospirosis, and Lyme disease. These diseases can cause more severe illnesses and complications in children, older persons, and individuals with pre-existing conditions. A marked increase in dengue cases was recorded in late 2023, with public health authorities linking the rise to climate variability and inadequate vector control.[5]

A further concern—highlighted by STENAPA and reinforced by global evidence—is the growing role of invasive species as vectors of novel diseases. Invasive species can introduce pathogens that are not currently present on-island, or they can amplify and transmit local parasites in new ways. Several high-risk invasive species already found in Statia or the wider region pose significant human-health threats:

- African land snails, already present on Statia, are known carriers of parasites that cause *eosinophilic meningitis*, bilharzia, and abdominal angiostrongyliasis—all serious diseases that can lead to long-term neurological and organ damage.
- Cuban tree frogs, also already present in Statia, are capable of carrying the rat lungworm parasite (as documented in Florida populations). This parasite can cause severe *eosinophilic meningitis* in humans, leading to intense neurological symptoms and, in some cases, permanent nerve damage or death.
- Ticks, insects, and other small organism pests—often far more difficult to detect upon entry—can carry Lyme disease, other bacterial infections, and emerging pathogens that may not yet be well understood.

These examples represent only the visible part of the threat. Large species such as frogs and snails are relatively easy to identify, yet small invertebrates—the most likely carriers of novel diseases—are far harder to detect before they establish and extremely difficult and costly to eradicate once they do. As climate change accelerates ecological disruptions and mobility increases between islands, these public health risks will intensify unless proactive prevention systems are built. Statia's small population, high exposure to the outdoor environment, and limited surge capacity in the health system mean that an outbreak of even one disease can place significant pressure on local healthcare services.

Impact of Heat on Physical Activity

Physical inactivity is another key driver of public health decline on Statia, and it is directly linked to rising temperatures and inadequate public infrastructure. Based on self-reported data, fewer than 14% of Statians meet the recommended 150 minutes of physical activity per week. The decline in active lifestyles is even more acute among youth, with only one third of children meeting the recommended levels of weekly movement. While multiple factors contribute to this trend, including car dependency and changing social habits, the heat is a major inhibitor. Many residents, especially older adults and children, find it difficult to exercise or even walk outdoors during the hottest parts of the day.[6] Sports facilities and school gyms are often unventilated or inaccessible. In some cases, children in the participatory planning sessions reported feeling ill or dizzy after gym

[5] Public Health Department St. Eustatius, 2024. Public Health on Sint Eustatius 2025-2029. Public Entity St. Eustatius (OLE); Samantaroy, S., 2024. *Climate Change Now Responsible for Nearly One Fifth of Dengue Cases in the Americas and Asia.* Health Policy Watch. Retrieved from: https://healthpolicy-watch.news/climate-change-now-responsible-for-nearly-one-fifth-of-dengue-cases-in-the-americas-and-asia/

[6] Public Health Department St. Eustatius, 2024.

class due to the heat. These trends are part of a dangerous feedback loop—where sedentary behaviour fuels chronic disease, and chronic disease in turn limits people's ability to move and build physical resilience.

Efforts to reverse these patterns are underway. Public health strategies such as the Sports and Prevention Agreement, healthy lifestyle campaigns, and the Strong Roots Masterplan all acknowledge the need to embed healthy behaviours early in life and support lifestyle change through culturally appropriate programs. However, implementation remains inconsistent, and infrastructural gaps—such as the lack of shaded walkways, accessible public parks, or indoor activity spaces—continue to limit progress.

Gaps in Healthcare Access and Systemic Vulnerability

While Statia's Public Health Department has made meaningful progress in prevention programs and community outreach, the island's health system remains structurally under-equipped to cope with the scale and complexity of the challenges it faces—particularly in the context of climate change. Several essential services are no longer available on-island. Residents must travel abroad for childbirth, dialysis, trauma care, specialist consultations, and even basic diagnostics such as bloodwork. This creates an acute dependence on external facilities, particularly on the nearby island of St. Maarten, which functions as Statia's primary referral hub.

