Policy Department – Ministry of VROMI

Spatial Development Strategy 2030

Creating a sustainable spatial development for Sint Maarten

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Spatial Development Strategy 2030

Ministry of Public housing, Spatial Planning, Environment and Infrastructure (Ministry of VROMI)

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Sint Maarten

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Summary

The public consultations during the preparation of development (zoning) plans for the districts in Sint Maarten that started in 2013/2014 showed a general outcome in reactions. A general feeling was that on several cross-sectoral areas an overall and coherent strategy is needed on the direction for the long term. A framework – so to speak - within which the various spatial themes fit and are integrated. The Spatial Development Strategy aims to provide an overview on the bigger picture regarding spatial development and the correlation between various spatial themes.

The main objective of this strategy is to realize an optimal living, working and recreational environment for Country Sint Maarten now and in the future. This implies that we should strive for *sustainable* spatial development.
To achieve sustainable spatial development, this strategy focusses on the following main strategic objective:
Provide a coherent and comprehensive direction for sustainable spatial development of Country Sint Maarten until 2030,
with sub-objectives that focus on:
1. Sustainable development;
2. Enhancement of the resilience of the country;
3. Enhance the quality of life for citizens.

There have been many positive developments in the last decennia in terms of building and land use, but also many developments that have had adverse spatial effects that are difficult to reverse. This can be seen for example in the inadequately planned developments in the hillsides, in the destruction of natural areas, in the occurrence of incompatible developments competing for space such as commercial and industrial functions in close proximity to residential neighborhoods, and in inadequate infrastructure and housing.
Given the current adverse spatial effects and in light of external factors such as increasing competition from other tourist destinations, climate change and continuing population growth, having a coherent vision and strategy for sustainable (spatial) development is as relevant as ever.

Main connecting theme: sustainable development

One main conclusion is the awareness that spatial themes do not stand independently of each other, but rather are related; that developments must take place in a sustainable way, with a balance between the economic, ecological and social development.
Sustainable development provides for the needs of the present generation (in the sense that it is of sufficiently good quality of life), without using, claiming, or destroying the supply of needs of future generations. Sustainable growth occurs when the total of economic activities, the quality of the living environment and social well-being increases. Between these three elements of sustainable development there is a reciprocal relationship. This is also reflected in the United Nations Sustainable Development Goals (SDG), which were used as guidelines and input for the proposals described in this Strategy document.

These elements form the point of departure for this Spatial Development Strategy.

Furthermore, Sint Maarten is part of a bigger picture or a larger whole. This means being aware of stakeholders ‘outside the borders’. Development also gives opportunities for achieving goals with cooperation and funding.

Executive Proposals

This Spatial Development Strategy intends to give an overview of the main trends, topics, issues and possible proposals and directions. From this (spatial) point of view choices have to be made,

priorities to be set after which these can be translated into concrete execution.

Proposals have been drafted on three main sustainable pillars: the economic, social and environment pillar. These should not be seen as just vertical 'columns', standing separately on their own. No, they are in fact circles, overlapping each other partly. Indicating that there is some (inter)connectivity in many cases. Decisions/changes on one aspect might influence the other. It is important to be aware of that, to secure a sustainable future guaranteeing a certain quality of life for all.

Pillar 1. Economic
For the economic pillar, economic proposals have been made to facilitate tourism, main ports, industrial functions & utilities, and mobility & transportation.
More in detail, to facilitate:
- stay-over tourism, marine industry and other tourism related activities (tourism)
- airport and harbor (main ports)
- energy cluster, building (material) cluster, waste cluster, commercial and light industrial (industrial functions and utilities)
- main road network, upgrading of existing main roads, Improvement secondary road system, bicycle and pedestrian traffic, public transportation and parking (mobility and transportation).

Pillar 2. Social
The social pillar includes social proposals to facilitate housing, public facilities and cultural heritage.
More in detail, to facilitate:
- affordable housing
- schools, sport & recreation, village centers, and cemeteries (public facilities)
- cultural heritage.

Pillar 3. Environment
The environment pillar includes proposals to better facilitate our atmosphere, hydrosphere, lithosphere, and biosphere.
More in detail, to facilitate:
- air quality (atmosphere)
- sea level rise, main water bodies, storm water management, and water quality: waste water & drinking water (hydrosphere)
- soil pollution, solid waste (garbage), nature and nature conservation (lithosphere)
- protection of biodiversity, climate change, and energy (biosphere).

Attachment 3 contains a map of Sint Maarten on which the main proposals from this Spatial Development Strategy are visualized and further elaborated on. Thus providing an overview of the spatial distribution of the main proposals.

With the trend analyses, elaboration of the different pillars and the proposals, a first direction of spatial planning on a national level is provided. Awareness is created about what interests and aspects may be involved when taking the next steps: deciding - departing from a coherent vision - on specific steps to take, measures to take, priorities to set in order to secure a sustainable future, guaranteeing a certain quality of life for all.

1. Introduction

Based on the National Ordinance Foundations Spatial Development Planning (Dutch: Landsverordening grondslagen ruimtelijke ontwikkelingsplanning (AB 2013, GT no. 403)) the Minister of VROMI is tasked with the preparation of a consistent and sustainable policy for the (spatial) development of Sint Maarten.

However, practically all of the developments in the last decades have taken place without an established comprehensive and coherent policy framework with respect to the spatial development of Sint Maarten.

Over the last decades, Sint Maarten has experienced an economic boom. The population of Sint Maarten has grown tremendously from nearly 3.000 inhabitants in 1961 (Hartog, 1981) to officially nearly 42.000 inhabitants in 2019.

There have been many positive developments in terms of building and land use, but also many developments that have had adverse spatial effects that are difficult to reverse. This can be seen for example in some inadequately planned developments in the hillsides, in the destruction of natural areas, in the occurrence of incompatible developments competing for space such as commercial and industrial functions in close proximity to residential neighborhoods, and in an inadequate road infrastructure and housing.

Given the current adverse spatial effects and in light of some external factors --such as increasing competition from other tourist destinations, climate change, and continuing population growth- as a country within the Kingdom of the Netherlands, having a coherent strategy for sustainable spatial development is as relevant as ever.

Getting insight in the state of affairs, the trends and developments is necessary to have an overview on several, sometimes conflicting demands that may be expected for the upcoming period. Individual and ad-hoc approaches deny the complexity of today and future society in which a lot of things somehow effects teach other. If we miss that in our considerations, it might lead to suboptimal choices on future spatial planning. From experience it can be noted that in complex projects where different challenges (and therefore interests) meet, it pays to start with a shared image: joint fact-finding. In plain English: what are we talking about and where do we stand? What is the common denominator? What lessons from the past can we share with each other? A careful assessment and consideration support an empirical basis; all those involved in future spatial development receive a shared picture with an overview of the tasks and of the urgencies.
This document intends to take a first step towards a vision on the future spatial development of Sint Maarten. In addition, it proposes points of departure for future development, resulting in a cleaner (1), more closely-knit (2) and prosperous (3) country.

Clean in two senses: on the one hand a beautiful and attractive landscape; on the other a country with minimal pollution, ecologically stable, with high quality of life for today and future generations.
Closely-knit in the sense that we don’t just live and work in close proximity to one another but also feel closely connected in social and cultural terms. Sharing the space together, feeling connected to each other and the environment we are living in.
Prosperous in the sense that our country has a strong economy offers everyone opportunities and is characterized by diversity, individual freedom of choice and thriving (urban) areas.
Creating a future we can all look forward to.

1.1. Scope

Since the 1970s, Sint Maarten has increasingly focused on tourism development to promote economic growth. This was accompanied by a multiplication of the number of hotel rooms, an explosive increase in the population, mainly due to immigration, increased construction activities and expansion of facilities. In short, the pressure on the available land on Sint Maarten has increased tremendously.

The developments outlined have also led to increasing conflicts between land use destinations. Frictions between residential use and commercial activity for example, which in many cases can negatively affect the enjoyment of living. Due to the expanding of the amount of buildings, the remaining green (nature) areas will also come under greater pressure.

The claims to land are becoming more and more numerous and urgent. This requires land and, according to experience, relatively even more as prosperity increases. If these claims are left to itself, there is a danger that the strongest economic and social forces determine the use of space at the expense of less powerful interests and players, who are less able to defend their own interests. This can have a negative effect on the environment for certain groups of the population. In addition, prosperity may also be at stake. The different claims to land can hinder and harm one another at the expense of optimal economic growth and livability. It is therefore in everyone's interest to organize and use the space on Sint Maarten as efficiently as possible, taking into account the current and future demand for and supply of land.

Obviously, it is not possible to avoid all contradictory claims on the land. Some destinations are excluding each other. In the course of development, a choice must always be made that entails a sacrifice of certain, in itself important values. It is of the utmost importance that this choice is not just made ‘like that'. After all, decisions regarding space have a particularly far-reaching scope, especially if buildings and other radical changes are involved. In addition, bad choices are - most of the time – irrevocable or cannot be reversed easily.

Spatial planning means trying to "steer" the development process in such a way that it not only avoids environmental, social and economic disadvantages, but also achieves the highest possible social benefit; a positive contribution to the "quality of life". Different elements of development can complement and support each other when properly designed. In this way, the use of available space, as well as that of public and private investment, is optimally facilitated.
Such spatial planning presupposes an approach to the process as one coherent whole, so that the various claims on land can be harmonized as well as possible. That is why spatial (environmental) planning can only take place in close connection with social and economic planning. Spatial planning assumes an approach in time by indicating a strategy or vision of the future, so that decisions can be tested in the short term against their longer-term significance.

So, spatial planning is – as said before - essentially about dividing space between various needs. The essence is that needs (interests) are weighed against each other because space is finite. There are always more wishes than can be fulfilled. We can resolve this conflict of interest in two ways:
- either a democratically legitimate government decides, or;
- the law of the strongest applies.

There are good reasons for choosing the former because space is a collective good. Spatial planning is not a conflict resolution between different parties, but it affects us *all*. This not only requires the government to make choices, but also to *implement* those choices. So, spatial planning requires:
1. weighing of different interests and making choices,
2. perseverance and
3. vision.

If one of these is missing, spatial planning is not carried out in the best possible way.

The choice to instruct government to take care of the space as collective good is reflected in the Constitution of St. Maarten in which it is stated: “We, the people of Sint Maarten resolved to provide for the continuing preservation of nature and the environment” (preamble of the Constitution of Sint Maarten). “It shall be the government’s constant concern to keep the country habitable and to protect and improve the environment and of the living environment and welfare of animals.” (art. 22 Constitution Sint Maarten).

In the National Ordinance Foundations Spatial Development Planning it is stated: 'The Minister does the necessary in the preparation of a coherent and sustainable government policy for the development of the land... ' (art. 2).

This is the legal base for preparing the Spatial Development Strategy.
The Spatial Development Strategy is intended to provide a coherent policy framework until 2030, integrating various topics such as: nature, environment, economy, traffic, and housing. For all of these topics there is an emphasis on the aspects that are directly related to *spatial* issues, the competition for space and the need for balance in (spatial) allocation for often competing needs. For example, when addressing the environment, the focus is placed on the spatial possibilities of new developments and the consequences or implications thereof on the (natural) environment. When public facilities are addressed, the focus will be on spatial distribution of facilities.

This Spatial Development Strategy focuses on Country Sint Maarten as a whole, but as a small island nation, Sint Maarten will be affected by regional developments as well. Therefore, the mutual interests and issues with French Saint Martin will be considered in this Spatial Development Strategy as well.
This Spatial Development Strategy indicates *possibilities* and *suggestions* for the spatial development of Sint Maarten for the coming years. It does not make specific choices or indicate specific (concrete) directions to take. That will be a next step. The Strategy does not entail any binding rules for citizens. However, for an effective implementation of the strategy, there is a need to enact binding rules for citizens, property owners and Government alike. These direct binding rules for citizens can – according to current laws - be put in place and enforced by means of development (zoning) plans and resulting from this in the issuance of building or hindrance permits.
The Spatial Development Strategy provides an indication to citizens about the manner in which the Government envisions the spatial development of the country and that citizens may expect that the Government will act in a consistent and consequent manner when making decisions on spatial planning.
The Strategy provides a *general* strategy that requires further detailing on many aspects. Adjustment of direction from this strategy is possible when confronted with new facts and insights that can make the consideration of a new route legitimate. In that case a change or adjustment of the direction different from this strategy should be properly motivated. In that perspective the motivation may be found in the social, economic and environmental interests that, from sustainable perspective, can be served most optimal by choices deviating from the points of departure of this strategy.

So, as said before, this Spatial Development Strategy contains proposals, options and *general* directions to work towards.. These directions itself need to be specifically decided upon and need to be further detailed in zoning plans, other legislation and regulations, as well as more specific in policy plans and action plans on certain subjects.

1.1.1 Relation to the United Nations SDG’s and New Urban Agenda

Cities and metropolitan areas are powerhouses of economic growth—contributing about 60 per cent of global GDP. However, they also account for about 70 per cent of global carbon emissions and over 60 per cent of resource use. Rapid urbanization is resulting in a growing number of slum dwellers, inadequate and overburdened infrastructure and services (such as waste collection and water and sanitation systems, roads and transport), worsening air pollution and unplanned urban sprawl.

The Sustainable Development Goals (SDGs), were adopted by all United Nations Member States in 2015 as a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030. The 17 SDGs are integrated—that is, they recognize that action in one area will affect outcomes in others, and that development must balance social, economic and environmental sustainability. St. Maarten continues to embrace the SDG 2030 Development Agenda and remains committed to achieving these by the time the target date arrives. The Sustainable Development goals are interconnected. Often the key to success on one goal will accelerate progress on another goal. The idea is to reach all targets, by 2030, and sustain these for the duration of life. The UNDP office of Trinidad & Tobago provides support to the St. Maarten government via the Department of The Interior and Kingdom Relations in integrating the SDGs into our upcoming National Development Plan and policies. St. Maarten, along with the Dutch kingdom, committed itself to the SDG 2030 Development Agenda and is in the process of defining priorities for its development agenda.

The Spatial Development Strategy (SDS) takes some of these SDG's as the point of departure of the development direction to consider. The link between the SDS to these SDG's is further elucidated in the attachments to this document.

The United Nations Conference on Housing and Sustainable Urban Development, took place in Quito, Ecuador from 17-20 October 2016, and was the first UN global summit on urbanization since the adoption of the 2030 Agenda for Sustainable Development. In Quito, world leaders adopted the New Urban Agenda which sets global standards of achievement in sustainable urban development, rethinking the way we build, manage, and live in cities through drawing together cooperation with committed partners, relevant stakeholders, and urban actors at all levels of government as well as the civil society and private sector. The New Urban Agenda (NUA) was endorsed by the United Nations General Assembly at its sixty-eighth plenary meeting of the seventy-first session on 23 December 2016 and therefore represents a shared vision for a better and more sustainable future.
This NUA includes "spatial sustainability" as a fourth Dimension that builds on the three main elements as being leading in this SDS: social sustainability, economic sustainability and environmental sustainability (more extensively elucidated later in this document).
Spatial sustainability, as a concept, suggests that the spatial conditions of a city can enhance its power to generate social, economic and environmental value and well-being. Governments can achieve spatial sustainability by guiding the physical form of urban environments to create equitable access to jobs, housing and social interactions; enable agglomeration economies and encourage sustainable relationships to ecosystems and natural habitats.
The physical form of a city, which is the result of intentional planning and development, is critical to urban social, economic and environmental well-being. The New Urban Agenda encourages "spatial development strategies that take into account, as appropriate, the need to guide urban extension, prioritizing urban renewal by planning for the provision of accessible and well-connected infrastructure and services, sustainable population densities and compact design and integration of new neighborhoods into the urban fabric, preventing urban sprawl and marginalization". Some of the aspects mentioned in the NUA are also indicated (in general) in this document as point of awareness and consideration.

1.1.2 Relation to the National Development Vision

On a broader basis, a National Development Vision (NDV) has been drafted by the Government. The NDV covers the period until 2030 and aims to set the direction for the strategic long-term development as a country, taking into consideration the United Nations (UN) Sustainable Development Goals (SDGs). In chapter 4 of this (draft) NDV the characteristics of Sint Maarten's future are defined. These are of importance because the NDV and other policies should be in line with each other. Characteristics are:

- Reliance on leisure tourism and the need to economically diversify: The occurrence of shocks to our economy can be reduced through good financial management and by taking steps to diversify our economy from its reliance on leisure tourism and attract investment.

- Addressing the needs of the current generation and the needs of future generations: Sint Maarten's development path will in future be guided by the principles of sustainability, through effective environmental management, that will take steps to meet the needs of the current generation, without compromising the needs of future generations.
- Maintaining social cohesion and multi ethnic diversity of Sint Maarten: Recognizing and displaying the historical and cultural foundation of Sint Maarten in the context of the country's development, [..]
- Orderly development and uncontrolled expansion: Sustainable spatial development is essential to resolve competing interests for space and recognizes that not all development is desired or possible.
- Economic growth and environment management: What is needed is an approach where growth does not occur at the expense of social development and the environment.

More in detail the NDV aims to, amongst others things:
- Build a sustainable energy sector;
- Develop an efficient and safe method for waste disposal;
- Mainstream sustainable development and resilience practices;
- Promote orderly and sustainable spatial development;
- Integrate the disaster risk management into development policy;
- Reduce or mitigate adverse impacts of climate change.

This Spatial Development Strategy intends to be in line with this National Development Vision, detailing aspects of it related to spatial development in the broadest sense.
The UN Sustainable Development Goals are included in the NDV as well as in this Spatial Development Strategy. Many of these are very relevant for the choices to be made within the context of the spatial development of Sint Maarten.

1.1.3 Relation to the Development Plans or zoning plans

The Ministry of VROMI is tasked with the preparation of development plans, also called zoning plans, with zoning regulations for Sint Maarten in accordance with the National Ordinance on Spatial Development Planning. The development plans or zoning plans regulate and specify where building and other spatial development is or is not permitted, the types of development that may be possible in certain areas, the manner in which the development of the land may be realized, and the build or land may be used. Permit requests will according to the current Building ordinance - be approved or denied, when not in line with those development plans.

While the preparation of the zoning plans is approached in a district specific manner, the Spatial Development Strategy is intended as an underlying or overarching (national) strategy and a coherent cross-district/sectoral island-wide framework to anchor the main themes of the zoning plans. Input gathered during the zoning consultation process, that took place in the phase of preparation of the draft zoning plans, has identified certain cross-cutting issues that concern the spatial development of the country as a whole. Issues that are used to rationalize the Spatial Development Strategy will serve as a foundation for the choices made in the more specific zoning plans.

1.2 Theoretical framework: sustainable development

Looking at the future of spatial planning, the following aspects need to be taken into consideration:

1.Progress

The coat of arms of Sint Maarten bears the motto: Semper Pro Grediens (Always Progressing). However, progress can have diverse meanings or interpretations. What one experiences being progress can be an uncomfortable future to others.
Worldwide several attempts are made to describe what progress is about. Some say it is about being rich, others say it is about safety, health, or education, happiness, food etc

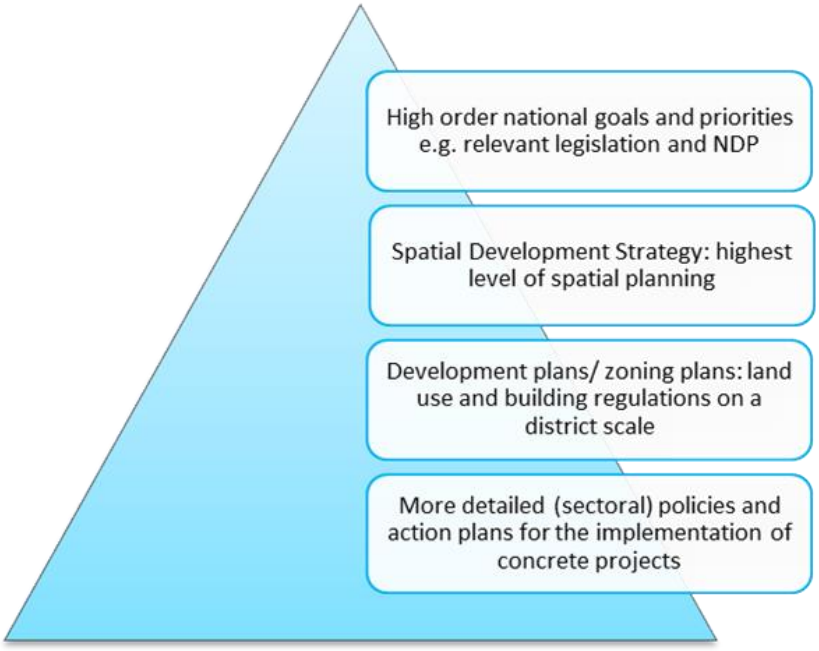


Figure 1. *Framework Sustainable Development Strategy*

. **2. Quality of life**

Quality of life in the sense of the general well-being of individuals and societies, outlining negative and positive features of life. It observes life satisfaction, including everything from physical health, healthcare, family, education, employment, wealth, safety, security to freedom, religious beliefs, and the environment.

3. Resilient

Resilience or resilient stands for 'bouncing back'. Related to systems, organisms or people it means: returning quickly to normal after damaging events or conditions.

4. Livability

Livability is the sum of the factors that add up to a community's quality of life—including the built and natural environments, economic prosperity, social stability and equity, educational opportunity, and cultural, entertainment and recreation possibilities.

In the considerations what qualifies best, it can be noted that the concept of 'sustainable development' or 'sustainability' continues to be widely recognized and used. This is also the case in the Caribbean region, especially in recent years, stimulated by the worldwide establishing of the United Nations Sustainable Development Goals 2030 (SDGs).
The most frequently cited definition of sustainable development is found in the report "Our Common Future" (1987) from the World Commission on Environment and Development:
"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Also the law (national ordinance foundations spatial development planning) instructs the Minister to prepare a coherent and *sustainable* government policy for the development of the country.
Government has agreed with the principles of working with the United Nations Sustainable Development Goals. Considering abovementioned, it seems most preferable to have the aspect of 'sustainability' being leading.

Therefore, the point of departure for the Spatial Development Strategy is that development has to be sustainable to achieve real progress. The aim is to create a Spatial Development Strategy for a *sustainable* spatial development of the Country Sint Maarten.
For the purpose of the Spatial Development Strategy, the notion of sustainable development builds on a three-part division, namely into an environmental, an economic and a social dimension, also known as the “three pillars” or “triple bottom line” (Palme, 2001). In 1992, Munasinghe presented (Roger, 2008, p.32) the three approaches to sustainable development as follows:

- Economic: maximizing income, while maintaining a constant or increasing stock of capital;
- Ecological: maintaining resilience and robustness of biological and physical systems;
- Social: maintaining stability of social and cultural systems.

Sustainable development provides for the needs of the present generation (in the sense that they are of sufficiently good quality of life) without using, claiming or destroying the supply of needs of future generations. Sustainable growth occurs when the total of economic activity, quality of the living environment, and social well-being increases. This implies the balance between the economic, social and environmental pillars or--in other words--to their simultaneous achievement (FAO, 2004).
There is a reciprocal relationship between these three elements of sustainable development.

Some examples are given below: Natural resources can – for example - be input for economical production. For the production of goods for example, (fossil)fuels are needed. The production causes waste or emission of gasses, which can (partially) be absorbed by nature. Nature can also be attractive to tourists, gaining financial revenues.

Economic and social dimensions also have connections. Jobs can be of influence on material wellbeing, personal activity and economical and social wellbeing of people. The sports facility of a hotel might possibly be used publically during some time.
Besides that it is possible that the social wellbeing can influence economical activities. For example, labor skills may increase via education, causing an increase in productivity.

There can also be some interaction between ecological and social dimensions. The severity of pollution and waste can influence the health of people in a negative way, while for example recreational activities in nature (beach, sea, hiking) can contribute in a positive manner.

The picture below depicts where the several domains (partly) join each other. Sustainable (spatial) development occurs in the overlap between these domains.
This concept of sustainability is the point of departure for this Spatial Development Strategy.

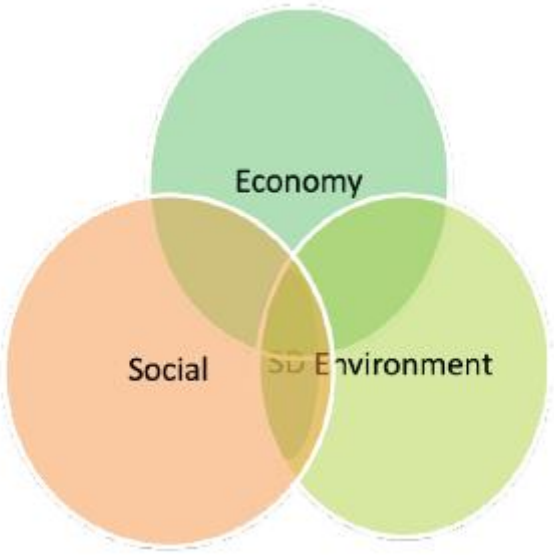


Figure 2. *Framework Sustainable Development Strategy*

It is recognized that not all aspects of sustainability have a spatial component. This is the case for aspects in all three dimensions aforementioned. While these aspects are also important, the Spatial Development Strategy specifically aims at aspects that have more or less direct a spatial impact or relation to space, and outlines a strategy for Sint Maarten wherein these can be addressed. Therefore, certain aspects that do not have a direct relation with space may not be addressed. The NDV is the document with a broader overall perspective, focusing on all aspects involved. The SDS in fact is a detailing of that document related to the spatial effects in the broadest sense.

1.3 Preparation of the Spatial Development Strategy

Desk research

A wide range of information was used to prepare this Spatial Development Strategy. Desk research was done in order to analyze existing policies and the many (spatial) ideas, studies and visions that have been developed in the past. The documents are listed in the attachments.
The Spatial Development Strategy refers to specific sources where relevant. Furthermor,e special consideration is given to the formally established policies in the field of spatial planning, these include:

- Ministry of the Interior and Kingdom relations, July 2020 - Draft National Development Vision (published July 2020 for public review).
- Comprehensive Road Network Plan, Sint Maarten Government (1993)
- Beach Policy, Sint Maarten Government (1994); publically published
- Hillsides Policy, Guidelines for Development in the Hillside Areas, Sint Maarten Government (1996); publically published
- Development Perspective Sint Maarten Greater Philipsburg & Great Bay Area, TKA et al. (2003, published).
- Storm Water Management Policy (established 2018, not published)
- Beach and Vending Policy 2001 (TEATT)
- Residential Economic Policy 2009 (TEATT)

Stakeholder and public involvement

Various stakeholder/public consultations and town hall meetings facilitated the realization of the above mentioned reports and policy proposals in the past such as the Development Perspective Sint Maarten West, Development Perspective Greater Philipsburg and the SXMosaic study. The outcomes of these consultations remain relevant to the present day. Furthermore, public consultations with respect to the draft Development Plans (zoning plans) and the pre-draft National Development Plan (in the period 2013-2015) and NDV in the year 2020 gave input for the preparation of this Spatial Development Strategy. Therefore, no separate public consultations were initiated with respect to this document due to its general objective and character, and having taken note of the discussions and input from the previous consultation meetings.
However, several topics of this spatial development strategy share common grounds with the policy objectives of other Ministries of the Government of Sint Maarten. Therefore, the respective Ministries were consulted to provide their input. In addition, some main stakeholders were consulted to verify most recent developments and insights. Their input is included in this document.

