

Navigating Shared Vulnerabilities:
Climate Adaptation on the Split Island of Saint Martin

by
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Abstract:

The island of Saint Martin on the windward side of the Caribbean Sea is a volcanic island whose low-lying areas are at high risk for flooding and storm surges as a result of exposure to increasing severe hurricanes that is compounded by sea level rise. Saint Martin's mountainous landscape is split by two governments. The first is the Collectivity of Saint-Martin, a semi-autonomous region of France. The second is the Government of Sint Maarten, an independent island government within the Kingdom of the Netherlands. This thesis examines how both governments on the island of Saint Martin are working to develop climate adaptation strategies within a context of already existing chronic exposure to extreme climate risks. Given the administrative split and the severity of climate change, how can an island with two governments and two different approaches to climate change adapt to common future climate changes?

The work first traces how the construction of climate adaptation expertise is shaped by perceptual biases which originate from outside the Caribbean region, often in countries like the Netherlands and France. From this engagement on the construction of expertise, the Chapter 1 traces how hurricanes have shaped how climate and weather events are understood and confronted by islanders and argues that future hurricane models articulate changes to everyday climate conditions that stand to challenge longstanding practices of resilience in the face of extreme climate events. Chapter 2 examines current climate adaptation strategies implemented in the Collectivity of Saint-Martin, and underscores the relationship between risk perception, policy formulation, and historical context by highlighting the need for locally-adapted strategies. Chapter 3 examines how the Government of Sint Maarten attempts to address climate change and climate adaptation and considers avenues for community-centered risk assessment and adaptation planning. Chapter 4 engages the limitations of both strategies in Saint-Martin and Sint Maarten, and proposes an alternative vision for climate adaptation given the shared vulnerabilities that exist for both sides of Saint Martin.

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Table of Contents

<i>Acknowledgements</i>	5
<i>List of Figures</i>	6
<i>List of Tables</i>	10
<i>Introduction</i>	11
Perceptions of Risk: Summer Storm Poly	11
Methodology.....	17
Chapter Overview.....	25
<i>Grounded Interlude 1 The Island and The Island</i>	28
<i>Chapter 1: Hurricanes Pasts and Futures in Saint Martin</i>	33
Risk as a Memory and Time Keeper	33
Two Environments: The Ever-Present and the Potential.....	38
Hurricanes are Temporal Artifacts, They Punctuate a Chronic Time	40
Hurricane Pasts and Presents.....	45
Hurricanes, Sea Level Rise, and Climate Futures	47
<i>Grounded Interlude 2 The Doubles</i>	50
<i>Chapter 2: Saint-Martin, France, and Contextualizing Adaptation</i>	54
Risk and its Discontents.....	54
Contesting Coastal Change.....	55
Natural Risk Prevention Plan (PPRN).....	59
Administrative Risk and Climate Change	61
Measuring a Coastline	64
The Value of a Coastline in Theory and Practice	66
Loi Pons: Densifying Urban Coastlines and Conditioned Coastal Urban Possibilities.....	68
The State and Re-naturalization	69
The Call from Fort-de-France.....	70
Facing Incoherence	71
<i>Grounded Interlude 3 Trick Mirror</i>	73
<i>Chapter 3: Sint Maarten, the Kingdom of Netherlands, and Conditioned Vulnerability</i>	78
Risk, Spatial Scales, and Manufactured Dependencies	78
Ever-Present Environments	80
Invisible Infrastructures	82

The Missing-Island Atlas	84
Who Governs the Ever-Present Environment?.....	85
Status, Financing, and the Ever-Present Environment.....	87
Post-Irma Reconstruction and the NRPB: Building for What Risks?	89
Environmental Advocacy: Mapping Responsibilities.....	92
Attenuating Risk: What Kingdom Affairs Matter	95
IPDC: Mapping Risk, Futures, and Responsibilities	97
Representing the Ever-Present and Potential Environment at Scale	99
<i>Grounded Interlude 4 Who you for?</i>	<i>102</i>
<i>Chapter 4: From Risk Assessment to Climate Adaptation</i>	<i>107</i>
From Risk and Risk Assessment to Adaptation?.....	109
A Very Short Speculative Fiction: Press Release of a Joint MOU on Climate Collaboration, 21 June 2025	114
On the Possibilities of the Fictional MOU	118
Canary in the Coal Mine for Climate Cooperation	119
Allegory for Climate Futures: Mayotte, Island Rights, and Conditional Citizenship.....	120
The Climate is Changing, and so too, must Saint Martin	122
Long Term Planning as the Something-Needing-to-be-Done	123
Constructing Commons through Climate Adaptation Plans	124
Shared Futures for Saint Martin.....	126
<i>Appendix 1: Saffir-Simpson Hurricane Wind Scale</i>	<i>127</i>
<i>Appendix 2: Interviews</i>	<i>128</i>
<i>Appendix 3: Themes from Coded Interviews</i>	<i>130</i>
<i>Appendix 4: Non-exhaustive List of Literature Consulted by Category</i>	<i>132</i>
<i>Appendix 5: Meditations on Risk</i>	<i>133</i>
<i>Appendix 6: Mundane Risks, Climate Extremes, and Tools for Action</i>	<i>136</i>
<i>Appendix 7: Visual Analysis of Historic Changes to Saint Martin</i>	<i>138</i>
<i>Appendix 8: Diagrams for Structuring Chapter 4.....</i>	<i>139</i>
<i>Bibliography.....</i>	<i>140</i>

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List of Figures

Figure 1: Diagram of overall thesis structure. Image by Author, 2024	25
Figure 2: Photograph of Northern Side of Saint-Martin from the Ferry to Saint-Barth. Image by Author, 2024.	28
Figure 3: Photograph of the Pond Island Landfill in the Great Salt Pond of Sint Maarten. Sint Maarten. Image by Author, 2024.	29
Figure 4: Photograph of Dredged Sand by the Cruise Terminal of Sint Maarten. Image by Author, 2024.	30
Figure 5: Photograph of Northern Landfill near Grand Caye in Saint-Martin. Image by Author, 2024.....	30
Figure 6: Photograph of the Great Bay in Sint Maarten from Fort Amsterdam, with cruise ships visible in the background. Image by Author, 2024.	32
Figure 7: Map of Saint Martin with Topography and Bathymetry. Map by DATA.SHOM.FR, “Cartography of Saint-Martin 1:50 000 Seamless (Raster Marine),” Digital (Institut national de l’information géographique et forestière [National Institute for Geographic and Forestry Data], n.d.).....	33
Figure 8: (left) Map of Saint Martin from later 19 th century. Image from the National Archives in Guadeloupe, "St-Martin : Plan de la rade au 1/125000e / Fait par le garde d'artillerie soussigné [illisible]. 1892 Guadeloupe. Atlas des bâtiments militaires [St-Martin: Plan of the Rade at a 1/125000 scale / Made by artillery guard [illegible].”	35
Figure 9: (right) Map of Saint Martin depicting circulation maps on Saint Martin, mirroring the circulation routes that are active today on the island (see Figure 11). Map from the National Archives the Netherlands (Nationaal Archief),"Geteekende kaart van het eiland Sint Martin (Sint Maarten), met aanwijzing der kwartieren en verdere topographische bijzonderheden [Drawn map of the island of St. Martin (St. Martin), with indication of quarters and further topographical details]”, 1817.	35
Figure 10: Map of Saint Martin's elevation and geology. Note the change in elevation in the bottom cross-sections of the island cutting from A to A' through Cole Bay (Kool Baai), Philipsburg, and Geneve Bay, and from B to B' starting at The Grand Case Bay to Point Blanche, which transects the tallest point Pic Paradis (411m). Note near Marigot, Anse Marcel, Simpson Bay, and in the Great Salt Pond (Groot Zoutpan) the absence of landfills that are present today (see yellow zones in Figure 11). Image by Robert A. Christman, “Geology of St. Bartholomew, St. Martine, and Anguilla, Lesser Antilles,” GSA Bulletin 64, no. 1 (January 1, 1953): 65–96, page 81.	36
Figure 11: Map of Saint Martin’s urban zones as of 2021. Panel A depicts location of Saint-Martin/Sint-Martin within the Windward islands of the Caribbean. Panel B shows main physical and built features of the island. Image by Virginie K. E. Duvat et al., “Understanding Interlinkages between Long-Term Trajectory of Exposure and Vulnerability, Path	

Dependency and Cascading Impacts of Disasters in Saint-Martin (Caribbean),” Global Environmental Change 67 (March 1, 202):1-43, Page 6. 37

Figure 12: Image of the Vegetation on Saint Martin as an island. Compared to the Urban Zones and reclaimed land areas shown in Figure 11, the true distribution of vegetation on Saint Martin is fragmented by infrastructure. Image by Ministry of Public Housing, Spatial Planning, Environment, and Infrastructure, “Nature Policy Plan 2021-2025” (Government of Sint Maarten, October 2021), page 7. 38

Figure 13: (right) Illustration of Hurricane Irma's Path in 2017, where dark purple represents a Category 5 storm. Images created by author using “Historical Hurricane Tracks,” Government, Office for Coastal Management: Digital Coast, accessed December 16, 2023, <https://coast.noaa.gov/hurricanes/>. 39

Figure 14: (left) Recorded hurricane paths for Category 3, 4 and 5 storms crossing through or near Saint Martin over the last century. Images created by author using “Historical Hurricane Tracks,” Government, Office for Coastal Management: Digital Coast, accessed December 16, 2023, <https://coast.noaa.gov/hurricanes/>. 39

Figure 15: Boat on the beach of Philipsburg, Sint Maarten, 2017. Image by SXM Talks, “Hurricane Irma Destroys St. Maarten: ‘Everything Seems Wiped Away,’” September 17, 2017. 40

Figure 16: Image from presentation at the Governors Symposium made in 2018 on future sea level rise for Saint Martin in the next 20-50 years. Here Philipsburg, Lowlands, Cole Bay, Maho Beach, Princess Juliana Airport, Marigot, and Sandy Ground are all depicted as flooded. Portions of Dutch Cul-de-Sac and St. Peters are also shown as flooded. Image from Hilbert Haar, Sint Maarten News, <https://stmaartennews.com/weather/climate-change-nobody-moves/>. 43

Figure 17: (left) Photograph of large satellite dish on Pond Island adjacent to the new Government Building in Sint Maarten. Image by Author, 2024. 50

Figure 18: (right) Photograph of a telecom pole on the top pic Paradis in Saint-Martin. Image by Author, 2024. 50

Figure 19 (left) : Two desalinated water tanks near the Sint Maarten cruise terminal, serving nearby developments and cruise ships that are docked. Image by Author, 2024. 51

Figure 20 (right): Diesel power plant located close to sea level in Cole Bay, Sint Maarten. Image by Author, 2024. 51

Figure 21: Barricaded Street in Saint-Martin. Image from J. Champion et H. Pédurand, “Vives tensions à Saint Martin autour du plan de prévention des risques naturels [Heated tensions in Saint-Martin around the Natural Risk Prevention Plan]” FrancInfo Guadeloupe. December 13, 2019. 54

Figure 22: Map of Cyclonic Hazards for Saint Martin for the Natural Risk Prevention Plan. Image by Saint-Barthélemy and Saint-Martin, “Plans de Prévention des Risques naturels

(PPRN) [Natural Risk Prevention Plan]” (Ministry of the Ecological Transition of France, March 23, 2023).	55
Figure 23: Map of Communes with Natural Risk Prevention Plans, not including Saint-Martin, which is not considered part of Metropolitan France, though is under the jurisdiction of the Ministry of the Ecological Transition. Image by Géorisques, “Risques naturels sur le territoire français: chiffres clés [Natural Risks in France: key statistics]. Ministry of the Ecological Transition. 2023.	58
Figure 24: Territorial Status of Saint-Martin within the Republic of France, with island of Clipperton omitted. Image by Author, 2024.....	58
Figure 25: Map of Zones in Relation to the Natural Risk Prevention Plan, and specifically for Managed Retreat. Image by Saint-Barthélemy and Saint-Martin, “Plans de Prévention des Risques naturels (PPRN) [Natural Risk Prevention Plan]” (Ministry of the Ecological Transition of France, March 23, 2023).	61
Figure 26: Map of France’s Overseas Territories (Territories d’Outre-mer) including Overseas Collectivities and Departments (DOM-TOM), as well as Southern and Antarctic Lands (TAAF). Image by Superbenjamin. “La France avec l'ensemble des territoires d'outre-mer [France with all of the French Overseas Territories],” Digital Map. December 1, 2015.....	64
Figure 10: (left) Building near Orient Bay with cactus growing located at the coast (not visible in picture but directly behind the building). Source: Author, 2024.	73
Figure 11: (right) Two chairs in Fort Amsterdam facing the horizon. Image by Author, 2024.	73
Figure 12: Dried leaf on the path towards Pic Paradis. Image by Author, 2024.	75
Figure 13: (left) Mangled roots after Summer Storm Poly in Amsterdam, Netherlands. Image by Author, 2024.	76
Figure 14: (right) Cacti located near Friars Bay in Saint-Martin. Image by Author, 2024.....	76
Figure 33: Diagram of Sint Maarten's Territorial Status. Image by Author, 2024	78
Figure 34: Image taken from Cole Bay of Simpson Bay pre-1980 (top), and an image of Simpson Bay in 2012, before Irma in 2017, and continued urbanization, including the Simpson Bay Causeway Bridge built across the Lagoon in 2013. Image by Ministry of Public Housing, Spatial Planning, Environment, and Infrastructure, “Nature Policy Plan 2021-2025” (Government of Sint Maarten, October 2021), page 13.	81
Figure 35: Map of the six islands in the Dutch Caribbean (Curaçao, Aruba, Bonaire, Saba, Sint Maarten, Statia) located on the western edge of the Caribbean Sea. Image by Author, 2024.....	84
Figure 36: Estimated Damage Costs by Sector in Sint Maarten by NAf. Million. Image by Monetary Policy, Economics & Statistics Division, “Economic Bulletin December 2023,” Central Bank of Curaçao and Sint Maarten, (December 13, 2023). Page 28.	86

Figure 37: Damage after Irma in terms of % of total Capital Stock. Image by Mary Boyer et al., “Advancing Disaster Risk Financing in Sint Maarten” World Bank. (August 4, 2023). 91

Figure 38: (left) A great egret (*Ardea alba*) flies from fort Amsterdam. Image by Author, 2024. 102

Figure 39: (right) The remnants of pylons by Orient Bay, and Saint-Barth is visible from a distance. Image by Author, 2024. 102

Figure 40: Plastic caught in a fern by Étang Guichard and Friar’s Bay. Image by Author, 2024. 103

Figure 41: Pieces of a former sugar plantation covered in roots on the path towards Pic Paradis. Image by Author, 2024. 104

Figure 42: Cactus hidden by moving grasses near Étang Guichard. Image by Author, 2024. 104

List of Tables

Table 1: Total Estimated Damages in US\$ after Irma in Saint Martin.	41
Table 2: Saffir-Simpson Hurricane Wind Scale. Source: National Oceanic and Atmospheric Administration. https://www.nhc.noaa.gov/aboutsshws.php	127

Introduction

“1. An island is a naturally formed area of land, surrounded by water, which is above water at high tide.” - Article 121: Regime of Islands, United Nations Convention on the Law of the Sea

“Coasts are not human constructs. Coastlines on a map are.” – Susan Crawford, in *Charleston: Race, Water, and the Coming Storm*

Perceptions of Risk: Summer Storm Poly

Staring out the eleventh flood window of a government office in The Hague, Netherlands, my colleagues were frenzied. A rare summer storm name Poly was arriving. It was July. Predicted strong winds and rain meant it was time to head home to Amsterdam, to Leiden, to Gouda before the trains shut down, or worse yet, delayed indefinitely. That evening into the next morning, winds ranging up to 90 mph (146 kmph) hit the western coasts of Netherlands. Trees toppled. Transit paralyzed. The day after the storm, cities remained still and then, slowly, began to stir again. Were this event measured in severity by Hurricane standards, it would be a Category 1 on the Saffir-Simpson Wind Scale, meaning a storm whose dangerous winds will likely produce some damage (see Appendix 1). Here, losses can be measured in felled trees and downed power lines. Temporary obstructions lasting days not weeks, let alone years.

Returning to work the next day at the Ministry of Infrastructure and Water Management of the Netherlands, I asked colleagues in the Climate Adaptation and International Water Affairs team a question. Have you ever lived through a Hurricane? Of those I spoke to, the answer was a resounding “no.” This makes sense, geographically speaking. The Netherlands, a coastal nation located on Rhine River and Meuse River deltas, does not experience hurricanes, right? And yet, Summer Storm Poly felt and looked like a hurricane.

In the Netherlands, hurricanes are not a factor of administrative or public concern. In the country founded on engineered landscapes, water authorities, dikes, artificial lands (polders) and seas, and mechanical feats such as moveable sea walls: water is everywhere and conditions every piece of the built environment. Policy is built around water. Strategic research organizations like Deltares in Delft and civil engineering agencies like Rijkswaterstaat hold mandates to address water-based engineering and research

questions in the European Netherlands and within selective international partnerships (van den Brink 2021, 244-245). Finding ways to systemically control water as an organizing force is not only a goal, but a national prerogative defining the possibilities for the nation's longevity. The landscape is in a suspended state of nature. One where nationally there is a deep reliance on water management infrastructure to suspend possibilities of catastrophe every day and during flood events. To live with environmental risk means finding solutions to manage the problem, that is, to live with conditioned risks rather than unmitigated processes. Living alongside engineered extremities has produced a normalized forgetting of climate risks that is societally reinforced.

And yet, despite early warning systems and predictive modelling, Summer Storm Poly was not an ordinary storm. It caused a reported €100 million in damages to insurers in the Netherlands alone (RTL Nieuws 2023). A summer storm like Poly was a surprise to many because it evolved from a fast moving, dense pressure system produced by rarely seen changes in temperature patterns in the North Sea region that was coupled with deep levels of uncertainty in the climate models used by decision makers to estimate the severity of the storm (Coumou et al. 2018). In the Netherlands, Summer Storm Poly emerged as record breaking anomaly rather than a harbinger of what's to come.

At the Ministry of Infrastructure and Water Management, my work focused on a relatively new Dutch international policy initiative known as the International Panel on Deltas, Coastal Areas, and Small Island States (IPDC) within the Climate Adaptation and International Water Affairs (KAWI) unit. As the acronym suggests, Small Island States were added after the initiative was formed. My work was to focus on coordinating efforts to reach Ministerial contacts for partner countries such as Argentina and South Africa as well as representatives from the Dutch Caribbean, a term comprising Curaçao, Aruba, and Sint Maarten, the three independent islands in the Kingdom of the Netherlands, as well as Bonaire, Saba, and St. Eustatius (Statia), the three islands of the Caribbean Netherlands. This work aimed to provide pathways, almost ironically, toward the development of climate adaptation plans and international funding mechanisms—a decision often ultimately administered on and overseen on the European continent.

In the Climate Adaptation and International Water Affairs (KAWI) unit, the team not only focused on the co-construction of international water policy with countries like Tajikistan,

but it was emphasized that the Netherlands is a knowledge leader for climate adaptation.¹ The Netherlands regularly held court for government partnerships with countries such as Egypt, Vietnam, Indonesia, and Bangladesh with intersecting public and private interests (IPDC 2021). For the Dutch Government, newer exploratory partnerships with other Caribbean island nations were opportunities to establish new relationships in the Caribbean region, one *without the burden of history* as one interviewee stressed. The Dutch Caribbean, within the context of Dutch International Adaptation policy, was outwardly used as proof of Dutch comprehension of small island concerns. The Dutch Caribbean as an inclusive category for all six islands of the Kingdom of the Netherlands, was used to prompt speeches on Dutch dedication to the region and yet, behind the curtains of diplomatic engagement, that there exists a complex entanglement of competing interests limiting action for islands within the Kingdom. With the Dutch Caribbean as the foreground of Dutch adaptation expertise it appears as though their expertise was ornamental at best.

My disagreement with colleagues was over the paradoxical position taken by the Dutch government, one where officials claimed legitimacy and competency over issues such as persistent flooding, land reclamation and subsidence prevention, and sea level rise protections with grey and green infrastructures including nature based solutions (NbS).² Within the construction of expertise, the national government of the Netherlands, acting often on behalf of the Kingdom, seemed to neither acknowledge, nor engage with all six Dutch Caribbean islands beyond limited formal interactions between ministers and reports published following a change in political priorities and reviewed mandates toward the region. (This is the subject of a law suit brought on by Greenpeace Netherlands and Bonaire against the Netherlands on behalf of the Caribbean Netherlands at the time of writing this thesis.) In fact, when I mentioned to colleagues the potential for reputational risk raised by this apparent willingness to engage the heads of small island states like Barbados while Dutch Ministries simultaneously lacked cooperation and offered few comprehensive

¹ The UN 2023 Water Conference, for example, was co-hosted by the Netherlands and Tajikistan with programming centered on “strengthen local, national and international action for water supply, sanitation and hygiene (WASH) and integrated water resources management (IWRM), and create support for an integrated, comprehensive and preventive approach towards water challenges;” See “Vision Statement for UN 2023 Water Conference.”

² For more on the construction and limitations of Dutch expertise related to managing water-related environmental hazards, see Lizzie Yarina, “This River Is a Model,” *Places Journal*, February 13, 2024, <https://placesjournal.org/article/this-river-is-a-model/>.

integrated strategies for the Dutch Caribbean, several colleagues responded that they had never thought of it that way.

In a sense, the Caribbean was not a part of a common perception of what legitimates Dutch water and climate policy. (This is a sort of reverse NIMBYism³ — one where the government would like to claim the capacity to take on an internationally progressive policy decision, in this case support of small island states, while not wanting to fundamentally address the issue of climate adaptation in their own small island territories.) In this sense, the construction of the policy agenda was confounding; it revealed considerations in the interests and mandates of the Netherlands as country first, even if the Kingdom was evoked to deliberately include the islands as participants represented in international events. In the Dutch national government, there was a potent *grey zone* of responsibility toward overseas territories. This grey zone was characterized by asymmetric financial, social, and political power dynamics that maintains populations of the Dutch Caribbean within positions of dependence toward the Netherlands.

In a brief conversation with a representative from the Union of Dutch Regional Water Authorities (*Unie van Waterschappen*), a national representative body for all twenty-one water authorities in the Netherlands, he noted, in an almost confessional tone, something to the effect of: the public trusts us *too* much to manage what is to come [in terms of climate risks, sea level rise and flooding], *there are some risks we cannot manage our way out of* in the future and [these risks] will exceed the infrastructures we have. Though this phrasing may appear polished, or perhaps adjusted for dramatic effect, this is no exaggeration. Public understandings of the past as evidence of present and future protections from risk are no longer enough. The very ability to continue to live surrounded by risk was the implicit undertone utilized by this official; an official whose presence, at the time of our meeting, was to convince an international governmental entity of the robustness of Dutch water management systems and programming. For the Netherlands, living with the threat of climate risk as a complex factor for future planning and, at the same time, holding a large economic and political stake in the knowledge and expertise on this very topic can both be true. Dutch water management systems are some of the most robust in the world. And yet, Dutch water management systems may struggle to withstand

³ NIMBY is a term that means “not in my backyard.” Dutch Water Sector. March 22, 2023. <https://www.dutchwatersector.com/events/un-2023-water-conference>

future climate changes and the unequal distributive effects of sea level rise. (The earth is a spheroid with uneven topographies that affect the distribution of the sea level.) For the purposes of this thesis, I wish to weigh the consequences of this undertone; One marked by the implications of managing risk and adjusting to risks that are, at present, unthinkable. The unthinkable as it is made present today will condition the possibilities and constraints that define abilities to engage risk in the future.

Herein lies, paradoxically and tellingly, my introduction to Sint Maarten as a territory and government, and Saint Martin as the island in the Caribbean. A foil to the ultra-planned regimes of climate adaptation planning in the Netherlands and then Saint-Martin and France as the thesis progressed. Saint Martin (with no hyphen) throughout the thesis refers to the whole island. Saint-Martin (with hyphen) refers to semi-autonomous territory of 54 sq.km (20.85) located in the Northern half of the island that is part of France. Sint Maarten refers to country of 34 sq. km () located in the Southern half of the island that is part of the Kingdom of the Netherlands. The more I engaged Saint Martin as the subject of my research with interlocutors the more the island and it's two governments—Saint-Martin to the North and Sint Maarten to the south—seemingly defied the boundaries of existing institutional perceptions. Island territories in the Caribbean, as it was once emphasized disapprovingly by a French government official in Paris, are a disaster for policy implementation and enforcement.⁴ To this individual, islands were thorny reminders of places within France's jurisdiction that significantly diverge, in the eyes of a French bureaucrat, from the “acceptable” standards of practice and habitation defined by French state.

Paralleling this misapprehension, an official on island, also from metropolitan France, noted that efforts to implement top-down planning strategies set as sanitation reforms within a mandated urban renewal strategy in one of Saint-Martin's incremental settlement areas referred to as Priority Neighborhoods (QPV) (*Quartier prioritaire de la politique de la ville*), is impossible to carry out. The task of planning, within the individual's understanding of their role, was incompatible with the norms and practices of Saint-Martin. In fact, the individual noted that their role can “only work with some destruction in the process in order to produce something better for these communities.” This individual—trained in the models, processes, and practices fabricated over decades of French social housing and

⁴ Stuart Schwartz notes that calamity as it is named and defined, notably in spaces of chronic hurricane risk, is itself a “social assessment,” See Stuart B. Schwartz, *Sea of Storms: A History of Hurricanes in the Greater Caribbean from Columbus to Katrina* (Princeton University Press, 2016), page 99.

urban planning policies (and accompanying professional educational structures) that favored centralization over planning with regional difference—expressed a sentiment that is ultimately unsurprising.⁵ However, when asked to consider if aspects of their work as a civil servant in Saint-Martin’s incrementally planned neighborhoods, including the area’s mix of languages and cultures, had reframed any of their previous work in some of France’s most diverse urban districts, the individual responded resoundingly “no.” Instead, the island had become a place where nothing was to be done, even if planning for future chronic environmental risks needed remains an urgent task to be done.

Troubled and intrigued by this official’s resignation, it became clear that whether in Saint-Martin or Sint Maarten, the role Saint Martin in the eyes of representatives from the island’s former metropolises is seldom clear. From the perspective of officials interviewed from both the French Ministry of the Ecological Transition and Dutch Ministry of Infrastructure and Water Management: islands in the Caribbean were a relatively “new issues” added to policy agenda rather than *de facto* a precondition in the formation of national policy. Islands appeared as challenges to European standards, and preoccupations within internal domestic policy issues as well as climate policy issues more broadly. Elizabeth DeLoughrey writes that Nissology, or the study of islands, “has long been concerned with this paradox, in which islands are depicted as isolated and remote yet seem to be under constant surveillance, visualized, studied, and visited by colonizers, militaries, anthropologists, filmmakers, and tourists” (2019, 170). From discussions with officials in Saint-Martin and Sint Maarten, as well as in France and the Netherlands, a throughline animating the structure of this thesis emerges: Engagement with climate adaptation planning and risk management as a subject of research is caught in a paradox of representation; one where the roles and responsibilities towards Saint Martin as an island remain articulated in terms of differences, artificial splits, and failures to meet standards that have always seemingly been set from elsewhere. The work of this thesis aims to critically examine the supposed differences, splits, and failures underscored by officials both on and off island, from the ground-up as gaps between what has been done and what can be done to take action and diminish the risks brought on by climate change on Saint Martin.

⁵ For a discussion of how French urbanization practices have utilized centralization to disperse low-income communities, notably immigrants from its former colonies working in French manufacturing, see an example written on the city of Montpellier by Roza Tchoukaleyska, “Public Space and Memories of Migration: Erasing Diversity through Urban Redevelopment in France,” *Social & Cultural Geography* 17, no. 8 (November 16, 2016): 1101–19.

Background

The motivation behind this work is derived from the gaps in policy and planning I observed while working both in France in 2021-2022 and in the Netherlands in 2023 on projects and policies related to small island territories and states. From the experiences and collaborations in this process, I wanted to delve actively into climate adaptation policy and planning models which could best exemplify some of the perspectives shared with me over the course of those experiences and subsequent research investigating the dynamics I encountered. The material used to construct the analyses in each chapter of this thesis is largely derived from fieldwork and interviews in Netherlands, France, and Saint Martin in the Caribbean. To engage stakeholders in Saint Martin, I visited both sides of the island: Saint-Martin and Sint Maarten. Many of the stakeholders engaged for the purposes of this thesis were the result of a proposed a fact-finding mission in collaboration with the non-profit Climate Adaptation Services, an organization based in the Netherlands and specialized in climate effect mapping for countries around the world. I first worked Climate Adaptation Services as a public service fellow in Climate Adaptation and International Water Affairs Team of the Ministry of Infrastructure and Water Management of the Netherlands. The public service fellowship and collaboration was made possible through three grants funded by organizations within the Massachusetts Institute of Technology: two from the Priscilla King Grey Center for Public Service and one from the Department of Urban Studies and Planning.

Methodology

Interviews

The work and research informing this thesis was completed over a period of nine months, including a two-week visit to Saint Martin in January 2024. Some of the work completed for this thesis has helped inform the development of a Climate Risk Atlas for the Caribbean, a project itself funded by the Ministry of Infrastructure and Water Management of the Netherlands that is discussed in Chapter 3. The research for this thesis includes collaboration with Ellen van Beuren, Chair of Urban Management at TU Delft, and as well as members of the NGO and research group Islanders at the Helm, including Raymond Jessurun and Lysanne Charles at the University of Saint Martin. Islanders at the Helm and Climate Adaptation Services offered critical support that allowed me to contact and speak with stakeholders in Sint Maarten. To contact individuals in Saint-Martin, I was put in touch

through a couple initial contacts I had from previous project work in Paris funded by France's Ministry of Ecological Transition and the Cohesion of the Territories, among other governmental and non-profit project funders. I also has a generous contact at MIT from Saint-Martin who connected me with some of the initial people I spoke with while in Saint-Martin. Throughout the thesis, I strive to give credence to the generosity and kindness of those who have made it possible to pursue this work. Any misstatements are mine alone.

In summary, the research for this thesis began in June 2023 and ended in April 2024. A list of the organizations and sectors that informed the scope of this research can be found in Appendix 2. A total of 76 individuals were engaged in informational interviews. Of these 76 individuals, additional targeted interviews were completed to obtain supplementary information on climate adaptation planning approaches in Saint-Martin, Sint Maarten, France, and the Netherlands. The first set of observational interviews was conducted in Summer 2023. The second set of observational interviews took place in Fall 2023 to understand at a preliminary level the state of climate adaptation planning in Saint-Martin and Sint Maarten. The first set of targeted interviews took place over two weeks in January 2024 in Saint Martin with stakeholders from both sides of the island. These interviews were accompanied by field visits around the island to gain a better sense of the island's topography and different coastal areas from cities to protected natural reserves. A second set of targeted interviews was conducted from February to April 2024 with stakeholders from Saint-Martin, Sint-Maarten, France, and the Netherlands to gain a fuller picture of some of the insights shared while on island. Most of the interviews conducted for this thesis were granted under conditions of anonymity. Quotes throughout the thesis remain anonymous and indicated through *italics* when paraphrasing a quote from an individual or grouping similar perspectives from several interviewees. Any direct citation from an interviewee is places in “ “ quotations. Between January 2024 and April 2024, each targeted interview was processed and coded by themes that are listed in Appendix 3. The themes which emerged from the coded interviews were then used to determine the publicly available documents, statutes, and events that are used to assemble each chapter.

Each chapter engages the selected publicly available documents and relevant literature to ground the perspectives that emerge from the interviews, meetings, and events I observed and/or engaged in. The documents used in this thesis to name legal definitions, risk metrics, and active adaptation programs become important “junctions” or tools that channel “diverse technical inheritances” and “open the possibility for other possibilities” (Bollestro 2019, 11). In this sense, I explore how technical documents (and their apparent fixity) are tools to open other possibilities, ones which when placed in conversation with

one another across borders and jurisdictions of one geographic place engages how we understand climate risk today. The work of this thesis is interested in how renewed relationships to these tools can otherwise bound the uncertainty of climate futures.

These tools that define risk shape not only climate adaptation plans, but also condition climate futures, from the catastrophic to the mundane (see Appendix 6). They become what François Vèrges terms as “critical junctures” which can ground shared “inheritances to find sources and references for the struggle ahead” (2017). In the cases of Saint-Martin and Sint Maarten, these inheritances are derived from histories of colonization, exploitation, and extraction which have conditioned the island of Saint Martin and islands throughout the Caribbean region in the aftermath of the atrocities and systemic violence of Slavery and the Middle Passage. Though this thesis is not intended to provide a comprehensive history of either Sint Maarten or Saint-Martin, the work of this thesis aims to situate, where possible, the place of history informing current vulnerabilities on the island of Saint Martin.⁶ In describing parts of Saint Martin, each chapter remains a limited engagement with an island whose richness and complexity extends far beyond any set of written words, photographs, maps, or diagrams.

Mapping Gap Analysis

As a preliminary step, an analysis of mapping data was conducted to identify whether a cartographic rendering of Sint Maarten and Saint-Martin was feasible. Through this analysis, it emerged that both the governments of Saint-Martin and Sint Maarten currently have limited, incomplete, and/or fragmented datasets to represent urban and environmental conditions in their respective parts of the island. Owing to the artificial split of the island, most available datasets were clipped in half, offering a partial picture of the island as a whole with differing methodologies. Owing to limits in time, this thesis does not include any further mapping analysis. Instead, the chapters relies primarily on qualitative data collected through field work and interviews to engage the existing environmental conditions of the island as well as plans, existing maps, and professional practices related to climate adaptation on the island. Further research could be conducted to generate

⁶ For accounts of Sint Maarten’s history, see Johan Hartog, *History of Sint Maarten and Saint Martin* (1981). For accounts of Saint-Martin, see Yves Monnier, *L’immuable et le changeant. Étude de la partie française de l’île de Saint-Martin* (1983). For a history addressing both sides, see Jean Glasscock’s self-published book, *The making of an Island: Sint Maarten/Saint Martin* (1985).

detailed, coordinated datasets to draw parallels between the physical and social environments of Saint-Martin and Sint Maarten.

Visual and Historical Analysis

Prior to completing the thesis project, a series of visual investigations (Appendix 7) to survey historical literature and archives to gain an understanding of the timeline of changes in Saint Martin. The analysis engaged available records of pre-Columbian habitation in Saint Martin as well as nearby islands, and studied the impacts of French, Dutch, Spanish, and British colonization on Saint Martin before and after its division by the French and Dutch in 1648. This analysis also tracked recent changes to the island's landscape in the aftermath of Hurricane Irma in 2017. From the analysis the impacts of colonization, across both sides of Saint Martin, were produced through the establishment of a plantation economy using the enslavement of individuals brought in the Middle Passage to harvest tobacco, cotton, sugar, indigo, and salt among other commodities (Hartog 1981)(Monnier 1983). This engagement with historical records authored by Yves Monnier (1983, 1987), Jean Glasscock (1985), Johan Hartog (1978, 1981, 1997), Thierry Hartog and Jean-Pierre Chardon (1995), and Wim Renkema (2020) to chart changes over time of settlement patterns, political systems, as well as changes to the island's ecology (De Freitas et al. 2020). More recent works by Daniella Jeffry (2010) and Daphina Misiedjan (2020) chart how administrative status changes in Saint-Martin in 2007 and Sint Maarten in 2010 continue to challenge possibilities for resilience both in everyday governance and in terms of long-terms prospective for islanders. Both Jeffry and Misiedjan note the ongoing respective inequities maintained between each island territory and their former metropolises (France and the Netherlands), as well as the islands they were once dependencies of: Sint Maarten was dependency of Curaçao until 2010, and Saint-Martin was a dependency of the Department of Guadeloupe until 2007. The intricate disparities connecting islands to islands, and islands to nations in continental Europe makes Saint Martin, as island conditioned by these connections, a critical place for environmental planning research and action.