This model of care, while long-standing, is highly vulnerable. It depends not only on the availability of transport links but also on the operational stability of health services in partner jurisdictions. If St. Maarten is impacted by a major storm—as it was during Hurricane Irma—Statia's access to critical medical services could be abruptly and dangerously severed. Even in less extreme scenarios, delays in travel, airlift cancellations, or regional infrastructure failures can lead to treatment disruptions that put lives at risk. In this sense, climate change does not only affect public health directly; it also threatens access to care by exposing the island's total reliance on a fragile, centralized referral network.

Statia lacks the economies of scale to support a comprehensive, full-service hospital. However, this should not obscure the urgency of building a more resilient and adaptive system. The limited on-island diagnostic capacity, absence of specialist staff, and lack of trauma services mean that even routine medical needs can escalate into high-risk situations. In the event of a major disaster, disease outbreak, or regional transport disruption, this capacity gap could severely hinder emergency response and long-term recovery.

The island's health vulnerability is further compounded by the absence of an integrated approach to health and food policy. With imported food dominating household consumption, local nutrition and food security are increasingly precarious. School meal programs rely on off-island supply chains, and families struggle with the rising costs of medicine, cooling, and fresh produce. These financial pressures, coupled with limited mental health services and chronic underinvestment in wellness infrastructure, are contributing to rising rates of stress-related illness and emotional fatigue.

To mitigate these risks, Statia must begin to invest in a model of health resilience that includes both local capacity building and regional redundancy. Strengthening diagnostic infrastructure, improving telemedicine capabilities, and training general practitioners in broader emergency response protocols are essential first steps. Equally important is the development of contingency plans for continuity of care during disruptions to air or sea transport.

A particularly promising opportunity lies just 20 kilometres away. St. Kitts, while currently outside the Kingdom's formal referral arrangements, could serve as a critical secondary access point for Statian patients. A health partnership with St. Kitts—facilitated through formal agreements and logistical coordination—would create much-needed redundancy in Statia's health system. In an era of increasing regional volatility, such redundancy is not a luxury, but a foundational pillar of climate resilience.

Education in Transition: Preparing for a Climate-Driven Future

Statia's education system is also at a crossroads. While significant efforts have been made in recent years to improve facilities and expand access, the system remains misaligned with the island's future climate and economic realities. Educational offerings are not yet preparing youth for the challenges and opportunities of a climate-driven economy. Topics such as climate science, sustainable agriculture, digital innovation, and circular economy principles are largely absent from the formal curriculum. Although environmental education programs like Green Kids and the school garden initiative have been piloted, they are often short-term and under-resourced.

This lack of climate literacy is a missed opportunity. Equipping students with the knowledge and skills to understand climate risks—and to see themselves as agents of change—is a cornerstone of long-term adaptation. Education for sustainable development (ESD) must be a core component of both primary and secondary curricula, aligned with Sustainable Development Goal 4.7.[7]

Learning conditions themselves are also being affected by climate. As in the health sector, high temperatures are interfering with educational outcomes. Many classrooms and school buildings are poorly ventilated or lack functioning air conditioning. During hot spells, students struggle to focus, and teachers report rising levels of classroom fatigue. Outdoor learning and recreational opportunities are similarly constrained by the heat.

Beyond infrastructure, deeper structural gaps persist. Less than 5% of Statian students are fluent in Dutch, which limits access to tertiary education in the Netherlands and reduces employability in the broader Kingdom context.[8] Youth who study abroad often do not return, and there are few structured pathways or incentives for those who wish to contribute to the island's development. Meanwhile, adult education and vocational programs remain limited in scope and reach, despite growing demand for training in climate-related fields such as food production, green construction, or sustainable tourism.

