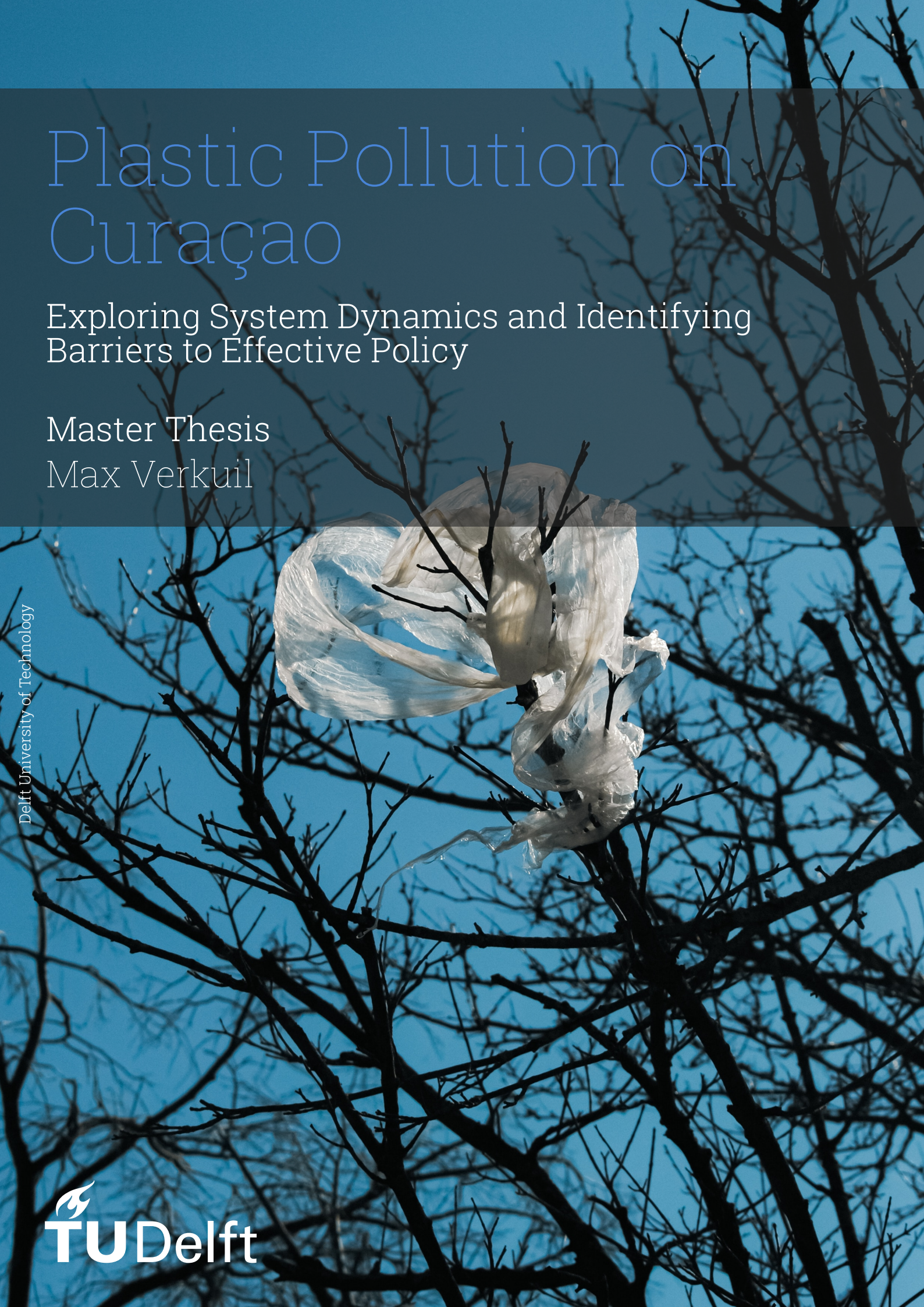
Plastic Pollution on Curaçao

Exploring System Dynamics and Identifying Barriers to Effective Policy

Master Thesis

Max Verkuil



Delft University of Technology

TU Delft

Plastic Pollution on Curaçao

Exploring System Dynamics and Identifying Barriers to Effective Policy

by

Max Verkuil

Student Name	Student Number
Max Verkuil	4647602

A thesis submitted in partial fulfillment of the requirements for the master's degree of Complex Systems Engineering and Management at the University of Technology Delft

Supervisor:	J.A. Annema
Supervisor:	M.L.C. de Bruijne
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TU Delft

Preface

This report marks the conclusion of my research journey into the issue of plastic pollution in Curaçao, a journey that has been both challenging and rewarding. I wanted to dive into a new subject, using familiar methods driven by my passion for environmental sustainability and a desire to contribute to solutions through the perspective of policy. I am happy I have done precisely this. Although the specific issues faced by Small Island Developing States (SIDS) were new to me, they have since ignited a commitment to make a social impact in communities beyond my own.

Throughout this journey, I have had the privilege to meet with many dedicated stakeholders, from government officials and environmental organizations to community members directly affected by plastic pollution. Their insights have been vital in shaping the direction and adding depth to this research. Community engagement and collaboration are key to addressing plastic pollution in communities such as Curaçao. I am confident that these stakeholders will continue to make significant strides in their efforts.

I want to express my deepest gratitude to my academic advisors, Jan Anne Annema and Mark de Bruijne. Their guidance and support have been vital to the successful completion of this thesis. Their expertise and encouragement have served as a constant source of inspiration. On a personal note, I am also thankful to my family and friends for their continuous support and understanding throughout this project.

I also want to express my gratitude to Global Initiative, TPM Travel Funds, and FAST for their generous financial support. Your contributions have been invaluable in advancing my research and enabling me to explore new opportunities. I am truly grateful for your support, which has made a significant difference in my journey.

I hope that the findings and recommendations in this thesis will support ongoing efforts to combat plastic pollution in Curaçao and beyond and inspire others to continue research in this critical area.

From this point forward, I am committed to advocating against plastic pollution, a cause that has become a deep passion of mine. I want to invite anyone reading this thesis who has questions about the topic, my research, or my experiences in this field to reach out to me. I welcome connections through email, LinkedIn, or by phone, and I am always open to discussions and collaborations aimed at making a difference.

Max Verkuil
Delft, September 2024

L: https://www.linkedin.com/in/maxverkuil/

Summary

Plastic pollution is a major global environmental issue, and its impact is even more pronounced in Small Island Developing States (SIDS) like Curaçao. These islands face unique challenges due to limited resources, heavy reliance on imports, and complex socio-cultural dynamics that complicate waste management. This study aimed to investigate plastic pollution in Curaçao by examining the local system, identifying challenges in policy design, and proposing effective strategies to mitigate environmental impact. The scientific knowledge gap lies in the limited understanding of how plastic pollution systems function in Small Island Developing States (SIDS) and the specific challenges they face when designing and implementing effective environmental policies.

The research focused on two objectives:

1. Understanding the dynamics of plastic pollution in Curaçao.
2. Investigating the specific challenges in designing policies for plastic waste management.

Methodology:
A mixed-methods approach was used to achieve these objectives, combining stakeholder analysis, interviews, and observations. A framework was developed from existing literature to understand plastic pollution in Curaçao better. Stakeholder analysis identified key actors in managing plastic pollution, including government agencies, NGOs, recycling companies, and private sector participants. Interviews with these stakeholders, in which the plastic pollution and policy tool frameworks were discussed, provided insights into the plastic pollution system and policy implementation challenges. Field observations were conducted to assess waste management practices on the island, including illegal dumping and recycling efforts. Additionally, articles and reports on plastic pollution were reviewed to support other findings.

Key Findings:
This research on plastic pollution in Curaçao has yielded several critical insights:

- **Implementation Gaps:** Despite the government's ambitious goals to address plastic pollution, substantial gaps exist between these goals and their implementation. Limited resources, infrastructure constraints, street-level bureaucracy, and political volatility hinder effective policy enforcement.
- **Cultural and Socio-Political Challenges:** Curaçao's unique cultural attitudes towards convenience and plastic consumption and political and economic instability complicate efforts to manage plastic pollution. The short-term focus on economic and social issues often overshadows environmental concerns.
- **Stakeholder Perspectives and Local Context:** Stakeholders generally agree that the government should lead the charge against plastic pollution; however, there are concerns regarding the suitability and implementation of proposed solutions. A one-size-fits-all approach is impractical; tailored solutions considering Curaçao's local context are essential.
- **Framework for Action:** The redesigned framework emphasizes rethinking plastic importation, reducing consumption, improving recycling rates, combating illegal disposal, and maintaining a clean island. This localized approach addresses the specific drivers of plastic pollution on the island.
- **Barriers to Effective Policy:** Key barriers include resource constraints, political challenges, lack of public awareness, and street-level bureaucracy. These factors collectively impede the development and implementation of effective environmental policies.

Contributions to Theory:
This research extends Alpizar's framework to better fit the plastic pollution systems of Small Island Developing States (SIDS). It considers context-specific factors that influence these systems, enabling the identification of crucial battle arenas for effective intervention.

Additionally, the study clarifies the role of street-level bureaucracy in enforcement and waste management within SIDS. It reveals how the limitations faced by frontline bureaucrats complicate the design and implementation of policies, emphasizing the need for practical solutions that account for these challenges.

The findings underscore that effective policy requires a tailored approach; one-size-fits-all solutions for plastic pollution in SIDS are not viable. The cultural dynamics of these islands significantly shape attitudes and consumption patterns, indicating that any successful policy must integrate cultural considerations to resonate with local communities.

Finally, the research highlights the impact of political volatility on environmental policy, demonstrating how instability can hinder the development and enforcement of effective plastic pollution strategies. This interplay between culture, politics, and environmental management calls for a nuanced understanding of local contexts in policy design.

Recommendations:
To effectively tackle plastic pollution in Curaçao, several key recommendations emerge:

- **Enhance Public Education and Expand the Plastic Ban:** Launch comprehensive campaigns to promote environmental stewardship while broadening the ban on single-use plastics to include more items, ensuring accessible and sustainable alternatives.
- **Implement a Plastic Deposit System:** Introduce a deposit initiative that encourages the return of plastic containers, reducing waste and providing economic benefits.
- **Improve Government Coordination and Support Enforcement:** Develop a cohesive waste management strategy with clear roles for stakeholders, strengthen enforcement against illegal dumping, and provide resources and legal protections to front-line workers.
- **Promote Recycling and External Partnerships:** Invest in recycling infrastructure to encourage community participation and seek collaborations with NGOs and international entities for funding and expertise.
- **Revise the Legislative Framework:** Evaluate and strengthen existing waste management laws to ensure effective enforcement and compliance.

Limitations:
The research on plastic pollution in Curaçao highlights several limitations. The reliance on stakeholder interviews introduces subjectivity, potentially affecting the validity of the findings. The unique sociocultural and political context of Curaçao limits the generalizability of results to other Small Island Developing States, necessitating localized solutions. The study's focus on plastic pollution may overlook broader waste management issues. Recommendations are context-specific, emphasizing that a one-size-fits-all approach is impractical. Cultural attitudes towards convenience and plastic use complicate policy implementation, indicating that behavior change requires more than regulatory measures. Lastly, ongoing research is needed to assess long-term policy impacts and explore shared challenges among SIDS.

Future Research:
Much research is needed on plastic pollution, so I suggest starting with these topics:

- Exploring a wider range of policies for plastic pollution in SIDS through stakeholder engagement.
- Conducting comparative studies among Small Island Developing States to identify shared challenges and solutions.
- Analyzing plastic pollution management evolution in developed countries to uncover effective strategies.

- Investigating consumer behavior regarding plastic use and disposal in Curaçao and other SIDS.
- Conducting longitudinal studies on the long-term impacts of policies like single-use plastic bans.

This study highlights the complexities of managing plastic pollution in Curaçao and underscores the need for a localized, culturally sensitive approach to policy design and implementation. While significant challenges, coordinated efforts involving government leadership, community engagement, and infrastructure improvements could lead to a more sustainable future. The insights offered a valuable framework for other SIDS facing similar environmental issues.

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Introduction

Every day, the equivalent of 2,000 garbage trucks full of plastic are emptied into our oceans, rivers, and lakes, accumulating about 20 million tonnes of plastic waste annually in the world's aquatic ecosystems [78]. If you take all the discarded plastic, the amount entering landfills, and the environment, it is sufficient to rebuild the Great Wall of China every year [12]. The current global production and consumption patterns threaten Earth's recovering capabilities and the economic success and well-being of societies that live on it. Therefore, encouraging the sustainable use of resources and implementing effective waste management strategies are relevant and necessary [61].

Background

Before we discuss the specific topic of plastic pollution, we must explore the existing literature that forms the basis of this research. This section concisely overviews the most important studies and theories on plastic pollution and related policy development and implementation. By incorporating insights from existing research, we build toward new insights.

Environmental Impact

About 60% of all produced plastics end up in landfills or the natural environment, with less than 10% being recycled. But thanks to ongoing efforts from researchers, citizens, policymakers, NGOs, and other stakeholders, there is optimism that the proportion of recycled plastics will significantly increase[34]. Plastics, known for their durability, take years to break down in nature or landfills. The timeframe for decomposition varies widely based on factors such as environmental conditions and the type of plastic. For instance, the most basic polyethylene terephthalate (PET) bottles take around 58 years to break down, while high-density polyethylene (HDPE) pipes can take over 1200 years to dissolve [12].

Inadequate global waste management systems, outdated recycling technologies, insufficient infrastructure, and public awareness worsen the plastic crisis. Improper disposal of plastics leads to environmental pollution. Plastic pollution, which refers to the presence and accumulation of plastic materials in ecosystems, poses a severe threat [62]. The persistence of plastic, breaking down into harmful microplastics, further adds ecological and health risks. A comprehensive approach to mitigating the effects of plastic pollution is crucial for a healthy planet and the beings that live on it.

Policy Development and Implementation

To tackle plastic pollution effectively, we must examine the specific challenges of developing and implementing policies. Global initiatives to control and reduce plastic pollution face significant challenges,

mainly because they often need a comprehensive and integrated strategy. These efforts frequently need to address the root causes specific to different regions, leading to ineffective outcomes [31, 66]. However, well-devised strategies have the potential to substantially and sustainably address the issue of plastic pollution, for example, by increasing recycling efforts or by cutting down the overall plastic consumption [14, 102]. These challenges highlight the complexity and critical need for well-crafted and successfully implemented policies.

Policy Challenges in Small Island Developing States

Small Island Developing States (SIDS), such as Curaçao and other Caribbean island nations, face specific challenges when implementing policies to address plastic pollution. Firstly, reducing plastic usage in SIDS is difficult due to these regions' limited international influence over upstream processes and plastic producers. Additionally, the lack of viable alternatives that effectively replace plastic and limited control over tourist behavior on the islands complicates the challenge [3, 23, 96]. Small Island Developing States (SIDS) and their challenges will be further discussed in chapter 3.

Secondly, barriers to implementing effective waste management policies in Small Island Developing States (SIDS) are diverse and complex, spanning four main areas: institutional, financial, technical, and educational [60, 76]. These challenges add complexity to the formulation and execution of policies in these domains.

Finally, developing and implementing effective policies in SIDS face additional challenges, such as competing priorities, inadequate planning or governance, and limited resources. Policies must be customized to fit specific local circumstances and cultures [1, 96]. Therefore, comprehending the subtleties of policy development and implementation is vital for creating tailored and pragmatic solutions to combat plastic pollution in these fragile island environments.

Problem Statement

Plastic pollution presents significant global challenges, impacting oceans, ecosystems, and human health. Understanding the complexities that hinder effective policy development, especially in the unique context of Curaçao, is essential. This island faces distinct geographical, cultural, and governance-related challenges that complicate efforts to combat plastic pollution. This research aims to fill critical knowledge gaps by examining the interplay of these factors and identifying barriers to policy implementation. By doing so, it seeks to provide tailored insights and strategies for reducing plastic pollution in Curaçao and other similar Small Island Developing States (SIDS)

Understanding the plastic problem

The widespread issue of plastic pollution has global implications, affecting oceans, ecosystems, and human health. It is important to understand the challenges that prevent policies from effectively addressing this problem, especially in the unique context of Curaçao, which is influenced by its distinct geography, culture, and governance. This research seeks to fill these knowledge gaps and offer valuable insights into successful strategies for reducing plastic pollution in this environment.

Plastic is pervasive in our food, clothing, and, unfortunately, among our modern challenges [52, 105, 111]. The issue is not just the inconvenience of littered landscapes; it is a global health and environmental challenge that is proving difficult to address. Making policies to combat this plastic crisis is challenging. It involves juggling economic interests, requires international cooperation, and solutions must meet the demands of a plastic-dependent society to prevent resistance [31, 68]. As we explore the issue of plastic pollution, it becomes apparent that it is not simply a visual nuisance but a multifaceted problem that endangers our health and the environment.

The effects of plastic pollution are significant and widespread. Plastics contaminate our oceans and ecosystems and enter our bodies, leading to serious health risks. Numerous studies have shown that plastic pollution contributes to the development of cancer and negatively affects reproductive systems [26, 53, 100]. Plus, manufacturing all that plastic contributes to climate change, as manufacturing releases harmful gases. The aggregate emissions are projected to reach 56 gigatons of CO_2e by 2050,

consuming 10-13% of the global carbon budget [101]. It is essential to understand the significant use of fossil fuels in the production of plastic. The EU's largest industrial oil, gas, and electricity consumer is plastic manufacturing. This is relevant because climate measures seek to reduce reliance on oil and gas and lessen geopolitical dependencies on other nations [74].

We must also consider the impact on the foundational balance of nature. Plastic pollution severely impacts aquatic ecosystems and has already damaged 43% of fish species, 44% of seabird species, and 86% of sea turtle species [56]. Without immediate intervention, the ocean is projected to have more plastic than fish by 2050 [32]. Adding to the challenge, plastics persist in the sea, where 50-80% of litter is composed of plastic, lingering for an extended period once introduced [15]. In addition to the risk to aquatic ecosystems, recent studies have examined the threat of plastic pollution to terrestrial ecosystems. Research indicates that soil-plant systems are affected by the destabilization of soil aggregates. Previous studies have emphasized the risks to food safety and crop yield due to plastic contamination [98, 112].

Curaçao and Small Island Developing States

Curaçao and other Caribbean islands are more fragile than one might think, and plastic pollution is a significant issue. Plastic pollution is caused by ocean currents, tourism, packaging, and other sources. The impact of plastic pollution is evident from the considerable amount of litter found on beaches, in towns, and in landfills [20, 50, 54]. The Caribbean islands are the world's largest per capita contributors to plastic pollution, with local littering significantly worsening the problem on these islands [30]. There are various challenges to overcome when creating and implementing policies to address this issue. These obstacles include cultural differences, government barriers, economic factors, and reliance on plastic in different industries. This makes the development and execution of effective policies a complex task [31].

Unraveling the plastic puzzle requires a global outlook and a focus on coastal areas [71, 110]. It is about finding real solutions for real places. Welcome to the complex world of plastic pollution, where the challenge is immense, but so is the need for effective change.

Thus, the problem statement for this research is:

Plastic pollution poses a significant global challenge, impacting oceans, ecosystems, and human well-being. In the specific context of Curaçao, influenced by unique geographical, cultural, and governmental factors, there is a noticeable lack of understanding of why policies and their implementation struggle to address this issue effectively. There is uncertainty about the most effective strategies to reduce plastic pollution in this setting.

Significance of the Study

Curaçao, a Small Island Developing State (SIDS), faces severe consequences from escalating plastic pollution, demanding quick and targeted action. This section addresses the urgent need for sustainable solutions and introduces two key research objectives to understand policy design challenges and propose tailored mitigation strategies.

Consequences and Relevancy

Plastic pollution, with its visible litter and concealed ecological threats, necessitates urgent attention. The consequences, ranging from marine life entanglement to the ingestion of microplastics, show the need for action, especially given that Small Island Developing States (SIDS) are the most vulnerable territories to plastic pollution [37, 55]. Continuing with the current course of action is anticipated to cause irreversible damage to local ecosystems, the welfare of residents, and the crucial tourism industry of the islands [10, 37, 69].

Unsystematic approaches have been demonstrated to be considerably less effective [43]. There exists a window of opportunity for all stakeholders within the system to achieve irreversible progress. In 2023, a proposed law aimed to prohibit the sale of specific types of single-use plastics, and over the past year, there has been a heightened focus on the issue of plastic pollution [7, 21, 36, 77]. The urgency for

sustainable solutions is critical; environmental and societal effects will escalate without prompt action.

Knowledge Gap

To address this issue effectively, understanding its root causes is crucial. Research indicates that formulating and implementing policies on Small Island Developing States (SIDS) is challenging due to various factors, including relatively high intervention costs, socio-cultural norms, and barriers associated with climatic, political, and economic vulnerabilities [9, 99]. Previous attempts at environmental policy in Curaçao faced challenges in the local decision-making process, lack of capacity, and funding issues [24]. Despite recognizing the need for action, the reasons for the lack of progress in designing specific policies or a coherent strategy to mitigate the effects of plastic pollution and determining what these policies or strategies should entail are unclear.

Research Objectives

To address the challenges presented by plastic pollution in Curaçao, this study aims to achieve two overarching research objectives:

Research Objective 1: Understanding the Plastic Pollution System:
Investigate the plastic pollution system in Curaçao by examining the key stakeholders, existing policies, current issues, and ongoing initiatives. This objective aims to thoroughly understand the local context and the factors driving plastic pollution.

Research Objective 2: Understanding Policy Design Challenges on Plastic Pollution:
Investigate the underlying factors contributing to the complexity of designing effective policies to address plastic pollution in Curaçao. This involves examining the historical context, socio-cultural dynamics, and institutional frameworks influencing policy development and implementation.

The critical consequences of plastic pollution in Curaçao call for immediate intervention. This study, guided by two research objectives, aims to understand the complexities of the plastic pollution system and policy design and offer context-specific strategies.

Scope

This section outlines the study's scope. It outlines the research questions guiding the study and defines the geographical and theoretical scope.

Research Question

The research question guiding this study is:

"How does the plastic pollution system operate, and what are the barriers to reducing plastic pollution in Curaçao?"

Theoretical Scope

The theoretical framework of this study focuses on Small Island Developing States (SIDS), with an emphasis on Curaçao to develop tailored strategies. This approach addresses the unique environmental, economic, and cultural barriers to managing plastic pollution. By investigating these challenges, the study aims to create a deeper understanding of the plastic pollution system in Curaçao and the complexities that make effective policy implementation difficult. Ultimately, this research seeks to uncover why policy on plastic pollution remains a persistent challenge in similar Caribbean contexts.

Curaçao

Curaçao is a small island in the southern Caribbean Sea, part of the Lesser Antilles. It is a constituent country of the Kingdom of the Netherlands. The island is notable for its diverse culture, influenced by European, African, and indigenous heritages. Economically, Curaçao relies heavily on tourism, petroleum refining, and offshore finance.

Environmental challenges in Curaçao include managing marine pollution, especially plastic waste, which significantly impacts its coastal ecosystems. The tourism industry, a major economic driver, also contributes to increased plastic consumption and waste. Despite some efforts at waste management and environmental policies, Curaçao faces ongoing challenges in effectively addressing plastic pollution, partly due to its limited resources and the complex interplay of economic and ecological priorities.

Curaçao, a constituent country within the Kingdom of the Netherlands, gained a degree of autonomy following the dissolution of the Netherlands Antilles in 2010 [67]. The island governs most of its internal affairs, with the Netherlands overseeing defense and foreign policy. Curaçao operates under a parliamentary system, with the legislative power vested in the unicameral Estates of Curaçao, akin to a senate [95].

The government comprises various ministries, among which the Ministry of Health, Environment, and Nature plays a crucial role in environmental management. This ministry is tasked with developing and implementing policies related to environmental protection, including waste management and pollution control [17]. Curaçao's environmental policy landscape is thus a blend of local autonomy and collaborative efforts with Dutch and European entities, particularly in areas like environmental conservation and sustainable development [65].

Structure

This thesis is structured into nine chapters to comprehensively explore the complexities of plastic pollution management in Small Island Developing States (SIDS), using Curaçao as a case study. The first chapter introduces the research, outlining its objectives, significance, and context. Chapter 2 presents the methodology, detailing the research design, literature review, case study approach, stakeholder analysis, and ethical considerations. Chapter 3 explores SIDS, focusing on their unique characteristics, challenges, and the role of culture in shaping policies. In Chapter 4, government intervention and policy implementation are examined, and obstacles and opportunities in policymaking are identified. Chapter 5 introduces a modified Plastic Impact Pathway Framework fitted explicitly to the context of SIDS. Chapter 6 presents the results, highlighting key insights and challenges from stakeholder interviews and other data sources. These findings are then interpreted in Chapter 7 to provide a focused understanding to answer the research questions. Finally, the thesis concludes with Chapters 8 and 9, which summarize the main findings, discuss their implications for theory and practice, and suggest avenues for future research.

2

Methodology

This thesis explores the plastic pollution issue in Curaçao, a challenge intensified within the context of Small Island Developing States (SIDS). Recognizing the difficult and multifaceted nature of this issue, the research adopts a qualitative methodology created to dissect the socio-technical complexities that quantitative approaches might not be able to discover. This methodology is chosen because environmental policy in SIDS depends on socio-cultural, economic, and political elements that require an exploratory lens to unravel.

This chapter's purpose is twofold: first, it explains the research process, literature review, and rationale behind the chosen methodologies. Second, it explains why a qualitative approach is most fitting for this research, highlighting its importance when answering the research question. This chapter can be seen as the roadmap of the research journey, detailing how each step is designed to contribute to an understanding of the research content.

A qualitative research approach is chosen for its strength in revealing stories and perspectives on the issue, bringing forth the human and systemic factors that shape the plastic pollution issue in Curaçao. This approach allows for a deep dive into the nuances that define policy effectiveness, stakeholder dynamics, and cultural influences, which are necessary to understanding and addressing the environmental challenges faced by the island.