The scope of this work considers how these historic dependencies on Saint Martin condition possibilities for climate action, and by extension forms of climate justice, in the present. In future research, an in-depth examination of the economic and social implications of Saint Martin's colonial history as it relates to contemporary policy challenges would contribute to ongoing discussions on post-colonial (in)justices experienced in the French and Dutch Caribbean today. Placing the Dutch and French Caribbean in conversation remains an important step in naming some of the analogous responsibilities both nations maintain in the Caribbean region despite differences in

language and approach. For the purposes of the thesis, the scope of this work considers how these historic and present dependencies between Saint Martin, France, and the Netherlands broadly condition possibilities for climate action, and, by extension, forms of climate justice, in the present. The scope of this thesis focuses on existing documentation and processes that have emerged primarily since 2007. Chapter 1 uses Hurricane Irma in 2017 as a turning point in the literature from observing how the island has changed from a distance towards quantifying and measuring climate risks with greater precision. Broadly, the literature discussed in Chapter 1 reveals how contemporary resilience practices on island are both grounded in historic relationships to extreme climate events that, since Irma, are faced with unprecedented change due to the impacts of climate change, including more severe Hurricanes and sea level rise, in Saint Martin and the Caribbean region. Chapter 2 and Chapter 3 are also framed within the period after Irma. Chapter 4 moves away from the present toward implications for prospective futures within Saint-Martin and Sint Maarten, and for Saint Marin as an island faced with shared imminent environmental changes.

Literature Review to Engage Risk

The literature addressing climate risk rife with slippery words: nature, solutions, benefit, debt, environment, time, scale, memory, affect. These risks within climate adaptation processes and strategies emerge in curious ways across multiple disciplines. These disciplines contend differently with the distribution of risk over time, across scales, and to what extent the issue of climate adaptation addresses affective relationships to land, community, and history. Though written from the perspective of a student in environmental planning, this analysis of climate adaptation planning in Saint Martin is deeply informed by engaging across disciplines including: landscape architecture, architecture, social theory, anthropology, earth and planetary science (meteorology and geology), political science, art and creative writing,⁷ histories of landscape and meteorological processes, as well as experts on the construction of financial risk. For an overview of the writers consulted by theme to inform the thinking throughout the Chapters see Appendix 4.

⁷ Caribbean artists, writers and poets such as Patrick Chamoiseau, Deborah Jack, Eduard Glissant, Dionne Brand, Edwidge Danticat, Valérie Loichot, Maryse Condé, Derek Walcott, and Jean d'amérique breathe life through words, image, and material art into the heavy weight of the histories that produced the Caribbean as it is known today. These authors make active the inheritances of colonization to create more expansive visions of the present and, in this sense, make evident the importance of “acknowledg[ing] the webs of obligation that connect across islands and continents” (DeLoughrey 2019, 192).

Risk itself also has evolved in the last decades as a techno-social term evoked through various attempts to capture, often with specificity and quantifiable metrics, the consequences of changes within a system. Environmental risk draws from the need to represent the consequences and outcomes of changes within a system and ties those changes to physical spaces as they change in time (Mythen 2004). Writers and environmental advocates, Rachel Carson and Naomi Klein each chronicle pivotal case studies of environmental risks in the United States and internationally from the pervasive dangers of pesticide use in the environment to the systemic failures that lead to levees breaking after Hurricane Katrina in 2005.⁸ Katharine Hayhoe names “disaster risk” within infrastructural development as the intersection of weather and climate events, vulnerability, and exposure (2019, 100). Experts from urban planning and environmental studies echo Hayhoe to highlight how disaster risk has made visible the unequal outcomes of overlapping factors which influence disaster risk, and by extension climate risk as “differential vulnerability” (Thomas et al. 2018), “segmented resilience” (Logan et al. 2016) or alternatively “residual risk” (Fu et al. 2023). Climate adaptation emerges as a response to both environmental risk and disaster risk as they inform different forms of vulnerability and resilience through existing and potential social, financial and physical infrastructures.

Ben Orlove notes the term climate adaptation, as a response to the environmental risks brought on by climate change, is often “coupled with the direct measurement of consequences” leading to the idea of adaptation as a series of quantifiable effects “described in economic terms of cost and benefits or harms and opportunities” (2009, 136). In his contention with adaptation, Orlove further posits that the term has limitations as a comprehensive paradigm. These limitations are that adaptation often overlooks the more subjective, ordinary concerns of those directly affected by climate change, leading to outcomes which can undermine adaptation efforts by offering implicit promises that the “problem” of climate change can be addressed in full. Extending the challenges of addressing the problem, geographers Barry Smit and Johanna Wandel underscore that in addressing such unequal outcomes, adaptation may require change to “broad economic–social–political structures themselves,” notably when local- or community- based work is deeply constrained by “geo-political-economic systems” (2006). The interplay between local and global scales Smit and Wandel describe emerges as a central factor behind the challenges to implementing climate adaptation plans and strategies on a split island like Saint Martin.

⁸ Vann R. Newkirk III’s podcast “Floodlines” (2021) for *the Atlantic* is also an excellent chronicle of the events that led up to and after the flood in New Orleans following Katrina.

Research Questions

Each chapter is structured to around three sets of questions derived from insights drawn from the interviews, mapping gap analysis, visual and historical analysis, as well as an engagement with a range of literatures across disciplines. These questions aim to make visible the underlying conditions that shape the task of climate adaptation planning in Saint Martin. The first question asks, what environmental risk management strategies and climate adaptation models are operationalized in Saint-Martin and in Sint Maarten. This question, as an attempt to understand what environmental strategies exist on island, was extended to consider whether climate adaptation models produced in France and the Netherlands and whether they are applied (or not) to each side of Saint Martin. The identified documents, evidence from fieldwork, and insights from interviews were then examined to consider how existing (or absent) strategies to address emerging environmental hazards define risk itself and accordingly set priorities for risk assessment based on these definitions.

A secondary approach to this question represented by the four Grounded Interludes considers: can photography and essay writing ground the task of contemporary environmental planning as not only an articulation of roles, responsibilities, and steps to decrease vulnerabilities to climate change, but also as a deep engagement with the landscape and communities concerned within the research from the ground-up. In a sense, how can an engagement with experiential observations, as a form of environmental literacy, illustrate some of the gaps and continuities that fall outside environmental planning analysis in Saint Martin. And moreover, can this speak to the broader implications of grounded analyses in environmental and climate adaptation planning practices.

The second set of questions considers, what differences (both historical and contemporary) exist between the spatial, temporal, and affective scales represented in the definitions of risk and in the operation of risk management strategies that are actively applied within Saint-Martin and Sint Maarten respectively. The third set of questions extends from the second set to consider what implications these differences in approach can have for climate adaptation planning and risk management in both Saint-Martin and Sint Maarten today and in the decades to come.

The overarching framework of this thesis considers how definitions of risk are shaped by affective, temporal, and spatial scales that are themselves altering the environmental conditions and vulnerabilities of Saint Martin in the past and the present. The temporal, affective, and spatial scales of risk identified in the examples included in each chapter are selected from the fieldwork and interviews conducted to complete the research portion of this thesis. From the examples gathered in Chapter 2 and Chapter 3, the intersecting scales of risk emerge as key factors, which, in turn, shape what models of climate adaptation are operationalized today in Saint-Martin and Sint Maarten. The tools and processes that define risk emerge through in climate models and experiences of hurricanes, public land boundaries and international financing mechanisms. These tools and process become meaningful “entities” or assemblages that have social, political, and material consequences in Saint Martin. They shape forms of action and inaction that already influence possibilities for climate adaptation and resilience in the future for both sides of Saint Martin. As such, an engagement with these tools, raises the question: what range of possible futures are conditioned by these tools given the extreme conditions that stand to push at boundaries of human habitation as we know it. Through the contrasts presented in the following chapters, the thesis examines how this range of possible futures, informed by the trajectories set by current adaptation models, offer ways to frame climate adaptation models differently for Saint Martin.

Grounded Interludes

Each chapter of the thesis is followed by essays illustrated with photographs taken during fieldwork in Saint Martin. These essays, or grounded interludes, break from the case studies presented in each chapter to offer a set of reflections that consider what it can mean to engage environmental planning from the ground-up and to read the sites of research and practice as places conditioned over millennia. Each interlude situates the observational, transient position I held while completing this work. The first interlude starts by contemplating with the concepts of observational distance, notably highlighting the differences between representations and experiences of the real. Each interlude moves closer to the particular complexities of representation on an island split into halves with deeply intersecting histories. The second interlude contends with how the island of Saint Martin contains, in its halves, a number of parallel conditions, one which cannot appear through a one-sided observation Saint Martin. The third interlude considers how many of the silences in the history of Saint Martin emerge as echoes in visible through the landscape. In a sense, materials reflect back many of the conditions and experiences that are left unspoken. The fourth interlude considers how representations, parallels, and silences encounter the challenges of ensuring a promised futurity on Saint Martin, asking

ultimately: Who is this work for, and how can the safety and dignity of Saint Martiners be central to climate adaptation as the monumental task at hand.

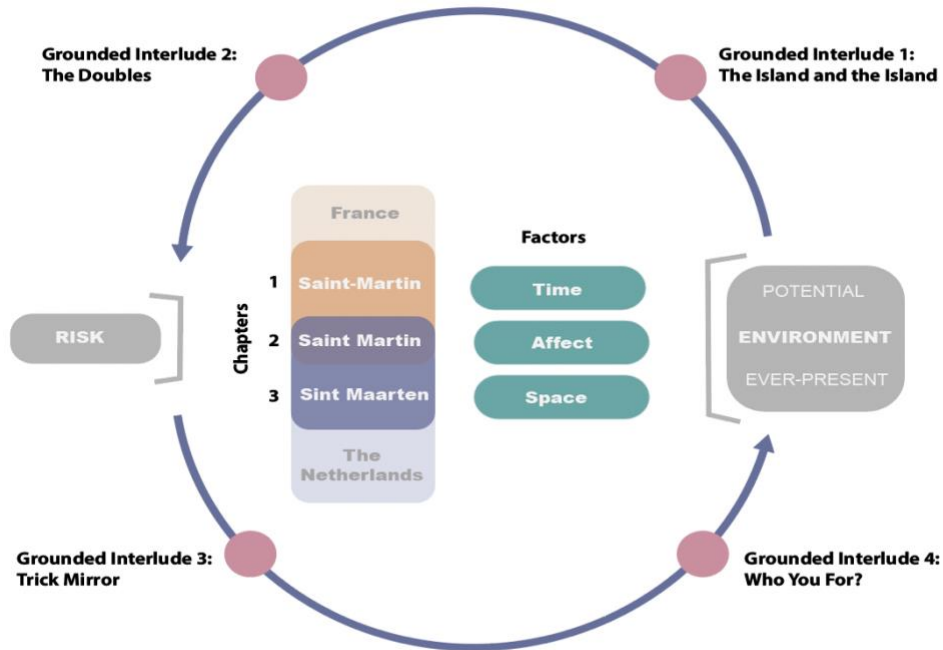


Figure 1: Diagram of overall thesis structure. Image by Author, 2024

Chapter Overview

In an engagement with the questions animating this work, the thesis is organized as follows around three case studies and four subjects of research: Saint Martin as an island, Saint-Martin, Sint Maarten, and climate risk as a force animating each case study of thesis. (For a short meditation on risk as a subject itself see Appendix 5.) Using the case of Hurricane Irma in 2017, Chapter 1 explores the role of hurricanes as they shape definitions and perceptions of climate risk on Saint Martin. Hurricanes, as extreme climate events, emerge on Saint Martin as a decision-making force, one that reveals splits along administrative borders, affecting both physical and social structures. Chapter 1 highlights how hurricanes reveal splits in environmental representations, highlighting colonial legacies and disparities. The chapter ends by considering how hurricanes, as they are understood and modelled, also reveal a split in knowledge about climate change, one which no longer relies on historically-driven models to comprehend future climate patterns. The splits

outlined in chapter 1 foreground the challenges that emerge in Saint Martin around perceptions of climate risk. These splits animate the contrasts which shape the temporal and spatial factors of risk that are central to the feasibility of the climate adaptation strategies discussed in Chapter 2 and Chapter 3.

Building off hurricanes as risk-defining and risk-revealing events, Chapter 2 turns to Saint-Martin, and examines the aftermath of the French government's publication of the Saint-Martin Natural Risk Prevention Plan (PPRN) in 2019, following the devastation and slow recovery on the Northern side of the island following Irma. Through a direct engagement with the PPRN, this chapter contends with how changing relationships to time and evolving environmental conditions in Saint-Martin reveal differing perceptions of climate risk between public administrations and local community members. The chapter argues that these differences in climate adaptation strategies defined in metropolitan France, but applied in Saint-Martin, create substantial misalignments that impede the implementation of effective climate adaptation plans.

Chapter 3 shifts to Sint Maarten and explores how weak environmental protections and governance structures, present limited formal adaptation or risk management strategies often carried out by local or regional non-profit organizations. The chapter argues these limited risk management and climate adaptation strategies are a confounding revelation given the extensive financial, social, and political engagements between Sint Maarten and the Kingdom of the Netherlands. The chapter argues, the limited cooperation between the Kingdom of the Netherlands and Sint Maarten increases already heightened vulnerabilities on island by diffusing official responsibilities to address current and future environmental conditions, and disincentivizing urgent action given the proximity to finance and expertise.

Combined Chapter 2 and Chapter 3 outline the existing challenges that limit climate adaptation in both Sint Maarten and Saint-Martin. To confront these challenges and consider pathways forward, Chapter 4 posits that a lack of climate plans in Saint-Martin and Sint Maarten ultimately underscores the shared vulnerabilities that exist across the island if insufficient action is taken by both island governments and by both European governments implicated in Saint Martin. Through this examination, Chapter 4 utilizes a short fiction to illustrate how climate adaptation in Saint Martin could emerge as a focal point for collective action. The chapter concludes by asserting that engaging in collaborative planning for a shared future in Saint Martin can serve as a model for long-

term planning and mutual cooperation over transboundary climate issues in the Caribbean region and beyond.

Grounded Interlude 1: The Island and The Island



Figure 2: Photograph of Northern Side of Saint-Martin from the Ferry to Saint-Barth. Image by Author, 2024.

Peering off the edge of the ferry between the islands of Saint Martin and Saint-Barth, a colossal island landscape seemingly materialized from the sea. Saint Martin emerged as a landscape woven of hills, a mirror of deep time histories, these hills are vestiges of million-year-old geological movements. A ridged spine of undulating mountains presented a contained hugeness, whose impression on my understanding of Saint Martin as a place contested the smallness I had once attributed to the island. This oceanic enclave challenged my cartographic imaginary, drawing from a reductionist desire to distill clarity from a flattened landscape I had once examined. The planner in me had been duped by the simplicity of two dimensions.

My perception shaken, I began to think topographically, to notice the formations whose orientations toward the surrounding Caribbean Sea and Atlantic Ocean, regulate exposure to ongoing storms, structure wind and water flows, influence the density of tree canopies, and frame the inhabited spaces of the island. Ravines and gullies at the foot of mountains become rivers after a heavy rainfall from rolling deep-grey clouds. Pastures in the valleys between the sea and the mountains become wind tunnels. Forests and fallow lands become archives—repositories of histories whose traces become visible in debris and

small ruins. Each of these is an often overlooked monument to the layered histories of life, of harm, of occupation, and of endurance that have conditioned dwelling on island in the last centuries.

Place names across Saint Martin echo the island's topographic formations. Cul-de-Sac and Dutch Cul-de-Sac are neighborhoods contained at the base of mountain valleys. Sandy ground on a sandy strip of land between the Caribbean Sea and the Simpson Bay lagoon. From across the bay, one can see to the southeast that the Terres-basses (*lowlands*) in Saint-Martin is next to Lowlands in Sint Maarten. Both of these lowlands are on the same rock formation at the edge of the sea. Former plantations emerge as parks (Emilio Wilson Estate and Park), as the names of housing estates and housing redevelopment corporations (Belvedere), as luxury resort nature reserves (Loterie Farms), and as preserved cultural sites (Mont Vernon Plantation). The land has been engineered, tilled, uprooted, reconfigured, excavated, and artificially grown.



Figure 3: Photograph of the Pond Island Landfill in the Great Salt Pond of Sint Maarten. Sint Maarten. Image by Author, 2024.



Figure 4: Photograph of Dredged Sand by the Cruise Terminal of Sint Maarten. Image by Author, 2024.



Figure 5: Photograph of Northern Landfill near Grand Caye in Saint-Martin. Image by Author, 2024.

Mountains of dredged sand—the physical remnants of a once protective sand dune—lay waiting for the next construction project of concrete walls or the re-nourishment of a beach lost to the last surge. This mountain is new, a reclaimed landscape. A quarry inverts the mountain, leaving a conic gap in the land where there was once a peak. Gravel, sand, clay, and kaolin are exhumed from a quarry to be transformed into the walls and façades of housing estates populating the coasts and the hills of Saint Martin. A landfill of litter and debris, sometimes, catches fire and leaves the air thick with noxious fumes as they waft in the direction of the wind into the mountains or out to sea. Such false mountains of compacted trash, and metal, and dirt, and sand become almost-monuments to the material afterlives of island modernity.

From a distance, the silhouettes of these deceptive formations become one with the mountains above, that is, unless you look closely these sites can blend into the landscape. These are sites of tending accumulations. They do not show the stone walls and small houses built by enslaved persons that have since been displaced and taken away as rubble to these false mountains. These accumulations are not considered a consequential material dispersal. The absences channeled into these nascent landscapes are monuments to the un-built—testaments to a time and history now held in memory by those who still know. Between the map and the place. Between the island and the island, these manufactured silhouettes linger.

The island landscape, as it is captured in images, portrays a stillness which cannot convey the aliveness and constant change the island has seen in the past and present. As a meeting point between the ocean and the sea, as a juncture between a fault line of the Caribbean and the North Atlantic plates, as a longstanding distribution point between continents and other islands in the Caribbean region, as place of multi-generational trans-oceanic crossings, there is a multiplicity of intersecting influences and powerful forces interacting on Saint Martin. These intersecting encounters span languages, histories, cultures, and geographies. Individuals I spoke to understand the multiplicity of these influences in various ways, referring to the island as an *île-monde* or island-world, as an island-city, as a city-state, as a sacrifice zone, as a nano-geography. When considering the role of observation and distance in a constructed understanding of place, what can these worldly visions within Saint Martin mean for the scales of our climate reckoning?



Figure 6: Photograph of the Great Bay in Sint Maarten from Fort Amsterdam, with cruise ships visible in the background. Image by Author, 2024.

Chapter 1: Hurricanes Pasts and Futures in Saint Martin

“Face à la ville créole, l’urbaniste créole doit oublier la Ville. Quand je dis ‘urbanisme créole’, j’invoque: mutation de l’esprit.” [Confronted with the Creole town, the creole urbanist has to forget the city. When I say, ‘creole urbanism,’ I’m invoking: mutation of the spirit] (translation by Author)— Patrick Chamoiseau, *Texaco*

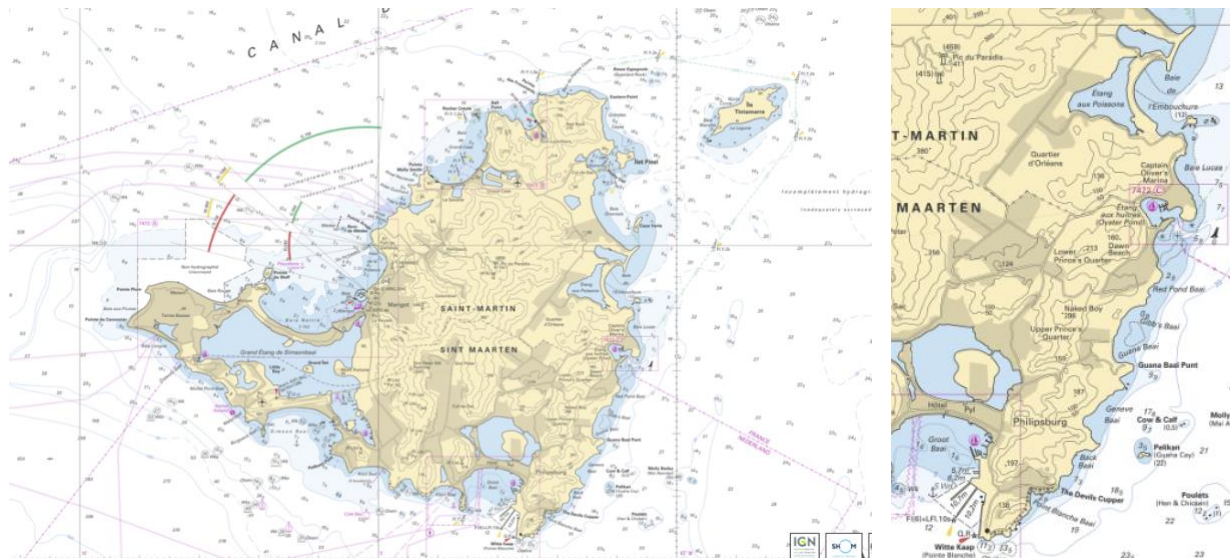


Figure 7: Map of Saint Martin with Topography and Bathymetry. Map by DATA.SHOM.FR, “Cartography of Saint-Martin 1:50 000 Seamless (Raster Marine),” *Digital* (Institut national de l’information géographique et forestière [National Institute for Geographic and Forestry Data], n.d.).

Risk as a Memory and Time Keeper

Between the Atlantic Ocean and the Caribbean Sea, Saint Martin—the island—is governed by two separate administrations: The Government of Sint Maarten to the South and The Collectivity of Saint-Martin to the North. In many ways this chapter is a false contrast bound and constructed from a border four centuries old. (And yet, the border was only formalized in 2023 in the name of “diplomatic peace and economic health” (Ascensio 2023).) Saint Martin is located on the Western edge of the Caribbean plate, has been at the intersection of empires for centuries. The border, established in 1648 by the Treaty of Concordia, created two halves across a mountainous island thought once thought to be known as *Sualouiga* or *Souliaga*, amongst other possible names.⁹ The island is comprised

⁹ These names have been argued as a mix of transliterations from later colonial surveys of indigenous populations, namely the Island-Carib Arawak and the Taíno who lived across the Northern Caribbean archipelago, see Basil A. Reid and R. Grant Gilmore III, *Encyclopedia of Caribbean Archaeology* (University

of approximately 88 km² (34 sq mi) of mountain formations, coves, sand and pebble beaches, and valleys. Thick forest cover over the mountain tops gives the island a dark green hue that contrasts with the more arid shrub and grasslands below in the valleys that lead to the sea and wooded wetland estuaries lined with mangrove forests. On Saint Martin, the topography is condensed. Mountains and coasts fold into one another. Whether sitting on the coast or standing at the top of a mountain, nearby islands such as Saba and Saint-Barth are visible from a distance. The island is never quite alone.

When driving through the island, each partial border crossing is marked by a monument to the longstanding quadricentennial cooperation between Saint-Martin, the Republic of France, Sint Maarten, and the Kingdom of the Netherlands. To cross the border to the North means entering the European Union and the expanses of the Republic of France, to turn towards the South means entering a constituent country of the Kingdom of the Netherlands. The central roads of Saint Martin connect to one another. As one drives along the island, some of the first differences in the landscape emerge through the road conditions, road signs, and street lamps. Interviewees often first asked whether I had noticed such changes, as in, *had I seen this evidence of these bordered differences*.

For residents and administrative officials alike, perceptions of climate risk and of Saint Martin itself change fundamentally in periods before, during, and after Hurricanes. These are chronic cycles, repeating year after year, tethering the island of Saint Martin within cyclical times scales that span back millennia. How these cyclical periods are defined, experienced, understood or even overlooked are deeply subjective. Perceptions of the time and risk in storm cycles matter in the definition of risk. The affective dimensions of risk modify the obligations and responsibilities people feel to their communities, to their work and spaces of dwelling, to themselves. This chapter begins by describing Saint Martin as it emerges in 2024, in the period after Hurricane Irma and before the next storm appears through a series of splits defined by the histories and memories as environmental knowledge. These forms of environmental knowledge provide perceptual maps of the island and the local climate before and after a storm. In a topographic description of Saint Martin, the island's first split emerges through the physical environment and the social experiences shaped by periods of post-hurricane survival and the return to life as it was and life as it is now. The second split emerges in representations of the environment which I define as the ever-present and the potential environment. Promises of renewal and the complications of reconstruction become charged reminders of the colonial inheritances

Press of Florida, 2014). Pages 41-44. These are not neutral claims are the subject of political discussions to date, including arguments for administrative reunification of the island.

exist and drive disparities on the island as they are channeled through both these environments. The final split emerges through this assertion: climate risks stand to worsen in the next decades in unimaginable ways. Recent climate and hurricane models stand unsettle longstanding affective relationships to climate risk as the emerging severity, magnitude, and unequal distribution of compounding climate risks for coastal regions around the globe become clearer (Meiler et al. 2023). Through hurricanes as symbols of an intensifying climate, the final split is discussed as sites where deeply subjective perceptions of climate risk are challenged, reconstituted and even systematically ignored, to make sense of the present. This reckoning with the present conditions the contrasts that emerge in the Chapter 2 and Chapter 3 through the relationships between Saint-Martin and France, and Sint Maarten and the Kingdom of the Netherlands. The implicit to the uncertainties around the metrics used to define climate risk in this thesis are the real material consequences of life being upended for residents on both sides of Saint Martin, not just chronically with each intensifying hurricane season, but more dramatically as the grounds of dwelling on island stand to change.



Figure 8: (left) Map of Saint Martin from later 19th century. Image from the National Archives in Guadeloupe, "St-Martin : Plan de la rade au 1/125000e / Fait par le garde d'artillerie soussigné [illisible]. 1892 Guadeloupe. Atlas des bâtiments militaires [St-Martin: Plan of the Rade at a 1/125000 scale / Made by artillery guard [illegible]."

Figure 9: (right) Map of Saint Martin depicting circulation maps on Saint Martin, mirroring the circulation routes that are active today on the island (see Figure 11). Map from the National Archives the Netherlands (Nationaal Archief), "Geteekende kaart van het eiland Sint Martin (Sint Maarten), met aanwijzing der kwartieren en verdere topographische bijzonderheden [Drawn map of the island of St. Martin (St. Martin), with indication of quarters and further topographical details]", 1817.

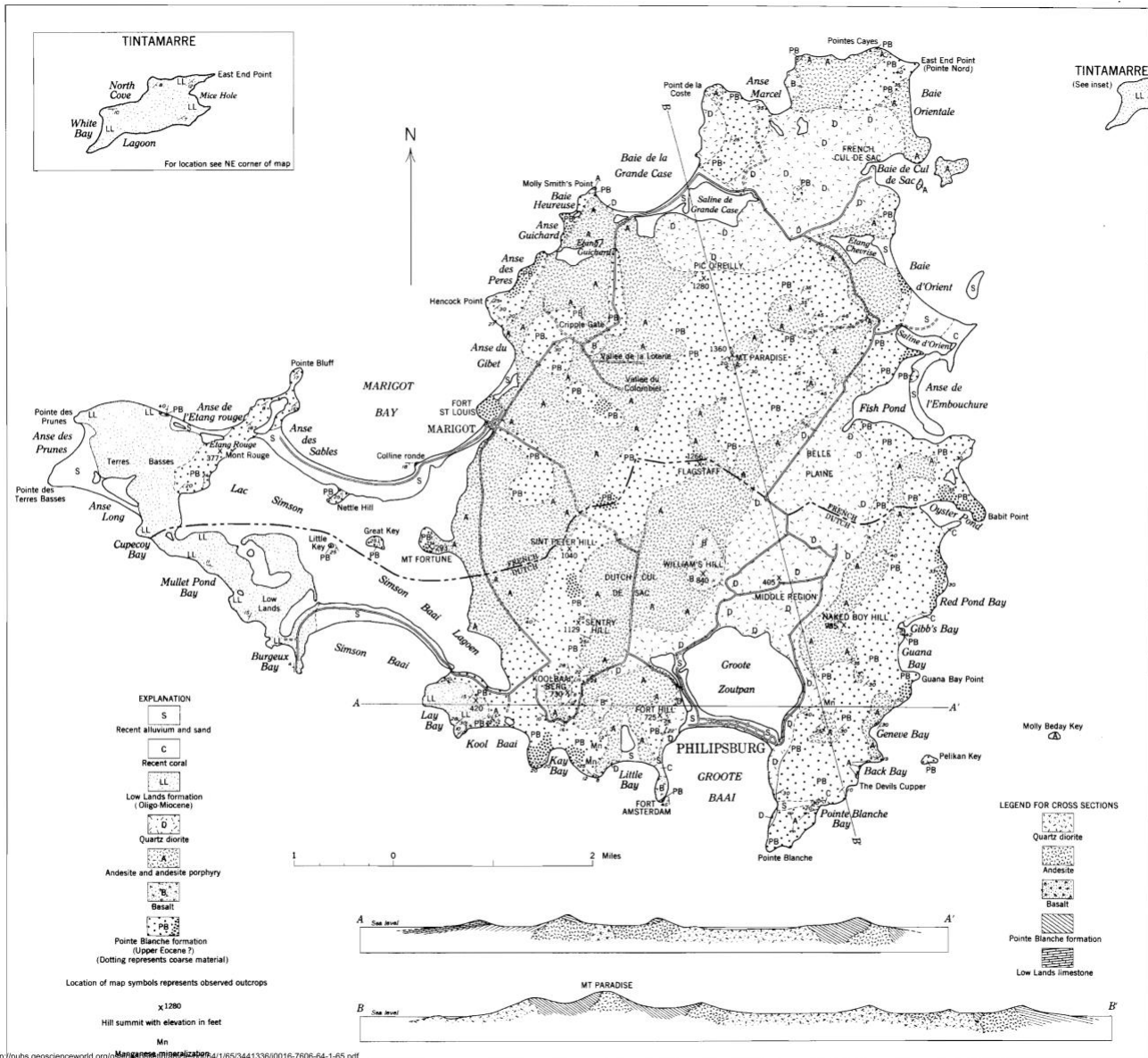


Figure 10: Map of Saint Martin's elevation and geology. Note the change in elevation in the bottom cross-sections of the island cutting from A to A' through Cole Bay (Kool Baai), Philipsburg, and Geneve Bay, and from B to B' starting at The Grand Case Bay to Point Blanche, which transects the tallest point Pic Paradis (411m). Note near Marigot, Anse Marcel, Simpson Bay, and in the Great Salt Pond (Groot Zoutpan) the absence of landfills that are present today (see yellow zones in Figure 11). Image by Robert A. Christman, "Geology of St. Bartholomew, St. Martine, and Anguilla, Lesser Antilles," GSA Bulletin 64, no. 1 (January 1, 1953): 65–96, page 81.

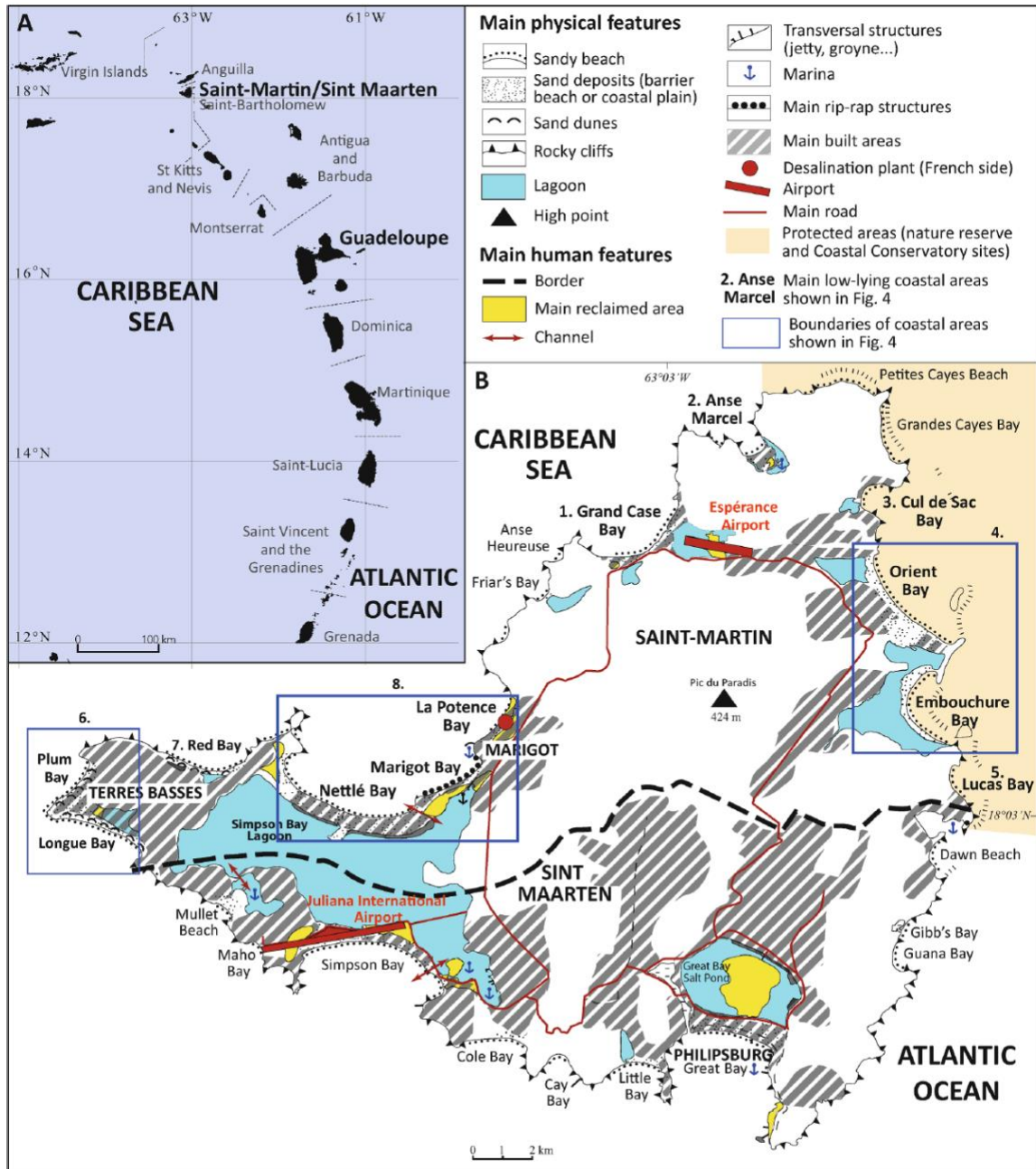


Fig. 1. Study area. Panel A shows the location of the island of Saint-Martin/Sint Maarten in the Caribbean region. Panel B highlights the main physical and human features of the island, and the concentration of most built areas and critical infrastructure in the coastal zone on the French side of the island. It also shows the location of urbanized and developed beach sites that are presented in Figs. 3 and 4.