Intergenerational Knowledge Loss and Social Resilience

One of the less visible but equally concerning trends is the erosion of intergenerational knowledge—particularly in agriculture, herbal medicine, and food preservation. These practices have long helped Statia cope with scarcity and environmental stress, yet they are now fading as older generations pass on and youth are disconnected from traditional food systems. This loss is not only cultural, many stakeholders feel that it weakens the island's ability to build local resilience through low-cost, locally adapted solutions.

Revitalising this knowledge base and embedding it into education, public health, and community initiatives could serve as a powerful, low-tech complement to formal adaptation strategies. Integrating storytelling, gardening, bush medicine, and seasonal awareness into school programs, youth groups, and public campaigns would simultaneously strengthen food sovereignty, mental wellbeing, and cultural identity.

Addressing Health and Education: Key Recommendations

Climate change is amplifying existing public health vulnerabilities on Statia, particularly in relation to chronic disease, heat exposure, food systems, and mental wellbeing. As rising temperatures, shifting disease patterns, and supply chain disruptions intersect with high rates of non-communicable diseases and physical inactivity, climate risks increasingly manifest through underlying social and behavioural determinants of health.

[7] Directorate of Social Domain, 2020. Strong Roots Masterplan, 2021–2025. The Pubic Entity St. Eustatius.

[8] Directorate of Social Domain, 2020.

Adaptation in this domain therefore extends beyond emergency preparedness and clinical services; it requires strengthening preventive health systems and building long-term population resilience.

Responsibility for preventive health promotion, lifestyle interventions, and community-based wellbeing programming sits within the broader Social Domain mandate, while clinical services and public health infrastructure fall under the Health portfolio. Within the context of the Climate Plan, this requires coordinated stewardship to ensure that climate impacts on health are addressed both medically and socially. Preventive health strategies, education reform, and climate-aware emergency preparedness must therefore be aligned with existing policy frameworks to avoid fragmentation and ensure continuity of care.

The Dutch Caribbean Health Report (2024), the Public Health Policy for St. Eustatius (2020–2026), and the Strong Roots Masterplan provide the strategic instruments through which climate-health resilience can be operationalised. Aligning climate implementation with these frameworks will help ensure that health adaptation efforts strengthen preventive care, enhance system redundancy, and support a future-ready generation equipped with the skills and knowledge required to navigate a changing climate.

1. Dutch Caribbean Health Report (2024)

This regional report compiles public health data from Bonaire, St. Eustatius, and Saba, highlighting the rise in non-communicable diseases, limited healthcare access, and the impact of social determinants on health. It stresses the need for better infrastructure and inter-island collaboration.

Key Recommendations:

- Improve maternal and neonatal care access
  Review the feasibility of delivering basic obstetric services locally or ensuring timely and climate-resilient evacuation protocols for pregnant women.
- Develop regional redundancy in care networks
  Strengthen cross-island partnerships for medical referral—including the possibility of accessing services in St. Kitts to reduce overreliance on St. Maarten.
- Implement healthy food policies in public institutions
  Establish nutritional standards for school meals and government-run programs to address diet-related disease burdens.

2. Public Health Policy for St. Eustatius (2020–2026)

This strategic policy document outlines the goals of the Public Health Department to strengthen health promotion, disease prevention, and access to essential health services across the life course. It emphasizes integrated, community-based care and climate-sensitive public health interventions.

Key Recommendations:

- Strengthen local diagnostic and trauma response capacity
  Invest in laboratory infrastructure and essential trauma care facilities to reduce dependence on off-island emergency services.
- Integrate climate resilience into emergency preparedness
  Ensure that contingency plans for health service continuity address climate risks, such as transport disruptions or hurricanes affecting regional referral points.

- Expand vector control programs using nature-based methods
  Increase community mosquito control measures through ecosystem-friendly approaches like guppy distribution and larval traps, reducing reliance on chemical spraying.
- Improve water and sanitation infrastructure
  Upgrade cistern management and greywater systems to reduce exposure to E. coli and other waterborne pathogens, particularly in vulnerable households.