The research is exploratory by nature, which allows for the investigation of uncharted territories, in this case, in the realm of plastic pollution within SIDS. It must be more explanatory, as we cannot form a hypothesis based on the available research. It seeks to uncover the underlying factors that contribute to the complexities of formulating and implementing effective environmental policies in the unique context of Curaçao, as well as a comprehensive understanding of the plastic system of the island.

The qualitative, exploratory approach aligns with the research objectives: to dissect the complexities of policy design challenges and to craft tailored strategies for mitigating plastic pollution in Curaçao. By understanding the specific socio-cultural dynamics and institutional settings, this research aims to contribute insights and actionable recommendations tailored to the distinct environmental and societal fabric of Curaçao. This approach is important in ensuring that the strategies developed are not only theoretically correct but to ensure they are also practically viable and culturally sensitive.

In summary, this chapter presents the methodological approach, which is comprehensive, context-sensitive, and exploratory. It is designed to provide a nuanced understanding of plastic pollution's complexities in Curaçao, guiding the development of informed and practical policy recommendations. The subsequent sections will delve into the specific methodologies employed, illustrating how each element of this qualitative approach contributes to a deeper understanding of the environmental chal-

lenges and opportunities in Curaçao.

2.1. Literature Review

In addressing the multifaceted challenge of plastic pollution in Curaçao, this thesis analyzes a range of literature to understand all the facets of the system. These facets include taking account of the context of Small Island Developing States (SIDS), understanding the range of tools accessible to policymakers, grasping the plastic system within SIDS, and comparing different strategies with one another. This section outlines the rationale behind the chosen literature, the methods employed in its analysis, and how these elements contribute to understanding and addressing plastic pollution in a specific SIDS context.

2.1.1. Literature Selection

The literature analysis was conducted through a thematic approach, categorizing information based on key themes relevant to plastic pollution in SIDS, such as SIDS and its challenges, a policymakers toolkit, the plastic pollution system, and policies to battle plastic pollution. This thematic analysis helped identify patterns and gaps in the existing body of research, which helped develop the research framework for this study.

Using Scopus, Google Scholar, and Web of Science as search engines to find scientific sources, the topics were explored generally before a deeper dive into the literature. When choosing which literature to explore and what to include in the literature review, articles and books were selected based on their relevance to the research question and their scientific importance in the field based on the number of times the articles were cited.

A deeper dive into literature was used for the following four chapters, each focusing on a different theme, which, as a whole, shapes the storyline of this research. The literature search was focused on its relevance to understanding the environmental, socio-economic, and political landscapes of SIDS and how these factors interplay with the issue of plastic pollution within these themes. Sources included but were not limited to peer-reviewed academic journals, (policy) reports, case studies, publications from environmental organizations, and (news) websites. A complete list of the used literature can be found in the reference section of the report. This diverse literature provided a broad background, allowing for a holistic understanding of the challenges faced when managing plastic pollution.

2.1.2. Literature Themes

In the next chapter, chapter 3, the origin of, the challenges for, and the differences between Small Island States (SIS) and SIDS will be discussed. SIDS, including Curaçao, presents a unique case for studying plastic pollution due to their distinct environmental vulnerabilities and limited resources. The rationale for focusing on SIDS, and Curaçao in particular, stems from their heightened exposure to environmental damage and the pressing need for sustainable waste management solutions, aside from the lack of knowledge on tackling plastic pollution as a SIDS. Curaçao is an example of an SIS and SIDS and will function as a case study for analyzing challenges that SIDS faces in the battle against plastic pollution to allow for specific recommendations and the development of general knowledge on SIDS and how they can battle plastic pollution.

This research seeks to apply the broader knowledge and theories about plastic pollution collected from the global context to the specific case of Curaçao. By doing so, the study aims to explore how general findings and strategies can be adapted and applied to the unique circumstances of Curaçao as a SIDS. This involves analyzing how global lessons translate to local scopes, landscapes, and policy and tailoring them to fit the regional landscape of Curaçao if necessary. The comparative nature of this approach is essential to bridge the gap between global knowledge and local application, ensuring that strategies are practical and culturally sensitive.

In the chapter after that, chapter 4, the tools policymakers can use are discussed, as well as the barriers to developing effective strategies in general and on SIDS. This is to understand the methods and interventions that can be employed to address plastic pollution and the difficulties faced when

developing and implementing policy in the context of SIDS. The reason for this investigation is to identify both the strengths and limitations of different policy approaches. The chapter will focus on constraints and opportunities for SIDS when battling plastic pollution. Understanding the toolset is essential to proposing realistic and practical policy recommendations tailored to SIDS like Curaçao and will help craft a better strategy for a circular Curaçao.

In chapter 5, the system of plastic pollution is discussed. The chapter answers how the plastic system functions, including the import, consumption, and disposal stages, and how these phases relate to one another. It describes the sources of plastic pollution and their travel pathways. It identifies points in the system on which to focus policy. It explains how different flows in the system impact the amount of plastic pollution, including some mechanisms to manage plastic pollution. To effectively craft a strategy to battle plastic pollution on SIDS, specifically in Curaçao, it is essential to understand the plastic pollution system on the islands.

2.2. Case Study of Curaçao

Engaging in comprehensive research before entering the field is crucial. It establishes an understanding of the relevant themes in existing knowledge and theoretical frameworks. This preliminary research guides the fieldwork, ensuring it is focused, appropriate, and grounded in a solid understanding of the broader context. It also helps formulate more informed and targeted interview questions, leading to more prosperous and meaningful data collection.

There are four arguments why Curaçao was chosen as a case study:

1. Local Stories: Many people who have been to Curaçao told me about the severe plastic pollution problem there. Hearing their stories was a big reason for diving into this topic.
2. Language Advantage: In Curaçao, the locals speak Dutch, my native language. This makes it easier for them to express their thoughts and ideas during interviews.
3. Example for Other Islands: Curaçao is an excellent example of a Small Island State (SIS) and Small Island Developing State (SIDS). Studying it could help discover widely applicable knowledge.
4. Community Efforts: Many organizations in Curaçao and worldwide are already working to tackle plastic pollution. Interestingly, the efforts to fight plastic pollution in Curaçao started from the local community, not just from the government [80, 28, 35, 36]. Since the battle against plastic pollution has already begun and policymakers are taking it seriously, the research can positively impact the local situation.

2.3. Stakeholders

Plastic pollution management involves diverse stakeholders, each playing a role in shaping policies, practices, and interventions to address this issue. Understanding the landscape of stakeholders is crucial for developing effective strategies that consider the perspectives, priorities, and capabilities of various actors involved. This section outlines the categories of stakeholders involved in plastic pollution management in Curaçao and our process for identifying and engaging with relevant stakeholders.

2.3.1. Identifying Stakeholders

Identifying the most relevant stakeholders was done by integrating brainstorming sessions, discussions with supervisors, consultations with local stakeholders in Curaçao, and thorough literature research. Through these methods, we compiled a comprehensive list of stakeholders relevant to the context of plastic pollution in Curaçao. Furthermore, during interviews and interactions, we actively sought recommendations for new stakeholders from the stakeholders we were able to get hold of, ensuring that our stakeholder mapping was inclusive, up-to-date, and representative of the diverse actors involved.

To allow research to be replicated, we developed a list of stakeholder groups applicable to any study concerning plastic pollution management in Small Island Developing States (SIDS).

- Environmental NGOs
- National and Local Governments
- Recycling Organizations
- Community Groups
- Tourists and Household Consumers
- Research Institutions
- Waste Disposal Facilities
- Retail and Industrial Importers
- Activists and Grassroots Movements
- Media Organizations

Each category represents a distinct perspective and set of interests. Recommendations are more valuable if they include all perspectives and interests.

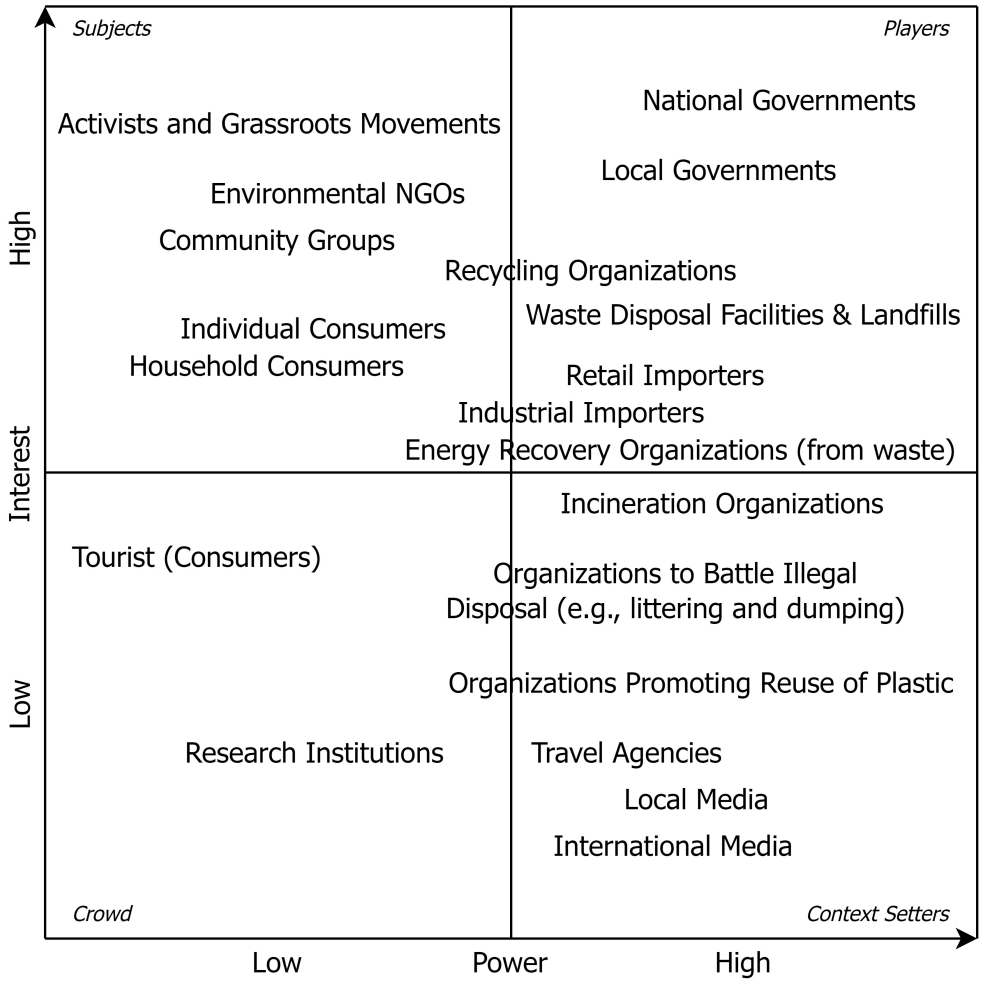

Figure 2.1: Power Interest Grid for the Plastic Pollution System of Small Island Developing States

These stakeholders are categorized into four groups: Subjects, Players, Context-Setters, and Crowd, per the guidelines for creating a power interest grid [38].

For the fieldwork, it was crucial to determine which stakeholders were the most relevant. Therefore, before flying out to Curaçao, a list of organizations was compiled and prioritized based on their influence and interest. This list guided our initial outreach efforts.

This approach helped identify key stakeholders for our fieldwork phase and ensured that we captured the most relevant perspectives. Given the time constraints, we anticipated challenges in meeting with all the most relevant stakeholders. Four organizations representing different stakeholder groups were contacted to explore responsiveness and willingness to collaborate. Encouragingly, all of these organizations expressed interest and willingness to cooperate, ultimately leading to formal interviews during the fieldwork period.

The identified organizations were assessed using a power-interest grid, as depicted in Figure 2.2. This grid represents the final version and results from an iterative process as research progressed; we refined this grid to produce a more accurate representation of stakeholder roles and relationships.

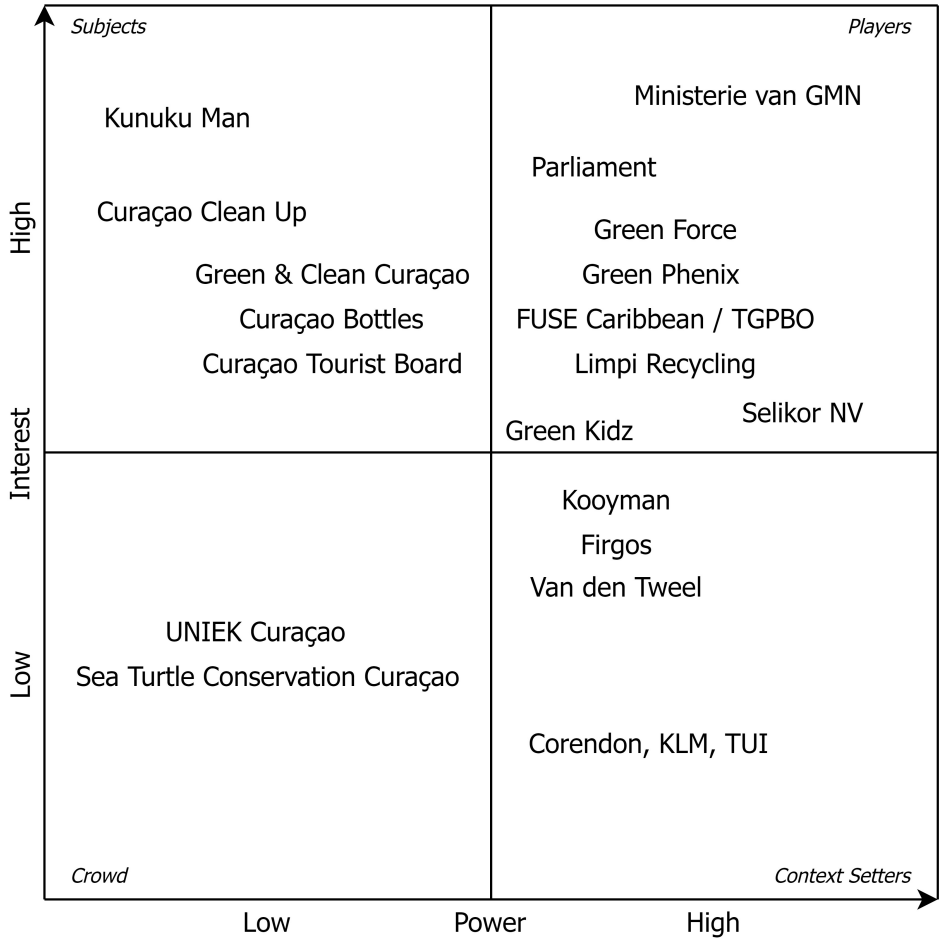

Figure 2.2: Power Interest Grid for the Plastic Pollution System of Curacao

2.3.2. Engaging Stakeholders

We used different methods to engage with stakeholders, including interviews, emails, WhatsApp conversations, and informal discussions. These methods were chosen to facilitate communication and gather insights from various stakeholders, including those with limited availability for in-person meetings. The main objective of engaging stakeholders is understanding the system's workings, including the stakeholder relationships and the plastic system dynamics. The flexible nature of our engagement approach enabled us to capture many perspectives and experiences [5, 41].

Initially, the goal was to speak to all stakeholders in the most formal setting, attempting to get into contact through formal channels such as email and setting up a structured interview. This was because we wanted to involve and engage the stakeholders professionally to increase expected validity and reliability [108]. When preparing the fieldwork and reading the literature on qualitative research, this seemed the most appropriate approach [63]. During the fieldwork and after conducting the first interviews, it became clear that the culture in Curaçao is more informal and that the approach could be slightly adjusted to lead to more honest responses and higher responsiveness of stakeholders [107]. At this time, it was already possible to have an initial understanding of the field of stakeholders and some of the dynamics within the system. We have allowed ourselves to get used to the local cultural norms in this period.

So, over time, the structure of the interviews gets more informal. The first interview with Green Phenix was the most structured, and the last was the least structured. This also matches the goals for the interviews; in the first interviews, it was important not to miss any topics and questions as this was necessary to get a holistic understanding of the system. In the later interviews, a less structured approach was more suitable for diving deeper into topics relevant to that specific stakeholder. What contributed to the change in structure was that, over time, the research team was more confident and comfortable conducting semi-structured interviews.

Parallel to these interviews, more informal conversations were held with less prominent stakeholders such as inhabitants, restaurant owners, cleaners, and tourists. These conversations are necessary to understand if the subset of people working in the plastic pollution sector is representative of the entire population and to check if the interview structure and form have impacted the responses. These conversations are not included in this chapter's interview subsection but in the observation subsection. This is because their role, contact details, and use of words were only sometimes recorded. This paper must be called an interview because this is described in the interview protocol.

We also offered interviewees the option to meet online through teams. None of the interviewees chose this option; they wanted to meet in person.

The stakeholders were approached by email, then by phone, and finally, if it still needed to get in touch with them, a message through text, WhatsApp, or any other form of social media such as Instagram or LinkedIn would work. This created a formal relationship with the respondents and a professional impression.

These engagement methods can be organized into a hierarchy, reflecting their formality and effectiveness in establishing stakeholder communication. The Engagement Hierarchy (Figure 2.3) illustrates the range of methods used, from formal in-person interviews to more informal interactions via email, phone calls, and social media. This hierarchy helped promote professional relationships and ensure ample stakeholder engagement throughout the research process.

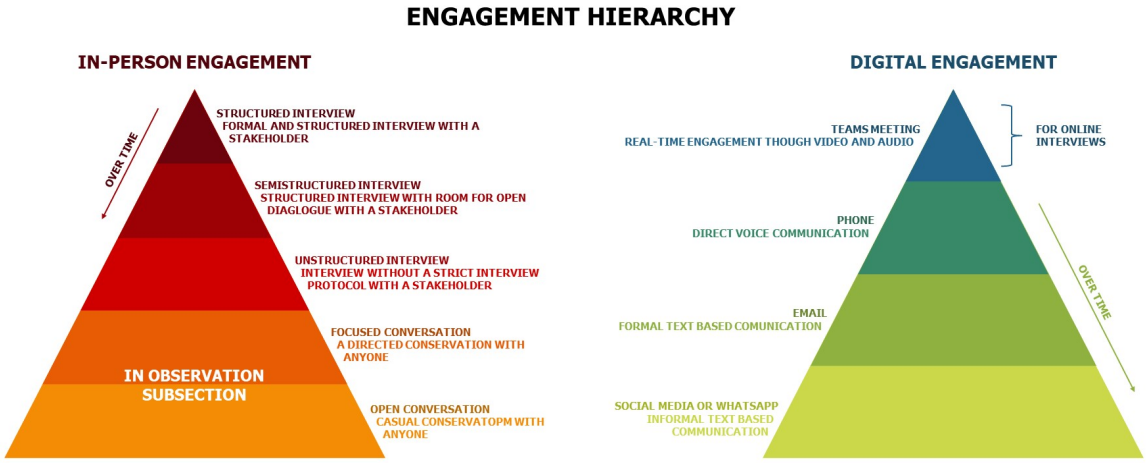

Figure 2.3: Engagement Hierarchy

2.3.3. Engaged Stakeholders

This chapter subsection presents the list of interviews we have conducted. The complete list of interviews can be found in Table 2.1. The table includes the sector under which the organization falls and the interview's date.

ID	Name of Organisation	Sector	Interview Date
1	Green Phenix	Recycling Organization	2024-02-06
2	Selikor	Waste Management Organization	2024-02-07
3	Green Force	Recycling Organization	2024-02-08
4	van den Tweel	Retail Importer	2024-02-11
5	Kunuku Man	Plastic Cleanup Organization	2024-02-13
6	TUI	Travel Agency	2024-02-14
7	Firgos	Retail and Industrial Importer	2024-02-15
8	Green Kidz	Environmental Education	2024-02-16
9	Ministerie van GMN	National Government	2024-02-19
10	Ministerie van GMN	National Government	2024-02-19
11	Ministerie van GMN	National Government	2024-02-19
12	Selikor	Waste Management Organization	2024-02-19
13	Green & Clean Curaçao	Environmental Awareness	2024-02-21
14	Parliamentarian	Political Representative	2024-02-21
15	Curaçao Bottles	Retail Importer	2024-02-23
16	Curaçao CleanUp	Plastic Cleanup Organization	2024-02-23
17	UNIEK Curaçao	Nature Conservation	2024-02-26
18	Sea Turtle Conservation Curaçao	Environmental Awareness	2024-02-29

Table 2.1: List of Interviews

All interviews involve a different person, with one exception: the representative of Curaçao Bottles and Curaçao CleanUp is the same person, as this person is involved with both organizations.

2.3.4. Interview Methodology

This section will discuss how we plan to conduct interviews for our research.

Why Interviews?

We chose interviews as a research method because they allow us to gather detailed information about the plastic pollution system. We aim to speak with people who are experts on plastic pollution in Curaçao and hear about their experiences and insights. Interviews allow us to ask follow-up questions and gain a deeper understanding of the topic. Also, it will enable researchers to ask questions directly related to the research objectives of this thesis. Finding data covering the specific information required to answer the research question is complicated. Given the complexity of our research, interviews are an effective way to collect comprehensive data.

The chosen interview style is semi-structured [63]. This means that we have a set of questions prepared. Still, we also remain flexible during the interviews and have room for a more informal conversation about the topic at the end, where the interviewee has the time to express any other thoughts they might still have. This style suits our research because it allows us to explore new ideas and topics that may arise organically during the interviews but ensures the most critical issues are still touched upon.

2.4. Interviews Setup

In this section, we delve into the interviews to gain valuable insights from stakeholders involved in plastic pollution management in Curaçao. We will discuss the interview process or protocol and the key takeaways. The interviews served as a foundation of our research, providing firsthand perspectives and experiences from a diverse range of stakeholders representing various sectors and interests.

The selection of interview participants was guided by the need to capture a comprehensive spectrum of stakeholder perspectives crucial to understanding the dynamics of plastic pollution management. The previous section provides a thorough explanation of the stakeholder selection process. Diverse representation ensured that our interviews were multifaceted and that all perspectives from within the plastic pollution issue system were considered.

2.4.1. Interview Protocol

The interview protocol used for the study, "Plastic Pollution on Curaçao," was designed to facilitate a thorough exploration of stakeholder perspectives regarding plastic pollution management within the unique context of Curaçao. This protocol provided a structured framework to guide discussions during interviews, ensuring the collection of diverse and thorough insights from participants. Before starting interviews, participants were provided with detailed information about the research objectives and the intended use of interview data, emphasizing the voluntary nature of their participation and their right to withdraw from the study at any time without providing a reason. A copy of the Interview Protocol can be found in Appendix A.

Interviews were conducted with participants' informed consent, each lasting approximately 30 to 40 minutes. During interviews, audio recordings were made for research purposes, and participants were assured of the confidentiality and secure storage of their recorded data at TU Delft, accessible only to authorized research team members. The protocol also outlined obtaining informed consent, including producing anonymized summaries for public dissemination upon project completion. This rigorous protocol underwent review and approval by a Data Steward and the Ethics Committee from the TU Delft to ensure compliance with ethical guidelines and data protection standards. A copy of the Informed Consent form can be found in Appendix B.

The interviews were conducted in person at the office or in a public space in Curaçao. In short, the interviewee and the interviewer would meet at a location, have an informal greeting, and discuss the latest developments in Curaçao. After introducing myself and the research and receiving consent to interview and record the stakeholder, we would dive into the first questions in the interview protocol and go through the movements of a semi-structured interview. At the end, we exchanged contact details so that either party could contact the other with further questions.

After the interview, the conversation would be summarized, and the summary would be shared so the interviewee could confirm that they agreed with and recognized everything mentioned in the summary. Throughout all the summaries, topics were pulled out, and the data was labeled; this was done to allow for easier comparison and analysis. The analysis and interpretations can be found in Chapters 6 and 7.

2.4.2. Interview Questions

The interview questions are designed to capture information contributing to understanding plastic pollution challenges and management strategies specific to Curaçao. The list of questions is designed to answer the research questions collectively. Participants were asked about their familiarity with plastic pollution issues, how they defined the problem, and their organizational involvement in addressing plastic pollution on the island. Additionally, questions explored the roles of the participants within the plastic pollution system, currently employed policy instruments, and participants' perspectives on the effectiveness of current and possible new approaches. The questions aimed to capture diverse viewpoints and gather valuable insights to inform policy development and intervention strategies to mitigate plastic pollution in Curaçao and similar contexts. A copy of the questions can be found in Appendix A.

When designing the interview protocol and determining the interview questionnaire, it is essential to consider how the wording of the questions can influence an interviewee's responses. Therefore, questions are carefully discussed and tested with experienced interviewers to ensure they are phrased as neutrally as possible. Additionally, the order of the questions is thoughtfully structured: the interview begins with broad topics, such as the societal challenges faced in Curaçao, and progressively delves deeper into specific issues like plastic pollution. Experts recommend this order because it is easier for interviewees to narrow their focus on particular topics than to broaden it. Starting with broader questions also helps reduce potential biases and allows for a more natural flow of an interview.

Aligning all questions with the research objectives is crucial. This ensures that every question contributes to answering one of the research objectives, making the interview process more relevant and engaging.

Identifying the active stakeholders within the system is not just a step in the process but a key to understanding the system. It also plays a crucial role in selecting whom to interview, ensuring our research is comprehensive and insightful. We contacted those respective stakeholders if an organization was mentioned twice or more times in earlier interviews. These organizations are listed in Figure ef fig: PI Curacao and Table ef tab: List of Uncompleted Interviews or ef tab: List of Interviews.

We proactively prepared additional questions to gather information that was particularly relevant to specific stakeholders. If a project associated with a stakeholder was mentioned in a previous interview or discovered through online research, we brought it up during the interview to discuss their experience and views on the topic. For instance, Kunukuman mentioned a pilot project testing whether a financial incentive would encourage residents to return bottles to designated deposit spots. During this discussion, he noted that Selikor and Curaçao Bottles were involved in the pilot project and suggested some topics to discuss with them.

Two additional topics, not included in the initial list of questions, naturally arose consistently in the first four interviews. These topics, broadly interpreted as including state-level bureaucracy and a deposit system for plastic, were crucial in understanding the challenges and opportunities within the waste management system. When time permitted, these topics were also addressed in subsequent interviews. These topics will be discussed in more detail in subsection 7.3.