Participation of the public took place in 2008 when preparing sustainable strategies for a future development of Sint Maarten. More than 100 interviews were held with businesses, organizations, government departments and individual people. A participative meeting took place consisting of verbal consultations with over 250 participants. The outcome of this meeting is still of relevance now and is included in the strategy as much as possible:

1. Infrastructure (38%):
   - Regulated public transport and bus stops
   - Bicycle lanes and pedestrian paths
   - Less cars

2. Education (921%):
   - Afterschool activities
   - Playground
   - Bicycle lanes for children

3. Environment (17%):
   - Recreational park
   - Self sufficiency Sint Maarten
   - Waste management plant

4. Housing (11%):
   - Housing on Salt Pond
   - Building on hills next to Philipsburg
   - More middle income housing

Most recent participation of people (citizens of Sint Maarten) on spatial planning matters took place at the time when the first drafts of development plans/zoning plan were presented and discussed from 2013 until 2015. This was for the zoning plans of districts Simpson Bay, Billy Folly, Cay Bay, Cul de Sac, Little Bay, Middle Region and Dutch Quarter.

More elucidation about this is given in the attachments.

1.4 Goal of the Spatial Development Strategy

The Spatial Development Strategy provides direction for the establishment of legislation and policy with respect to the built and the natural environment of Sint Maarten. The main goal of this Spatial Development Strategy is to:

"Provide a coherent and comprehensive direction for sustainable spatial development of Country Sint Maarten for the coming years."

The sub goals are:

1. Sustainable development;
2. Enhancement of the resilience of the country;
3. Enhance the quality of life for citizens.

The Spatial Development Strategy strives to, amongst other things:

- align and structure the often fragmented existing policies in the field of spatial planning;
- provide a basis for the translation into legally binding development plans (zoning plans) on a district level with specific land use and building regulations;
- guide the preparation of more detailed policies and/or action plans for specific (geographical) areas;
- provide policy guidance to spatially coordinate, prioritize and align public investments;

- provide policy guidance for the evaluation of public and private sector project development proposals;
- serve as a framework for alignment of spatial development with other policy are as of the Government;
- Serve as a catalyst for sustainable development from both the public and private sector.

1.5 Content/readers guide

Chapter 2 provides an introduction to Sint Maarten indicating trends and developments amongst other things.
The content in this strategy document is formed around the economic, social and environmental pillars, to accentuate the balance between these pillars of sustainable development.
In chapters 3, 4 and 5 the main themes are based on the three pillars of economy, environment and social. For every theme, the issues will be outlined, followed by a summary and proposals. In addition, the relation with the specific SDG is indicated and more elaborate elucidated in the attachment 7.

Chapter 6 focusses on the implementation, cooperation and execution,

In the closing remarks in chapter 7, a picture for a sustainable future is painted.
The proposals in the several chapters are formulated in a general way, providing a long-term 'umbrella' scope of this document. In fact, they might be considered as principles or guidelines for future decision making. Without any additional action or detailing not much will happen. So 'action' and 'detailing' is needed in most cases to really move forward. It has been a deliberate choice to split the strategy from the actions, to focus *first* on the general, overall picture without being consumed with the details already.

An overall elucidation of these proposals is translated and projected on a plan map in appendix 3 of this document.

The proposals also are reflected in an overall overview in attachment 4.

The document includes some (artist) impressions to illustrate the intentions of the proposals. However, it should be noted that these are only the 'ideas' behind the proposal, and not the actual detailing thereof.

2. Sint Maarten: an introduction

Planning for the future begins with an understanding of the past and the present. In this chapter Sint Maarten is described in a nutshell, followed by a description of the (spatial) development of Sint Maarten from a historical point of view. This chapter ends with the most important trends and developments relating to the spatial development of the country.

2.1 Sint Maarten in a nutshell

The country Sint Maarten is a constituent country within the Kingdom of the Netherlands. Before 10 October 2010, Sint Maarten was one of the island territories that constituted the former Netherlands Antilles. Sint Maarten encompasses the southern part (34 km^2) of the island, while the northern part (53 km^2) of the island constitutes the French overseas Collectivity of Saint-Martin. The island is the smallest landmass in the world to be shared by two sovereign nations.

Factsheet Country Sint Maarten (Source: Statistical yearbook 2017- dept. of statistics Sint Maarten and The World Fact book 2018 by the Central Intelligence Agency, Washington DC 2018, unless otherwise indicated.)
Location
Caribbean, located in the Leeward Islands (northern) group. Coordinates: 18˚ 4' N, 63˚ 4' W 
Area
34 km²
Climate
Tropical marina climate varies from a relatively dry season (January-April) to a rainy season (August-December), with moderate winds from the east to northeast. Temperatures usually remain around 27° C or 81°F with the warmest month being August/ September. The normal annual rainfall ranges from about 1026 mm-274 mm/ 40-50 inches (1981—2010). The island is subject to hurricanes from July to November (Meteorological Department St. Maarten, 2019)
Terrain
Hilly terrain, no volcanic origin Lowest point: Caribbean Sea 0 m, Highest point: Mount Flagstaff 386 m
Population
42,882 in 2020 (est.) (UN population division, dept. of Economic and Social affairs, 2019)
Population growth rate
1.34% (2020 est.)
Language

English (official) 67.5%, Spanish 12.9%, Creole 8.2%, Dutch (official) 4.2%, Papiamento 2.2%, French 1.5%, other 3.5% (2001 est.)

Sint Maarten encompasses the southern part (34 km^2) of the island, while the northern part (53 km^2) of the island constitutes the French overseas Collectivity of Saint-Martin. The island is the smallest landmass in the world to be shared by two sovereign nations.

The economy of Sint Maarten centers around tourism with nearly 85% of the labor force engaged in this sector. Tourism represents about 80% of Sint Maarten's GDP, including domestic demand and construction. Around 1.8 million visitors come to the island each year by cruise ship and roughly, 600,000 visitors arrive through Princess Juliana International Airport. Larger yachts also call on Sint Maarten's numerous ports and harbors. The cruise industry alone represents 35% of the GDP (Moody's, 2016). No significant agriculture and limited local fishing means that almost all food is imported. Energy resources and manufactured goods are also imported.

In 2017 Sint Maarten had the second highest GDP per capita (US$ 32,256) compared to Aruba ($33.966) and Curacao ($25.590) (Worldbank 2018, source Wikipedia 2020). However, Sint Maarten's average 0.7% real GDP growth forecast for 2011-2017 was among the lowest for similarly rated peers (Bermuda, Sint Maarten, Trinidad & Tobago, Bahamas, Dominican Republic, Barbados, St. Vincent and the Grenadines, Belize, Cuba, Jamaica and Aruba (Moody's, 2019)).

2.2 The (spatial) development of Sint Maarten, a brief history

To the knowledge of historians, Sint Maarten's first settlers were the Arawak Indians and later the Carib Indians, indigenous people from the Orinoco Delta in Venezuela, who settled in Sint Maarten approximately in the first centuries of the era. It is believed that Sint Maarten was unoccupied when it was discovered by Christopher Columbus on behalf of Spain in 1493 (Sypkens Smit, M. 1981). Although sighted by Columbus and claimed for Spain, it was the Dutch who occupied the island in 1631 and set about exploiting its salt deposits. The Spanish retook the island in 1633, but continued to be harassed by the Dutch. The Spanish finally relinquished the island of Saint Martin to the French and Dutch, who peacefully divided it amongst themselves in 1648 (treaty of Concordia).

2.2.1 Salt and plantation industry

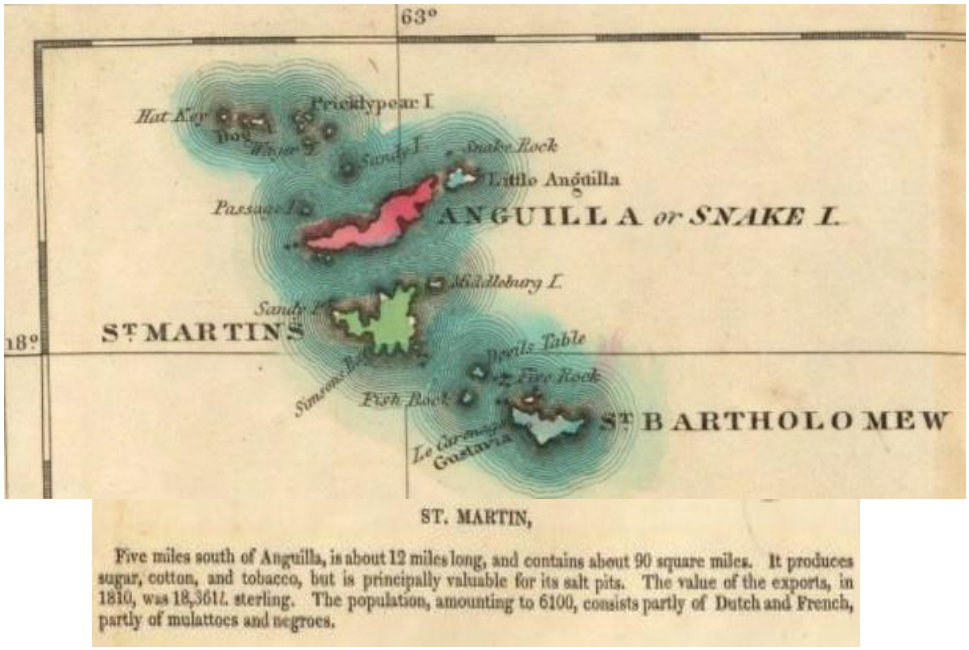


Figure 3.*The image above shows the section in an explanatory note about Sint Maarten from the Geographical, Historical and Statistical Map of The Leeward Islands No. 45 (J. Yaeger Sculp, 1822)*

The establishment of cotton, tobacco, and sugar plantations dramatically expanded African slavery on the island in the 18th and 19th centuries; this practice was not abolished on the Dutch side until 1863. The Cul de Sac valley was the area of the first major colonial period settlement on the Dutch side of Sint Maarten. The valley was home to several large sugar plantations in the 18th and 19th centuries. Remainders of some of these plantations are still present (Marys Fancy, Golden Rock/Emilio Wilson). Plantations were also established at other locations, mainly in the Lower Prince's Quarter area. The main house of the Union Farm plantation complex, presumably dating back to 1680, is one of the oldest houses of the island that still exist. Bethlehem Estate (behind Dutch Quarter McDonalds) has still some major ruins.
The salt industry also revived in the 18th century. The subdivision of the saltpans and several civil works, such as the Foga pumping station and the Phoebe Pond and Rolandus Canal were constructed in the 18th and 19th centuries.
In order to protect the territories and the economic interests, several military structures (forts and batteries) were constructed around the Great Bay in the 18th and 19th century as well. Most notably is the Fort Amsterdam which was reconstructed by Commander John Philips in 1737.
In 1733 the council decided to establish a village on the strip of land between the Great Bay and the Salt Pond. Under the leadership of vice-commander Meyers the strip of land was subdivided into parcels of 40 paces square. The development of Philipsburg was based on a clear urban design principle with development along two axes. The north-south axes from the Great Salt Pond via the Court House to the Great Bay was the primary axis reflected by the logistics of the salt production. Perpendicular to this a second axis was developed (Frontstreet), which connects all important (public) buildings (Lesterhuis en Van Oers, 2001*).*

Simpson Bay is the other historical village of Sint Maarten. It is most likely even older than Philipsburg since Simpson Bay was the main anchorage area before ships started to moor in the Great Bay. Simpson Bay is situated on a sandbar between the sea and the lagoon. In 1819, the sandbar burst as the result of a major hurricane, leaving a gap between the sea and the lagoon. The physical isolation of Simpson Bay was only definitively ended by the construction of a bridge in 1933 (Pream, 2009).

2.2.3 A new era: tourism industry

The plantation industry, which was already declining since the abolition of slavery in 1863, came to a definitive end with the end of cotton growing in 1923. The salt industry also came to an end in the first half of the 20th century when it was no longer profitable. The island's economy suffered in this period and part of the population left to work in the emerging oil industry, mainly on Curacao and Aruba.

After a lengthy period of economic decline Sint Maarten received a major boost in 1939 when it was declared a duty-free port. Princess Juliana International Airport opened in 1943, and four years later the island's first hotel, the Sea View Hotel, welcomed its first guests. In 1956, the Technical Economical Council of the Netherlands Antilles drew up a plan for the economic development of the Windward Islands. As for Sint Maarten, it was concluded that tourism could bring prosperity. Some infrastructural projects, such as improvement of the airport, water and energy supply were undertaken (Hartog, 1981). Development was further encouraged by remigration from people who left to work on Curacao and Aruba.

In the 2nd half of the 20th century and in particular since the 1970's the development began to change the character of the island drastically. Tourism was the driving force behind this development. In 1955 Little Bay Hotel opened its doors. Touristic development in the Lowlands (villa construction) started in 1957. While the development of the then uninhabited Atlantic Coast of Sint Maarten only started in the 1960's. The amount of inhabitants was 3000 in 19961. Important milestones were the opening of Juancho Yruasquin Blvd in the direction of Point Blanche-- hardly accessible before--and the first main pier at the harbor in 1964.

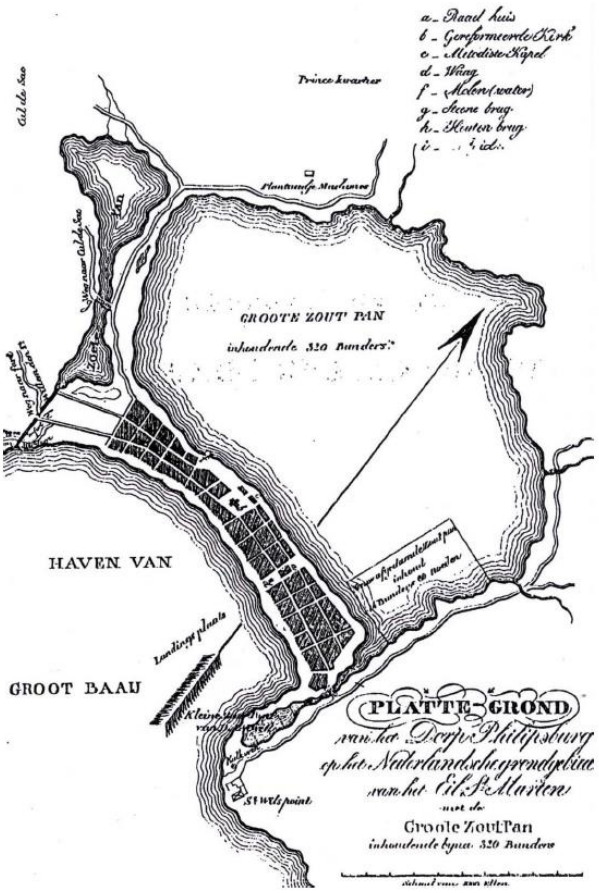


Figure 4. *Historical Map Greater Philipsburg*

In the 1970's and 80's significant investments were made in the hotel infrastructure, which had enabled the island to prosper in the area of stay-over tourism. In the 1990's the emphasis began to shift to increased cruise tourism, whereas Sint Maarten became one of the most visited cruise destinations in the Caribbean as a result of the investments in the cruise port in Point Blanche.

Figure 5. *Philipsburg 1970's (left) and 2009 (right)*

The growth in tourism attracted migrant workers from other parts of the Caribbean and the rest of the world, thereby causing an explosive growth of the population. This dramatic population growth has led to an increased demand in adequate housing and other related infrastructure (Ministry of VROMI, 2011).

As the population started growing, residential developments in the Cul de Sac valley (St. Peter's and South Reward) started in the early 70's, as well as residential and touristic development in the Oyster Pond area, and touristic development in the Lowlands area.

Figure 6. *Cul de Sac 1960 (left) compared to 2009 (right)*

The character of Philipsburg also started to change in the 1960's and 70's. Traditional dwellings made place for modern commercial buildings. In the early 70's land was reclaimed from the Great Salt Pond (locally known as the Pond fill) in order to further facilitate the growth of Philipsburg, mainly for commercial development and government administration purposes. The Great Salt Pond has also been used as a sanitary landfill since the 70's, which eventually was the basis for the creation of the artificial Pond Island with a separated landfill at the northwest section of the Pond Island in the 90's. The pictures below show Philipsburg and the Great Salt Pond seen from Guana Bay Hill in ca. 1968 and 2009 *(Haviser, 2009*).

Figure 7. *Great Salt pond 1968 (left) compared to 2009 (right)*

Although Simpson Bay village has kept its traditional village character to a certain extent, this part of Sint Maarten was also highly affected by development. Land was reclaimed from the Simpson Bay Lagoon in order to facilitate expansion of the Airport, a commercial strip adjacent to the historic Simpson Bay village and various marina developments. The Lowlands area was also affected by touristic development and was characterized by condominiums and resort development along the Caribbean coastline. The pictures below show Cole Bay and the Simpson Bay lagoon with Simpson Bay village and the Lowlands in the background in ca. 1949 and 2009 (Haviser, 2009).

Figure 8. *Simpson bay lagoon 1948 (left) compared to 2009 (right)*

2.3 Trends and developments

This paragraph describes some of the important trends and autonomous developments, which are projected for the coming years and will have an impact on choices to make regarding spatial development of Sint Maarten. Main trends described are climate change, health hazards, carrying capacity, economic development, identity, and spatial quality, which are in fact, all intertwined with each other.

In general, all developments described indicate that the physical living environment is used more intensively. Intensive in a way that it places both the ecological sustainability as well as the social appreciation of the living environment under pressure. A new balance is needed between 'use value' (economic utilization) and 'experience value' (citizen's perspective) and 'future value' (ecological sustainability) of that environment.
It is already a major policy task to find space for the various existing and new functions, but an urgent relieve of pressure on the underlying physical system is certainly needed. Due to the one-sided orientation on maximizing the utility value of urban areas, waters and land, the limits of the carrying capacity of the underlying physical system are closely in sight or already exceeded. This has consequences for the 'future-proof-ness' of the subsurface (soil), the water systems and biodiversity. Meaning complex choices have to be made.

2.3.1 Climate Change

Climate Change describes a change in the average conditions — such as temperature and rainfall — in a region over a long period of time.
Earth's climate has constantly been changing — even long before humans came into the picture. However, earth's average temperature has been increasing much more quickly than expected over the past 150 years. If this trend continues (which is expected), the intensity and amount of rainfall during storms such as hurricanes is expected to increase. Droughts and heat waves are also expected to become more intense as the temperature rises.
Temperature changes by one or two degrees can have big impacts on the health of Earth's plants and animals too.

It is expected that the amount of rainfall on a yearly basis for this part of the Caribbean area will reduce with as much as 30% within coming decades. Melting of the icecaps will cause sea levels to rise as much as one (1) meter by the end of this century. This will have its effect on several ecosystems, but also on the direct living environment of people. All the low areas nearby the sea may be flooded. This urges us to think about the spatial implications on the long run of concentrating building and development activities near to the seashore and of specific measures to mitigate this threat. This topic will be one of the main challenges for the future.
More extensive study studies will be conducted to determine, more in detail, the expected effects of Climate Change on Sint Maarten. Based on these studies strategies need to be developed on how to deal with the effects of Climate Change and coastal management.

2.3.1.1 hurricanes/earthquakes

Since 1975, the average yearly number of tropical storms and major hurricanes (cat. 3 - 5) in the Atlantic is growing. It is impossible to predict if and to what degree this increase will continue, if the number of intense hurricanes will rise too or what the paths of these storms will be. Considering the last 50 years (1969-2018) a total number of 258 tropical storms in this part of the world became hurricanes; 52 of them category 4 and 20 category 5. During their lifespan, hurricanes are constantly changing strength. Some of the major hurricanes, for instance Georges in 1998 and Hugo in 1988 hit Sint Maarten, but not as a category 4 or 5. The heaviest hurricanes that struck the island in the hart or came very close during the last 50 years were Luis in 1995 (4), Earl in 2010 (4) and Irma in 2017 (5+) (Van Leeuwen, Building Back Better, but how, VNG-I, 2019)

The effects of Irma on the economy was huge. An economy that, until this hurricane hit, was still growing year by year. However, there has been a reduction in revenues and spending by tourists in the last couple of years. This urges us to think differently about the tourist product Sint Maarten has to offer (Albers, November 22, 2016).

Although not directly related to Climate Change, earthquakes also may have their spatial impact.
The Leeward Islands are characterized by higher seismicity than the Windward Islands. The islands of Antigua and Barbuda have the highest level of hazard in the region. The only exception is constituted by the south-western part of Tobago. In fact, the island of Tobago is characterized by a high seismic hazard level for short period components, in contrast with the nearest Windward Islands, suggesting the importance of the transition zone between the island arc and the boundary between the Caribbean and South American plates.

On Christmas Eve 2017 an earthquake with magnitude 5.2 struck Sint Maarten and on January 21st, 2011 a similar one (4.9), both with the epicenter rather close to the island. While more earthquakes with such magnitudes have been reported, most of them were on greater distances from Sint Maarten (Van Leeuwen, Building Back Better, but how, VNG-I, 2019).
Besides the earthquake itself, it is important to monitor the risk of sub sequential flooding because of huge waves caused by earthquakes (tsunamis).

2.3.1.2 Sea level rise/flooding

As said before, flooding has become a growing and serious problem on Sint Maarten. This is not only reflected in severe environmental, road and property damages, but also with the loss of lives in the past, during exceptionally heavy rainstorms. Past flooding has shown the severity of the problem.

The Council of Ministers has in 2018 approved a Storm-Water Management Strategy, a policy framework for storm water management on Sint Maarten. A set of both structural and non-structural measures are proposed in order to reduce private and public losses due to both the probability and the impact of flooding. If these measures are not taken, events like the November 2014 flooding might occur on average every 5-10 years based on historic statistical data. However, in light of, among other aspects, climate change and ongoing building developments in the hillsides and coastlines, events like the November 2014 flooding are most likely to happen (much) more frequent. This will cause not only a great deal of stress on the population of Sint Maarten, but also leads to increased health risks (contaminated natural resources, increase in vector and disease sites, etc.) and even lives might be at stake (flashflood, mudslide accidents, etc.).

2.3.1.3. Health hazards

Resilience as defined by the United Nations Office for Disaster Risk Reduction “means the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover

from the effects of the hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions." The major efforts by the UNDRR to make cities resilient have focused on the concept of urban resilience mainly related to climate change adaptation and disaster management, leaving wider sustainability challenges aside. The UN Sustainable Development Goals 9 and 11 explicitly identify the role of resilience, which is a specific challenge related to health issues, with most recent the COVID-19 pandemic.
But in fact human kind has been struggling with health hazards for ages.
For example, seniors can probably remember when contagious diseases were a threat with diphtheria and polio in the 1950s. The cholera epidemics in the 19th century sparked the introduction of urban sanitation systems. Housing regulations around light and air were introduced as a measure against respiratory diseases in overcrowded slums in Europe during industrialization.

With the COVID-19 pandemic outbreak of 2019/2020 in mind, some (upcoming) trends (with spatial consequences) that are likely to play out in the years ahead are described below:

1. The shift to online retail will accelerate. Most stores selling products — from computers to car parts — are slowly moving to cyberspace. Pandemics could be terminal for stores that can't survive prolonged supply and demand shocks. Sadly, smaller businesses are most at risk despite being the very assets that contribute to city identity and character.
2. Ride-sharing might – if already practiced - slow down until hygienic solutions are available. Self-driving alternatives could start arriving. More people will want to work from home or go to work by bike or foot. More space will be needed for pedestrians and bikers.
3. The way societies consume and produce food in urban areas might be overhauled. The overdependence on 'just in time' global supply chains and meat-based diets proved to be vulnerable. A boom may be expected in vertical and urban gardens, or even better, rooftop and container farming. Likewise, public spaces and parks might be re-envisioned to accommodate food.
4. A shift from structured office environments to more flexible, virtual and home-based work arrangements will begin/accelerate. Also the central place of digital connectivity, and cyber security, and the functions of residential areas where people live and work will be reinforced (Muggah & Ermacora, 2020; Ermacora & Bullivant, 2016).

People might be encouraged to consider to make work and school trips on active mobility and recreational walking and cycling. These are low-cost mobility options compared to public transport, for which huge investments need to be made.
There is a direct relation between the availability of infrastructure, active mobility and the health and well-being of commutes. Physical activities also help to strengthen immune systems against common diseases. Non-motorized transport runs on zero energy emissions, making it the cleanest form of transport. Strategies in that perspective might be:

- Plan compact urban areas based on public transport and active mobility
- Prioritize active mobility as part of public transport
- Plan and develop related infrastructure for active mobility
- Develop resting areas and public parks
- Improve environment along walking/cycling routes by planting trees and beautification.

This will also contribute to the achievements of Sustainable Development Goals (SDG) 3: Good health and well-being, 9: Industry, innovation and infrastructure, 11: Sustainable cities and communities and 13: Climate action (Regmi, 2020).

To help harness the power of big data – in response to crisis, but also to other long-term sustainability and equity challenges – we need more granular, regularly updated data streams that can provide better evidence for decision-making. Resilience is all about interdependencies. That means that if we keep data in 'silos', we cannot track where the pivot points are, and we will not be able to take the right measures. This underscores the need to have an up to date system of national spatial development infrastructure (NSDI) in place. Ministries should collect and share data not only vertical (separately within each Ministry), but also horizontal.

Cadaster, utility companies, emergency services, community groups, universities, the private sector and concerned citizens should start building more comprehensive, community-based data sets to better understand and address the challenges ahead.

2.3.2 Carrying Capacity

The carrying capacity is the number of individuals an environment can support without significant negative impacts to the given organism and its environment.
The carrying capacity of an environment may vary for different species and may change over time due to a variety of factors including food availability, water supply, environmental conditions and living space.

Tourism Carrying Capacity is defined by the World Tourism Organization as "*The maximum number of people that may visit a tourist destination at the same time, without causing destruction of the physical, economic, socio-cultural environment and an unacceptable decrease in the quality of visitors' satisfaction"*.

From time to time, the question comes up if Sint Maarten can handle all the future (economic) developments. More specific; what impact will economic growth (tourism) have on the quality of life at Sint Maarten?
The Central Bank of Aruba published a paper with review on these matters in 2019. Some of the findings are mentioned below, as these are of relevance for Sint Maarten too.

Overtourism portrays relentless tourism growth – frequently unregulated – that has moved beyond the level of acceptable change in a destination due to: significant levels of tourism density (tourism exports to national income), tourism intensity (total visitors-to-population), and tourism density (visitors per km2) resulting in destruction of the natural environment, wear and tear of infrastructures and (cultural) architectures, and the negative impacts on residents and tourists (Center for Responsible Travel, 2018) (Central Bank of Aruba, 2019, p.13)

The World Travel & Tourism Council (WTTC, 2017) describes several adverse effects of overtourism including pressures on infrastructure (i.e., transportation and energy), resource consumption and pollution (i.e., leakage and waste), spatial and cultural alienation (i.e., real-estate and social identity), and deterioration of the tourist experience (i.e., congestion and service quality) (Central Bank of Aruba, p.14).

Several studies indicate that tourism may have reached or surpassed its optimum growth. Although limited, previous economic studies suggest that Aruba is experiencing a 'tourism exhaustion' effect (IMF, 2013; 2019) and may have become 'tourism saturated' (Pereira & Croes, 2018), in which tourism growth is no longer delivering value-added with diminishing economic returns. Previous tourism studies have indeed questioned how far and fast tourism can and should expand (Cole & Razak, 2009; Peterson, 2006) (Central Bank of Aruba, 2019, p.26)

The above mentioned results in the need to carefully look into this matter because there are indications that the findings may also be at stake for Sint Maarten, for example looking to the mobility in high tourist seasons. Therefore, more thought needs to be put into initiatives that simultaneously contribute to the economy, the environmental and social life. More on this is discussed in detail in paragraph 2.3.1.5 and chapter 3.