3. Strong Roots Masterplan for the Social Domain (2021–2025)

This masterplan sets the vision for social development and well-being in St. Eustatius across key domains including youth, education, health, leisure, and work. It outlines preventative strategies to reduce poverty, improve health outcomes, and build social resilience.

Key Recommendations:

- Scale preventative health interventions across the life course
  Strengthen programs such as Best4Kids and the Strong Roots prevention clinic to embed healthy eating, physical activity, and mental well-being early in life.
- Promote active lifestyles through better infrastructure
  Expand access to shaded, ventilated sports and leisure facilities to counter rising heat and inactivity, especially among youth.
- Enhance access to mental health services
  Build on-island mental health support structures to address rising emotional stress, fatigue, and social isolation, especially in low-income households.
- Integrate well-being goals into spatial planning
  Align climate-resilient infrastructure with health outcomes—such as walkable public spaces, safe recreational areas, and universal design for elder care.

Current Gap

At present, the NEPP provides support for vector control, but there is no comprehensive prevention framework focusing on biosecurity, early detection, and rapid response to invasive species and emerging human-health pathogens. Given the climate-related increase in disease risks, Statia requires a stronger upstream approach that prevents introductions, reduces vector habitat, and limits the spread of invasive hosts.

Effective prevention includes:

- Improved biosecurity at borders and ports, including screening protocols, trained personnel, and monitoring equipment that can detect both large and small invasive organisms.
- Rapid-response capacity within Public Health, STENAPA, and the agricultural/environmental teams to quickly isolate, contain, and eradicate new invasive species before they spread.
- Invasive species and novel disease management plans that integrate human health, ecosystem resilience, and climate risk.
- Community education to support early reporting, reduce breeding sites, and minimise human exposure.

This is also why bio-secure fencing at the St. Eustatius harbour is essential as part of the harbour upgrade project. The fencing will help prevent the entry of larger, more visible invasive animals, but the greatest biosecurity risk often comes from small invertebrates and other inconspicuous organisms, which are far more difficult to detect before they establish and extremely costly to eradicate once they do. Effective prevention therefore requires more than physical infrastructure: it depends on trained environmental rangers who conduct ongoing monitoring and rapid response, supported by community training that builds island-wide vigilance and early reporting. Strengthening this frontline capacity is critical to safeguarding Statia from invasive species–driven disease risks in a changing climate.

Action Agenda

Core Adaptation Challenge 6.2: Vulnerable Healthcare System

Statia's population faces high rates of obesity and rising cases of non-communicable diseases, making residents especially vulnerable to climate-related health risks. At the same time, many essential services are unavailable on-island, forcing dependence on regional referral networks vulnerable to disruptions by storms, hurricanes or transport failures. Limited diagnostic capacity, scarce specialist care, and underinvestment in prevention further weaken the system, leaving both routine care and emergency response at risk in a changing climate.

Adaptation Challenge 7.1: Improve Health and Healthcare Resilience– Boost accessibility to health, prevention, and emergency care

Identified Key Actions:

7.1.1. Increase the climate resilience of the healthcare system.

a. Retrofit clinics and community centres with backup power, cooling, and storm-proof design to ensure care continuity during extreme weather events.

b. Explore formal collaboration with St. Kitts as a secondary access point for emergency and specialist care, especially during climate disruptions.

7.1.2. Increase healthcare accessibility.

c. Develop a permanent specialist roster (e.g. dialysis, dermatology) and acquire necessary medical equipment.

d. Install a clinical testing laboratory on island to handle basic diagnostics without export to other islands.

4.1.4. Decrease the risk of non-communicable and climate-related diseases

a. Tackle non-communicable diseases (NCDs) like hypertension, diabetes, and obesity through improved healthy food access, preventive care and exercise.

b. Implement vector control and water health systems (e.g. mosquito traps, guppies in cisterns, water sampling, biological alternatives to spraying)

c. Develop strategies for future climate-change related pandemics and infectious disease outbreaks.