2.4.3. Interview Challenges

In this subsection, we discuss the challenges encountered during the interview period and reflect on the strategies employed to mitigate these challenges. By addressing these challenges, we enhance the credibility and rigor of our research process, ensuring the validity and reliability of our interview findings.

Logistical Challenges

One significant logistical challenge was coordinating interview schedules with participants. Given stakeholders' busy and varied schedules, arranging interviews at mutually convenient times was often difficult. To address this, we employed flexible scheduling and utilized various communication tools such as phone calls, video conferencing, and in-person meetings. This flexibility helped accommodate participants' availability and ensured a higher response rate.

The interviews were recorded after explicit consent to reduce the work that had to be carried out during them so that the focus could be on the interviews and the discussion.

Methodological Challenges

Ensuring the consistency and reliability of interview data was a key concern. Different interviewers might interpret responses differently, leading to potential biases. To mitigate this, we developed a standardized interview guide with questions and prompts. All interviewers used this guide to ensure consistency in the questions and data collected.

Contextual Challenges

Contextual challenges included navigating sensitive topics, such as illegal dumping and enforcement issues, which some participants might have hesitated to discuss openly.

The close-knit nature of the community also posed challenges, as participants were often familiar with each other. This familiarity sometimes led to a reluctance to discuss issues openly due to fear of repercussions. Emphasizing the confidentiality of responses and explaining the importance of candidness for the study's success helped alleviate some of these concerns.

Impact on Interview Outcomes and Data Quality

Despite these efforts, the challenges inevitably impacted the interview outcomes and data quality. Scheduling difficulties occasionally led to shorter interviews, potentially limiting the depth of responses.

However, by being flexible and accommodating, we maximized the opportunities for engagement.

While logistically necessary, the reliance on remote interviews sometimes affected the rapport between interviewers and participants, potentially influencing the depth of discussion. However, video calls helped maintain a personal connection, mitigating this issue to some extent.

Stakeholder Limitations

While the stakeholder engagement process was comprehensive, we encountered challenges with specific stakeholders who could not participate in interviews or respond to inquiries due to conflicting schedules and other commitments. This variability in stakeholder availability posed a limitation, potentially impacting the depth of insights obtained from these actors. To maximize stakeholder participation, we implemented proactive follow-up measures to address these challenges, including personalized outreach and flexible scheduling options.

The stakeholders we could not reach are outlined in table 2.2. To reduce the impact of the missed engagement, we interviewed at least two other stakeholders from the same stakeholder sector. This way, we could make sure different organizations covered the perspectives of these organizations.

#	Name of Organisation	Sector	Status
1	Curaçao Tourist Board	Tourist Representative	No Further Communication
2	Limpi Recycling	Recycling Organization	Questions sent, no response
3	FUSE Caribbean	Recycling Organization	Questions sent, no response
4	The Great Plastic Bake Off	Recycling Organization	Questions sent, no response
5	Kooyman	Retail Importer	Unavailable

Table 2.2: List of Uncompleted Interviews

The impact of limited stakeholder participation on our research underlines the importance of strategies in stakeholder engagement. Despite these challenges, the enthusiastic involvement of other stakeholders across various sectors helped mitigate these limitations, ensuring that a diverse range of perspectives was represented in our research. Incorporating early engagement strategies and fostering ongoing communication with stakeholders could enhance future research efforts in similar contexts, promoting more inclusive and robust stakeholder engagement processes.

2.5. Ethical Considerations

Ethical considerations are important in our research. We ensure that we conduct our study with the utmost respect for moral principles.

2.5.1. Informed Consent

Obtaining informed consent is a critical aspect of our research. Before conducting interviews, we will provide interviewees with all the necessary information about the research, its purpose, and how their data will be used. They will have the opportunity to ask questions and provide their consent to participate voluntarily. Before publishing the thesis, anything used from their interview will be revisited with the interviewees so they can retract or change any statements if they see fit. We also informed them that they could withdraw from the study without consequences.

2.5.2. Data Confidentiality

We take data confidentiality seriously. All data collected during interviews will be treated with the highest level of privacy. Any information will only be used for research purposes, and any insights from interviews will be revisited with the interviewees before publishing the thesis. We ask for their explicit consent to share the identity and role of the interviewees.

2.6. Research Flow and Chapter Connections

This research is structured to provide a comprehensive understanding of the plastic pollution system in Small Island Developing States (SIDS), with a particular focus on Curaçao. The methodology is designed to flow logically through the chapters, establishing a solid foundation from existing literature and progressing through empirical fieldwork to draw insightful conclusions.

Chapter 3 introduces the concept of SIDS, outlining their unique vulnerabilities and characteristics. This foundational knowledge is crucial for contextualizing the subsequent discussions on policy tools and plastic pollution.

Chapter 4 focuses on the available policy tools for addressing environmental challenges in SIDS. It critically reviews existing frameworks and discusses their applicability to Curaçao's specific context. This chapter sets the stage for developing a tailored framework for understanding plastic pollution.

Chapter 5 synthesizes the literature on plastic pollution pathways, culminating in the design of a framework that specifically addresses the dynamics of plastic pollution in SIDS. This framework provides a structured lens through which to analyze the complexities of plastic waste management in Curaçao.

The insights gained from these chapters inform the empirical phase of the research, which involves fieldwork. During this phase, stakeholder interviews challenge and refine the established literature. The interviews delve into specific topics related to SIDS, including the effectiveness of policy tools and the applicability of the developed frameworks.

These chapters are interconnected, as the findings from the literature review serve as a basis for the interview questions and discussion. The interview data validates and critiques existing frameworks, ensuring that the conclusions drawn reflect theoretical and practical perspectives.

Figure 2.4 visually represents the connections between the topics and the overall progression from literature to fieldwork and, ultimately, to the conclusions.

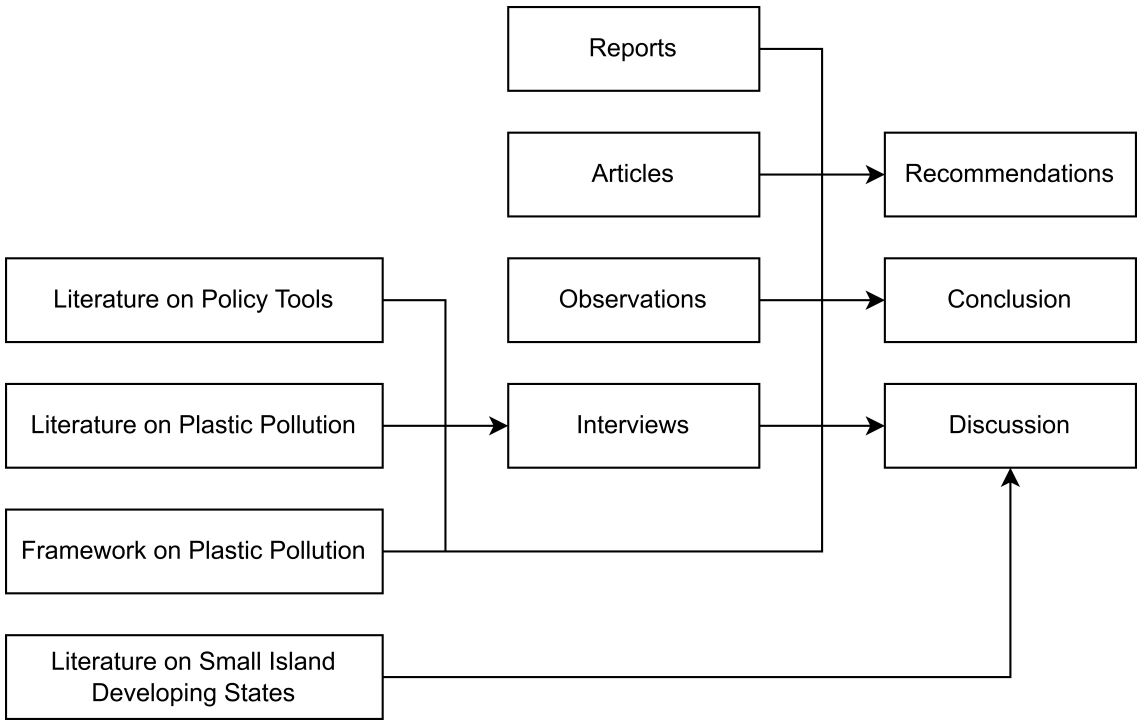

Figure 2.4: Research Flow

3

Small Island Developing States, Institutional Transplantation and Culture

Small Island Developing States (SIDS) face similar challenges because they share common characteristics such as their remote geographic locations, delicate ecosystems, and economic susceptibilities, as recognized by the United Nations [40]. The distinction of these 58 states in this group serves to pinpoint states in need of support when designing sustainable strategies to address these shared issues [11, 25]

In this chapter, we explore the concept of Small Island Developing States (SIDS) and the intricacies surrounding its definition within the global landscape [39]. We go into the specific challenges that define SIDS and explore their vulnerabilities.

We will also touch upon institutional transplantation, a strategic approach many SIDS employ to grapple with these common challenges. We will discuss the significance of institutional transplantation in the context of sustainable development, its practical application through a relevant case study, and its implications for SIDS' policy enhancement [45].

Our exploration aims to reveal the complexities surrounding institutional transplantation in SIDS. Through this chapter, we seek to understand the methods and feasibility of transplanting institutions or policies from one SIDS to another within this subgroup, ultimately contributing to policy effectiveness and promoting resilience in the face of shared challenges.

3.1. Defining Small Island Developing States

Small Island Developing States (SIDS) form a unique category of nations. Placing this subgroup within the broader context of all countries worldwide is essential to comprehend this subgroup. Initially, we can identify a subset of island nations among all countries, characterized by their geographical isolation on islands, such as Australia or Great Britain. Within this subset of island states, we can further narrow it down by selecting the smallest island nations, such as the Bahamas or Nauru. We must exclude the most developed states when refining our focus to Small Island Developing States (SIDS). As a result, we are left with 58 states, as recognized by the United Nations [40].

Interestingly, the states on this list exhibit diversity. They vary in size, with some not particularly small

(e.g., Papua New Guinea), in geographical characteristics (e.g., Suriname, not an island), in levels of development (e.g., Singapore), and in whether they align precisely with the definition of SIDS as per the Oxford English Dictionary (e.g., Curaçao) [72]. SIDS is dispersed across different regions worldwide, including the Caribbean, Pacific, and Indian Ocean.

In 1975, the ECOSOC recognized the challenges in creating a definitive list of geographically disadvantaged island countries [29]. As a result, no such list was compiled. Consequently, there exist seven distinct classifications for Small Island Developing States (SIDS), each encompassing a varying number of states, ranging from 18 to 58 states within these classifications.

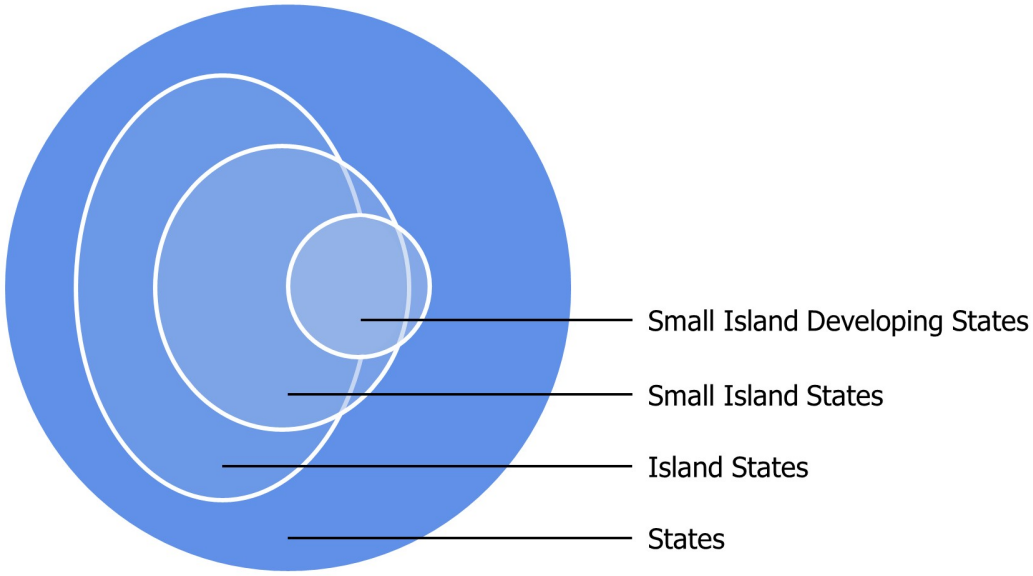

Figure 3.1: Representation of the Small Island Developing States subgroup of States

3.1.1. Characteristics of SIDS

The first time the international community formally recognized SIDS was at the Rio Earth Summit 1992. Here, its environmental and ecological vulnerabilities were recognized, and the agenda stated:

> ”Small island developing states and islands supporting small communities are special cases for both the environment and development. They are ecologically fragile and vulnerable. Their small size, limited resources, geographic dispersion, and isolation from markets place them at a disadvantage economically and prevent economies of scale” [64]

Since then, the use of the term has evolved. Nowadays, researchers agree on the following common characteristics of SIDS:

- **Small Size and Isolation:** SIDS are small, isolated islands, which limits resources and market access.
- **Resource Dependency:** They rely heavily on international trade due to limited natural resources.
- **Population Pressure:** High population density pressure resources and infrastructure.
- **Natural Disaster Vulnerability:** Prone to natural disasters like hurricanes and rising sea levels.
- **Fragile Ecosystems:** Sensitive environments require sustainable development.
- **Tourism and Aid Dependence:** Economies rely on tourism and aid, making them vulnerable to external factors.

For our case study, we will analyze Plastic Pollution in Curaçao. Curaçao shares these characteristics,

is an Associate Member of United Nations Regional Commissions, and is included in most classifications of SIDS [109]. We see that Curaçao is a textbook example of a SIDS. Therefore, we hope to develop recommendations fitting for Curaçao and other SIDS.

3.1.2. Challenges of SIDS

Now that we understand what states are Small Island Developing States (SIDS), we also recognize other commonalities. These states encounter similar challenges stemming from their distinct geographical, environmental, and economic characteristics. The international community has widely recognized these challenges, underscoring the need for strategies to address them and their vulnerabilities.

Vulnerability, like resilience, is a key term when discussing SIDS and its challenges. Vulnerability underscores the heightened susceptibility of SIDS to external influences due to their geographical and economic characteristics. Resilience represents their capacity to adapt, recover, and thrive despite vulnerabilities. Recognizing and addressing these vulnerabilities while building resilience are critical priorities in the sustainable development of SIDS.

The key challenges faced by SIDS include the following aspects:

1. **Geographical Constraints:** SIDS are characterized by their tiny landmass, limited territorial waters, and geographic dispersion. These factors restrict the availability of arable land, freshwater resources, and potential for infrastructure development.
2. **Economic Vulnerability:** Due to their small size and limited resource base, SIDS often experience economic vulnerabilities. They heavily depend on a narrow range of industries, such as tourism, agriculture, or fishing, making them susceptible to fluctuations in global markets.
3. **Environmental Fragility:** SIDS frequently host fragile ecosystems, including coral reefs and coastal areas. These environments are susceptible to climate change, rising sea levels, and human activities, leading to ecosystem degradation and loss of biodiversity.
4. **Climate Change Impacts:** SIDS are disproportionately affected by climate change, experiencing more frequent and severe weather events like hurricanes, cyclones, and sea-level rise. These events pose immediate threats to infrastructure, livelihoods, and ecosystems.
5. **Resource Scarcity:** Limited freshwater resources and arable land are common challenges in SIDS. Overexploitation of these resources can lead to water scarcity, soil erosion, and decreased agricultural productivity.
6. **Dependence on Imports:** SIDS relies heavily on imported goods, including food and energy. This dependence makes them vulnerable to global price fluctuations and supply chain disruptions.
7. **High Energy Costs:** Geographic isolation often results in high transportation costs for fuel and energy sources. This contributes to elevated energy prices, affecting both households and industries.
8. **Healthcare and Education:** Access to healthcare and education can be limited in SIDS, especially on remote islands. This can lead to disparities in healthcare outcomes and educational opportunities.
9. **Dependency on Tourism:** Tourism is a significant source of revenue for many SIDS. However, it also exposes them to economic shocks during global crises, as demonstrated by the COVID-19 pandemic.
10. **Social Resilience:** Building social resilience and adaptive capacity is crucial for SIDS to respond effectively to external challenges, including disasters and economic uncertainties.

These challenges collectively present formidable obstacles to sustainable development. Circumstances and characteristics are the leading causes of these challenges, and the international community can provide support and solutions that help SIDS pursue resilience, economic stability, and environmental sustainability.

This paper on Plastic Pollution in Curaçao will require navigating various challenges. Geographical constraints, economic vulnerability, environmental fragility, resource scarcity, dependence on imports,

and social resilience will be key to navigating Curaçao to a sustainable and clean future. When designing the recommendations and uncovering the core problems when tackling plastic pollution, these challenges are expected to be part of the problem and the solution. For example, we can understand that geographical, economic, environmental, and resource constraints are at the issue's core. In the interviews, we will check if the stakeholders recognize these challenges.

When forming recommendations, we must consider the natural challenges that SIDS face.

3.2. Institutional Transplantation

This chapter focuses on Institutional Transplantation. Institutional transplantation is the conscious effort to modify existing institutions within a society by adopting new structures, practices, or norms from another country or context. This involves borrowing successful frameworks, policies, or practices and implementing them in a new setting to achieve similar success [47].

In the context of Small Island Developing States (SIDS), institutional transplantation is the adoption of institutional frameworks, policies, and practices from external sources to address local challenges. Given SIDS' unique vulnerabilities and constraints, such as limited resources, geographical isolation, and susceptibility to environmental hazards, transplanting institutions that have proven effective in other contexts can be helpful when working on these pressing issues.

3.2.1. Relevance for SIDS

Institutional transplantation is particularly relevant and significant for SIDS for four reasons:

1. **Adaptation to Global Standards:** SIDS often face pressure to align their institutions with global standards, especially in areas like environmental management, disaster resilience, and economic development. Institutional transplantation allows them to quickly adopt best practices without the lengthy process of developing them from scratch.
2. **Addressing Capacity Gaps:** Many SIDS lack the technical expertise and resources to develop robust institutions independently. By adopting institutions from other countries, they can leverage existing knowledge and frameworks to fill these capacity gaps.
3. **Enhancing Resilience:** The unique challenges of SIDS, such as climate change and natural disasters, require resilient and adaptive institutional frameworks. Transplanting institutions that have been tested and refined in other contexts can help SIDS build more resilient systems capable of withstanding these challenges.
4. **Facilitating Economic Development:** Economic development in SIDS is often hampered by their small size and limited resources. Institutional transplantation can introduce more efficient and effective economic policies and regulatory frameworks, fostering growth and development.

SIDS must maintain respect within the international community and remain proactive on globally relevant issues. This is because SIDS are more dependent on other nations than larger, more self-reliant countries or countries that predominantly rely on tourism, trade, or exports for economic stability.

3.2.2. Challenges

Despite its potential benefits, institutional transplantation in SIDS faces several significant challenges and obstacles:

1. **Cultural Incompatibility:** Ensuring that transplanted institutions are culturally compatible with the host society is a significant challenge. Institutions that work well in one context might face resistance or fail in another due to deep-rooted cultural differences.
2. **Goodness of Fit:** The success of institutional transplantation heavily depends on the "goodness of fit" between the donor and host societies. Even slight differences can lead to significant implementation issues.
3. **Adaptation and Implementation:** The processes of adaptation and implementation can be more challenging than anticipated. Misalignment in these processes often leads to failure or suboptimal

performance of the transplanted institutions.

Thus, translating institutions has to be done properly. For our case, considering historical and social context will be necessary as the historical and social contexts in Curaçao are specific.

3.2.3. Opportunities

In Small Island Developing States (SIDS), institutional transplantation offers significant advantages despite challenges:

These nations can accelerate development by adopting proven institutions, bypassing stages and achieving progress efficiently. It's cost-effective compared to creating new institutions, saving time and money. Importing robust governance structures enhances resilience against environmental, economic, and social pressures, securing a more stable future.

When exploring specific potential areas for institutional transplantation in Curaçao, various domains are categorized in Table 3.1 [46]. Although the constitutional aspects of plastic pollution in Curaçao are not within the scope of this case, the operational and policy domains hold significant relevance. Identifying effective procedures, roles, and suitable formal regulations that synergize well could benefit the island and its governance system.

Level of Action	Formal Relations	Informal Practices
Constitutional level	Legal systems	Value orientations
Level of policy area	Formal regulations	Informal codes
Operational level	Procedures	Roles

Table 3.1: Different domains of institutional transplantation

3.2.4. Cultural and Contextual Factors for Institutional Transplantation

Cultural and contextual factors heavily influence the success of institutional transplantation. Key considerations include:

1. **Cultural Sensitivity:** The transplanted institutions must be adaptable to the local cultural context. Institutions that ignore or clash with local traditions and values will likely face resistance and fail.
2. **Local Involvement:** Engaging local stakeholders in the transplantation process can increase acceptance and ensure the new institutions are appropriately tailored to the local context.
3. **Incremental Adaptation:** Gradual implementation and continuous adaptation to local feedback can improve the success rate of transplanted institutions. This approach allows for adjustments based on real-world challenges and cultural nuances.

In conclusion, institutional transplantation offers a promising pathway for SIDS to address their unique challenges. By carefully considering cultural and contextual factors, these nations can adopt and adapt external institutions to foster development and enhance resilience. In this research, we will ensure that if inspiration is taken from policy from elsewhere, we will advise for local involvement, incremental adaptation, and cultural sensitivity. If the culture of Curaçao is not ready to tackle the plastic pollution issue yet, we will incorporate this into our advise.

3.3. Culture and its Role in Policy

Culture is a complex and multifaceted concept that profoundly influences societal norms, values, behaviors, and institutions within a community or nation. It encompasses various factors shaping how people perceive the world, interact with each other, and organize themselves politically, socially, and economically. This research investigates the role of culture within the system. Therefore, an introductory section introduces the definition within the literature and the role it can have in policy decisions.

Culture can be defined as the collective set of beliefs, customs, traditions, language, arts, and social

behaviors that characterize a particular group of people or society. It is transmitted across generations through socialization and plays a crucial role in shaping identities and fostering a sense of belonging among individuals [73].

3.3.1. Elements of Culture

Culture encompasses various elements that together define and shape societal norms and behaviors [59]:

- **Beliefs and Values:** Core principles and moral frameworks that guide decision-making and behavior.
- **Social Norms:** Accepted patterns of behavior and interaction within a community.
- **Language and Communication:** Verbal and non-verbal communication styles that reflect cultural nuances.
- **Arts and Expressive Forms:** Literature, music, visual arts, and other forms of creative expression.
- **Traditions and Rituals:** Ceremonies, celebrations, and customary practices that uphold cultural heritage.

3.3.2. Role of Culture in Policy

Understanding how culture influences policy is essential for effective governance and policymaking. Culture plays a role in all stages of policy development. During policy formulation, cultural values and norms shape public attitudes toward various policy issues, influencing what policies are deemed acceptable or necessary. When implementing policy, cultural factors affect how policies are executed. Local customs, social hierarchies, and community dynamics can impact the effectiveness of policy measures and should be considered during formulation.

The impact of policy is also influenced by culture; cultural context determines how policies are received and interpreted by different segments of society. Policies that align with cultural values are more likely to gain public support and achieve desired outcomes.

To assess the role of culture in policy, policymakers and analysts can consider multiple factors, such as:

- **Historical Context:** Understanding how historical events and cultural evolution have shaped societal values and norms.
- **Public Opinion and Attitudes:** Investigating public perceptions and attitudes toward specific policy proposals.
- **Stakeholder Engagement:** Consulting with diverse stakeholders, including cultural and community leaders, to incorporate local perspectives into policy development.

Incorporating cultural considerations into policymaking fosters inclusivity, enhances policy relevance, and promotes sustainable development. Recognizing the dynamic interplay between culture and policy is essential for crafting effective, context-sensitive governance strategies that resonate with diverse populations.

In this research, culture was a key consideration. Attitude and tradition in Curaçao are particular and present in the plastic pollution system. Due to a history of poverty and suppression by the Dutch and an in-the-day culture, policy is frequently focused on the short term. Tackling plastic pollution requires a long-term focus, so we will make sure to discuss this in the interviews with the stakeholders and make an effort to grasp the culture of Curaçao as much as possible.

In Chapter 7, the findings presented in Chapter 6 are analyzed. This interpretation is necessary due to existing ambiguity among stakeholders and residents regarding the definition and elements of culture. While an anthropologist might explore diverse perspectives on culture and accept all perspectives as true, this study benefits from having a clear definition and some key elements and considerations relevant to the context.

3.4. Relevance of this chapter for the Research

In this chapter, we have explored the defining characteristics and vulnerabilities of Small Island Developing States (SIDS), establishing a foundational understanding crucial for our plastic pollution research. SIDS face unique challenges due to their geographic isolation, economic dependencies, and environmental fragility. These factors not only complicate policy development but also influence the effectiveness of environmental governance.

As we proceed in this research, we will specifically test whether SIDS share common barriers to formulating effective policies to reduce plastic pollution. By examining the vulnerabilities outlined in the literature, we aim to identify prevalent issues that transcend individual island contexts.

One significant finding is that the need for immediate solutions is greater than one might initially perceive, mainly due to the economy's dependency on tourism and the detrimental effects of plastic pollution on this sector. Addressing these environmental challenges is an ecological imperative and a vital economic necessity.

An essential takeaway from this chapter is the importance of context in crafting effective policy. Cultural factors are crucial in this discourse, shaping public attitudes toward plastic use and waste management. This theme will be a central focus of our fieldwork and interviews. To facilitate meaningful discussions on this topic, we must start with a shared understanding of what culture entails, as recommended by an anthropologist.