2.3.3 Economic development

In the last 10-20 years, the local economy became more and more focused on the tourist sector, in particular the handling of cruise ships. The latter accounting for close to two million visiting tourists per year. Some setbacks were reported in 2016, when two cruise lines withdrew and tourists became fearful following the Zika virus outbreak, hurricane Irma in September 2017

and the COVID-19 pandemic outbreak March 2020. Bottlenecks had already emerged in managing tourist arrivals, with daily crowds of more than 5,000 visitors per ship.
Saturated Philipsburg was no longer able to absorb the 40,000 vehicles in circulation, which is double the size of the pre-2010 car fleet. Vehicle imports were tax free, which in the end made urban area traffic jams worse, as these became part of the daily street scene (Nusselder, 2017)

Sint Maarten's low economic strength balances a comparatively high economic development with a very small and undiversified economy (Moody's, 2016). In 2006, the Island Council commissioned SQW research to conduct an economic diversification study. Several suggestions were made in order to broaden the economy, however, Sint Maarten remains a one pillar economy to date.
The tourism sector accounts for approx. 85% of the country's GDP, including the impact on domestic demand and construction. The cruise industry alone represents 35% of GDP. Future efforts to diversify the economy will likely build on the existing tourism related infrastructure and Sint Maarten's role as a regional hub (Moody's, 2016).
In 2016, Sint Maarten's economy was rated 'Baa2-stable' by Moody's Investors service. At that time Sint Maarten's had a high economic GDP per capita of $28,221 (2015), which was higher than the Baa median of $9,522 (Moody's, 2016).

However, in 2017 hurricane Irma hit, causing major devastation to the island. Sint Maarten's economy dropped almost 5% in 2017 and another 8% in 2018. The deep recession reduced government revenues from 24.9% of GDP in 2016 to 19.9 % in 2018.
Subsequently Moody's downgraded Sint Maarten's issues rating to Baa3 from Baa2 and changed the outlook from 'stable' to 'negative' in 2019. The downgrade reflects:

- An increase in Sint Maarten's main debt metrics, resulting from the still ongoing economic and fiscal shock following Hurricane Irma's landing in 2017;
- There is slower than expected progress in development of institutional strengths including fiscal and monitoring capabilities in the aftermath of becoming a constituent country with the kingdom of the Netherlands. This institutional weakness is hindering disbursements of grant aid from the Netherlands aimed at putting back the small tourism dependent and environmentally vulnerable economy on a healthier and more resilient growth path;
- Also, Sint Maarten's slow economic growth which limits the country's ability to manage adverse external conditions (Moody's, 2019)

The global border closures and travel restrictions due to COVID-19 exacerbated losses in tourism. The economy contracted by an estimated 24% in 2020, with major impacts on fiscal revenue (IMF, February 2021). Unemployment projected to have increased to 19% (IMF).

In March 2021, Moody's downgraded the Sint Maarten ratings to 'Ba2' from 'Baa3'. Moody's also changed the outlook to 'negative'. The key drivers were:
• Policy differences with the Netherlands, the sole source of financing for Sint Maarten;
• Untested access to alternative sources of financing, which exacerbates the credit impact of the large increase in Sint Maarten's debt burden.
The negative outlook reflects the risk that political differences with the Netherlands may lead to a repeat of the funding problems Sint Maarten faced at the end of 2020.
The local currency ceiling is lowered to 'Baa2' from 'A3' and the foreign currency ceiling is lowered to 'Baa3' from 'Baa1'. The three notch gap between the local currency ceiling and the sovereign rating reflects the limited role of the government in the economy. The one notch difference between the foreign and local current ceilings reflects the limited scope to impose transfer and convertibility controls within Sint Maarten's existing monetary union.

GDP per capita (PPP basis, US$): 39,507 (2019), Real GDP growth (% change): 8.2% (2019).
The COVID-19 pandemic and the measures put in place to contain its diffusion took a heavy toll on the tourism sector. The data on daily air traffic indicated a drop of almost 80 percent since January 2020. While many economic sectors are expected to recover once restrictive measures are lifted, the pandemic will probably have a longer lasting effect on international tourism.

This is largely due to reduced consumer confidence and the likelihood of longer restrictions on the international movement of people.

According to the World Travel and Tourism Council (WTTC), in previous viral epidemics the average recovery time for visitors to a destination was about 19 months.
For Sint Maarten, even before hurricane Irma 2017 the tourism growth curve already flawed, because it is based on the increase of quantity instead of quality. The increase in income is based on the continuously growing population and not the increase of the individual GDP, which proves to not be sustainable in the end.

Sint Maarten is one of the most densely populated places in the Caribbean; space is running out. The quantity of the industry and population outgrows the infrastructure and environment, waste management capacity, in short 'carrying capacity'. The intensity of the tourist developments is deteriorating the product itself; mass tourism product becomes less attractive, compounded by the decreasing attractiveness of the Island (less nature and scenery, traffic jams, pollution). The current developments lacks improvement of the tourism product itself. Cruise ship passengers tend to spend less per capita, room capacity tends to go from hotels towards time shares and within hotels towards 'all inclusive' formulas. Concepts tend to decrease rather than increase daily spending per capita. Increasing daily spending capita means investments are needed in higher quality class of tourism facilities and a workforce with higher qualifications (A. Albers, presentation November 22, 2016).

As a one-pillar economy, the global and regional trends in tourism are of paramount importance for Sint Maarten. Besides local or regional influences, several trends have influence on regional and global markets. It is important to note what they are or might be:

1 In that perspective it could be noted that the global market share of international tourism in the Caribbean might decrease the upcoming period due to the trend of faster growth in the global market shares in for instance Asia and the Pacific (UNWTO, 2014), in the period before COVID-19;
2 Rivers might be the new oceans;
  While river cruises had a reputation for mainly attracting senior citizens until a few years ago, they have now become the biggest growth market on the water;
3 Luxury expeditions to the end of the world;
4 No fewer than 52 new expedition cruise ships were under construction at the end of 2019. Upon completion – and after the pandemic – most of them will be taking their maiden voyage to Antarctica, the Arctic Circle, the Amazon, and the Andaman Sea;
5 over-tourism – and especially overcrowding – are problems that also affect the cruise industry;
6 Size matters: also, for ships;
7 Mega-liner or mini-cruiser? Thus far, the trend barometer has been swinging in both directions. On the one hand, ships were getting bigger and bigger, turning into floating cities for more than 6,000 guests. On the other hand, demand for small- to medium-sized ships and yachts for up to 200 passengers has been rising, especially in the luxury sector.
8 The latter in particular are likely to be a winning strategy after the pandemic subsides, as Julian Pfitzner, the new CEO of the Hapag-Lloyd Cruises brand, has confirmed: "Small, exclusive ships with abundant personal space, exceptional travel experiences, and excellent tailor-made services – that's in our DNA. I am sure that these assets will become even more important in the future." [trends 2-5, The Daily Herald, March 26th 2021, key insights in a changed world].

In the past decade sustainability has become a major topic in tourism growth around the globe. Tourism has continued to develop, with the rise of budget travel, alternative forms of tourism and the development of individual (traveler) choices and consumption, facilitated by the growth of modern technologies. Therefore, attention has shifted from the purely quantitative growth of tourism demand (mass tourism) towards qualitative change in the nature of that demand (Richards, 2014).

Islands in the region also tend to focus more and more on their unique selling points, since 'sun-sea-sand' alone does not seem sufficient anymore. This is also reflected in slogans of islands which sell the image of natural and cultural beauty, such as "Dominica, the nature Island". Other islands such as St. Barth focus on luxury and exclusivity. Competition in the region is ever increasing. For instance, St. Kitts is seeing a significant growth in hotel and resort construction and development. This includes several high-end and eco-friendly developments (Caribbean Journal, 2015; Henthorne, George, Miller, 2016).

In a multicultural Sint Maarten with a population from all over the world it is important to have some 'identity to belong': an identity which makes Sint Maarten different from other Islands in the Caribbean. That identity can be found in the cultural historical heritage from the past. The structure of the landscape, the remains of old buildings or old paths tell a story about the use of the land and the buildings in the past. The history of the island is a contributing factor in Sint Maarten's identity and culture. In addition to specific sites, the street pattern and spatial layout of certain areas can also reflect the history of an era for particular areas worthy of protection. Particularly in the Simpson Bay Village and in Philipsburg, this street pattern of the (historical) drives sometimes determines the visualization of the history.

Spatial quality

Reading the abovementioned possible future trends it is very important to note the importance of *spatial quality*.

Many new developments on Sint Maarten are – most of the time – not planned, but rather realized organically. Meaning, when the need to develop is is high and land and the finances are available, initiatives are taken to develop land. This is the way spatial development has taken (/is taking) place in past years. Up until now, little attention is paid to creating nice/beautiful looking streets and buildings. Although the question of beautification comes up from time to time, there has been no real urgency to intervene and prioritize financial investment for this topic by government.
Only a few individual beautification projects contributing to spatial quality of public spaces were realized since 2005, namely: the Boardwalk, Frontstreet, Backstreet, the re-profiling of the Middle Region Road, Walter Plantz Square and – to some extend - Porto Cupecoy.

However, after hurricane Irma in September 2017 and the COVID-19 virus in 2020, the dramatic reduction of tourists and decreasing of incomes, the question rises more prominently on how to improve the attractiveness of Sint Maarten. In what way does Sint Maarten distinct itself from other Islands? What are residents and tourists looking for? What do they find attractive?
It can be stated that time after time, when people are asked what they like about Sint Maarten, they (generally) indicate liking an environment that is *clean, whole and safe*.
Whole in the sense of no damages, no destructions, nice looking. Being friendly is also the distinctive character which comes up frequently being part of a distinctive own culture. In addition, of course the sun, sea and beaches and the Caribbean 'good life'. Sint Maarten also has a distinctive history noticeable in the Frontstreet and Backstreet, which distinguishes this Island from others.
Abovementioned indicates that at least more emphasis might be needed on promoting improvement of spatial quality of public spaces and its (siding) buildings. The facilitation of the spatial quality needs more emphasis to keep the island attractive for visitors and residents alike.

In conclusion, Sint Maarten should be critical and innovative regarding its future position as (mass) tourism destination. Some important (spatial) developments are noticeable:
- Further development of Sint Maarten as a regional hub;
- Increased focus on quality, identity, unique selling points and diversification rather than quantity in terms of stay-over facilities;
- Increased attention for sustainability, eco-friendly developments, cultural history, identity etc.;
- Recover lost grounds in terms of infrastructure (road network, wastewater management, storm water management, waste processing, climate change, etc.).

- More emphasis is needed on promoting improvement of spatial quality of public spaces and its (siding) buildings. The facilitation of the quality of the built-up area needs more emphasis to keep the island attractive for visitors and residents.

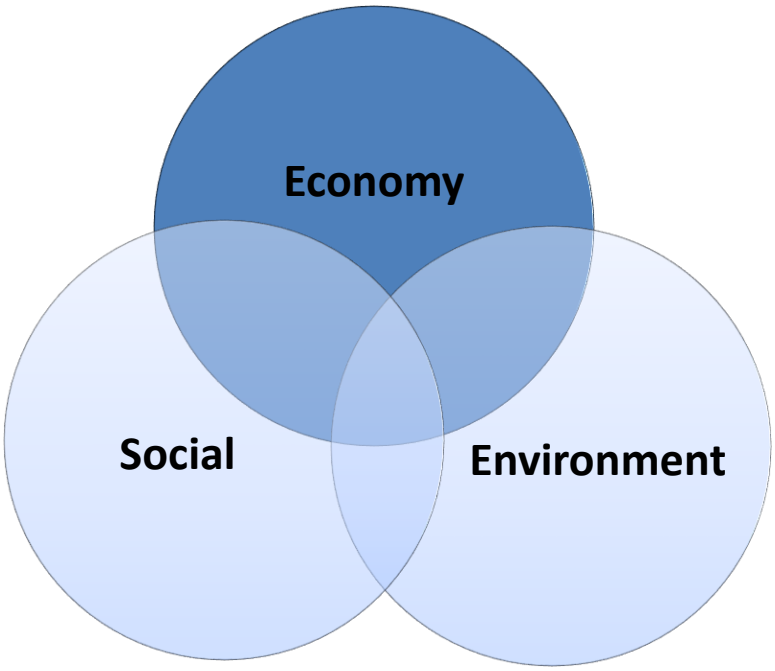
2.3.1.4 Demographics

In 1950, about 1500 people were living on the Dutch part of Sint Maarten. In 1961, the population increased to about 3000. Mainly in the period between 1975 and 1990 the population rose significantly due to economic development (tourism) and is now stable around 42.000 (2020 est.). The population is expected to slowly grow further with 1.34% a year (estimated pre- hurricane Irma and COVID19).
The growth of the population in the future depends on the amount of births, deaths and migration. The amount of births and deaths is quite predictable. Migration is much more fluctuating, because it depends on government policy, the economy (labor) and the availability of housing. In general, immigration has (until recently) been bigger than emigration. However, even before hurricane Irma and COVID19 it was already noticeable that immigration is slowing down and might continue to slow down in the future, because of the expectation that there might be less economic growth, the relatively high cost of living and the declining availability of (affordable) homes on Sint Maarten.

The growth of the population has its challenges, for example regarding housing, consumption, production of waste, education, the availability of a labor force, and mobility.
The natural growth of the population (amount of births and deaths) is very much related to the age of the population. The younger the population, the less deaths and more births. It is anticipated that Sint Maarten – with a quite young pollution recent years – may begin to experience the phenomenon of an aging society.

An aging population needs a different housing stock than generally has been provided. Elderly people usually need smaller homes, having a garden is less important (even a problem sometimes) and stairs are often not wanted. Social care services in the home environment must be the new approach to keeping the elderly, disabled and those with chronic conditions in suitable housing for longer periods. Institutionalized care is not affordable and sustainable.
Another example is that, with a rising income, in general the desire and ability to have a bigger and more comfortable home can be expected to rise also.

Converting population growth into housing demand is based on an assumption of the average size of a household. The registered addresses/households according to the Census data in 2012 are 14.750 households. With 42.000 inhabitants that is an average of 3 persons per household. In reality, this figure is expected to be higher, because it does not include unregistered persons and homes.
It is clear that the situation regarding development of the population in accordance with the availability of affordable housing is a point of concern and needs attention. There are also areas on Sint Maarten, for example in the so-called ‘shanty towns', where the general living conditions should be improved. More about this is described in detail in chapter 4, under ‘housing’.



3. Sustainable Development: dimension Economy

The attainment of economic growth is related to the generation of employment, income and wealth (net economic benefits). Economic sustainability is defined as *maximizing net economic benefits, while at least maintaining the stock of assets or capital* (Munasinghe, 2001). Within the context of this report, there is a focus on social capital and natural (environmental) capital. For instance, the effects of economic development on the quality of life of residents (human capital) and the use of scarce natural resources will be considered. The ultimate goal is maximizing net economic benefits while at least maintaining, or preferably improving social and natural capital. This means that the more development is positioned in *the middle* of the three circles indicated above, the better it serves all objectives.
The following key topics for sustainable economic development in Sint Maarten are described in the coming paragraphs: tourism, main ports, industrial functions and utilities, transportation and mobility. Every topic is concluded with some proposals.

3.1 Tourism

With a share of approx. 80% - 85 %in the country's GDP, tourism is basically the life line for every sector, including the public sector (through direct and indirect taxes).
The tourism sector on Sint Maarten consists of stay-over tourism, yachting, cruise tourism, the hospitality industry and several other related sectors. Although rather diversified, tourism is dependent largely on (North) American tourists and is characterized by a high degree of seasonality (Ecorys, 2012). The key tourism sectors are further described in the following sub-paragraphs: stay-over tourism, marine industry, and other tourism related activities. The airport and harbor are described separately in paragraph 3.2.

As indicated in the trends described in chapter 2 the carrying capacity of Sint Maarten is point of attention for future development. In this paragraph, aspects of carrying capacity will be more elaborate addressed in follow up on chapter 2 because of the importance of being aware of those aspects. The page numbers indicated between brackets are referring to the report of the Central Bank of Aruba 2019 about this matter. Because there are some similarities between the economic development between Aruba and Sint Maarten, some observations and findings might be of relevance for Sint Maarten too.

In reflecting on tourism life-cycles in the Caribbean, Cole (2007) indicates already that an overshoot in tourism arises from several interdependent factors, including e.g. ,

a. surpassing physical limits of beachfront or coastal areas for resort construction,
b. increasing labor migration due to limited local workforce,
c. growing visitors' sense of overcrowding, and
d. an escalation in residents feeling overwhelmed or displaced by visitors and/or immigrant workers. The latter describes intensifying sentiments of visitor annoyance and apathy by local communities (Doxey, 1975). (p.16)

One of the most enduring critiques of tourism is its non-inclusive development. They contend that tourism oftentimes provides opportunities for the privileged, creating profits for international (non-local) resorts, and building exclusive enclaves for the rich, thereby excluding the indigenous community, marginalizing local cultures and lifestyles, and depleting scarce natural resources (Scheyvens & Biddulph, 2017) (p.17)

Direct channels of overtourism transmission describe diminishing (or negative) tourism contribution to GDP [national income], declining average per-visitor expenditures, growing resource consumption (Scheyvens & Biddulph, 2017) (p.18).

Indirect channels of overtourism transmission include stagnant labor participation rates, limited or declining income equality, uneven income distribution, foreign-ownership concentration of tourism industry, spatial concentration of tourism industry, real-estate price inflation, environmental degradation, loss of natural habitats, and diminishing contribution of tourism ecological services. More importantly, the tourism industry is one of the main producers of CO2 emissions (Ewing-Chow, 2019; Gossling, 2002, Isik et al, 2017; Lenzen et al., 2018); directly – due to travel and transportation – as well as indirectly – as a result of tourism infrastructures, deforestation, construction activities, energy consumption, food imports, and waste. Previous studies indicate that a 1 percent increase in tourism expenditures is associated with a 0.12 percent rise in CO2 emissions (Isik et al., 2017). It is estimated that for every single US$ of tourism-related consumption in Caribbean destinations, one kg of CO2 is produced (Ewing-Chow, 2019) (p.18-19)

Overtourism carries long-term costs for the public sector due to its indirect effect on government expenditures. Whereas the growth in tourism might drive government (tax) revenues in the short-term, in the medium to long-term, rising levels of tourism intensity generate public sector costs in terms of, e.g., social security, health care insurance, and education, and other public sector services and infrastructures. These costs stem largely from rapid population growth, population aging, and residential urbanization. (p.33)

Although limited, initial evidence suggests that the overconsumption of tourism is partially responsible for the loss of ecological services, which is currently estimated at 10 percent of GDP (see Table 6, Chart 6.6). (p.34)

The general perception of the community towards tourism and tourism growth is characterized by substantial concerns and complaints about the overconstruction of tourism infrastructures, the congestion and crowding (out) of beaches and public areas, the rising costs of living, and the loss of cultural authenticity, natural habitats, and ecological biodiversity.(p.47)

In contrast to classical maxims of economic and tourism growth, this study finds no evidence that economic growth is – automatically – good for social equality and environmental quality nor that tourism is intrinsically beneficial to sustainable development. Whereas tourism has been and remains the main economic driver of growth and employment in Aruba, the impact in terms of socioeconomic and socioecological costs is substantial. This raises significant policy questions and development concerns about the future [..]. (p.52)

Selected small islands ranked	Population per km2	Total visitors to population	Visitors per km2	Total tourism contribution to GDP [national income]	Average of sub-indices
St. Maarten	0.93	0.89	1.00	0.88	0.92
Aruba	0.45	0.48	0.29	1.00	0.59
Cayman islands	0.17	1.00	0.21	0.22	0.48
British Virgin Islands	0.13	0.43	0.08	0.77	0.43
Anguilla	0.10	0.41	0.06	0.66	0.38
US Virgin Islands	0.21	0.39	0.11	0.62	0.37

Table 1. *Overtourism in select small island tourism economies in the Caribbean (CTO,2018; FCCA,2018; WTTC, 2017)*

The text above indicates that short-term revenues from tourism might also have it's downsize on the longer term, eventually related to the quality of life of people.
The findings of the Central Bank of Aruba – although very general - seems to indicate at least that too much tourism is causing a decline in the 'quality-of-life-experience' on the longer run and should therefore be avoided. Too much tourism might – in that case - be too much of a good thing.

Proposals on sustainable and inclusive tourism

- Social and environmental policies need to be set at the fore of future economic development, including both macroeconomic and climate change developments. To mitigate the risks and costs of overtourism and foster a more inclusive – less intrusive – model of tourism development, it is vital that environmental health and ecological biodiversity are restored.

- Integral to circular tourism is the improved flow of visitors, especially in congested and crowed areas. The strict enforcement of land use and zoning rules, as well as the retrofitting of buildings and infrastructures should be pursued. Building codes and environmental zoning rules should be adapted with explicit consideration of overtourism and climate change risks.

- Several of the Sustainable Development Goals 2030 (SDG) provide indicators and targets for measuring, monitoring and managing multiple key performance indicators, which are directly relvant to overtourism and climate change. This should be a focus.

In that perspective: SDG 8.4 states specifically to decouple economic growth from environmental degradation. SDG 8.9 indicates to promote sustainable tourism, promoting local culture and products.

3.1.1 Stay-over tourism

Stay-over tourism has been the backbone of Sint Maarten tourism, accounting for more than 60% of overall tourism revenues (TTC, 2005). This despite being vulnerable to fierce competition as well as being increasingly dependent on a sound quality of the environment and surroundings, which has experienced decline in the case of Sint Maarten. Stay-over tourism consists of tourist staying in accommodations (hotels, guest houses, time share) and tourists renting condominiums and villas.

In 2016 tourist arrivals increased totaling 528,153 tourist arrivals, the highest amount reached as yet. Combined occupancy of hotels and timeshare is for years with some plusses and minuses between 50% and 85% in general, with the months June-October being the slowest months and December-May being the best months (source: SHTA overview 2013-2019. Factors responsible for such an increase are the increase in hosting of events and the increase of all-inclusive promotional packages. However, after hurricane Irma and Maria in 2017, tourist arrivals plummeted and Sint Maarten had to gradually recover. The economy contracted by a cumulative 16.9% in 2017−18 as tourism plummeted. The sharp drop in stay over tourism (-56% in 2018) was due to the closure of hotels and other accommodations. At the beginning of 2018, only 20% of the total accommodation was in use.

In the first half of 2018, the number of cruise passengers had fallen by more than a quarter compared to the first half of 2017. In the second half however, cruise tourism recovered to pre-hurricane levels, and even increased by nearly 30% compared to 2017. But the stay-over tourism recovery has been slower than in other hurricane-affected regional peers.
In November 2019, stay-over tourism reached about 60 percent of pre-hurricane levels, reflecting the slow progress of airport reconstruction (only using a third of its space) and the slow hotel room reconstruction (60% of the pre-hurricane level). Staff's projections assume that the airport and hotel reconstruction would be completed in 2022, implying a continued recovery in stay-over tourism over 2020-22.

The cruise sector experienced a growth with an increase of 84.4% for the first quarter of 2019. With these growth trends, total arrivals for the year estimated at 1.779,646 arrivals. This will represent an increase of 11.4% when compared to 2018 as well as stimulate additional activities within the industry. Cruise tourism was – even without Covid-19 - however expected to decline in 2020 due to scheduled changes in cruise itineraries (EVT Macro economic outlook, 2018/2019). Average daily expenditures in USD are: 130 (2014), 76 (2015), 120 (2016), 83 (2018), source Dep. Statistics.
The impact and effects of Covid-19 on tourism behavior for the upcoming period is unsure, depending on available vaccination or reducing strength of the virus and also depending on the economic/financial recovery determining tourism behavior.

The Sint Maarten Tourist Bureau stresses that there are opportunities for establishing international brand hotels as well as small scale boutique hotels, focusing on the high spending tourists. According to Ecorys (2012), there is a demand for hotels offering luxury facilities in a unique or intimate setting. Such boutique, design or lifestyle hotels cater to upscale tourism; it is believed that there is still sufficient room in the niche market for boutique style hotels as well as for a luxury 4 or 5-star brand name hotels.

Proposals

Based on the current market and the outlook with respect to stay-over tourism the following space reservations should be made from a spatial planning point of view:

- A new large-scale hotel/resort might be facilitated at a strategic location in vicinity of the harbor and/or airport with a focus on conference and events tourism and/or a luxury brand name hotel/resort;

- The development of a niche market for small scale boutique or lifestyle hotels will be facilitated in terms of zoning with a focus on the Simpson Bay, Philipsburg and Little Bay Beach areas and --under strict environmental conditions-- a few hillside locations (eco-lodge type);

- With respect to the "traditional" hotel and timeshare business additional space reservation is neither required nor desirable. The focus should be rather on refurbishment/improvement of existing stock and use of vacant locations.

3.1.2 Other tourism related activities

There are several other economic sectors in Sint Maarten that are very much dependent on the tourism industry. One of these is the very competitive restaurant sector, with relatively low barriers to enter and many suppliers. A large untracked part of the tourism industry can be categorized as the nightlife sector (casinos, bars, discos). It is estimated that this sector in the period of steady growth the last decennia employs 1500-2000 people (Ecorys, *2012*). The outlook for the restaurant and nightlife sector is positive. However, competition is strong and results will depend on individual business performance (Ecorys, 2012).

Another component that adds to the tourism product are possibilities for day-recreation (for both cruise and stay-over tourists), such as land based sports facilities (horseback riding, golf, etc.), water sports and organized tours. According to TTC (2005) the weakness for Sint Maarten tourism lies in the scarcity of unique activities of a local, cultural, and heritage nature. There has also been limited focus on eco-tourism activities such as hiking and nature walks. More recent studies based on surveys conducted among cruise passengers endorse the perceived lack of in particular cultural heritage tourism.

When tourists are asked what they like when on Sint Maarten the things mentioned most are: the areas are clean, it feels safe, and the people are friendly. To feel welcome is important to them. They are not expecting some kind of a 'Disney world' in Sint Maarten, but like to be in a nice, safe and authentic place. In that perspective, an upgrading of the public spaces (beautification) such as the tourist area in Simpson Bay needs to be considered. In addition, the detonating (visual) spatial quality of the Frontstreet/Backstreet area, Great Bay Beach area, Walter Nisbeth Road, needs attention.

Figure 9. *Simpson Bay area*

Proposals

- Facilitate the restaurant and nightlife sector in terms of zoning, subject to certain conditions in order to avoid excessive nuisance and unsustainable development on the long run (see also paragraph 3.3.4);
- Facilitate and encourage the development of land based attractions, in particular in the field of cultural heritage and eco-tourism (see also paragraph 4.2);
- Beautification of tourist areas.

3.2 Main ports: airport and harbor

The main ports of Sint Maarten, the Airport and the Seaport (harbor), are the key elements in the transportation system and link the island with the rest of the world. Sint Maarten is also following the global trend, which shows that main ports on an increasing basis become key nodes for local economic development. Hub airports for instance, are attracting different kind of aviation-oriented businesses, such as time critical distribution, entertainment, offices, and hotels. This development is often occurring in a spontaneous, haphazard and ultimately unsustainable manner (*Kasarda, 2013*).

Integrating urban and regional planning with planning of the main ports is therefore required.
The development of the main ports, the airport and the harbor, are further described in respectively paragraph 3.2.1 and 3.2.2

These, as well as the industrial functions and mobility and transportation as mentioned in 3.3 and 3.4, contribute to develop quality, reliable , sustainable and resilient infrastructure (SDG 9.1), inclusive and sustainable new industrialization (SDG 9.2) as well as upgrading and retrofit existing industries and infrastructure (SDG 9.4).