4.1.5. Control of Vector Borne and Novel Diseases

a. Improved biosecurity at borders and ports, including screening protocols, trained personnel, and monitoring equipment that can detect both large and small invasive organisms.

b. Build rapid-response capacity within Public Health, STENAPA, and the agricultural/environmental teams to quickly isolate, contain, and eradicate new invasive species before they spread.

c. Develop and implement invasive species and novel disease management plans that integrate human health, ecosystem resilience, and climate risk.

d. Deliver community education programmes that promote early reporting of invasive species, reduce vector breeding sites, and minimise human exposure to potential disease risks.

7.1.3. Promote use of traditional plant medicine (e.g. bush teas, aloe, paracetamol bush) as part of self-reliant, preventative health strategies.

a. Integrate traditional health and food practices—such as bush medicine, food preservation, and local diets—into school curricula and public health programming.

Core Adaptation Challenge 7.2: Education Gaps

Despite recent investments in facilities and programs, Statia's education system remains poorly aligned with the island's future climate and economic realities. Current offerings do not adequately equip young people with the skills and knowledge needed to navigate the challenges—or seize the opportunities—of a climate-driven economy.

Adaptation Objective 7.2: Youth education → preparing youth for a climate-driven future

Identified Key Actions:

7.2.1. Introduce climate, nature and agriculture education in schools.

a. Develop agriculture and food system topics for inclusion in school curricula (SAPSA Activity 2.2.4).

b. Develop and integrate topics such as climate adaptation, environmental science, sustainable tourism, and circular economy principles into primary and secondary school curricula .

c. Host agriculture competitions for youth linked to AgriFest and entrepreneurship.

d. Reintroduce entrepreneurship and digital innovation training in schools, including "Kidpreneurs" and student enterprise programs.

e. Use music, art, and social media to engage young people in climate action.

7.2.2. Provide career guidance aligned with emerging sectors (e.g., green jobs, climate tech, sustainable tourism).

FROM FRAMEWORK TO IMPLEMENTATION



THE PATH FORWARD

This Integrated Climate Framework has examined how climate change affects Statia across seven interrelated thematic domains that together encompass island life and governance. Within each domain, Action Agendas identify priority measures required to reduce risk, strengthen resilience, and support long-term sustainability. These domain-level priorities have been brought together through the Integrated Climate Roadmap, which aligns immediate actions and short-term targets with medium- and long-term milestones extending to 2050 and 2100. The next phase of the Climate Action process will be the operationalisation and implementation of the integrated climate framework in conjunction with the cross-cutting themes and flagship projects identified in Part 2 of the Climate Plan.

The first element of operationalisation is institutional alignment. Many of the identified priority climate action interventions sit at the intersection of administrative mandates and functions. For example, water security, is simultaneously an infrastructure and utilities issue, a public health issue, an environmental management issue, a food security issue, and an affordability (social) issue. This first step in operationalising the plan will therefore involve:

- Aligning the identified priorities and actions with existing institutional responsibilities and mandates;
- Aligning climate actions with existing policy instruments, programmes, and planning processes;
- Identifying interdependencies, shared responsibilities, and areas requiring coordinated action.
- Identify important indicators and metrics needed to track progress and monitor impacts.

The second element will be to ensure that the enabling conditions are in place for delivery. This will involve identifying the required capacity and resources required to support the directorates and units in embedding climate change impacts into their mandates, and implementing priority actions. This includes practical capacity and resource requirements including skills, technical support needs, organisational arrangements, and the financing and budgeting implications of delivering priority actions.

The third element of operationalisation is coordination. Given the interconnected nature of the thematic domains, implementation cannot proceed effectively within isolated administrative functions. Many actions depend on sequencing across mandates, shared responsibilities, and aligned investment decisions. Operationalisation will therefore establish a structured coordination approach, supported by a practical implementation management tool, to provide clarity across domains and maintain coherence in delivery.