By leveraging the insights gained from existing literature, we will assess the extent to which these common vulnerabilities manifest in the challenges faced by SIDS in addressing plastic pollution. Ultimately, our findings will contribute to a broader understanding of how these barriers impact policy formulation and implementation across similar island contexts, reinforcing the need for localized yet collaborative strategies in tackling environmental challenges.

4

Government Intervention through Policy

Plastic pollution is a critical environmental issue affecting global ecosystems and human health. For small island nations like Curaçao, the impact of plastic pollution is particularly severe due to their limited landmass and resources.This chapter explores the role of government steering in managing plastic pollution, examining various forms of intervention, the underlying reasons for government action, and the different stages and instruments involved in policy-making.

This discussion is important because it helps understand the complexities of policy formulation and implementation in (environmental) governance. By understanding these processes, motives, and methods, we can better navigate the challenges and opportunities for mitigating plastic pollution in Curaçao.

The chapter provides an overview, starting with the different forms of government steering and the reasons for government intervention, considering general principles and Curaçao-specific factors. Following this, the chapter outlines the stages of policy development and the analytical approaches for crafting effective policies. It also examines the available policy instruments and implementation challenges.

Understanding the reasons and methods for government intervention is crucial for achieving the research objectives of this thesis, which focus on identifying effective strategies for reducing plastic pollution in Curaçao. This chapter analyzes government interventions and policy frameworks and enhances our understanding of how targeted actions can lead to significant social and environmental improvements.

In the previous chapter, we explored Small Island Developing States (SIDS), Institutional Transplantation, and the influence of culture on an island and policy. This chapter builds upon that theoretical foundation and investigates governmental interventions. The next chapter will show a framework for understanding plastic pollution in SIDS. These three chapters collectively establish the theoretical basis of this research. The findings from fieldwork combined with this theoretical basis will result in comprehensive conclusions.

4.1. Government Steering

In the literature on policy, there are five main reasons for government intervention [6]:

1. **Prevention of Monopolies and Cartels**: Ensuring fair competition and consumer choice.
2. **Production of Public Goods**: Providing goods and services that are non-excludable and non-rivalrous in consumption.
3. **Regulation of External Effects**: Addressing negative externalities such as pollution.
4. **Control of Merit Goods**: Ensuring the provision of beneficial goods and services under-consumed by the market.
5. **Compensation for Distribution Effects**: Redistributing resources to achieve greater social equity.

When trying to reduce plastic pollution, the primary reason for government intervention is to regulate external effects and, more specifically, manage plastic pollution to protect the local environment and the people from the damage plastics cause. The ambition of the government of Curaçao is to become circular [77] and thus wholly change how the country works with waste and plastics. This will require a complete system change.

When simplifying the methods for government steering, they can be organized into three categories [6]:

1. **Societal Self-Governance**: This approach involves communities and societies organizing themselves without direct government intervention.
2. **Interactive Governance between Government and Civil Society**: This method fosters collaboration between the government, civil society organizations, and the market.
3. **Market Mechanisms**: Governments influence behavior through economic incentives and regulations.

In Curaçao, we find evidence for interactive governance between government and society. Some initiatives, such as battling the illegal dumping of plastic, prove that societal self-governance will not solve this issue. Using the market as the main method to solve this issue is cost-effective but ineffective; it requires fewer resources than interactive governance but usually creates less consensus and less comprehensive solutions.

4.2. Crafting Policy

Policy development unfolds through structured stages of formation, implementation, and evaluation. These stages ensure policies effectively address societal challenges and achieve desired outcomes.

4.2.1. Policy Development Stages

Policy development follows structured stages encompassing formation, implementation, and evaluation, pivotal for addressing societal challenges and achieving desired outcomes [6, 42].

Policy Formation

Policy formation begins with agenda setting, where issues are identified and prioritized for policy consideration. This stage involves research and the drafting of potential policy solutions [6]. Ultimately, decisions are made on which policies to adopt based on their feasibility and expected impact. As mentioned in Chapter 1, the government has decided Curaçao will transition towards a circular economy [77].

Policy Implementation

Policy implementation involves executing formulated policies through administrative actions, resource allocation, and detailed operational planning. This stage ensures that policies are effectively implemented to achieve the intended outcomes. In Curaçao, specific initiatives are currently implemented

as part of government policy. For instance, until recently, the Government of Curaçao subsidized Green Kidz to promote environmental awareness among students.

Policy Evaluation

Policy evaluation assesses the effectiveness and impact of implemented policies. By measuring against predefined objectives, this stage determines whether policies have successfully addressed societal challenges and achieved desired outcomes.

4.2.2. Policy Instruments and Behavior Influence

According to Van Den Doelen, policy instruments can be broadly categorized into three main types [6, 27]:

1. **Communicative Instruments**: These instruments focus on information dissemination and persuasion. They aim to raise awareness, educate, and influence public perception and behavior through communication strategies. Examples include public campaigns, educational programs, and outreach activities to promote environmentally friendly practices or health awareness.
2. **Economic Instruments**: This category includes financial incentives and disincentives designed to influence behavior through economic means. Financial incentives such as subsidies, tax credits, or grants stimulate desired behaviors, such as renewable energy adoption or waste reduction. Conversely, disincentives like taxes, fines, or penalties discourage undesirable behaviors, such as pollution or excessive resource consumption.
3. **Legal Instruments**: Legal instruments involve regulations, laws, and enforcement mechanisms established by governments to mandate or restrict certain behaviors. Regulations set standards, requirements, and prohibitions to protect public health, safety, and the environment. Enforcement ensures compliance through inspections, sanctions, and legal consequences for non-compliance.

These instruments influence behavior either through [6]:

- **Stimulating**: They encourage or promote desired behaviors by providing incentives (e.g., subsidies for renewable energy) or by making it easier to adopt certain practices (e.g., streamlined permit processes for environmentally friendly technologies).
- **Repressing**: They discourage or deter undesirable behaviors by imposing costs (e.g., taxes on carbon emissions) or legal constraints (e.g., regulations on pollutant discharge limits). Repressive measures aim to change behavior through penalties or restrictions on activities that harm public welfare or the environment.

These instruments influence behavior by stimulating desired behaviors through incentives or repressing undesirable behaviors through disincentives and legal constraints.

In the specific context of plastic pollution, Alpizar identifies three critical areas for policy focus within the plastic chain: the plastic industry, consumption of plastics, and disposal of plastics [2]. Each location presents unique challenges and opportunities for policy intervention to reduce plastic pollution.

For a comprehensive understanding of potential policies, Figure 4.1 illustrates a matrix categorizing these instruments across different sectors and their directional impact.

The figure above shows a few policy tools that illustrate the diversity of options a policymaker has when crafting policy. This is an adapted version from the books from Bovens and van der Doelen [6, 27]

4.3. Policy Implementation Challenges

One critical aspect of policy implementation is how it aligns with political intentions. This alignment can significantly influence policy outcomes and their effectiveness. Key issues in this regard include:

4.3.1. Street-Level Bureaucracy

Street-level bureaucracy refers to the pivotal role played by frontline public service workers, such as police officers, teachers, and social workers, in implementing policies at the local level. These individuals

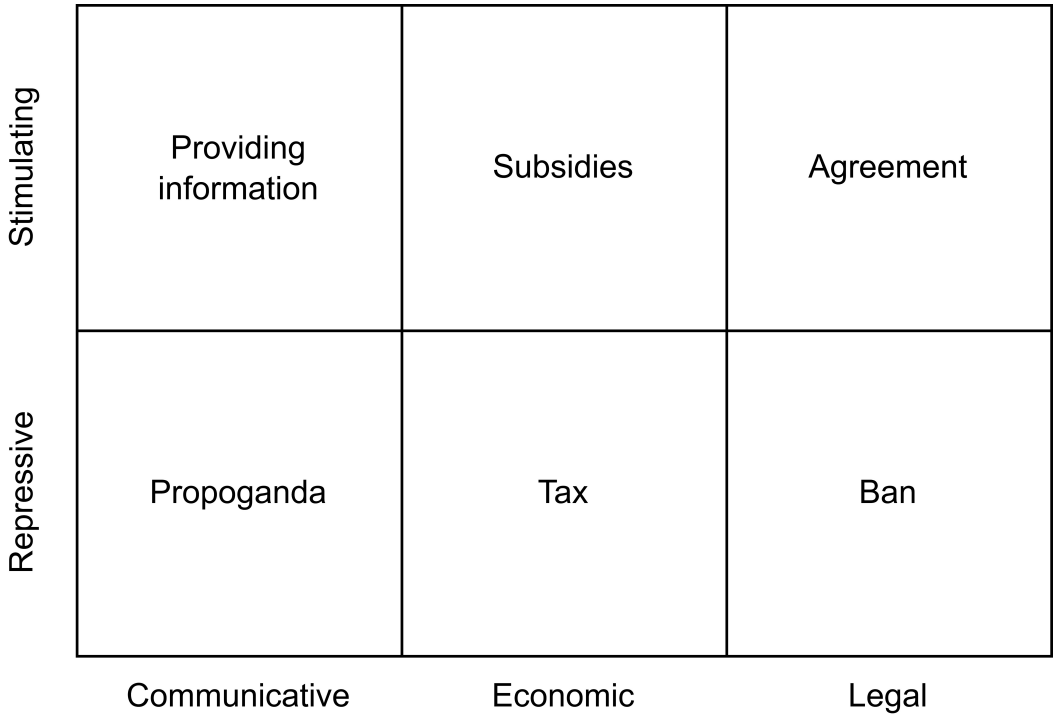

Figure 4.1: Policy Tools

often have significant discretion in interpreting and applying policies according to the specific contexts they encounter. Their decisions and actions can shape policy outcomes and directly impact citizens' experiences [58].

For example, in the context of environmental policies aimed at reducing plastic pollution in Curaçao, the environmental police are an example of a street-level bureaucrat. Their interpretation of regulations, enforcement practices, and interactions with businesses and residents can affect compliance levels and the overall success of the initiatives.

4.3.2. Calculating Citizens

The effectiveness of policies also depends on how citizens respond to them. Policies that are well-received and understood by the public are more likely to achieve their intended outcomes. Factors influencing citizen responses include the clarity of policy communication, perceived fairness, and the practical implications of compliance.

Regarding policies addressing plastic pollution, citizen response may vary based on their understanding of the environmental impacts of plastic waste and their willingness to adopt alternative behaviors such as reducing single-use plastics, participating in recycling programs, or participating in a plastic deposit system. Effective policies incorporate mechanisms to educate and engage citizens, fostering a sense of ownership and compliance with regulatory measures.

4.4. Contextual Factors

Understanding the diverse contextual factors influencing policy formation and implementation is crucial for developing effective policies. In the context of Small Island Developing States (SIDS) like Curaçao, these factors are particularly impactful due to the unique environmental, economic, and social challenges they face. The following sections elaborate on relevant contextual factors when crafting policy, structured using the well-known PESTEL framework [22].

Political Context: Political stability, government priorities, and stakeholder interests significantly im-

pact policy-making processes. In Curaçao, gaining political support and aligning with government agendas is crucial for policy adoption and sustainability. Effective policy development requires navigating political dynamics and securing endorsements from key political figures and institutions to ensure broad-based support and commitment.

Economic Context: The economic conditions of a region, including its level of development, industry presence, and financial resources, play a critical role in policy formation. Economic constraints can limit the scope of policy initiatives, while economic opportunities can provide leverage for innovative solutions. In Curaçao, balancing economic growth with environmental sustainability is essential, particularly given its reliance on tourism and the need for economic diversification.

Socio-Cultural Context: Cultural values, social norms, and community behaviors influence policies' perception and adoption. Public awareness and engagement campaigns tailored to local cultures can enhance policy effectiveness. In Curaçao, understanding and integrating socio-cultural dimensions into policy-making can foster greater community support and participation, making policies more effective and sustainable.

Technological Context: The availability and advancement of technology affect how policies are developed and implemented. In Curaçao, leveraging modern waste management technologies can enhance efforts to tackle plastic pollution, but it requires investment and technical expertise. Policies should encourage technological innovation and adoption to address environmental challenges effectively.

Environmental Context: Geographic features and location significantly impact policy outcomes. For example, SIDS, like Curaçao, faces unique challenges due to its size, isolation, and susceptibility to natural disasters. Policies must consider these geographic constraints to ensure effective implementation. Environmental policies should also focus on preserving natural resources and mitigating the impacts of climate change and natural disasters.

Legal Context: The existing legal framework shapes what policies can be enacted and how they are enforced. In Curaçao, aligning new policies with existing laws and regulations ensures coherence and smoother implementation. Legal reforms may be necessary to support new policy initiatives and to remove any legal barriers that could hinder effective implementation.

In this research, these contextual factors are thoroughly considered by engaging local stakeholders, conducting comprehensive situational analyses, and tailoring policies to the unique conditions of Curaçao. This holistic approach ensures that policies are realistic, culturally sensitive, and contextually appropriate, enhancing their likelihood of success. By incorporating the PESTEL framework, policymakers can develop more robust and practical strategies to address the complex challenges faced by SIDS like Curaçao.

4.5. Realization and Barrier Power

When deciding what policies have the most significant likelihood of solving the plastic pollution issue, the realization power of the coalition battling to end plastic pollution and the barrier power of the organization opposing the proposed changes have to be considered. If the barrier power exceeds the realization power, the policy will likely fail [6, 97].

- **Realization Power**: Realization power refers to the ability of the government and its partners to mobilize resources, gain support, and utilize expertise to implement new policies effectively. Realization power includes political will, financial resources, administrative capabilities, and public support.
- **Hindrance Power**: Hindrance power encompasses the various obstacles that impede policy implementation, including political opposition, vested interests, resource limitations, and societal resistance. These factors can delay or derail policy efforts if not adequately addressed.

For the proposed interventions to succeed, the government and cooperating organizations must possess sufficient realization power to overcome any obstacles. The realization power of these entities should be strong enough to ensure that critical organizations and stakeholders, who might otherwise hinder progress, can exert influence only on the organizing parties. Effective policy implementation

will depend on mobilizing resources, securing political and public support, and navigating or mitigating resistance from opposing forces. By balancing realization and hindrance power, Curaçao can reduce plastic pollution and promote sustainable environmental practices.

4.6. Relevance of this chapter for the Research

This chapter has examined the critical role of government intervention and policy frameworks in addressing plastic pollution in Curaçao, a small island nation with unique environmental challenges. By providing a comprehensive overview of the policy landscape, we have created a shared understanding of essential policy aspects relevant to our research.

We have clarified the necessity of government intervention and detailed the stages of policy development, from agenda setting to evaluation. This knowledge is crucial for identifying barriers within the policy process. Our findings indicate that plastic pollution is often deprioritized, resulting in insufficient attention and resources allocated to this pressing issue.

The chapter also highlights implementation challenges, particularly the influence of street-level bureaucracy—a topic explored in depth during stakeholder interviews. By incorporating this discussion alongside other theoretical frameworks, we aimed to offer a nuanced perspective on the complexities involved in policy execution.

Moreover, we examined contextual factors essential for informed policy design. These factors were rigorously investigated during fieldwork, allowing us to assess their impact on the plastic pollution system and the barriers faced. Understanding realization and barrier power is crucial, as we suspect these concepts significantly hinder the prioritization of plastic pollution in policy agendas. Limited resources affect realization power, while cultural factors contribute to elevated barrier power, complicating effective implementation.

By synthesizing these insights, we illustrate how contextual understanding and a robust grasp of the policy framework are vital for developing effective strategies to combat plastic pollution in Curaçao. This chapter lays the groundwork for subsequent discussions and recommendations, reinforcing the overall objectives of our research.

5

Plastic Pollution Framework

The challenge of mitigating plastic pollution in Small Island Developing States (SIDS) has highlighted a knowledge gap: the need for a framework that captures the unique conditions of these regions. Also, the current literature provides limited guidance on targeted intervention points, a gap this chapter aims to address by adapting an existing framework to analyze plastic pollution in Curaçao, a representative SIDS environment.

The current, broader frameworks need to account that SIDS, without a local production of plastics, relies on imports. Furthermore, the relatively significant impact of tourism on waste production should be more attention to [2]. This chapter's mission is to customize a framework that genuinely reflects the socioeconomic and environmental realities of Curaçao, providing insights into opportunities to tackle plastic pollution.

Two fundamental Material Flow Analyses (MFA) on Curaçao reveal the state of plastic use and disposal on the island. Building upon this, enhancements such as highlighting tourism's significant role in generating plastic waste, which is a sector that's critical in SIDS yet never mentioned in broader models [1, 51].

Incorporating the R-ladder and Lachman's ladder will allow us to identify and sequence intervention opportunities throughout the plastic lifecycle, calling for alternatives to the dominant yet unsustainable practice of landfilling [57, 70, 75, 113]. This chapter is a theoretical exercise and sets the stage for developing practical strategies to guide Curaçao, and SIDS in general, toward a sustainable and economically healthy future.

By the end of the chapter, a comprehensive framework is presented that reflects the realities of plastic pollution in Curaçao, guides policymakers, resonates with stakeholders, and inspires effective environmental stewardship.

5.1. Introducing the Plastic Impact Pathway Framework

The framework from Alpizar was developed to trace the journey of plastics from production to their eventual loss into marine environments. Dividing the life cycle of plastics into three stages: production, consumption, and disposal. This systematic approach helps pinpoint effective policy interventions to reduce marine plastic pollution [2]. This framework is new and one-of-a-kind; no other frameworks analyze plastic pollution in this way.

It acknowledges that much of the (marine) plastic pollution originates from developing countries. Small Island Developing States (SIDS) is a subgroup where waste management practices are diverse and

often insufficient. Alpizar recommends developing country-specific policy recommendations that consider local institutional traits. This aligns with the research objectives of this project, offering a solid starting point for our adapted framework.

This more general framework will be adjusted to suit the context of SIDS, where the absence of local plastic production and tourism's significant yet often ignored impact on waste generation calls for a new model. The following sections will justify the need for these modifications. Further, in the chapter, the framework will be adjusted to better represent the plastic flows in these regions to inform policy and intervention strategies.

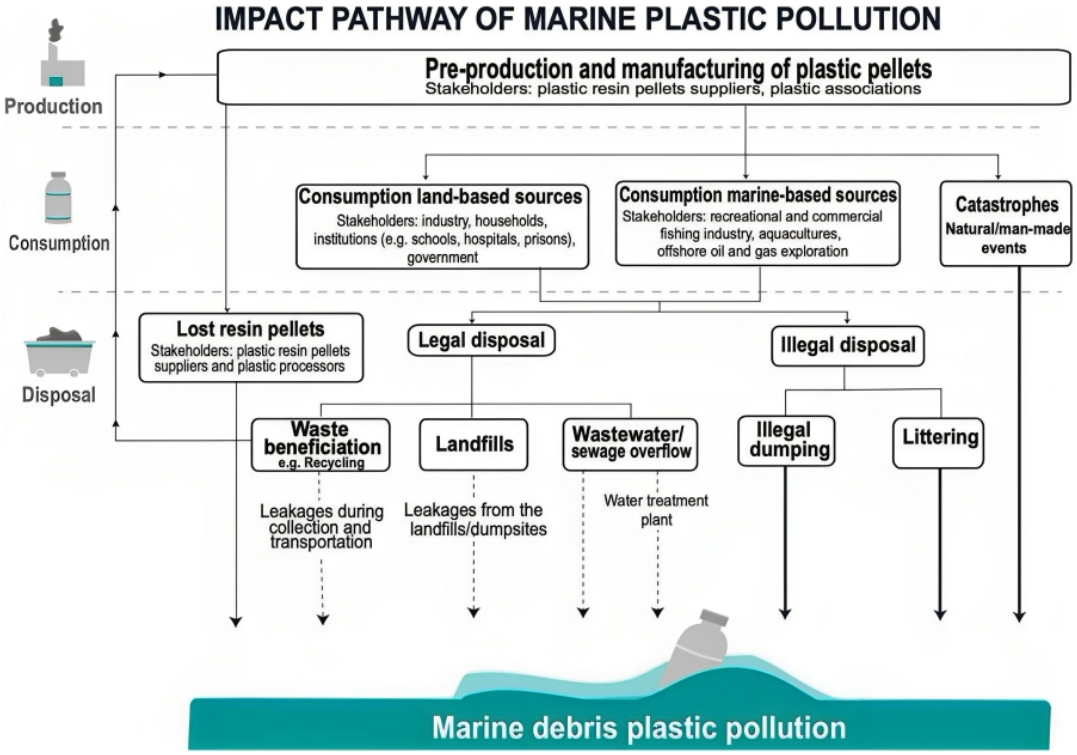

Figure 5.1: Plastic Impact Pathway [2]

Before working on the framework, a simplified version is made for clarity and consistency throughout the chapter. This simplified, interpreted framework version will be the base for future work. Items that are **bold** in the figure are adjusted in the newest version of the framework.

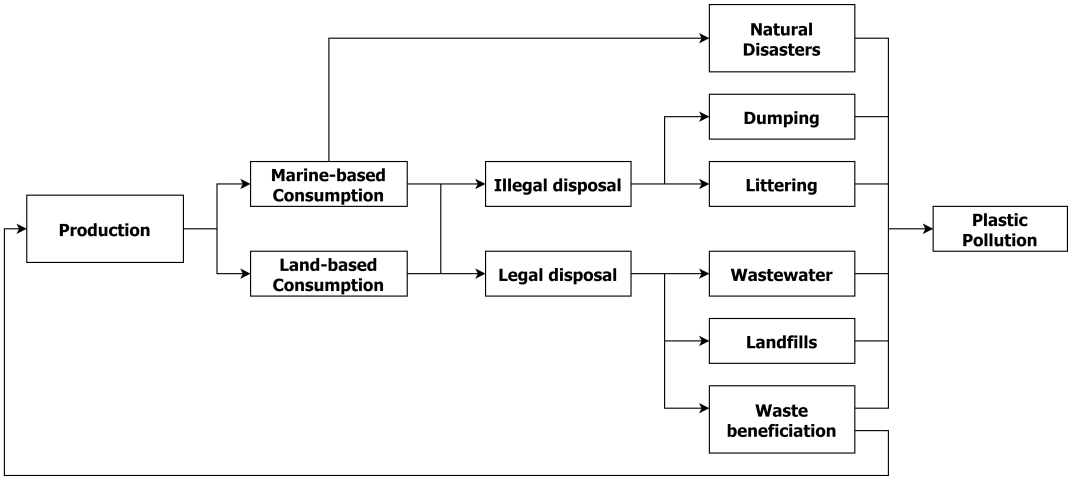

Figure 5.2: An interpretation of the Plastic Impact Pathway [2]

5.2. Rationale for Framework Modification

The need to address plastic pollution in Small Island Developing States (SIDS) drives this chapter's focus on adapting an existing environmental framework to the unique context of Curaçao. SIDS presents distinct challenges in waste management, notably due to the lack of local plastic production and the significant contribution of tourism to plastic waste, factors often overlooked in broader environmental frameworks. In the original paper and other documents discussing plastic pollution, a focus on local circumstances is recommended and mentioned as relevant future studies [1, 96].

This chapter's adaptation of the environmental framework is important in aligning with Curaçao's ambition towards a circular economy, a strategy still searching for a path to follow [77]. Key insights from Kloosterman's Material Flow Analysis and the UNOPS report emphasize the significant contribution of tourism to waste generation in Curaçao, necessitating a framework modification to include this aspect [1, 51]. Moreover, the chapter integrates methodologies from the R-ladder and Lansink's ladder. These methodologies help craft strategies for tackling plastic pollution and enhancing circular economy principles within SIDS. By applying these methodologies, the framework will be better equipped to identify and prioritize interventions across the plastic lifecycle, emphasizing sustainable alternatives to traditional landfill practices [70, 57, 75, 113].

The absence of comparable frameworks supports this approach's uniqueness. Therefore, the modified framework's credibility and practical relevance must be assessed. This will be done through stakeholder interviews during fieldwork in Curaçao, aiming to speak with the most senior policymakers to determine its credibility and usability. This will allow for alignment with local realities and its effectiveness in addressing the specific challenges of plastic pollution in a SIDS context.

In sum, this chapter section is dedicated to justifying the need for and outlining the process of adapting a framework on marine plastic pollution in developing nations to better suit the characteristics of SIDS, with Curaçao as a focal point. It also identifies specific areas for which strategies can be formulated. The ultimate aim is to create a strategic tool that is theoretically sound and practically applicable in reducing plastic pollution within the unique setting of SIDS, thereby contributing to Curaçao's environmental and economic sustainability.

5.3. Incorporating Material Flows of Curaçao

Understanding how plastics circulate in the system is required to effectively manage plastic pollution in Small Island Developing States (SIDS). On Curaçao, the complex system, including local- and tourism consumption, paints a picture of plastic flows. A comprehensive report by the United Nations Office for Project Services, the National Ministry of Traffic Transport and Urban Planning of Curaçao, and the University of Oxford's ITRC in 2018 shed light on the island's solid-waste infrastructure. This report

highlights a significant insight: tourists significantly influence waste production, contributing to 20% of overall waste and an additional 3% attributed to cruise ships alone [1].

Kloosterman's thesis adds to this viewpoint, estimating that tourists contribute up to 40% of plastic litter in Curaçao. These figures underline a gap in the existing frameworks, which largely overlook the tourism sector, despite being a significant economic and waste contributor in SIDS like Curaçao [51].

Finally, the framework includes plastic production, a phase that could be improved within most SIDS due to the plastics being imported. The only plastics produced in most SIDS are recycled plastics. Therefore, a modified framework that excludes plastic production and integrates tourism-related waste is essential to more accurately reflect the actual material streams of SIDS.

To address this, the framework is adjusted as seen in Figure 5.3, which encapsulates the economic activities and their environmental implications in SIDS. The framework incorporates Kloosterman's sector-specific pollution contributions and UNOPS's waste origin categories, offering a more nuanced perspective of the problem. Assessing the source of plastic pollution is an important step in identifying effective strategies for reducing it, as it aligns with the need to develop specific interventions and policies.