Figure 11: Map of Saint Martin's urban zones as of 2021. Panel A depicts location of Saint-Martin/Sint-Martin within the Windward islands of the Caribbean. Panel B shows main physical and built features of the island. Image by Virginie K. E. Duvat et al., "Understanding Interlinkages between Long-Term Trajectory of Exposure and Vulnerability, Path Dependency and Cascading Impacts of Disasters in Saint-Martin (Caribbean)," *Global Environmental Change* 67 (March 1, 2022):1-43, Page 6.

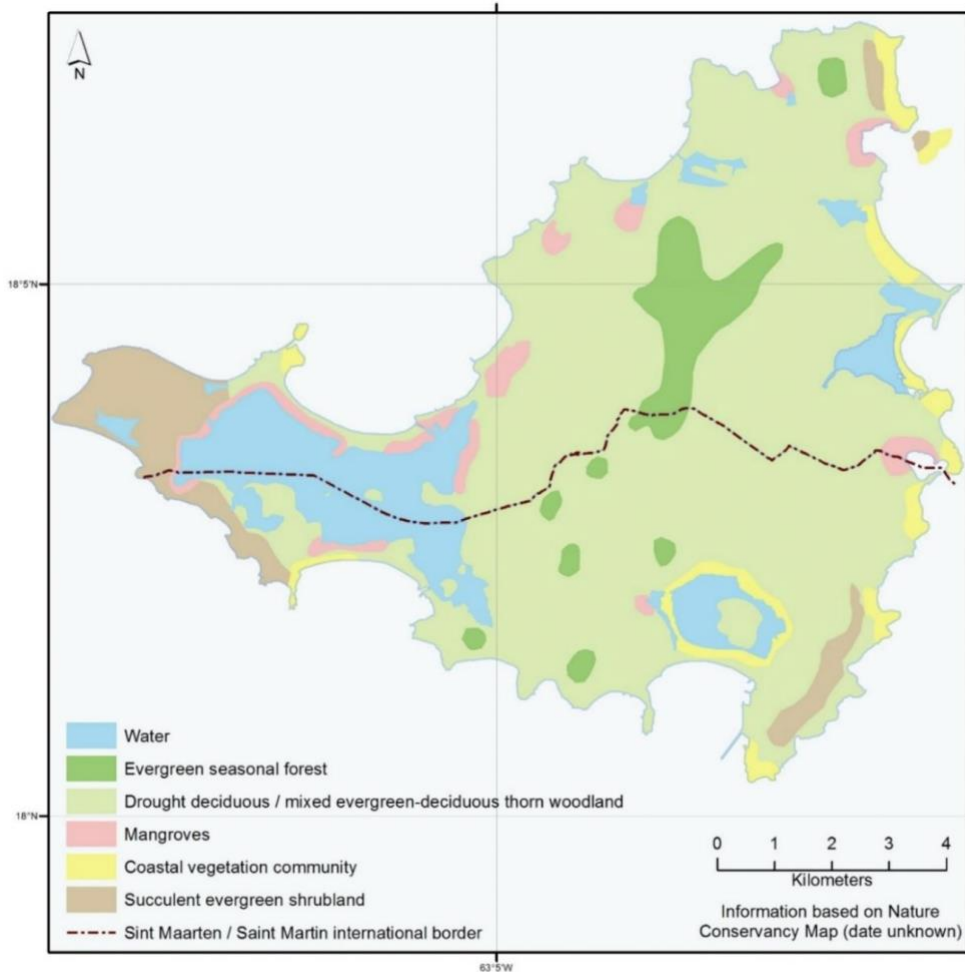


Figure 3: The Nature Conservancy (TNC) Vegetation map of Sint Maarten (not completed).

Figure 12: Image of the Vegetation on Saint Martin as an island. Compared to the Urban Zones and reclaimed land areas shown in Figure 11, the true distribution of vegetation on Saint Martin is fragmented by infrastructure. Image by Ministry of Public Housing, Spatial Planning, Environment, and Infrastructure, “Nature Policy Plan 2021-2025” (Government of Sint Maarten, October 2021), page 7.

Two Environments: The Ever-Present and the Potential

To articulate how changing environmental conditions affect perceptions and definitions of risk, the terms ever-present environment and potential environment will be used throughout subsequent chapters. In many ways, there are two forms of environment on Saint Martin. The first is the environment as it is tied to surrounding ecological and built conditions. This is the ever-present environment. Small cities built along the shoreline and into the hills. Mangrove forests rooted in a cove. Sand and pebble beaches along a shoreline. Mountain peaks populated by lush tropical forests. Cacti, cranes, and iguanas appearing on a cliffside. The second is an almost-external nature. This is the potential

environment. This is the temporary conditions sustained hurricane winds, the short perch of a rain clouds rolling slowly overhead, a Saharan dust storm looming over the horizon moving ominously until it makes landfall. It is also unprecedented Sargassum blooms that choke the coastal and toxic algae blooms causing millions of fish to die off in high summer heat.

This could also be considered an environment of extremes. The potential environment may not always be visible, but it lingers as a persistent instability that looms in memories and in the material traces of past storms, but one can see around the island. Both the ever-present and the potential environment are intertwined. Both environments affect habitation for humans and non-humans. Both environments inform risk and the possibilities of risk. Though in later chapters I will discuss the scales of influence that shape, in part, possibilities for adapting to climate change in its extremities, this chapter will focus in two ways on the grounds of Saint Martin. One addresses the real, island-altering role of Hurricanes as a spatial organizing force on island, one that has shaped the trajectory and scope of current adaptation practices to date. The other analyses the relationship to the first relatively stable environment, one that will emerge in the subsequent chapters as the object of policy and development on island.

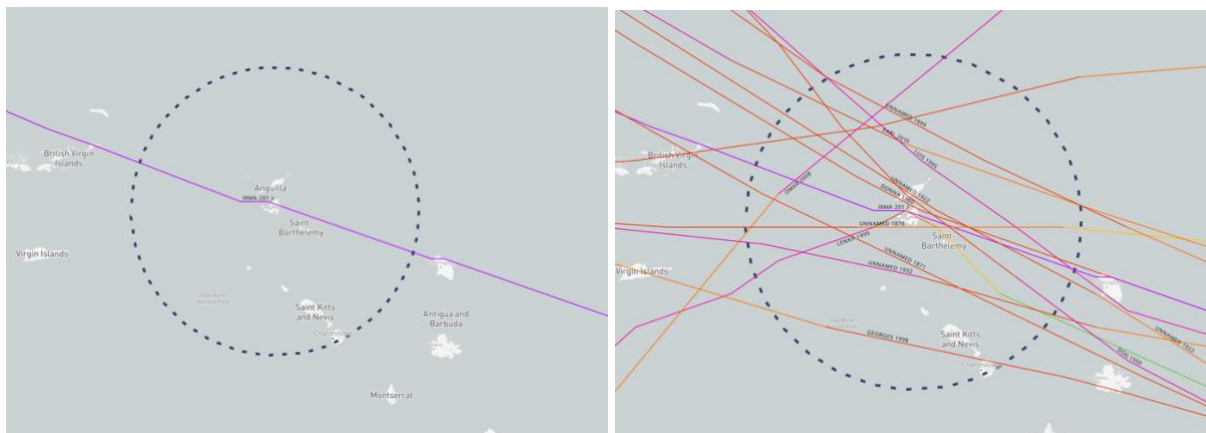


Figure 13: (right) Illustration of Hurricane Irma's Path in 2017, where dark purple represents a Category 5 storm. Images created by author using "Historical Hurricane Tracks," Government, Office for Coastal Management: Digital Coast, accessed December 16, 2023, <https://coast.noaa.gov/hurricanes/>.

Figure 14: (left) Recorded hurricane paths for Category 3, 4 and 5 storms crossing through or near Saint Martin over the last century. Images created by author using "Historical Hurricane Tracks," Government, Office for Coastal Management: Digital Coast, accessed December 16, 2023, <https://coast.noaa.gov/hurricanes/>.



Figure 15: Boat on the beach of Philipsburg, Sint Maarten, 2017. Image by SXM Talks, “Hurricane Irma Destroys St. Maarten: ‘Everything Seems Wiped Away,’” September 17, 2017.

Hurricanes are Temporal Artifacts, They Punctuate a Chronic Time

In late 2017, Hurricane Irma tore through Saint Martin, a small binational Caribbean Island, at a Category 5 on the Saffir-Simpson Wind Scale and 287 kmph for a period of about two hours (Cangialosi et al. 2018). Those who experienced the storm first hand noted that despite Irma’s short duration—some storms previously having lingered for days at a time—the scale and magnitude of the destruction on island was astonishing. The anatomy of this hurricane was distinct. In Saint-Martin, the northern half of the island, official reports estimated that 95% of the built environment was impacted, with upwards of 25-30% of the island facing extreme damage (Rey et al. 2019, 20). In Saint-Martin, damages were estimated at approximately US\$€1.982 billion (€1.17 billion), even while later estimates determined that fewer buildings had ultimately suffered catastrophic damage (Rey et al. 2019, 20). In Sint Maarten, damages were estimated at US \$1.1 billion (ECLAC 2018, 10). Irma—as many hurricanes before it—revealed the realities of administrative containment. Unseen boundaries emerge with national militaries and aid organizations coming from France and the Netherlands.

Table 1: Total Estimated Damages in US\$ after Irma in Saint Martin.¹⁰

IRMA DAMAGES	Saint-Martin	Sint Maarten	Total
Damage Estimate (in billions)	US\$ 1.94	US\$1.17	US\$ 3.11

Both governments on the island faced with high levels of destruction were forced to confront not only the immediate aftermath of the storm, but also a long road to reconstruction. Complex responsibilities to salvage and reconstruct were abruptly, and sometimes violently, revealed in the shadows of debris and unclear prioritizations. One former official noted that, during Irma, the question of protocol could not always be considered. The need to act took precedence over the need to follow bureaucratic rules, specifically those related to the immediate process of securitization, including the removal of debris and repairs to critical infrastructure.

Neil Smith notes, in a series titled “After Katrina,” that disasters are distinctly human constructs (2006). Disasters are not natural, nor are they neutral. Rather, they are revelatory of vulnerabilities embedded in the grounds now characterized, if only temporarily, by upheaval. When Hurricanes hit, suspended states of nature on the island emerge. In the years after the storm, embedded territorial histories become present. Tropical cyclones are not new to the island. Rather Hurricanes serve as markers of time, ones Edouard Glissant would note are *sites in time*. Symbolic expressions such as “the year of the hurricane that flattened M. Celeste’s house,” (Miranda 2023), are used to characterize the temporal, spatial and affective relationships embedded in hurricane memories.

Confronting the mundanity of survival, many people cited the societal melding that occurred during this period, animosities and disagreements could be overlooked in favor of

¹⁰ The estimated damages for Saint-Martin were found in Tony, Frédéric Leone, Thomas Candela, Ali Belmadani, Philippe Palany, Yann Krien, Raphael Cécé, Monique Gherardi, Matthieu Péroche, and Narcisse Zahibo. “Coastal Processes and Influence on Damage to Urban Structures during Hurricane Irma (St-Martin & St-Barthélemy, French West Indies).” *Journal of Marine Science and Engineering* 7, no. 7 (July 2019): 215. <https://doi.org/10.3390/jmse7070215>; The estimated damages for Sint Maarten were found in Collodi, Jason, Mark Pelling, Arabella Fraser, Maud Borie, and Simone Di Vicenz. “How Do You Build Back Better so No One Is Left behind? Lessons from Sint Maarten, Dutch Caribbean, Following Hurricane Irma.” *Disasters* 45, no. 1 (2021): 202–23. <https://doi.org/10.1111/disa.12423>.

mutual aid, resources were shared (and hoarded). One woman, familiar with both post-Irma reconstruction and justice-informed initiatives on island, the relational in Saint Martin is part of survival. One cannot disentangle the robust and long-standing community relationships that characterize how place on island is made. Hurricanes in their cyclical nature reveal in extreme, yet familiar conditions of survivability a renewed context for relations between humans and the ever-present environment. Living with a constant understanding of risk to both past and future is a fundamental part of living on island. Zadie Smith notes on Hurricane Sandy that “the ever more frequent tropical depressions, storms, hurricanes, droughts, and landslides do not fall, for Jamaicans in the category of ontological argument” (2014). In other words, the regularity of storms is a matter of being, whereas for the outsider looking in the settings of such catastrophe seem pivotal if not necessarily symbolic.

In the years since Irma, scholars of urban studies, risk and disaster management, other fields such as tropical ecology familiar with Saint-Martin and Sint Maarten have noted the fundamental upheaval hurricanes cause when they pass through the island for human and non-human communities.¹¹ In the years after hurricanes, the ensuing disasters become ghosts, haunting communities into the present as temporary resilience structures are propped by international and multinational organizations aiming to stabilize fraught conditions on island. For communities faced with the immense burden of reconstruction and the newfound presence of once absent states, such as France and the Kingdom of the Netherlands, disaster reasserts the power imbalances always present between this island, its respective territories and both European colonizers. Disasters prompted by traversing storms and other extreme climate events prompt the reevaluations of response systems, community resilience, and governmental responsibilities.

¹¹ See examples from the last seven years including Kevon Rhiney, “Recipe for Resilience? Tracing the Biopolitics of Sint Maarten’s Recovery Efforts After Irma,” *Journal of Extreme Events* 05, no. 04 (December 2018); Walcker et al., “Damages Caused by Hurricane Irma in the Human-Degraded Mangroves of Saint Martin (Caribbean),” *Scientific Reports* 9, no. 1 (December 12, 2019); Roxana Popescu, Hélène Beraud, and Bruno Barroca, “The Impact of Hurricane Irma on the Metabolism of St. Martin’s Island,” *Sustainability* 12, no. 17 (January 2020): 6731, <https://doi.org/10.3390/su12176731>; Rita Der Sarkissian et al., “Evaluating the Implementation of the ‘Build-Back-Better’ Concept for Critical Infrastructure Systems: Lessons from Saint-Martin’s Island Following Hurricane Irma,” *Sustainability (Basel, Switzerland)* 13, no. 6 (2021); Annabelle Moatty, Delphine Grancher, and Virginie K. E. Duvat, “Leverages and Obstacles Facing Post-Cyclone Recovery in Saint-Martin, Caribbean: Between the ‘Window of Opportunity’ and the ‘Systemic Risk’?,” *International Journal of Disaster Risk Reduction* 63 (September 1, 2021); Kelly Pasquon et al., “Évolution de l’urbanisme et exposition au risque cyclonique à Saint-Martin de 1954 à 2017 [Evolution of Urban Planning and Hurricane Risk Exposure in Saint-Martin from 1954-2017],” *VertigO : la revue électronique en sciences de l’environnement* 22, no. 1 (2022): 1–33, <https://doi.org/10.4000/vertigo.35495>

In the immediate period after Hurricane Irma, President Macron promised, upon visiting Saint-Martin, that the Northern half of the Island would be “reborn” (*renaître*) in six months (Clavel 2017). Such promises do not provide context for what it can mean for a territory to be reborn, notably when terms of (urban) renewal are entrenched in a delocalized concept of place that has historically ignored the forms occupation that land varying, and often non-market values, for local communities Saint-Martin. In this same exchange, Lila, a resident of Grand-Case, refused to address President Macron by his full title, expressing her dismay that anything could happen in the six months the French head of state promised (Clavel 2017). In other words, it is the people whose presence and activation of the landscape generate the values that are enshrined by cultural, economic, and political processes in Saint-Martin, and across Saint Martin more broadly. As one interviewee in Sint Maarten noted, *the social is survival, it’s more important than any physical or governmental structure*.

To consider the current landscape of Saint Martin requires the recognition of a central tension which persists: how to plan safely for climate change and how to successfully rebuild given the financial, technical, political, as well as temporal and seasonal challenges to reconstruction, and (notably given the different understandings of success and rebuilding could be). In the wake of Irma, of Louis, of the hurricanes-not-named and those yet-to-come a question burgeons from both sides of the island: whose risk can be made to matter for a future filled with so much uncertainty?



Figure 16: Image from presentation at the Governors Symposium made in 2018 on future sea level rise for Saint Martin in the next 20-50 years. Here Philipsburg, Lowlands, Cole Bay, Maho Beach, Princess Juliana Airport, Marigot, and Sandy

Ground are all depicted as flooded. Portions of Dutch Cul-de-Sac and St. Peters are also shown as flooded. Image from Hilbert Haar, Sint Maarten News, <https://stmaartennews.com/weather/climate-change-nobody-moves/>

In the last two decades, small islands have contributed to a significant shift in climate policy and planning related to sea level rise. Efforts by organizations like AOSIS (Alliance of Small Island States) for from a general consideration for the securitization of the built environment on low-lying coastal areas and island to the securitization of the coasts as a matter of international policy interest (Baldacchino and Antat 2023). Efforts by AOSIS made climate change a matter of critical sovereignty that has challenged public policy agendas set by the Global North on international stage and have helped with the development of nascent loss and damage funds. Together, AOSIS members have posited to the international diplomatic community what entities should be responsible for state disappearance because of climate change (Rimon and Tong 2021). This rise of small islands specifically as a critical site of climate policy making and apocalyptic allegories implicates the landscape of Saint Martin into archetypal symbols for national and international policy efforts. (DeLoughrey 2019).

In France, Saint-Martin's current environmental conditions reinforce bureaucratic justifications for coastal management, overlooking the deeper social and cultural ties that reinforce attachment to a status-quo where adaptation means rebuilding for the present (Chapter 2). In the Kingdom of the Netherlands, Sint Maarten has been integrated into public international policy initiatives to support climate adaptation for small islands, but the island government itself lacks a comprehensive policy or strategy to engage climate adaptation as an environmental and urban issue (Chapter 3). Over the course of the following chapters, neither administration in Saint-Martin and Sint Maarten, as well as in France nor in the Netherlands fully contends with the radical implications of climate change and living with climate risk on the island. These institutional blind spots point to a particular, almost taboo, one indicating the forms of inequitable salvation possible in the advent of the most disastrous and chronically deleterious circumstances that both the island and continental administrations will face. This blind spot is emerging as climate extremes push the boundaries of collective visions be it as spatial planners, policymakers, citizens, and more basically (and perhaps more critically) as humans.

As such, the split of the island, the doubleness of the island reveals a critical component to engage with and push through as implicit to boundaries of acceptable risk within climate adaptation. There is no jurisdiction entirely capable of controlling natural systems—neither hurricanes, nor climate change stays within the confines of administrative borders. Legal systems are not natural Some appear to be better at it than others. Some generate policy

apparatuses around the ability to manage catastrophes cause by natural forces. But natural events have and will continue to be the precipice from which fundamental governmental and societal shifts are catalyzed.¹² For Saint Martin, “Irma revealed an accumulation of structural, organisational, social and economic vulnerabilities” whose consequences still emerge today.

Hurricane Pasts and Presents

In 2017, when Irma made landfall, out of 11,730 buildings in Saint-Martin, nearly 95% of buildings and infrastructure had suffered moderate damage or destruction, (Rey 2019)(Moatty et al 2021, 4). By 2018, nearly 78.3% of building were still impacted by damage, and 7.2% of them were removed. By 2019, 66.2% of buildings still damaged (Rey et al. 2019; Neuman et al. 2017)). In addition to structural damage to the built infrastructure, mangroves critical to coastal flood mitigation and decreased erosion were razed by the unrelenting winds, leaving some coastal areas, notably in Orient Bay with fewer natural defenses and greater vulnerabilities long-term as many mangroves struggle to recover (Walcker et al. 2019). Large amounts of debris can represent future risks to buildings and general safety during subsequent storm events. The material traces of Irma remain on both sides of the island to this day and loom as reminders of all that should be done before the next storm hits.

The representation of storms and severe climate conditions such as earthquakes, has long been predicated on the vastness of destruction, spurring the creation of resources to document changes in conditions through land surveys, illustrations and photographs, as well as maps (Schwartz 2015, xiii-xix). Combined with the increased knowledge of climate change and the storms short extreme severity, Hurricane Irma represented a turn in the

¹² A key example in Dutch lore is specifically the 1953 North Sea Flood that led to the consolidation of the 2,600 water authorities (Waterschappen) into 21 regional authorities to allow for better oversight and coordination across the country. Irma also spurred several administrative reforms between Saint-Martin and Guadeloupe, see Pasquon et al. 2020. Disaster Risk reduction frameworks were also adjusted between the Netherlands and Sint Maarten in the aftermath of Irma, see Kevon Rhiney, “Recipe for Resilience? Tracing the Biopolitics of Sint Maarten’s Recovery Efforts After Irma,” *Journal of Extreme Events* 05, no. 04 (December 2018); Alex A. Moulton, “Modernity’s Antillean Ecologies: Dispossession, Disasters, Justice, and Repair across the Caribbean Archipelago,” *Progress in Environmental Geography* 3, no. 1 (March 1, 2024).

literature on Saint Martin itself, with many papers published from 2017 onwards to categorize and analyze the destruction and aftermath of post-hurricane reconstruction.¹³

In parallel with Irma, over twenty years prior, Hurricane Luis, a Category 4 storm, made landfall in 1995 with 213 kmph winds and caused an estimated US\$ 2 billion in damages in Sint Maarten alone (Collodi et al. 2021, 208). Homes were damaged by the devastating category 5 hurricane, leaving residents on both sides of the island stranded for many days following the event. The impacts of Luis, however, did not become a signal for future planning. Development persisted and expanded, further entrenching ongoing vulnerabilities in the islands built environment. Many homes and areas impacted by damaged brought on during Hurricane Luis were further impacted, if not severely damaged by Hurricane Irma two decades later.¹⁴

In 1819, an unnamed Hurricane passed through the island and destroyed nearly all the crops, ruined salt pans for several years afterwards, and nearly swept away an entire fishing village in Simpson's Bay, a cove to the South of Sandy Ground on the Sint Maarten side of the island (Sypkens Smit 1985, 56). The impacts of this storm created the Simpson Bay Lagoon. This, in turn, reshaped the thin, low-lying strip of land—no more than 4 meters above sea levels—where Sandy Ground sits today, wedged between ocean and lagoon. One island resident noted in 1829, ten years after a devastating Hurricane in 1819, “everywhere between the few houses that now constitute the village, ruins may be seen of houses blown down or collapsed, of which the foundations and broken walls are overgrown with wild vegetation” (Sypkens Smit 1985, 56). The account of this Hurricane echoes the accounts of Hurricane Irma nearly 200 years later in 2017. Residents of Sandy Ground—a low-lying community on a sand strip on the Southwestern side of Saint Martin—emphasized a deep knowledge of hurricanes in place. In an interview with reporter from the New York Times, Marie Abner—a resident of Sandy Ground who moved to Saint-Martin from Haiti as a child—notes “[m]any of us living by the sea, we know the risk... if anything happen, we leave the home. Then we come back” (Semple 2019). Echoing Marie Abner, several

¹³ Some examples of this literature include, Rita Der Sarkissian et al., “Evaluating the Implementation of the ‘Build-Back-Better’ Concept for Critical Infrastructure Systems: Lessons from Saint-Martin’s Island Following Hurricane Irma,” *Sustainability (Basel, Switzerland)* 13, no. 6 (2021): 3313. 1-25; Roxana Popescu, Hélène Beraud, and Bruno Barroca, “The Impact of Hurricane Irma on the Metabolism of St. Martin’s Island,” *Sustainability* 12, no. 17 (January 2020): 6731.

¹⁴ Between Luis and Irma there were also Hurricanes Lenny (1999), Omar (2008), and Gonzalo (2014) that did not reach higher than a Category 3.

interviewees noted both in Saint-Martin and in Sint Maarten when asked about their experiences of Irma as well as previous storms that *hurricanes are something that people prepare for, hurricanes don't just appear, people know they're coming.*

Hurricanes, Sea Level Rise, and Climate Futures

Our understanding of hurricanes as scientific objects of research and at times society-redefining events mirrors a contemporary history of science and specifically scientific understandings of meteorological phenomena. Meteorology and climate assessments—as representations of planetary systems—are tied both to the science shapes contemporary understandings of the planet as a geophysical fluid system and to the metrics and statistical methods whose use as “tools of empire” maintained, expanded, and embedded the early violence of slavery and the middle passage into the ongoing racial disparities that exist today across the globe (Schwartz 2015, 80). Kevon Rhiney and April Karen Baptiste note as evidence of intensifying disparities between past and current climate records that the planet has entered “a new and ‘unfamiliar’ regional climate regime, marked by warmer temperature, more variable rainfall patterns, more intense storms, and other climate extremes and higher sea levels” (2019, 64). Warming patterns are accelerating and intensifying the severity of major tropical cyclones in the North Atlantic (Sarhadi et al 2024, 3)(Emmanuel 2005, 2021)(Thiery et al. 2021). Largely reliant on historic data, many current climate models are not able to make statistical interpretations for conditions no longer grounded in the circumstances defining past climate events. As technologies change and improve to understand climate, so too do understandings of hurricanes shift. As the severity of climate change increases, including the magnitude and scale of hurricanes, knowledge of hurricanes-to-come will be more extreme and deeply unfamiliar.

In a conversation with Kerry Emanuel, a prominent meteorologist and climate scientist who focuses on hurricanes, he noted the climate models we have today for hurricanes and other meteorological phenomena are not enough for the present let alone the future. Therefore, as shifting climate conditions are modelled with greater, but still limited accuracy, it is important to contend with what these changes means for understanding present adaptation strategies and action for the futures. Hurricanes, like wildfires, feed on “temperature, wind speed, pressure and humidity...and the carbon emissions driving climate change let them gather the energy to achieve intensities that can never be reversed” and have never been seen before in the contemporary human record (Petryna 2023, 74)(Ekwurzel 2012). Kerry Emanuel’s longstanding work on hurricane models has sought to emphasize and push how predictive modeling can be understood given the

uncertainties inherent to climate models (2006). To conduct this work, Emanuel has developed synthetic hurricanes generated from thousands of statistical points within climate simulations. These points are then aggregated to create a single storm. By examining the results of many storms, it is possible to draw out averages that convey approximation of future storm severity in terms of wind speed specifically for Saint Martin. Through the synthetic hurricanes models it was possible to consider how compound risks will continue to impact Windward Caribbean islands, and to emphasize that increased growth in coastal areas will increase damages in future storms (Sarhadi et al. 2024)(Kleptsova et al. 2021). From the synthetic hurricane models it was possible to observe for Saint Martin that though the exact occurrence of hurricane risk cannot be predicted, the severity and magnitude of future hurricanes will increase exponentially over time with winds exceeding those seen during Irma (Emanuel 2006). Moving away from historic hurricane models which framed hurricanes as exceptional, represents an understanding that as hurricanes emerge with greater frequency, severity, and regularity, severe hurricanes are shifted away from exceptions to a quasi-norm.

There is the science of prediction and then there is the real, “outrun[ning] techniques used to apprehend them” (Petryna 2022, 112). Differentiating the scenario from reality becomes an essential component needed in the construction of acceptable risk, to make room of the uncapturable, for the learning and failures of when the hurricane becomes real again. Within the idea of the real outrunning longstanding techniques lies a fascinating possibility which emerges through the acknowledgement that climate changes will continue to emerge outside of what is consider habitual or “the norm.” The throughline is this: the apparent trajectories set by both sides of Saint Martin are not fixed, neither are those of France and the Netherlands. An abundance or absence of methods may still be outrun by the processes they intended to control. To engage the interconnectedness of disparate, unequal scales is not one intended to flatten the weight of those differences, but rather to consider that when placed in dialogue with one another, there are lessons to be learned from the interconnectedness of these scales. Herein lies a second throughline in this work which the active decision to think reflexively on the implications of transversal power structures between European states, between European states and each side of the island, between both side of the island. To engage substantively where learning can occur across boundaries and to recognize the role risk plays in determine how action takes place and in what timescales the perceived failures occur may speak a greater truth to the most important challenges planners and governments will face in the years to come.

Learning from hurricanes can as, Petzold and Magnan argue, make it possible to look “beyond Small Island Developing States (SIDS)” with ideas which include “the recognition of critical issues (asymmetrical governance structures, archipelagic constellations, inter-island connections) that shape island societies’ vulnerability and leeway for adaptation to climate-related hazards” and recognize how the norms have shifted globally (2019). To look beyond small island developing states or sub-national island territories, is to consider islands as consequential spaces to engage climate futures in an era of extreme climate change without neglecting the power of scale both in time and space as it shapes ability to respond to emerging challenges. In the following chapters, the case studies presented will consider how current climate adaptation models in Saint-Martin (Chapter 2) and Sint Maarten (Chapter 3) engage climate futures and how these small island territories allow for the recognition of critical issues such as power asymmetries and shifting norms given longstanding adaptation to climate hazards. The final chapter will build from these case studies to consider how the potential threat of hurricanes and more broadly climate change can shape power asymmetries and ground the establishment of new norms given the urgency of responding to the challenges climate change will pose.

Grounded Interlude 2: The Doubles



Figure 17: (left) Photograph of large satellite dish on Pond Island adjacent to the new Government Building in Sint Maarten. Image by Author, 2024.

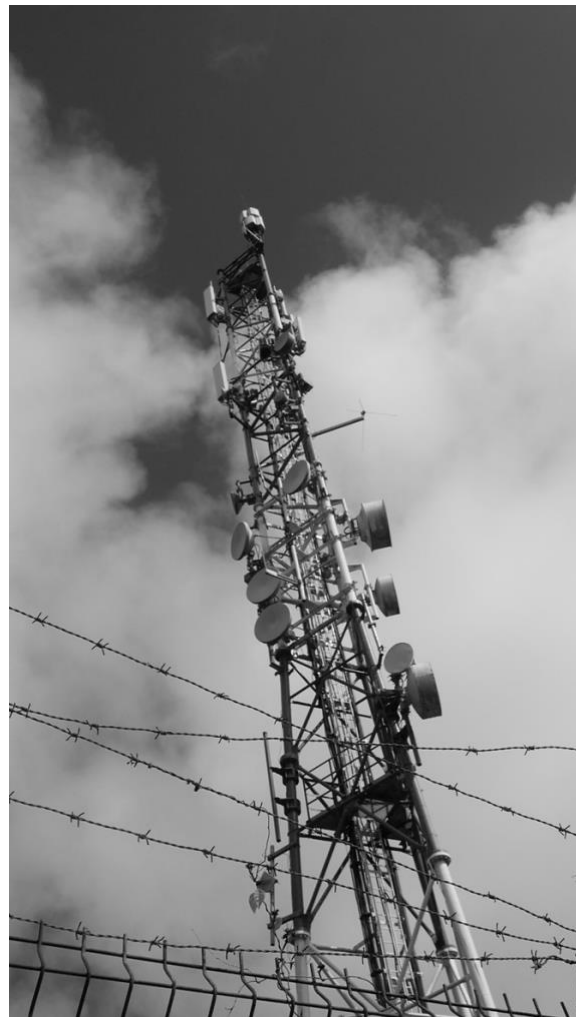


Figure 18: (right) Photograph of a telecom pole on the top pic Paradis in Saint-Martin. Image by Author, 2024.

On the whole of Saint Martin, there are many doubles. In these parallel conditions, one cannot help but see both halves of the island—Saint-Martin and Sint Maarten—in a comparison. There is two of everything, but neither is a substitute or replacement. The doubles create the symbolic grounds from which it is possible to “perform an autopsy of the border, to inspect its internal structure and understand its structuring effects” (Brady 2000, 186). Diesel electric power stations located in low-lying coastal areas power both the northern and southern grids with fuel imported from the Gulf of Mexico or Latin America via islands like St. Eustatius. In two insular electricity markets, the absence of power sharing is literal. Outages happen on one side, but not the other. For short amount of time, one side

slows, some residents leave to their respective other side for a time and then return to their homes and offices once the lights slowly begin to flicker on again as the grid powers up. For those who traverse the island's partial borders, telecom companies are separated and functional on only one side of island. To communicate across the border, individuals with one SIM-card must roam and pay exorbitant prices for communication just over the border. Those who can afford to, own two sim cards or resort to data plans from other countries, including the United States, whose data agreements covers both sides of the island with cooperative with several local telecom operators.



Figure 19 (left) : Two desalinated water tanks near the Sint Maarten cruise terminal, serving nearby developments and cruise ships that are docked. Image by Author, 2024.



Figure 20 (right): Diesel power plant located close to sea level in Cole Bay, Sint Maarten. Image by Author, 2024.

In Saint Martin, the doubles can represent fragments, two systems of importation, neither coordinated. Two Desalination plants on both sides generate grey water for those whose

homes are serviced—drinking water is consumed primarily through two liter bottles bought in large packs that are later disposed of in the landfills. Two sewage treatment facilities are challenged by frequent overflow, where a patchwork of facilities are regularly overwhelmed by rain events release raw sewage into the ocean and the lagoons.

Two cargo ports on both sides of the island allow ships to come and go, notably with critical supplies to support islanders and the island economy. Containers offloaded onto shore deliver provisions for two territories who currently import most of their food and essential consumer goods market. Two cruise and ferry terminals and two airports bring millions of tourists onto the island annually, with each subsequent vessel and aircraft, swaths of people across the partial borders to each side of the island. An inundation of people on an island with a regular population of under 100,000, makes for increased pressure on existing infrastructure.

Most of these doubled critical infrastructures are in low lying coastal areas. Through the eyes of an environmental planner, their vulnerability to rising seas and surging storms is clear. And yet, the exception to this rule remains the road infrastructure where one road network is split. Each side of the road is conditioned by administrative priorities and selective investments visible in the levels of repair differing at the neighborhood level. In a literal sense, there exist through each pair of double infrastructures a doubles exposure, where in the absence of shared systems each pair of critical infrastructure is exposed to the same threats independently. These double exposures produce fault lines that fracture the landscape beyond the island's borders by revealing vulnerabilities that permeate into the shared ever-present environment and underscores the deep interconnectedness of the island's human and non-human communities. The lagoons and bays exposed to sewage leaks are part of shared freshwater and marine ecosystems. Air pollution from cars, planes, cruise ships, ferries, cargo ships, leisure boating, and buses all emit large amounts of sulfur dioxide (SO₂) and carbon monoxide (CO) into the local atmosphere during the peak tourist season. Air quality is often also worsened in the aftermath of major storm events by private diesel electricity generators, as well as large Saharan dust storms crossing the Atlantic and decaying over-abundant sargassum seaweed creating noxious gases as they choke the beaches and coastline.

Beyond the double border, there also echoes of doubles in the vestiges of colonization and modern dependencies on islands across the Caribbean archipelago. Islands contemporaneous to Saint Martin, notably Anguilla and Saint-Barth, were once physically connected to one large island now considered part of the Anguilla bank before oceans rose over the last million years to make the islands as they are today (Christman 1953, 68). Island like Curaçao and Guadeloupe, were once the administrative centers for Sint Maarten

and Saint-Martin respectively. These were the dependencies of dependencies. The doubles resist splits. These are pairs that reconfigure seemingly finite boundaries and borders.