This coordination approach will enable the OLE to sequence actions appropriately, manage interdependencies, and identify potential bottlenecks before they delay progress. It will support collaboration across directorates and units, reducing the risk of siloed implementation and ensuring that actions undertaken in one area do not undermine priorities in another. By maintaining visibility across the Action Agendas and Roadmap milestones, coordination will strengthen alignment between planning, budgeting, and implementation.

Tracking and monitoring will be integral to this coordination function. Progress will be assessed not only against delivery milestones, but also against an unified set of impact indicators that reflect the broader principles and priorities of the Climate Plan.[9] This includes technical resilience indicators related to critical infrastructure and

[9] Refer to Climate Plan Overview, Part 2, pages 6,7

lifelines, alongside social, economic, and environmental outcomes such as water affordability, food security stability, ecosystem health, and long-term risk reduction. Embedding monitoring within the coordination structure will enable informed decision-making and timely adjustment where necessary.

Finally, the Climate Plan is designed to function as a living instrument. Climate risks, data availability, and financing conditions will evolve, and implementation will generate lessons over time. The operational phase will therefore incorporate structured review and feedback processes so that progress toward defined milestones informs refinement of priorities, sequencing, and resourcing. In this way, coordination, tracking, and adaptive review operate together as part of a continuous implementation cycle rather than as separate functions.

Taken together, these elements— institutional alignment, enabling conditions, structured coordination, integrated monitoring, and adaptive review—provide the practical foundation for effective implementation of the Integrated Climate Framework. They ensure that the priorities set out across the Cross-cutting themes, the seven domains and sequenced through the integrated roadmap can be carried forward coherently, supported by realistic capacity and resources, and adjusted over time as conditions evolve. In this way, operationalisation transforms the Framework from a strategic reference into an embedded and sustained approach to climate action across all domains of island life and governance.

References

AEF (2024). *Bijlage 1 Rapport Klein Gebied Grote Opgave: Infrastructure Deficit Report – St. Eustatius.* Amsterdam: AEF Consulting for the Ministry of the Interior and Kingdom Relations (BZK).

BES Reporter (2024). *Economic Activity and Labour Developments on St. Eustatius.* BES Reporter, 12 March 2024.

CARICOM (2020). *CARICOM 25x25 Initiative: Reducing Regional Food Import Dependency by 25% by 2025.*Georgetown: CARICOM Secretariat.

CARPHA (2024). *Climate and Health Programme – Regional Disease Early Warning Systems.* Caribbean Public Health Agency, Port of Spain.

CBS (2024). *Caribbean Netherlands Compendium of Statistics 2024.* The Hague: Centraal Bureau voor de Statistiek.

CDEMA (2023). *Comprehensive Disaster Management Framework for the Caribbean Region (2023–2028).* Bridgetown: Caribbean Disaster Emergency Management Agency.

CARDI (2025). *Strategic Plan for Resilient Food Systems in the Caribbean.* St. Augustine: Caribbean Agricultural Research and Development Institute.

CCCCC (2023). *Caribbean Climate Online Risk and Adaptation Tool (CCORAL): User Guidance.* Belmopan: Caribbean Community Climate Change Centre.

CCRIF SPC (2023). *Annual Report 2022–2023: Building Financial Resilience Against Natural Hazards.* Grand Cayman: Caribbean Catastrophe Risk Insurance Facility.

Cultuuragenda (2024). *St. Eustatius Cultural Agenda 2024–2028.* Oranjestad: Public Entity St. Eustatius & Ministry of Education, Culture and Science (OCW).

DCNA (2023). *Climate Action Plan for the Dutch Caribbean.* Willemstad: Dutch Caribbean Nature Alliance.

EBA (2024). *Digital Readiness Assessment for the Eastern Caribbean.* European Business Alliance, Brussels.