When targeting plastic pollution in Small Island Developing States (SIDS), distinguishing tourists as a distinct consumer category is a strategic move to devise targeted mitigation strategies. For example, the partnership between TUI, one of Curaçao's most prominent tourism operators, and GreenPhenix, a local social and environmental enterprise, exemplifies this approach. By involving tourists in educational programs about the island's plastic handling, such as the visitors center at GreenPhenix, they aim to enhance awareness and minimize the tourism sector's environmental footprint [33].

In broader environmental frameworks applicable to general developing states, the distinction between marine-based and land-based sources of plastic is significant. However, the delineation could be more distinct in the context of SIDS. Here, commercial activities, such as fisheries, which typically fall under the marine-based consumption category in the standard framework, are more accurately represented within commercial-based consumption functions in SIDS. This shift reflects the integrated nature of island economies, where the impact of commercial practices, including those related to marine resources, directly affects the overall consumption and waste management cycle.

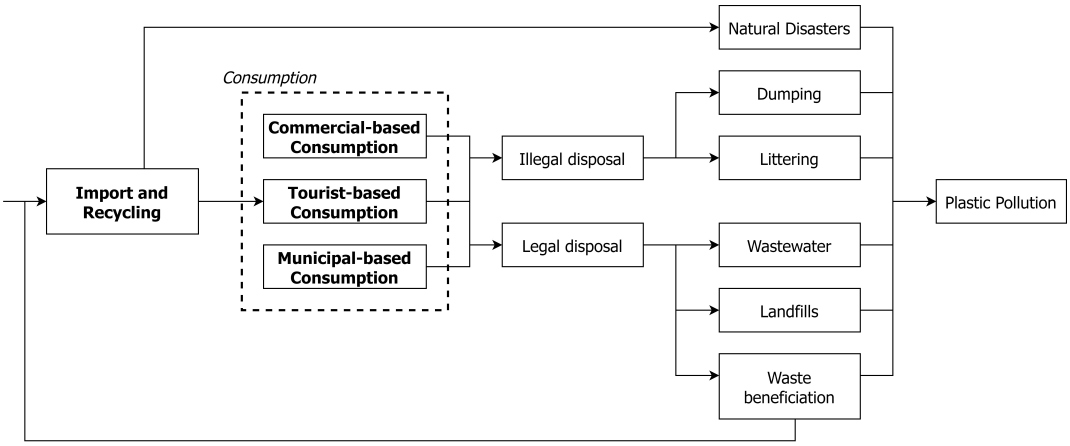

Figure 5.3: Consumption Adapted Plastic Impact Pathway

In summary, this section has articulated the need for, the process of, and the first step in modifying the framework. The figure illustrates the development of the framework, setting the stage for the next step in creating an effective framework to tackle plastic pollution in SIDS and, more specifically, in the context of Curaçao.

5.4. Incorporating Lansink's Ladder and the R-Ladder

This section introduces the integration of Lansink's Ladder and the R-ladder into our framework for managing plastic pollution in Small Island Developing States (SIDS), focusing on Curaçao. These

conceptual models prioritize waste management practices to increase circularity in a system, providing a structured approach to reducing plastic pollution. By incorporating these models into our framework, we aim to create a robust tool for policymakers and other stakeholders who need to identify practical areas for strategic interventions that align with SIDS's environmental and economic goals.

5.4.1. Understanding Lansink's Ladder and the R-ladder

Lansink's Ladder, also known as the Waste Hierarchy, is a framework prioritizing waste management practices from most to least environmentally favorable. It advocates for waste prevention, reuse, recycling, and, as a last resort, disposal such as landfilling [75, 79, 113]. The R-ladder, sometimes called the Recovery Ladder, complements this by offering a hierarchy within the recycling processes, emphasizing the reduction in resource use as the ultimate goal. The R-ladder is often used to show methods to increase a system's circularity, a goal for Curaçao [70, 75].

Both ladders serve as critical tools in developing sustainable waste management strategies. They assist in identifying key intervention points and establish a clear priority for actions, an approach precious in SIDS, where resources are finite and environmental impacts are pronounced. They do this by creating a clear prioritization; you should start by reducing plastics in general before increasing recovery rates. This ladder can help you focus your efforts.

Figures 5.4 and 5.5 present a visualization of both ladders.

Figure 5.4: An interpretation of Lansink's Ladder [79]

5.4.2. Incorporating Ladders into the framework

The expanded framework for SIDS incorporates the principles of these ladders by mapping out the entire life cycle of plastics. This allows policymakers and stakeholders to visualize where strategic interventions can be focused. By emphasizing prevention and reduction at the top of our strategic focus, we suggest reducing the import of plastics into the island's economy, which aligns with the most favorable rung on both ladders.

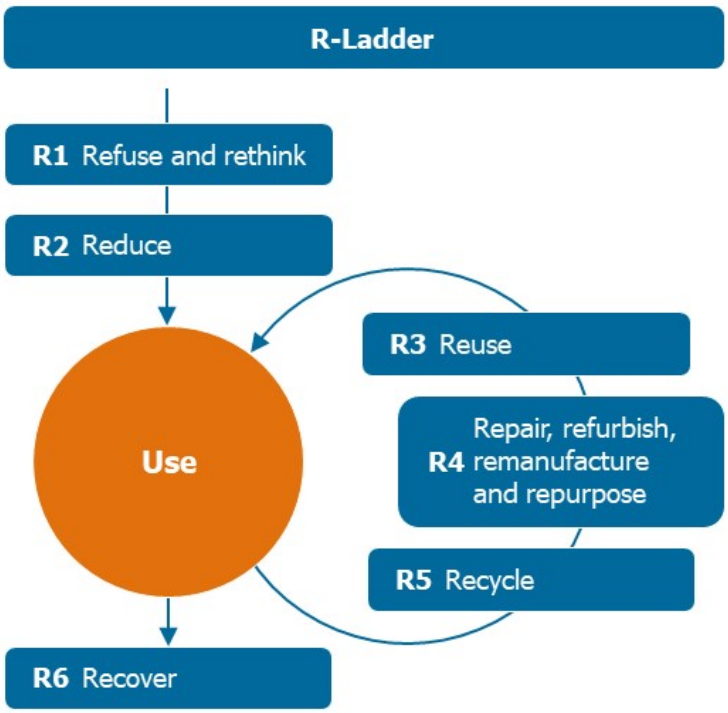

Figure 5.5: An interpretation of the R-Ladder [70]

Simultaneously, we acknowledge that tourism, a key economic driver in SIDS like Curaçao, significantly contributes to waste generation. Therefore, interventions around tourist-based consumption are visible in the framework, highlighting opportunities for reuse and recycling that cater to this sector.

5.4.3. Implications of the framework

In refining Curaçao's approach to plastic waste management, the framework integrates Lansink's Ladder and the R-ladder, establishing a hierarchy where waste prevention supersedes other practices. Ladder prioritizes waste avoidance, reuse, and recycling, with disposal as a last resort. The R-ladder similarly promotes the reduction or "refusing" of unnecessary plastic imports and encourages a reevaluation or "rethinking" of consumption habits for more sustainable outcomes.

Strategically, the focus shifts toward diminishing plastic imports, for example, by enforcing import restrictions on single-use plastics and supporting sustainable alternatives to plastics. Efforts to boost recycling and increase waste recovery take secondary precedence, aiming to cultivate a robust local second-hand and recycling industry and promote source segregation to foster a circular economy.

The framework's design guides the identification of pollution sources, with landfilling highlighted in red to denote its status as an unfavorable practice due to its high environmental leakage potential. Conversely, actions that reject plastic imports or encourage reuse are accentuated in green, reflecting their relatively positive ecological contributions. Other waste management options, like recycling and recovery, including repairing, refurbishing, remanufacturing, and repurposing materials where possible, are depicted in shades of yellow, signifying a moderate preference. Incineration, marked in orange, is recognized for preventing pollution but is less favored due to climate impact concerns.

In the adapted framework, the effectiveness of interventions is evaluated based on their impact on the system. Strategies that minimize imports or mitigate losses invariably benefit the system. However, the value of recycling enhancement initiatives must be contextualized. Their merit is dependent upon the status quo of product handling. For instance, if plastic bottles previously underwent multiple reuse

cycles before disposal, an intervention prompting their recycling after a single use may be harmful, as it downgrades the system's efficacy. Conversely, if the intervention diverts plastics from landfills to recycling, it's advantageous, representing an ascent in system efficiency and a stepladder ladder.

It's critical to acknowledge that interpreting interventions through this framework is possible but needs to be more straightforward. The underlying socio-technical system, characterized by complex stakeholder interactions, can yield unpredictable long-term outcomes distinct from immediate effects. This framework is a simplified tool for visualizing policy impacts on the system that might help guide policymakers in their work.

This visual hierarchy quickly references eco-friendly practices for policymakers and stakeholders. Policy proposals could include incentives for biodegradable alternatives or the introduction of deposit-return schemes to encourage reuse. This approach aims to guide a transition to increasingly sustainable interventions, going beyond merely addressing plastic pollution to proactively preventing it.

Policymakers can influence other aspects within the framework beyond the numbered functions. For example, they may address prevalent illegal disposal practices, recognizing them as a significant pollution source. Reducing illegal disposal in favor of legal methods will invariably reduce plastic loss. Similarly, bolstering system resilience against natural disasters or enhancing the proportion of waste benefaction within the legal disposal function can also yield positive outcomes.

This strategic framework emphasizes the critical role of prevention and reuse over recycling, aligning Curaçao with international sustainability aspirations and fostering a healthier environment. It advocates that enhancing recycling initiatives should not detract from efforts to decrease imports or promote reuse but should serve to limit the amount of plastic reaching the environment or being incinerated. This principle applies to all stages of waste management, ensuring that every step contributes positively to the island's ecological and economic health.

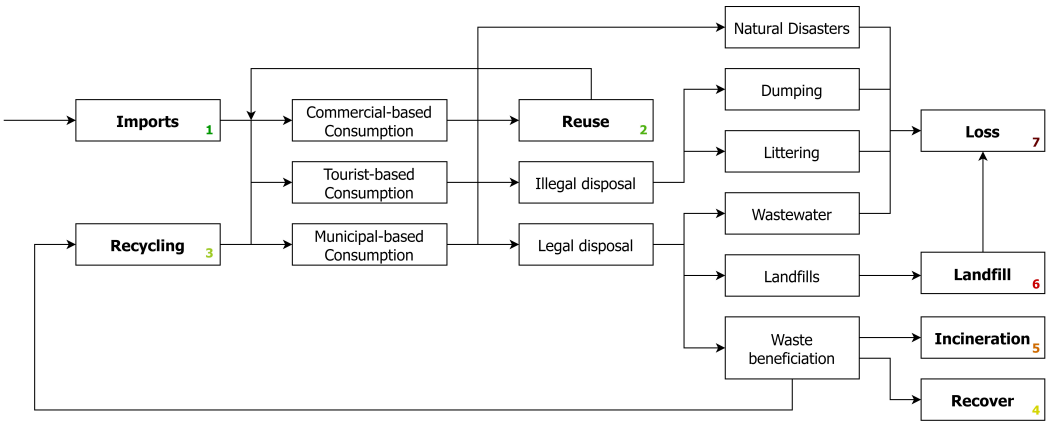

Figure 5.6: Framework Tackling Plastic Pollution on SIDS

5.5. Relevance of this chapter for the Research

This chapter is critical in framing the research findings and conclusions regarding plastic pollution management in Curaçao. By adopting a framework specifically for Small Island Developing States (SIDS), we have filled a notable gap in the literature and provided a practical tool for policymakers.

The framework's relevance is underscored by its active discussion during stakeholder interviews, where it illustrated the behaviors and dynamics of the plastic pollution system in Curaçao. This engagement deepened stakeholder understanding and enriched our findings by grounding them in local realities.

Throughout the interpretation chapter, the framework was instrumental in identifying key areas that require attention within the plastic pollution system. By incorporating the R-ladder and Lansink's ladder methodologies, we could effectively prioritize intervention opportunities, highlighting which aspects of plastic management warrant immediate focus. This prioritization will significantly inform the recommendations outlined later in the research.

Moreover, the chapter emphasizes the importance of a practical, actionable framework that resonates with local stakeholders. By aligning with their needs and perspectives, the framework can guide effective policy implementation and inspire a broader commitment to environmental stewardship.

As we integrate these insights into our conclusions, it becomes clear that continuous assessment and refinement of the framework will be essential. This adaptive approach will ensure that the strategies remain relevant and effective in addressing the challenges of plastic pollution in Curaçao and other SIDS.

In summary, this chapter not only provides a structured understanding of the plastic pollution system but also lays the groundwork for actionable solutions, reinforcing the overall objectives of the research.

6

Fieldwork Results

Plastic pollution presents a significant challenge globally and locally, particularly in Small Island Developing States (SIDS) like Curaçao. Addressing this issue requires local research and active stakeholder engagement. This chapter explores the main research findings into the priorities and challenges in tackling plastic pollution.

Fieldwork is crucial for grounding our research in the real-world context of plastic pollution. This chapter gathers insights from formal interviews, informal discussions, document analysis, and on-the-ground observations made during field visits and cleanup activities. These varied data sources provide a comprehensive perspective on the current state of plastic pollution in Curaçao.

The chapter is structured to reflect the investigative journey. After some general findings are presented, the results are organized in structured themes. The sources from the insights are provided in the header for each subtopic.

The insights from this research will inform the subsequent interpretation and conclusion chapters. By discussing the complexities of plastic pollution and identifying barriers in policy development and interpretation, we aim to develop effective and sustainable solutions that protect the environmental integrity and well-being of Curaçao and its residents.

6.1. General Insights

Through our engagement with stakeholders, we gained valuable insights into the culture and state of Curaçao. Conversations with those experienced in local affairs enriched our understanding of the island's governmental structure, historical context, and cultural dynamics. This broad understanding is vital for crafting recommendations that resonate within the contemporary local narrative.

Regarding the governmental structure, several interviewees noted that it resembles the Dutch system. Curaçao's parliament consists of 21 members divided into a coalition and opposition, with six political parties, two of which form the governing coalition. This coalition selects a cabinet of ministers who lead nine ministries.

Plastic pollution falls under the purview of the Ministry of GMN (Health, Environment, and Nature). This ministry has faced challenges, particularly following the resignation of the previous minister in March 2023. Javier Silvania serves as the interim minister while managing his responsibilities as Minister of Finance. Within the Ministry, environmental issues have received less attention than health concerns, largely due to challenges within Curaçao's healthcare system, most related to the country's aging population [87, 89, 94].

Curaçao lacks a senate to oversee parliament and the cabinet. Instead, various committees and organizations, like the Raad van State, provide feedback on legislation and governmental functions. This structure will become relevant in later discussions, particularly concerning the ban on single-use plastics.

The historical context of Curaçao is equally important. From the 17th century until 1954, Curaçao was a Dutch colony, primarily serving as a defense base, a hub for the slave trade, and a settlement colony. Following the abolition of slavery in 1863, the island transitioned to new economic models, including mining and oil. The departure of Shell in 1976 severely impacted the economy, which had heavily relied on the refinery. Since then, tourism has emerged as a major economic driver, especially after the COVID-19 pandemic and the refinery's closure in 2019 [91, 103].

On October 10, 2010, Curaçao became an autonomous state within the Kingdom of the Netherlands. A significant portion of Dutch legislation was adapted for Curaçao, but not all laws were transferred. Notably, no comprehensive waste management framework has been in place since 2010, complicating efforts to address plastic pollution.

Culturally, Curaçao presents a rich tapestry that influences the plastic pollution system. Throughout our interviews, we observed a hopeful and cooperative spirit among stakeholders. Despite some interpersonal tensions, there is a shared understanding of the primary challenges: resource scarcity, lack of public awareness, and inadequate physical and legislative infrastructure.

Reaching stakeholders initially proved challenging via email and phone, but subsequent meetings led to valuable connections within their organizations. This underscores the strong community ties and willingness among locals to support research efforts.

Further discussions on culture will be elaborated in the interview and observation sections of this chapter.

6.2. Insights sorted by themes

This section presents key findings from our interviews, observations, articles, and reports, organized thematically. This thematic categorization allows us to distill valuable insights and effectively integrate them into our conclusions. These materials were collected systematically to ensure a clear presentation and understanding of the plastic pollution issue in Curaçao.

The observations were made through site visits, direct engagement with local communities, and general observations during the research period in Curaçao. If possible, observations were recorded using a phone, for example, by taking a picture or taking notes of the observation. This ensured that all relevant observations could be considered, and the observations' location and date were automatically registered.

Articles and documents were sourced from local news outlets, journals, and policy reports. These documents aimed to gather a final perspective to support the themes identified in the interviews.

By corroborating interview insights with evidence from observations and literature, we aim to strengthen the validity and reliability of our findings. This multi-faceted approach ensures a robust analysis of the plastic pollution issue in Curaçao.

The themes will be presented in the same order as discussed in the interviews to ensure consistency and enhance readability. Table 6.1 summarizes the main themes, along with brief descriptions and the corresponding interviews that informed these insights.

An overview of the interviews, observations, articles, and reports can be found in Appendix C. Some of the observation are captured with images, these are presented in Appendix D. The methodology behind how stakeholders are engaged, how the interview was set up, and how data was gathered can be found in Chapter 2.

Theme	Description
Societal Challenges	What are the current societal challenges on Curaçao
Policy Challenges	What are Challenges making or executing policy on Curaçao
Plastic Pollution Causes	What are the main causes for plastic being polluted; focused on SIDS vulnerabilities and culture
Activities in the System	What is happening within the system, by whom and why?
Stakeholders in the System	What stakeholders are active in the system and how do they interact
Plastic Pollution Policy	What is the current policy regarding plastic pollution
Plastic Pollution Framework	What do the stakeholders think of the plastic pollution framework
State-Level Bureaucracy	How do state-level bureaucracy play a role in the system
Plastic Deposit System	What do the stakeholders think of a plastic deposit system to battle plastic pollution?

Table 6.1: List of Themes

Interview ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Societal Challenges	X			X			X	X	X	X		X	X	X	X			X
Policy Challenges				X	X		X		X	X		X	X	X	X			X
Plastic Pollution Causes	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Activities in the System	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Stakeholders in the System	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Plastic Pollution Policy	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Plastic Pollution Framework	X		X		X							X					X	
Street-Level Bureaucracy				X	X			X	X	X	X		X	X	X			X
Plastic Deposit System				X	X			X		X		X	X		X			

Table 6.2: Interviews incorporated in each of the themes

6.2.1. Societal Challenges

This theme explores the societal challenges Curaçao faces, particularly those that influence plastic pollution management. Interview insights reveal how these challenges shape stakeholder actions and community behaviors.

Even though the organizations interviewed are actively engaged in reducing plastic pollution on the island in one way or another, they agreed that plastic pollution, or pollution in general, is not the biggest challenge for society. Only a retail importer was convinced that pollution on the island was the biggest problem at this point [I4].

Poverty and Social Inequality [I1, I4, I7, I8, I9, I12, I14, I18, A17, A19]
The most frequently mentioned social challenge in Curaçao is poverty among citizens. Approximately 31% of the population lives in poverty, with unemployment estimated at around 13%, considerably higher than desired. The gap between the richest and poorest is significant, and while these groups live close together, it creates considerable friction within society. Notably, only registered citizens are included in these statistics, meaning the estimated 22,000 to 45,000 unregistered refugees on the island are overlooked, potentially masking the severity of socio-economic issues. Interviewees believe a lot of criminal activity is linked to poverty and social inequality, which complicates efforts to address environmental concerns, including plastic pollution.

Economic Challenges [I1, I4, I10, I12, O1, O8, O9, O10, O11, O12, O17, O18, O45, A1, A3]
Curaçao relies heavily on imports, leading to inflated prices and significant pressure on economic activity. Interviewees consistently highlighted the island's unrealized potential, hindered by its inability to benefit from economies of scale due to its small size. The economy relies primarily on tourism, making it vulnerable to external shocks. This vulnerability was illustrated during the COVID-19 pandemic, significantly damaging the tourism sector and leading to widespread economic disruption. The closure of the island's second-largest industry, the oil refinery, in 2019 further underscores the challenge of building a healthy economy. High taxes and premiums further weaken the economic environment, affecting residents and businesses. This dual blow highlights the critical need for economic diversification and the development of sustainable local industries to reduce dependency on imports and enhance financial resilience.

Governance Challenges [I1, I4, I7, I8, I9, I10, I13, O4, O27, O40, O46]
Curaçao is a young country that faces governance challenges such as corruption and cronyism. Bureaucratic inefficiencies plague governmental processes, resulting in slow governance, underwhelming policy implementation, and a lack of long-term strategic planning. Interviewees frequently mentioned a lack of urgency and structure, inadequate legislative frameworks, and insufficient government employees, especially regarding environmental topics. The short-term focus of political leaders and increased political unrest surrounding election years further exacerbate these issues, diverting attention from crucial environmental initiatives.

Socio-Cultural Dynamics [I4, I7I8, I12, I14, O7, O20, O23, O25, O36, O45, A12, A14]
Economic differences and cultural norms significantly influence societal attitudes and behaviors in Curaçao. The widespread poverty and consequent survivalist mentality create a short-term focus, relegating environmental concerns to secondary importance. Ingrained patterns such as illegal dumping reflect a broader societal acceptance of unsustainable practices. Larger employers have observed a reduced willingness to work and an increased emphasis on personal freedom over traditional employment stability. The cultural mindset complicates the issue further; while personal cleanliness is highly valued, there is less concern for public spaces and the natural environment. For instance, people often dispose of plastic waste carelessly, even in public and natural areas. Additionally, the island's diverse community, including refugees, descendants of enslaved people, immigrants, and native descendants, alongside a history of colonialism and global influences, creates friction and a complex cultural landscape.

Lack of Infrastructure [I1, I4, I8, I9, 112, I15, O1, O3, O6, O8, O9, O11, O12, O13, O14, O16, O19, O26, O30, O32, O35, O39, O41, O43, A2, A3, A17]
Curaçao faces significant infrastructure shortages, particularly in transportation and waste management, exacerbating existing challenges. The island relies heavily on cars but lacks ample public transit options. Criticism of the roads is widespread, and shortcomings in waste management infrastructure hinder effective pollution mitigation efforts. The lack of enforcement and critiques of the educational system further complicate the situation. Structural problems necessitate modern and practical solutions to address these issues.

Environmental and Health Concerns [I1, I4, I9, I14, O10, O18, O37, O47]
Environmental degradation and health hazards are pressing concerns in Curaçao. Air and water pollution from improper waste disposal practices and the government's lack of environmental focus pose severe risks for citizens and tourists alike. The island's focus on short-term economic gains sidelines ecological and health priorities, highlighting the urgent need for sustainable and holistic approaches. The aging population also adds pressure; as the average age has been rising, the government anticipates significant increases in healthcare spending, further straining resources that could be allocated to address environmental challenges.

In summary, while plastic pollution remains a significant concern, it is interwoven with broader socio-economic, governance, and infrastructural challenges often prioritized over environmental issues. Addressing these underlying factors is crucial for creating a conducive environment for effectively tackling plastic pollution.

6.2.2. Policy Challenges

This section delves into the intricate challenges encountered in crafting and implementing policies in Curaçao. It synthesizes the perspectives of various stakeholders, shedding light on the impediments to effective policy formulation and execution.

Lack of Priority for Environmental Policy [I4, I5, I7, I9, I10, I12, I13, I14, I15, I18, O9, O18, O27, O37, O45, A4]

Despite growing concerns about the state of the environment and its damage to the climate and nature, there exists a noticeable absence of prioritization for environmental policy initiatives. Interviewees expressed frustration over the slow progress in addressing pressing environmental issues such as plastic pollution. Fueled by different interests and a conservative mindset, the reluctance to phase out plastic interferes with efforts to embrace more sustainable practices. This absence of urgency is compounded by the lack of comprehensive legislative frameworks on waste, which significantly slows any environmental progress made by the island.

Governance Challenges [I4, I5, I7, I10, I12, I15, O27, O42]

The young nature of Curaçao's governance landscape presents obstacles to effective policymaking. Corruption, cronyism, and decision-making processes that may not consistently serve the island's best interests are mentioned concerns. Bureaucratic inefficiencies further slow policy implementation, resulting in slow processes, inadequate strategic planning, and underwhelming outcomes. These inefficiencies hinder environmental policy and create a context where competing interests often supersede evidence-based decision-making, particularly during election years.

Resource Constraints [I5, I9, I10, I12, I15, I18, O17, A1, A6]

Resources are limited, which poses significant hurdles to policy development and implementation. The downsizing of government agencies has led to a shortage of personnel; therefore, the workload for remaining staff members is high. More financial resources are needed to ensure the government can undertake effective policy initiatives. Additionally, the lack of specialized expertise in critical areas, such as legislation, further hampers the drafting of new policies.

Political Dynamics [I4, I5, I7, I9, I10, I12, I14, I15]

Political dynamics shape the policymaking landscape in Curaçao. Complex tensions and competing interests require making choices when formulating policy. The influence of political partnerships, personal relationships, and other interests often supersedes evidence-based decision-making, undermining the efficacy of policy interventions. This impact becomes particularly pronounced during election years when the desire to avoid negative publicity can stifle necessary action.

Implementation Challenges [I5, I10, I12, I15, O31, O48, A3]

Inadequate enforcement mechanisms and a lack of power to implement policy make translating policy into tangible outcomes difficult. Limited resources and the need to know about numerous topics as a government further slow implementation, allowing unsustainable practices to continue. The absence of comprehensive regulatory frameworks adds to enforcement challenges. This ongoing lack of foundational legislation impedes the government's ability to manage and solve environmental problems effectively, compounding the difficulties faced in enforcement.

In summary, addressing the multifaceted policy challenges facing Curaçao requires a concerted effort to prioritize environmental concerns, strengthen governance structures, build institutional capacity, and foster inclusive policymaking processes. By overcoming these obstacles, Curaçao can pave the way for sustainable development and resilience in the face of emerging environmental threats.

6.2.3. Plastic Pollution Causes

This theme identifies the primary causes of plastic pollution, emphasizing the unique vulnerabilities of Small Island Developing States (SIDS) and cultural factors. It provides an understanding of the root causes that need to be addressed. Only arguments brought up more than once are incorporated in this subsection to allow for a readable subsection.