3.2.1 Airport

The Princess Juliana International Airport (PJIA) plays a crucial role in Sint Maarten's accessibility. The number of passengers that pass through the airport (arriving and departing) annually before September 2017 is approximately 1.7 million. This is projected to increase after recovery to 2 million in the next 10 years and to as many as 2.3 million in 20 years. As such, the PJIA is a significant contributor to the economy and economic development of Sint Maarten. The PJIA plays an important role in maintaining the competitive advantage of Sint Maarten within the tourism industry as well as the position of Sint Maarten as a transportation and transit hub for the region.
A number of things are currently not optimally organized at and around the airport. For example, current plane traffic capacity is limited because the runway must also be used for taxiing, and there is too little space to station airplanes especially during high season. The airport terminal will have to be expanded facilitating pre-clearance of USA citizens. To be able to meet needs over time as well, the airport has a master plan to improve and expand over the coming years.

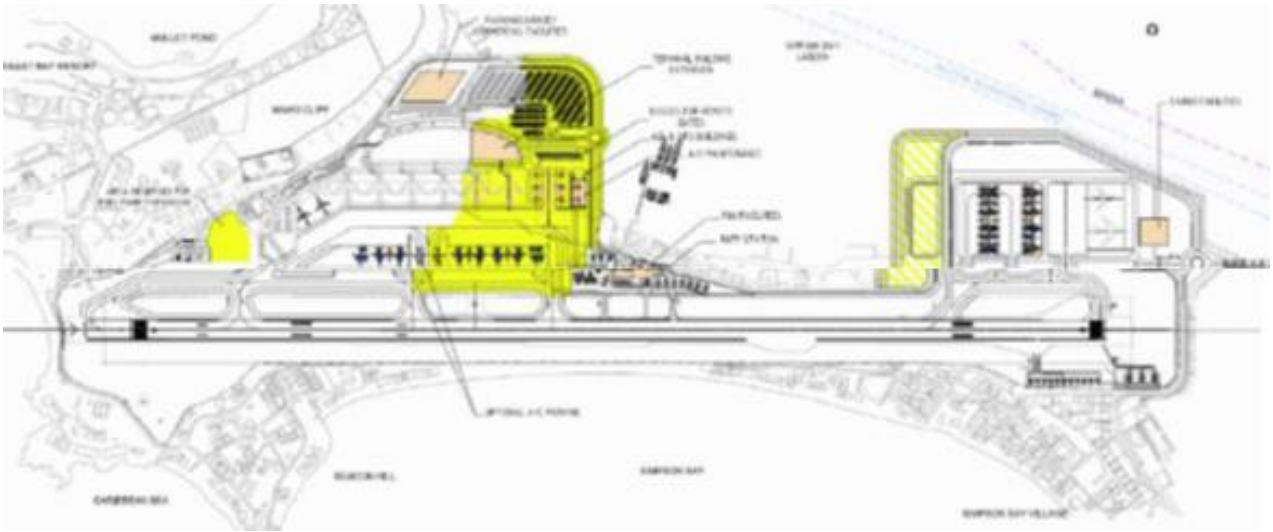


Figure 10. *Phase 2 from the Princess Juliana International Airport Master Plan (Source: Master Plan Update PJIA Sint Maarten, NACO, November 2012).*

The ambitions in that plan are a bit delayed due to the unforeseen hurricane in 2017 and COVID-19 in 2020/2021. The plans for the upcoming 10-15 years are indicated in this plan. Besides the expansion of the terminal building mentioned above, one of the key elements of the Master Plan still is land reclamation in the Simpson Bay Lagoon to the northeast of the runway to make space for:

- part of the new taxiway;
- the apron (parking space for airplanes);
- parking space for employees after expanding the airport building to the east
- airport-related businesses.

The land reclamation northeast of the runway is intended to allow for safer and more efficient operations of the Airport through the realization of the taxiway. As a result of this land reclamation the landscape around the airport will change significantly. The impact of the proposed land reclamation on the ecosystem, water quality and other possible (adverse) environmental effects must be taken into account.

In addition to the above mentioned it is planned to build a new traffic tower in the current water corner behind former Thrifty car rental (opposite of the Winair building. This location is chosen because from there the entire airport can be seen by air traffic control. Some land reclamation is needed for that.
In addition, the building of a so called FBO is still foreseen somewhere near the fire department. The current fuel farm near the landing strip needs to be moved and foreseen on the current location of Goddard catering. Goddard will move to the other side of the road into the parking garage building.

The reality before hurricane Irma September 2017 and the COVID-19 virus, was that in the peak period December-March the airport was very crowded with a lot of departing and arriving visitors. This mostly ended up in huge traffic jams coming from or going to the airport.
It seems that the (road) infrastructure is not able to facilitate the mobility of these amounts of people traveling in a relatively short time period (between 11am and 5pm). The carrying capacity seems insufficient in these situations.
Reconsideration is needed to reflect on this, asking if this a sustainable way for the future and what is needed to reach a sustainable situation.
It is in that perspective, but also related to aspects of nature and environment, advisable that the government looks carefully at the intended land reclamation plans for the expansion of the airport operations. It should be properly justified by means of a sound cost benefit analysis and environmental impact assessment prior to any decision making. Furthermore, the point of departure should be that the land reclamation *is kept to a minimum,* meaning only if it is strictly needed to facilitate the expansion needs of the airport on the long term. Considering the adverse environmental effects, land reclamation that exceeds this requirement should not be permitted.

Proposals

- Reconsideration and reflection on the carrying capacity of the logistics and its effect. In that perspective:
- minimize land reclamation for the expansion of the airport after cost-benefit analysis and environmental impact assessment

3.2.2 Harbor (cruise, cargo, yachting)

The Dr. A.C. Wathey Cruise & Cargo Facility (harbour) is of vital importance to the tourism product and economic development of Sint Maarten.

Cruise ships

The cruise facilities consist of a 545 m pier which can accommodate 4 ships and with a second pier of 445 m, Sint Maarten is now one of the few ports able to accommodate the world's largest cruise ships.
In high season, sometimes seven cruise ships per day can dock at Sint Maarten, each of which brings 3000 to 4000 tourists to the island per day. In 2014, a milestone was reached when 2 million cruise passengers arrived that year.
The cruise sector experienced a growth with an increase of 84.4% for the first quarter of 2019. With these growth trends, total arrivals for the year estimated at 1.779,646 arrivals. This will represent an increase of 11.4% when compared to 2018 as well as stimulate additional activities within the industry. However, cruise tourism was expected to decline in 2020 due to scheduled changes in cruise itineraries. Due to the Covid-19 pandemic in 2020, the tourism sector (including cruise tourism) came to a halt completely (Macro economic outlook 2018/2019, IMF, 2019)

Other than the already mentioned passenger movements using the existing methods of walking, taxis, tour busses etc. and the concerns with regards to the distribution of said persons on the busiest of days, more consideration should be given to better movement of persons via water based tenders etc. especially, during the peak hours of the day. Key pickup and drop off locations can be considered from Philipsburg, Cole bay/Simpson bay and various French side locations. This will significantly lower the burden of vehicular traffic dependency on the existing or direct future urban and infrastructure developments.

Average daily expenditures in USD (171 (2014), 206 (2015), 144 (2016), 217 (2018), source Dep. Statistics.

Mobility is spread as follows: Foot traffic roughly 20%, Water taxi 30%, Organized tours 25% - 30%

There is a growing demand for more experiences and activities (source: Sint Maarten Tourism Sector Recovery: Compendium of Toerism Statistics, Febr. 2020, Sint Maarten Trust Fund.)

Cargo

Another important element of the harbor is the cargo and trans-shipment component. The cargo sector is important for the import of consumer goods, but also in terms of economic revenue. Each year the port handles about 75.000 twenty-foot container equivalent units. The port also acts as a feeder port for many of the smaller islands nearby. It is projected that feeder ports will play a greater role in the future with the expansion of the Panama Canal in 2016 or the harbors of Kingston, Jamaica, San Juan on Puerto Rico or Port of Spain, Trinidad.

Port Sint Maarten has focused and successfully boosted their hub and feeder system. Feeder vessels help to support the islands without the necessary infrastructure to obtain their cargo and Port Sint Maarten serves as a hub in the North- Eastern Caribbean. Over the last 5 years our trans-shipment numbers has increased by 35%, over 3,000 Teus in 2019 vs 2016.

The Panama Canal expansion will most likely attract bigger vessels to the port of Panama. This increase in size of is requiring third-party logistics (3PL) companies to make adjustments. Schedule constraints and the economics of ship and shore side operations mean carriers will limit direct calls to a handful of ports (perhaps just two or three) and serve others via feeder services. Given the inevitable reduction in direct port calls, feeder ports will become more necessary (Gooley, 2018).
Third-party logistics is essentially a variety of services and processes that are provided to a business by an external company for a variety of reasons such as wanting to reduce costs, improve efficiencies and expand capabilities. It is part of the port concept. It also gives guidance as to the harbor transshipment hub function. The 3PL concept was introduced in 2017 where even though operations were impacted by the hurricane our 2017 TS cargo increased 5% vs 2016. TS then increased in 2018 and 2019 by 8% and 7% respectively vs the previous year. The possible increase in development on the island will lead to further increases of the container movements to and from the Port Cargo Facility. Considerable efforts are needed concerning the safe and efficient transport of containerized vehicular traffic. This in the combination of regular vehicular traffic and pedestrian traffic to and from the area of Port, Point Blanche and Philipsburg.

Yachting

With a considerable growth within the yachting industry of the island and region, and in consideration of the future development plans of the Philipsburg area, offering more berthing availability for larger yachts, more research is needed to the urban and coastal development of the island. This should address the amount of vessels, their sizes, where they can be facilitated given
the current infrastructure, nature and environment and limitations of safe harbor. Where can and will coastal development give added value.

Economic distribution

It is known that the Port is not considered to be in competition with the rest of the island and in particular the economic offerings of the greater Philipsburg. Yet when the above and various concerns of developments are not conducive to the easy distribution of persons and their individual experience, it can be expected that this will work as a deterrent to the movement of said persons. No movement of persons, No economic movement. In this case the internal development of the Port to create and offer a balanced experience internally and ensuring that our various company pillars

continue to grow or sustain our main port objectives is equally important. All this yet contributing to the GDP of the island.

Despite the continuing growth, no major developments are foreseen with respect to the actual port facilities (cruise and cargo), in terms of land use planning. A westward expansion of the breakwater to protect the container yard is however planned and the extension of the second pier is still under consideration. Also, asset utilization of Pier 1 is to be considered with Harbor partners.
In terms of land use planning a great emphasis is placed on the development of the area in vicinity of the port, in particular the waterfront between the port and the center of Philipsburg.

The cruise passengers--some days over 20.000 people--should be transported or conveyed to the various places of interest on the island in a pleasant manner. Many cruise tourists currently walk from the cruise ship to Philipsburg on a small footpath alongside the congested Juancho Yrausquin Blvd.

The area between the cruise terminal and Philipsburg has a lot of potential. The area receives very large numbers of people every day; this can expand the support base considerably.
The 'Development Perspective for Greater Great Bay Area' plan (TKA et al, 2003) contains design ideas for the area between the Cruise terminal and Philipsburg, illustrated in the two artist impressions below. Among others is a boardwalk foreseen to enable walking and biking comfortably from Harbor to Philipsburg and back. The detailing of these ideas must pay further attention to prevent excessively strong competition with the existing functions within Philipsburg; it should be avoided as much as possible that the new development of the east side of Great Bay would be at the expense of the shopkeepers and the character of Philipsburg.

Figure 11. *Development Perspective for Greater Great Bay Area' plan (Source: TKA et al, 2003)*
Plans for a mixed use development of this area indicated and include among others a 150 room 4 star brand name hotel including amenities, an aquarium, completion of the boardwalk, retail, a zip-line (opened 2019) and mega yacht slips (being constructed 2020). Below an artist rendering of some ideas for development (Seatrade Cruise News, 2015):

Figure 12. *Plans for a mixed use development of this area indicated and include among others a 150 room 4 star brand name hotel including amenities, an aquarium, completion of the boardwalk, retail, a zip-line (opened 2019) and mega yacht slips (being constructed 2020). Below an artist rendering of some ideas for development (Seatrade Cruise News, 2015)*

Facing the reality before hurricane Irma September 2017 and the COVID-19 virus, one could frequently notice 4 – 6 mega cruise ships docking at the harbor, meaning together dropping approximately 4000 tourists per ship plus some 1000 cruise ship employees, in total around 30.000 people. A part of them going to Philipsburg by foot, another part going on excursion mainly by bus or taxi, being in several traffic jams for quite some time. The (road) infrastructure is not able to facilitate the mobility of these amounts of people in a relatively short period of time (between 9am and 4pm). The carrying capacity seems insufficient in these situations.

Reconsideration is needed to reflect on this asking if this a sustainable way for the future and what is needed to reach a sustainable situation.

Proposals

The current plans for development of the waterfront are supported, provided that the following points are taken into account:

- Completion of the boardwalk along Great Bay to connect Philipsburg directly to the harbor

- Intensifying and improving the public waterfront from Philipsburg to Harbor: e.g. hotel, conference center in line with the points of departure of the Development Perspective Great Bay (TKA et al., 2003); Ensuring a greater diversity of functions, which are complementary to what Philipsburg currently has to offer. Points of departure for this development are:
  - Beautification is priority in light of new developments: spatial quality should be considered too;
  - Ecological and natural environment needs to be protected;
  - Historical axes need to be uplifted/upgraded and preserved, meaning restauration/preservation of historic buildings;
  - Make sure that the town does not become overcrowded (sufficient carrying capacity);
  - Balance and reconciliation of large scale, modern and global developments with small-scale historical settings and fragile environment, at the same time supporting desired and much needed economic developments.

- Ensuring that possible adverse environmental effects will be kept to a minimum and are mitigated

- Due consideration for the congestion problems of Juancho Yrausquin Blvd.

3.3 Industrial functions, utilities and commercial development

Most of the industrial activities (such as production plants) are crucial for the functioning of the economy of a society. There are hardly any alternatives to these industries, they are hard to replace (capital investments) and are often interrelated (e.g. energy production on Sint Maarten is dependent on the supply of oil). In Sint Maarten the crucial industries include: production of energy and drinking water, storage and supply of petroleum products, waste management and the production of building materials such as asphalt and concrete.

(Heavy) industries tend to generate adverse environmental effects such as noise pollution, air pollution and heavy traffic. The heavy industrial activities on Sint Maarten can be classified as typical Not In My Backyard (NIMBY) activities. Bluntly stated, everyone feels the need for crucial industries, but not in their direct surroundings. The main goal is to facilitate crucial heavy industrial activities in terms of spatial planning and to limit/avoid the adverse effects on the social and natural capital.

Therefore, given the small size of Sint Maarten and the relatively high population density that results in limited available space, the point of departure is that only (heavy) industries that concentrate on and are crucial for the domestic market are to be facilitated. This because it is not desirable to attract export-oriented heavy industries, as these may have negative effects on nature, landscape, tourism sector (Sint Maarten's core business) and residential areas (social capitals). The need for adequate space to cater to nature and social needs outweigh the potential economic benefits of export oriented heavy industry, in particular considering the highly mixed land-use and limited amount of available space on Sint Maarten.

The (re) location and clustering of heavy industries has been a point of discussion for many years, with the aim to concentrate nuisance generating activities in one area, and thereby alleviating nuisance from other areas. In 1998 a pre-feasibility study for a land reclamation in Cay Bay for the relocation of heavy industries was conducted (Civil Engineering Caribbean et al., 1998). The land reclamation and reallocation has not yet materialized for various reasons. More recently, TU Delft et al. (2008) indicated the possibility that the Cole Bay seashore area may be developed into a larger harbor and depot area. The potential for such a development may still be further investigated, however, the cost-benefit justification needs to indicate that such is feasible besides a clear risk profile indication and assessment on natural and environmental effects. It is uncertain if such a development will be feasible within the time-horizon of the Spatial Development Strategy (10 years).
This topic is related to Sustainable Development Goal number 9: Industry, Innovation and Infrastructure, more specific:
9.2 Promote inclusive and sustainable industrialization and, by 2030,
9.3 Increase the access of small-scale industrial and other enterprises,
9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes,

The three current (heavy) industrial clusters (energy, construction, waste) as well as other commercial and industrial functions are further described below.

3.3.1 Energy cluster

From the Cay Bay area energy is supplied for all of Sint Maarten. This area is in principle a logical location for an 'energy cluster' since the (Cole) bay is relatively sheltered, deep enough for the mooring of tanker ships, and noise, dust and odors are carried away offshore most of the time due to the prevailing wind direction (Civil Engineering Caribbean et al., 1998). The N.V. GEBE power plant and fuel supply (oil terminals) are located in this area since the 1960's.

The present capacity of GEBE's power plant is approximately 80 MW; it's peak use during the high season is 55,5 MW (N.V. GEBE 2015). There is no apparent need for an expansion of the power plant in the foreseeable future. Any increase in economic activity and energy demand might most likely be compensated by savings on energy and water use (Ecorys, 2012), adding renewable Energy sources and focusing on energy efficiency.

Fuel supply on Sint Maarten is currently in the hands of the companies SOL (former Shell) and GB Group (former Texaco). They serve the domestic market and supply fuel for GEBE's power plant, service stations, marinas, aviation fuel for the airport and cooking gas. No export initiatives are envisioned, and the companies rather focus on the upgrading of existing facilities (verbal information SOL and GB Group, 2013). There are no plans known to expand territory. This seems understandable considering the fact that most cruise ships are fueled elsewhere and planes having more and more technical advanced engines with reduced fuel consumption.

The current capacity of the oil terminal facilities is sufficient. Although expansion might not be required, the current situation leaves much to be desired. Autonomous developments have led to the present situation whereby houses and heavy industry are situated very close to each other.
Several houses, most of them packed together on small lots and often built without permission, literally border the power plant and the oil terminals. Noise and air pollution are a health risk for the people living close to the power plant. External safety is a great concern for the entire Cole Bay sea-shore industrial development area. In the event of a disaster, numerous people might be affected. A snowball effect is likely to happen if a disaster hits at, for instance, one of the oil terminals, or if a fire breaks out in the adjacent shanty town.
Furthermore, the relatively narrow Cape Bay access road to the GEBE plant is not designed for the heavy traffic (tanker trucks). Overhead pipes crossing the public road connecting the one side of the GEBE premises with the other is undesirable from a safety point of view.

Figure 13. *GEBE Plant Cay Bay*

Proposals

- A buffer zone with light industrial activities such as warehouses between the industry and the residential area is advised:
  A set of measures will be required in order to improve the current situation, such as partial redevelopment of the area. It is advised to create a buffer zone between the heavy industry and the residential area. The current limited distance between the heavy industry and the residential area will result in a severe impact on residents in the event of a possible large accident at the industrial facilities. This buffer zone can cater to light industrial activities such as warehousing and/or a green zone. The picture below shows the principle of such a buffer zone.

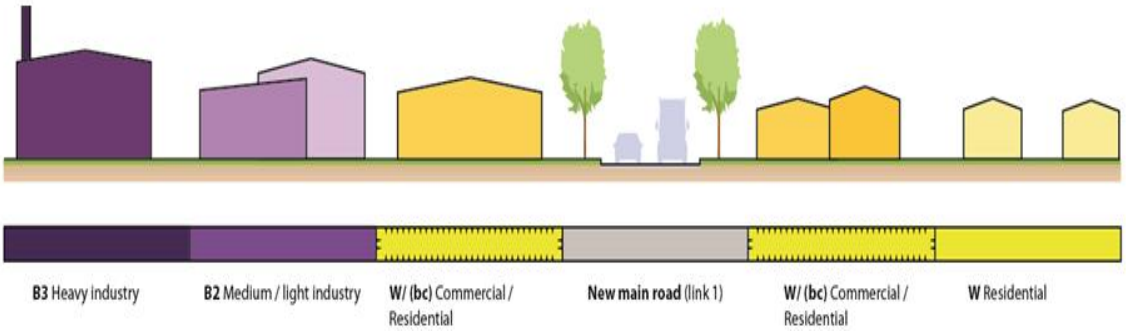


Figure 14. *Buffer zone principle*

- A new main road (Link 1, phase 3) is planned to be constructed through Cay Bay and the Cole Bay industrial area. The construction of this road can be used as an incentive for the redevelopment of the area and the realization of a buffer zone, where the road can function as a 'natural' border between the industrial and residential/mixed use area. This also allows the possibility to close off the current Cape Bay access road for public traffic for safety reasons in the vicinity of the GEBE power plant. The GEBE premises will then no longer be divided by a public road which will benefit the security of the power plant.

- To realize abovementioned, partial redevelopment of the Cay Bay area will be required.

3.3.2 Building/Construction cluster

The construction sector is also a significant contributor to the Sint Maarten economy, given the construction boom that the island has experienced. The construction industry remains a stable contributor to the economy, offering significant employment opportunities. Companies producing building materials such as concrete and asphalt, and the storage of materials (heavy equipment) are typically located in the Over the Pond and Sucker Garden areas. There seems to be limited, but in principle, sufficient capacity for these activities. An asphalt plant and concrete plant are necessary in order to provide the local civil works and construction companies with relatively affordable building materials. Additional capacity for large scale projects could be obtained from French Saint-Martin or through temporary measures, such as mobile asphalt plants.

Several attempts were made to regulate the development in the Over the Pond and Sucker Garden areas, such as the Draft Development Plan "*Over the Pond East*" (ICE, 1999) which unfortunately has never fully materialized. Contrary to this, the area has developed in a relatively uncontrolled manner. This resulted in (sometimes illegal) land reclamation, poor access, inefficient subdivision, and cluttering of the landscape. Furthermore, the (illegal) filling led to stagnation of adequate storm-water drainage, rainwater gutters from the hillier terrain north traverse this area. There are some scattered industrial activities, such as the production of concrete blocks and storage of heavy equipment in the adjacent primarily residential neighborhoods where they cause significant nuisance.

Proposal

The Over the Pond-Sucker Garden area should be zoned to facilitate the current industrial activities. It is advisable that the area also will be restructured and improved. A master plan for the area should be established with special attention for access, a more efficient subdivision, and better drainage. Space can also be created to relocate industrial activities from the neighboring residential areas to the Over the Pond-Sucker Garden area through an improved subdivision.
In light of this proposal, a masterplan for the area should be established with focus on revitalization of the area with attention to storm-water management (stagnation of run-off water), prevention of illegal land reclamation, access, and more efficient subdivision of plots;

3.3.3 Waste cluster

The landfill is currently located at Pond Island in close proximity to Philipsburg. The landfill is used as a disposal area for *all* household and commercial waste. The waste is deposited and compacted with layers of soil. There is hardly any processing of waste material (sorting, treatment, or recycling).

The presence of the landfill, in particular at this location, is management wise a big challenge for several reasons. First of all the highly visible landfill in vicinity to the capital Philipsburg is a major eyesore. There are also nuisance problems (such as, dust, odor, noise pollution, and health risks) and now and then some fires at the landfill causing odor and air quality problems. Landfills may also result in the harboring of disease vectors such as rats and flies. Furthermore, the landfill is not used as a viable and abundant source of residuals for recycling purposes. Finally, the allocated space for the landfill has reached the planned maximum capacity.

The Council of Ministers decided in their meeting at November 13th 2018, to approve the Road Map Waste management 2018-2022 as a vision and guide for the way forward with waste management at Sint Maarten (agenda point 14, DIV 6713-18). This was drafted in 2018 under the responsibility of the Minister of VROMI.
Points of departure were:

- The starting point is to aim for maximum sorting, reuse and recycling of waste-materials within economically acceptable conditions based on the principles of the internationally recognized Waste hierarchy model (prevention, re-use, recycling, waste to energy, disposal, landfilling);
- Part of the waste-streams are exported off island (prepared for recycling);
- For the remaining burnable waste-streams a Waste-to-Energy (WtE) (incinerator) facility converts waste into electricity seems to be the best option.
- The landfill is covered and not operational anymore for regular waste. Only a small part is used for the temporary storage of remaining ashes of the WtE facility (bottom-ash can be reused as filling material, fly-ash off-island). The emissions are under control, the odor issue has been solved and the produced methane can be used for power production.

Proposal

A Waste to Energy (WTE) plant is projected to be situated on Pond Island in the vicinity of the landfill. The purpose of this facility is to process all waste streams, as well as the mining of the current landfill for fuel to produce electricity to sell to the local electricity supply company. See Chapter 5 for more information.

3.3.4 Commercial and light industrial activities

Apart from the three industrial clusters described in the previous paragraphs there are also light industrial areas, commercial nodes and scattered small commercial activities, in particular along the main roads. Small and medium businesses have historically comprised the major employment opportunities, and as such have been collectively major contributors to the economy.
The economy has been supported by the entrepreneurial spirit, which therefore should be encouraged and facilitated as much as possible. Non-restrictiveness can lead to new initiatives, and creative and innovative ideas and developments. On the other hand it is clear that not all initiatives mix well together. Another (negative) effect that can be noted is the frequent going in and out of lots along the main roads, causing traffic congestion on those main roads.
Non-residential activities in residential areas provide for home-based employment and economic diversification. They can also provide valued services for the surrounding community. However, without regulations, such businesses may be experienced as a possible hindrance or threat to the main function of that area: residential living (Island Government of Sint Maarten, Department of Economic Policy & Research, 2009).

Proposal

- Mixed use along the main roads facilitated in terms of zoning:
  The point of departure is that along the main roads, in line with the current policy of the Ministry of TEATT, mixed and commercial activities will be allowed, while on the other hand such activities need to be discouraged and prohibited in (residential) areas not designated for such purpose. The existing mix of functions along the main roads will be facilitated in the development plans as much as possible within certain conditions. Along the main roads in existing clusters some more intense commercial and light industrial activities can be allowed. But as noted before it is a challenge how to deal with the mobility to and from those lots along the main road, frequently interrupting the traffic flow.

- Facilitating and enhancing of a commercial node in vicinity of Churchill Roundabout and logistical/light industrial activities in Cole Bay (in vicinity of Orange Grove Road) and Point Blanche (in vicinity of the harbor) through zoning

- Explore the possibilities for a light industrial park in the former quarry area in Hope Estate, also for possible reallocations:
  The former quarry area in Hope Estate is potentially a suitable location for light industrial functions, provided that proper accessibility is ensured, among other criteria. However, also a strictly residential development is considered for this area.

- Facilitate home-based occupations that do not provide any type of nuisance in residential and mixed use areas in terms of zoning:
  - In line with the residential policy of the Ministry of TEAT established in 2009, residential areas must be safeguarded from noise pollution or parking problems caused by non-residential functions.
  - Only small-scale enterprises without any hazards or nuisance to the surrounding environment should be allowed in or near residential areas. Regulations are already in place and will be improved to prevent excessive hindrance (Hindrance Ordinance, Civil Code).
  - Certain occupations may be exercised anywhere also within solely residential areas, namely the type of occupations that do not have any or too great an impact on the enjoyment of the residential function. These so called home-based occupations such as small administration offices will be facilitated in terms of zoning.

3.4 Local Mobility and Transportation

Without a smoothly functioning mobility system, our economy and our society will literally grind to a halt. Both economic and social interests are served by good accessibility at every level. The cohesive functioning of the total system of roads, waterways, infrastructure for walking and cycling, multimodal hub, ports, now and in the longer term, is of national interest. Traffic and the transport of people and goods must be safe, affordable and reliable, must offer acceptable journey times and travel alternatives and must have the least possible negative impact on the environment.