Ecorys (2017a). *Study on Freight Logistics in the Caribbean Netherlands – Part I: Supply Chains.* Rotterdam: Ecorys Nederland B.V.

Ecorys (2017b). *Study on Freight Logistics in the Caribbean Netherlands – Part II: Logistics Costs and Bottlenecks.*Rotterdam: Ecorys Nederland B.V.

Ewing-Chow, D. (2024). *Food Security in the Caribbean: Building Climate-Resilient Systems. Forbes*, 8 April 2024.

Grant Thornton (2025). *Navigating the Logistics Chain between Colombia and the Caribbean Netherlands.* Amsterdam: Grant Thornton Advisory.

IPCC (2023). *Sixth Assessment Report: Impacts, Adaptation and Vulnerability.* Geneva: Intergovernmental Panel on Climate Change.

KNMI (2023). *KNMI'23 Climate Scenarios for the Caribbean Netherlands.* De Bilt: Royal Netherlands Meteorological Institute.

Maersk (2025). *Caribbean Trade Outlook 2025: Supply Chain Challenges and Opportunities.* Copenhagen: A.P. Møller–Maersk.

Ministry of BZK (2023). *Intentiebrief Economische Ontwikkeling Caribisch Nederland.* The Hague: Ministerie van Binnenlandse Zaken en Koninkrijksrelaties.

Ministry of BZK (2025). *Kamerbrief Economische Ontwikkeling en Zelfredzaamheid.* The Hague: Ministerie van Binnenlandse Zaken en Koninkrijksrelaties.

Public Entity St. Eustatius (2020–2026). *Public Health Policy for St. Eustatius.* Oranjestad: Public Health Department.

Public Entity St. Eustatius (2024). *Statia Health Report 2024.* Oranjestad: Directorate of Social Domain.

PSO (2023). *Impact van het PSO op de Bovenwindse Eilanden.* Kralendijk: Public Service Obligation Programme Report.

PSO (2024). *Statia Economic and Tourism Situation Analysis 2024.* Oranjestad: Public Entity St. Eustatius.

Rijksdienst Caribisch Nederland (2025). *Regional Logistics and Supply Chain Coordination Study for the Windward Islands.* The Hague: Rijksdienst Caribisch Nederland.

Royal HaskoningDHV (2019). *Water Management Plan for St. Eustatius.* Amersfoort: Royal HaskoningDHV.

Samantaroy, A. (2024). *Climate Change and Dengue: Emerging Threats in the Dutch Caribbean. The Daily Herald*, 14 May 2024.

Singh, R. (2025). *Compound Climate Events in the Caribbean Region: Understanding Cascading Risks. Caribbean Climate Journal*, 12(2), pp. 45–61.

Statia Tourism Vision Plan (2024). *Strategic Tourism Development Vision 2024–2030.* Oranjestad: Statia Tourism Foundation.