Inherent to this small world of doubles is an overlay and a never-perfect comparative. These comparatives reveal shared vulnerabilities to the infrastructures themselves and to the island and its communities as a whole. These infrastructures serve distinctly separate populations, under separate jurisdictions, and yet their nearness to one another create other modes of looking at what conditions occupy the landscape. Much like a double exposure, this representation of the island is constituted through visual pairs. Elizabeth DeLoughrey writes of the “rarely found evidence of uncanny materiality,” one which, in seeing the doubles of Saint Martin, creates the conditions from which we can, perhaps, acknowledge the “webs of obligation that connect across islands and continents” (DeLoughrey 2019, 42). These local and transoceanic obligations emerge as a counterfactual to the administratively bounded representations of the island as halves and even as subnational dependencies existing outside the national imaginaries of the countries each side is entangled with. The webs of obligation visible through these double infrastructures are embedded in the trajectories of islanders. Infrastructure, in its doubles, also evokes a sense of service to provide for a defined community with a purpose over a set amount of time. Infrastructures as they are maintained or overlooked come into contact with the varying forms of responsibility and accountability that exist within family histories in shadows of enslavement and the plantation economy as well as later migrations as a result of economic downturns, post-disaster crises, and to support tourism as a mono-economy. Infrastructures reveal institutional obligations towards settlements and the unclear borders across Saint Marti. Infrastructures underscore the forms of responsibility that exist between islands and continents, many of which have never been settled.

Chapter 2: Saint-Martin, France, and Contextualizing Adaptation

Tout le monde sait que le Cyclone ne s'arrête pas à la Frontière [Everyone knows that the Hurricane doesn't stop at the Border] – Daniella Jeffry, quoting Felix Choisy, in *the Status of Scandal*.



Figure 21: Barricaded Street in Saint-Martin. Image from J. Champion et H. Pédurand, “Vives tensions à Saint Martin autour du plan de prévention des risques naturels [Heated tensions in Saint-Martin around the Natural Risk Prevention Plan]” *FranceInfo Guadeloupe*. December 13, 2019.

Risk and its Discontents

Where hurricanes and drastic changes to the island are familiar to many, naming the potential effects of climate change can pose a challenge to existing understandings of the way things have been for centuries. In this chapter, the analysis turns to “when” climate or environmental risk are defined and emerge within adaptation strategies proposed in the Saint-Martin, the island government with a population of approximately 35,000 to the North of the island of Saint Martin that is a part of France and an ultraperipheral territory of the EU. For Saint-Martin, challenges to the way things have been appears through metrics defined by centuries-old colonial fears of invasion, by legal and fiscal changes to combat predicted risk of further economic losses in future sports, and through the spur of unprecedented growth, a perceived risk of environmental degradation. Climate risks as they are tied to the ever-present and potential environment in Saint-Martin disrupt time. They play with historical narratives to legitimate strategic adaptation plans and rouses discontentment from the echoes of those histories. This chapter builds off the previous

chapter’s notion of affect to trace how temporal scale emerges within definitions risk in Saint-Martin and engages how these differences in the timescale of risk shape what possibilities exist to implement climate adaptation strategies.

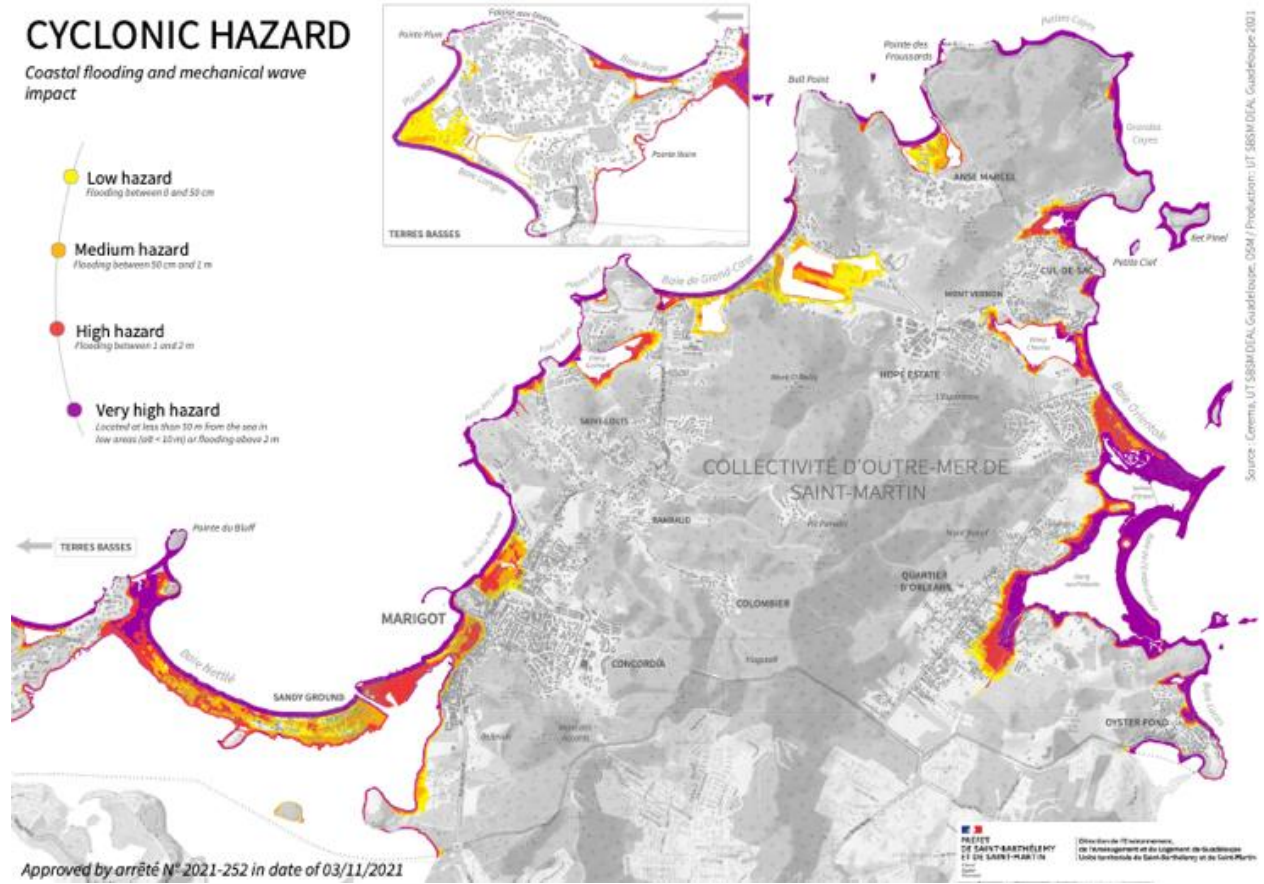


Figure 22: Map of Cyclonic Hazards for Saint Martin for the Natural Risk Prevention Plan. Image by Saint-Barthélemy and Saint-Martin, “Plans de Prévention des Risques naturels (PPRN) [Natural Risk Prevention Plan]” (Ministry of the Ecological Transition of France, March 23, 2023).

Contesting Coastal Change

In 2019, community members of Sandy Ground and Orient Bay—two coastal low-lying neighborhoods on the east and the west side of Saint-Martin—barricaded the streets to protest the local adaptation of France’s National Natural Risk Prevention Plan (Plan de Prévention de Risques Naturels).¹⁵ The Natural Risk Prevention Plan, often referred to as the

¹⁵ The French government states that 64% of France’s metropolitan population is currently at risk of flooding and are not aware of it. See, Géorisques, “Risques naturels sur le territoire français: chiffres clés [Natural Risks in France: key statistics]. Ministry of the Ecological Transition. 2023.

PPRN, calls for managed retreat from and limited reconstruction in coastal zones categorized as most vulnerable to future impact from hurricanes. The zones are indicated on the regulatory map in dark purple for zones exposed to high levels of potential risk and orange and red zones areas with slightly limited exposure (Figure 22). These levels of exposure are then translated into a zoning map indicating that most of the areas in the dark purple zone were to be deemed uninhabitable by the French state and no further construction could take place in those areas. Representatives and residents of both Sandy Ground and Quartier d'Orléans decried the French state's decision to "mak[e] a prevention plan without accounting for [their] economic reality, which takes place primarily on the coast..." and arguing such a decision was "worse than Irma" (La 1ère 2019). To this a government official replied "we are not here to expropriate from anyone. We are only here to explain" (La 1ère 2019). Updated for the first time since 2011, the 2019 PPRN was instituted by the French Ministry of Ecological Transition, a name whose direct translation is the Ministry for the Ecological Transition *and Cohesion of the Territories*. The policy, reflecting the priorities and competing objectives of the Ministry, places national climate strategy and environmental preservation as territorial prerogative from the top-down.

The plan names a response to climate risks explicitly and coherently across territorial scales and environmental conditions in France and French overseas territories. Though comprehensive approaches to climate adaptation are needed, the application of the plan in Saint-Martin has taken additional dimensions. In a sense, the afterlives of the PPRN's implementation as an administrative decision has had spatial, material, and social consequences; consequences whose translation into physical and social experiences echo the complex and inequitable articulations of power between France and its former colonies (Ministry of the Ecological Transition of France 2022). The PPRN has since 2019, and well after a subsequent revision in 2022 following local unrest, has become an unwieldy communication tool for representatives of French state in Saint-Martin to convey risk reduction strategies with various publics, including impacted community members and property owners, architects and engineers, and public representatives from the Collectivity.

In 2007, Saint-Martin's changed its territorial status from a department of France to an overseas Collectivity (*collectivité d'outre-mer*) (Benoit 2008)(Jeffrey 2010). A department is a part of continental France and are grouped into regions. Island departments like Guadeloupe are considered both a department and a region and are considered ultra-peripheral territories of the European Union. A Collectivity is a territory with a semi-autonomous status, combining the responsibilities of a region and are often outside of the

European Union. Saint-Martin is a singular exception within France's overseas territories, both as a Collectivity with a semi-autonomous status, and a part the European Union (see Figure 23).

Saint-Martin's 2007 status change catalyzed forms administrative of *decentralization* from Paris to attain condensed authority over what is traditionally the role of municipalities (communes), a department and a region into one entity.¹⁶ Saint-Martin gained rights over services such as taxes, the right to tax (General Local Authorities Code Art. LO6214-4), cadastral oversight, transportation and road infrastructure, state rights and public properties, access of foreigners to employment, and tourism. Environmental protections, planning, and regulation, as well as national primary and secondary school education, remain under the authority of ministries located in metropolitan France. As such, environmental regulations in Saint-Martin are overseen by France's Ministry of the Ecological Transition (and Cohesion of the Territories) and represented by a prefecture on island. A prefecture is a direct extension of the French national government in Saint-Martin and operates independently from the local government within the Collectivity. The current role of the French government as it relates to environmental protections is not fixed, and future decentralization laws could fold environmental protections into the Collectivity of Saint-Martin.



¹⁶ Collectivités are similar in practice to unincorporated territories of the United States including: Puerto Rico, Guam, American Samoa, and the U.S. Virgin Islands. Within the Republic of France, these territories include French Polynesia (including but not limited to: Tahiti and Moorea of the Society Islands, Rangiroa and Fakarava of the Tuamotu Archipelago, Nuku Hiva and Hiva Oa of the Marquesas Islands, Rurutu and Tubuai of the Austral Islands, Mangareva of the Gambier Islands, as well as Mauputi and Tikehau), New Caledonia. For the Kingdom of the Netherlands, Sint Maarten, Aruba, and Curaçao could be considered to hold a similar status, though the islands have slightly more structural independence.

Figure 23: Map of Communes with Natural Risk Prevention Plans, not including Saint-Martin, which is not considered part of Metropolitan France, though is under the jurisdiction of the Ministry of the Ecological Transition. Image by Géorisques, “Risques naturels sur le territoire français: chiffres clés [Natural Risks in France: key statistics]. Ministry of the Ecological Transition. 2023.

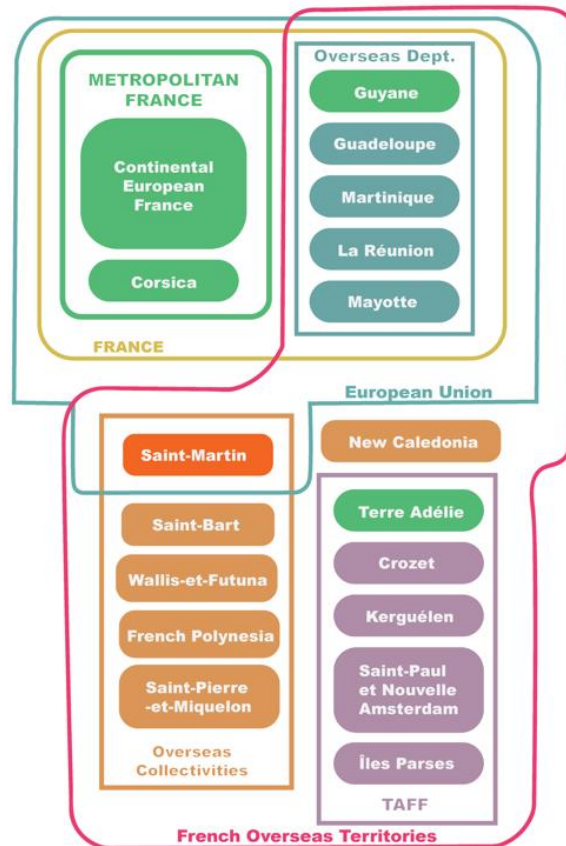


Figure 24: Territorial Status of Saint-Martin within the Republic of France, with island of Clipperton omitted. Image by Author, 2024

The revised plan is an evocative illustration of current operational frameworks that shape how risk is defined and utilized by the French State to create adaptation strategies in Saint-Martin. The PPRN also highlights the role of metrics in the construction of risk mitigation and the place of various publics within definitions of risk. Ultimately, the constitution and response to risk within the PPRN illustrates an implicit relationship to shifting conditions in landscapes increasingly and chronically impacted by climate change. The conveyed inevitability of this regulatory action raises questions of how and in what ways risk is rendered (un)acceptable in the development of spatial policies for climate change. Making note of the bureaucratic risk management practices in Netherlands, Lizzie Yarina notes

“[a] very real conflict, with people fighting for their livelihood, can be expressed as an abstract dispute over metrics” (Yarina 2024). For residents of Saint-Martin, the inevitability of managed retreat as a formal response to climate change, informs a charged vision for the future of the island, one which may not allow for people to fight for their livelihoods. This misalignment between local perceptions of climate risk and the French governments vision for climate policy poses greater long term difficulties around the communication of uncertainty and adaption to still-changing climate conditions, notably hurricanes.

The Natural Risk Prevention Plan surfaces for many residents of Saint Martin on both sides as an inadvertent example of cartographic violence implicitly arranged around a question of acceptable risk as it is defined by the French state. Through the Natural Risk Prevention Plan, an already tenuous reality of coastal habitation for communities across Saint-Martin were suddenly a concern of a French Ministry. For many interviewed, the Prevention Plan’s map overlooked local perspectives of risk in low-lying areas from the rights property owners felt they had to build what they want on their land to community networks concentrated in incremental neighborhoods. By condemning large swaths of Saint-Martin’s coastal areas, the PPRN was perceived as a cartographic violence—a visual denial of community rights to the coasts and the sea.

Natural Risk Prevention Plan (PPRN)

The Natural Risk Prevention Plan (PPRN) is a national regulatory measure in place since 1995 that situates climate risks for all of France’s 36,000 municipalities (Figure 23). When it comes to coastal risks, France has and its 5 500km of coastline, including the French overseas departments and territories (Bahé 2008, 11). In addition to regulation, the PPRN also systematically translates the spatial distribution of the regulation into map form for every municipality and territory. Though applications can vary by region, the role of the Prevention Plan is intended to uniformly convey a standard of necessary adaptations as it is envisioned by the French State as a response to the anticipated risks of climate change such as sea level rise, inland flooding, coast and bank erosion, and storm surge for coastal and riparian communities (Ministry of Ecological Transition of France 2022). Since 1995, the PPRN has been revised three times, once in 2011, and twice in the period between 2019 and 2022. Both 1995 and 2017 were major hurricane year’s corresponding with

extensive damage to the built fabric of Saint Martin.¹⁷ The PPRN zoning plan is an explicit strategy for managed coastal retreat.

The PPRN as a regulation stipulates the required publication of a completed analysis considering the risks to place susceptible to “(1) the presence of [dangerous] natural phenomena, and (2) an evaluation within an appropriate time frame which includes alerting relevant populations and then facilitating their complete evacuation” (Art.L526-1 Code of the Environment of France).¹⁸ The PPRN, as it is applied in Saint-Martin is an artifact of French National Environmental Planning, coordinated by prefectural representatives—individuals or teams working on behalf of the French State at the Departmental and Territorial level abroad—in Guadeloupe and Saint-Martin. The PPRN regulation applies specifically within the Saint Martin’s Urban Planning code, stating that justifications for easements for public utility (*utilité publiques*) by the French government that affect current land-use must be signaled to the Collectivity, by the representative of the state, or in the case of Saint-Martin, the prefecture (Art. 13-37 Code de L’Urbanisme).

In fact, given Saint-Martin’s exceptional territorial status, there is a French State representative whose role is singular in the entirety of the French administration either in France or overseas (Benoit 2008. 219).¹⁹ The exceptional status of Saint-Martin can best be illustrated by Figure 24 depicting the Collectivity’s overlap within three distinct territorial categories: an overseas territory of France, a France within the E.U., and as an independent Collectivity. Saint-Martin’s status maintains the north half of the island as a subnational territory within relative aspects of French national responsibility as well as compliance structures that extend to the European Union.

¹⁷ This was conducted through a change to the French Constitution, known as the March 28, 2003, Law n°2003-276.

¹⁸ Art. L526-1 of the Code of Environment states “(1) Les circonstances de temps et de lieu dans lesquelles le phénomène naturel est susceptible de se produire), and (2) L’évaluation des délais nécessaires à, d’une part, l’alerte des populations exposées et, d’autre part, leur complète évacuation.” Translation by the author.

¹⁹ Catherine Benoît notes that the exceptional status of Saint-Martin is part of the French Republic’s pluri-legislative state, where island territories are considered spaces of legal adaptation where laws are not directly applied but adopted for specific contexts.

REGULATORY ZONING

Cyclonic hazard

- Low constraints
- Medium constraints
- High constraints
- Very high constraints

Crossing Hazards X Stakes	Territory's stakes			
	Urban centers	Urbanized areas of strategic interest	Urbanized areas (Urban area center and MSA)	Non urbanized area (SIC + natural area)
Low Hazardous level LS	Blue	Blue	Blue	Red
Medium Hazardous level MS	Blue	Blue	Blue	Red
High Hazardous level HS	Dark Blue	Dark Blue	Red	Dark Red
Very High Hazardous level VHS	Red	Red	Dark Red	Dark Red



Figure 25: Map of Zones in Relation to the Natural Risk Prevention Plan, and specifically for Managed Retreat. Image by Saint-Barthélemy and Saint-Martin, “Plans de Prévention des Risques naturels (PPRN) [Natural Risk Prevention Plan]” (Ministry of the Ecological Transition of France, March 23, 2023).

Administrative Risk and Climate Change

The PPRN is a ministerial decree (*arrêté*) stipulating the publication of the declaration of the decree, a report presenting the plan, the law of the territory (*réglement*), the map of revised cyclonic risks (coastal flooding and wave action), and a map of regulatory zoning.²⁰ These, in turn, are meant to “establish a precise map of risk zones, prohibit human settlement in the most dangerous zones in dark red and limit use in other risk zones in light red and dark blue (See Figure 25), to prescribe strategies to reduce vulnerability for existing settlements and constructions, and to prescribe measures for collective protection and prevention.” The central risks outlined are hurricane risks, floods, landslides and

²⁰ See Prefecture of Saint-Barthélemy and Saint-Martin, “Arrêté N° Du 3 Novembre 2021 Protant Approbation de La Révision Du Plan de Prévention Des Risques Naturels (PPRN), Aléa Cycloniques (Submersion Marine et Choc Mécanique Des Vagues) de La Collectivité d’Outre-Mer de Saint-Martin [Order No. of 3 November 2021 Approving the Revision of the Plan for the Prevention of Natural Risks (PPRN), Cyclone Hazards (Marine Submersion and Mechanical Wave Shock) of the Overseas Collectivity of Saint-Martin]” (Ministry of the Ecological Transition, November 3, 2021; Prefecture of Saint-Barth and Saint-Martin, “Plans de Prévention des Risques naturels (PPRN) [Natural Risk Prevention Plan]” (Ministry of the Ecological Transition of France, March 23, 2023).

earthquakes. Interestingly, there are for the updated PPRN regulation and zoning maps—unlike most French administrative documents—an English translation of each. The PPRN places Saint-Martin within a national risk prevention and planning initiative developed and initiated in the Metropole, starting in mid-2000s (Pastel and Saffache 2021). Today the PPRN is equivalent to a public easement over property (*servitude d'utilité publique*) justified by issues related to sanitation and public security.²¹ Resembling concepts of American eminent domain, French decentralized services or *services déconcentrés* (i.e. the French interior government overseas) have invoked a SUP with a jurisdiction that supersedes Saint-Martin's local comprehensive plan (*Plan d'occupation des Sols*) under the local administrations Urban Planning Code (Artl.13-37 Code de l'urbanisme). The PPRN uses dark red zones to distinguish areas subject to these public easements and has, since the revision of the program, yielded a portion of the land as still-inhabitable areas shown in light pink (Figure 25).

In the PPRN regulatory document translated by the French government into English several terms about climate adaptation are proposed and convey the bureaucratic determinacy tied to climate adaptation planning (emphasis by Author):²²

“Vulnerability: In the broadest sense, vulnerability expresses the **level of foreseeable consequences** of a natural phenomenon for critical situations. A distinction can be made between economic and human vulnerability.

Economic vulnerability: This generally reflects the degree of loss or damage to property and activities **exposed to the occurrence of a phenomenon**. It refers to the **cost of the damage:** restoration, value of lost property, loss of business, etc.
Human vulnerability: It first assesses the potential damage to people's physical and moral integrity. The number of people exposed to the risk, but also the capacity to

²¹ See Article L. 562-1 of the French Environmental Code. The French legal phrasing around public easements goes as follows: “le plan de prevention des risques naturels prévisibles approuvé vaut servitude d'utilité publiques.” There are four categories of public easements over property, these include conservation of natural, cultural or sport heritage sites (*patrimoine*), critical infrastructures (energy, mines, telecommunications, sewer systems), national defense, and lastly, sanitation and public security. See “Outils de l'aménagement: Les servitudes d'utilité publique affectant l'utilisation des sols (SUP) [Urban development tools: public utility easements and their effect on land-use (SUP)],” CEREMA: Climat et Territoires de Demain, August 19, 2020.

²² Prefecture of Saint-Barthélemy and Saint-Martin, “Natural Risk Protection Plan: Revision of the Hurricane Hazard” (Overseas Collectivity of Saint-Martin: Ministry of the Ecological Transition of France, November 3, 2021).

respond to a crisis situation (e.g. children, the elderly, the disabled, etc., will be highly vulnerable).

Risk: Probable loss of life, property, and business due to the occurrence of a natural hazard. The notion of risk corresponds to the conjunction between a hazard and the critical situations.

Major Risk: The possibility of an event of natural or man-made origin, the effects of which may involve many people, cause significant damage and exceed society's ability to respond. A major risk is characterized by **its low frequency and high severity.**

Urban Planning: The study of the structure, coordination and control of land use in the evolution of towns and cities.

Urban Renewal: In urban planning, this is a form of urban development that refers to the action of rebuilding the city on itself and recycling its built and land resources. This aims in particular to deal with the social, economic, urban planning and architectural problems of certain old or run-down districts, as well as to encourage new development trends, particularly economic ones, and to promote solidarity on the scale of the conurbation (better distribution of disadvantaged populations, particularly through social housing). It is a global project aimed at opening up the urban area in the long term, facilitating access to employment, education and culture, while making the area safe from natural hazards. The main purpose of urban renewal is to limit urban sprawl and suburbanisation by developing concentrated, dense housing, in particular to reduce the ecological footprint of housing, and consequently of the city itself. The city can be renewed in old neighbourhoods (vacant or substandard housing, shops, industrial buildings, facilities, etc.), but also in industrial areas or industrial wasteland. See definition of 'Overall development' (Prefecture of Saint-Barthélemy and Saint-Martin 2022)."

These terms articulate France's ministerial position with regards to climate adaptation policy as a form of urban renewal aimed at minimizing risks related to "probable loss of life, property, and business due to the occurrence of a natural hazard" by minimize dense individual housing routinely associated with urban, low-income and often informal neighborhoods (Prefecture of Saint-Barthélemy and Saint-Martin 2022). In Saint-Martin, the identification of major risks prompted a decision to pursue urban renewal, even as threatens to fragment low-income immigrant communities.



Figure 26: Map of France's Overseas Territories (Territories d'Outre-mer) including Overseas Collectivities and Departments (DOM-TOM), as well as Southern and Antarctic Lands (TAAF). Image by Superbenjamin. "La France avec l'ensemble des territoires d'outre-mer [France with all of the French Overseas Territories]," Digital Map. December 1, 2015.

Measuring a Coastline

The Natural Risk Prevention Plan zones are determined through the use of a metric termed the 50 Natural Geometric Steps (50NGS) [*50 pas géométrique naturel*] for Saint Martin specifically, constitutes about 81.20m from coast inland at the highest tide. This measure of inland coastal areas both confers jurisdiction of coastal land to the French National government, and also has no basis in geology or contemporary climatology, in fact the metric has little basis in anything "natural." Rather, 50 NGS are the brainchild of 17th-century French colonization and surveying of land in the Americas and Caribbean region. Originating from a split between the Coastal Protection Agency (*Conservatoire du Littoral*) and the National Forest Office (*Office Nationale des Forêts*), historically the 50 Natural Geometric Steps have served to reincorporate Saint-Martin's coastline and coastal land as a matter of urgent public interest for the French state.

In other words, these metric structures the coastline, attributing to it a once seemingly finite boundary is a finitude put under duress. The coast's rocky coastal edges are eroding and sandy beaches have washed away with storm surges and abnormal high tides. A reminder, that coast was always fluid. The coast remains a fluid space, one which does not account for changing coastlines as the sea level will shift upwards, subsuming large parts

of the low-lying landscape in Saint-Martin. This inheritance was not construed for adaptability. And yet, this regulation attaches to coastline a metric that will continue cut into the coast. The frontline of climate policy protections, quite literally, move inwards as tides rise along with the ocean.

Not all overseas territories have the same 50NGS. Territories that have remained Departments of France, such as Guadeloupe and Martinique, utilize a standard measurement of 100m from the shoreline utilized in metropolitan France, but face coordination and governance issues between the Coastal Protection Agency and National Forest Office. For example, tidal zones with mangrove forests are protected by the Coastal Protection Agency but utilize Forest Codes—a set of overarching laws and regulations for forest management across France—to protect these areas.²³ Guyana, on the eastern coast of South America, and Réunion, a small island in the Indian Ocean, have altogether or nearly eliminated the 50NGS respectively. Within this constellation, Saint-Martin use of 50NGS has been consolidated into the power of the Coastal Protection Agency since 2007 and is seen characterized by the French Ministry of Agriculture and Food Sovereignty as use of the metric that “allows for strong and sustainable protections [of the coast]” (Morin and Clément 2016).

This centuries-old measurement becomes the arbitrator of protected coastal zones is shaped by the imagination of a contiguous continental French state and its coasts. The changing coastlines of France under climate change and sea level rise challenge the seemingly static and uniform condition of this metric. As parts of the territory shrink and expand, the 50 geometric steps’ once mild, if not invisible, role of maintaining coasts and beaches as a public common space now emerges as full arbiter of state power. The paradigm shift is contextual and territorially dependent. Despite the legal universality of the PPRN, the metrics and administrative entities determining its application vary in accordance with the histories and administrative specificities of each island territory. For this reason, many of the rules that apply to overseas French territories are categorized as exceptional. The public realm, and its definition by the French state is itself a contentious matter for many overseas territories whose sense of agency relative to the French state has been conditioned by cycles of independence movements and a state of complex dependence on their former colonizer, turned national government.

The 50 geometric steps had been in place for centuries. As an evaluation of the coastline, the 50 geometric steps began the work, as an institutionally defined metric, of separating the land into categories of danger and habitability. The coast was suddenly segmented. In several interviews, the utility of this metric emerged as a key symbol of how the seemingly sudden segmentation of the French side was part of a broader history of French bureaucratic decision-making. Some familiar with procedures argued the metric was a legal tool to initiate a necessary process for the safety of the Saint-Martinois who live near the coast.

The Value of a Coastline in Theory and Practice

The PPRN was developed by the French Ministry of Interior in conjunction with the Ministry of the Ecological Transition and of the Cohesion of the Territories. The latter Ministry, often referred to in French and translated to in English as simply the Ministry of Ecological Transition, elides the broader coordination and deployment of spatial and environmental planning regulatory structures from the top down across all of France. In interviews with officials familiar with this regulation, the very premise of protection enshrined in the PPRN is not only a protection for populations from State-defined coastal risk, but also protection from land speculation and development on already cordoned off protected zones, including marine protected areas. This specifically targets developments likely subject to repeated, frequent severe climate events that will undermine the longevity of this construction. As a local example within these discussions with French officials and local practitioners in the built environment, Sandy Ground, as a community, was utilized as both a metric of success (or its apparent absence) for the implementation of coastal risk reduction policies from an administrative position of enforcement to a local perspective on resistance to this very enforcement. The neighborhood was a space attributed a value through the terms of measured climate impacts because, in the eyes of state planners, the perceived vulnerability of the site also became a means to assess the local value of the coast and how to prioritize coastal plans with stakeholders.

Faced with the major difficulties with implementation, the certainty of the Risk Prevention Plan as a step towards risk management and climate adaptation came crashing down. The value of the coast, as it is understood and assessed by formal and informal systems became a wedge between a shared sense public risk in Saint-Martin. In this formulation, the PPRN revealed two risks. The first an explicit risk related to land subject to the changing natural climate, and the second an implicit risk, characterized by State distrust of local

public priorities over the preservation of land that is already protected. State agencies such as the Coastal Protection Agency (CDL), operate separately but in conjunction with this notion of two forms of public interest. Public administrative interests in the environment, conflict and are in tension with perceived local public interests from within the Collectivity in developing land, and as such taking the land outside of the administrative category of environment into the category of urban development. In such cases, Sint Maarten and its still-densifying landscape was invoked several times as proof for the hardened positions of the bureaucrats I spoke with. To officials in Saint-Martin, Sint Maarten was a symbol of what to avoid. The perspective shared by these individuals contrasted alternative narratives shared by architects on island of reconstruction in Saint-Martin through a more tempered construction regime to support the local economic interests and priorities, notably within tourism via hotels or private homes as well as the construction industry.

The environmental plans codified into law are symbolic of complexities characterizing the independence Saint-Martin holds. One where the very naming of environmental risk and coastal protections are situated in contrast to coastal communities on the island, but more broadly this positions the environment as an extension of French governmental affairs on island rather strategy put forward by the local Collectivité themselves. Ongoing reticence about the French government's ability to represent islanders emerges through contentions that have emerged because of the PPRN. As the object of public opposition, the environment, as it is framed by the PPRN, was often considered a non-local issue. For some, climate adaptation should be a consideration for a changing environment elsewhere, given the effects of climate change in Saint-Martin were not seen as consequential.

The definition of natural risk that mirrors rules and regulations transposed from Metropolitan France onto Saint-Martin lacks the pragmatism—as one local architect put it—of what is needed to properly rebuild the island today. On the other hand, public opposition to the PPRN after 2019 shifted the regulatory standards on island and resulted in an adapted plan in 2022 to create differentiated zones. This new plan allows for a greater number of structures to be considered eligible to remain along the coast and moves away from the originally defined single zone of 50 Natural Geometric Steps from the shoreline. This deviation from the norm was considered a flagrant exception by the French officials with regards to French Administrative standards. A flexibility rendered—from the perspective of some state officials—to service deliberate omissions of the *true future risk* posed to the coast.

Reconstruction seven years after Irma has been slow, and at times seemingly impossible. The impossibility of reconstruction creates frustrations amongst residents and architects from the island, who in interviews highlighted the inability to renovate homes. This is due to a limit imposed through the PPRN on the possible overall cost of renovation paid for by the property owner (a ceiling of 10% of the total parcel value), which prohibits many existing buildings from substantive renovation projects for damaged homes, let alone total reconstructions for sites with severe damage (Prefecture of Saint-Barthélemy and Saint-Martin 2021). This creates a fundamental tension between the anticipated risks highlighted by the PPRN in zones most susceptible to climate risk and the urgency felt by Saint-Martinians to rebuild housing. On this side of the island where land is scarce and permitting is enforced, every meter counts. Every lot that is occupied by a damaged or deteriorating structure without new housing or businesses, is empty and slated for preservation from development. These lots are symbolic, many inhabitants in Saint-Martin of the increasing pressures on local real estate, including ever-increasing costs of living on island. These lots were also considered revelatory of the limited opportunities for economic growth when land tenure is fundamentally put to question.

Loi Pons: Densifying Urban Coastlines and Conditioned Coastal Urban Possibilities

In 1987, Saint-Martin was deemed a tax haven by French authorities through a law known as the defiscalization law PONS (*loi de defiscalization*) making the French side of island tax exempt. The islands change in state created incentives for many white, European French citizens to arrive on the island and buy up land for development. This became a state-sanctioned land grab. Consequently, the island's newfound property regime reified already existing fiscal, social, cultural, and racial stratifications between Saint-Martin residents and non-islanders from France, the U.S. or elsewhere than Saint Martin.

After the law was passed “the number of rooms doubled on the Dutch side” and increased nearly “eightfold on the French side between 1986 and 2000” (Redon 2006, 8). Hotels and secondary homes for wealthy Americans and European French were built on land bought by land developers, as well as additional housing for workers and families associated with the tourism economy (Monnier 1983, 68). Land in areas such as Terre-Basse, were acquired and owned 93% by American citizens (Monnier 1983, 68). To feed the booming construction sector, laborers immigrated from nearby Caribbean islands like Haiti, the

Dominican Republic, and Dominica (Duvat et al. 202)(Rendon 2006), leading to the constitution of informal neighborhoods where formal and informal laborers could reside.

In Saint-Martin, the Sandy Ground and Orient Bay neighborhoods developed en masse after the early 1970s. For example, Sandy Ground, a neighborhood located on a thin strip of land between the Caribbean Sea and Simpson Bay, saw the construction of over 526 buildings between 1969 and 1989, and 230 buildings were built in Orient Bay between 1999 and 2004 (Pasquon et al. 2022, 11). Over this period, population growth grew as greater numbers of workers and business people came to live on the island. In Saint-Martin alone, “the post-1986 immigration” the population multiplied 3.6 times, from “7850 inhabitants in 1982 to 28,505 inhabitants in 1990” (Rendon 2009). Embankments were built alongside Sandy Ground during this period to reinforce the land along two separate water edges.

Today, Sandy Ground has a density of nearly 1800 buildings per square kilometer, whereas wealthier and more touristic enclaves have much lower densities averaging at about 250 buildings per square meter. Orient Bay has about 600 buildings per square kilometer. By 1979, a cadastral study revealed that less than 2% of owners hold over 60% of the island, with 75.6% of property owners owning about 5.7% of the land (Monnier 1983, 66). In areas with greater levels of informality, ownership decreases, and so do the benefits residents are able to receive from the state in terms of financial allocations, general welfare benefits, and any cash transfers dedicated to future managed retreat. In a discussion with a researcher from the NGO Islanders at the Helm, it was pointed out to me that on the Saint-Martin side, *people know their rights, they know what they can fight for*, whereas similar protests seldom occur in Sint Maarten because few people have the protections afforded by the French welfare state. Despite this perception, other interviewees familiar with the PPRN noted financial and social supports are not distributed equally and require an ability for individuals to have the time and ability to interact with the French bureaucracy. In this sense, the PPRN’s land- and ownership- based approach has been inequitable from the start because it centers primarily on protections which initially overlooked conditions of informality. Power over land, as it is exercised, remains outside the hands of those who stand to be impacted the most by climate change.