The term ‘safety’ refers to road safety, social safety and external safety. It is of key importance on the road, in the water and in the air. In a robust mobility system, journey times are predictable and reliable, including the seamless transition between the various travel modalities. At the same time robust also means that the mobility system is futureproof (including climate resilience).

The road network on the island of Sint Maarten is not suited for the heavy traffic volumes it has to cope with today. This has resulted in a situation where accessibility of locations with economically vital functions is under pressure (DTV, 2011). Furthermore, the value of travel time which refers to the costs of time spent on transport, including waiting as well as travel, is significant for Sint Maarten. Total travel time costs are the product of time spent travelling multiplied by unit costs and are one of the largest categories of transport costs (Victoria Transport Policy Institute, 2013).

Travel time savings are often claimed to be the greatest benefit of infrastructure improvements. The average car driver's travel time in the USA is valued at $ 7.50 per hour under urban-peak conditions according to Victoria Transport Policy Institute (2013). Although detailed numbers for Sint Maarten have not been studied, one can imagine the potential economic benefits by decreasing travel time.
Besides this, it might be clear that tourists visiting Sint Maarten do not like to spend their scarce vacation time in traffic jams. That 'attraction' is something that most of them have at home too. It must be noted that these traffic jams are not a quick fix.

In order to achieve sustainable economic development the point of departure on transportation is to decrease travel time costs by means of spatial/physical measures and improvement of traffic safety. This will be done through the expansion and optimization of the main road network, improvement of the secondary road network, improvements of facilities for slow traffic (bike and pedestrian lanes), public transportation and parking. These topics will be addressed in the following paragraphs.
Previous paragraph 3.2. already indicates the contribution of these topics to SDG 9.1, 9.2 and 9.3. With the provision and access to safe, affordable, accessible and sustainable transports systems for all, also SDG goal 11.2 is covered.

Some proposals on this topic are mentioned below. However, it must be noted that mobility can only be solved in an *integrated* way. It is not just simple adding of extra roads/asphalt. A diversity of options/measures should be considered to get the best result. In that perspective, it was the intention to carry out a mobility study as part of the National recovery Program managed by NRPB/World bank. However, priorities were set differently, at least delaying this intention.

3.4.1 Main road network

The amount of vehicle movements on Sint Maarten has risen dramatically in the past decades. In Sint Maarten, there are about 30,000 vehicles registered (including about 3,200 rental cars), which means a car ownership rate of 750 vehicles per 1,000 habitants. This is similar to or above other high- income countries experiencing heavy traffic congestion (c.f., 870 in the United States, 630 in Netherlands, and 590 in the United Kingdom) (World bank, 2019).
The main road network, with few exceptions has however hardly changed since the 1960's. The capacity of the road system is not sufficient and the need for an adequate road network is felt more and more. The figure in the image below shows the capacity of the main road network. The red and dark red bars in the picture added how structural traffic jam areas (DTV, 2011).
Sint Maarten lacks alternative routes and has long suffered from chronic traffic congestion. The country has about 295 km of roads, of which 43 km are primary roads and the rest are secondary. The (main)road network is generally well maintained, with about 75 percent already paved by asphalt and concrete. Still, traffic congestion is persistent and getting worse given the country's high vehicle ownership and a large number of rent-a-cars used by tourists. Especially during the peak hours, traffic congestion has already been intolerable in some areas, such as Phillipsburg, Little Bay and Cul de Sac (Worldbank, 2019).

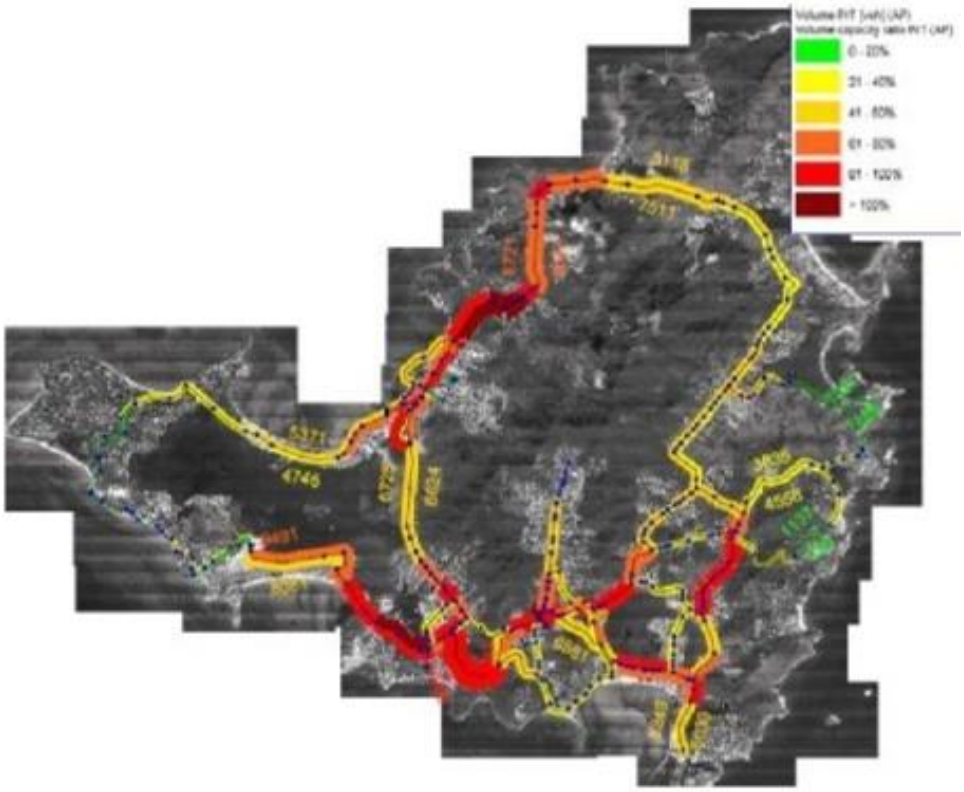


Figure 15. *Traffic congestion map showing areas where congestion occurs the most.*

Expansion of the main road network is an important issue to increase the capacity and reduce congestion. The proposed expansion of the main road network was described in 1993 in the Comprehensive Road Network Plan, which included the construction of a number of new road connections (links) in order to form a coherent system of arterial roads (DTV, 2011). A large part of the proposed expansion of main roads based on this 1993 plan however never materialized. An image is included showing the updated main road network with the planned new 'links'. Link 9 (the Causeway Bridge over Simpson Bay Lagoon) as shown on that image below was completed in 2013.
Government wants to execute these road links aimed at eliminating a number of key traffic bottlenecks. Of particular importance is the improvement of the east-west connection, as illustrated below. The east west connection – as indicated in the picture below - connects vital locations (Airport, Philipsburg and the Harbor) and is vulnerable since it depends on a very limited number of (main) roads.

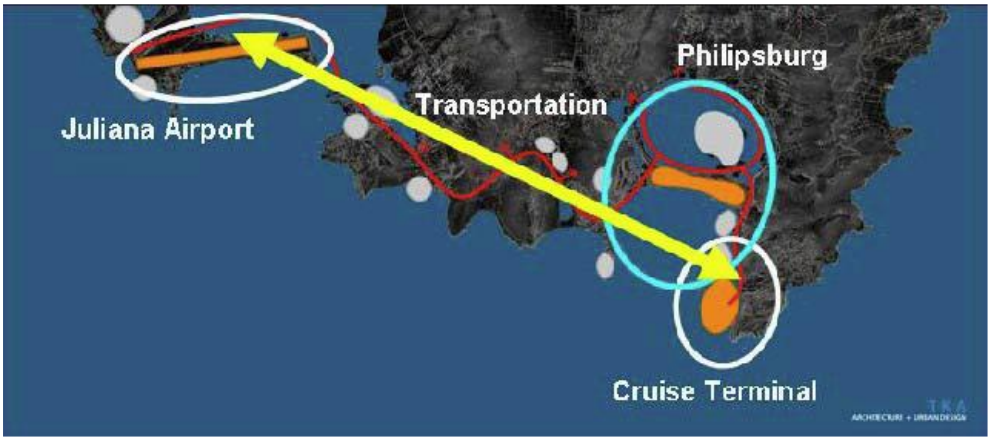


Figure 16. *Future transport links*

All new main roads should be developed in accordance with design standards pertaining to their function of conveying relatively large volumes of through traffic with a minimal of intersections (which

have to be properly designed) and access to frontage properties. Furthermore, safe facilities for slow traffic (pedestrians and cyclists) should be provided (also see 3.1.4.).
Space will be reserved in terms of zoning for the proposed road links in the respective development plans. Even for the links that may be considered on the longer run this is essential, in order to avoid that the possible future realization of these links will become practically impossible due to construction and/or conflicting land-use.

Prioritization of new main roads

A prioritization -and elucidation to this prioritization- for the execution of the links is indicated below (see also map below). It must be noted that as part of the National Recovery Program project Link 6 it was planned that a research takes place to see what the optimal main road network will be and which parts can be started first with. However, due to financial complications requiring property to construct Link 6 and the considerable delay because of that, other choices have been made and monies are shifted to other projects.

Proposals

Links necessary with high priority to alleviate congestion at key traffic bottlenecks:

- Link 6: Connection from Weymouth Hills to the Bethlehem area. This will alleviate L.B. Scott Road to a certain extent and provides for an alternative connection between Dutch Quarter/ Middle Region and Cul de Sac. The road will allow for better development possibilities for the Bethlehem area.

- Link 2: Alternate route from Philipsburg to Cul de Sac avoiding and alleviating the congestion at Bush Road and the congested Churchill Roundabout area;

- Link 3: this road will alleviate the heavily congested Walter A. Nisbeth Road and the southern section of A.T. Illidge Road. Furthermore it will also create a physical barrier in order to halt further land reclamation from the Great Salt Pond;

- Link 4: Upgrading and expansion of Alexis Arnell Blvd. to serve as an alternative to the crucial A.J.C. Brouwers Road;

- Link 1, phase 3: the alternate route from Philipsburg to Cole Bay, alleviating congestion at the Brouwers Rd., Union Rd, Welfare Rd intersection;

In most cases studies and (preliminary) designs of the abovementioned are already finalized.

Links that may be considered on the longer run, based on additional studies regarding the positive effects on traffic alleviation in relation to possible adverse environmental effects and costs:

- Link 7: will serve as a parallel road to the L.B. Scott Road. This will also allow for better access and development possibilities of southeast Cul de Sac. However, the feasibility and impact of this link will require further study due to, among other issues, seemingly incompatible existing land use;

- Link 10 (tunnel trajectory) from Union Road roundabout to St. Peters, and to Cake House Road area via link 7 and link 2

- Link 8: could reduce the congestion on part of Welfare Road, however anticipated effects of this link need to be studied;

In all cases, it is advisable to reserve space in terms of zoning for the trajectories proposed.

3.4.2 Upgrading of existing main roads

Figure 17. *Proposed new road system Dutch Sint Maarten (Source: DTV, 2011)*

Most of the existing main roads on Sint Maarten are not designed for the amount of vehicular traffic they have to cope with. The alignment, lack of left turn lanes, parking situations directly along the road and numerous driveways connecting to the road are the main problems that impede traffic flow and result in traffic congestion. The upgrading of existing main roads will improve the traffic flow by realizing left turn lanes, service/parallel roads, and the improvement of parking facilities along the main roads. The image below shows a possible cross section for a main road with a parallel road.

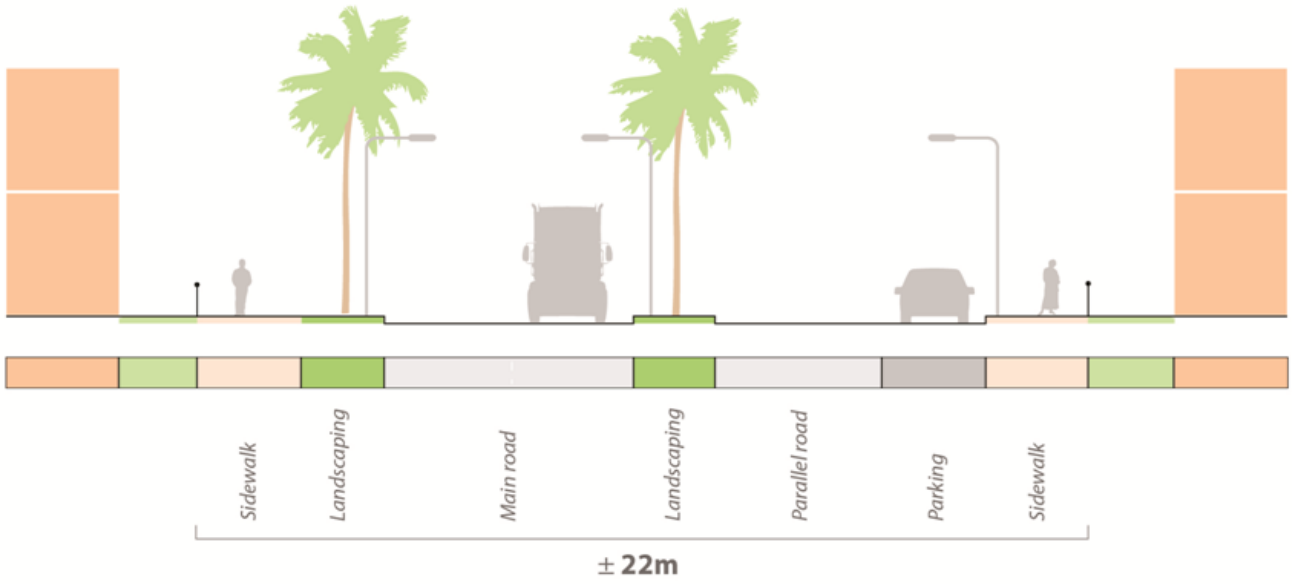


Figure 18. *Road layout proposal*

Different road sections require detailed designs based on among other factors the available space. However, minimum design standards for a main road (and secondary roads as well) should be set. This is important, as it stimulates maximum of traffic-flow with the least possible interruptions of that flow. In addition, by designing roads in a uniform way, roads are 'easier to read', meaning that the road structure and its appearance is clear and transparent to users of that road.
Within the respective Development plans (zoning plans) an area with a width of 18-22 meters will be reserved – if available /possible - in order to facilitate the upgrading/ beautification of the existing main roads.

Proposals

- Upgrade existing main roads:
  improve flow of traffic by limiting the number of intersections, driveways etc., eliminate parking directly alongside the main roads and improve traffic measures such as left turn lanes, lane separation, and parallel (service) roads;

- reserve, if possible, space in terms of zoning between 18 and 22 meters wide for the required upgrading

3.4.3 Improvement of the secondary road system

Improvement of the secondary road system is another way that can alleviate traffic congestion. It is typical for residential areas on Sint Maarten (in particular narrow tracts of land leading to the hillsides) that they have only one access road. The different residential areas are often not connected to each other, but are connected directly to the main road. This is clearly visible for instance in the Cole Bay area as shown on the figure below (DRO Amsterdam, 2012).
The significant amount of intersections reduce the capacity of the main roads and contribute to traffic congestion. Moreover, the dead end roads may also lead to relatively long travel distances for physically nearby locations.
The image below shows a schematic view of the current situation compared with the desired situation where a secondary road is realized, which gives the opportunity to disconnect one or more of the access roads from the main road.

Figure 19. *Current condition*

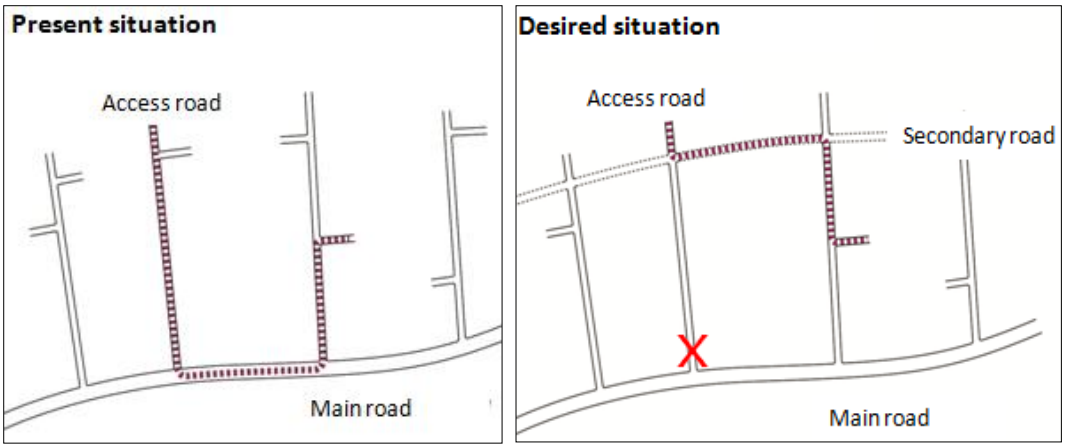


Figure 20. *Proposed Road Layout*

The dead end access roads in some cases can have advantages (feeling of safety) that are appreciated by residents. Safety is on the other hand a reason why alternative connections are important. In the current situation, there are large residential areas that only have one access road, such as Point Blanche, Beacon Hill and Pelican Key, which brings a high risk in the event of an emergency situation. It will be investigated in what ways the secondary road systems in specific areas can be improved, taking the aforementioned principles into consideration.

Proposals

- Further study into the improvement of the secondary road network, in order to increase the capacity of main roads and provide alternative access to vulnerable areas;
- Establish minimum design criteria for the public space, more concrete for the (re)construction of new roads in accordance with their specific function.

3.4.4 Bicycle and pedestrian traffic

The current infrastructure on Sint Maarten is very much car-oriented; there is a perception that the island has too many cars, certainly in relation to the capacity of the road network; proper sidewalks are rare (even in highly touristic areas such as Simpson Bay) and bicycle lanes simply don't exist. The weather, infrastructure and local hilly geography might not be very favorable for pedestrians, and in particular bicycle traffic. However, providing no alternatives will definitely not get people out of the car. The success of the boardwalk and the Simpson Bay Causeway show the potential when facilities for slow traffic are provided. Various ways of movement (walking, cycling, jogging) should be stimulated as this was repetitively voiced during the various jollifications held in 2008 relating to the preparation of sustainable development strategies for Sint Maarten (TU Delft, 2008). Moreover, facilitating pedestrian and bicycle movement could create more liveliness and safety in the public space and could be a way for tourists to explore parts of the island (TU Delft, 2008).

A bicycle and pedestrian route network that connects the Greater Philipsburg area with the Cul-de-Sac and Welgelegen area seems promising. Such a network connects the main commercial and public service clusters with major residential areas. The physical characteristics of this area are favorable for the realization of a bicycle route network; there is quite some space available and the area is rather flat. Furthermore, the realization of the new Link 2 and in particular the realization of an inner circle for walking and cycling as part of the Ring Road (Link 3) could set an example.
A pedestrian and bicycle route network around the Southern section of the Simpson Bay Lagoon could be an interesting route for both commuters and tourists.

Proposals

Improve facilities for slow traffic by:

- realization of bicycle and pedestrian route network in particular in the Greater Philipsburg and Simpson Bay - Cole Bay areas;
- create safe pedestrian facilities whenever a new main road is being constructed;

3.4.5 Public transportation

Sint Maarten has a privately run public transport system with mini busses. This is an affordable and reasonably functioning system, which doesn't require public investments. This system is however characterized by some disadvantages. The economically less beneficially areas are hardly served, or not served at all, while other routes are overlapping. Furthermore, there are no organized bus schedules.

Improvement of the public transport system both on land and on water could increase the mobility and reduce traffic congestion (SHTA, 2006 and TU Delft, 2008). It is the intention that a public transportation policy will be prepared, that will include, amongst others, a coordinated routing system.

Physical improvements are also part of the solution. Through the scarcity of facilities, such as bus stops and separate driving lanes, the busses often have to stop on the road instead of the side of the road, which causes traffic congestion. It is proposed to create better public transport facilities on the main road network, such as bus stops, for which ample space will be reserved within the respective development plans. The realization of a central bus terminal in Philipsburg (possibly on Clem Labega square) with clear signage and comfortable (shaded) waiting areas will also be considered.

It is furthermore proposed that a ferry service for commuters and visitors could be established between Philipsburg, Simpson Bay, the airport and Marigot on the French Side. The image below shows an artist rendering of a ferry terminal for Simpson Bay (TU Delft, 2008).
It is advisable to have a concerted effort to organize, develop and (re)structure public transportation (land and sea) as it is a supporting driver of the economy, social and environmental development and protection . One should be able to take a public bus (transportation) to/from the airport from anywhere on the Dutch side of the island to catch a flight. To be a full hub as airport also the transportation aspect must be taken into account. A public transportation hub will complete the hub function of the airport, enabling both Dutch as French public transportation users to make use of it.

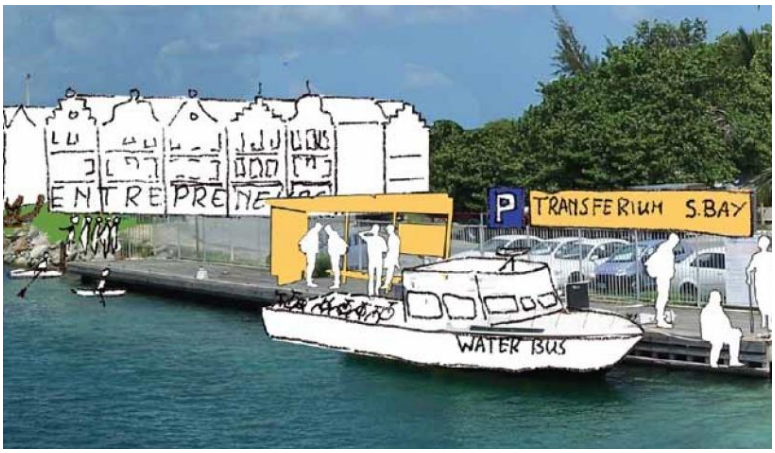


Figure 21. *Sint Maarten Waterbus*

Proposal

Improve the physical infrastructure for public transportation e.g. bus stops, central bus terminal and ferry terminals;

3.4.6 Parking

In order to avoid walking distances ‘everybody’ wants to park his or her car as close by the destination as possible. This is logical human behavior but can cause several side effects like unwanted ‘search traffic’, unsafe situations for pedestrians and small grid locks where one or a few cars can block the road for the others (DTV, 2011). In order to solve this problem it is important that parking is organized in a better manner.

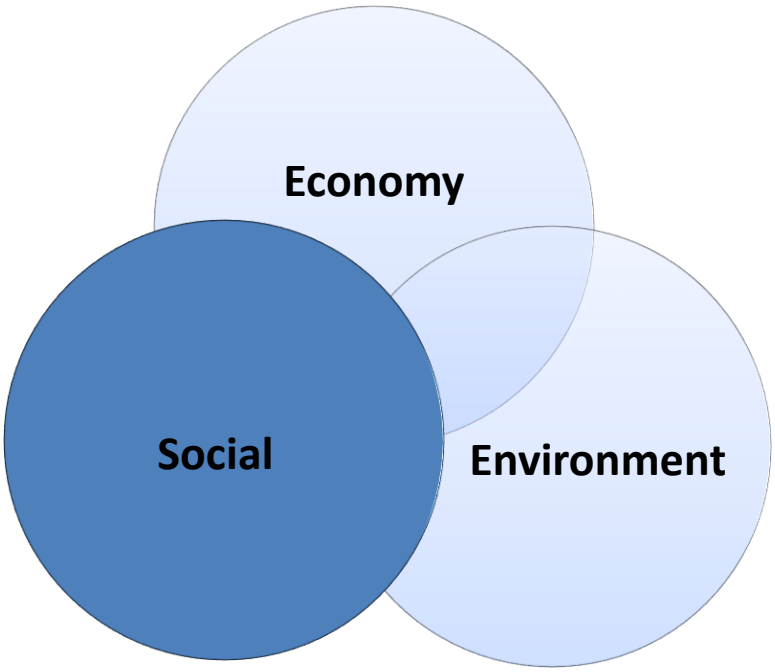
Proposals

- Realization of central parking facilities (possibly through a public-private partnership) in central commercial areas, such as Philipsburg and Simpson Bay (Kim Sha Beach area) in combination with the improvement of facilities for pedestrians (make pedestrian pathways more attractive/convenient);

- Parking standards for any new developments (as part of the building regulations and the development plans (zoning));

- Prohibit parking directly alongside the main roads through physical improvements of the main road (see also 3.1.2.).

Reserve space in terms of zoning for all of the proposals



4. Sustainable Development: Social dimension

Social sustainability emphasizes on reducing vulnerability and maintaining the health of social and cultural systems. Enhancing human capital (through education) and strengthening social values, institutions and equity will improve the resilience of social systems (*Munasinghe, 2007*). However, there is more to that. There are relations with the pillar 'environment', for instance, when people volunteer to participate to clean up natural areas and shorelines or when people use natural areas (parks, beaches) for socializing. There are also relations with the pillar 'economy' when well-educated and healthy people contribute to the economy, by, for example, being more productive and creative or, the other way around, when de economy challenges/'rewards' well-education with more perspectives, for example sufficient housing for all income groups.

The allocation of educational and other public facilities, community centers and the preservation of tangible cultural heritage and sufficient housing are important topics for social development which have a (direct) relation to spatial development and are therefore mentioned below.
The following main topics are described in this chapter: housing, public facilities and cultural historical heritage. Every topic is concluded with some proposals, with referrals to the relevant Sustainable Development Goal.

4.1 Housing

Everyone in SXM must be able to live in some comfort, have a home, for a reasonable price, irrespective of whether that means renting or buying. Alone, with your family or with others, in a house with garden or balcony, and in peaceful or more lively surroundings, depending on the individual wishes. Against that background, a housing stock that matches people's current and future housing demand is therefore a national interest. Good-quality housing means a pleasant, live-able environment, with enough homes for everyone, in every phase of life: from student bedsits to (care) homes for the elderly. Good housing also means a justified expectation of quality from builders and landlords, who carry out their work well and in a transparent manner, an expectation that government will act to tackle excesses. It also means that housing must be affordable with suitable homes for every budget and an affordable transition to clean energy in every home. In other words, quality relates not only to the home itself but also the residential and living environment.

Adequate and affordable housing for the citizens of Sint Maarten is regarded as a cardinal requirement to sustain a good quality of life. It is considered one of the basic needs of a healthy society. It is an objective to ensure that all citizens have access to affordable housing that meets certain minimum standards. Furthermore, it is the objective to promote home ownership to encourage independence and self-reliance of the citizens of Sint Maarten.
Several people in society have a disability. Because everyone must be able to participate in society, good access to the living environment including homes, buildings, public transport and public space is of importance. An accessible environment invites people to participate in more outdoor activities, makes it easier to meet people for people to do their own shopping.

There are numerous obstacles to the use of public space, buildings and het public transport. The task is to improve the accessibility of buildings, public transport and public space (also for the emergency services) and to ensure the availability of sufficient suitable homes and forms of housing for people with a disability.

A study into the need for housing on Sint Maarten was conducted on behalf of the Ministry of VROMI in 2012: SXM Housing Vision Building Book (KAW and Bout Overes, 2012). The key issues and conclusions of this study are briefly highlighted below.
In 2019 a Rapid Housing Assessment St. Maarten by the World Bank took place. Recommendations resulting from this assessment intend as a starting point for discussion about possible actions to improve the housing market in Sint Maarten. Some of the proposed recommendations are complex and require strong technical capacity and financial resources. The recommendations with spatial impact are elucidated below as proposals to be discussed.
The National Development Vision indicates: safe and affordable housing and upgrade slums.
The topic is also of importance because in SDG 11.1 it is stated to ensure access for all to adequate, safe and affordable housing and upgrading of slums.