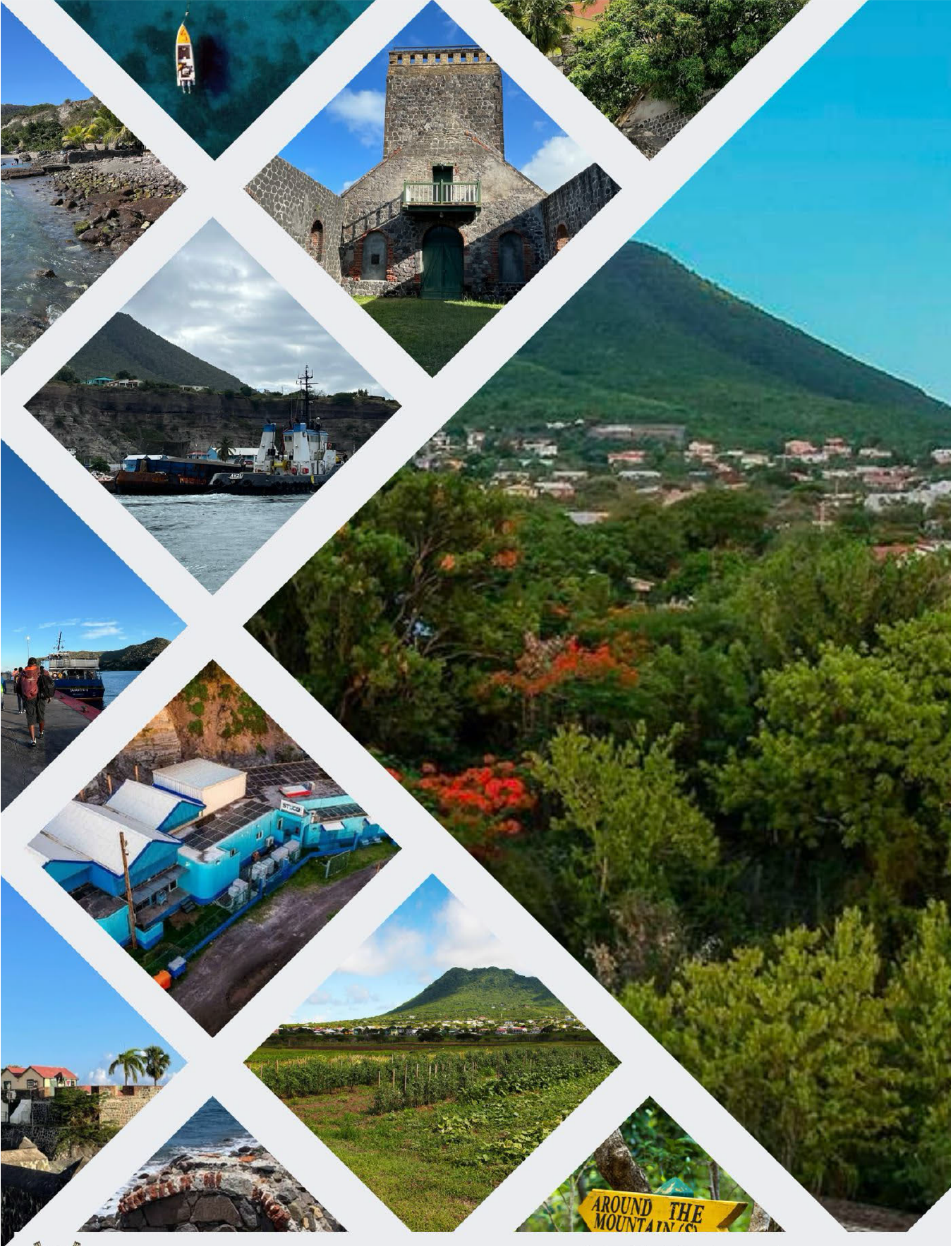
Statia 2026 (2025). *Marine Ecosystem Health and Coral Reef Monitoring Report.* Oranjestad: St. Eustatius National Parks Foundation (STENAPA).

STENAPA (2024). *Annual Conservation Report 2024.* Oranjestad: St. Eustatius National Parks Foundation.

The Daily Herald (2020). *Statia's Terminal Sale Finalised – NuStar Becomes GTI. The Daily Herald*, 3 January 2020.

University of Notre Dame (2024). *ND-GAIN Country Index 2024.* South Bend, IN: Notre Dame Global Adaptation Initiative.

WWF (2023). *Spatial Planning and Nature Policy Goals in the Caribbean Netherlands.* Zeist: World Wide Fund for Nature Netherlands.



St. Eustatius Climate Plan
Part 3: Integrated Climate Framework
Commissioned by the
Government of St. Eustatius

Prepared by Persoonlijke gegevens
Director, Reimpact Studio B.V.
www.reimpact.studio
Persoonlijke gegevens

RE³IMPACT
reinvent, reawaken, regenerate