The State and Re-naturalization

Using the dark red zones defined by the 2022 PPRN, the Coastal Protection Agency (CDL) has begun purchasing coastal land from land owners, rendered ineligible for

redevelopment by the regulation and has remained unoccupied or in a state of disrepair due to the still-lingering impacts of Irma. Hotels and large properties with insufficient insurance payouts were unable reconstruct have become major targets for the Coastal Protection Agency. These vacancies underscore a symbolic dynamic: the French government is willing to invest in purchasing land they consider at risk as an extension of its role in relation to the environmental protections it enforces. This remains entirely separate from the role of urban planning, urban development on island. In some cases, as it was described by a local architect, the agency would buy a site such as the hotel Belle Créole to make the space *a public park and memorial on land that is a supposed ancient Arawak cemetery*. Dubious of both the historic justifications of the land transfer and legitimacy of the purchasing strategy, my interlocutor pointed to the multiple claims inherent to the acquisition of the parcel. It was not just about control of the land, but it was about its use and the history mobilized within this vision of the value of place, one whose re-naturalization and availability to the public is misaligned with the local public visions of the ground.

Naturalization as a reassertion of French territoriality, specifically one anchored in a vision of the acceptable trajectories of climate risk, and whose conditioning of the present creates an adversarial relationship between Saint-Martinois and *their* land, as well as between the State and *their* environment. Within the context of French-mandated managed retreat as a climate adaptation strategy, environmental protections veils the real, economic, and financial implications of climate risk. In 2022, the gaps in between administrative representations of climate change (including a lack of discourse) and the measurable consequences of climate change were echoed when leaders from across French Caribbean territories launched the Call from Fort-de-France in 2022, and in a call to action by the Central Bank of Saint Martin in 2024 addressed later in Chapter 3.

The Call from Fort-de-France

In 2022, the leaders of French Caribbean overseas territories (*region ultrapériphériques européennes (RUP)*) called to action the French State (*l'État*) to change its development aid policies for their territories affected by high levels of poverty and increasing vulnerability to climate change. Leaders cited in the call the ongoing issues with insurance companies which are leaving or refusing to protect certain establishments from future storms because of the costs incurred from Irma in 2017 as well as other storms that have passed through the region in the years since. Referred to as the Call from Fort-de-France (*Appel de Fort-de-France*), representatives denounced a situation of “structural bad development” and the

inequality faced by citizens of overseas territories compared to those in metropolitan France. The leaders also insisted on a new national economic policy better attuned to geostrategic and ecological specificities of these territories, citing the Natural Risk Prevention Plan across island territories as “the law on the coast” (*la loi sur le littoral*) voted in Paris but directly applied on territories with deep incoherence between State and local priorities.

Facing Incoherence

The dynamics revealed by the Call from Fort-de-France around the differing forms and administrative terms for acceptable risk emerge as an echo of the split through Saint Martin. A metric itself consolidated into the present, defining the boundaries of what counts as public, what counts as significant matter worth preserving (regardless of the original intention of the statute or administrative intent in implementation). The afterlives of the 50NGS and subsequently the PPRN are tied to the colonization and fortified capture of the island, to the cartographic rendering and production of imperial and neo-imperial atlases that still lay the foundations for the transformation of land as the object of a public located thousands of miles away from Saint-Martin. Here the relationship to land and environment defines “physical domains as publics,” in the sense of French transboundary uniformity. Rather than perhaps a more contemporary configuration where the public administration integrates meaningful relationship to community, to recent histories, risk is dealt with in Saint-Martin through an established set of conditions, rather than a site teeming with plural experiences that have differing considerations for what the role of environmental conditions play in everyday lives. This is the tension. The foundations for climate adaptation planning at present within Saint-Martin are not enough to protect against future climate change. The need to rethink the relationship between Saint-Martin and France leaves the island territory with a leverage point from which to reconfigure the role of structurally-embedded inheritances in the ever-present environment through climate adaptation plans and reestablish shared vulnerabilities. From this vantage point, climate adaptation planning in a centralized system can become more effective across France’s territorial expanses and their differing experiences of climate change.

In the case of the PPRN, the regulation purports the containment and management of risk from climate change and mitigate already present environmental impacts visible on land. This land first approach echoes contentions within critiques of (neo)colonialism where the conquering of land came before any consideration for that which already was and the social, cultural, and legal (in the formal or informal sense) institutions that are *already* life

sustaining.²⁴ In this sense of power extended over land, *then people*, forgoes the recognition of the life sustaining processes that have purveyed in tandem with territorially bound adaptation frameworks. The definition of public, and risk as a function of the public, necessitates new forms of metrics, to better reflect and incorporate increasingly (un)certain futures. I bracket the “(un)certain” because there is certainty that future climate scenarios will increase in terms of a frequency and the severity of complex, intersecting climate extremes (Meiler et al. 2023). And yet, there is also uncertainty around the definitive timeframes of these climatic changes, which contributes to further uncertainty around the possibilities for collective action at local and global scales.

Through a centralized approach to environmental regulation and governance, the climate adaptation strategies proposed by the French national government in Saint-Martin have shifted risk management from a tacit government responsibility into a subject of public debate (and discontentment). This debate reveals the cultural, social, and historical gaps that shape administrative approaches to risk management and climate adaptation. These gaps create major challenges to implementing an effective and publicly accepted climate adaptation strategy for Saint-Martin. In contrast to top-down climate adaptation planning in Saint-Martin, Chapter 3 considers the institutional relationships between Sint Maarten and the Netherlands as it related to adaptation planning and risk management. These institutional relationships illustrate how the translation of risk into spatial planning strategies must acknowledge the current forms of responsibility toward environmental protections that exist within these strategies and by extension the institutions that produce them. The chapter considers how collective or co-defined representations of risk and environmental knowledge in Sint Maarten can offer a critical step forward for shared climate adaptation planning.

²⁴ Several authors who Anthropology of Expertise who write on climate change and bureaucratic structures. See Kian Goh, *Form and Flow: The Spatial Politics of Urban Resilience and Climate Justice* (The MIT Press, 2021); Lukas Ley, *Building on Borrowed Time: Rising Seas and Failing Infrastructure in Semarang* (Minneapolis: University of Minnesota Press, 2021).

Grounded Interlude 3: Trick Mirror



Figure 27: (left) Building near Orient Bay with cactus growing located at the coast (not visible in picture but directly behind the building). Source: Author, 2024.



Figure 28: (right) Two chairs in Fort Amsterdam facing the horizon. Image by Author, 2024.

Two metallic chairs at the edge of Fort Amsterdam overlook the ocean toward the south. On this memorial to colonial occupation, the two chairs face the horizon, joined by a single piece of wood. On a clear day, Saba can be seen: a tall, dormant volcano in the middle of the sea. The almost-fantom island, lingers just beyond a monument marking a history of occupation and fortification of Sint Maarten. Separate and connected in form and structure, these chairs seemed a symbol of Saint Martin itself. A shared place split in two—always together, always separate. The idea of a deliberate environmental condition is fiction—natural phenomena are not aware of our human projects. Mangled shallow roots

laid bare, life unearthed and history uprooted. A cactus becomes fixed to the roof of an abandoned building along the coast. A dried leaf falls apart, revealing an almost map of place unknown. In the landscape of Saint Martin there is order and disorder, calm and disarray. One interviewee reminded me, that from a distance you can hear the crackling of the earth before small earthquakes hit the island. The rumble and ruptures of tectonic plates colliding. The trick mirror is located in the ways material condition reflect changes that are often left unsaid. In these silences, there are echoes of this landscape and its repeated transformations.

On island, you can trace the clouds at a distance from the same horizon. Suspended fleets, hovering toward the island, lingering as long as the pressure system allows them to stay. Rain-heavy clouds approach Saint Martin like an enormous grey curtain. This grey curtain of rain, as it is drawn to the ground, was pointed out to me as a symbol of urban change on the windward side of the Caribbean. To understand this change, an architect with 40 years of experience and life on Saint-Barth produced a helpful anecdote, noting the role urbanization played in changing the ecology of the Saint-Barth as an island whose topography and environmental conditions parallel those on Saint Martin.

The architect shared from his decades of observations that over the last 30 years, as a greater number of people began to build homes and inhabit Saint-Barth, shrub, flower, and tree growth in private garden spaces over the last 30 years has fundamentally changed the island's biotope. Rainclouds, once pushed away by the heat emanating from the Saint-Barth's surface often heading to Saint-Martin, were now being pulled down onto Saint Barth. Aided by increased vegetation on Saint-Barth following urbanization, the increase in evapotranspiration drew rainclouds onto the formerly dry, arid and overgrazed island. Plants changed the island's climate. On Saint Martin, the plantation system and periods of subsistence agriculture also changed the landscape significantly over several hundred years, contributing to shift from an arid to a more tropical landscapes as rain capture systems and consistence cultivation of the land altered the environmental conditions. In a sense, the creation of the "oasis" like conditions of Saint Barth are in fact due to the presence of human habitation and deliberate tending to trees and flowering bushes to line private properties. The nature in Saint-Barth, and by extension Saint-Martin is not a "natural condition." The now frequent periods of rain on both islands is not a "natural condition."

The idea of a deliberate environmental condition is fiction—natural phenomena are not aware of our human projects. And yet, these phenomena respond, sometimes brilliantly and avidly to human endeavors to alter the human environment. Lest we forget invasive

species are also incredibly resilient. The pomegranate is not a native fruit, but it is now endemic to the Caribbean region on some islands. Iguanas now overpopulate parts of Saint Martin after years of cross-island travel and importation. Mangled shallow roots laid bare, life unearthed after storm leaves room for decay and soil fertilization. A cactus takes root on the roof of an abandoned building on coast. To encounter these environmental conditions with a sense of gravity can perhaps bring one's gaze to notice the great egret (*Ardea alba*) soar, crossing and re-crossing the border in search of food and a place to perch. One may notice a leaf slowly fall apart, revealing an almost-map of place unknown but almost familiar. In the landscape of Saint Martin there is order and disorder, calm and disarray. The trick mirror is located in the ways these vibrant materials reflects conditions that were often left unsaid. In the silences, there is an echo a landscape in a constant state of reconstruction and reinvention.



Figure 29: Dried leaf on the path towards Pic Paradis. Image by Author, 2024.

In the weeks and years after a storm, traces of the storm's passage can be seen in decaying tree stumps, mangled roots, empty houses, and small pieces of green amidst the barren ground. A slowing emergence. Sometimes the traces of a storm are in memory, where the material reminders of such an event are lost to reconstruction, replanting, reconfigurations of the landscape. Systematic forgetting as the disaster is slowly erased as the catastrophic is classified once again as exceptional, that is until the next "blowing season" begins.

Reconvening with the landscapes formulates distortions—it creates a contract with fear, with the present, with the future possibility of cataclysm.



Figure 30: (left) Mangled roots after Summer Storm Poly in Amsterdam, Netherlands. Image by Author, 2024.



Figure 31: (right) Cacti located near Friars Bay in Saint-Martin. Image by Author, 2024.

Mirrored risks. Distorted representations of similar phenomena across territory and scale. Distortions can make risk appear less relevant to those with “cognitive schema” that are far from the reality of these disasters. Making room for and needing additional advocacy from the region. New territorial statuses do not reverse centuries of colonialism. If you look closely enough, the mirror offers a reflection back to the sea, and yet from behind the trick mirror—there are the many who have always been looking out, standing guard, anticipating. The trick mirror refuses false equivalencies between the island and the island.

This is what I call the trick mirror of an island influenced by chronic relationship to atmospheric, topographic, and geologic disruptions. A trick mirror, as such, distorts the scales of impact between islands which appear and disappear from the horizon. The trick mirror makes present seemingly absent contiguities. Suddenly face to face, these objects can be placed into a conversation steeped in the language of ruptures that surface amidst the power relations between the island and the island, the island and the former metropole. The trick mirror emerges as an exception. An exception to the rule. As exception to the concept of the State or the Kingdom. An exception because one is unable to think a place without encountering the other, and in this encounter the histories of othering, the vestiges of coloniality, and money, and tourism are laid bare on the ground.

Trick mirrors have the power to subvert visions of the self. To offer altered perceptions of the real. Here, amidst altered perceptions of time and place a comparative emerges. The trick mirror becomes a symbolic tool to characterize the encounters and ruptures needed to consider what these materials can offer us through their particularities. The Trick mirror resists all possibilities to convey a completeness to any singular object or place.

A trick mirror, as it reflects the significance of material conditions on island, is also a meditation on the rootedness, erasures, and agency of the beings and environments that surround oneself when wayfinding on Saint Martin. Erasures and the systems to pick up the pieces, some to keep, some to turn into dust, into piles of rubble and wreckage, some to further our forgetting of the surroundings as it once was. Trees are archiving our climate; they encode environmental changes over time. Trees in this sense have stories to tell. Mangrove trees, like acacias, elms, and willows, capture stories of how the environment continues to change. As mangroves die off or are felled, a natural archive atrophy. If new saplings are planted, they become barometers of the present, fighting against time and nature to root and embed into the landscape.

Trees reflect earthen histories, anchored in a deep time of continental ruptures. Remembering, the earth below is the result of constant rumble, the friction of still-colliding continental plates. When the earth moves, we are reminded in not always gentle ways that the earth is never still. The seas, rolling clouds, unexpected rainstorms, hurricanes, earthquakes—these confront the idleness of a protected paradise. Small islands form between rivulets on the grounds beneath mountains. Winds arriving from the east carry out each new season's rest and unrest. What is shared is also configured into separateness. The trick mirror appears across the island Saint Martin: material inheritances are reconfigured into shared echoes and paralleled vestiges.

Chapter 3: Sint Maarten, the Kingdom of Netherlands, and Conditioned Vulnerability

“a negotiation / between / the cover and pages / are the marks that tried to maim us / the gentle amputations of / math hat rode / geographies that divide / and the amnesia of / unspoken histories” — Deborah Jack, from “the fecund, the lush and the salted land waits for a harvest...her people... ripe with promise, wait until the next blowing season.”

“In the Center, the literal undulations of the cane fields. The mountains are subdued and become hills. Ruins of factories lurk there as a witness to the old order of the plantations...” — Édouard Glissant, in *From the Landscape*

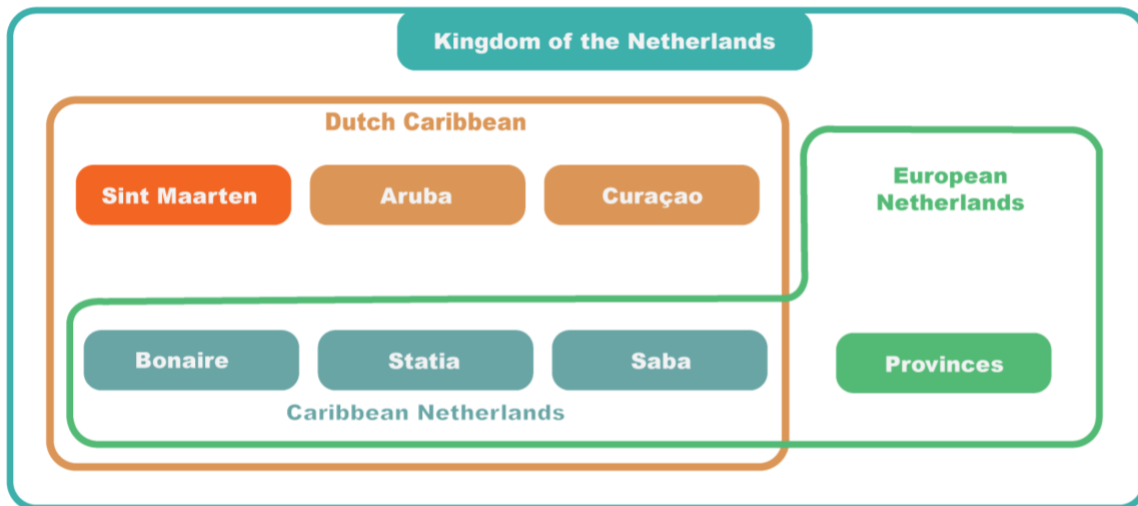


Figure 32: Diagram of Sint Maarten's Territorial Status. Image by Author, 2024

Risk, Spatial Scales, and Manufactured Dependencies

This chapter contends with how definitions of climate risk emerge in Sint Maarten, given its relationship to the Kingdom of the Netherlands, and how this selectively enforced relationship between the island and the metropole structures current climate adaptation policies and tentative future adaptation strategies. The programs and directives discussed in this chapter are ongoing and evolving. They offer small concrete steps forward, but do not go into comprehensive plans, implementation or financing for climate adaptation. They are also, in strange was, a warped reflection of my experience working with Dutch Ministry of Infrastructure and Water Management in the Hague as well as field work and interviews

in Sint Maarten. These experiences revealed the forms of financial and social connections between both the island and European government that supersede official mandates and reinforce existing power asymmetries. This is a dynamic can be understood as a manufactured dependency, rather than clear legal obligations that pertain to climate adaptation between the two governmental systems. Furthermore, experiences of the disparate ever-present environments in the Netherlands with its hyper-engineered polders and city centers, and Sint Maarten with its incremental patchwork of urban areas, shape how climate policy and planning can be defined and implemented; the “unprecedented” quality of Summer Storm Poly in the Netherlands described in the introduction pales in comparison to the magnitude and scale of Hurricane Irma as it crossed the entire island of Saint Martin. These differences in scale and in the role of the ever-present environment in governmental structures animate and structure the analysis of this chapter. They shape what counts as expertise and who, historically, has counted within applications of the expertise into the environment.

The chapter therefore first engages how the ever-present environment in Sint Maarten, an country of approximately 40,000 people, is an important, and often overlooked site of risk that contributes to experiences of chronic instability during extreme events such as hurricanes and tropical storms. The chapter then explores how the different spatial and temporal scales implicated in the definition of risk in Sint Maarten inform relationships between the ever-present environment and governance. These relationships, emerging from financing, conservation, and climate mapping programs, illustrate how climate risk is used ambiguously and emerges at varying scales between Sint Maarten, as part of the Dutch Caribbean within the Kingdom of the Netherlands. Existing or missing protections from climate risk at these different temporal and spatial scales reveals how the responsibility to protect islanders from climate change is ambiguous at best. This chapter’s engagement with approaches to risk management and climate adaptation in Sint Maarten reveal how where risk is located (e.g. Sint Maarten) versus where risk is defined (e.g. in The Hague) matters greatly for climate protections to emerge. The gaps and absent approaches to both risk management and climate adaptation highlight the challenges ahead to take action. The chapter concludes with an exploration of recent programming that aims to reconcile differences in scale as they relate to climate risk and climate adaptation strategies. These programs also provide resources that can service broader cross-island initiatives to address the urgency of the climate crisis.

Ever-Present Environments

Driving through the Lowlands on Rhine Road, a one lane road bisecting the middle of a still-active golf course. Rhine Road is on land that bridges the Simpson Bay lagoon and the Caribbean Sea, it also connects Sint Maarten’s Lowlands, an area close to the international Airport populated by casinos and residential towers, and Saint-Martin’s Terres-Basses, a privatized areas of villas purchased in the 1980s. On the edge of the golf course, two new rectangular eighteen story towers were built in 2021. If viewed in Cole Bay from across the lagoon, the white towers rise above the horizon. Serving as a land boundary between the bay and the sea, Lowlands—as the name suggests—is prone to flooding. Rhine Road, during heavy rainfall and storm surges becomes a river itself, connecting the bay and the sea. For an island of few roads all connected in a circle, flooding isolates, encircles, and halts circulation for visitors and locals alike. Higher in the mountains, there are also spaces in areas like Cul-de-Sac in Sint Maarten, which are ravines whose dormant rivers appear at the bottom of a valley between mountain formations. Now built-upon, this area still floods, and the farmland which used to cover this interior land area is pressured by water’s limited places to go. A natural gutter, the ravine or “gut” of Cul-de-Sac that once carried rain water to Fresh Pond, a small area for rain to overflow into the great Salt Pond is now pinched into small inlets through Philipsburg before evacuating out into sea.

The Great Salt Pond, a once porous area bordered by wetlands fed by rain water from the mountains and the overturn of ocean tides, has been, over centuries of colonization, walled and controlled with evolving water pumping technologies. Its crystalline salt contents were tilled by enslaved and later freed laborers who cultivated salt to service Sint Maarten’s plantation economy.²⁵ The practice of salt picking persisted until 1948. Then came the first hotel named Divi Bay. Salt was replaced with tourism. The island population expanded, so too did its built fabric. New hotels and homes and incremental housing to operate the new service economy. Increasing urbanization in Sint Maarten has catalyzed an ever-present environment dominated by increasing density and incursion into already limited land, new land through land reclamation and illegal hill cutting. The pressures to build and sustain growth has decreased the standing environmental features such as tidal mangrove forests, mountain tree canopies, healthy coral reefs and sea vines in the beaches which could best offer coastal resilience.

²⁵ The abolition of slavery in Sint Maarten was in 1863, nearly sixteen years after Saint-Martin had abolished slavery in 1848.

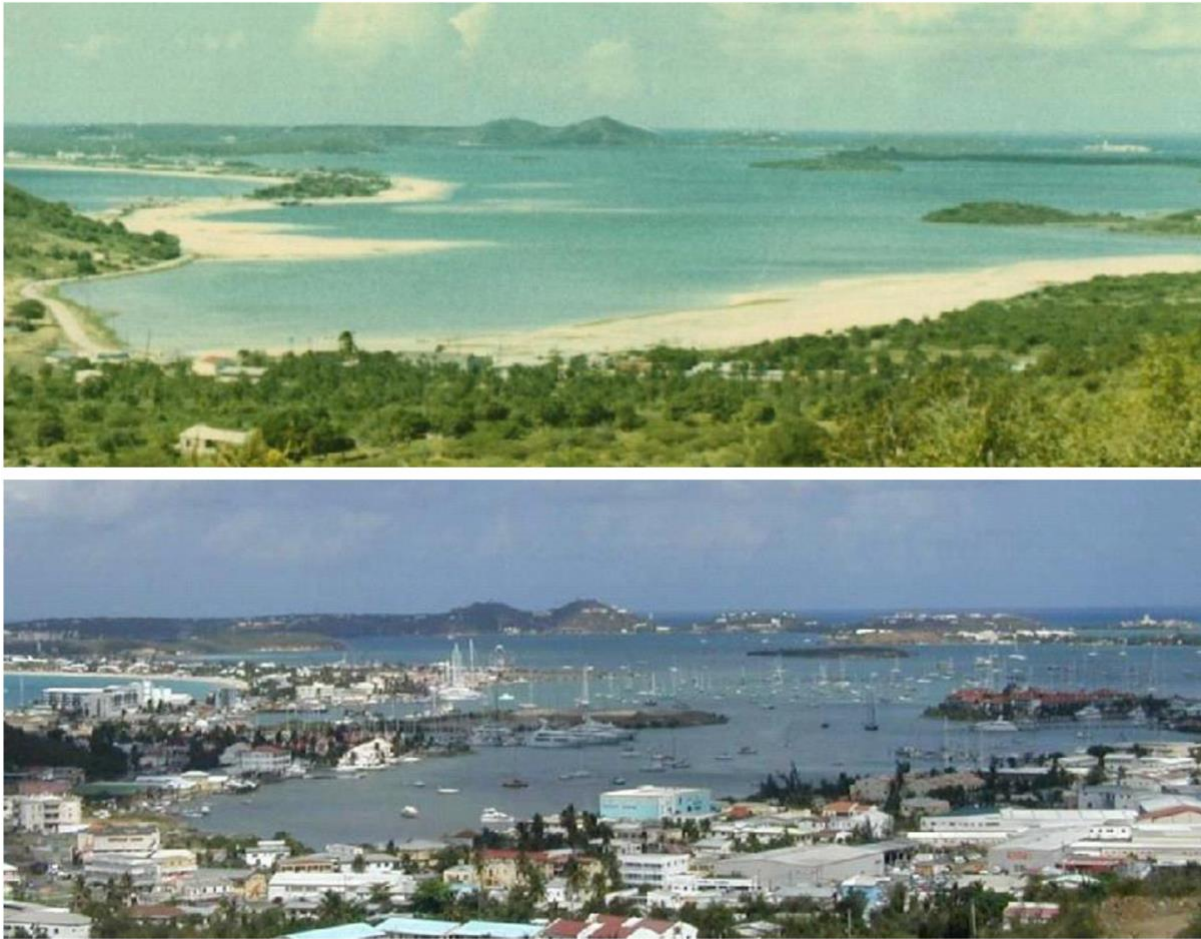


Figure 33: Image taken from Cole Bay of Simpson Bay pre-1980 (top), and an image of Simpson Bay in 2012, before Irma in 2017, and continued urbanization, including the Simpson Bay Causeway Bridge built across the Lagoon in 2013. Image by Ministry of Public Housing, Spatial Planning, Environment, and Infrastructure, “Nature Policy Plan 2021-2025” (Government of Sint Maarten, October 2021), page 13.

Today, the Great Salt Pond is partially filled. The reclaimed land extends Philipsburg inland and is known as “Pond Island.” Within this artificial island is a landfill and dump, the Government of Sint Maarten’s primary office building, a festival center/temporary hurricane shelter, and the University of Saint Martin. Owing to the mountain formations in Saint Martin, the built urban environment is part of a condensed landscape characterized by proximity to water bodies such as salt ponds, estuaries, or oceans, and to a towering mountain range. Sand bars in the Great Bay in front of Philipsburg that once protected the downtown have been dredged to make way for cruise ships, including the largest ocean liner to date, the Icon of the Seas, a behemoth ship sitting 59.7 m (196 feet) above the waterline, carrying up to 5,610 passengers and thousands of crew members (Thakker 2024). The Cruise Terminal of Sint Maarten carries up to six cruise ships a day, each running their engines as they port. One cruise ship emits the particulate matter of about 1,000,000

cars per day (Channel 4, 2017). The carbon dioxide released into the environment stays suspended for thousands of years in the atmosphere (Inman 2008). Though over time the Caribbean is not considered a legacy polluter, the emissions released into the air surrounding the island would benefit from greater regulation or reduction altogether. Dredge marks, visible through satellite imagery, along the shores, lagoons, and coves have excavated the sea floor to make way for large yachts and sail boats docked in the Marina. From the coast to the mountains to the air people breathe, the ever-present environment has been stretched to its limits. Echoing Teju Cole writing on American racism, the place of environmental degradation and land-bound injustices over centuries now perpetuated by Tourism in the Caribbean “is atmospheric” (2018, 15). To disentangle the hospitality sector from the environment that facilitates the very existence of the sector poses a thorny problem for risk management and climate adaptation. Additional attention and research should be brought to the climate adaptation discussion around reforming and estimating the longevity of tourism sector over the coming decades in Saint Martin and the Caribbean region.

As several environmental advocates in Sint Maarten noted, the state of the environment today is *dire*: Clear cutting into the hillside creating greater possibilities for erosion. Cracks in elevated hillside roads, part of Sint Maarten’s central road corridors, have emerged from developments that have encroached and excavated into Cole Bay hill. Wetlands have been filled in, creating greater possibilities for flooding. Removed mangroves leave coastal areas more vulnerable to flooding and erosion. Estuary systems have been degraded or destroyed (i.e. Fresh Pond and the Great Salt Pond). Water quality has been steadily decreasing in fresh water and close coastal zones due to limited and inadequate sewage management from both new and older developments, formal and incremental. The “natural” environment in Sint Maarten is marked and pushed to its edges as growth and reconstruction after Irma persists.

Invisible Infrastructures

Urban development in Sint Maarten has overtaken the ever-present environment. The status of the environment on island emerges as an invisible infrastructure on Saint Martin—a system which underpins the economic stability of the island that has remained a lesser concern for governmental organizations in the last decades. Sint Maarten is densifying and

consists of primarily urban areas.²⁶ Former plantation parcels, still-visible on cadastral maps cutting the land as if the mountains were flat, are now new concrete and steel neighborhoods.²⁷ Historic structures, such as the small shacks, civic infrastructures, cisterns and stone walls built primarily by enslaved and newly freed persons, have been destroyed or imperceptibly subsumed into the urban fabric of the island.²⁸ Take for example the former Salt Factory of the Great Salt Pond—its ruins lie between the large trucks, dust of cement makers, and movement of construction companies. They are building the island while the past is hidden in a cross-hatched space between past and present. In this in-between, there is no space for memorial. For an island economy characterized by maximizing tourism-based returns during the non-hurricane season, environment is necessary for the success of an island commodified for its beaches and landscapes and becomes a secondary concern until the next storm breaches the rhythm of everyday life. Silent histories reveal the almost dormant risk conditions found across the island of Saint Martin, not just Sint Maarten. These conditions are part of a potential nature—one whose absence is still felt, still known, and made visible when the next storm appears.

Pieces of the landscape that once were—fragments of the ecologies that existed— now appear, often, under conditions of duress. In time, dormant estuaries and streams wake. This when the invisible infrastructures haunt. They are “experiences of the non-present”— forces that linger in memories, in places, and in the stories, people talk about life and survival (Derrida 1999, 254). To learn and to make sense of these familiar absences, matters for the future that can be imagined in the present—this defines the boundaries and

²⁶ Saint Martin as island, owing to its size and relatively low importance, retained a small population up until the mid-20th century. Up until the early periods of tourism in the 1950s, more than two thirds of the population from 1764 to 1843 was African or Afro-Descendant and subjected to enslavement. See Yves Monnier, “L’immuable et le changeant. Étude de la partie française de l’île de Saint-Martin,” *Îles et Archipels* 1, no. 1 (1983). Page 54. .

²⁷ By to some accounts, there it estimated that over 110 plantations were based on Saint Martin during from 1764-1843 period, and nearly half of them were in Saint-Martin. See Menno P. Sypkens Smit, *Beyond the Tourist Trap : A Study of Sint Maarten Culture /*, Publication of the Foundation for Scientific Research in the Caribbean Region ; (Natuurwetenschappelijke Studiekring voor het Caraïbisch Gebied), (1995). Page 48. It should also be noted limited traces of former plantations remain throughout the island, as time, increasing development, and extreme weather events have slowly buried and disappeared vestiges of Saint Martin’s history.

²⁸ Today, dry-stone walls and their fragments can be found around the island landscape, including along salt flats whose cultivation has long subsided. Stone walls are some of the few remaining traces of the plantation-scapes on the island. Some former plantations, such as the Mount Vernon plantation, located a few kilometers away from Orient Bay, remain and are the subjects of restoration efforts. Slavery ended in Saint-Martin in 1843, with Sint Maarten to South ending in 1863, see Jean Glasscock, *The Making of an Island : Sint Maarten / Saint Martin*. Jean Glasscock.1985, page 38.

limits of the changes to come because of climate change. How environment is considered in relation to risk, and risk is considered in relation to perception of environment is what Avery F. Gordon names as “the something-to-be-done” (2011, 1). These are the gaps to address and make steps to reconcile. A renewed relationship to the landscape as both a risk and a place where there is something to be done names one step in a complex process of making more just futures possible for Sint Maarteners.

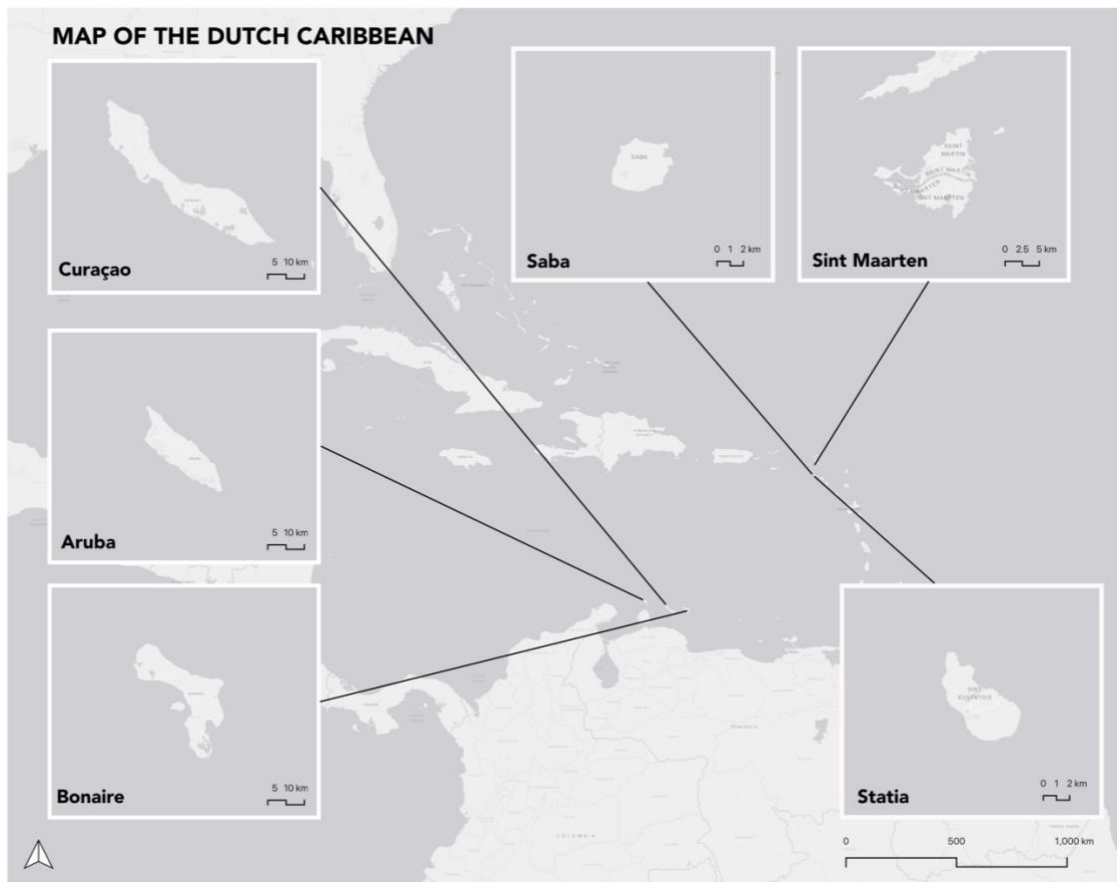


Figure 34: Map of the six islands in the Dutch Caribbean (Curaçao, Aruba, Bonaire, Saba, Sint Maarten, Statia) located on the western edge of the Caribbean Sea. Image by Author, 2024.

The Missing-Island Atlas

A short digression. Once upon a visit to Amsterdam University’s Allard Pierson Museum, I encountered an atlas. The book was located at the end of an exhibition titled “Maps Unfolded,” a large assemblage of contemporary and colonial maps of Dutch territories in Europe and across the globe. Large, wall-spanning depictions of Indonesia, Suriname, and

South Africa were juxtaposed with maps of Amsterdam as it changed over the years. The atlas itself showed no colonial maps. It was a visual atlas of places across the Netherlands. However, this cartographic rendering of the Netherlands as a supposedly inclusive category, one which could, in theory, offer a short history of Dutch colonization in the world, resulted in textbook published where not a single Caribbean Island was represented. A clear characterization of absence in the formulation of a state; these are overlooked dependencies whose presence is needed to formulate the territorial expanses of modern kingdoms, commonwealths, and republics such as France, the United Kingdom, Spain, Portugal, and the United States. People in the Netherlands, (and France, and the U.S.) unless they have ties to the Caribbean, often forget that islands are part of their country. Of the six islands in the Kingdom of the Netherlands, Curaçao, Aruba, Sint Maarten are independent countries with a semi-autonomous status within the kingdom, and Bonaire, Saba, and Statia are administratively part of the European Netherlands.