Issues

Housing issues at hand that need attention to be solved with spatial (policy or legal) instruments are discussed below:

- There are several socially disadvantaged existing neighbourhoods where urban renewal is necessary.
- There is a ‘market failure’ in the housing market, because elderly, starters, disabled, lower and middle-income inhabitants are not adequately catered to. The financial gap between renting and buying a house is too big. This leads to imbalance and invisible homelessness (starters that are not able to leave their parents’ house).
- Immigration is an important issue and raises the question of who we want to build for: temporary immigrants, permanent immigrants, illegal immigrants, SXM citizens?

In the end, there are not enough affordable homes and not enough safe and proper community areas/ neighbourhood centres.
Up until the present time, residential building has mostly occurred at the initiative of the private sector, resulting in a ‘out of balance’ housing market in a way that the supply falls too short of the demand. The government should assume a greater coordinating role in this, in order to restore balance in the housing market.

The objective is to supply housing that matches the demand and that offers sufficient differentiation in terms of type, residential environment and price class. We will make sure there is sufficient planning capacity, on time. Together, authorities must ensure that homes are available for all target groups including middle income groups, families and the elderly and must reach agreements on the distribution of social housing. We encourage social coherence by guaranteeing sufficient differentiation in terms of types of housing and price classes, the development of mixed residential/working environments and public space that is structured in a manner that is safe, accessible, attractive and healthy.

It can be noticed that in the perception of several people, the cause of housing stock lacking behind and high housing prices are the result of restrictive policies like the Hillside Policy and Parking Policy. It is true that these policies are in some way trying to guide a sustainable future spatial planning, meaning to prevent people from building whatever and wherever. On the other hand it is clear that additional homes are needed somehow to alleviate scarcity and high prices. In that regard, the choice is made to, in the future, allow higher building than the one or two floors most commonly built in in the lower lying. This will be established in the upcoming development plans/zoning plans.

Arguments to facilitate and coordinate solutions include:

- Certain target groups receive too little attention. For example, the elderly, the disabled and starters on the housing market, and people with low to middle incomes. Aside from this, the premise is that, from a perspective of spatial planning, affordable homes must not be clustered, but must be distributed across the island;
- The growth of the disadvantaged districts (shanty towns), where there are more than average problems in the area of health, sewerage, fire safety and criminality needs to be further reversed;
- The construction of more affordable homes is good for the economy of Sint Maarten. It is promoting of employment in the construction industry, while simultaneously improving the living standards. The aforementioned study identified the need for housing over the period of 10 years for approximately 7,000 extra homes. These new homes then provide for:
  - New development for autonomous growth;
  - New development for invisible housing needs (for example, young adults who continue to reside with their parents longer than they ideally would like to);
  - Replacement of homes of insufficient quality.

Proposals

- Reserve and secure land for housing and infrastructure development in various communities, including other community needs, such as community centers and recreational areas for residential communities;

- Facilitate the creation of housing projects in the large succession land areas that are not too steep. Especially where improvements e.g. on infrastructure are already being executed or planned;

- Promote urban renewal in the areas where houses below standard (shanty towns) are located, in public private partnerships, to improve the living standards of the residents;

- Promote, through zoning, for the residential function to be strengthened within the commercial centers, such as Philipsburg, to return life back to town after closing hours;

- Promote the development of higher density residential developments on flat land areas, but taking the future risks of flooding into account. This, in order to make efficient use of available infrastructure and to facilitate the demand in the housing market (7,000 homes in 10 years), bearing in mind proper planning principles. In that perspective, the increase of densities will mainly be created by allowing buildings to be one or two stories higher than we are used to in flat areas.

- Facilitate with the Sint Maarten Housing Development Foundation (SMHDF or others with same objectives) to realize more housing projects aimed at the purchasing market, in various forms of housing concepts and for varying demands in the market, to promote more home ownership;

- Facilitate community gardens and playgrounds in each housing development project, to improve the livability of the areas.

- Implement an inclusionary housing policy, which require some regulations within the spatial development plans that prescribe certain mandatory percentages of social/affordable housing within the (residential) zones to be (re-)developed. Developers can deviate from these percentages by contributing (preset) amounts of money to an in-lieu fund. That fund then provides financial means to cater for social/affordable housing projects elsewhere. This fund will preferably be managed by the Ministry of VROMI and will cater for developers (such as SMHDF) with social/affordable housing projects that need support from government and live up to the preset (publicly available) standards.

- This policy can also be part of the principle of using the 'to be detailed residential' zones in the zoning plans as a natural starting point for negotiations with developers in order to establish a stronger influence on building a certain percentage of social housing within these areas (for example 25% of the houses needs to be 'social' or 'affordable').

- In the new draft development plans, enough space is reserved for residential use and to locate community centers. However, the big challenge is to get developments started. The government could take on a greater facilitation and coordination role in this respect:

    - Increase the supply of social housing. It was outside the scope of the Rapid Housing Sector Assessment to quantify the exact demand for social housing in Sint Maarten. However, based on the mismatch between incomes and rent levels, it is evident that there is considerable demand. The 2012 Housing Vision Report estimated a demand of over 3,200 units of affordable housing over the 2012- 20 period. Post Irma, it is likely that the demand has increased significantly.

    - Several incentives may be considered in order to pique the interest of private developers. Examples include: an expedited permitting process for cheaper and smaller houses. Encouraging and incentivizing the construction of cheaper and smaller-format homes in denser developments could offset the cost of land, and make prices more affordable.

    - Investigate available public land parcels for pilot housing development. This includes reviewing parcels already slated for social housing construction to identify financially viable solutions, including pilot public-private partnerships (PPPs) for mixed-income, mixed-use higher density projects that could serve as a good practice model.

    - Make housing finance more accessible through the Mortgage Guarantee Fund. As highlighted in the National Recovery and Resilience Plan, the mortgage guarantee fund could be activated and capitalized, as was stated in the VROMI 2015-2018 Ministry Plan. This could help expand the reach of modest- and middle-income households who are otherwise creditworthy but unable to access funding in the conventional market. Such a Fund could help increase the 'effective demand' for housing, so it is critical that it be accompanied by measures to increase housing supply. The design and administration of the Fund requires further analysis.

    - Carry out a pilot project for the upgrading of informal settlements. Many low-income households currently live in informal settlements on public and private land. These settlements lack proper infrastructure and access to services. It is recommended that the Government consider piloting a program to upgrade and legalize selected neighborhoods, starting with settlements that are easier to regularize – for example, those located on publicly owned land.

    - Improve technical capacity and financial resources. Field interviews with VROMI departments as well as the SMHDF revealed a need for technical capacity in building and additional human resources.

- Permitting and Inspection
  Based on field interviews, there is lack of capacity within the permitting and inspection departments, both in terms of human capacity and personnel qualifications. Inadequate staffing has created a backlog of permit requests, which exacerbated after Hurricane Irma. An assessment of capacity should be conducted to determine the appropriate staffing arrangements and skill set for the departments. Furthermore, the entire permitting process is paper-based, which not only causes delays, but also is difficult to track, sometimes resulting in lost documents. It is recommended that a digitized system for handling permits requests be implemented.

- Sint Maarten Housing Development Foundation
  SMHDF can become the engine for the development of social housing. As part of the World Bank's support to the SMDHF, an evaluation of SMHDF's operational model was undertaken in 2020. This included lines of business, performance of existing properties, organizational structure and human resources, and financial flows. Based on this evaluation, conclusions were drawn regarding past operational performance. Recommendations for improvement were provided, including, among other things: modifications to the organizational structure, responsibilities and requirements for ongoing subsidy and collaboration with the Sint Maarten Government.

- Housing policy and data
  There is currently no staff member within VROMI responsible for housing policy on the island. A housing expert should be appointed to serve as the single point of accountability charged with defining, coordinating, facilitating, and developing the country's housing policy. The collection and analysis of housing data would also fall under the purview of this expert.

4.2 Public facilities

From a spatial point of view, the plans for the future development of schools, community centers, cemeteries, sport and recreational parks are critical for well-functioning communities. These topics are discussed below.

With the locations for sport and recreational parks healthy lives are ensured and well-being for all promoted (SDG 3, in particular targets: 3.1-3.5, 3.7, and 3.9)

4.2.1 Schools

Secondary schools are not well spread on Sint Maarten but are mainly clustered in the Cul–de-Sac area which has only one access road (L.B. Scott Road). This challenge has been recognized since the turn of the century and since then attempts have been made to construct new schools in other areas. However, this remains an issue, related to the capacity of the road structure, and adds significantly to the daily congestion in this already quite densely populated neighborhood. This will only partially be solved with the execution of an alternate access road, such as Link 6 (see paragraph 3.1.1) and/or other alternative roads to/from the area, in combination with mobility measures and an optimal transportation system.
Therefore, the point of departure is the wish to have a better spatial distribution of (in particular secondary) schools in Sint Maarten. Better in the sense that the demographic situation and expectations of the future demographic development will play a role in the considerations where to invest in future school accommodations. This is a prime responsibility of the Ministry of ECYS in which the Ministry of VROMI will facilitate as much as possible.
Although only a moderate growth is expected in the student population during the subject period of the Spatial Development Strategy, there is a need for planned development of new schools, community centers and multi-purpose play areas in the districts to facilitate:

- the further promulgation of the Community School model (Integrated Youth Policy, 2006), providing opportunities for the further development of schools, recreational and sporting facilities;
- relocation of aging school buildings to accommodate the decongestion within the Cul-de-Sac area, as well reconsidering the aging school buildings in the congested Philipsburg area;

- limited expansion of the existing school buildings.

To achieve this, new (primary and secondary) school locations are to be projected within all major districts, allowing for the possibility for the establishment of new schools, recreational and sporting facilities as the need arises (Ministry of ECYS, 2014). Due to the scarcity of land and limited means it is recommended that some of the remaining government land is earmarked for the development of schools, recreational and larger sporting facilities.
It should however be noted that there is not much government land available and in some districts all the land is privately owned. Therefore it is imperative that privately owned land be acquired or reserved as well, in order to be able to project schools and related community facilities in certain districts. Potential possible locations include the Welgelegen area in the Little Bay district and the Bethlehem and Union Farm areas in the Lower Prince's Quarter. Again, this is a prime responsibility of the Ministry of ECYS, but the Ministry of VROMI will facilitate as much as possible.

Proposal

- Space reservation for relocation of aging school buildings to accommodate the decongestion within the Cul-de-Sac area, as well as of aging school buildings in the congested Philipsburg area.

4.2.2 Sports and recreation

Sint Maarten has some larger sports facilities, which includes the Jose Lake Ball Park in Cul-de-Sac, the multipurpose Raoul Illidge Sports Complex in Cay Hill and the Little League Stadium on Pond Island. Furthermore, there are several indoor facilities and smaller facilities such as the facilities in Belvedere, the Melford Hazel facilities in FOGA and the Philipsburg Sports Auditorium. There are also various sports facilities (indoor and outdoor courts) connected to schools in various districts which are utilized by neighborhood residents, a practice that can be encouraged with due consideration for maintenance issues.

Within the respective zoning plan, space should be reserved for the expansion of the sports facility on Pond Island towards the north of the Little League Stadium. This area could be developed to include for instance a soccer or cricket stadium. There is also a private initiative for the development of a cricket stadium in the Bethlehem area, which can be facilitated in terms of zoning in the respective development plan.

There is a demand for more recreational areas in the different neighborhoods. These areas can take the form of multipurpose courts that can cater to various sports including basketball, football, hockey, netball and volleyball (*Ministry of ECYS, 2014*).These areas could be developed independently or as an integral part of "village centers" (see paragraph 4.1.3). Consideration should also be given to mini sport/exercise parks to complement the already established district courts and play grounds. The equipment placed in these parks would require minimum maintenance and would be beneficial to the surrounding community and persons not wishing to engage in the above mentioned team sports. This, as previously mentioned, could be included in the concept of social spaces/village centers.
The beaches of Sint Maarten have always comprised an important resource for recreation. The beaches are visited especially on weekends and on holidays by multitudes of locals for relaxation, and also frequented by many visitors to the island. Over the years, the intense development has resulted in almost all the beach front properties being developed or enclosed, thereby in some cases preventing access to the beaches by the general public. While all beaches in Sint Maarten are public in principle, access to the beaches is sometimes difficult for the general public, often through physical and psychological barriers imposed by beach front property owners. A reasonable balance needs to be put in place to ensure that public access to the beaches for relaxation, enjoyment and recreation is ensured.
Zoning can – in addition to the Beach Policy - be a means to try to regulate public access to beaches, but in some cases consultation of beachfront property owners might be advisable for collaboration.

In addition, as a result of Climate Change, affecting weather patterns and the rise of the sea level over time, many of the beaches will or already have suffered loss of sand and size. This is compounded by the construction of boundary walls and other structures by private property owners that serve as objects that exacerbate the erosion of the beaches. A proactive approach towards the management of the beaches is necessary, where strict prevention of construction and other activities is in place, as well as the management of the sand balance, to minimize the erosion and loss of the beaches for recreation.
The latter can - besides some artificial attempts with rocks in the sea as protective body and some sand supply - effectively and sustainable best be managed by preserving these areas. Preserve the existing coral reefs because they lead to sand creation to feed the sandy beaches. Allow for sea level rise and the natural in-land migration of beaches by planning future developments further back from the current coastline. This will ensure that even with sea level rise, there will still be white sandy beaches to enjoy in the future.

Proposal

- space reservation for expansion of the sport facilities on pond island (possibly soccer or cricket);
- facilitate development of a cricket stadium in the Bethlehem area;
- encourage the realization of multipurpose courts and sport/exercise parks in the several neighborhoods and facilitate this for residential and mixed use areas;
- encourage public space and parks with shaded areas, landscaping, community gardens and facilitate this for residential and mixed use areas;
- ensure public access to the beaches, through Beach Policy and (zoning) regulations that serve to prevent physical and psychological barriers by beach front property owners;
- undertake a proactive management of the beaches, to prevent construction and activities that exacerbate beach erosion and loss for public recreation.

4.2.3 Village Centers

Sint Maarten has traditionally consisted of the capital Phillipsburg, Simpson Bay village and a number of hamlets of sparse development that have over the years developed into larger neighborhoods. Those areas initially consisted of a few houses along the main roads. In the past fifty years the population has grown rapidly and as a result the neighborhoods have expanded to such degree that the respective of these areas is sometimes characteristic, with many side streets along which the dwellings built perpendicular to the main road neighborhoods are currently not easily distinguishable in a spatial sense.
The spatial structure of these areas is sometimes characteristic, with many side streets along which the dwellings built perpendicular to the main road. The business activities and shops are especially along the main roads. One of the less favorable consequences of this structure is that there is no ‘village center’, no central place where neighborhood residents can come together. In recent years many areas have begun to form community councils and associations of residents to collectively champion interests of communities, as a result of which the idea of and need for community centers has become more prominent. Such facilities, when realized, are often located near schools, sports or other community facilities, however this has not necessarily lead to the significant development of ‘village centers’.

Possibilities to create more village centers as meeting places include a certain bundling of commercial functions, for example in combination with the construction of a square or small park and with a community center and playground. It is foreseen that such development of village centers can stimulate social cohesion and the quality of life. The establishment of larger public facilities such as schools and sport facilities could be a good starting point for the creation of village centers (see artist impression below).
More detailed studies of the need and possible locations for schools and neighborhood sports and other community facilities is needed in order to further articulate the feasibility of such village centers for the respective neighborhoods.

Figure 22. *Sketch community courtyard*

Proposal

- Encourage and reserve space for the bundling of commercial functions, for example in combination with the construction of schools, public squares or small parks, community centers and playgrounds within so called “village centers” within the neighborhoods.

4.2.4 Cemeteries

Traditionally cemeteries are regarded as the means through which the population can provide respectable final memorial resting places for the deceased of the community. Currently there are five active cemeteries located in Sint Maarten. The current state of the cemeteries show that there is insufficient capacity available on the long term. Only the cemeteries in Cay Bay and Cul-de-Sac serve as a public cemetery.
The other cemeteries are private cemeteries managed by the churches. The shortage of burial spaces at the Cul-de-Sac cemetery has resulted in the construction of burial vaults above ground in recent years.

There is a demand for additional public burial space to serve as final resting place for the population at large. A quick scan was conducted in order to identify potential locations for additional cemetery space. Potential locations were identified based on the following spatial criteria: generally flat undeveloped land, not in direct vicinity of a residential area (>50 meters from residential buildings in line with the Burial Ordinance), and accessibility.
Based on this quick scan, locations in Welgelegen, Belvedere and Dutch Quarter seem to be the most promising locations from a spatial planning point of view. Therefore, it is advised that the government will further look into these possible locations for the realization of additional public cemetery space.
Besides a new public cemetery, additional privately managed (general) cemeteries could also be facilitated. The aforementioned spatial criteria should also be taken into consideration for the evaluation of such proposals as private initiatives.

Proposals

- Allocate space for additional public cemetery space (in the eastern part of Sint Maarten) in line with the following criteria: generally flat undeveloped land, not in direct vicinity of a residential area (compliance with Burial Ordinance), proper accessibility and parking;

- Facilitate initiatives for private cemeteries, provided that the criteria described above are met.

Cultural-historical heritage

As is the case today, our landscapes, our built and archaeological heritage, our national parks and the characteristic appearance of parts of our urban area will continue to determine the identity in the future. These are essential cultural and historical values that we must preserve for the future. We will aim to maintain a recognizable living environment, with a clear character. We must treat our landscape and our cultural heritage with due care. In that perspective we need to take action to counter the threats of cluttering and the unbridled spread of uncontrolled building. We might identify a new future for historical monuments sometimes being the starting point for designing and developing new landscapes and new high-quality heritage.
In other words, we embrace the new, and cherish what already exists. In this way, together, we will create an attractive, healthy and safe SXM, in which we are all happy to live.

In a multicultural Sint Maarten with a population from all over the world, it is important to have some identity to belong: an identity that makes Sint Maarten different from other Islands in the Caribbean. That identity can be found in the cultural historical heritage from the past. The structure of the landscape, the remains of old buildings or old paths tell a story about the use of the land and the buildings in the past. The awareness of the importance of the cultural historical heritage of Sint Maarten is sometimes not strong enough to resist certain initiatives to develop (building) activities on particular locations that may be worthy of some degree of preservation.

The history of the island is a contributing factor in Sint Maarten's identity and culture. Due to the rapid development of the island in the last decades, there is a danger that the cultural historical heritage and historical buildings and artifacts will be destroyed and disappear. To prevent this, the government of Sint Maarten has developed a policy plan designed to protect some of these values (Long-term Historical Monuments and Buildings Policy Plan Sint Maarten, PREAM Consultants & Architects, July 2009).
This policy is focused on “tangible, moveable or immoveable man-made property created at least 50 years ago, and that is considered of general interest due to its beauty, artistic value, its significance to science, the history of the land or the ethnological value”. These concern the historic buildings in the old villages of Simpson Bay and Philipsburg, the forts, plantations and country estates, the industrial historic buildings, several residential homes in the outlying areas, cemeteries, water wells and “dry walls”. Whether something will become a protected historic monument depends on its historical-cultural value, its integrity and its rarity.
Based on research of past settlements on Sint Maarten, an inventory was made to identify sites with high and medium expected cultural historic or archaeological value.

In addition to specific sites, the street pattern and spatial layout of certain areas can also reflect the history of an era for particular areas worthy of protection. Particularly in the Simpson Bay Village and in Philipsburg, this street pattern of the (historical) drives sometimes determines the visualization of the history. The urban pressure is intense, particularly due to the desire to construct larger buildings such as apartment complexes.
SDG 11.4 highlights the need to strengthen efforts to protect and safeguard the world's cultural and natural heritage.

Protection of monuments and historic buildings

There are currently some fifty buildings and immovable properties designated as legally protected monuments. The protected monuments and historic buildings will be identified on the zoning maps of the respective development plans, however these are under the protection of the Treaty of Malta (1992) and the National Monuments Ordinance. The safeguarding is constituted in the Monuments Ordinance which stipulates that any alterations to protected monuments requires a special permit.
Besides that, in the development plans extra measures can be taken to protect important historical structures and surroundings.

Preservation by re-development

The monuments and historic buildings create a historic atmosphere and awareness of the past. At the same time, the question is how long this can continue since many monuments and historic buildings are empty and are not always well maintained. Heirs sometimes take years to agree on the use and maintenance of buildings with the threatened deterioration and loss of cultural-historical heritage as a possible consequence. Furthermore, the Government needs to put an effective support system in place to assist property owners in the maintenance and upkeep of such buildings. A good method for preserving old buildings for the future is to give them a new function, which may require adjustments to the building structures. This concept, termed preservation through re-development, allows possible commercial use of the properties in such manner that this new use can generate revenues to assist in the upkeep.
A good example of this point of departure can be the (re)development of the old plantations. Aside from the historical buildings in the town and villages, the former plantations of Sint Maarten also contribute to the knowledge about the history and the cultural historical heritage of the country.

Preservation of historical sites: plantations

Over the centuries a plantation culture developed on Sint Maarten, with the main crops being tobacco, cotton and sugarcane. As a result of the on-site production process of sugarcane, the sugarcane plantations had buildings and industrial elements which can still be found (partially). A letter from 1790 by the then Commander Rink shows that there were 92 plantations
on Sint Maarten at that time (of which 35 were sugarcane). Existing remains (buildings and objects) of ten former plantations on Sint Maarten have been declared protected archaeological monuments, namely:

- **Ebenezer**: The remains of this plantation are located in the residential district, and could be included in a community park.

- **Retreat**: The stones of the sugar factory and the treadmill of this plantation remain. The building was affected considerably in its re-development into apartments.

- **Mary's Fancy**: With the remains of the plantation house and old sugar factory in a unique luxuriant garden landscape development-based conservation takes place here as development of the country estate, so that restoration of elements of the complex can be financed.

- **Emilio Wilsons Estate**: A particularly beautiful and still reasonably intact example of a sugarcane plantation. Development-based conservation is possible here through partial development, for example into an attraction park as has taken place with Rainforest Adventures.

- **Union Farm**: The plantation house of Union Farm from the 17th century still exists. It is probably one of the oldest buildings on the island. The building has two stories and is built from natural stone. It is partially restored and in good condition. Union Farm is one of the five plantations on Sint Maarten which are eligible for restoration, because the former house is intact, and secondly the landscape of the surroundings is relatively intact.

- **Bethlehem Estate**: The ruins of the Bethlehem plantation complex are important especially for historical-archaeological research. The remains of the Bethlehem plantation are intended to be part of a park-like area in the future, as part of the plans for the development of the area of Bethlehem.

- **Vineyard Estate:** A residential Plantation house structure of the late 19th century, built with a unique 'pre-fab' type of construction technique, which was produced in the New England areas of the USA.

- **Madame Estate:** A smaller Plantation complex of the 19th century, primarily used for cotton production. These structures were severely damaged by fire in the 1980s and later by Hurricane Omar.

- **Belvedere Plantation:** A large plantation structural complex area, very important for historical-archaeological research. A part of this site is proposed for a cultural-historical park and educational/tourism center.

- **Bishop Hill Plantation:** In very close proximity to the Belvedere Plantation, this is a compact concentration of sugar factory ruins, house structure, animal tread, and a windmill from the 18th century. This structural complex is proposed to be part of the Belvedere educational/tourism center.

Preservation of historical sites: the Great Salt Pond

One of the main reasons for investments on Sint Maarten centuries ago was the possibility of salt-making. The Great Salt Pond is Sint Maarten's most prominent and historically significant pond. The remaining 18th and 19th century constructed salt pans and dikes of the Great Salt Pond--which operated for centuries and was one of the primary reasons for the Dutch to initially settle on Sint Maarten --are still present and are designated as a protected monument.

Survey excavations on 'historical sites' before developing

For knowledge concerning the life of the earlier inhabitants, the population is largely dependent on archaeological artifacts still in the ground. Such artifacts are vulnerable and disturbance of the sites and locations may make these sources useless for interpretation. Protection against excavation and development activities consequently is of importance. This is why it is recommendable that in cases where an expectation of archeological ruins may exist, an archaeological investigation must first take place for these sites prior to excavation works for construction or development. This concerns areas where already back in 1919 there was a cluster of buildings (on land) worthy of conservation, or where shipwrecks are likely to be found (along the coast). The required investigation starts with a preliminary investigation. Depending on the outcome, a further investigation may be required. The legal enforcement of this premise needs to be established in new building legislation in accordance with the development (zoning) plans.

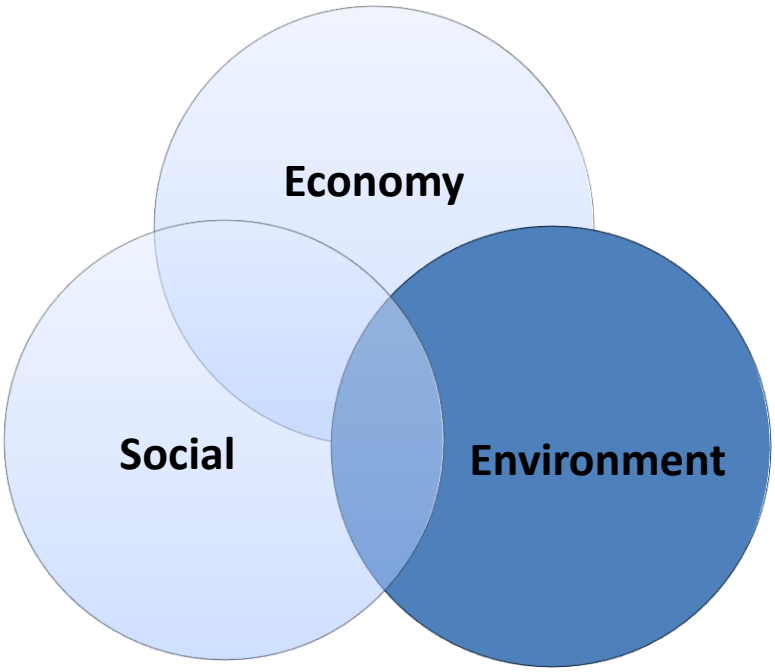
This policy proposal has been prepared in accordance with the Treaty of Malta of 1998, to which Sint Maarten is a party. The essence of this treaty is two-fold: to preserve and protect archaeological values and to implement the principle that the developer pays for the required archaeological activities. Within the zoning plans, the locations with expected archeological values will be identified as the basis for further site study. The further study of the sites to search for possible artifacts can be carried out by the Government, but will in principle also be required in the event of planned development on the respective locations. A balance has to be sought between the burden of expenses on smaller developers for such study, while in the event of larger development, this cost can be borne by the developers as part of the site development costs.

Historical Trees

Trees can also contribute to the local cultural historical awareness. There are still some significant trees on the island that have survived the centuries and as such are worthy of protection. Therefore, in 2008/2009 a policy was established to protect the old and big trees (Tree Policy). A policy on the protection of trees can legally be enforced via the article 28a LROP (National ordinance spatial development planning) after the policy is published. Via a new draft national ordinance VROMI (in preparation) the possibility is created to consider to reinstate the legal premise for the protection of certain classes of trees via a National Decree, entailing general measures (LbHam).

Proposals

- In the development plans, historical areas can be protected through zoning;
- In combination with restricting regulations, in areas with expected historical (archeological) significance, excavations should be allowed under conditions;
- Redevelopment of protected monuments is possible under certain conditions in the development plans, applying the principle of preservation through development, but this needs to be done with due consideration for protection of some of the more important values of the monuments, in accordance with the Monument Ordinance;
- Unregulated excavations can be prevented through regulation in the development plans;
- Consideration should be given to the protection of ‘historical’ trees through legislation.