Lack of Political Will [I1, I3, I5, I6, I9, I10, I15, I17, I18, O12, O17]
One recurring theme is the perceived need for more political willpower and implementation gaps within the government. Many projects and legislative drafts have been started but never enacted, started, or finished. Stakeholders blame the slow progress in translating proposed laws and initiatives into actionable policies. Understaffing, limited knowledge, and changing leadership exacerbate the challenges in implementing effective measures to tackle environmental issues such as plastic pollution. Additionally, residents express skepticism about the effectiveness of existing policies, affecting their trust in government initiatives.

Cultural and Behavioral Factors [I1, I3, I4, I5, I6, I7, I8, I9, I10, I12, I13, I14, I15, I16, I17, I18, O1, O3, O16, O17, O21, O23, O15, O28, O38, A4, A11, A12]
Cultural and behavioral factors significantly influence the attitudes and actions of individuals toward waste management and environmental stewardship. A prevalent "not-in-my-backyard" mentality and a lack of awareness about the environmental impact of plastic consumption contribute to widespread pollution. Additionally, the convenience and tradition associated with plastic usage perpetuate the waste generation and disposal cycle. Poverty and the focus on the shorter term are mentioned frequently as the main causes of plastic pollution. The interviewees are split on whether conservatism is a cause of plastic pollution. Moreover, there is a need for more education and awareness programs to foster a deeper understanding of the environmental impacts of plastic use.

Remoteness and Smallness [I3, I5, I6, I7, I8, I9, I12, I13, I14, I15, I17]
Resource constraints, logistical challenges, and remote geographical locations compound the difficulties in addressing plastic pollution. More financial resources and infrastructure help establish comprehensive waste management systems. Moreover, the island's small scale and its population's interconnectedness pose unique enforcement challenges, making it difficult to combat illegal dumping effectively.

Fragmented Efforts and lack of Awareness [I3, I4, I5, I6, I8, I9, I10, I13, I14, I15, I16, O12, O15, O21, O25, O26, O28, O29, O31, O32, O33, O39, O46]
Fragmented efforts and limited stakeholder engagement hamper the effectiveness of initiatives addressing plastic pollution. Despite the existence of grassroots initiatives and private sector involvement, the need for coordination and collaboration among stakeholders undermines the scalability and impact of these efforts. One of the main goals is to raise awareness because people do not see or recognize the problem; there is a lot of "trash blindness." Raising awareness is a shared vision of all organizations and has been the main driver for progress over the last few years. However, empowering local communities and involving them in decision-making could enhance the effectiveness of these initiatives.

Policy Priorities and Competing Interests [I1, I3, I4, I10, I12, I13, O17, O27, O37, O46, A13]
Competing policy priorities and interests further complicate efforts to address environmental challenges. Economic concerns and short-term considerations often take precedence over long-term sustainability goals. Moreover, the perceived disconnect between policy formulation and implementation underscores the need for more substantial political commitment and accountability in addressing plastic pollution. External influences, such as tourism and foreign investments, may also impact the dynamics of plastic pollution in Curaçao.

In summary, the policy challenges faced by Curaçao in addressing plastic pollution reflect a complex interplay of political, cultural, economic, and logistical factors. Overcoming these challenges will require concerted efforts to prioritize environmental sustainability, enhance stakeholder engagement, and strengthen policy coherence and implementation mechanisms. Additionally, recognizing the health implications of plastic pollution and exploring innovative solutions can pave the way for a more sustainable and resilient future in Curaçao.

6.2.4. Activities in the System

This theme outlines the various activities within the plastic pollution management system. It details who is involved, what actions are being taken, and the underlying motivations for these activities.

Education and Awareness [I1, I3, I4, I5, I6, I7, I8, I13, I14, I16, I17, I18, O15, O33, O38, A5, A9, A15, A16, A18]
Raising awareness and educating the public, especially the younger generation is crucial in addressing plastic pollution. Almost all organizations are involved in educational activities, such as giving school speeches, creating educational materials, and conducting tours to raise awareness about recycling and pollution. Initiatives like beach clean-ups with tourists and community members promote a sense of responsibility and sustainable behavior. Interviewees agree that education and awareness are critical in changing public perception and encouraging sustainable behavior against plastic waste. Notably, organizations like Green Force and Green Kidz play significant roles in these awareness campaigns, focusing on plastic's environmental and health impacts.

Developing Infrastructure [I1, I2, I3, I4, I6, I12, I13, I14, A8, A10, A15, A16]
The current state of waste management and recycling infrastructure needs improvement. Many organizations require more resources and facilities. Despite efforts to recycle, significant challenges still need to be addressed, such as the high cost of exporting plastic waste and the limited capacity of local recycling facilities. With its limited lifespan and outdated methods, the landfill poses environmental risks. Upgrading the waste management infrastructure requires substantial investments to ensure sustainability and effectiveness. Additionally, resource constraints, such as worn-out bins, lack of staff, and insufficient promotion of recycling programs, hinder progress. The involvement of private sector entities, such as Firgos and van den Tweel, is essential in providing the necessary infrastructure for recycling initiatives.

Recycling Initiatives [I1, I3, I4, I5, I13, I16, I17, I18, O11, O12, O13, O22, O24, O30, O33, O34, O45, A6]
Recycling initiatives are crucial in the fight against plastic pollution. Developing a circular economy, where waste is minimized, and materials are reused, requires comprehensive waste management practices and infrastructure changes. Economic challenges, such as the high cost of exporting waste and the lack of local demand for recycled materials, must be addressed to make recycling initiatives economically viable. Creating financial incentives, like deposit systems, can help increase participation and sustainability in recycling programs. Additionally, enhancing infrastructure for recycling, including collection, sorting, and processing facilities, is essential to improve the efficiency and effectiveness of these initiatives. Collaboration among various stakeholders, including businesses, government agencies, and community organizations, is necessary to create a cohesive recycling ecosystem. Entities such as Green Phenix and Limpi Recycling are actively involved in local recycling efforts, producing recycled products and increasing community engagement.

Legislative Initiatives [I3, I9, I10, I11, I12, I15, A5, A6, A7]
Legislation is crucial in driving change towards sustainable waste management and recycling practices. Implementing laws to ban single-use plastics and introducing deposit systems for recyclable materials are essential. These measures create financial incentives for recycling and reduce overall consumption of plastic. Additionally, stricter penalties for illegal dumping can deter environmentally harmful practices. Effective legislation can support the transition to a circular economy, where materials are reused and recycled rather than discarded. Collaboration with government agencies is vital to develop and enforce policies that promote sustainable waste management and environmental protection. Such legislative actions can provide the framework and support needed to ensure long-term environmental sustainability and reduce the impact of plastic pollution on the island. The recent law banning specific single-use plastics, enacted in March 2024, demonstrates the Parliament's commitment to addressing this issue, with support from organizations like Green Force and Selikor.

In summary, addressing plastic pollution in Curaçao requires a multifaceted approach encompassing integrated and collaborative efforts, education and awareness, developing infrastructure and recycling initiatives, and legislative measures. The island can move towards a sustainable and circular economy by uniting various stakeholders, educating the public, enhancing recycling facilities, and enacting supportive laws. These combined efforts are essential for mitigating the environmental impact of plastic waste and fostering a cleaner, healthier environment for future generations. Moreover, continuous evaluation of stakeholder engagement and activity arenas, as illustrated in the framework, will enhance

the effectiveness of these initiatives and ensure comprehensive coverage of the plastic pollution management system.

6.2.5. Stakeholders in the System

Stakeholders in the System This section maps out the key stakeholders active within the system and their interactions. It provides insights into the roles and relationships that drive the system's dynamics.

Roles and Actions of Organizations

Government bodies and state-owned organizations [I2, I9, I10, I11, I12, I14]: Governmental bodies are crucial in establishing frameworks, legislation, and policies that guide activities in Curaçao. The Ministry of Health, Environment, and Nature is responsible for health, the island's climate, and nature. It works together with most of the other interviewed stakeholders on tackling plastic pollution. Selikor is responsible for most aspects of waste management on the island, as the government and Selikor have a service agreement on this topic. These organizations should all represent the best interests of the citizens of Curaçao.

While the importance of governmental roles is emphasized, specific interactions and political will's impact on these bodies' effectiveness could be further explored.

Recycling Companies and Non-Governmental Organizations (NGOs) [I1, I3, I5, I8, I13, I16, I17, I18]: The island hosts 12 recycling companies. These companies also strive to raise awareness about the health impacts of foam containers and promote healthier alternatives. However, only 7% of the locally generated plastic is recycled or exported, highlighting significant challenges. NGOs like Green&Clean engage in campaigns to promote cleaner environments and organize events to facilitate better waste separation. Despite these efforts, the overall impact of some organizations has yet to be debated, particularly regarding their contributions to reducing plastic usage and advancing a circular economy. More data on their impact would enhance understanding.

The for-profit and tourism sector [I4, I6, I7, I15] constitutes a significant part of the stakeholders, whose primary goal is to make a profit, mostly tied to tourism. As previously mentioned, the island's economy depends mainly on tourism and is therefore negatively impacted by waste management issues. Frequent complaints from tourists about litter and illegal dumping highlight the need for better waste management practices. The motivations of these organizations and their impact on overall strategies could provide deeper insights.

Cooperation and Coordination Among Stakeholders [Result of All Interviews]

Collaborative Efforts: Collaborative efforts among government bodies, NGOs, and the private sector are evident in various initiatives. The campaigns with Green&Clean and the Cleanup days are prime examples. Cooperation with organizations like Green Force is valued for their data-driven approach, which helps avoid greenwashing.

Despite these efforts, significant challenges remain. The system needs to be more cohesive, with unclear guidelines, an unclear vision of waste disposal, and a lack of integrated policy. Disagreements between organizations, competition for grants, and varying missions and methods complicate collaboration. The government is often seen as the key player that needs to lead and champion initiatives, yet officials need to take more action and be more responsive.

Building a Cooperative Culture: There is a growing recognition of the need to build bridges and promote cooperation. Despite their limited resources, small foundations can significantly impact even without government support. The changing mindset on the island is seen as a positive development, with increasing cooperation indicating a shift towards more effective and unified efforts in waste management and recycling.

Understanding the roles and actions of various stakeholders, along with the challenges and opportunities for cooperation, is essential for improving waste management and recycling on the island. Effective collaboration among governmental bodies, NGOs, businesses, and the public is crucial for driving sustainable practices and addressing environmental concerns. Building a culture of cooperation and coordination will be key to achieving a cleaner and more sustainable future for Curaçao.

6.2.6. Plastic Pollution Policy

This theme reviews the current policies to manage plastic pollution, assessing their scope, effectiveness, and areas for improvement based on stakeholder feedback. Critiques of the existing policy are abundant, and the primary observation regarding plastic pollution policy in Curaçao is its notable absence, as expressed by many stakeholders. Green Phenix's gap analysis highlights numerous areas needing improvement, and Green Force has issued multiple press releases expressing dissatisfaction with the current policy framework. Furthermore, local activist Kunuku Man has voiced his discontent with several ministers. Over the years, Selikor has proposed various legislative measures to tackle waste management issues, indirectly addressing plastic pollution. This sentiment is echoed by many organizations and individuals, with increasing public pressure on the government to take a more proactive stance.

Current Policies [I1, I2, I3, I4, I6, I7, I8, I9, I10, I11, I12, I13, I14, I16, I17, I18, O2, O8, O9, O33, A5, A8, A9, R1, R2, R3, R4]]

There is a notable absence of specific policies addressing plastic pollution in Curaçao. None of the interviewees know any official policy to tackle plastic pollution, and the governmental framework lacks dedicated regulations or directives to mitigate plastic pollution. However, Selikor has been involved in legislative proposals, and residents call for more robust policies. A document does provide insight into the region's future trajectory of waste management and environmental sustainability. The Vision for the Circular Economy of Curaçao outlines a forward-looking approach to resource management and economic development, emphasizing transitioning towards a circular economy.

Key conclusions from Green Phenix's gap analysis include:

- **Lack of National Legislation and Enforcement:** The analysis identifies a significant deficiency in national legislation for waste management and plastic pollution prevention. Existing regulations are poorly enforced, allowing plastics to enter Curaçao and threaten ecosystems and public health.
- **Identified Gaps in the Analytical Framework:** The analysis found gaps across categories, including global objectives, waste prevention, management, microplastics, and standardization. These gaps include the absence of trade restrictions on problematic polymers and plastic products, inadequate financial mechanisms to deter plastic pollution, and a need for national reduction targets with measurable criteria.
- **Institutional Framework Inadequacies:** The current institutional framework in Curaçao is insufficient for protecting public health and the environment. The framework's weaknesses jeopardize human rights and biological diversity, with a need to strengthen institutional capacities and mechanisms for more effective management of plastic pollution.
- **Need for Explicit Attention to Plastic Pollution:** Plastics, as a distinct waste category, require explicit attention in national legislation, plans, and policies due to their significant environmental and health impacts.
- **Importance of Implementation and Representation:** Incorporating the themes identified in the analytical framework into national legislation, policies, and plans would significantly improve Curaçao's ability to combat plastic pollution, aligning local efforts with global objectives to reduce the need for a global plastics treaty.

Future Policy Suggestions [I1, I3, I4, I6, I7, I8, I9, I10, I11, I12, I13, I14, I16, A8, A9, R1, R2, R3, R4]

Interviewees and stakeholders provided several suggestions to address gaps in current policy and management strategies. These include:

- **Promote Education and Awareness:** Interviewees emphasize the importance of education and awareness campaigns to foster a culture of environmental responsibility within the community. Such campaigns can raise awareness of the effects of plastic pollution on the environment and human health. These initiatives would help residents and businesses adopt sustainable practices and reduce reliance on single-use plastics.

- **Enhance Infrastructure:** Interviewees advocate for developing robust waste management and recycling infrastructure. This includes expanding collection points for recyclable materials, implementing reward systems to incentivize recycling behavior, and investing significantly in recycling facilities. Improving infrastructure would make recycling more accessible and efficient, helping divert plastic waste from landfills and promoting sustainable behavior.
- **Strengthen Enforcement and Legislation:** There is an urgent need to strengthen enforcement mechanisms and legislative frameworks to combat illegal dumping and encourage responsible waste management practices. Measures should include centralizing responsibilities for waste management enforcement, increasing penalties for offenders, and improving collaboration among government agencies involved in environmental regulation. Enforcing stricter rules can create a deterrent against illegal dumping, leading to a cleaner, healthier environment.
- **Reducing Imports of Plastics:** Implementing policies to reduce the importation of plastics can significantly contribute to mitigating plastic pollution. These policies could include incentivizing alternative materials, imposing tariffs or restrictions on plastic imports, and promoting domestic production of sustainable alternatives. By reducing reliance on imported plastics, Curaçao can lower its plastic footprint and encourage local industries to focus on sustainable materials.
- **Implementing a Deposit System:** Introducing a deposit system for plastic containers and packaging could reduce plastic pollution. Consumers would pay a small deposit when purchasing plastic products, which is refunded upon returning the containers for recycling. This system encourages recycling behavior and proper disposal, ultimately reducing plastic waste. Stakeholders agree that this system could significantly reduce plastic pollution if implemented correctly.

By addressing the gaps identified in both existing policies and enforcement mechanisms, Curaçao has the potential to make significant strides in combating plastic pollution. The insights from stakeholders and the gap analysis underscore the need for stronger legislation, enhanced infrastructure, and public awareness campaigns. As the Vision for the Circular Economy of Curaçao outlines, moving towards a circular economy requires proactive government action, collaboration with local organizations, and effective policy implementation. If these recommendations are followed, Curaçao can mitigate plastic pollution, protect its ecosystems, and create a sustainable future for its citizens.

6.2.7. Plastic Pollution Framework

This theme delves into stakeholders' opinions on the existing framework for managing plastic pollution. In this section, we cover suggested potential areas for framework improvement.

This theme delves into stakeholders' opinions on the existing framework for managing plastic pollution and highlights potential areas for improvement. Green Phenix [I1] emphasizes the importance of developing a local market for used products, which is currently limited to porch sales, garage sales, and platforms like Facebook Marketplace. They also stress the need for beach cleanups due to the significant amounts of plastic washing ashore on Curaçao. In line with this, UNIEK Curaçao [I17] regularly conducts beach cleanups, adding that this activity should be reflected in the plastic pollution framework.

Green Force [I3] suggests separating industrial and consumer plastic waste collection, noting that incineration or recovery methods are less attractive than recycling due to their high pollution levels. They argue that imported plastic pellets, blown into shape on Curaçao, should be considered local production and included in the framework. They also believe that the plastic export activities they manage should be recognized.

Similarly, Selikor [I12] acknowledges the export of large amounts of plastic, handled mainly by Green Force, and stresses the importance of including this in the framework. Kunuku Man [I5], a local activist, highlights the need for more formal recognition of cleanup activities in the plastic management system. These efforts, undertaken by him and other organizations, directly reduce the amount of plastic pollution in nature.

When these stakeholder insights are integrated into the existing plastic pollution framework, it becomes clear that expanding the current system to account for these suggestions would significantly enhance its scope and effectiveness. This expanded framework is illustrated in Figure 6.1.

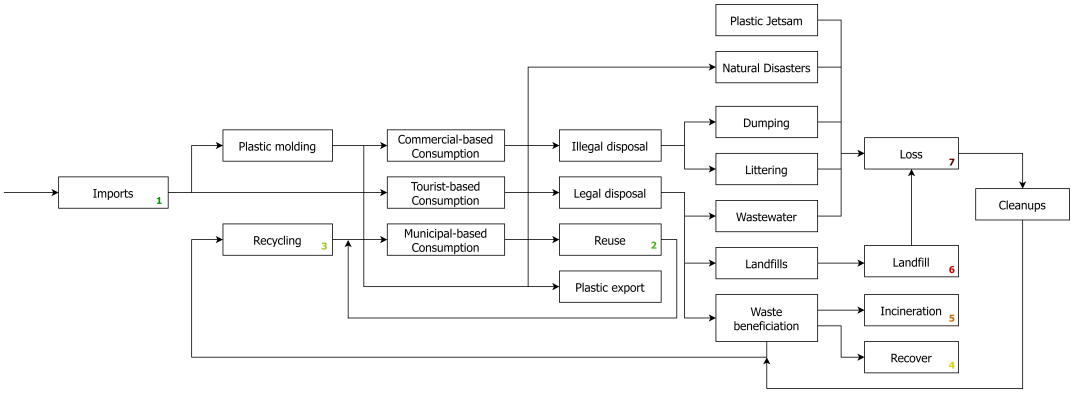

Figure 6.1: Extended Framework

This section also contextualizes these suggestions within the plastic pollution framework introduced in Chapter 5, showing how stakeholder activities align with broader system improvements. The framework is structured into five focus areas, referred to as ”Activity Arenas,” where stakeholders actively tackle plastic pollution.

One of the key recent developments is the March 2024 law banning specific single-use plastics, spearheaded by Parliament, with support from Green Force, Green Phenix, and Selikor. This legal milestone aligns with Green Phenix's earlier gap analysis, which called for such a ban, and Green Force's awareness-raising efforts through press releases.

The five focus areas are:

1. Ban or tariff on plastic imports (led by Parliament, supported by Green Phenix, Green Force, and Selikor).
2. Recycling plastics (with organizations like FUSE Caribbean, Green & Clean Curaçao, Green Force, Green Phenix, and Limpi Recycling active in this arena).
3. Reducing plastic consumption (with Green & Clean Curaçao, Green Force, Green Kidz, Green Phenix, and Kunuku Man involved in awareness and education campaigns).
4. Battling illegal disposal (managed primarily by the Ministry of Health, Environment, and Nature, which has introduced policy tools such as removing landfill fees and enhancing the environmental police's role).
5. Preventing plastic from entering nature and removing plastic from nature (with organizations like Curaçao CleanUp, Kunuku Man, Sea Turtle Conservation Curaçao, and UNIEK Curaçao leading cleanup efforts).

Several companies are involved in recycling and upcycling plastics locally. For instance, Green Force has exported over 360,000 kg of plastic for recycling, and Limpi Recycling and Green Phenix produce items like planks, bricks, and souvenirs from recycled materials. In addition, organizations such as Green & Clean Curaçao and Green Force facilitate plastic collection during public events. At the same time, businesses like van den Tweel and Firgos provide infrastructure for recycling, such as drop-off points.

Public awareness efforts are also central to reducing plastic consumption. Organizations like Green Force, Green Kidz, Green Phenix, and Kunuku Man focus on educating the public about plastics' environmental and health impacts. Green & Clean Curaçao engages with the public during events, while UNIEK Curaçao promotes environmental stewardship through community enhancement projects and proper waste disposal.

The Ministry of Health, Environment, and Nature is critical in combating illegal disposal by working with the environmental police and implementing new policies. UNIEK Curaçao has observed a reduction in illegal dumping due to initiatives like installing waste bins in community spaces.

Finally, collaborative cleanup events, organized by groups such as Curaçao Cleanup Foundation, Sea Turtle Conservation Curaçao, Kunuku Man, and UNIEK Curaçao, continue to remove plastic waste from natural areas and raise public awareness about environmental conservation. Firgos supports these efforts by providing waste collection bags.

Together, these changes can be summarized in a new updated version highlighting these battle areas. This expanded framework is illustrated in Figure 6.2. It is accompanied by a table that links the framework to activity arenas and active organizations for clarity.

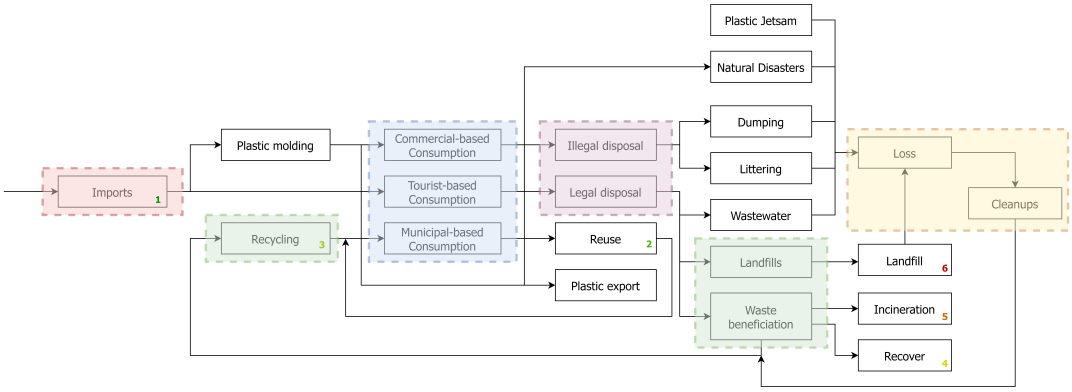

Figure 6.2: Activity within the Framework

This integration of stakeholder activities, combined with recent legislative progress, reflects the evolving and comprehensive nature of the plastic pollution framework. Stakeholder observations, articles, and documents validate the framework's completeness, with ongoing efforts to incorporate new feedback ensuring continuous improvement.

6.2.8. Street-Level Bureaucracy

This theme explores how street-level bureaucracy impacts the plastic pollution management system. It discusses bureaucratic challenges and their effects on policy implementation and stakeholder cooperation. Several factors unique to the island's social dynamics challenge effective enforcement and implementation.

Proximity and Recognition [I4, I5, I8, O31, O42]

Unlike larger urban centers, Curaçao's close-knit community means that law enforcement officers often live and work in the same neighborhoods as those they regulate. This lack of anonymity can hinder enforcement efforts, as officers may hesitate to take action against individuals they know personally, such as friends or family members. Consequently, offenders may exploit these personal relationships to evade consequences. This dynamic was not explicitly mentioned in the second part but plays a crucial role in enforcement difficulties.

Fear of Reprisal [I4, I5, I8, O17, O37, O42]

The presence of powerful criminal elements on the island creates fear among law enforcement officers. Fear of reprisal from criminals and local community members may deter officers from rigorously enforcing regulations. This fear can further undermine the effectiveness of enforcement efforts, allowing illegal activities such as illegal dumping to persist unchecked. Although vital to understanding enforcement challenges, this element was not covered in the second section.

Limited Social Control [I4, I5, I9, I13, O36]

Despite its relatively small size, Curaçao faces challenges in maintaining social control over environmental violations. The tight-knit nature of the community, combined with the potential for conflicts of interest among enforcers, complicates efforts to hold offenders accountable. Moreover, the limited availability of enforcement resources exacerbates these challenges, making it difficult to maintain consistent oversight of environmental regulations.

Color in framework	Activity arena	Organisations active in arena
Red	Ban or tariff on plastic import	Green Phenix Green Force Parliament Selikor
Green	Recycling plastics	FUSE Caribbean Green & Clean Curaçao Green Force Green Phenix Limpi Recycling The Great Plastic Bake Off
Blue	Reducing plastic consumption or use	Green & Clean Curaçao Green Force Green Kidz Green Phenix Kunuku Man
Purple	Battling illegal disposal	Ministry of GMN
Yellow	Preventing plastic from ending up in nature Removing plastic from nature	Curaçao CleanUp Kunuku Man Sea Turtle Conservation Curaçao Uniek Curaçao

Table 6.3: Linking the Framework to Activity Arenas and Active Organisations

Execution-Policy Disruption [I5, I10, I14]
Discrepancies between policy intentions and on-the-ground execution are common in Curaçao's plastic pollution management system. Despite existing regulations on paper, enforcement may falter in practice due to various factors, including resource constraints, social dynamics, and bureaucratic inefficiencies. This misalignment between policy goals and implementation poses a significant obstacle to effective plastic pollution management. While the second part touches on practical inefficiencies, it does not address the more profound social and systemic challenges mentioned here.

Street-level bureaucracy plays a crucial role in enforcing waste management policies. For example, field observations at Jan Thiel Beach demonstrated how bureaucratic inefficiencies can render even well-designed policies ineffective. Recycling bins were placed on the beach, but cleaners were seen dumping plastic waste into residual waste bins, undermining the effort. This incident illustrates how street-level bureaucrats like cleaners and waste collectors make real-time decisions based on conditions on the ground, often more accurately than what is foreseen by top-down policies. The cleaner explained that the plastic was too contaminated to recycle, highlighting inefficiencies that policymakers may overlook.