Who Governs the Ever-Present Environment?

The government of Sint Maarten engages the ever-present environment cautiously. The ability to address environmental concerns is hampered by limited capacity, scarce coordination between Sint Maarten's ministries, and significant compliance obligations for international and Kingdom-based funding programs. In a sense, the ever-present environment is in a regulatory limbo. There is not a clear and comprehensive definition of protections for the ever-present environment as a function of economic sustainability and public safety, let alone in terms of climate change.²⁹

Rather, the ever-present environment appears in a few lines of regulatory text. For example, beaches, since 1994, are legally considered a matter of public recreation where no construction should occur, unless a structure such as a hotel or private home was built before the regulation was passed (Government of Sint Maarten 1994a). In addition to Beaches, Hillside, including mountain tops, should be protected by regulation from construction to protect the "visual aesthetic" quality of the area, including its rich ecologies, and to ultimately avoid greater degradation, if not severe erosion (Government

²⁹ Larry Vale and Zachary B. Lamb note from "the IPCC's Sixth Assessment Report" that a "lack of coordination between governance levels and disagreement about financial responsibility' are key barriers to adaptation [Citation omitted]," See Vale and Lamb *Forthcoming 2024*, page 242.

of Sint Maarten 1994b).³⁰ Neither policy, since their respective adoption in the mid-1990s and re-adoption during Sint Maarten’s 2010 independence reforms, incorporates emerging pressures onto the ever-present caused by climate change including the increasing severity of Hurricanes, severe rain storms, and other risks such as earthquakes. In the years since both policies were enacted, Hurricanes Louis (1995), Gonzalo (1996), Lenny (1999), Maria (2017), and Irma (2017) have deeply impacted Sint Maarten/Saint-Martin. The United Nations Economic Commission for Latin America and the Caribbean estimated damages in Sint Maarten alone at US \$1.1 billion, with the tourism and housing sector most impacted (ECLAC 2018, 10). Irma, like many storms before it, caused severe damage to the built and present environment, leading to an ongoing process of reconstruction to establish a new normal. Adaptation to increasingly frequent and severe climate conditions are currently absent.

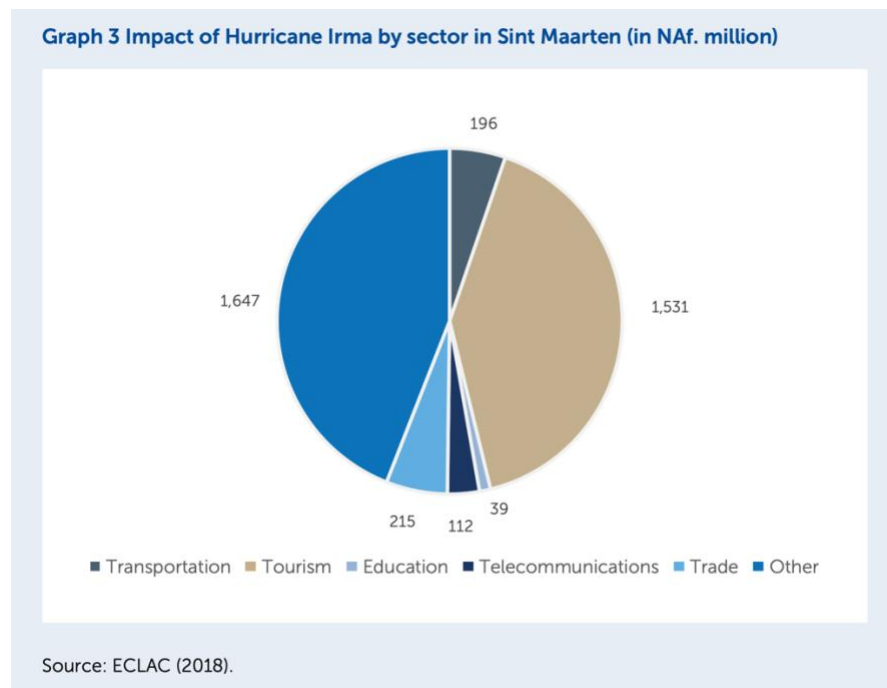


Figure 35: Estimated Damage Costs by Sector in Sint Maarten by NAf. Million. Image by Monetary Policy, Economics & Statistics Division, “Economic Bulletin December 2023,” Central Bank of Curaçao and Sint Maarten, (December 13, 2023). Page 28.

³⁰ These hills include Cole Bay Hill, Sentry Hill, St. Peters Hill, Marigot Hill, Waymouth Hill, Flagstaff/Williams Hill and the areas of Bethlehem and Belvedere are important to the ecology and natural value of the island for their exceptional bio-diversity in flora and fauna. See Ministry of Public Housing, Spatial Planning, Environment, and Infrastructure of the Government of Sint Maarten, “Hillside Policy,” Pub. L. No. 986/98 (1994), <https://www.sintmaartengov.org/Documents/Policies/Vromi%20hillside%20policy.pdf>.

In this sense, the environmental conditions on the ground as urban sprawl increases and climate events gain severity are not accounted for in the metrics of risk embedded in reconstruction. Hurricane Irma, as the source for major reconstruction in Sint Maarten, failing to protect the environment and by extension the settlements around it results in direct and indirect costs, one that challenges the capacity and existing strategies within the Government of Sint Maarten. The ever-present environment as it is engaged in a limited manner by officials, emerges as a systemic risk, hampering the already fragile mechanisms of governance that are continually shaped by chronic exposure to disaster. Sint Maarten's Ministry of Public Housing, Spatial Planning, Environment and Infrastructure (VROMI) has name climate change, notably sea level rise, as a critical risk within their 2030 spatial development agenda. And yet, little action has been taken to center how these risks connect to the current state of development in Sint Maarten.

In several interviews, residents on island noted the cycles of destruction, loss, and reconstruction that have occurred in the last decade alone. Relationships to material loss for residents are conditioned by a renewed possibility of further loss in the next storm. Resilience to storms and urban reconstruction are, as such, intersecting processes whose integration and attention toward environmental conditions are opaque at best. And yet, for island government like Sint Maarten, this exposure to compounding risks requires urgent attention from policymakers, spatial planners, and ministerial representatives as conditions worsen and the time to arbitrate strategies diminishes.

This gap between rhetoric and action creates space for greater political failure when the true risks to sustainable development such a frequent severe hurricanes and sea level rise would impede future growth as it is imagined today. Climate change will occur; And there is a need to consider what forms of public transparency on climate-related risk can matter most for public decision making both at an administrative and community level. Recent climate events, like Hurricane Irma and the COVID-19, pandemic have already forced many to consider who has a right to live safely on island? Who can afford to stay if there is no work on the coasts in resorts? These are all questions that mirror historical migrations after the end of the salt industry and the start of the regional petrochemical industry in Curaçao, where many Sint Maartiners left to work elsewhere in the Caribbean region, the U.S. or Europe in the 1950s during prolonged local economic downturn. The social and financial costs of staying are rising. The realities of climate stability are changing.

Status, Financing, and the Ever-Present Environment

Sint Maarten, owing to its status within the Kingdom of the Netherlands, is precluded from Dutch international aid programs for climate infrastructure. Coastal and island states

such as Indonesia, Vietnam and Barbados are presented as key policy priorities for Ministerial officials in the Hague. Meanwhile, islands within the Kingdom are frequently precluded from accessing resources through Dutch Aid programs that have direct applicability for their own climate adaptation and resilience issues. Both in the Hague and in Sint Maarten, several interlocutors highlighted from their own perspectives the limits of Dutch funding for these specific programs as they related to the Dutch Caribbean. How the Netherlands—as a country and as a kingdom—develops climate adaptation policies with international governments is contentious because, as Daphina Misiedjan notes, these actions are partially at odds with the fact “that safeguarding fundamental human rights and freedoms is a Kingdom affair” from Europe toward the Caribbean (Misiedjan 2023, 617).

Independent governments, like Sint Maarten, do not have a final say in Kingdom law, which technically could create obligations to climate accords such as emissions reduction standards and biodiversity preservation efforts. In many cases, the Netherlands signs international accords as a country simultaneously representing a kingdom, without factoring in the perspectives of leader or the capacity to comply with accords at the Caribbean island-level. Highlighting this dynamic, Misiedjan argues that an articulated responsibility between the Kingdom of the Netherlands and the independent islands has not materialized to define enforcement of climate treaties where the Kingdom of the Netherlands is a signatory (Misiedjan 2023, 617). Furthermore, impingements to islands adhering to Dutch Kingdom treaties makes independent Dutch Caribbean islands ineligible for international financing mechanisms like the United Nations Green Climate Fund UNFCCC, and therefore “no access to funding for mitigation and adaptation from the UN.” (Misiedjan 2023, 618).

Additionally, though Sint Maarten is considered an OTC (Overseas Countries and Territories) of the EU, the southern half of the island is not considered an outermost region of the EU like bordering Saint Martin. This means Sint Maarten is ineligible for most EU funding mechanisms. And yet, at the Dutch EU Treaty Level, the Kingdom of the Netherlands makes no distinction in status between the independent islands (Aruba, Curaçao, and Sint Maarten) and “national” islands (Bonaire, Saba, Saint Eustatius or Statia) (Misiedjan 2023, 619). Sint Maarten, as an OTC, is not eligible for funding in the same ways as Saint-Martin, a ultraperipheral member of the EU. Sint Maarten, though technically an independent country, is not eligible to independently seek funds from multinational financial institutions for climate adaptation plans without explicit oversight of the Netherlands—this is a matter of foreign affairs for the Kingdom, not island sovereignty.

A 2023 Report from the World Bank titled “Advancing Disaster Risk Finance in Sint Maarten,” situates Sint Maarten’s ongoing challenges to rebuild in the six years since Irma and the continued position of the NRPB (National Recovery Plan Bureau) funded by a Dutch-financed trust fund for the island. The island trust fund received US\$550 million, financed by the Netherlands and administered by the World Bank for post-Irma reconstruction efforts. The report, written five years after Irma and in the wake of the COVID-19 pandemic, examines the state of financial and spatial strategies as they relate to the environment. This relationship between finance and the ever-present environment reveals how Sint Maarten’s governance remains tied to varying environmental conditions. After the hurricane emerges or significant flooding affects the coast, new forms of governance emerge and take hold of the island for a while. As one interviewee noted, new forms of social governance emerge people overlook their past differences for a short while to recognize the urgency of meeting each other’s fundamental needs until a new normal is found again. Another interlocutor noted, that for a period after a storm, it is as though rules are suspended. Stores are looted. Basic infrastructures such as water and electricity are upended. Foreign governments and aid organizations appear from the United States and Europe to help to manage food, water, and other basic resource distribution, to tend to those who are injured, and to help search for those who have disappeared.

Post-Irma Reconstruction and the NRPB: Building for What Risks?

Governance in Sint Maarten as it relates to changing stability in the ever-present environment reflects two distinct forms of risk. The first is a form of risk is shaped, evaluated and tracked by institutions off-island, notably who mobilize visions of the ever-present environment into financing mechanisms and generate standards for reconstruction on island. This is best exemplified by the National Recovery Plan Bureau (NRPB), a post-Hurricane Irma reconstruction program financed by the Netherlands, administered by the World Bank, and situated in Saint Martin. Through the case of the NRPB, as well as other programs discussed in this chapter, risks emerge as organizations in the so-called global north place a burden of conformity to standards that many governments struggle to meet (de Hamer 2019, 50). The second form of risk emerges from the first and is defined by how changing environmental conditions are communicated and understood. Here the communication of climate risk, as discussed in Chapter 2 on Saint-Martin, evokes institutional and political boundaries that shape how the ever-present environment influences governance on Sint Maarten.

In particular, when considering the framing of the National Recovery Plan Bureau in the subsequent sections—notably in terms of who stands to lose and who stands to benefit from this arrangement—tracing risk from a spatial and/or cartographic standpoint can overlook the gradients of change that happen on island and specifically many of the conditions that are simply undocumented at this point in time. Stewart Schwartz underscores the anticipation and vilification of hurricanes as forces whereby in “disrupting order and undermining security” successfully uncover “a vision of a possible future to be avoided at all costs” (Schwartz 2015, 81). Hurricanes create, as Schwartz notes, “crises and opportunities” within existing systems from which inequities are laid bare (Schwartz 2015, 83). Echoing histories and influences of hurricanes within Saint Martin in Chapter 1, this dynamic of crises and opportunities especially true for both Sint Maarten in relation to the National Recovery Plan Bureau, as well as for Saint-Martin in the relation to the Natural Risk Prevention Plan.

The National Recovery Plan Bureau report highlights the temporal and spatial dimensions of risk via financing mechanisms and their selective deployment by institutions in the region and abroad. Reconstruction takes time and considerable financial resource requirements. Time that is cyclically compressed by the next hurricane season. Time that placed under duress and used as a metric of success or failure in reconstruction. Incrementality is both needed and harder to oversee, measure, justify within the complex frameworks of international monetary funds and aid organizations whose accounting structures do not match with local capacity and oversight (Carolini 2010).

Debt is seldom taken equally, neither is destruction; The terms of engagement were unequal from the start. Developed within the Technical Assistance Program for Disaster Risk Financing and Insurance (DRFI TA), a 2023 World Bank report highlights an increasing potential for annual losses of US\$43.2 million or about 3% of Sint Maarten’s GDP due to hurricanes and about US\$6.3 million or 0.5% of GDP due to earthquakes (World Bank 2023, 8). Combined, the potential loss from hurricane and earthquakes mean over 3.5% of Sint Maarten’s GDP is at risk annually through the World Bank’s risk estimates. In 2017, damages from Irma cost an estimated 17% of Sint Maarten’s total capital stock or the total value of the built environment (schools, hotels, houses) that are accounted for and have an existing estimated market value (World Bank 2023, 8). Currently, Sint Maarten’s public sector deficit is of US\$145 million and hold a standing subscription to liquidity support

through debt borrowing from the Kingdom of the Netherlands (World Bank 2023, 13).³¹ Debt and funding condition the possibilities for present and future **environmental** stability in Sint Maarten; they both shape future experiences of climate, whether this is planned or not.

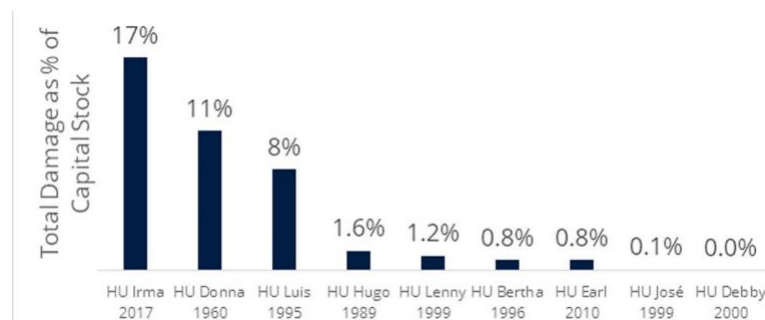


Figure 36: Damage after Irma in terms of % of total Capital Stock. Image by Mary Boyer et al., “Advancing Disaster Risk Financing in Sint Maarten” World Bank. (August 4, 2023).

Even Sint Maarten’s insurance market, which is combined with Curaçao’s insurance market, is opaque, with little to no information available since 2012 (World Bank 2023, 29). The artificiality of markets as they reveal metrics for a constructed representation or modelled rendering of place are limited in their utility. They are strategic reductions of a place. Take for example Sint Maarten’s real estate market: Owing to its small scale, the market has little interpretative data to value capital stock regularly through transaction histories. The economic value of the built and present environment are accounted for in the aftermath of major events where insurance payouts are distributed for those have both the financial ability and necessary property rights.

In essence, hurricanes and other extreme events reveal the costs and implicit financial values of the territory. This is then further articulated at the level of the Kingdom where banks and financial markets intertwine between Sint Maarten and Curaçao, or Sint Maarten and the Netherlands, often positioned as the Kingdom of the Netherlands. (The distinction between national and Kingdom Affairs relative to the Dutch Caribbean is seldom clear in action and rarely articulated in public by the Government of the Netherlands. One official I spoke with noted that this lack of distinction is a so-called grey zone in Dutch policy agenda-setting.) As such, the experience of a climate event on Sint Maarten can be singular, but it also reverberates unequally through interdependent financial markets and transactions outwards toward the regional and international territories it remains intertwined with. These reverberations came to the forefront when, in December 2023, the Central Bank of Curaçao and Sint Maarten (CBCS) issued a press

³¹ Interesting (and concerning) is that Sint Maarten’s government did not trace “expenditure related to disasters or the calamity budget” within the Ministry of Finance from 2014 to 2021, “unlike most other Caribbean countries’ governments.”

release titled “Winds of Change: Adapting to Climate Change” that called for climate plans and for politicians—directly criticized for short term thinking—to focus more regular attention on estimating future risks and prioritizing climate adaptation on both islands (van Dam 2023)(CBCS 2023). The bank tellingly states “[c]limate change-related extreme weather events continue to pose a serious threat to [economic] growth. Extreme weather that could destroy crucial infrastructure poses a threat to the economies of both countries, albeit Sint Maarten [relative to Curaçao] is more vulnerable to particularly hurricanes.” This call from a national bank is an unusual act, one which renews the urgent need for adaptation strategies in Sint Maarten that can consider the short- and long-term implications of climate change for the territory.

In a state of chronic reactivity, acceptable risk and by extension the anticipation of potential climate futures is externalized. Reliance on individual efforts to prepare for risk is reinforced through the opaqueness around what rights can be maintained in the aftermath of a major, island-altering climate event. The public, as it is constituted in disaster governance, is not only revealed in the financial relationships constituted in the aftermath of large events, but it also generates material presence to who and what counts in the eyes of the government. New buildings are erected after insurance payouts, while some neighborhoods and businesses wait years for potential financial support.

Financing and budget through the NRPB is framed as a primary tool to allow government to respond to disaster impacts. I would argue that in a disaster governance framework, the ability to respond to disaster impacts are subsumed into Sint Maarten’s everyday operations that are conditioned fundamentally by disaster. As such, disaster tempers the possibility for comprehensive infrastructure planning at any given time. The quantification of risk as a function of debt and other costing mechanisms, including physical damage functions or flood mapping, do not reflect the real material and affective relationships individuals have fostered toward Sint Maarten as climate changes continue to alter the landscape in the decades to come.

Environmental Advocacy: Mapping Responsibilities

Environmental advocacy in Sint Maarten operates in parallel to governmental mandates. Absent or scarce environmental or climate initiatives chart gaps in formal responsibilities. In Sint Maarten, responsibility over environmental and climate policy is largely outsourced. Organizations such as the Nature Foundation have been mandated by the Sint Maarten’s Ministry of Public Housing, Spatial Planning, Environment, and Infrastructure (VROMI) to

function as the government’s environmental conservation and policy experts.³² Groups such as the Dutch Caribbean Nature Alliance (DCNA) and Environmental Protections in the Caribbean (EPIC) have developed disaster preparedness reports framed around environmental risk and conservation plans for specific endemic species such as sharks and sea turtles. In a recent DCNA report, Dutch Caribbean Disaster Response Manual lists a need to monitor spaces on island vulnerable to storm surge, strong winds, rainfall, rip tides, as well as areas prone to landslides, cliff collapse, gullies, increased prevalence of flood zones, underwater landslides, unstable grounds, destroyed infrastructure such as roads and trails, vulnerable biodiversity-rich areas such as mangroves and uphill forested areas (DCNA 2022). The Manual is a preparatory document providing timelines and checklists to better anticipate before and after a major storm event, including hurricanes. The Manual raises awareness of the implicit relationship between environment and risk; however, it does not aim to make suggestion beyond individual- and community-level preparedness.

On the ground, practitioners concerned with environmental protections on island across non-profit and governmental organizations noted that comprehensive strategic plans and preventative measures required for environmental, let alone climate change, policy was currently missing in Sint Maarten. This, in turn, contributes to cycles of manufactured dependencies with the Netherlands that emerge in the aftermath of extreme climatic events. These are dependencies that are temporarily mandated or enforced secondarily through programs funded by the Dutch Government but administered through a secondary organization, notably non-profits. Several interviewees noted that Irma in 2017, as well as the 2020 COVID-19 pandemic, exposed how island officials held few options other than the Netherlands to access aid, temporary staff for specific issues such as disaster management or larger financing schemes for critical infrastructure repairs. As such, the ability to address degradation in the ever-present environment deliberately and comprehensively is a political act, one that is tied to persisting power imbalances between Sint Maarten and the Netherlands. An environmental specialist from Sint Maarten noted that even addressing degradation in the ever-present environment can emerge as a perceived reputational risk for decisionmakers. Consequently, many public officials do not acknowledge how ever-present environmental can transform into real material

³² The Nature Foundation’s website notes that “[t]he [Executive Council of St. Maarten](https://naturefoundationsxm.org/about/) recognizes the Foundation as the organization to assist the Island Government in all issues related to the management of the environment and its preservation,” See “About,” Nature Foundation St. Maarten, February 23, 2016, <https://naturefoundationsxm.org/about/>.

consequences for Sint Maarten’s public health and safety today and to a greater extent in the future.

The question remains: who then is ultimately responsible for protecting the ever-present environment in Sint Maarten as a matter of public safety and health? The disconnection between governance and environment is an emerging and poignant topic in current Dutch Kingdom relations. Former and current government officials from both the Sint Maarten Government and Ministries in the Netherlands noted that there remains an ill-defined responsibility to overseas territories and states maintained within the Kingdom of the Netherlands. This ill-defined responsibility for the Kingdom’s relatively new Caribbean countries of Sint Maarten, Aruba, and Curaçao remain bound to the Kingdom and simultaneously unable to comply with governmental, financial, and risk mitigation standards established by their former metropole. Compared to the Caribbean Netherlands—Saba, Sint Eustatius, and Bonaire—that are part of the European Netherlands, Sint Maarten experiences disparate access to welfare, funding, and capacity-building opportunities in its post-independence period. Deepened disparities between Caribbean islands themselves, as well as between Caribbean Islands and Europe have shown substantial gaps in experiences and revealed opportunities to reconfigure the obligations held by the Kingdom of the Netherlands in the Hague towards its island territories in the Caribbean.

This dynamic is further exposed by a recent case brought to the Hague by Greenpeace Netherlands on behalf of Bonaire arguing the Netherlands has committed “human rights violations and insufficient climate action” for islanders on Bonaire (Kaminski 2023). Here, disparities in access to protection from harm and to a right to continue living in places like Sint Maarten are placed at the forefront. These disparities reveal implicitly who and what have benefitted and stand to continue benefitting from the selectively privileged relationships embedded into the physical environment. Spatial analysis, as a tool for indexing and codifying this value and estimates can often only be revealed in the aftermath of disaster—seemingly arbitrary borders emerge. This is not new. Terms such as *Disaster Governance* and its discursive others have emerged in aftermath of extreme events, notably Hurricane Katrina in 2005, and illustrate manufactured risks before, after, and during extreme events were systemic. These terms name how the distribution of risk to

human life, to environment, to the planet are experienced differently across racial and economic lines and have material traces that should not be overlooked.³³

Where the Netherlands is willing to guarantee protections to all its citizens in Europe for up to 5m of sea level rise, the Caribbean islands are faced with increasing pressures to justify their right to remain, to live, let alone thrive in their home communities. For islands like Sint Maarten, the ability to claim a right to protection from harm is complex. As quasi-sovereign states, independent constitutionally except for foreign relations, the maintenance of independence and defense of the Kingdom, Dutch citizenship, the regulation of knighthood, the regulation of ship nationalities, as well as border and immigration control (Art. 3 Statuut voor het Koninkrijk der Nederlanden (Charter for the Kingdom of the Netherlands)). These competencies fall under the jurisdiction of the Kingdom of the Netherlands in the Hague.

Echoing an equally buoyant perspective, a recent report titled “It is not too late” (*Het is nooit te laat*) published by Ed Nijpels, quartermaster for the Bonaire Climate Table in the Netherlands, outlines a climate strategy for Bonaire—promising greater protections and response given the scope of the climate crisis (2023). In response to “It is not too late,” Mark Harbers, Minister of Infrastructure and Water Management, along with Alexandra van Huffelen, Minister of Interior and Kingdom Relations, noted that the Netherlands would offer parallel programs through the International Panel on Deltas and Coastal Areas (and Small Island States), or IPDC, for the independent islands of the Dutch Caribbean as well as address the vulnerabilities of Small Island Developing States (SIDS) more broadly at the COP28 in November 2023 (Ministry of Infrastructure and the Water Management of the Netherlands 2022).³⁴

Attenuating Risk: What Kingdom Affairs Matter

³³ Written works such as Naomi Klein’s *Shock Doctrine*, Kian Goh’s *Form and Flow*, Neil Smith’s article “*There’s No Such Things as a Natural Disaster*,” Lizzie Yarina’s “*Your Sea Wall Won’t Save You*” and “*This River is a Model*,” and Lukas Ley’s *Building on Borrowed Time* animate this claim. Audio Reporting such as Van Newkirk III’s *Floodlines* for the Atlantic gave texture and depth to how disasters and risk is built.

³⁴ Advies Klimaattafel Bonaire (Bonaire Climate Table), “It’s Not Too Late — Advisory Report on Bonaire Climate Table,” rapport (Ministry of General Affairs, May 8, 2023), <https://open.overheid.nl/documenten/ronl-893aab0ab82170edcac62b164d4a745ab3dbad4e/pdf>.

In attempt to recognize the task of climate mitigation for the independent islands of the Dutch Caribbean, the Ministerial response to the Ed Nijpels report placed at the forefront an acknowledgement on the part of the Dutch government that the independent islands have a place in Dutch policy priorities. However, the timescales and distribution of resources to achieve similar goals have remained limited. Kingdom relations within the Kingdom of the Netherlands emerge unequally and lack coordination. What counts as national versus a Kingdom question for the Netherlands is unclear. When Sint Maarten engages the Netherlands, it is engaging the Kingdom through several Ministries and public agencies. Island relations cut and weave into often competing and overlapping policy initiatives and programming. For example, the Ministry of Infrastructure and Water Management (IenW) was not privy to conferences organized in the Dutch Caribbean by the Ministry of Economics and Climate (EZK), despite the fact both entities have a vested interest in climate adaptation and climate resilience in their policy agendas. Input from representatives of the Caribbean states in the Kingdom have, until recently, not been placed the forefront of decision making.

In recent years, Sint Maarten, as one of the six islands of the kingdom, has been integrated within a metanarrative of Dutch international discourse on the attention they will bring to Small Island Developing States (SIDS). This is a message that has been carried by individual Ministers, the Prime Minister, and the King of the Netherlands. In the last twenty years, as Aruba, Curaçao, and Sint Maarten have shifted toward independent statuses within the Kingdom of the Netherlands, severe climate impacts have increased across the Caribbean region. With new voices now part of the Kingdom discussion, the Dutch government has only recently begun a process of contending with Caribbean representation and voices that they have not previously integrated into political processes and agenda setting. The Netherlands as it engages with climate urgency in the Caribbean region and builds a climate agenda bolstered by support for small island states, faces a reputational risk, one which will reveal the responsibility the Kingdom and National government are willing to develop. The question remains: can the Netherlands, and by extension the Kingdom, manage the realities of future climate change as they emerge across their scales of spatial, temporal and affective influence in Europe and in the Caribbean?

In March 2024, the Dutch government published a note titled “The climate is changing, the Netherlands is changing with it [*Het klimaat verandert, Nederland verandert mee*].” The note included a curious quote from the Minister of Infrastructure and Water management Mark Harbers to all citizens of the European Netherlands. It assured European citizens that

the government can cope with up to 5m of sea level rise despite the changes that will emerge “for the design of the Netherlands,” and that there isn’t a need to make a decision now because there is still “time....for the big choices we will make in the future.” (Rijksoverheid 2024). This claim, the research, and the reports used to argue this possibility of protection, make no outward mention of the Dutch Caribbean as part of the Netherlands adapting to climate changes (Deltaprogramma 2023). The foundations to propose an engineered solution out of climate change does not count for Sint Maarten. The stakes and the water level are high. The management of risk, and by extension natural phenomena, is revealed to be structured by risks to forms of political legitimacy tied a **historically burdened** logic of control over water flows and the environment.

One can wonder whether aspirations to seemingly manage such levels of risk are feasible, let alone reasonable, as most of the world would struggle to meet such (exceptional) standards. What are the distributional effects of appearing to protect from risk? Through this I contend that the Netherlands engages in a system which has made a ritual of normalized forgetting, that is few remember how to live with risk, and specifically risks potentially imposed onto a nation where 26% of the ground is considered below current sea level metrics (Schiermeier 2010). The relevance of Dutch risk management culture here is significant because it informs the strategic gaps and misconceptions which characterize the relationship between the National Government of the Netherlands, the Kingdom of the Netherlands, and Caribbean islands, like Sint Maarten, that have been a part of both for centuries.

IPDC: Mapping Risk, Futures, and Responsibilities

As a result of new attention directed towards the independent islands of the Dutch Caribbean through IPDC, several initiatives have been launched or sponsored by Dutch institutions to map out the realities of climate change for the region. Echoing previous projects and reports sponsored by the Ministry of Infrastructure and Water Management as well as the Royal Netherlands Meteorological Institute (KNMI), the NGO Climate Adaptation Services, and Deltares for the European Netherlands, climate risk mapping and scenarios are currently being developed for both the Caribbean Netherlands and the independent islands of the Dutch Caribbean for the first time. These scenarios will contribute to broader structure housed within the Climate Effect Atlas (KEA) and Knowledge Portal for each of the Dutch Caribbean islands.

Organized by the NGO Climate Adaptation Services, mapping will be developed first for the islands in the European Netherlands (Bonaire, Saba, St. Eustatius) and then for the independent islands (Aruba, Curaçao, Sint Maarten). Each Island's Climate Effect Atlas will be modelled after an online portal by the same name created for the Netherlands in tandem the country's National Climate Adaptation Strategy (NAS)³⁵ in 2016 and National Implementation Program for Climate Adaptation (NUP KA) in 2023.³⁶ At an official level, efforts to produce a clearer understanding of the changing climate and distribution of those changes across the Caribbean region represent an important step. The Royal Netherlands Meteorological Institute (KNMI) climate scenarios stand to help to visualize and situate climate risks, while also providing greater transparency and recognition of the changes that will undoubtedly challenge each island in the coming decades. And yet, KNMI can only produce research and a report for the Caribbean Netherlands, despite the proximity of the independent islands in both the Leeward and Windward sides of the Caribbean. In a 2023 KNMI report "The State of our Climate in 2023" published in Dutch, English, and Papiamentu, highlights the unusually active hurricane season experienced in the last year, as well as warming sea temperatures and the start of a new El-Niño event. However, reports such as these remain limited and generalized. They do not translate meteorological patterns and events into signals for action on the part of local officials.

Sint Maarten has to date maintained and collected limited environmental and spatial data. Mapping the environment, let alone risks related to climate, is not a straight forward process. In fact, mapping as a language to share and condense critical information for climate change remains a tool of experts rather than a tool for public engagement and governance. The question of translating climate risks with the particularity and specificity needed for Sint Maarten, as well as Aruba and Curaçao, must also recognize the political and social dimensions of how this information is conveyed. Though information can be translated for islands in the same region such as Sint Maarten, Saba, and Statia, climate scenarios and maps need to underscore how climate effects specifically impact each island is important because islands often operate in isolation from one other. The Organizations such as Islanders at the Helm, an initiative spearheaded by the University of

³⁵ NAS, in Dutch, is *Nationaal Klimaatadaptatie Strategie*. See Ministry of Infrastructure and the Environment, "Nationaal Klimaatadaptatie Strategie [National Climate Adaptation Strategy]" (Government of the Netherlands, December 2016).

³⁶ NUP KA, in Dutch is *Nationaal Uitvoeringsprogramma Kimaatadaptatie*. See Ministry of Infrastructure and Water Management of the Netherlands, "Nationaal Uitvoeringsprogramma Kimaatadaptatie: Slimmer, Intensiever, Voor En Door Iedereen [National Implementation Program on Climate Adaptation: Smarter, More Intensive, for and by Everyone]" (Government of the Netherlands, November 2023).

Sint Maarten, University of Curaçao, University of Aruba, University of Amsterdam, University of Leiden, and TU Delft, collaborates to create pathways to place citizens of the Dutch Caribbean, including Sint Maarten, at the table to inform and shape climate adaptation research. Through this collaboration, Islanders at the Helm shapes agendas and sets goals for research and advocacy in Saint-Martin to empower efforts that benefit those who stand to be most affected by climate change.

Through mapping risk for Sint Maarten, there is an opportunity here to not only represent risk but also generate necessary narrative work to underscore the scales of change that are going to occur on the island. The act of mapping climate risks, as one interviewee put it, should include a disclaimer for what it represents and what it excludes and where there are still unknowns. An interviewee from an environmental NGO in Sint Maarten noted that perhaps the greatest need before adaptation plans are even set is to help Sint Maarteners *reconcile the disconnection they have with their environment*. The individual further noted change must be situated within an acknowledgement of generational relationships to the land, notably for those who remember the island as a rural place including the descendants of enslaved laborers who remain in Sint Maarten.

In other words, the act of translating the climate impacts through maps and redefined metrics situates change in relation to time and to people as they see the land change. Communities remember the island as a rural space in the years after the abolition of slavery into the 1950s. People used to run into the hills to hide from the next storm. Now hills are privatized, cut-up, and occupied. The future of Sint Maarten for the grandchildren or great-grandchildren of those who remember is what is at stake. In forty years' time, what will they remember? What will they lose? Climate change challenges and enlivens the affective relationships communities have with land. Mapping as it is utilized to communicate climate risk on Sint Maarten must acknowledge the disruptions it implicates for the possibilities of living on island today and in the future. This is a heavy task. This is a necessary task.

Representing the Ever-Present and Potential Environment at Scale

Proposed as a climate adaptation planning and assistance program for Sint Maarten, the International Panel on Deltas and Coastal Areas (and Small Island States) is a Dutch-led initiative aiming to link climate adaptation strategies and knowledge directly with climate financing by bringing together relevant national government officials and international monetary organizations. The IPDC, as such, hopes to create more direct climate adaptation strategy to financing to implementation pipelines. In the inaugural presentation

brochure, IPDC leadership notes that “Deltas, coastal zones and rivers are connected, via flows of water, sediments, nutrients and pollutants, by fish that move upstream and downstream, and by the transport of goods and people. Their fates in times of climate change, therefore, are also linked” (2022, 8). Acknowledging these intersecting risks publicly, the IPDC notes that there is a fundamental need to think across intersecting risks to generate integrated planning solutions. While working at the Ministry of Infrastructure and Water Management, however, I hold that neither spatial nor environmental planning was at the forefront of policy decision making. In fact, after revealing my background in environmental policy and planning, several Ministerial colleagues were confused as to why I was there and not, for example, in the Dutch National Planning Bureau (PBL). The translation of spatial planning within climate adaptation policy was seen as outside the scope of what policymakers do, even though the primary policy issues addressed in the Climate Adaptation and International Water Affairs (KAWI) unit were distinctly spatial in addition to being political. Bureaucracy is and remains bureaucratic. This is a distinct contrast to the apprehension of IPDC on the ground in Sint Maarten, whose experience of Dutch policy priorities from multiple ministries has resulted in incomplete, often limited support.