5. Sustainable development: dimension Environment

Sustainable development within the dimension of environment can be defined as maintaining resilience and robustness of biological and physical systems, meeting the required goals without undermining the integrity or stability of the environment. Resilience is the potential of a system to maintain its structure and function in the state of disturbance.
Sint Maarten needs to consider the valuable, yet fragile nature of its resources (both natural and otherwise).
Balancing out economic resilience with ecological responsibility is fundamental to achieving improved quality of life and sustainable development of Sint Maarten. And it will contribute in reducing the Carbon Footprint[1] of Sint Maarten, which is regarded as rather high per capita compared to other Caribbean islands.

In the Constitution of St. Maarten it is stated that:
"*We, the people of Sint Maarten resolved to provide for the continuing preservation of nature and the environment*" (preamble of the Constitution of Sint Maarten).
"*It shall be the government's constant concern to keep the country habitable and to protect and improve the environment and of the living environment and welfare of animals.*" (art. 22 Constitution Sint Maarten).

"The spatial conditions must be created to safeguard a healthy environment, such as to safeguard space for nature and recreation [...] and as well as by keeping clean water, soil and air." (Art. 3 of the National Ordinance Foundations spatial development planning; AB 2013, GT no. 403).

In the future, we will have set aside more space for nature, by more strongly integrating nature and landscape values with other developments. Within building and development tasks, nature-inclusive development is the standard, both in urban and rural areas. Nature inclusion will become a standard element in design activities. The area of land under nature has been increased and water conditions and environmental conditions improved.

[1] *Carbon footprint: "A measure of the total amount of carbon dioxide (CO_2) and methane (CH_4) emissions (greenhouse gases)of a defined population, system or activity, considering all relevant sources within the system."*

Based on the EU Habitat Directive (VHR11), EU members have the task to guarantee the continued sustainable existence of species and ecosystems. This not only applies on land but also in the marine environment where we will strive to achieve a good environmental status and sustainable and responsible use. In urban areas, there is space for nature and green, by 2050, to allow flora and fauna a good chance of survival. (source: Draft National Strategy on Spatial planning and the Environment (NOVI, 2019, The Netherlands)One can see in the above mentioned that the words 'nature' and 'environment' sometimes are mentioned separately and sometimes environment is supposed to include also 'nature'.
Strictly speaking, the term 'environment' has a broader meaning; besides aspects as 'soil', 'air', 'water' also 'nature' is part of the environment. The latter is point of departure in this chapter.

The simplest explanation about why the environment matters is that, as humans, the environment is our home. It is where we live, breathe, eat and raise our families. All components required for survival of living organisms such as air, water, soil and food as required for survival, are acquired through the environment.
The basic components of our environment are:
1. Atmosphere (air)
2. Hydrosphere (water)
3. Lithosphere (rocks and soil)
4. Biosphere (sum of the above, for life on earth).

In the paragraphs below, several topics and issues related to aspect of air, water, and soil are addressed more in detail, mainly with the focus on the effects on spatial development. This chapter first addresses the topics of Climate Change and Energy and subsequently discusses the subject of the environment based on the four aforementioned components. Every topic is concluded with some proposals.
In the desire to make progress in the development of Sint Maarten it is important to be aware of the impacts of certain developments on the space and environment, to ensure a balanced use of space and a healthy environment. These can include:
- The awareness of the possibility of imbalance between development and conservation;
- The possibility of conflicting interest in the manner of development of land and buildings.

When there is no awareness of these possible conflicts it can result in a negative impact on the quality of life, which can be experienced through traffic congestion, reduced biodiversity, and the pollution of air, water, soil and noise.
For example:
- Overused Landfill, health hazard: water and air pollution (seepage into the Great Salt Pond and spontaneous hazardous fires);
- Waste and litter, illegal dumps (within communities), including car-wrecks, oil and chemical waste dumps: health hazards;
- Heavy industry nearby residential areas.

5.1 Climate Change and Energy

The climate on earth changes from time to time. However, the average temperature is changing more dramatically, caused amongst others by air pollution to a great degree related to the human consumption of fossil fuels for energy. The phenomenon of Climate Change is expected to affect all facets of our livelihood, including more severe weather patterns, health and economic development.
The impact of Climate Change will also have effect on the flora and fauna, as increasing temperatures will cause vegetation zones and accompanying habitats to move poleward and as it is expected that the amount of rainfall on a yearly basis for this area may potentially reduce with as much as 30% within coming decades.

As a result of the melting of the icecaps, it is expected that the level of the sea could rise as much as 1 meter by the end of this century. This will have its effect on several ecosystems but also the direct living environment of people. All the low areas nearby the sea may be flooded. This urges us to think about the spatial implications on the long run, of concentrating building and development activities near to the seashore and of specific measures to mitigate this threat. This topic will be one of the main challenges for the future. More extensive studies will be conducted to determine more in detail the expected effects of Climate Change on Sint Maarten, based on which a strategy needs to be developed on how to deal with the effects of Climate Change and coastal management.

The Dutch Ministry of Agriculture, Nature and Food Quality (LNV) concluded that the most effective way for the government to mitigate losses due to climate change would be to increase efforts in the land-use-planning and zoning as well as terrestrial and marine conservation (Debrot, 2010)
The National Development Vision indicates: reduce or mitigate adverse impacts of climate change.
SDG 13 demands to take urgent action to combat climate change and its impacts. More specific: In SDG 13.1 and 13.2, it is stated: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries. Integrate climate change measures into national policies, strategies and planning.

The use of energy is one of the items that affects the environment and spatial development. The extraction and use of fossil fuels have effects on the soil and the air, and result in a significant release of greenhouse gases that contribute to Climate Change. Other spatial effects that need to be considered are that oil based energy generation needs space for electricity plants and storage of oil. However, solar fields or wind farms, for example, would require more space than the current fossil fuel based electricity generation. So more focus for spatial planning should be on accommodating these more sustainable and resilient forms of energy generation without reducing spatial quality.

In the National Development Vision, one of the objectives indicated is to build a sustainable energy sector via:

- Lesser dependency on imported fuel.
- Strategic actions Renewable Energy.
- National Energy Policy of 2014, with proposals to reduce dependency on fossil fuels and stimulating Sustainable and Renewable Energy production implemented.
- Private development investments projects (IPP Individual Power Projects) encouraged e.g. in the area of Solar Power.
- Waste to Energy plant as qualified as a renewable energy project fine-tuned.

SDG 7 indicates: Ensure access to affordable, reliable, sustainable and modern energy for all by:

- ensuring universal access to affordable, reliable and modern energy services.(7.1)
- increasing substantially the share of renewable energy in the global energy mix.(7.2)
- doubling the (global) rate of improvement in energy efficiency.(7.3)

The National Energy Policy was established in 2014 by the Government of Sint Maarten. The policy promotes the generation of energy from renewable, sustainable sources and concludes that solar, wind and Waste-to-Energy sources of energy are the most promising for Sint Maarten to reduce its dependency on heavy fuels in the short run
The payback times of most renewable energy sources are getting shorter, and the technologies are becoming more affordable and available. The Energy Policy demands swift action to derive more of the island's energy from renewable sources. The policy encourages the installation of solar panels especially on rooftops of buildings and schools, because of the scarcity and high cost of land for solar parks. In addition, solar covered parking areas are very feasible for Sint Maarten, especially if combined with charging systems for electric cars and buses. The installation of wind-turbines can also contribute a great deal to reduce the dependency on fossil fuels, however due to the impact on the landscape of Sint Maarten, and the lack of open space the first thoughts are to study/detail the

feasibility of a wind-park at sea. In the past a research indicated the open space between Sint Maarten and St. Barthelemy being a promising possibility because the wind speed between the two islands is at that point most forceful and the sea is at that location not that deep (20m) which makes the construction of those wind turbines not to complicated/costly.

Proposal

- Further study the expected effects of Climate Change on Sint Maarten, including recommendations about measures for mitigation and adaptation;
- Promote the harnessing of energy through rooftop solar panels with large scale generation options via development plans;
- Study the possibility of the installation of wind-turbines in a wind park;
- Create more awareness of proper management of the environment related to the spatial implications thereof (Energy efficiency,reduce-reuse-recycle, etc.).

5.2 Atmosphere (air)

5.2.1 Air quality

The quality of the air on Sint Maarten is in general good due to the small size of the island and the winds coming from the open sea. Only in the industrial areas, attention is needed. Areas like GEBE, Princess Juliana International Airport, the landfill/waste dump, the concrete factory on Over the Pond, shipyards and car paint companies. These activities tend to compete for space with other activities, such as residential neighborhoods, thereby causing the quality of life in these neighborhoods to deteriorate. Only when certain conditions are met it is safe for people to live near those industries. Aside from a proper balance in the distribution and allocation of space, proper standards, regulations and enforcement regarding emissions are needed for these polluting activities to minimize the adverse effects on the quality of air and hence the quality of life.
The quality of life nearby air polluting industries or activities can – even in already existing situations - be regulated via zoning distances in development plans and via conditions in the hindrance permits. It is the intention to have additional policies and legislation put into effect to address the matter of air quality.

5.2.2 Noise

Noise from traffic, factories or music can be disturbing and need in certain situations some regulation. For factories/companies it is regulated if a Hindrance permit is needed. In that case conditions are added to the permit. Also via the future zoning plans it can be avoided that businesses are free to build were they want. For example, in residential areas this is only allowed regarding very light businesses when subordinate to the residential function. The residential policy 2009 from the Ministry of TEATT falls in that same line, preventing all kind of shops coming into residential neighborhoods. That same ministry issues ‘establishing permits’ for shops, bars and restaurant with the possibility to attach conditions to the level of noise. Efforts to combat air pollution will contribute to SDG 3 (good health and well-being), SDG target 7.2 on access to clean energy in the home, SDG target 11.6 on air quality in cities, SDG target 11.2 on access to sustainable transport and SDG 13 (climate action), as well as the goals of the Paris Agreement on climate change.

Proposal

- Implement a zoning strategy whereby polluting industries are isolated (for example, by way of zoning distances) from residential and recreational areas;

- Impose emission standards and regulations on polluting industries and activities to minimize the adverse effects on air quality and noise.

5.3 Hydrosphere

Characterized by the seas, a large inland lagoon, numerous ponds and a history of salt production, the water system always played a key role for Sint Maarten, despite the lack of fresh water resources such as rivers or lakes.
Over the last decades, the use and function of the water systems have changed dramatically. There are serious issues regarding both the quantity (flooding) and quality (pollution) of water within the natural environment.
In this section the rise of the sea level, the surface water systems, storm water management and the water quality are addressed with the focus on spatial implications.
It is of national importance that water safety be guaranteed. That safety can be achieved by focusing on flood prevention and mitigating the consequences of potential flooding by means of water-robust spatial planning and sound contingency planning. The central focus on water safety is prevention, based on the strengthening and maintenance of primary flood defenses, dunes and storm surge barriers.

It is of importance that sufficient space is reserved for eventual sand dredging for coastal and water safety (including the future strengthening of flood defenses). Ensuring that sufficient space is also reserved close to flood defenses for future strengthening work after determining the kind of works needed is another element of national importance. Additional protection should – when technically and financially possible - be offered for those locations where there is a risk of large groups of victims and/or large-scale economic damage and/or serious damage due to the failure of vital and vulnerable infrastructure elements of national importance.

To allow a flexible and adaptive long-term water safety strategy, choices are needed. We need to retain and reserve sufficient space for future water safety measures, while already taking climate adaptation measures to cope with ever more extreme weather conditions.
Identifying the best possible balance between protection and preservation of the core qualities and collective values of the coastal zone on the one hand and the development of that zone, on the other. Strengthening the balance between safety, economy and ecology, while strengthening the landscape and cultural and historical qualities. To prevent additional risks of damage and victims in the face of extreme weather conditions, far-reaching developments in the physical living environment will be preceded by stress tests. On the basis of plans and measures, the risk of flooding will be reduced in the framework of water safety policy.

Water aspects are indicated in SDG 6.3 with the objective to improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally. Also in SDG 6.6 with the objective to protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes. Furthermore SDG 14.1 to prevent and significantly reduce marine pollution. And SDG 14.5 indicating to conserve at least 10% of coastal and marine areas.

5.3.1 Sea level (effects of Climate Change)

As mentioned earlier, for island territories, including Caribbean islands, it is foreseen that Climate Change will bring with it serious consequences, particularly in regards to sea level rise, ocean acidification, changes in weather patterns, invasive species and coral bleaching. It is predicted that by 2070 various districts on the island, including Great Bay, Simpson Bay and the lower lying parts of Cole Bay may be submerged, if the current estimated sea-level rise continues[2].A large amount of the population, economic development and infrastructure are concentrated in the coastal zone areas and the rise in sea-level will have profound effects on the economy and living conditions. Measures need to be taken beforehand to mitigate and adapt to the effects that Climate Change will have on the country. In addition, there will be effects on the Marine and Coastal Zone Ecosystems of Sint Maarten.
Further research will be carried out and fundamental choices need to be made based on the results of such assessment.

Proposal

- Conduct research on the measures needed to mitigate and adapt to the effects of the rise of the sea level on the marine and coastal ecosystems and area development of Sint Maarten.

5.3.2 Surface water systems

The picture below provides an overview of the storm and surface water system of Sint Maarten as described in the following paragraphs. The surface water systems concern the lagoons and the ponds of Sint Maarten which are important parts of the ecosystem, contributing to a balanced nature and landscape development.

Lagoons

The Simpson Bay Lagoon (or simply the Lagoon) is one of the largest inland water bodies in the Caribbean, shared between two autonomous territories, Sint Maarten and Saint-Martin. The land bordering the Lagoon has experienced intense (coastal) development over the last decades to accommodate the tourism industry. Over the last 2 decades the Lagoon itself has reduced 23% in size due to land reclamation (EcoVision, 2010). The removal of mangrove stands around the Lagoon and dredging activities have altered the sediment balance of the Lagoon with consequent effects on the marine life. Furthermore, severe eutrophication has been taking place leading to a decrease of the water quality (see also paragraph 5.3.4.) Lastly, the Lagoon has seen overfishing and most of the once commercially harvested species (e.g. spiny lobsters, conch, fish > 30cm) are currently ecologically extinct (EcoVision, 2010). There are however still some ecologically important areas left within the Simpson Bay Lagoon. Most notably are Mullet Pond (which is part of the Simpson Bay Lagoon and a very important nursery for fish), Little Key and surroundings (with significant sea grass beds), and the remaining areas where mangrove stands exist near the shoreline. The Mullet Pond section of the Lagoon has been identified as a very important natural wetland resource and, in 2016, was designated a recognized Wetland of International Importance through the RAMSAR convention. Mullet Pond as a protected RAMSAR site embodies government's commitment to take the steps necessary to ensure that its ecological character is maintained (National Development Vision, p. 33).

The Dutch and French sides are intending to establish a joint management strategy for the Lagoon where one aspect of the cooperation is the improvement of water quality, for example by a serious effort to develop a joint sewage treatment facility

[2]*Reponse Plan for the efects of Climate Change on the Marine and Coastal Zones of Sint Maarten, Nature Foundation Sint Maarten, November 2013*

The Oyster Pond, which is actually a lagoon by nature, is connected to the ocean and also borders with the French territory on the east side of the island. The location of this lagoon enables the idyllic and shallow Oyster Pond being a probable important area for tourism and recreation (yachting) after (re)development of the destroyed facilities has taken place.A more balanced development of the lagoons is required whereby further land reclamation should be limited. Filling should only be allowed in projects for the general interest, such as the airport expansion that is required for autonomous growth and in order to comply with safety regulations. Marina development should be regulated and additional capacity should be limited to existing water rights, smaller shoreline jetties and some designated strategic new marina locations, in particular in vicinity of the airport, in order to prevent unbridled growth.
Furthermore, a better accessible lagoon shore, provisions for pedestrians and cyclists and eco-tourism are an opportunity for future development of the Simpson Bay Lagoon. The economic and scenic value of the Lagoon could be better utilized by the creation of a public boardwalk along for instance the Simpson Bay 'strip'. Land reclamation could be minimized with the realization of such as a public quayside.

A coherent management plan is needed in which eutrophication and habitat loss are adequately addressed and guidelines are developed for future construction projects (best environmental practices) around and inside the Lagoon (Ecovision, 2010).
The most ecologically important areas such as Little Key and Mullet Pond should get full protection in terms of legislation and zoning.

Ponds

Sint Maarten used to have more than seventeen natural (inland) ponds. The ponds are important for the catchment of sediments coming from the hills, flood management, and the gradual discharge of runoff water in the oceans. This plays an important role in regulating pollution entering into the marine natural environment. By regulating and limiting sedimentation runoff from land based sources, the ponds are directly protecting the coral reefs which serve many valuable ecological functions, such as providing a nursery for commercially valuable species as well as suppling white sandy to replenish the beaches of Sint Maarten. However, over the last decades, many of these natural ponds were filled in due to development pressure, and only 4 remain today (the Great Salt Pond, Fresh Pond, Little Bay Pond, and Red Pond). For instance the Airport (former Flamingo Pond), N.V. GEBE / SOL Gas (former Cole Bay Pond) and the Westin Resort (former Dawn Beach Pond) are built on locations of filled in natural ponds.

The Great Salt Pond is Sint Maarten's most prominent and historically significant pond, which has been exploited for the salt industry since already for ages. In particular, the eastern part of the Great Salt Pond is also a foraging area for pelicans and egrets among other birds. In recent decades, the Phoebe Pond, as a perimeter pond of the Great Salt Pond, to collect rainwater runoff from the surrounding area was filled in to accommodate development causing the functioning of the Great Salt Pond to change, whereas the pond has become an even more important water buffer for a large catchment area (see 5.3.3). Continuous filling of the pond over the years has reduced the water buffer capacity significantly, as a result of which the pumping capacity to manage the water level has been increased. Currently the Great Salt Pond is estimated to be around 114 hectares, since the filling for the Ring Road.

It is advisable that the filling for the Ring Road will be the last filling activity in order to maintain the critical water retention capacity of the Great Salt Pond and to minimize further flood risk. The remaining water surface area should have full protection in terms of zoning. This is also of great importance considering the historical and ecological value of the Great Salt Pond.

Little Bay Pond, Fresh Pond and Red Pond are some of the few solitary ponds left on Sint Maarten. These ponds also play an important role as a buffer for runoff water. Furthermore, these ponds, in particular Little Bay Pond, are important habitats for various bird species among other fauna. There should also be full protection in terms of zoning for Little Bay Pond, Fresh Pond and Red Pond as buffers and filters for runoff water, for their roles for managing flood risk and because of their scenic and ecological value.

Proposals

- Limit any further filling of the Simpson Bay Lagoon solely to projects of a general interest (i.e. airport expansion for strictly what is needed for autonomous growth and compliance to safety regulations);

- Additional developments should be limited to existing water rights, with selective space reservations made for expansion of the marina capacity in the lagoons in terms of zoning to prevent unbridled growth, with the exception of some new strategic locations such as near the airport. Small scale shoreline jetties will be allowed for private use;

- Regulate protection of the most ecologically important areas of the ponds and the lagoons and for the protection of wildlife habitat, such as Mullet Pond and Little Key, and protect and manage the remaining shoreline mangrove populations of the ponds and lagoons;

- Create more publicly accessible shorelines in the Simpson Bay Lagoon and Great Salt Pond through the creation of shoreline boardwalks or pedestrian ways, thereby stimulating community appreciation and eco-tourism opportunities, also well as setting physical limits to further filling;

- Protect the (remaining) ponds from further filling to maintain the buffer capacity for rainwater runoff and as a collection area for silt and erosion material, to prevent pollution of the marine environment;

- Protect the historical values of the ponds, such as the remaining salt pans of the Great Salt Pond.

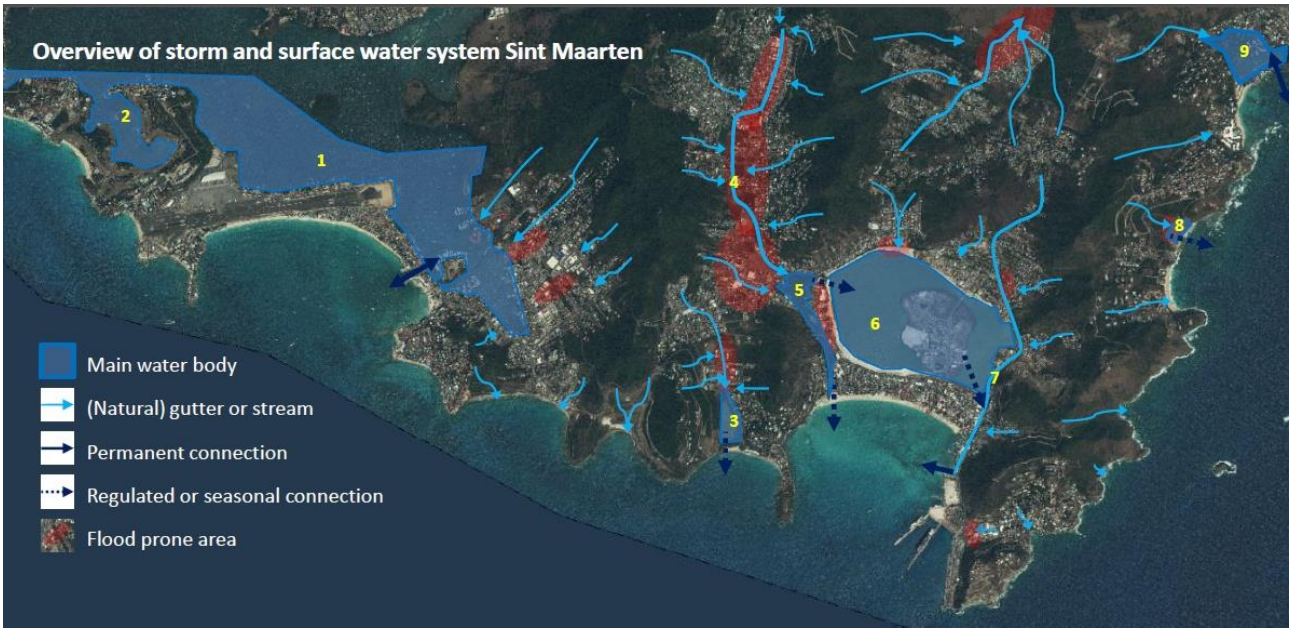


Figure 23. *An overview of the storm and sur,face water system of Country Sint Maarten*

The Sea/ocean [source: OCTA, Blue economy roadmap, April 2021]

The Caribbean Sea's ecosystems and natural resources form a unique asset for the Regio's countries and territories. Understanding and measuring the economic activity tied to this asset, and dependent on it, is essential for sustainably growing these economies. It is important to orient the true potential of the ocean as an economic space and engine for growth, while developing associated policies to better manage sustainable use. The value derived from the ocean's natural sources and ecological systems is significant [source: World bank 2016, towards a blue economy; a promise for sustainable growth in the Caribbean.]

In that perspective, it is urged that among others attention is given to maritime spatial planning. Maritime Spatial Planning (MSP) is defined as 'a process by which the relevant Member State's authorities analyze and organize human activities in marine areas to achieve ecological, economic and social objectives'. Marine Spatial Planning is an important activity as it informs the development of Maritime spatial plans for example, the whereabouts of a protected species, provides the environmental input to ensure that no (spatial) plans are put forward to place for blue energy technology. Marine Spatial Plans develop the diverse sets of high-quality marine data and information required to inform maritime stakeholders and planners in the planning of maritime activities to support the blue economy whilst also helping to maintain healthy and productive seas and oceans in order to make sound decisions based on facts. Marine Spatial Plans, for example, integrated datasets of ocean physics, chemistry, biology, seafloor geology, and their derived products like seabed habitat maps, can help Marine Protected Areas planners decide where the most vulnerable ecosystems are that need protecting and where human activities such as wind farms and maritime shipping routes would be best located.

Proposals

- Prepare and implement the Sint Maarten Maritime spatial plan
- Development of a long-term port diversification plan, Sint Maarten has demonstrated that their ports have the capacity to expand and it is recommended that they optimize port facilities to increase diversification,
- Improve the long-term environmental sustainability of Sint Maarten tourism exploitation; (avoidance of mass tourism model) to gain competitive advantage

5.3.3 Storm water management

Storm water management is one of the items that has been drastically affected by the rapid growth of Sint Maarten. In the past, rainwater was stored and preserved for domestic and agricultural purposes. Nowadays storm water is often considered a nuisance and is drained from urban areas as fast as possible. According to UNESCO-IHE (2006) storm water catchments and streams of Sint Maarten have several unique characteristics that contribute to the severity of flooding. Dense urban areas are usually situated on low-lying areas, with little consideration for drainage and are as such subject to flash flooding from surrounding hills (i.e. runoff).

Ongoing development in the hillsides --and even in natural gutters-- with little or no consideration for water retention and erosion control, adds to the problem. The addition of hardened surfaces (buildings, driveways, parking lots) allow less rain water to infiltrate into the ground, hence more runoff is generated.
Therefore, flooding has become a growing and serious problem. This is not only reflected in severe road and property damages, but also in loss of lives as was the case for example within the Cul-de-Sac valley during an exceptionally heavy rainstorm (150 mm/hour) in 2005 (*UNESCO- IHE, 2008*). The severe infrastructure and property damages as a result of the adverse weather conditions show the seriousness of flood related problems on Sint Maarten. With the frequent occurrence of hurricanes, tropical storms, the increase of heavy rainfall due to climate change, the situation is likely to become even more perilous.

The economic loss –caused by those water floodings - in terms of infrastructure damage, property damage, congestion, closing down of businesses and indirect costs such as degradation of the touristic image of the island will be significant and will expectedly exceed the cost involved with solving the flood related problems at large.

Several structural measures such as dredging, channel alteration and improvement of outlets are required in order to discharge storm water from low lying areas. There should however also be more attention for water retention, infiltration and erosion control particularly upstream.
In essence it is about holding the water upstream as much and as long as possible (via infiltration and retention) resulting in slowing down the runoff and on the other hand to let it flow out as soon as possible downstream.

Proposals

A complete set of proposed measures is described more in depth in the Storm Water Management Strategy Sint Maarten, established by the Council of Ministers 2018. The measures related to spatial planning are the following:

- Preserve the higher and/or steep slopes of the hillsides as conservation (nature) areas where no development is allowed;

- In principle no building in or near natural gutters, unless sufficient mitigation measures are feasible and executed with regards to safety and effects downstream;

- Any new subdivisions (development) will require a storm-water management plan based on the premise that the development may not lead to any adverse effects downstream;

- Establish appropriate building regulations for flood prone areas and flood-proofing;

- Protect the surface area of ponds (see 5.3.2.) and reserve space for additional storm water retention ponds in Cul-de- Sac and Dutch Quarter.

- Aim at the full use and proper integration of structural and non- structural measures with a 100 year ARI event as an - in principle - flood protection standard;

- Encourage water retention, infiltration and erosion control upstream, while there should be a focus on efficient discharge of storm water runoff for the low lying areas;

- Execute the following capital intensive structural measures (in the order of roughly NAf 15 mln), in order to reduce the occurrence of flooding and alleviate the most urgent drainage problems in the coming years: channel improvements (mainly Philipsburg and Cul de Sac), roadway drainage (countrywide), improvement of pond’s outlets, dredging and creation of retention ponds;

- Increase funds for the structural operational maintenance of the storm-water management system to NAf 2 mln. annually;

- Prioritize the following land use planning and/or zoning measures in order to prevent the flood and erosion risks from becoming even higher: protection of ponds surface areas, protection of higher and/or steep hillsides and natural gutters, building regulations for flood prone areas, storm-water and excavation regulations for new developments and establish an infrastructure design manual;

- Aim to reduce the impact of flooding by means of: implementation of a flood warning system; designation of evacuation routes and safe zones; establishing of a disaster fund and increased capacity building between all levels of Government, the private sector and civil society;

- For certain areas, non-structural policy measures may be more cost efficient and sustainable in the long run. In built-up flood prone areas, flood proofing of property and infrastructure has proven to be a more sensible solution than avoiding floods. Several land use planning measures, such as storm water regulations for new developments will be paramount to prevent the flood risk from becoming even higher. Measures, such as an infrastructure design manual and excavation regulations are relatively easy to implement, whereas relatively low cost measures such as an early warning system and designation of evacuation routes and safe zones can even be life saving.