Enforcement faces similar challenges regarding limited resources. The small size of the island and the constrained resources of the police force mean individual officers bear significant responsibility. As of February 2024, the environmental police comprise only six members tasked with combating illegal dumping. While they have tools and resources, there remains to be uncertainty regarding whether protocols are consistently followed. This reinforces the earlier execution-policy disruption, showing how real-time constraints can affect policy outcomes.

Enforcement Capacity and Feedback Loops [I11, I12, I14, I15, O37, O42]
The small scale of Curaçao limits the effectiveness of feedback loops in the enforcement process. Inadequate feedback mechanisms hinder the ability to assess the impact of enforcement efforts and adjust strategies accordingly. Additionally, the limited capacity of law enforcement agencies further constrains their ability to combat plastic pollution effectively. Enforcement has many tasks, so preventing pollution is not their main priority. This crucial point, absent from the second part, highlights the misalignment between enforcement priorities and plastic pollution management.

Organizations like Curaçao Cleanup Foundation, Kunuku Man, Sea Turtle Conservation Curaçao, and UNIEK Curaçao actively organize cleanup events. These initiatives not only remove plastic waste from nature but also raise public awareness about the importance of environmental conservation. Collaborative efforts from entities like Firgos, which provides waste collection bags, support these cleanups. However, without addressing the deeper bureaucratic and social challenges, these efforts can only offer short-term relief, not systemic change.

In summary, street-level bureaucracy in Curaçao operates within a complex social context characterized by close community ties, fear of reprisal, and resource constraints. Addressing these challenges requires strengthening enforcement capacity, addressing underlying social dynamics, and fostering a culture of accountability and environmental stewardship within the community.

6.2.9. Plastic Deposit System

This section evaluates stakeholder perspectives on implementing a plastic deposit system in Curaçao as a strategy to reduce plastic pollution. The views highlighted such a system's potential benefits and challenges through both observations and literature on pilot projects and existing models.

Perceived Benefits [I1, I2, I3, I4, I5, I6, I7, I9, I10, I11, I12, I13, I15, O17]
Several stakeholders advocate for implementing a plastic deposit system, noting its potential to engage the local population, particularly those from lower socioeconomic backgrounds, in environmental cleanup efforts. Van den Tweel [I4] finds it surprising that such a system has yet to be implemented. They suggest that it could incentivize poorer individuals to participate in waste collection, thus addressing both pollution and social inequality. They believe the government could organize such a system effectively.

The Kunuku Man [I5] proposes a creative twist on the traditional deposit system. A mandatory donation to a disposal fund would be required upon purchasing glass or plastic bottles. This fund would then reward individuals for returning these items, creating a sense of receiving a gift rather than a refund. He argues that this approach could encourage more widespread participation in recycling efforts, and he expects this method to encounter much less resistance from the population.

Selikor [I12] recounts the success of a pilot deposit scheme on the island, carried out with Curaçao Bottles and the Kunuku Man. The scheme saw funds spent three times faster than anticipated, indicating high public engagement. Selikor views the pilot's success as evidence of the system's viability and actively pushes for political discussion and legislative action to formalize it.

Implementing a plastic deposit system could significantly reduce plastic pollution. A plastic deposit system would ensure that those who pollute bear the cost while those who clean up benefit. It would also facilitate earlier separation of different plastics and enhance overall waste collection. Moreover, implementing a plastic deposit system could make alternatives more affordable, particularly for takeout places, known locally as 'truki pan.' These businesses must charge customers the deposit fee, manage plastic cleanups, or switch to alternative materials.

This system could also provide a financial incentive for cleanup efforts, allowing the poorest residents to earn extra income by helping to keep the island clean. The potential benefits of this system are significant, offering a hopeful outlook for Curaçao's future.

Challenges and Considerations [I1, I2, I3, I4, I5, I6, I7, I9, I10, I11, I12, I13, I15, O17]
Despite the enthusiasm, several stakeholders also highlight significant challenges to implementing a plastic deposit system. The Ministry of Health, Environment, and Nature [I10] references a study from

15 years ago that advised against a deposit scheme, citing difficulties in communication, infrastructure, and legislative complexities. They caution against assuming that what works in other contexts, like the Netherlands, would work in Curaçao due to differences in market dynamics, culture, and infrastructure.

Curaçao Bottles [I15] highlights such a system's financial and logistical burdens. They emphasize the need for substantial investment, appropriate management infrastructure, and equitable legislative frameworks. They caution that consumers often perceive deposit systems as additional costs, which could alter purchasing behaviors.

Concerns were also raised about potential market disruptions, particularly regarding imported bottles from neighboring regions like Venezuela, which could undermine local recycling efforts and complicate the system's effectiveness.

Alternatives and Complementary Measures [I1, I3, I4, I5, I7, I9, I11, I13, I15]

Some stakeholders suggest alternative or complementary measures to enhance the effectiveness of a plastic deposit system. Green & Clean Curaçao [I13] advocates for incorporating environmental plans into permits for large events, promoting recycling norms that could spill over into broader community practices. They also believe rewarding people for recycling might have a more significant impact than a traditional deposit system alone.

While stakeholders strongly support a plastic deposit system, resistance exists, primarily because of the need for behavior change among organizations and residents. Considerable challenges also need to be addressed, including ensuring financial viability, creating effective legislative frameworks, and overcoming cultural and market-specific obstacles. For example, one observation from Jan Thiel Beach revealed that despite efforts to promote recycling, plastic waste needed to be properly handled by cleaners, undermining the campaign's success.

A successful implementation would likely require a tailored approach that considers the unique context of Curaçao, combined with strong political will and community engagement. Each of us has a role in the fight against plastic pollution. Public support could shift opinion toward such systems over time, especially among younger generations.

In summary, while implementing a plastic deposit system in Curaçao presents significant opportunities for reducing pollution and engaging the community, it also faces several logistical, financial, and cultural challenges. Stakeholder support is strong, and pilot programs indicate high public engagement, but successful adoption will require tailored solutions that address local market dynamics and infrastructure limitations. Moving forward, combining political will, stakeholder cooperation, and public engagement is crucial to overcome the existing barriers and unlock the system's full potential. With the right strategies, a deposit system could become a pivotal tool in the fight against plastic pollution on the island.

7

Interpretation

In this chapter, the findings from the previous chapter are interpreted, the implications discussed, and deeper insights into the plastic pollution issue in Curaçao uncovered. While the results chapter presented the findings maintaining complete objectivity, this chapter aims to summarize the most insightful takeaways from the results.

By examining the societal challenges, policy challenges, causes of plastic pollution, activities within the system, stakeholders in the system, plastic pollution policy, framework on plastic pollution, street-level bureaucracy, and the plastic deposit system, a comprehensive understanding of the current situation is gathered and effective strategies to combat plastic pollution are identified. This interpretation will align with the research objectives and provide a basis for the subsequent conclusion and discussion chapters.

The research objectives of this study are:

1. **Understanding the Plastic Pollution System on SIDS and Curaçao:** Investigate the intricate plastic pollution system in Curaçao by examining the key stakeholders, existing policies, current issues, and ongoing initiatives. This goal is to thoroughly understand the local context and the factors driving plastic pollution.
2. **Understanding Policy Design Challenges on Plastic Pollution:** Examine the factors contributing to the complexity and obstacles in designing effective policies to combat plastic pollution in Curaçao. This involves examining the historical context, socio-cultural dynamics, and institutional frameworks influencing policy development and implementation.

General insights

The interactions with stakeholders on addressing plastic pollution in Curaçao exposed noteworthy insights. Despite the slow or sometimes even absent progress in reducing pollution, the people and organizations interviewed remain remarkably optimistic about the future. Many have been dedicated to this cause for over a decade and continue to believe in the possibility of positive change and, eventually, a circular economy on the island. Their enthusiasm is evident in their willingness to assist, share information, and wishes to stay engaged with the research. This optimism is crucial as it helps the ongoing efforts and commitment to a cleaner environment.

Another significant observation is that Curaçao's historical and political context is relevant in shaping future-proof policies. The separation from the Netherlands has led to gaps in the legislative framework, contributing to the current pollution issues. The shared history with the Netherlands also presents an opportunity, as the previous Dutch cabinet pledged to make funding from the Netherlands available for

Curaçao to support sustainable development initiatives. Some European Funds are also available for projects on Curaçao.

Societal Challenges

A key insight is that plastic pollution is not a societal topic or concern in Curaçao; more prevalent issues include poverty, social inequality, economic and government challenges, sociocultural dynamics, lack of infrastructure, and broader environmental and health concerns. These challenges overshadow the plastic pollution issue and partially explain the government's and residents' limited engagement and lower prioritization of the topics. Understanding these societal challenges provides context for the reduced focus on environmental issues and highlights the need for holistic solutions that address multiple problems simultaneously.

Policy Challenges

The policy landscape in Curaçao reveals several barriers. The young government, limited resources, a lack of priority for environmental topics, and political volatility hinder effective policy development and stable implementation. Despite ambitious goals set by the Ministry of Health, Environment, and Nature, the challenges of a rapidly changing political environment and limited resources make these goals appear unreasonably ambitious. Encouragingly, the interviews indicated that the main challenge is not a lack of willpower or willingness among government and system actors but broader issues such as pressing societal challenges and resource constraints.

Causes of Plastic Pollution

There is some disagreement among stakeholders about the cause of the behavior of Curaçao's residents, which is the primary cause of plastic pollution. The island's remoteness, small size, and a general lack of awareness worsen the issue. Additionally, the fragmented efforts of various stakeholders and the absence of political capabilities hinder progress. The lack of engagement from large groups of residents can be partly attributed to other societal challenges and inadequate infrastructure, but the islands' culture is the leading cause. While residents are proud of their island, this pride does not extend to its natural environment, which is a critical insight for developing targeted awareness and engagement campaigns.

Activities within the System

The primary causes of plastic pollution in Curaçao are consumer behavior, lack of infrastructure, and insufficient resources. Stakeholders focus on educating residents and raising awareness to change behavior. The theory is that residents will become more conscious of the issue and demand a cleaner island; this will drive change and make plastic pollution a higher priority for both the public and the government, leading to more impactful initiatives in the future.

It was interesting to note that all stakeholders agreed the main issue is residents' behavior, stemming from a lack of awareness and high barriers to participating actively in the recycling system. Consequently, stakeholders have been working to raise awareness and improve infrastructure. They primarily target the younger generation through educational channels to plant long-term environmental values. All stakeholders agree that transitioning from a culture of environmental disengagement to a circular economy will take several decades.

Stakeholders in the System

There is a need for greater cooperation among stakeholders. Currently, efforts are fragmented and uncoordinated despite all organizations working towards the common goal of ending plastic pollution in Curaçao. While some focus on raising awareness and others on infrastructure, there is a lack of coordination even within similar efforts. One stakeholder could coordinate to ensure that every teacher on the island knows about available educational materials and which organizations can provide guest lectures on these subjects.

If organizations focusing on education communicated more effectively, they could share their teaching methods and learn from each other. This principle applies to other routes for a cleaner island as well. Another clear indication of uncoordinated efforts is that all organizations use different metrics to assess

their progress, even within the same sectors, such as recycling initiatives. If stakeholders came together to standardize what and how they measure, tracking progress and identifying which efforts are most effective would be much easier.

Plastic Pollution Policy

As of now, the government is transitioning to a circular economy: an economy where nothing is wasted and imports are decreased as much as possible. One part of this plan is reducing plastic use and eradicating single-use plastics, which is the opposite of the circular vision. This vision was approved in 2023, and since then, the government has been trying to figure out the best way to reduce single-use plastics and improve recycling rates. Aside from some earlier pilots, the only policy tool implemented to battle plastic use is the ban on (some) single-use plastic, enacted in March of this year. They have a few methods they use to tackle illegal dumping, and two examples are the environmental police and raising awareness about the issue, especially near common dumping areas. No policies are tackling plastic consumption yet, and the government is not involved in recycling initiatives or cleanup activities (except by passively promoting the activities).

The main ideas for reducing plastic pollution through policies are promoting the issue through education and awareness campaigns, enhancing infrastructure to reduce barriers to participation, strengthening enforcement and legislation frameworks to allow for formal rules to tackle dumping and pollution, extending the current import ban to reduce plastic imports, and implementing a deposit system.

Framework on Plastic Pollution

The framework introduced in the previous chapter highlights the key battle arenas in addressing plastic pollution in Curaçao, as depicted in Figure 7.1. This framework incorporates feedback from interviewees and is designed to simplify and clarify the complexities of plastic pollution management on the island.

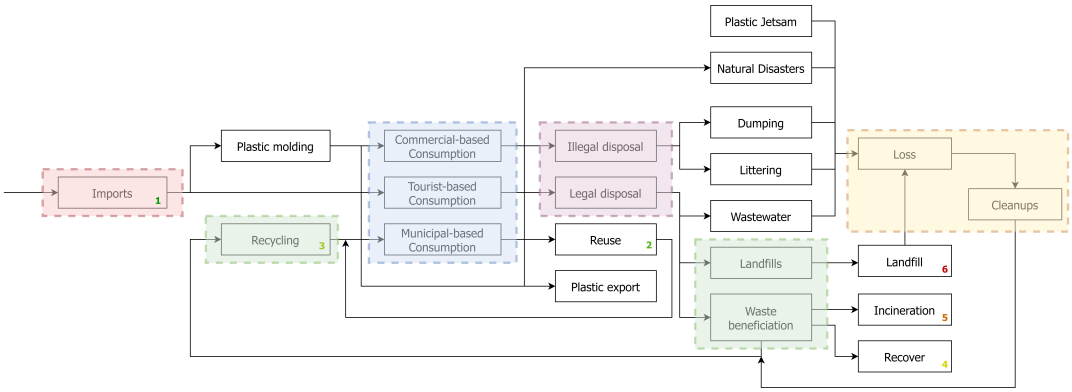

Figure 7.1: Activity within the Framework

Several modifications were made to enhance the framework's usability:

- **Plastic Molding:** Although plastic bottles are molded from plastic pellets on the island, they represent a small portion of all the imported plastic, and the impact of the molding itself on the overall system is minimal. Therefore, Plastic Molding is removed from the framework.
- **Natural Disasters and Plastic Jetsam:** The impact of Plastic Jetsam and Natural Disasters on the system as a whole is minimal and the amount of plastic landing on the islands' ecosystem through these streams is very small. The only implication of these factors on the system is that there is no way to completely get rid of plastic pollution without the need for cleanups on beaches and to counter natural pollution causes such as wind and storms.
- **Littering and Dumping:** These sources of illegal disposal can be combined for this research as they represent the same behavior. This allows for less emphasis on the different disposal methods.

- **Wastewater:** While wastewater is a significant source of microplastics entering the ocean, this research focuses on land-based pollution. Also, at this point, the island's infrastructure cannot address these smaller waste streams, so wastewater has been excluded from the framework.
- **Incineration and Energy Recovery:** Since plastics and other waste are rarely incinerated in Curaçao, these elements have been removed from the framework.

Despite the need for more organized large-scale reuse initiatives, individual efforts, such as reusing plastic bottles or purchasing secondhand items, occur. Estimating the extent of plastic reuse for this case is out of the scope of the research, so it remains part of the framework.

The revised framework reflects a more streamlined approach, focusing on the most impacting areas while acknowledging the practical limitations and realities of the island's current waste management system. The new framework now looks like this:

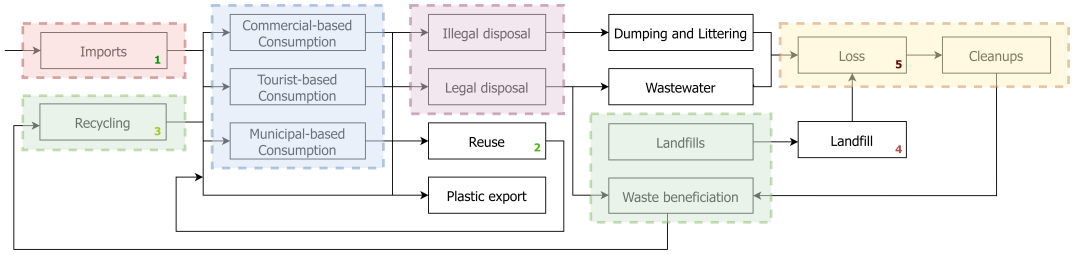

Figure 7.2: Plastic Framework

Street-Level Bureaucracy

Examining street-level bureaucracy within Curaçao's plastic pollution management system reveals the important role that front-line workers play in the success or failure of environmental policies. While policies may be well-designed at higher levels, their effectiveness is frequently compromised by the challenges those responsible for implementation face. For example, street-level bureaucracy emerges as a key factor in weakened enforcement on the island, indirectly contributing to issues like illegal disposal. Front-line workers in the waste industry have also explained the defective recycling system where plastics from recycling bins are not recycled due to street-level bureaucracy. Addressing these challenges is crucial for policymakers to strengthen the implementation of environmental policy, ensuring that efforts to combat plastic pollution are not undermined by the very individuals tasked with their enforcement.

Plastic Deposit System

The consideration of a plastic deposit system in Curaçao highlights both the promise of significant environmental improvements and the considerable challenges that must be navigated for its successful implementation. While such a system has the potential to reduce plastic waste and engage the local population in recycling efforts, its success hinges on adapting the approach to fit the island's unique social, economic, and infrastructural conditions. Resistance from both organizations and residents underscores the need for a carefully planned, context-sensitive strategy that addresses logistical concerns, market dynamics, and cultural attitudes. The insights from stakeholder interviews underscore the crucial role of strong political will and community engagement in achieving the desired outcomes. These factors, along with a comprehensive understanding of the potential obstacles and opportunities within Curaçao's specific context, are key to the success of the plastic deposit system.

8

Discussion, Conclusion, and recommendations

This research aimed to understand the complexities of Curaçao's plastic pollution system and identify the barriers to effective policy development and implementation. The study provided valuable insights into the island's environmental challenges and socio-political dynamics by adopting a qualitative approach that involved stakeholder interviews and a thorough analysis of policies and literature. However, using interviews introduces inherent subjectivity, which limits the findings' internal and external validity.

Internal validity was significantly enhanced by incorporating perspectives from a diverse range of stakeholders, including government officials, local NGOs, and business owners. This inclusive approach helped to mitigate individual biases, creating a multi-faceted understanding of the policy landscape. By reflecting the broader systemic issues rather than isolated opinions, the data's credibility was enhanced, and a nuanced analysis was made possible.

Despite these efforts to strengthen internal validity, external validity remains constrained by the unique socio-cultural and political context of Curaçao. Although the island shares common characteristics with other Small Island Developing States (SIDS) —such as geographic isolation, economic vulnerabilities, and limited waste management infrastructure - the country's distinct culture, such as their norms and values, challenge the generalizability of the findings. While broader themes like resource constraints and the challenges of import dependency may resonate with other SIDS, the particularities of Curaçao's governance structure and public attitudes toward plastic consumption suggest that any policy solutions would need to be carefully adapted to other contexts.

The study was built upon existing literature on SIDS and its vulnerabilities, a framework focused on plastic pollution pathways, and a policy tools framework. By adapting the Alpízar framework, the research allows for a clearer understanding of Curaçao's and other SIDS plastic pollution systems.

Findings reaffirmed several existing theories about SIDS vulnerabilities, such as geographical isolation and economic constraints. They proved that SIDS such as Curaçao are indeed particularly vulnerable, in this case, due to a combination of environmental, cultural, and financial challenges. The research highlights which of the literature's vulnerabilities are most relevant in the context of Curaçao. This helps understand how these vulnerabilities interact with other barriers and challenges to further complicate the design and implementation of effective policies.

The study also highlighted the limitations of institutional transplantation, emphasizing that policies borrowed from other contexts often fail without adapting to local norms and considering other contexts, such as the historical context. Together with the modified framework on plastic pollution, these findings

highlight the need for local and fitting policy and challenge the idea of a one-size-fits-all solution for policy in SIDS.

The policy tools framework helps grasp the range of available policies and understand the need for adequate realization power. In Curaçao, repressing policies has often seen significant societal resistance, requiring more realization power, longer policy implementation runups, more realization power, and additional resources — all already in short supply.

Furthermore, the research confirms the frequently mentioned assumption that economic and resource constraints are primary barriers to policy development in SIDS. Still, it highlights many more barriers, such as political volatility, and focuses on other societal challenges. Moreover, the study highlighted the often-underestimated role of street-level bureaucracy. For example, enforcement is having difficulties carrying out their duties due to the closely knit society on the island, lack of resources, and shifting focus from higher authorities.

Cultural barriers also emerged as significant obstacles to implementing plastic pollution policies. Although residents are aware of the environmental impacts, convenience, and tradition often take precedence, mainly due to the limited availability of affordable and accessible alternatives. This cultural factor challenges the literature's focus on external economic pressures, suggesting that changing public behavior will require more than technical or regulatory solutions, targeted public awareness campaigns, and shifts in cultural attitudes.

The reliance on interviews introduced an element of subjectivity, as stakeholders may have shared biased or incomplete perspectives. While cross-referencing these interviews with policy reviews and multiple sources helped mitigate this risk, it's important to recognize the value in these subjective responses. The biases and personal insights of interviewees provide a window into the deeper cultural values and societal dynamics that make this case particularly complex. Had the interviewees been asked to remain entirely objective, we might have lost the richness of their perspectives and the nuanced interplay between different stakeholders, which are crucial for understanding the intricacies of the plastic pollution issue in Curaçao.

The research offers critical implications for policymakers in Curaçao and other SIDS facing similar challenges: Curaçao will likely continue to struggle with plastic pollution without addressing current policy gaps. The failure to enforce regulations and cultural attitudes prioritizing convenience will exacerbate pollution levels, posing long-term risks. Targeted public awareness campaigns are essential to foster environmental stewardship among residents.

This research was set up to find solutions that can be implemented in many SIDS cases, but one of the primary outcomes is that there is no such thing as a one-size-fits-all solution to tackle plastic pollution in SIDS. Although we learned more about the plastic pollution system and the barriers to successful policy, we cannot make clear recommendations that will work well in other SIDS.

Other limitations of the study are that the recommendations should be discussed, tested, or analyzed in depth and that the recommendations focus entirely on plastic pollution rather than the pollution caused by all waste. These are both caused by a specific focus in the research design, which was made because of an interest in some in-depth results over several broader, more on-the-surface outcomes. Future research should examine the range of available policies and discuss and test these with the stakeholders. This could help to understand the available means for SIDS. There are already several papers on the waste management situation of Curaçao, and research is ongoing; the relationship, differences, and similarities between these areas would be fascinating to understand. Does the lack of environmental stewardship pressure the waste management system of Curaçao?

The Plastic Pollution Pathway Framework developed in this study provides a practical tool for identifying key intervention points or battle arenas and helps prioritize efforts. Recognizing socio-cultural factors and local governance limitations can help other SIDS develop more localized and effective environmental policies and identify items that should be considered. Policy interventions should focus on improving enforcement mechanisms, increasing public engagement, and providing accessible alternatives to plastic products. External support in the form of funding, expertise, or technology transfer will also be crucial for bridging the gap between policy ambition and implementation capacity.

Future research should address the study's limitations and explore further avenues, such as comparative studies across SIDS, to identify common challenges and barriers and determine how they can be overcome. Another idea is to analyze how the battle against plastic pollution has evolved in more developed countries. What decisions have slowed the process, what policy has significantly impacted the system, and why? These studies would look at the problem from a different perspective and have the potential to support and add to the insights from this research.

Another possible avenue would be in-depth behavioral research to understand plastic consumption and disposal behaviors in Curaçao or other SIDS. One of the main drivers of plastic pollution is plastic consumption; identifying how much plastic is consumed for what reason and for what purpose and investigating the possible alternatives can prove to what extent the solutions lie with the consumer and not the suppliers. In this case, I would be interested in how behavior changes over time as supply changes. This would also allow for insight into changing consumer behavior and attitude.

Another suggestion is to conduct a longitudinal study to assess the long-term effects of policies like the single-use plastic ban. Do they work, or are the fears that plastic will always find a way into an economy valid? This would allow for insight into consumer behavior and attitude and show the impact of policy on consumer behavior.

In conclusion, while the study provides a comprehensive analysis of the plastic pollution system in Curaçao, it highlights the need for ongoing research, community involvement, and policy innovation to overcome socio-cultural and legislative barriers to environmental sustainability in Curaçao.

Conclusion

This research explored the plastic pollution system in Curaçao, aiming to understand the key challenges in designing and implementing effective environmental policies and understanding the plastic pollution system. The study provided valuable insights into the island's environmental challenges, socio-political dynamics, and the factors complicating policy enforcement by employing a qualitative methodology that included stakeholder interviews, policy reviews, and field observations.

The research question was: How does the plastic pollution system operate in SIDS, and what are the barriers to policy aimed at reducing plastic pollution in Curaçao?

This research on plastic pollution in Curaçao has yielded several critical insights:

- **Implementation Gaps:** Despite the government's ambitious goals to address plastic pollution, substantial gaps exist between these goals and implementation. Limited resources, infrastructure constraints, street-level bureaucracy, and political volatility significantly hinder effective policy enforcement.
- **Cultural and Socio-Political Challenges:** Curaçao's unique cultural attitudes towards convenience and plastic consumption and political and economic instability complicate efforts to manage plastic pollution. The short-term focus on economic and social issues often overshadows environmental concerns.
- **Stakeholder Perspectives and Local Context:** Stakeholders agree that the government should lead the charge against plastic pollution, but there are concerns about the suitability and implementation of proposed solutions. A one-size-fits-all approach is impractical; tailored solutions considering Curaçao's local context are essential.
- **Framework for Action:** The redesigned framework emphasizes rethinking plastic importation, reducing consumption, improving recycling rates, combating illegal disposal, and maintaining a clean island. This localized approach addresses the specific drivers of plastic pollution on the island.
- **Barriers to Effective Policy:** Key barriers include resource constraints, political challenges, lack of public awareness, and street-level bureaucracy. These factors collectively impede the development and implementation of effective environmental policies.