The Dutch Caribbean has been largely secondary to Dutch international public policy, international initiatives with countries like Vietnam, Bangladesh, and Indonesia have been well documented (and criticized) (Goh 2021)(Ley 2021)(Yarina 2024). Public-private national interests driven by the Dutch Water Partnerships (NWP), Partners for Water (PVW), the Netherlands International Water Ambition (NIWA) make evident a vested interest in the economic and political gains of exported expertise in environmental management, namely water infrastructure, abroad but not in the Kingdom itself. Quasi-independent research organizations like Deltares help generate the knowledge and expertise to support these initiatives, in addition to private Dutch organizations contracted to complete certain parts of a project. The prioritization given to support international governments over those within the Dutch Kingdom set priorities far more frequently than internal considerations. In fact, the Island countries within the Kingdom were seen as laden with colonial legacies whose implications were inherently “difficult” to manage. The terms of engagement between Sint Maarten and the Netherlands have never been clear. Obligations and responsibilities between the newly independent nations and Dutch National government lack clear articulation. There are no transcontinental or transregional governance strategies. Climate change, as it poses a major risk to the stability governments and entire states, has catalyzed in an almost ironic sense some of the first Kingdom-wide strategies to address climate adaptation and resilience planning.

Developing a form of acceptable risk, one which can be communicated and engaged with by multiple publics, is needed to confront the uncertainties that have already permeated into the ways to understand the present and the future of climate in Sint Maarten. How can we better communicate all that we do not know without risking reputational loss given the crisis of science communication and distrust in institutional decision-making across the world. Ultimately, understanding how climate can change in relation to longstanding relationships risk ultimately what is at stake when risk is being quantified and spatialized. The present state of climate and the futures it will generate will likely surpass any understanding we have seen in the past or present. Sint Maarten's current strategy to address climate change and implement more comprehensive risk mitigation strategies is limited and needs to improve measurably in order to offer substantive protections to Sint Maarteners. Currently, pathways to effective mitigation and adaptation strategies for an island more resilient to climate change need to be defined. And yet, the current programs being developed, notably the Climate Effect Atlas and Knowledge Portal, can prove to be an opportunity to take steps forward differently. Climate adaptation plans, using the structures of the Climate Effect Atlas, can ultimately provide the necessary combination of climate expertise matched with community perspectives. In Chapter 4, the proscriptive qualities of the Natural Risk Prevention Plan proposed by the PPRN coupled with the Community-based knowledge creation in Saint Martin currently serve to support separate climate strategies, that combined can develop a more robust approach to climate adaptation for Saint Martin as a whole.

Grounded Interlude 4: Who you for?



Figure 37: (left) A great egret (*Ardea alba*) flies from fort Amsterdam. Image by Author, 2024.



Figure 38: (right) The remnants of pylons by Orient Bay, and Saint-Barth is visible from a distance. Image by Author, 2024.

In a conversation, an interviewee told me, *if you point a finger at someone to blame, there are always three fingers pointing back at you. Make this movement, and you'll see how both you and I are part of this system.* Blame—to my interlocutor—is reflection of the connection between human and environmental systems conditioning the uncertainties and betrayals that have underscored spectacular and mundane disasters. Blame, and by extension responsibility with regards to climate risk became this is a dance between the perceptible and imperceptible. Following this question, this interviewee asked: who you for? As in, who are you doing this work for? And how can you better center the rights of people on this island to have safe futures?

In turning towards the material traces and processes observed on Saint Martin, I aim to center how the act of looking closely as an environmental planner can elucidate, even in the smallest ways, some of the dynamics needed to inform what is to be done. In this final interlude, I turn to places and materials that lingered with me long after I had left the island.

A translucent film is trapped within a fern—debris caught in a wilderness it has been encircled by. What is caught is held still, and yet with every strong gust the film trembles. What matter matters in the vestiges of occupation and dwelling? In a stillness caught, the manufactured encounters the natural. What material presence will matter tomorrow? What memory of place will matter to future generations? If the ground is to become ephemera within an engulfing sea, what is to be done with this material reckoning. Vestiges of a plantation landscape can be found between fallen branches of verdant tropical forests and the arid grasses of the coastal rock formations. The stones of a former sugar mill, high in the mountain of Pic Paradis no longer reigns in its ongoing disassembly.



Figure 39: Plastic caught in a fern by Étang Guichard and Friar's Bay. Image by Author, 2024.



Figure 40: Pieces of a former sugar plantation covered in roots on the path towards Pic Paradis. Image by Author, 2024.



Figure 41: Cactus hidden by moving grasses near Étang Guichard. Image by Author, 2024.

In noticing particularities, one can take renewed notice of Saint Martin through its textured patchworks. One can contemplate the ecology without being deterministic of its fate. One can identify borders whose boundaries are defined by the plants and tree rooted within these spaces. The ecology as it alters becomes a repository for histories left unsaid. We can understand where land, partitioned and split into smaller entities, echoes former plantation landscapes and remains unsettled in a sense. But where is The Island? Where are the pieces always remaining between the bordered conditions that animate Saint Martin? Who and what frames the stories that have been told about change on island? And who is seen as responsible for this change on island? Pylon stumps severed by a hurricane are embedded in the ground. Edges are an opening to the world and an exposure to its dangers. The coast is, technically, immeasurable and yet makes clear the land from the sea. An infinite number of points—a coast is a construction determined by the scale of measurement we choose. A coast is fluid. A coast is never still. A coast artificially binds that which is never fixed. The tall grass whispers in the breeze. From the height of an iguana, the cacti loom, between each renewing gust. A crane lurches from the tall grass and an iguana darts from rock to rock. In contemplating what it meant to be for Saint Martin and for Saint Martiners, I thought of these small moments as contrasts to the scale and magnitude of the changes to the island the linger in the air and coasts and sea. There was a familiarity on island that I already grieved given the anticipations inherent to the work of an environmental planner in this period of climate change.

How make we, as humans, make matter the earth beneath us has meaning and has held meaning with consequential material implications for centuries. The boundaries of nature, of plants, of science, of community, of history, of risk can all become small earthquakes—world-altering formations that shudder perceptual foundations. Zadie Smith writes in “Elegy for a Country’s Seasons” that “[e]very country has its own version of this local sadness,” when confronted with the loss of the most familiar surroundings (2014). These deeply local losses, or “minor losses” as Smith refers to them, are tied to intimate vocabularies of place and being whose alignments in the world are seldom fixed and deeply subjective. These intimate vocabularies of place create boundaries which exist beyond any law of any land. Writing on the power of real and imagined borders, Asiya Wadud notes in “On the Infinite Fault Lines of our Contemporary Life” that

“naming a border is a way to rectify and absolve us, it’s a way to give credence to our own inaction and to do so without shame. A border can do the job of asserting the limits of our ethical obligation—where we are bound and then miraculously, arbitrarily, not”(2018).

These miraculous limits of our ethical obligations constitute all that has yet to be confronted and borders in need of crossing. In a world where climate change reigns,

untethered changes, ultimately, will bound us all. The question remains, who can this all be for?

Chapter 4: From Risk Assessment to Climate Adaptation

“The histories, the split, became reduced, unified. The times are given one to the other. Yet who returns to the incline of the mornes, and rummages?” — Édouard Glissant, “Histories” in Poetic Intention

“Are we prepared for the urgencies of our dependencies?” – John Durham Peters, *The Marvelous Clouds*

Making the case for visions for climate adaptation in Saint Martin must consider how the process itself can be reframed and rearticulated as a shared problem. This shared problem requires an approach to compounding factors at scale for the island as a whole. For Saint Martin, these threats include, but are not limited to, sea level rise, heat, coastal erosion, hurricanes, storm surge, heavy rain fall, sargassum blooms, and earthquakes. For an island conditioned over centuries by storms, accounting for environmental risk is both routine and the result of generations of preparation and anticipation. With each new storm, life in-between has relied on the premise that climate risks are surmountable. Owing to the fact both sides of the island are influenced by chronic exposure to extreme events, many of the individuals in power, as it was noted in several interviews, remain unwilling or unable to think of risk beyond the present. Economic growth and continued development are top of mind and central to retaining political mandates. Long term planning emerges as a challenge to visions of political stability and economic prosperity for administrative officials in Saint-Martin and Sint Maarten. In one such example, an official from Saint-Martin conceded climate change was imminent but insisted beach nourishment—the adding of sand along the shoreline—would be enough to stave off sea level rise and maintain the current tourist economy which depends on the coastline. Note, this is not possible.³⁷ Compounding conditions over the next decades stand to upend the utility of the coast and the possibilities for coastal habitation as it is today.

The previous chapters have focused on existing environmental strategies and climate adaptation plans in place in Saint Martin. For many islanders on both sides, anticipating and surviving the next hurricanes is considered a shared community practice, one everyone who stays on island has come to understand as necessary to remain on island

³⁷ This echoes recent news in the United States where in of a coastal town in Northern Massachusetts invested US\$ 600,000 into new sand dunes only for a storm to wash most of the sand away within months, See Lola Fadulu, “Beach Town Residents Paid \$600,000 for Sand. It Lasted a Few Days.” *The New York Times*, March 15, 2024.

long term. Hurricanes as they affect the island of Saint Martin signal two important conditions. The first, different administrative approaches in Saint-Martin and Sint Maarten have reshaped the territory through differences in post-disaster approaches and outcomes. Separate approaches to urban development, post-disaster reconstruction policies, and political priorities make these differences in outcome visible in the built environment. Combined, these divergent approaches with different adaptation planning and financing models in France and the Netherlands have positioned Saint-Martin and Sint Maarten on fundamentally different trajectories for the future. Second, hurricanes have become central to understanding this divergence as meteorological processes which signal to Saint Martin's vulnerabilities, but also changes to understandings of climate change as it relates to the Caribbean.

In Chapter 2 and Chapter 3 four administrative groups are engaged within the boundaries of Saint Martin as an island. Chapter 2 engages Saint-Martin, and the Republic of France. Chapter 3 engages Sint Maarten and the Netherlands. In each chapter, histories are made present through an engagement with active and absent definitions of risk within risk management programs, environmental plans, and climate adaptation strategies. These definitions of risk are then selectively mobilized and interpreted differently through plans and assessments by administrations and non-profit organizations in Saint-Martin, Sint Maarten, France, and the Netherlands. Through this engagement it emerges that formal and informal definitions risks not only differ substantively, but they are also made sense of through direct comparisons across borders and administrations within these four groups. Emerging from these conditions, risk management and adaptation regimes interact across spatial scales to create divergent time horizons for change and development, which ultimately shape expected impacts, outcomes, and future visions for a changing climate. There are, in other words, "[m]ultiple temporal origins embedded" into the responsibility of climate adaptation on island (Durham Peters 2019, 107). The lack of alignment between approaches in Saint-Martin and Sint Maarten impacts current and future abilities to implement risk management strategies, let alone apply climate adaptation strategies through community-based, regulatory, and physical infrastructures. The following chapter argues that the absence of climate plans in both Saint-Martin and Sint Maarten reflects the respective dependent status of each in relation to France and the Netherlands respectively, and points to shared vulnerabilities across the island if little continues to be done on both sides. From this discussion, the chapter explores through a short fiction how climate adaptation in Saint Martin can become a site for shared action given the range of changes that will occur on island. The chapter ends by arguing that developing strategies for a

shared future can support long term planning as a form of common and can set an example for climate cooperation in the years to come.

From Risk and Risk Assessment to Adaptation

Saint-Martin

In Saint-Martin, risk management is split between the Collectivity's—or island government's—mandate over urban and spatial planning, and the Prefecture of Saint-Barthélemy and Saint-Martin mandate within France's Ministry of the Ecological Transition over climate change and environmental resilience for the island territory. For climate adaptation planning and relevant risk management policies, the French government, through representatives stationed at the prefecture in Saint-Martin, determines local policy and strategies. For environmental policy relating to climate adaptation, the local approach is derived from metropolitan France. As such, the Natural Risk Reduction Plan (PPRN) is derived from a French National mandate carried out and adapted to Saint Martin. Using a 17th-century metric known as 50 geographic steps (81.20m) to define zones overlapping with various estimated risks including flooding, hurricanes, earthquakes, sandy soil liquefaction, and landslides, the PPRN condemns parts of the landscape as not-constructable (*terrain inconstructible*). The strategy of the PPRN is, ultimately, managed retreat. This proscriptive policy, though amended, makes present in practice the land on Saint-Martin located within French jurisdictions and symbolically reveals the still embedded traces of a colonization on island to rationalize a climate adaptation strategy. The application of this historic metric complicates and challenges the legitimacy of a concrete adaptation plan for Saint-Martin, even if it is limited in acceptability.

In Saint-Martin, the zones of habitation are compacted within low-lying coastal areas, valleys at the foot of mountain peaks. These zones are composed, in part, by swaths of unrepaired, decaying building stock largely in downtown areas, which are the remnants of Hurricane Irma. The PPRN does not propose alternative zones for habitation. Managed retreat as an adaptation strategy in the PPRN names the risk but does not name explicit alternative pathways to overcome forms of property and land loss for community members regardless of their property titles.

Received with public dismay, notably by communities of Haitian and Jamaican immigrants living in incremental neighborhoods such as Sandy Ground, the PPRN is a symbol of French urban renewal tactics. A tactic predicated on the disaggregation of low-income

communities, and subsequently favoring social fragmentation of islanders in the name of “safety from natural hazards” and “economic opportunity.” An extension of policy in France, the PPRN and its backlash echoes the discriminatory (often racist) policies carried out in urban *banlieues* across France. The PPRN, in its drafting, largely overlooked the value of a substantive engagement with local publics as they are: multi-lingual or non-French speaking, multi-faith, racially and culturally diverse. The translation of environmental risks into adaptation elides the social and leaves possible adaptation strategies in an adversarial position with local communities in Saint-Martin. Fear of state discrimination supersedes fear of an incumbent nature. This tension requires reconciliation to arrive at a possibility of more acceptable risk strategies for residents of Saint-Martin.

In this adaptation planning process, residents should be thought of as an inclusive category which counts those on island formally and informally. Though administrative status in Saint-Martin matters materially and socially for access to the welfare state, planning for all resident’s safety and security can still drive decision making for climate adaptation planning. Angela Glover Blackwell writes the curb-cut effect is—be it for better access to sidewalks for disabled residents or accessible energy retrofits for low-income communities — “to identify the best solutions to remedy...inequities” by advancing opportunities to minimize exclusion and undue vulnerabilities (2017). Like a curb-cut effect, climate adaptation planning in Saint-Martin, and by extension Sint Maarten, should be thought of in terms of its benefits for the widest range of people, while focusing first on those most marginalized by current infrastructural structures and practices.

Sint Maarten

In Sint Maarten political priorities for economic growth and everyday urgencies prevent environmental or climate adaptation planning from taking place. Existing reconstruction agencies, including Sint Maarten’s National Reconstruction Plan Bureau (NRPB), are funding infrastructural repairs for post-Hurricane Irma damaged building stock with limited consideration for and no jurisdiction over planning for future climate impacts across Sint Maarten. The NRPB is a quasi-governmental entity administered by the World Bank and funded by the Netherlands on behalf of Sint Maarten. The NRPB focuses primarily on post-Irma reconstruction, with little attention towards future climate adaptation. The Government of Sint Maarten’s approach to environmental management through the 1994 Beach and Hillside policies adopted prior to Sint Maarten’s status change in 2010 place the coasts and mountain-tops as amenities with intrinsic aesthetic importance to preserve for residents and tourists to observe and access. Absent zoning plans and comprehensive

environmental protections leaves Sint Maarten's built environment, including its coastal areas and hillsides, in an unregulated status. Non-profit organizations such as the Nature Foundation, the Dutch Caribbean Nature Alliance (DCNA), and Environmental Protections in Caribbean (EPIC), acting in the place of a ministerial environmental division, work to develop conservation and disaster risk reduction plans.

The efforts carried out by these non-profit organizations offer a patchwork of limited, but necessary strategies to address environmental risk and environmental degradation in the present. Though hurricanes and sea level are named by organizations such as DCNA as an existential risk to contemporary island life, governmental organizations on Sint Maarten have not publicly responded to this challenge with concrete strategies and plans. As a response to critiques of absent climate adaptation planning in the Dutch Caribbean, the Dutch-led International Panel on Deltas and Coastal Areas (and Small Island States) (IPDC) underscores the place of environmental risk in current climate policy debates and the urgent need for comprehensive climate adaptation plans.

The IPDC is not a supranational governmental organization able to provide direct additional capacity to Sint Maarten's Government. Although the Netherlands has extensive expertise in climate adaptation, its public and private network of expertise is not directly applied in Sint Maarten since it is an independent country within the Kingdom of the Netherlands. Despite a mandate to uphold security and defense in the Kingdom as a whole, the Netherlands as a member country of the Kingdom of the Netherlands does not hold a mandate to address or plan for climate change in Sint Maarten. Security as a fundamental aspect of climate change is not, yet an issue that could shift a Kingdom mandate towards Sint Maarten. Instead, the IPDC is a partnership between the Government of the Netherlands and the Government of Sint Maarten to establish shared goals for climate adaptation, including prioritizing resource and human capacity needs that can accomplish yet-to-be-defined adaptation goals and outcomes. The IPDC relies on Dutch quasi-governmental institutes and national agencies as consultants and intragovernmental funding cycles and priorities in the Netherlands. Ultimately, though the Netherlands has developed a climate plan for its European territories, these do not apply to the independent islands of the Dutch Caribbean.

The Climate Effect Atlas and Knowledge Portal (KEA), as a project for the Dutch Caribbean as a whole, including the independent island countries, emerges as an opportunity to represent climate risk spatially and through community knowledge to situate climate

adaptation within local needs. However, this project does not represent concrete adaptation plans, nor does it clarify the more complex, difficult to define aspects of political and fiscal responsibility between Sint Maarten and the Netherlands as it relates to climate risks. The absence of climate adaptation plans in Sint Maarten attests to internal bureaucratic fragmentation and the hands-off relationship maintained by the Netherlands towards Sint Maarten. Despite numerous programs funded unilaterally by Dutch authorities, the Netherlands maintains this hand-off approach, citing the island's independent status. This hands-off approach creates a disconnect between possible expectations for climate policy and the capacity for Sint Maarten's Government to carry out such plans. Moreover, the lack of alignment between the island nation and its former metropole prolongs longstanding power asymmetries that condition post-disaster risk management as well as the island government's capacity to transition from repeated short-term risk assessments to longer term planning for climate change.

Parallel States of Exception

In Saint-Martin and Sint Maarten, the construction of risk differs across various spoken, institutional, and sector-specific languages. Risk within a development economist's funding metrics differ from urban and environmental planner's concerns around urban density and coastal risks. These differ from a conservation biologist's unease at declining coral and mangrove ecosystems as part of the island's resilience, and stray from a politician's concern over continued economic growth. The different and overlapping languages of risk on Saint Martin have thus far limited any concrete adaptation planning on island. The trajectories on island are separate but not fixed. Limited action on each side leaves both sides vulnerable. The reputational and administrative risks apparent in efforts to address climate change within all four governmental entities implicated in Saint Martin ultimately impede meaningful, material action to protect islanders from climate change—not just paper promises and soft admonitions that animate current inactions.

The independence of Saint-Martin and Sint Maarten is set to fit between economic, political, and legal parameters neither side had the opportunity to set in the first place. Reconfiguring and assuming full governmental capacities in the first decades after independence is seldom smooth—these new subnational dependencies are not blank slated but rather systems whose centuries-old roots remain difficult to disentangle from the land, water, and air they are embedded in.

Risk management strategies as they are defined by metrics developed within international organizations such as the U.N., regional organizations such as E.U., and national agencies from France and the Netherlands hold both sides of Saint Martin to standards neither side is able to fully meet. Both island governments are hampered by limited capacity and political unwillingness to make complete structural reforms, and therefore seldom can ensure compliance to initiatives if adopted. Saint-Martin and Sint Maarten are neither fully compliant to or a direct signatories of international climate agreements that have been respectively signed by France and the Netherlands. Moreover, tourism, as the primary economic sector, does not conform to current climate emissions reductions trajectories. Neither side of the island can be a signatory of international or regional climate agreements. Compliance as a matter of responsibility to protect the environment for islanders and as participant in global emissions reductions is not factored into everyday policy decisions. As the tourism sector continues to drive the island's economy, government officials struggle to identify pathways to decarbonize the tourism sector and maintain an accessible market without being at odds with continued economic growth for the island. Both sides need to relocate critical infrastructures to higher ground, including desalination plants, sewage treatment facilities, and electricity grids.

The challenges to climate adaptation planning in Saint Martin make transparent the compromises inherent to making processes apply across spatial, affective, and temporal scales. To examine and name these compromises across scales can make room for adaptation policies and plan that empower the communities most affected by them. How we make sense of the present sets up the conditions for action to be taken in the future. Currently neither side of the island can stand to adapt alone; the costs and capacity required to complete such as transition appear currently insurmountable. Cooperation between Saint-Martin and Sint Maarten is needed to address the scope of how the island will change as global climate conditions intensify. Cooperation between both island governments, France and the Netherlands seems imperative to ensure any form of climate adaptation planning and implementation is carried out. Lastly, cooperation to address climate change on Saint Martin, as an island facing the same future climate conditions can become a model for forms of transboundary climate cooperation, including perhaps at a regional level in the Caribbean.

There are aspects from each governance structure implicated in Saint Martin that can contribute to more effective climate adaptation and risk management planning. Centralized planning strategies can offer structures that can be adapted to fit at the local level. Governance systems articulated around planning and managing environmental

systems can offer insights. Governments and communities with experience living with and anticipating chronic and cyclical risks have critical knowledge needed to create more comprehensive and effective resilience strategies. Despite the different forms of expertise each party can bring, the quadripartite structure that exists between Sint Maarten, the Kingdom of the Netherlands, Saint-Martin, and France does not serve to combine expertise. In interviews, the quadripartite structure was described as a series of infrequent and often unproductive negotiations that were largely for diplomatic rather than for the purpose of pragmatic problem-solving. Moreover, throughout the interview process any attempt to contact individuals who worked within the quadripartite structure was first met with enthusiasm, and then, silence. To speak for the dynamics of this administrative group was evidently too political. Therefore, rethinking risk, risk management, and climate adaptation as a shared problem on the ground in Saint Martin as well as between France, the Netherlands, Saint-Martin, and Sint Maarten can “articulate accountability” within a framework for a shared future. To propose adaptation in fragments is to not propose adaptation at all. There is a need for strategic alignment over shared risks in a shared future of climate change.

A Very Short Speculative Fiction: Press Release of a Joint MOU on Climate Collaboration, 21 June 2025

The French Minister of Overseas Territories, The State Secretary of the Ministry of the Interior and Kingdom Affairs in the Netherlands, The Prime Minister of St. Maarten, and President of the Collectivity of St. Martin met at the Hôtel de Montmorin for a seventh quadripartite meeting to discuss Franco-Dutch cooperation on the island of St. Martin. In the meeting the authorities affirmed a commitment to undertaking a comprehensive risk mitigation and climate adaptation plan to be co-adopted by both sides of the island. This plan will engage the construction of more resilient critical infrastructures, including combined renewable- and fossil-based energy grids. The plan will also engage the rehabilitation of the Simpson Bay Lagoon and support ecological revitalization across the island as a matter of coastal security and long-term resilience. Through more resilient critical green and grey infrastructure, like mangrove forest planting and partial sea walls, the plan will support a transition over the next 70 years as sea level rise and severe storms irreversibly alter the entire island of the St. Martin. The quadripartite structures currently stands together to publicly co-establish a new standard for climate cooperation, one driven by ongoing environmental justice movements lead by small island developing states across the world, and an active understanding that climate risks are not experienced equally. All four parties affirmed that transparency and reciprocity is the basis of not only this

partnership, but also the shared understanding that climate adaptation for St. Martin must develop as an urgent joint-process to protect communities today and generations to come.

Steps forward: Steps for the Strategic Alignment Passed in June 2025

The strategic alignment for climate adaptation in Saint Martin will be defined through a series of shared agreements and co-developed plans structured between (1) Saint-Martin and Sint Maarten, (2) Saint-Martin and France, (3) Sint-Maarten and the Netherlands, (4) France and the Netherlands, as well as (5) all four entities within a quadripartite framework. The strategic alignment sets targets to center the rights of Saint Martiners to live on island for as long as possible, to support a right to safety and dignity and a right to prosperity that includes a sustainable transition of the hospitality sector, as climate conditions stand to significantly alter the island. The strategic realignment situates the far-reaching changes to Saint Martin's landscape that have occurred in the last half century, notably through the rise the tourism industry, significant urbanization and a significance increase in population on both sides. This plan connects generational experiences on island to these broader physical changes and offers perspectives on how these changes contribute to different vulnerabilities that may be experienced on island. The plan includes a series of visual and analytic components in the form of building blocks to show climate risks and vulnerability for policymakers and everyday citizens. These building blocks will illustrate how stronger hurricanes, increasing sea level rise, and rain fall compound to create differing, but significant vulnerabilities over time and each year during the changes between hurricane seasons. The plan will underscore how these compounding affects will lead to prolonged flooding periods for the island's lowest lying areas, affecting areas that contain critical infrastructures such as energy grids, ports, and desalination plants. In understanding these infrastructural vulnerabilities, the plan contends with what Larry Vale and Zachary B. Lamb note in the IPCC's Sixth Assessment Report that a "lack of coordination between governance levels and disagreement about financial responsibility' are key barriers to adaptation [Citation omitted]," (Vale and Lamb Forthcoming 2024, 242). In a sense, the plan translates shared regional and global challenges of climate risk management and adaptation towards the local, an important task underscored by Vale and Lamb in their engagement with the IPCC's Sixth Assessment report.

A plan for strategic alignment will be split into phases to structure goals and actions that contend with the pressing transformations caused by climate change on island

over the next fifty years. These goals and actions as they build and intersect with one another are critical to build resilience and meet the challenges of a changed world in 2075. The differing administrative structures of Saint-Martin and Sint Maarten will affect the articulation of this joint process and will necessitate constructing shared capacities specifically for urban-development as well as environmental planning and conservation. Combined data and surveying information catalogued for both sides of the island would need to be coordinated into shared databases for planners and decisionmakers, including coordination with non-profits already working on Island.

Phase 1: Adapting Critical Infrastructure and Housing Retrofits

The splits in the strategic alignment plan, at a higher level, are proposed in three main phases, each developed concurrently with differing pipelines given the distribution of estimated climate impacts until 2070. The first phase will be implemented over the next 10 to 20 years. The first phase will require processes to repair parts of the existing building stock still-damaged by Irma, and to create adaptation strategies, including but not limited financial instrument, for buildings, including parts of the hospitality sector, to withstand repeated and potentially prolonged flooding and stronger wind speeds. This process will also aim rehabilitate threatened ecological sites, including mangroves and hillsides with forest degrowth to mitigate flooding, where possible, in low-lying areas and decrease the risk of erosion and landslides in mountain areas.

Already active non-profit organizations will be engaged to support joint-data collection on both sides of the island and support the development of a joint-climate impact mapping tool. This tool could support efforts to indexing the built environment, including property surveys, in both Saint-Martin and Sint Maarten. These tools will aim to outline the differences between the public and private land as well as land that can potentially become public. A survey of potential sites is critical for both administrations to create opportunities to build resiliently and affordably and to prioritize low-income and middle-income housing in upland areas. Within these sites, mixed-use developments will be prioritized for businesses at the ground level, and housing from the first floor up (e.g. second floor by non-US standards). Collaboration between public and private insurance firms, along with public incentive programs for retrofits, could push private land and building owners, whenever possible, to adapt the existing housing and building stock. Change would comply with updated building codes that are drafted to minimize damages from

both wind speeds and flooding, while prioritizing cost-effectiveness. Standards for adaptation would be developed in cooperation with community members, architects, construction experts, urban and environmental planners to highlight what forms of adaptation are priorities for public and private construction. The first phase would also include financing and siting for critical infrastructure, notably electricity power plants with renewable and non-renewable sources that can be hurricane resistant. This can include grid decentralization and microgrid development.

Phase 2: Climate Impact Zones

The second phase, developed in tandem with Phase 1, requires zoning first to identify high-, medium-, and low-risk zones for climate impacts and as well as current infrastructural vulnerabilities. These zones would then be translated into adaptation priority zones with differing recommendations based on locations also identified for Phase 1. Phase 2 moves from the building-level to the neighborhood- and area-level. This phase would then also propose zones for managed retreat in the range of 2040-2050. As sea level rise increases, communities and both governments will need to decide together how zones identified for resilient development benefit communities who stand to face displacement the most, notably communities in Sandy Ground, Nettle Bay, Downtown Marigot, Grand Case, Anse Marcel, Orient Bay, lower Quartier d'Orléans Philipsburg, Upper Prince's Quarter, Cole Bay, Simpson Bay and Cay Bay, Guana Bay. Managed retreat strategies should not resort to eviction or forced expulsion, but rather emerge through the development of construction plans as well as community co-development strategies carried out by government actors and community advocates to find tenable strategies with community members, while also highlighting the dangers to livelihoods and social structures posed by climate change. These community-based negotiations will aim to engage and empower local action holders, communities, and individuals in Saint Martin to consider the material, ecological, and social impacts of comprehensive plans and projects.

Funding structures and instruments will be created to finance and construct grey and green infrastructure, notably to move critical infrastructure upland and to protect coastal zones. The Climate adaptation plan overall should emerge as a program to not only create adaptation plans but to create sites for debate and communication between stakeholders to foster greater agency around changes to

the island and to create regular spaces to air differing political demands. Common pathways forward will necessarily involve structuring processes through negotiations and compromises that include room for the grief and frustrations that will be a part of this process, and that protecting human life on island includes anticipating forms of displacement. Negotiations carried out should include multiparty stakeholder conversations that can be translated into official negotiations with representatives from Saint-Martin and Sint Maarten, as well as France and the Kingdom of the Netherlands.

Phase 3: Securing Migration Pathways

Phase 3, coinciding with Phase 1 and Phase 2, would draft and implement legal infrastructures within both France and the Kingdom of the Netherlands to support safe, recognized pathways for migration and relocation support for residents of Saint Martin, including residents with formal and informal statuses on island. These pathways to migration will recognize the need and obligation to protect the human rights of those who are part of France and the Kingdom of the Netherlands. These legal pathways will integrate lessons learned from recent migrations following waves of violence and famine that precipitated unprecedented trans-Mediterranean crossings toward the European Union from the Middle East, as well as North and Sub-Saharan Africa. The resulting violence, exploitation and loss of life need not be repeated. Migration pathways and protections should be extended to those in Saint Martin who can no longer remain on island due to increased insecurity, decreased safety and economic opportunity, and decreased possibilities for future growth on island. Lina Tran notes, “climate migration is already happening,” and across the world, “[s]ince 2008, an average of 20 million people have been internally displaced each year” (2022). Migration pathways and relocation support should be developed for a maximum number of beneficiaries as a matter of responsibility of France and the Netherlands towards subnational territories.³⁸

On the Possibilities of the Fictional MOU

³⁸ Islands such as Kiribati, Tuvalu, and the Maldives (to name a few) have engaged in public discussions around climate migrations, pushing countries of the Global North to contend with the political feasibility of absorbing small nations and how national rights might be preserved and in what way. See Akka Rimon and Anote Tong, “The Seas Are Coming for Us in Kiribati. Will Australia Rehome Us?,” *The Conversation*, accessed September 7, 2022.

Were this speculative short fiction to become a reality, the possibilities for comprehensive adaptation planning would remain difficult to implement, while also acknowledging how both sides of the island will face the same climate changes. However, at the moment, a joint-climate adaptation plan in Saint-Martin and Sint Maarten is infeasible. Current tensions and political cultures on island and in Europe do not frame climate adaptation as a shared goal. A new memorandum of understanding made during the quadripartite meeting in December 2023 to assist water shortages on both sides of Saint Martin exemplify small advances toward addressing shared infrastructure concerns on island (Government of Sint Maarten 2023). Despite these small advances, significant coordination and cooperation still required to develop an effective and comprehensive climate adaptation plan and agenda for both Saint-Martin and Sint Maarten.

Canary in the Coal Mine for Climate Cooperation

The present relationships between Saint-Martin and France, and Sint Maarten and the Kingdom of Netherlands remind us that the unequal distribution of risk to people and communities in time and across spatial scales must be held central and carefully engaged with in the design of climate adaptation strategies.³⁹ Attention to histories, as they are informed to by colonialism and globalization, should prompt us to contend with the communities and nations subjected to life-altering conditions which have, more often than not, been the first to shoulder the burden of environmental degradation (Nixon 2003)(Davis 2002)(Gómez-Barris 2017).⁴⁰ Injustices perpetuated by racist, neo-colonial systems in relation to environments and climate are not new—territorial dependences including sub-national territories and countries like Saint-Martin and Sint Maarten reflect these histories. Through this research, the current unequal and asymmetric institutional relationships in Saint-Martin and Sint Maarten to their respective former metropolises became evident.

³⁹ Both France and the Netherlands operate with color-blind national policies. In France, Naming forms socio-economic and racial discrimination within France or French territories remains almost impossible after World War II. For a short discussion on the invisibilization of minorities and experiences of racial disparities in France, See David Keane and Jeremie Gilbert, “How French Law Makes Minorities Invisible,” *The Conversation*, November 13, 2016. For a discussion on Dutch Color-blindness, see Ariana Rose, “‘Dutch Racism Is Not Like Anywhere Else’: Refusing Color-Blind Myths in Black Feminist Otherwise Spaces,” *Gender & Society* 36, no. 2 (April 1, 2022): 239–63.

⁴⁰ *Mike Davis depicts in Late Victorian Holocausts* the drastic material, economic, and social consequences of late-British imperial metrics that spurred the drought conditions that caused a series of catastrophic famines between 1877-1885 that killed millions in what is now India (2002). Today, the famine conditions are now known to have been exacerbated by repeat prolonged El-Niño Southern Oscillation periods of atmospheric warming. The severity and magnitude of these events reflect an ongoing shift in human comprehension of the planet and its atmosphere.

These asymmetries subsequently emerged as key factors that contribute to increased vulnerability and worsened risk for local populations as climate risks increase. Though addressing longstanding racial and social inequities may seem a political impossibility within the current political climate, naming the need for this change must not go unsaid and holding hope for possible change is required for more equitable pathways forward. The risks experienced by each side as a dependency within a European supranational structure point to a weighted silence present within Saint Martin's respective environmental and climate risk strategies: Absent climate cooperation at the scale of Saint Martin given these territorial relationships is a sign of governmental resignation, if not governmental failure at all levels.

Finding strategies to act in the face of cyclical chronic risk can strengthen risk management and climate adaptation plans by reframing the silences that still govern risk outcomes on Saint Martin into a more intersectional, climate justice-oriented process. In sum, there are climate adaptation approaches to develop founding in an understand of living with chronic risk that can be integrated from Saint Martin into policy learning and climate planning not just for the Caribbean region, but for other territorial dependencies around the world, as well as for the island's respective former metropolises—France and the Kingdom of the Netherlands.