Let's start with insights into SIDS and their battle against plastic pollution. Because SIDS usually have limited resources, are resource-dependent, have fragile ecosystems, and are often tourist or aid-dependent, plastic pollution will be a common vulnerability, and the issue will be persistent. Tackling plastic pollution is difficult because of geographical constraints, economic vulnerability, dependence on imports, and unique socio-cultural attitudes. Because of the uniqueness of SIDS, such as Curaçao, institutional transplantation is complex because policy is very context-specific, and it is difficult to transplant policy or other institutions from other regions due to cultural and implementation challenges.

Another insight is that culture plays an essential role in the fight against plastic pollution in Curaçao. The people of Curaçao attach great importance to traditions and convenience and share a more short-term focus without much stewardship for the local environment. Therefore, People's attitudes are generally neutral or positive towards plastic consumption, and although suppliers offer alternatives, locals prefer plastic supplies.

Most stakeholders in the plastic pollution system agree that the government should take the lead in addressing the issue. They view the government as responsible for regulating negative externalities and believe it should actively curb plastic pollution. While many stakeholders initially pointed to a lack of government policies targeting plastic pollution, further discussion revealed that some actions were underway or had been implemented. Figure 8.1, below summarizes several commonly mentioned ideas and initiatives. Notably, these suggestions emerged during brainstorming sessions, utilizing the policy tool framework, and represent potential actions rather than initiatives ongoing at the time of the field research. They follow directly from the fieldwork research.

	***C:** Policies aimed at reducing plastic consumption*	***D:** Policies aimed at reducing the amount of illegal disposal*	
Stimulating	**C:** Awareness campaign on alternatives for plastic **D:** Awareness campaign on affordability of landfill	**C:** Subsidizing alternatives of plastics **D:** Rewarding citizens who recycle plastics (financially)	**C:** Law that obligates catering industry to serve alternatives to plastic **D:** Increasing amount of recycling points
Repressing	**C:** Awareness campaign on health damage of plastic use **D:** Awareness campaign on environmental damage from dumping	**C:** Tariff on imported plastics **D:** Fines for anyone involved in dumping illegally	**C:** Ban on single-use plastics **D:** Revoking drivers license when caught dumping
	Communicative	Economic	Legal

Figure 8.1: Policy Tools on Plastic Pollution

When discussing a plastic disposal system with the stakeholders, it became clear that all stakeholders were fans of a version of the idea. Still, all stakeholders were concerned about the form required. They often defended some commercial interests, believed a foreign system would not work in Curaçao, or were afraid the setup was too slim. What form to choose is difficult, but it is interesting to consider that the diverse group of stakeholders agreed on the system's possible impact as well as the necessity of the system to fit the local context.

The ambitions of Curaçao are significant, but the government should consider their realization power and the significant barriers faced in this process. The community and the people are key to the success of any upcoming interventions, and working with the stakeholders to convince the people of Curaçao to come together will be a crucial challenge.

This study redesigned Alpizar's marine plastic pollution framework to fit this research's SIDS and terrestrial focus. The new framework is focused on the case of Curaçao and was designed to fit most SIDS cases. It can help us understand how the plastic system works in these states and help identify the most important battle arenas to reduce plastic pollution effectively. The framework, coupled with the stakeholder analysis, interviews, and observations, gives a comprehensive perspective on the plastic pollution system. The newly designed framework can be found below, in figure 8.2.

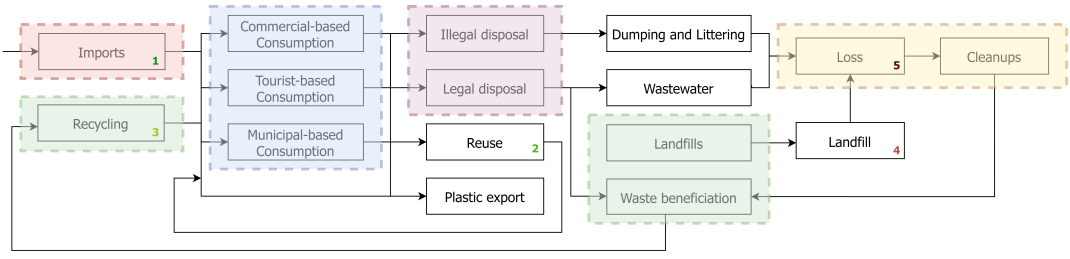

Figure 8.2: Plastic Framework

The framework shows that the priorities are rethinking the types and amounts of plastic imported, reducing plastic consumption, increasing the recycling rate, reducing the amount of illegally disposed plastics, and continuing to fight for a clean island. Together, these issues are the leading causes of

plastic pollution on the island.

We have presented a comprehensive perspective on the plastic pollution system and identified the most important battle arenas that require interventions. Next, we need to understand the most prominent barriers to effective policy development. From the interviews, articles, and observations, we have identified a set of barriers that prevent effective policy development or implementation.

First, there are some prominent challenges on the island, such as the government's shift in focus and resources to widespread poverty and social inequality, resource constraints, political challenges such as political volatility, and a need for better infrastructure. The government has not prioritized environmental challenges as these do not pose any immediate threat like poverty. Also, the government is in serious debt, which constricts its resources and significantly limits its options.

Secondly, a lack of awareness, combined with cultural attitudes towards plastic and the island's nature, has made the topic political and unappealing for a minister to tackle. Currently, the stakeholders in the systems are working on education and awareness, developing infrastructure, and setting up recycling initiatives.

Lastly, a significant barrier to policy implementation is street-level bureaucracy in Curaçao. This significantly damages the enforcement power and, therefore, the legislative effect of any new policy. It also has created ineffective systems such as the milieustraat and other recycling infrastructure due to improper management of these facilities.

The results show that while challenges, such as geographic isolation and economic constraints, are common to other Small Island Developing States (SIDS), Curaçao's unique cultural and political landscape requires a localized approach to policy development. The study also confirmed the limitations of applying universal environmental solutions to SIDS, stressing the importance of context-specific strategies considering the island's socio-cultural fabric and governance structure.

Thus, while the research contributed to closing the knowledge gap about plastic pollution systems in SIDS, it revealed that the solutions for Curaçao may not be fully generalizable to other SIDS without significant adaptations. Each island's cultural, political, and economic nuances must be factored into policy design.

While this study has provided valuable insights, it recognizes several limitations and promotes further research in the discussion section of this chapter. Further research is needed to reach the long-term goals of becoming a circular island and impacting all SIDS.

Recommendations

Several recommendations have emerged from this study to address the pressing issue of plastic pollution in Curaçao, tailored to the island's specific challenges and opportunities.

First, there is a need to expand and strengthen public education campaigns to promote environmental stewardship and raise awareness about the negative impacts of plastic pollution. These campaigns should focus on changing public attitudes toward single-use plastics and fostering a culture of responsibility and environmental care. By engaging the community — particularly schools, businesses, and permanent residents — these efforts can encourage the reduction of plastic use and promote sustainable practices across the island.

In line with this, broadening the existing ban on single-use plastics is essential. While some progress has been made in limiting the use of plastics, the ban should be expanded to cover other commonly discarded items that more sustainable alternatives can replace; examples are plastic cutlery, packaging, and unnecessary plastic products that contribute significantly to the waste stream. This expanded ban should be coupled with efforts to ensure that sustainable and affordable alternatives are available to consumers and businesses, making it easier for them to transition away from harmful plastic products.

A critical component of addressing plastic pollution in Curaçao is introducing a plastic deposit system. This system, designed to fit the local context, would allow consumers to return plastic bottles and packaging in exchange for a deposit refund. It would reduce plastic waste and provide economic benefits, particularly for lower-income communities that may be significantly affected by plastic pollution. By encouraging proper disposal and recycling of plastic waste, this initiative could substantially lessen the environmental pressure on the island.

The Curaçaoan government must coordinate waste management, recycling, educational, and cleanup efforts among key stakeholders. Leadership from the government is vital to ensure a cohesive approach to plastic pollution, aligning the efforts of various organizations toward common goals. A comprehensive waste management strategy that incorporates plastic pollution reduction is crucial, with clear roles and responsibilities for all involved parties. Furthermore, the government should ensure that the enforcement mechanisms in place to tackle illegal dumping are improved. By redesigning the strategies to address illegal waste disposal, including stricter regulations and enhanced enforcement, the government can significantly reduce this persistent problem. Licensing controls for waste transporters and penalties for non-compliance would further deter illegal dumping and promote better waste management practices.

One key barrier to effective policy implementation is the impact of street-level bureaucracy. Front-line workers often face challenges in enforcing environmental regulations, partly due to a lack of resources or community resistance. Providing these workers with more support, legal protections, and autonomy can enhance their effectiveness. Additionally, improving community engagement and understanding of the role and importance of these enforcement efforts could reduce social backlash and improve compliance with environmental policies.

It is also crucial to promote and support recycling activities across the island. Curaçao should invest in the infrastructure and systems needed to enhance local recycling efforts, ensuring that materials like plastic are properly collected, sorted, and repurposed. By promoting recycling as a crucial part of the waste management strategy and circular economy, the government and other stakeholders can work toward reducing the volume of waste in landfills and the environment. Recycling initiatives should be accessible to all residents and businesses, encouraging widespread participation and contributing to the island's sustainability goals.

Curaçao can benefit from seeking external support and partnerships to tackle plastic pollution. International cooperation with environmental NGOs and donor countries can bring much-needed funding, technical expertise, and innovative solutions tailored to small island states. These partnerships can also provide resources for public awareness campaigns and support the transition to a circular economy where waste is minimized, and materials are reused.

Finally, the current legislative framework on waste should be revisited. Existing laws governing waste management and plastic pollution need to be evaluated to ensure they are comprehensive and en-

forceable. Creating a legal framework to reflect the island's current needs and including more stringent penalties for non-compliance will help support efforts to reduce illegal dumping, promote recycling, and enforce the expanded ban on single-use plastics. A legislative overhaul can strengthen Curaçao's approach to waste management and ensure long-term success in battling plastic pollution.

In conclusion, addressing plastic pollution in Curaçao requires a multifaceted approach that includes public education, expanded legislation, community involvement, and government leadership. By promoting recycling, improving enforcement mechanisms, and fostering both local and international collaborations, Curaçao can develop a more sustainable waste management system and reduce the impact of plastic pollution on its environment and residents.

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A

Interview Protocol: In-depth Interview

Dit interview is onderdeel van een onderzoek genaamd “Plasticvervuiling op Curaçao”. Dit onderzoek wordt uitgevoerd door Max Verkuil als onderdeel van zijn master in Complex Systems Engineering and Management.

Het doel van het onderzoek is om een stap in de juiste richting te zetten in de aanpak omtrent plasticvervuiling en om erachter te komen welke barrières er op Curaçao (en vergelijkbare Small Island Developing States) optreden bij het ontwikkelen van een aanpak. Hierbij wordt er specifiek gekeken naar welke invloed cultuur en kwetsbaarheden van het eiland een rol spelen op de aanpak of proces rondom de aanpak. Om verschillende perspectieven te vergelijken en om het lokale perspectief te begrijpen worden er voor dit onderzoek interviews afgenomen met betrokkenen. Het interview zal ongeveer 30 tot 40 minuten in beslag nemen en – met uw toestemming – zal hiervan een opname worden gemaakt. De uitkomsten worden gebruikt voor mijn onderzoek, die openbaar gedeeld zal worden via de TU Delft repository. U wordt gevraagd om een aantal vragen te beantwoorden over het probleem van plasticvervuiling, de aanpak hiervan en uitdagingen op Curaçao.

Ondanks dat ik mijn uiterste best doe om uw gegevens en uitkomsten veilig te bewaren, is er een kans op een databreuk waardoor wat u zegt over dit onderwerp op het internet zou kunnen belanden. Dit risico minimaliseer ik door alleen samenvattingen van de interviews te bewaren. Omdat de samenvattingen van het interview gevoelig zijn voor interpretatie, laat ik deze graag eerst door u goedkeuren voor ik deze toevoeg aan het onderzoek. De opname van het interview wordt na afronding van het interview verwijderd.

Uw deelname aan dit onderzoek is volledig vrijwillig, en u kunt zich elk moment terugtrekken zonder reden op te geven. U bent vrij om vragen niet te beantwoorden.

Max Verkuil

m.m.verkuil@student.tudelft.nl of maxverkuil@hotmail.com

+31 6 40729251

Introductie

- Voorstellen
- Uitleg afstudeeronderzoek
- Uitleg opbouw interview
- Uitleg datagebruik en tekenen consentformulier
- Heb je vooraf nog vragen of opmerkingen?

Uitdagingen Curaçao

Doel: uitzoeken welke uitdagingen er nu spelen op Curaçao en welke barrières er spelen bij het maken en implementeren van beleid.

- Welke uitdagingen spelen er op Curaçao? Welke thema's zijn nu maatschappelijk relevant of hebben maatschappelijke prioriteit?
- Wat zijn uitdagingen in het ontwikkelen of uitvoeren van beleid in de context van Curaçao?
- Spelen de kwetsbaarheden van Curaçao als eiland hier een rol in? Zo ja, welke kwetsbaarheden spelen hier een rol in?
- Speelt de cultuur van het eiland hier een rol in? Zo ja, welke factoren van cultuur spelen hier een rol in?

Plasticvervuiling

Doel: informatie verzamelen over de context van de case en het beeld van de geïnterviewde.

- Ben je bekend met (het begrip) plasticvervuiling?
- Hoe definieer jij het probleem van plasticvervuiling?
- Ben je betrokken bij plasticvervuiling op Curaçao? Zo ja, vanuit welke rol en organisatie ben je betrokken?
- Kan je kort iets vertellen over het probleem op Curaçao en de visie van jouw organisatie omtrent de aanpak tegen plasticvervuiling op Curaçao?

Actoranalyse Plasticvervuiling

Doel: overzicht van welke personen en organisaties (de grootste) invloed hebben op het plasticvervuilingsprobleem en hoe ze betrokken zijn.

- Welke personen en organisaties zijn spelen de grootste rol in het systeem ontremt plasticvervuiling?

Beleidsinstrumenten en plasticsysteem

Doel: ontdekken welke beleidsinstrumenten al gebruikt worden en wat de geïnterviewde hiervan vind en op welke trap op de ladder of functie binnen het systeem nu wordt geopereerd.

- Wat is het beleid over plasticvervuiling op Curaçao?
- Introductie: Beleidsinstrumenten
- Welke beleidsinstrumenten herken je terug in de huidige aanpak omtrent plasticvervuiling?
- Welke beleidsinstrumenten herken je te weinig of niet terug in de huidige aanpak omtrent plasticvervuiling?
- Wat vind u van de aanpak omtrent plasticvervuiling? Werkt de huidige aanpak?
- Introductie: Plasticvervuiling Framework
- Op welke trap van de ladder wordt nu voornamelijk ingezet in de aanpak omtrent plasticvervuiling?

- Op welke plek functie binnen het systeem wordt nu voornamelijk ingezet in de aanpak omtrent plasticvervuiling?

W.v.t.t.k

- Is er verder nog iets dat u kwijt wilt?

Afsluiten en bedanken

- Noteren contactgegevens, zodat de samenvatting kan worden goedgekeurd.

B

Informed Consent Form

You are invited to participate in a research study titled “Plastic Pollution on Curaçao”. This study is being done by Max Verkuil from the TU Delft, as part of his master thesis.

The purpose of this research study is to understand the plastic pollution system that exist for Curaçao and identify opportunities and barriers in reducing plastic pollution on the island. To gain understanding, your perspective is greatly appreciated and through this 40 minute meeting we can incorporate your view into the analysis.

We will be asking you to describe your experience and give your (professional) opinion. By signing this form, or by verbally accepting, you agree with the following statements:

1. I understand that, as with any research activity, there is a risk of a data breach. The researcher will, to the best of their ability, keep my answers in this study confidential. They will minimize any risks by keeping all personal information at TU Delft, only accessible to the TU Delft research team. The data will not be shared with other partner institutions.
2. I understand that taking part in the study involves an interview from which written notes will be made or audio will be recorded. If any audio is recorded, this will be stored at TU Delft, only accessible by the TU Delft research team. All recordings and transcripts will be deleted at the latest 1 month after completion of the project.
3. I understand that the researcher will produce an anonymous summary of the discussion in which I will only be referred to by job description and domain of activity. The summary will be made publicly available at the end of the project.
4. I understand that my participation in this study is entirely voluntary and I can withdraw at any time. I am free to omit any questions. I can contact the researcher or his supervisor and ask to delete any of my data until the project is finished, which is expected to be at the end of May 2024, and the researcher will do so accordingly.
5. I understand that I may be anonymously quoted in the final thesis.
6. The personal data collected during this project may be reused for scientific publication, scientific communication or education purposes, on the topic of plastic polution in Small Island Developing States.
7. You will be anonymous in all outputs. Should we want to use the data for any other purposes, we will reach out to you and obtain your explicit permission.
8. I have read and understood the study information, or it has been read to me. I have been able to ask questions about the study and my questions have been answered to my satisfaction.

Signatures

Name of participant	Signature	Signature Date

Study contact details for further information:

Researcher: Max Verkuil - m.m.verkuil@student.tudelft.nl

TU Delft Supervisors
Jan Anne Annema - j.a.annema@tudelft.nl
Mark de Bruijne - m.l.c.debruijne@tudelft.nl

C

Lists of Data

This appendix provides supplementary data and materials that support the research findings. Detailed lists of interviews conducted, observations made, and relevant articles and reports reviewed throughout the study are included. These resources aim to enhance understanding of the research context and methodology, offering readers a comprehensive view of the data collected and analyzed.

The lists can be found in the pages ahead.

C.1. List of Interviews

ID	Name of Organisation	Sector	Interview Date
1	Green Phenix	Recycling Organization	2024-02-06
2	Selikor	Waste Management Organization	2024-02-07
3	Green Force	Recycling Organization	2024-02-08
4	van den Tweel	Retail Importer	2024-02-11
5	Kunuku Man	Plastic Cleanup Organization	2024-02-13
6	TUI	Travel Agency	2024-02-14
7	Firgos	Retail and Industrial Importer	2024-02-15
8	Green Kidz	Environmental Education	2024-02-16
9	Ministerie van GMN	National Government	2024-02-19
10	Ministerie van GMN	National Government	2024-02-19
11	Ministerie van GMN	National Government	2024-02-19
12	Selikor	Waste Management Organization	2024-02-19
13	Green & Clean Curaçao	Environmental Awareness	2024-02-21
14	Parliamentarian	Political Representative	2024-02-21
15	Curaçao Bottles	Retail Importer	2024-02-23
16	Curaçao CleanUp	Plastic Cleanup Organization	2024-02-23
17	UNIEK Curaçao	Nature Conservation	2024-02-26
18	Sea Turtle Conservation Curaçao	Environmental Awareness	2024-02-29

Table C.1: List of Interviews

C.2. List of Observations

#	Title of Observation	Location	Date
1	Life is built around automobiles as the main form of transportation	Willemstad	2024-02-05
2	Green Phenix carried out an extensive Gap Analysis	Zeelandia	2024-02-06
3	Plastic on Beaches	Boka Patrick	2024-02-07
4	SER advised the government on Plastic Pollution in 2021	Cornet	2024-02-07
5	Waste washes onto the beaches	Westpunt	2024-02-07
6	Near designated hiking trails, you find little (plastic) waste	2024-02-07	
7	In supervised areas, you find less (plastic) waste than in unsupervised areas	Westpunt	2024-02-07
8	Delivering waste to the landfill is priced	Mal Pais	2024-02-07
9	Landfill is of the most unsustainable type	Mal Pais	2024-02-07
10	People go through the waste to find value as a source of income	Mal Pais	2024-02-07
11	”Milieustraat” of Mal Pais is broken	Mal Pais	2024-02-07
12	”Milieustraat” of Mal Pais is barely used	Mal Pais	2024-02-07
13	Waste from ”Milieustraat” is dumped on landfill	Mal Pais	2024-02-07
14	Glas, asbestos, debris, and medical waste are separated	Mal Pais	2024-02-07
15	Some students are introduced to education on waste	Barber	2024-02-08
16	People leaving waste at the beach	Kleine Knip	2024-02-08
17	Poverty on Curaçao	Cornet	2024-02-08
18	30.000 Undocumented Refugees on Curaçao	Berg Athena	2024-02-08
19	Roads are awful	Willemstad	2024-02-08
20	Communication with locals can be difficult	Punda	2024-02-09
21	Plastic in Supermarkets	van den Tweel	2024-02-10
22	Reusable plastic cups at Carnaval Celebration	Otrobanda	2024-02-10
23	Drugs is a big topic	Jan Thiel Beach	2024-02-11
24	International tourist chains adhere to international guidelines and therefore recycle plastics	Willemstad	2024-02-12

Table C.2: List of Observations

#	Title of Observation	Location	Date
25	Food is packed in Plastic	Truk'i Pan Flippin Curaçao	2024-02-13
26	No waste or recycling bins near Food Trucks	Salina	2024-02-14
27	Anekdote by local on the current state between getting elected and being unemployed	Pietermaai	2024-02-15
28	Large appliances are dumped in bulk	Westpunt	2024-02-17
29	People gather their waste in garbage bags but leave them in public	Kleine Knip	2024-02-17
30	Recycling bins can be found near tourist destinations	Mambo Beach	2024-02-17
31	Cleaner is unaware of plastic recycling bin and wastes recyclables	Jan Thiel Beach	2024-02-17
32	At local food places, food is offered on plastic dishes	Willemstad	2024-02-18
33	Advertisement on local radio on delivering waste to Mal Pais	Radio	2024-02-19
34	At food places focused on tourists, food is served on paper dishes	Willemstad	2024-02-20
35	Recycling Station at van den Tweel is large and allows early waste separation	Zeelandia	2024-02-22
36	Tourists and locals barely mix	Zanzibar Beach	2024-02-24
37	Interaction on policy development with inhabitants	Jan Thiel	2024-02-24
38	Inhabitants throwing out waste from their car	Westpunt	2024-02-24
39	Plastic can be found anywhere, especially close to local hotspots	Salina	2024-02-25
40	Distrust towards white scholars	Punda	2024-02-25
41	Punda is much cleaner than the rest of Curaçao	Punda	2024-02-25
42	Punda was cleaned thoroughly before the arrival of the Dutch Royal Family	Punda	2024-02-25
43	Otrobanda is particularly clean near Wilhelmina bridge	Otrobanda	2024-02-25
44	One can find dead dogs beside the road	Barber	2024-02-26
45	Speaking to locals on their income and jobs	Cornet & Salina	2024-02-27
46	Anekdote by activists on how the ministers do not recognize the severity of the littering issue	Jan Thiel	2024-02-29
47	Anekdote on the use of soaps and detergents in Curaçao	Pietermaai	2024-03-01

Table C.3: List of Observations, ctd.

C.3. List of Articles

#	Title of Article	Publisher	Date	Reference
1	Twee maanden gratis vuil storten	Antilliaans Dagblad	May 29, 2024	[86]
2	Meer klachten over illegale vuilstort	Antilliaans Dagblad	May 28, 2024	[84]
3	Halvering Tarief Vuilstort	Antilliaans Dagblad	May 22, 2024	[82]
4	Statenlid Pauletta betrapt mannen op illegale vuilstort bij Dam Pretu	Curaçao.nu	May 2, 2024	[90]
5	Wet tegen wegwerpplastic op Curaçao, maar zal het eiland schoner worden?	NOS	Apr 18, 2024	[92]
6	Pleidooi voor scheiden afval	Antilliaans Dagblad	Apr 7, 2024	[85]
7	Curaçao enacts new law against plastic	Curaçao Chronicle	Mar 22, 2024	[13]
8	Curaçao Clean Up merkt verschil: Hoeveelheid plastic in de zee dringt terug	NU Curaçao	Mar 19, 2024	[16]
9	Op Curaçao staat de vergroening in de kinderschoenen, maar de doelen zijn ambitieus	Parool	Feb 25, 2024	[48]
10	Curaçao gaat illegale vuilstort en verbranding aanpakken	Paradise FM	Jan 17, 2024	[93]
11	‘Kijk, plastic recyclen op Curaçao heeft wél zin!’	NTR Caribisch Netwerk	Oct 18, 2023	[7]
12	Waarom is Curaçao zo vuil? ‘Spreek mensen aan op hun gedrag’	NTR Caribisch Netwerk	Sep 30, 2023	[8]
13	GMN gaat streng optreden	Antilliaans Dagblad	Sep 24, 2023	[81]
14	Kinderen willen statiegeld invoeren	Antilliaans Dagblad	Jul 11, 2023	[83]
15	Verbod foambak dichterbij	Antilliaans Dagblad	Jun 12, 2023	[21]
16	Gevaarlijke afval veroorzaakt explosie in Selikor-vrachtwagen	NU Curaçao	Apr 21, 2023	[88]
17	‘Curaçao, Aruba en Sint-Maarten schiet drastisch te kort in gezond afvalbeheer’	NU Curaçao	Apr 23, 2021	[106]
18	De weerstand tegen statiegeld	NOS Nieuwsuur	Apr 10, 2019	[68]
19	Curaçao: 100 jaar milieuvervuiling op wereldniveau	Vice Versa	Jan 24, 2018	[49]

Table C.4: List of Articles

C.4. List of Reports

#	Title of Document	Author	Reference
1	Gap Analysis	Steenhagen & Vijber	[104]
2	Advies over landsverordening openbare orde	Sociaal Economische Raad	[19]
3	Advies over landsverordening openbare orde en afvalstoffenbelasting	Sociaal Economische Raad	[18]
4	Challenges and opportunities of a global agreement on plastic pollution for SIDS	GIZ*	[44]

Table C.5: List of Reports

*GIZ = Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH

D

Photos of Fieldwork Research


Aluminium
Curaçao's
Circularity


RECYCLING
CENTRE
ZEELANDIA


24oz Sin Tapas
Cup 24oz Chapa
CUPS


CURACAO
MOET'NU
SCHOON


Science for
the benefit
of people


& ALUMINUM CANS.