Allegory for Climate Futures: Mayotte, Island Rights, and Conditional Citizenship

The physical grounds of island life, including Saint Martin's, have been shifting for millennia as oceans rise and fall with the Earth's changing climate. The fluidity of islands as social and physical spaces in the centuries since colonial occupation have challenged the stability of the borders inscribed onto them. Their plurality, or creoleness, has been the grounds for the unsettling of land-based models, of human rights and concepts of nationhood since their inception as territorial dependencies; this dynamic of unsettling and resettling plurally matters deeply for the possibilities to enact climate adaptation plans and strategies within dependent islands and dependent territories more broadly.⁴¹

⁴¹ Nissology, as the study of islands, often addresses the fluidity of island spaces in within the geomorphology of island over time as well as within indigenous cosmologies, notably in but not limited to Pacific Atolls. See Karin Amimoto Ingersoll, *Waves of Knowing: A Seascape Epistemology* (Duke University Press Books, 2016); Elizabeth DeLoughrey and Tatiana Flores, "Submerged Bodies: The Tidalectics of Representability and the Sea in Caribbean Art," *Environmental Humanities* 12, no. 1 (May 1, 2020): 132–66; Rodrigo Ugarte, "On Oceanic Fugitivity," *Items* (blog), September 29, 2020; Elizabeth Yarina, "Post-Island Futures : Seeding Territory for Tuvalu's Fluid Atolls" (Thesis, Massachusetts Institute of Technology, 2016),

At present, the stakes of protecting the right to live on dependent island territories remains in a delicate balance. In February 2024, Gérald Darmanin, France’s Minister of the Interior, proposed a law to deny birthright citizenship (*droit du sol*) for Mayotte, a small island department of European France in the Indian Ocean several hundred miles to the Northwest of Madagascar (Le Monde 2024) (see Figure 26, page). The decision, spurred by fears on the extreme right around economic migration onto the island, represented a major rupture—one where the already exceptional legal statuses of islands in the French republic were utilized to suspend one of France’s most fundamental constitutional rights. For those in Mayotte, what was once thought to be a fundamental right changed. Symbolically, the ground below inhabitants of Mayotte shifted its metaphorical and literal meaning. An individual’s full rights to citizenship in Mayotte suddenly emerged with an unstable status; one that is subject to the whims of Parisian conservative technocrats. Though the law was deferred from parliament after major public criticism until July 2024, a precedent was set: islands, as sites of regulatory exception, are not afforded the same obligations to maintain the rights and privileges guaranteed in Europe (Le Monde and Agence France-Presse 2024). Islands, instead, are positioned as threats to visions of current French administrative legitimacy—a misalignment with the “standards” expected of a French territory. Islands, as so-called sites of exception, are not conceived of as productive space for reflections on applicability or flexibility of national policy. And yet, from drawing from these temporary status shifts in Mayotte, what if the islands weren’t considered outside of the norm? What if they already aren’t?

Climate change and climate adaptation strategies will affect forms of regional migration. Climate migration as an emerging security concern is still evolving and is complicated by hard to determine forms of accountability or direct responsibility. Climate as a security issue is directly related to the protection of fundamental human rights within and outside of nations. Mayotte, like Saint-Martin and Sint Marten, face major vulnerabilities to natural disasters due to a lack of adequate planning and resources despite their dependency to European nations to safeguard their rights. In a sense, what can an understanding of what European nations are unable to support or implement overseas signal about what may not be able to achieve in their own borders. The dynamic visible in dependent islands, like Mayotte and Saint Martin, echoes narratives written in the aftermath of wars to speak to how individuals and societies, notably government administrations can become

<https://dspace.mit.edu/handle/1721.1/106363>; Patrick D. Nunn, *Vanished Islands and Hidden Continents of the Pacific* (University of Hawai’i Press, 2009), <https://www.jstor.org/stable/j.ctt6wr1p2>.

desensitized to forms of violence and injustice. These narratives trace how desensitization can lead to normalized or institutionalized forms of oppression within their own borders. For dependent territories across the world, this dynamic may stand to be no different when it comes to climate change and climate-related disaster.⁴²

In *The Marvelous Clouds*, John Durham Peters probes “[a]re we prepared for the urgencies of our dependencies?” To echo Durham Peters, are Saint-Martin and Sint Maarten, France and the Kingdom of Netherlands prepared for the urgencies of their dependencies? In Saint Martin, the urgency of the dependency is in each island government’s reliance on the environment to facilitate economic growth the possibility for continued habitation on island in the long and short term. In France and the Netherlands, the urgency of the dependency is recognizing there is a vital need to align risk management and climate adaptation strategies on Saint Martin to confront the climate change.

The Climate is Changing, and so too, must Saint Martin

The implications of climate risk for governance, for sovereignty and agency in Saint Martin, and for a right to live safely and with dignity can inform concrete actions if we let go of the idea that there is still time yet. The borders and environmental conditions seen as necessary to live safely and with dignity— be it in Saint Martin, the Netherlands or France— stand to no longer continue in their current forms. The landscapes many of us will know are already irreversibly changing. How climate risks are engaged, defined, and utilized in risk management and climate adaptation plans matters for how future climate risks are understood in the present. Climate adaptation models, plans, and financial structures make legible the risks and communicate what is currently acceptable and what is not. To make legible risks within a common or co-adopted climate adaptation plan requires recentring adaptation strategies on local experiences to better address regional challenges. For adaptation plans to work, currently active definitions of risk will need to shift alongside long-standing relationships to land and to the ocean.

In this sense, there is a need for both administrations and non-governmental entities to act otherwise and outside the boundaries they have currently set. Reckoning with Saint Martin can serve to reposition the structural, political, and social inheritances implicated in risk management and adaptation strategies in both Saint-Martin and Sint Maarten. This

⁴² For this I think of Susan Sontag’s *Regarding the Pain of Others* (2003) and well as the more extreme example of systematic injustice illustrated Samantha Powell in “A Problem from Hell: America and the Age of Genocide” (2012).

reckoning can also shed a critical, yet constructive eye on the limitations and potential shifts needed for more effective adaptation in France and the Netherlands. A critical repositioning can not only foster more equitable climate futures, but also become a point of departure from the lack of comprehensive action that has been taken. It can resituate what spatial and temporal disorientations matter in the reconfiguration of what colonial inheritances must end to take on climate adaptation equitably and justly, and to determine what can be carried onwards to find active junctures to animate steps taken to address the climate challenges. This is a process I term, following Avery F. Gordon, as the something-needing-to-be-done.

Long Term Planning as the Something-Needing-to-be-Done

Naming the challenges of long term planning ultimately make apparent the deep uncertainties, absent or limited oversight over the built and ever-present environment, as well as capacity issues which shape who has the ability to take on risk and where that risk takes place in its definition and implementation. Addressing risk as it is defined, communicated, and implemented reveals that what counts as acceptable risk is seldom clear. Risk and environmental knowledge has many forms. For both sides of Saint Martin, a rearticulation of what risks matter for the future of climate change is urgently needed.

The work of this thesis has been to consider how climate risk emerges as object of multiple institutional and public concerns in Saint Martin. From this, the communication of risk makes clear how the present and future is conditioned by these metrics? And by extension, how do these questions allow climate adaptation planners to define acceptable risk, given our acknowledgement of the historic and contemporary dynamics that inform how risk has been formulated, deployed, protected, and reinforced as a concept/idea/cognitive schema in various communities. Risk, as it is imagined, has tangible social and material consequences—it can even cause riots. Risk, given the worsening progression of climate change, will complicate notions of habitability on coasts and riparian areas for the foreseeable future. It will complicate a right to live and thrive on island. Risk will condition possibilities—literally—for communities to take place.

Cross-cultural and cross-regional definitions of risk necessitate compromise that still result in limited representations of the real. To make transparent these compromises and the distinctly active characteristics of these metrics, can make greater room for adaptation practitioners and advocates to empower the communities most affected by these

distortions. How can tools and process be created to help communities and decisionmakers make sense of the present to shape necessary steps to diminish the harms of climate change.

Constructing Commons through Climate Adaptation Plans

Common climate adaptation goals for Saint Martin is about establishing norms within risk management and climate adaptation plans that can consider what inheritances and what futures can be saved within institutionally structured processes. The quadripartite system alone cannot solve lacking or absent coordination that entrenches existing structural and political barriers to risk management and climate adaptation. And yet the quadripartite structure, as suggested in the short speculative piece above, can stand to provide a critical framework for combined action, one which may require additional supports to negotiate agreements and establish acceptable paths forward for all parties involved. One potential way forward is to consider the task of climate adaptation through the Quadripartite system in Saint Martin as a form of common protecting transboundary resources.⁴³ Building off other examples of transboundary resource negotiations, a renewed agreement between the governments of Saint-Martin, France, Sint Maarten, and the Kingdom of the Netherlands can be built through negotiations. These negotiations can structure rights and processes that offer protection not only for shared resources in Saint Martin, but also protect the rights embedded within these shared resources. These rights include to inhabit Saint Martin safely and with dignity as long as possible given each side's administrative sovereignty. Combined the protection of rights and resources can make the island itself an institutionally protected common that enshrines shared positions and shared challenges while observing the jurisdictional differences maintained by the current border.⁴⁴

⁴³ For commentaries on the state of transboundary resource management see Enamul Choudhury and Shafiqul Islam, *Complexity of Transboundary Water Conflicts: Enabling Conditions for Negotiating Contingent Resolutions* (Anthem Press, 2018); Lawrence Susskind and Alan Weinstein, "Towards a Theory of Environmental Dispute Resolution," *Boston College Environmental Affairs Law Review* 9 (1982 1980): 311; Lawrence E. Susskind and Saleem H. Ali, *Environmental Diplomacy: Negotiating More Effective Global Agreements* (Oxford University Press, 2014).

⁴⁴ Commons have emerged as critical forms of institutional protections for various environmental resource-sharing issues, these institutional structures can allow for many levels of engagement based on the various rights that each stakeholder holds and defines common outcomes through an acknowledgement of differences between stakeholders. See Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge University Press, 1990).

In an essay titled “Let Her Sink,” Jan Morris writes that attempts to save the sinking city of Venice from rising tides represents “[s]uch a city, such a society, such a philosophy of sovereignty” which, she argues, “are incompatible with the modern world, and so the idea of Venice is incompatible too” (2017). Given the state of risk management and climate adaptation in Saint Martin, currently the trajectory of the island as city-island or island-world, a society, and a philosophy of sovereignty appear incompatible with the state of climate change. And yet, Saint Martin as a place deserving of pathways to withstand climate change as long as possible (e.g. like Venice, until the water takes over), is itself an important place from which climate adaptation processes should be grounded in. The protection of Saint Martin through climate adaptation plans and risk management strategies contends directly with global models for what cities, what societies, what philosophies of sovereignty are considered compatible with a so-called modern world faced with climate change. Therefore, Saint Martin, perhaps, can become a site to demonstrate what climate change as a common endeavor can be given the need for a shared processes and practices to benefits to those at the margins of former empires. To contend that these states of exception should not be exceptional. The opportunities and challenges to enact climate adaptation in Saint Martin has a role to play in informing the practice of adaptation planning as a collective problem confronted by environmental planners, community advocates, policymakers, financial experts, and many others.

New knowledge of climate will continue shift understandings of history and the present. Nuanced and co-developed strategies for climate adaptation can help to better anticipate the uncertainties of the future. Finding meaning in current climate disruptions and making space for future climate disruptions is essential as unprecedented climate conditions will increasingly become the norm. Within new adaptation, a notion of acceptable risk can emerge and convey a duty in the present to differentiate between the certainties and uncertainties of our changing climate. What is certain is that sea Levels will rise. Low-lying areas on both sides of Saint Martin will be face periods of submersion caused by rising seas and repeated storm surges. Beaches will shrink with increasing coastal erosion. Various forms of risk mapping, be it in the form of statutory decrees, environmental plans, financial models, and more traditionally in climate effect maps can equip governments and communities with what is known in the uncertainties of the future climate. Struggling with the particular challenges and opportunities for climate adaptation in Saint Martin can be a space for practitioners and researchers motivated by climate justice to contend with the evolving implications and challenges of climate change for territorial dependencies across the world and the countries which subsume them.

Shared Futures for Saint Martin

As the future of climate continues to be uncertain, representations of climate adaptation plans need to state essential aspects of climate risk: Sea level rise will occur on in the Caribbean. There is the science of prediction and then there is the real, as a force animated by range of factors that Adriana Petryna argues “outrun techniques used to apprehend them” (2022, 112). Despite the limits of certain predictive techniques. There is certainty in the uncertain. Flooding will be pervasive. Extreme heat events will surge. Hurricanes will increase in frequency, severity and magnitude (Kerry 2021)(Meiler et al. 2023). These certainties should bound actions taken in the present to inform more effective and equitable outcomes for those on Saint Martin who stand to face the greatest impacts of a changing climate. Reconciling the value of the predictive and the real when it comes to environmental risk is a critical task for environmental and climate adaptation planners. To find pathways forward for successful climate adaptation there is a need to find common techniques, steps, approaches, and even shared institutional structures between Saint-Martin and Sint Maarten supported by France and the Kingdom of the Netherlands.

A common approach to the climate adaptation of Saint Martin should address possibilities for shared critical infrastructure, multi-stakeholder negotiated economic reforms for the tourism industry, retrofitting financing for existing building stock in the lowest-lying areas of the island, and critical planning to support islanders who may be pushed to migrate off island due to significant changes to the landscape. Without a common approach adopted to both sides of the island, only partial adaptation and piecemeal approaches on Saint Martin stand to increase vulnerability and decrease resilience for both sides of island. The opportunity to build a common approach to climate adaptation can reconcile longstanding unequal distributions of risk. The combined material and social consequences of climate risk expressed through the perspectives of planners, politicians, bankers, conservation specialists, and community advocates on Saint Martin reveal a more complete picture of the magnitude of change the island stands to face. This reckoning amongst differences in interests, language, and visions for the future shown in Saint Martin is a reminder of the need to think alongside differences meaningfully and to act by creating adaptation plans that attend to these differences as a critical component for meaningful paths forward for Saint Martiners as their island changes.

Appendix 1: Saffir-Simpson Hurricane Wind Scale

Category	Sustained Winds	Type of Damage Due to Hurricane Winds
1	74-95 mph 64-82 kt 119-153 km/h	Very dangerous winds will produce some damage: Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap, and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 mph 83-95 kt 154-177 km/h	Extremely dangerous winds will cause extensive damage: Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 (major)	111-129 mph 96-112 kt 178-208 km/h	Devastating damage will occur: Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4 (major)	130-156 mph 113-136 kt 209-251 km/h	Catastrophic damage will occur: Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5 (major)	157 mph or higher 137 kt or higher 252 km/h or higher	Catastrophic damage will occur: A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Table 2: Saffir-Simpson Hurricane Wind Scale. Table by National Oceanic and Atmospheric Administration.
<https://www.nhc.noaa.gov/aboutsshws.php>

Appendix 2: Interviews

Languages: French, English, Dutch, Spanish

Locations: Saint Martin, Netherlands, France

Informational Interviews in Summer 2023: 45

Targeted Interviews in Winter/Spring 2024: 31

Organizations Engaged for official interviews(*)/in-person observations were conducted (most spoke under condition of anonymity or limited identifying information:

Saint-Martin / Sint Maarten

- Nature Foundation (Sint Maarten)*
- Environmental Protections in the Caribbean (EPIC) (Sint Maarten)*
- Dutch Caribbean Nature Alliance (Sint Maarten)*
- University of Saint-Martin + Islanders at the Helm (Sint Maarten) *
- National Recovery Plan Bureau (NRPB) (Sint Maarten)*
- Sint Maarten’s Ministry of Housing, Spatial Planning, Environment, and Infrastructure *
- The Cruise Port of Sint Maarten*
- Prefecture of Saint-Barthélemy and Saint-Martin*
- Collectivity of Saint-Martin*
- Former-members of Saint-Martin’s Collectivity*
- Ex-president of the Collectivity of Saint-Martin / Former Deputy to the France’s Parliament*
- Architects from Saint-Martin *
- Architects from Saint-Barth *

France

- Ministry of Ecological Transition (Ministère de la Transition Écologique et de la Cohésion des Territoires) *
- Ministry of Interior Overseas Territories (Ministère de l’Intérieure et des Outre-mer)
- Geographic and Mining Research Agency (Bureau de Recherches Géographiques et Minière) (BRGM) de Guadeloupe *

Netherlands

- Dutch Ministry of Infrastructure and Water Management (Infrastructuur en Waterstaat)
- Rijkswaterstaat
- Netherlands Red Cross — 510 *
- Royal Netherlands Meteorological Institute (KNMI)*
- Dutch Ministry of Foreign Affairs (Ministerie van Buitenlandse Zaken)

- Dutch Ministry of Internal Relations and Kingdom Affairs (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties)
- Deltares
- Climate Adaptation Services
- Global Center on Adaptation
- Faculty and Architecture PhD from TU Delft*

Additional Conversations:

- Professional from Industry (U.S. and International wetland restoration firm)
- Faculty in MIT Department of Earth and Planetary Sciences
- Faculty in MIT Department of Urban Studies and Planning
- Faculty in MIT Anthropology
- Faculty in UPenn Germanic Studies
- Architects from Saint Barth (40+ years of experience rebuilding after storms)
- Member of the Economic, Social, and Cultural Council Report for Saint-Martin and Saint-Barth

Appendix 3: Themes from Coded Interviews

On the (Built) Environment:

- Critical infrastructure in high-risk areas
- State of Environmental Affairs
- Spatial Deontology (i.e. respect for land, people, and deep histories)
- Utility and implementation of Urban Plans for Saint-Martin and Sint Maarten respectively
- Natural Infrastructures / Perceptions of Nature
- Coastal compression (everything is coastal)
- Temporal cycles between storms
- Road quality between Saint-Martin / Sint Maarten
- Land Tenure / Land Leasing
- Diesel power grid and limitations to power structure.

On Descriptions of Saint-Martin / Sint Maarten:

- State of exception for both Saint-Martin relative to France, for Sint Maarten relative to the Kingdom of the Netherlands
- Island-world (île-monde)
- Nano-geography
- Island city
- City-state

On Tourism / the Economy:

- Mono-economy
- Local communities
- Definitions of labor
- Cycles of (re)construction

Institutional Power Structures related to the Environment:

- Normalized forgetting
- Saint-Martin Locked scales of power for funding, administration, and product distributions
- Institutional Blindness around each side, as well as France and the Netherlands towards Saint Martin
- Environmental policy can represent a reputational risk
- Natural Risk Prevention Plan (Plan de Prevention des Risques Naturels) (PPRN)
- Coastal Protection Agency (Conservatoire du littoral)
- National Recovery Plan Bureau (NRPB)
- Country Island Program for Sint Maarten (Landspakket)

Representations of Environmental Risks and Metrics:

- Flooding and the appearance of “ghost” rivers during storms
- Pragmatism versus regulation
- Joint water sanitation project and the Quadripartite system
- Hurricane severity and its increases
- Palpable changes from storms vs. slow, but lasting change
- Hurricane Irma 2017 vs. Hurricane Luis 1995
- Missing or incomplete climate action plans (Sint Maarten)
- Data governance and sharing obstacles (Sint Maarten)
- Cartographic violence and colonial maps
- Suspended environment / environment as a zone of exception
- Generational Framing / the relational as survival
- Limited GIS (Sint Maarten)
- 50 geometric steps (Saint-Martin)
- Limited data collection and institutional capacity to survey environmental conditions

Appendix 4: Non-exhaustive List of Literature Consulted by Category

[The Status of Saint-Martin and Sint Maarten vis-à-vis France and the Netherlands]

Daniella Jeffry
Daphina Meisiedjan

[On the History of Saint-Martin / Sint Maarten]

Johan Hartog
Sympkens-Smit
Yves Monnier
Jean Glasscock

[On Hurricane Irma]

Pasquon et al.
Duvat et al.
Rey et al.
Kevon Rhiney
Collodi et al.

[On Caribbean Hurricane History]

Stewart Schwartz
Valerie Trouet et al.
Martín et al.

[Environmental/Landscape Histories]

Mike Davis
William Cronon
Michael Grunwald
Akhil Gupta
Lucas Bessire
Hilda Lloréns
Katherine Mckittrick

[On Dutch Water Politics]

Simon Richter
Lizzie Yarina

[Anthropology of Expertise on Climate Adaptation]

Adriana Petryna
Stefan Helmreich
Lukas Ley
Kian Goh
Sarah Vaughn
Timothy Mitchell
Ben Orlove
Andrea Bollestro

[Landscapes as Archives and Spaces of Learning]

Elizabeth K. Meyer
Anne Whiston Spirn

[Materials, Power, and Agency]

Arturo Escobar
Avery F. Gordon
Erica C. James
Donna Haraway
Anna Tsing
Elizabeth DeLoughrey
Jane Bennett
Bruno Latour
John Durham Peters
Arjun Appadurai
Gayatri Spivak

[Caribbean Writing Literature and Art]

Edwidge Danticat
Patrick Chamoiseau
Maryse Condé
Deborah Jack
Dionne Brand
Edouard Glissant
María Magdalena Campos-Pons
Nicolas Laughlin
Jean d'amérique
Derek Walcott
Ana Mandieta
Doris Salcedo

[Risk, Vulnerability, and Climate Adaptation]

Ulrich Beck
Douglas and Wildavsky
Smit and Wandel
Thierry et al.
Tapan Kumar Dhar
Gigi Owen
Lawrence Vale
Naomi Klein
Rob Nixon

[Hurricane Risk Modelling]

Kerry Emmanuel
Ali Sarhadi
Simona Meiler

[Financial Systems and Administrative Risks]

Annelise Riles
Gabriella Carolini
Adrienne Buller

Appendix 5: Meditations on Risk

Risk is a social category. Power and history shape risk's acceptability and its possibilities for impact. Risk, and by extension its acceptability, emerges as place is interpreted through its particularities. Few understandings of risk are the same. Some forms and understandings of have taken on and occupied more space than others. State preoccupations with risk have laid claim to and reconfigured the connectivity of the world. Insurance companies exit places of incalculable risk before any government can. Small adaptations to known flood risks by communities across the world have been overlooked by engineers who believe their grey infrastructure can control nature.⁴⁵

Risk, as it is defined, measured, and illustrated, is difficult to transposed across temporal, spatial, and affective scales, and yet international organizations, non-profits, and national governments of implicated in the arbitration of risk on Saint Martin's both sides have constructed political and economic policies on this very premise of knowing the scale and implications of risk as we know it. From acts of war to flood hazard mitigation, the modern enterprise of risk prevention and detection has shaped the global economic order. The monetization of uncertainty drives insurance markets, and grounds arguments of economic growth.

Risks occupies space, oftentimes overlapping in the same spaces, in different ways. Risk shapes where and how humans and non-humans choose to live in place. Risk is neither an equal, nor an equitable enterprise. Not everyone is exposed to the same access to risk as it shapes how and where we live. Risk overlays with the real, often emerging fitfully all the while life persists, at times in irreversibly altered ways considering the radicality of change and the breadth of loss be it an earthquake in Haiti, Hurricane Maria in Puerto Rico and Irma on the island of Saint Martin. A risk of land loss, a risk of pollution, a risk of flooding, a risk of community loss is perceived differently at island versus continental scales. Risk resists standardization. Risk, unlike the ever-present environment, is deeply bound in the conditions, models, and places shaped and defined by human economic, legal, and political systems. Risk is formulated through a human regard and dependence on land as a place acted upon, quantifiable, measurable, and limited in its distribution. The present

⁴⁵ Dynamic engagements with this include Cronon's *Nature's Metropolis* and *Uncommon Ground*, as well as Mike Davis's *Late Victoria Holocausts*, Mitchell's *The Rule of Experts*, and Grunwald's *The Swamp*.

histories and afterlives colonization, as they emerge in the social and physical environment of Saint Martin, further complicate the distribution and perceptions of risk within these systems at scale. Distinctive possible futures to emerge through different perceptions of risk, to echo Katherine McKittrick's work in "Plantation Futures," to create different visions of Saint Martin as they reflect negotiations with "time, space, and terror" (2013, 3).

Risk as an aggregation of factors to signal danger or change to a state of nature, need not impede on the important lessons drawn from critical engagement with environmental justice movements and the recognition that histories of colonization and subsequent waves of immigration contribute to present individual and systemic inequities that can be traced in the physical environment.

Risk engages the everyday within the realm of the exceptional and spectacular. And yet, historical-based perceptions of risk are no longer enough to predict or understand the future impacts of climate events like hurricanes and climate-change driven process such as sea level rise. These risk metrics, as they are bound in historic data, are unable to represent the expanding and unprecedented conditions of our present and future climate as it changes the boundaries where habitation can take place.

Risk plays and pushes at the edges of what we can envision. Some argue risk is itself a contract with fear.⁴⁶ The constant striving to represent and quantify risk, to give it grounding in the virtual spaces of excel spread sheets, MATLAB models, and mapping portals remains a limited representation of the real. Risk as it is, not as it is represented, brings on challenges tied to the subjective experiences of those who are engaging risk as a matter of personal and professional concern, as a matter of survival during the experience of an extreme event, and perhaps even as a matter of academic research. How risk emerges, matters. The material and social consequences of risk as it relates to climate change force us to consider the scale and magnitude of the risk, we are willing to accept, to protect against, to build towards. The scales of our reckoning must reckon with differences across scale meaningfully—there is much to learn in this reflexivity.

⁴⁶ This concept I owe to a conversation on climate risk with philosopher Roberto Casati.

Appendix 6: Mundane Risks, Climate Extremes, and Tools for Action

Climate risks on Saint Martin are created by mundane actions deepen already present dependencies between Saint-Martin and Sint Maarten, as well as to the former metropolises. These dependencies are manufactured across the island and the ocean because these relationships produced systemically within and in relation to administrative structures. Given these dependencies, the shared prospect of increased climate risks in Saint Martin has the potential to collapse or to reinforce territorial boundaries today and in the future.

Regulatory statutes, policy agendas, finance and climate models, administrative procedures, and environmental conditions shape the severity of climate risk in Saint Martin. Rooted in everyday actions and centuries of separate development, these documents and processes are “instrument[s] of administrative control,” as well as sources for administrative subversion within existing risk management and climate adaptation processes (Mitchell 2002, 9). These instruments are deeply tied to the island’s artificial split between Saint-Martin and Sint Maarten exemplified by through the spatial distribution of infrastructure, housing, tourist infrastructure, and limited areas of undeveloped land. For an island economy driven by access to beaches and tourist infrastructure, administrative control over risk management and climate adaptation is implicitly tied to continued stability of the physical environment.

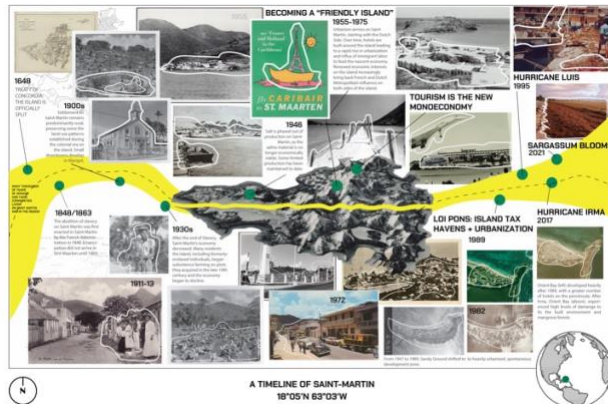
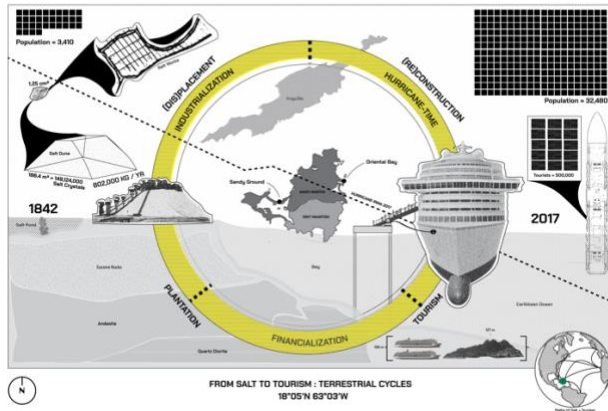
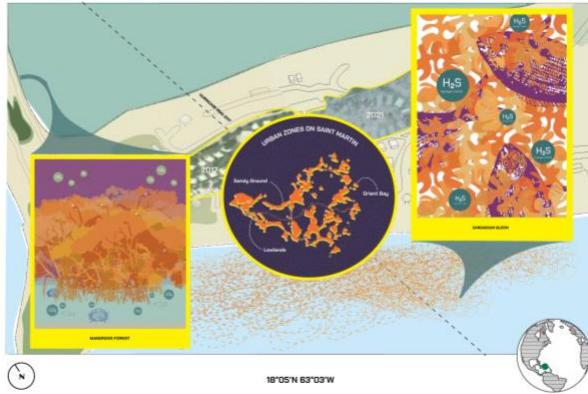
Absent or patchwork risk management and climate adaptation plans for both sides of Saint Martin structure future environmental risks to come, leaving both sides progressively vulnerable to their respective (in)actions. Climate risks as a global problem clash against the “ordinariness of vulnerability” as a deeply local experience in both Saint-Martin and Sint Maarten (Vaughn 2022, 180). Andrea Bollestro notes, “[f]utures are constantly being produced out of mundane actions” which become “crucial sites where big moral and even philosophical questions are encountered and entertained by everyday people” (Bollestro 2019, 191). The mundane action of publishing a map that condemns an entire coastline from future use. The mundane overlooking of codified permitting procedures in favor of additional development. The mundane act of arguing urban resilience planning necessarily implies destruction. The mundane realization an entire coastline has shrunk, and the mangroves are still not recovered. The mundane stipulations that determine what roofs are fundable for reconstruction after a hurricane has passed. The mundane overgrowths that hide former plantations hidden within forest-covered mountain top.

In an ever-present environment under duress, these mundane actions are already sites of slow, but still drastic changes to the landscape. The assertion of values through the mundane has critical implications for communities across Saint Martin that stand to be most affected by increasing climate risks, notably severe hurricanes and sea level rise. These mundane acts inform what emerge as mundane risks held within the silences of administrative instruments as they address or fail to address the environmental impacts of climate events and future climate change. Fundamentally, these mundanities—as they were cited in interviews about the feasibility of risk management and climate adaptation strategies on island—conveyed a major conundrum in climate adaptation planning: there is no singular approach or vision of changing climate as a problem for the future of Saint Martin. Moreover, this fragmented approach toward risk management and climate adaptation appeared time and again deeply constrained by the alive afterlives of colonization.

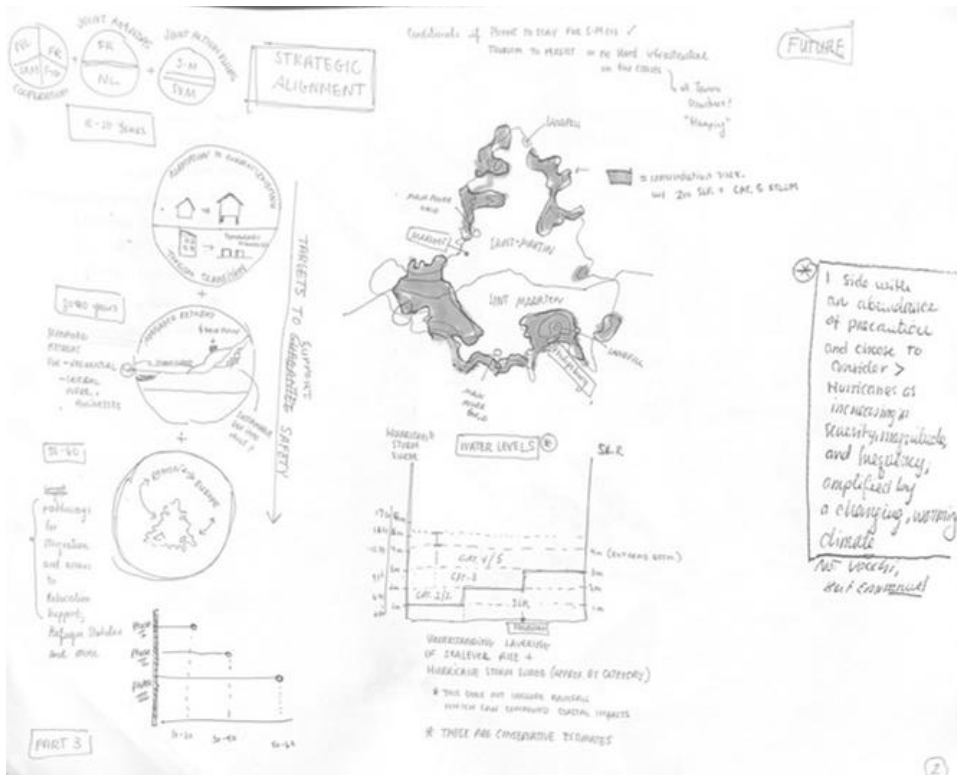
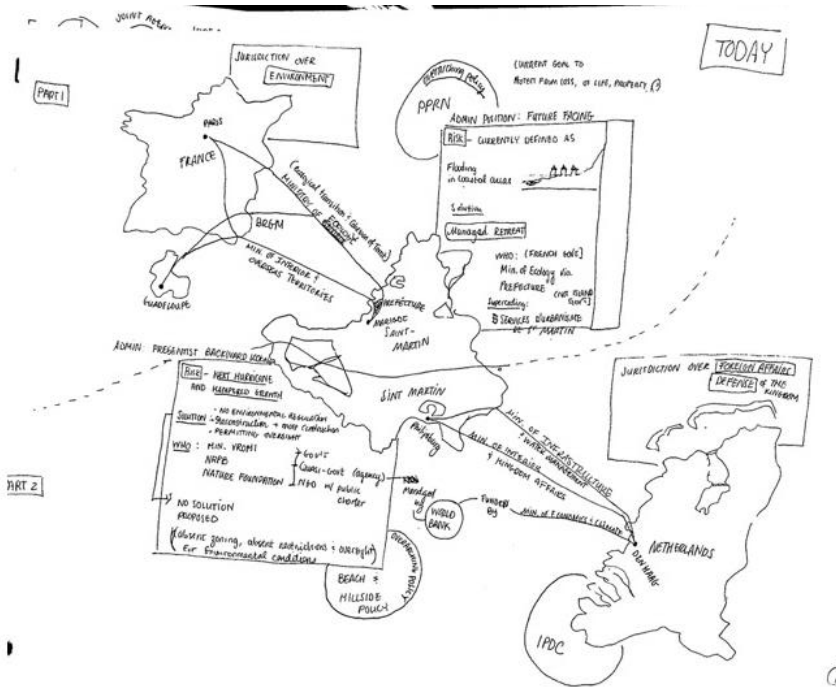
Historic silences reveal individual and collective relationships to these mundane, significant actions and the risks each poses to community structures and potential material losses. These are what Michel-Rolph Trouillot might call the “silences within silences” layered presently (2015, 60). And yet, as one interviewee asserted, climate change *fundamentally should be about the rights of Saint Martiners. This about a right to continue to live on the island no matter whether you’re in Saint-Martin or Sint Maarten*. The spectacular conditions ascribed to climate change will largely be hidden in the slow shifts that will accompany cataclysmic events. The identification of these slow, successive and irreversible changes and the need to question of the rights of Saint Martiners points to François Vêrges’s idea of finding a “critical juncture” to ground shared inheritances...for the struggle ahead” (2017). The major question remains: whose heritage and whose future counts in the construction of risk management and climate adaptation strategies in Saint Martin, and what juncture is needed to stay grounded in the struggle ahead.

Appendix 7: Visual Analysis of Historic Changes to Saint Martin

These illustrations were created in Fall 2023 for the Urbanism Proseminar taught by Professor Rania Ghosn in the Department of Architecture.



Appendix 8: Diagrams for Structuring Chapter 4



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