5.3.4 Water quality

The water quality of the main water bodies, ground water and the seawater along the eastern shore of the Great Bay is often reason for concern. For sure after heavy rainfall, which causes an increasing amount of water into the Rolandus Canal entering into the harbor waters of Great Bay. This is also the case when the Fresh Pond is opened to the sea, to drain the increasing amount of water.
Water pollution occurs mainly because of overflowing of illegal or wrongful sewage system connections, or sewage systems not being maintained or built to an adequate standard, as well as illegal dumping of wastewater. Furthermore, eroded soils (sediments), litter, illegally dumped trash, particles, batteries, and contributing oil from road surfaces end up in the ponds, lagoons, ground water and coastal areas. The effects of the landfill/waste dump on the water quality of the Great Salt Pond is also a serious point of concern.
Poor water quality causes significant environmental disturbances, which in their turn pose risks to the public health (contaminated surface water) and the economy. Certain pollutants and sediments can affect fish life and seagrass beds (Nature Foundation, 2007), which in turn also affects Sint Maarten's tourism industries and local fisheries.

Coral Bleaching is another problem that can occur when after heavy rainfall polluted waters from land drain into the seawater. Therefore, it is important to prevent erosion and the adverse effects of constructing in the hillsides as mentioned before. Coral reefs and seagrass beds play an essential role in everything from water filtration and fish reproduction to shoreline protection and erosion prevention.

It is important to take measures aimed at reducing the pollution of the water quality of for example the ponds, groundwater and the ocean. The aforementioned problems should mainly be solved by avoiding wastewater flows to mix with storm water runoff, mainly through the improvement of sewage systems. In addition, some storm water management measurers are also important for water quality.

Given the geography of Sint Maarten, many areas are supplied with potable water by the utility companies through water pumps. During calamities, water supply can be interrupted for extended periods, possibly as a result of interruption of electricity supply or disturbance of supply lines. It is advisable that construction of residential buildings in the higher elevations are also accompanied with rainwater cisterns, to be able to supply water for a certain minimum period.

Proposal

- Expand the current sewage treatment network to collect and properly treat as much sewage as possible before disposal or use of the effluent:
  - Reserve space for a central sewage treatment plant in the area west of Cole Bay Hill;
  - The amount of connections between the (main) sewage line and the individual homes should be drastically increased with respect to the existing sewage treatment plant (Illidge Road);
  - For new buildings situated away from the public sewage collection and treatment system, closed tanks are required, eventually septic tanks or private sewage treatment systems.
  - Determine targets for the quality of (surface) water in a national decree, entailing general measures based on the Waste Water Ordinance (AB 2013, GT no. 137) or successive ordinance.
  - Reduce pollution of ground water by means of adequate hindrance regulations and inspection.

- Increase runoff water retention upstream to minimize the discharge of (contaminated) runoff water downstream (see 5.3.3).
- Require the construction of cisterns in certain areas (hillsides) to have drinking water in case the general water system is not functioning during calamities and also to decrease the amount of runoff water downstream

5.4 Lithosphere (rocks, soil)

This paragraph concerns spatial developments and their effects on the physical situation: our soil, our land, and the way we manage the land. The Spatial Development Strategy in essence already deals with many of the proposals aimed at the use of the land, especially related to economic development and social development. Sint Maarten has a very small surface area (34 km^2), with a registered population density approximating 1.200 persons per km^2, being the highest in the Kingdom of the Netherlands. This inherently translates into an intense use of the land due to inadequate land-use planning in the past and competing interests for the occupation thereof. This also accounts for the relatively very high land values on Sint Maarten, resulting in overdevelopment of certain common areas on Sint Maarten. Overdevelopment coupled with inadequate infrastructure, can result in deterioration of the quality of life in Sint Maarten.
This chapter addresses some of the consequences of the aforementioned in terms of soil pollution as well as nature and nature conservation.

These topics contribute to SDG 15 indicating to protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss. More specific: SDG 15.3, Land Degradation Neutrality (LDN) and land restoration, which is part of SDG 15. In addition, SDG 15.4 and 15.9 urging to ensure the conservation of mountain ecosystems, including their biodiversity, as well as integrating ecosystems and biodiversity into national planning development processes.

5.4.1 Soil Pollution

There are three types of land degradation; physical, chemical, and biological.

Physical land degradation involves the displacement and/or repositioning of soil particles without altering their chemical composition. The best-known example of displacement is erosion caused by both wind and water, whereas compaction is an example of the onsite repositioning of soil particles caused, for example, by excessive pressure from heavy agricultural machinery and/or drainage/dewatering.

Achieving land degradation neutrality means eliminating net erosion or bringing the erosion rate in equilibrium with the soil formation rate. Erosion results from a complex interplay of processes that ultimately lead to loss of soil fertility, loss of organic matter, and loss of the top soil that provides water and nutrient holding capacity. Degraded soils slack and crust easily and have lower infiltration rates, which creates higher runoff and further erosion. These on-site effects are not the only issues that matter, however. Off-site effects of erosion can be equally damaging. Wetlands and marine ecosystems downhill of the erosion sites can be polluted and smothered by sediment and associated substances.

Chemical degradation of soils is the result of multiple processes, including the (over)use of manure and fertilizers (nitrogen and phosphorus) leading to eutrophication of soils and ground- and surface waters through leaching and runoff, pollution by inorganic (e.g., heavy metals, radionuclides) and organic substances (e.g., insecticides, herbicides, PCB, PAH), and salinization in (semi-)arid regions.

Biological degradation of Soil Organic Matter is reputed to enhance almost all aspects of soil functioning, ranging from soil fertility to soil structure, from water retention and infiltration capacity to the regulation of nutrients, and from prerequisites for a rich soil ecosystem to a carbon pool of global importance To ensure a good quality, it is probably easier to ensure proper soil biodiversity; a rich soil ecosystem almost always improves the quality of SOM, its interaction with the mineral parts of the soil, and the ecosystem functioning of soils.

Living on polluted soil can have health risks and affects the possibilities of future development and use of the land. Businesses and activities that need to have a Hindrance permit, as required by the Hindrance Ordinance, can only acquire such a permit under certain conditions. One of the conditions should be to prevent the pollution of the soil. Sometimes companies do not need a Hindrance permit. In that case the (severe) pollutions of the soil is still punishable by law, however it is a matter of enforcement to prevent this. An environmental policy plan needs to be established to articulate the norms, standards and procedures required to prevent pollution of the soil and what measures should be taken in the event of such pollution. In Chapter 3.3 on Sustainable Economic Development, a strategy is outlined related to the land use planning and space allocations related to the polluting industries. Special attention needs to be given to the regulation of the energy and industrial clusters regarding prevention of possible soil pollution.

Our current form of solid waste management by means of a relatively indiscriminate sanitary landfill is also regarded as a contributor to the pollution of the soil. The issue of waste management has also been addressed in Chapter 3 on Sustainable Economic Development. The need for a more effective means for waste treatment, namely a Waste-to-Energy facility, is emphasized. This is in line with the National Development Vision indicating that a efficient and safe method for waste disposal must be developed.

The concept of 'Trias-Energetica': reduce, re-use, recycle, is not only a concept for wise energy use, but it also can be used in the strategy for waste management, and to achieve sustainability. In that regard, a Waste-to-Energy plant (incineration of waste to produce energy (gas) and reduction of the landfill/waste dump) will be helpful.

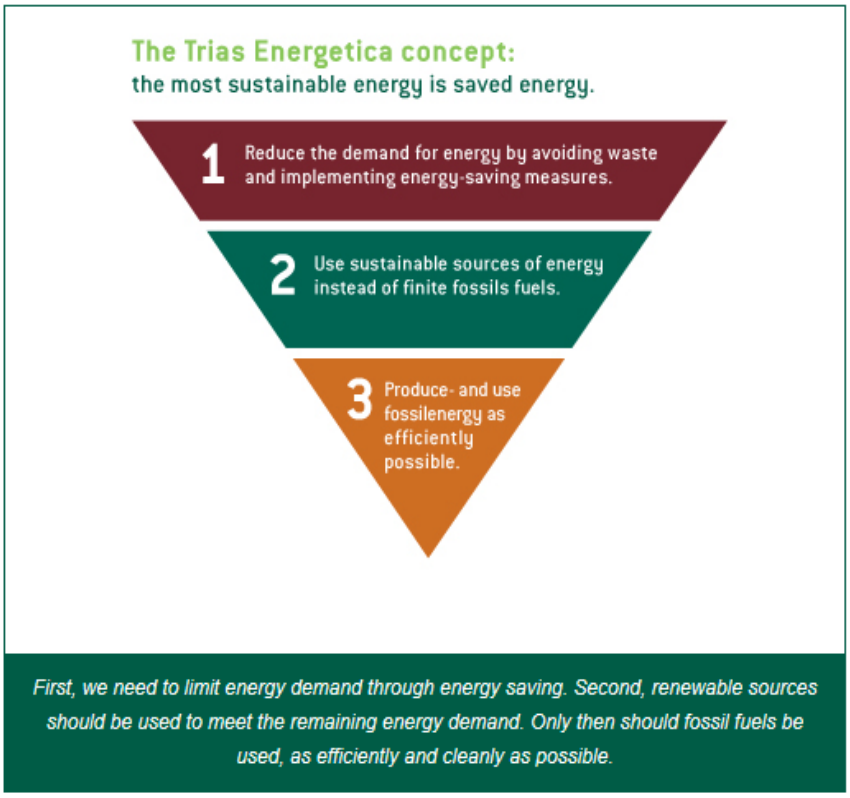


***Figure 24**. The Trias Energetica concept*

Proposals

- Special attention needs to be given to prevent soil pollution in the industrial and energy cluster areas through special regulations;

- Implement a Waste-to-Energy plant near the sanitary landfill to more effectively treat solid waste and to produce energy to reduce reliance on imported fuel.

5.4.2 Nature Conservation

Together with the sea, the beaches and the green hills, nature determines Sint Maarten's scenic character. This character is of vital economic importance because it embodies a large part of the tourism appeal of the island. Protecting this character is therefore important for the prosperity of Sint Maarten. Furthermore, these natural values and assets, along with the ponds (covered in 5.3), form an important ecosystem for the survival of (indigenous) flora and fauna.

Beaches

The beaches are important for recreation for residents and visitors alike, and indeed form an important part of the appeal of tropical islands as tourist destinations. In addition to the recreational function, some beaches are also important nesting areas for sea turtles which are a fully protected species through Sint Maarten legislation. This is the case for all beaches, but especially at the beaches of Guana Bay, Gibbs Bay, Simpson Bay, Great Bay, and Mullet Bay and - to a lesser degree – at Cupecoy Beach, Dawn Beach, Billy Folly Beach and Little Bay Beach.
It is important to protect the natural character of the beaches and to prevent excessive disturbances in the nesting seasons for the endangered and protected sea turtles. The existing Beach Policy aims to protect the public accessibility of the beaches and sets restrictions such as buildings within a particular zone to protect the functions 'nature' and 'recreation'. This policy should be translated into the regulations of the zoning plans, with proper beach access and building setback restrictions to protect encroachment on the public beach areas, to preserve the recreational function of the beaches, as well as the nature function, for example, the nesting sites of sea turtles. Spatial planning to preserve the beaches should also consider the expected impacts of sea level rise and the subsequent natural inland migration of the shoreline and beach.

Hill Sides

The green slopes of the hills, as seen from the tourist flocked beaches in the south, and from the sea at the southern part of Sint Maarten--the sailing route of the cruise ships--also determine the image of Sint Maarten. The green hillsides give the island natural qualities which attract tourists to the island (TourMap, 2005), one of the reasons why it is desirable to preserve the green character of these slopes.
The green hilltops and slopes are similarly very important to nature. These areas have a significant ecological value. The hillsides surrounding the Cul-de-Sac valley consist mainly of drought deciduous thorn woodlands and mixed evergreen thorn woodlands. Many animals depend on the trees and plants in the woodlands and forests for their survival. Birds and insects depend on the flowering and fruiting of trees and plants, which provide valuable food. Large insects are common on stems and branches which provide micro-habitats for these animals. In particular, the higher hillsides and tops are home to many endangered animal and plant species (Nature Foundation Sint Maarten, 2009).

Furthermore the vegetation on the hillsides prevents hillside erosion into the valleys, absorbs rainfall (limiting flooding), maintains climatic micro gradients, stores genetic resources and aids water retention for Sint Maarten (Nature Foundation Sint Maarten, 2009).

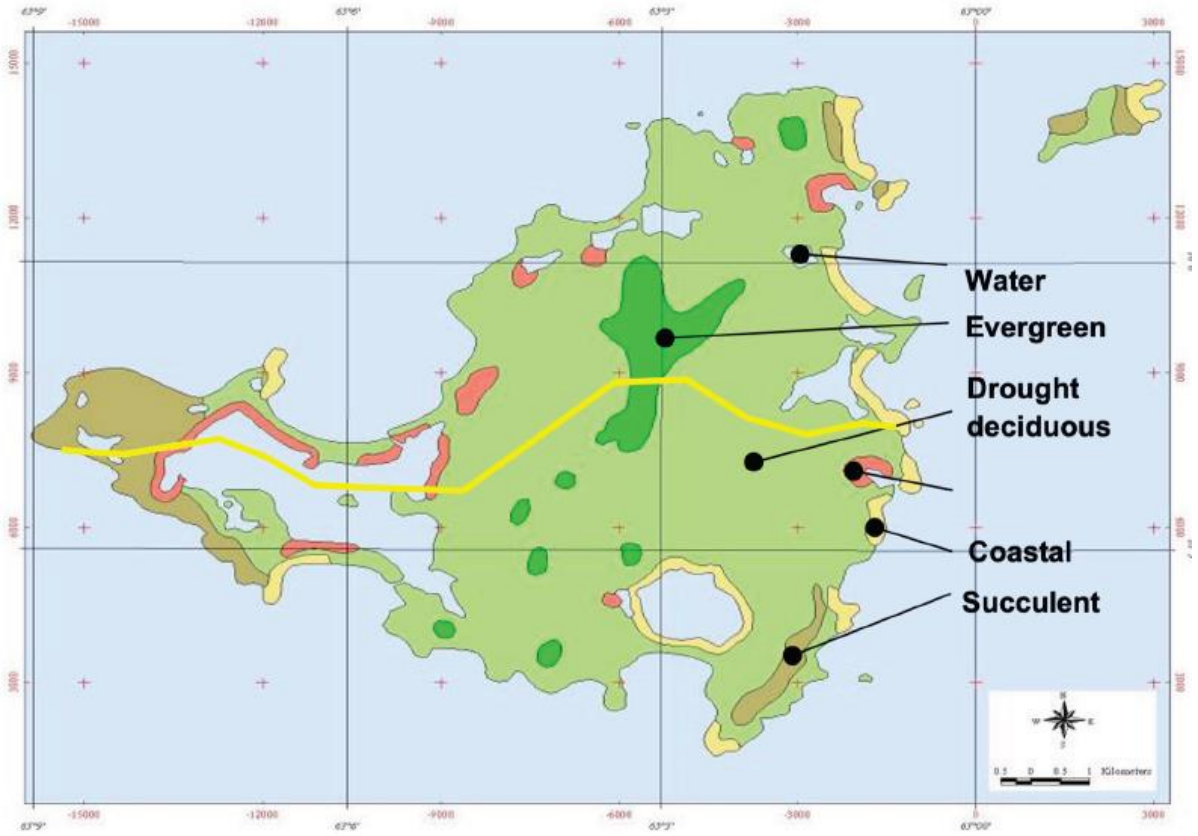


Figure 25. *Vegetation Sint Maarten*

The continuing development on Sint Maarten brings a lot of employment and tourists, but also the need for houses, commercial, industrial and administrative buildings, marinas and infrastructure, which results in a continuous pressure on, and threat to the undeveloped and unspoiled natural areas. The effect is a slow but consistent degradation of nature, not only the land itself but also reducing the biodiversity of flora and fauna. The developments in the hills contribute to erosion and extra flooding in the valley and other lower lying areas in the event of heavy rainfall.
As a result of the intense developments there are hardly any public parks or attractive green public spaces. In the end this affects the quality of life of the people of Sint Maarten (social dimension), and with it also the attractiveness for tourists (economic dimension).
Measures, amongst others, through zoning need to be put in place to safeguard some of the scarce remaining green hillsides.

The existing Hillsides Policy aims at the protection and management of the natural hillside landscapes and provide guidelines for certain development restrictions above the 50m elevation line including a general no build zone above the 200m height line and for the hilltops. The Hillsides Policy remains in effect until development plans (zoning plans) are established. The principles of the policy should be incorporated in the zoning plans and most notably in the zoning plan 'Hillside Conservation Areas', aimed at the protection of the natural qualities of the hills.

Furthermore, the National Nature Ordinance (AB 2013, GT no. 809) enables the designation and protecting of 'nature parks', be it marine or terrestrial. With the establishment of terrestrial nature parks there will be an extra legal protection for those areas and a better means to manage nature development within the park areas. For example for the hillsides areas, it is proposed to establish a cross-border Hillside Nature park in cooperation with the French side. Combinations of nature and recreation are worthwhile to explore. An nature policy plan needs to be established to set forth the national plans for the protection and management of nature on Sint Maarten. As this Spatial Development Strategy focuses on the (spatial) development of the terrestrial environment, considerations should be made for the spatial development (zoning/management) of the marine environment.

As indicated before, to avoid a substantial shortage in the availability of (affordable) housing, it is advised to allow more and higher building in the lower areas. In this way, it is the intention to serve the several different interests involved.

Proposals

- In addition to the protection of the public recreational function of beaches, additional regulations might be put in place to protect certain beaches as nesting areas for sea turtles, concrete: Incorporate the precepts of the Beach Policy into zoning regulations to prevent beach encroachment, excessive construction and other activities on the beach that obstruct public use, and exacerbate erosion that causes the loss of beaches;

- Incorporate the expected impacts of climate change so that natural inland migration of the coastline is considered and incorporated into spatial development planning.

- Incorporate the principles of the Hillsides Policy into zoning regulations to prevent excessive development of the hillsides and to protect some of the scarce remaining hillsides and hilltops as nature conservation areas;

- Establish Hillside Nature Parks as a means to manage the development of nature within these areas, as well as open these parks for enjoyment of residents and visitors.

5.5 Biosphere

The biosphere is the global sum of all ecosystems. It can also be named 'the zone of life on Earth', a closed system (apart from solar and cosmic radiation and heat from the interior of the Earth) and largely self-regulating. The biosphere is the global ecological system integrating all living beings and their relationships, including their interaction with the elements of the lithosphere (soil), hydrosphere (water), and atmosphere (air).
Human economies and societies are embedded parts of the Biosphere. As such, the Biosphere provides the life support systems upon which prosperity and development ultimately rest. The economy is a subsystem of society - and, in turn, a subsystem of the Biosphere - that should serve humanity to thrive within the means of the Biosphere.

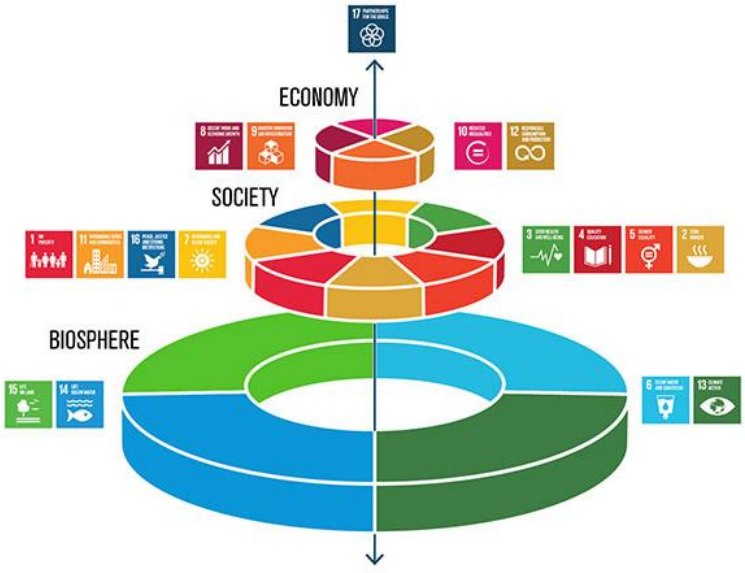


Figure 26. *Sustainable development interaction*

In an ideal world, the interactions between several systems and interests result in co-benefits and synergies. In practice, however, the interactions between interests often result in tradeoffs and tensions, frustrating sustainable development. For example, intensive agriculture for food production (SDG2) tends to result in biodiversity loss on land (SDG15) and in water (SDG16).
Biodiversity boosts ecosystem productivity where each species, no matter how small or large, all have an important role to play. For example, a larger number of plant species means a greater variety of crops; greater species diversity ensures natural sustainability for all life forms; healthy ecosystems can better withstand and recover from a variety of disasters, contributing to resilience, also having its spatial impact. A healthy biodiversity provides a number of natural services:

1. Ecosystem regulating services, such as:
    - Protection of water resources;
    - Soils formation and protection;
    - Nutrient storage and recycling;
    - Pollution breakdown and absorption.

2. Biological resources, such as:
    - Food;
    - Breeding stocks, population reservoirs;
    - Future resources;
    - Diversity in genes, species and ecosystems.

3. Social benefits, such as:
    - Research, education and monitoring;
    - Recreation and tourism;
    - Cultural values.

Appropriate conservation and sustainable development strategies attempt to recognize this as being integral to any approach to preserving biodiversity. Because it contributes to our quality of life, several proposals are – as elucidated before - made (from a spatial point of view) to contribute regarding water, soil, air and protection of areas.
Biodiversity can legally be stimulated by protection of species and their habitats according to the National Nature Ordinance (AB 2015, GT no. 9). In this regard it is also a challenge to determine how to deal with invasive species (flora and fauna) on land and in the water. It is necessary to update the biological inventory of flora and fauna on Sint Maarten to make more informed decisions in the area of nature conservation. A means to accomplish the protection of species habitat is through designation of these habitat areas as nature parks for more active management of these areas, as proposed in the preceding section on nature conservation.

Environmental Impact Assessments

It is vital when developing large projects on Sint Maarten to view such projects with respect to their overall consequences and impacts. In that regard, ‘environmental impact assessments’ (EIA) should be made a requirement for certain scales of projects, or projects in more vulnerable or ‘valuable’ areas. Prior to the decision to move forward with the proposed actions, formal environmental impact assessments should be conducted, including public participation. An environmental impact assessment can for example propose measures to adjust and mitigate impacts to acceptable levels or to investigate alternative solutions.

The purpose of the environmental impact assessment is to ensure that decision makers consider the environmental impacts when deciding whether or not to proceed with a project. The International Association for Impact Assessment (IAIA) defines an environmental impact assessment as "the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made." EIAs are unique in that they do not require adherence to a predetermined environmental outcome, but rather they require decision makers to account for environmental values in their decisions and to justify those decisions in light of detailed environmental studies and public comments on the potential environmental impacts.

Healthy and safe living environment

A healthy and safe living environment that is also perceived as such by the residents and visitors of SXM is of importance. At the same time, with regard to the healthy living environment, a distinction is made between protecting health through good environmental quality, and encouraging a healthy lifestyle by establishing a healthy living environment.
Nuisance and risks from among others chemical substances, radiation, vibrations and noise must be managed or preferably prevented. Air, land and water (whether in respect of nature, urban or rural areas (including transport arteries)) must be of such good quality that risks for people and the environment, as a consequence of human activities, are negligible.

Moreover, a healthily structured living environment invites people to demonstrate healthy behavior and a sense of wellbeing. Key elements of a healthy living environment are encouraging exercise (walking, cycling, sport and play), meeting and interaction and relaxation. This includes the system of recreation, cycling, walking and water sport networks. In this way, the living environment can contribute to reducing obesity, lowering blood pressure and improving all-round mental health. The living environment can make an important contribution to increasing the health potential of vulnerable groups. Moreover, a healthily planned and structured living environment can often be combined with other functions, such as climate adaptation (more green and blue environmental elements) and active mobility.

Landscape quality

The landscape gives the island and its people an identity, and is an invitation to enjoy the cultural, historical and ecological values. Landscape quality is a soft value which is difficult to express in monetary terms, but which is of clear (economic) importance. The landscape is sometimes handled carelessly, although in most cases this is not a deliberate decision. It often happens because developments are initiated from the viewpoint of a single interest, with insufficient attention for the quality of the landscape

The unique cultural historical, landscape and natural qualities of our landscape should be actively preserved and strengthened. Wherever possible, we add new qualities such as peace and relaxation, panoramas and the natural look and identity of the landscape. When landscape developments are undertaken, it is essential to take account of the quality of life, and to consider improved accessibility for example in the form of good networks of cycle and walking paths. The characteristics and identity of the area are the central point of focus.

Government should play a role in an effort to protect the landscape when satisfying one or more of the following criteria:

- Story: landscapes that are readable and contribute to the experience of telling the national story of the creation and spatial differentiation of the landscape;
- Unicity: landscapes that offer landscape qualities, natural values and/or cultural and historical values that are unique on a national and international scale;
- Scale: landscapes in respect of which the task of preserving their quality being spatial/biodiversity preferable to have a bigger scale;
- Threat: landscapes that are threatened now or in the future by spatial developments.

At least in respect of the following landscapes, government should focus on: coastal landscape, Sea landscape, lakes/ponds, and hillsides. This approach lays the foundation for the development of an area identity, which can deliver a boost to the spatial quality and economic value of the area.

Proposals

- Formalize the requirement to conduct EIA's for certain (scale of) projects for Sint Maarten in legislation, to ensure that adverse environmental effects can be mitigated.

- Establish (marine and terrestrial) nature parks to protect areas of high biodiversity from (over)development pressures and ensure effective management of these areas.

6. Implementation, Cooperation and Execution

6.1. Implementation and Execution

The previous chapters have several proposals mostly summarized at the end of each paragraph and/or chapter. Those proposals are visualized and indicated on de plan map that is part of this Strategy document.
Most of those proposals are expressed in a general way. In fact, they might be considered as principles or guidelines for future decision making. Additional action or detailing is needed in most cases to really move forward. It has been a deliberate choice to split this, to enable the focus first on the *general overall picture* without being consumed by the details already.
In attachment 4, an elaborate overview is given of all proposals.
Abovementioned means that this document does not focus on the execution of measures, because the next step is first to decide *what* and *how* things need to be detailed and executed.

It is also advisable to be aware of the relation between the proposals and the Sustainable Development Goals (SDG's). Therefore, in the previous three chapters, the topics described are also linked to SDG's. An overview of these SDG's is given in paragraph 6.1.1. This shows *how* St. Maarten is able to contribute to the (United Nations) Sustainable Development Goals. In attachment 7 some specific products that the Ministry of VROMI is or will be working are listed, that are connected to the SDG's

6.1.1 Sustainable Development Goals 2020-2030

The sustainable development goals (SDGs) are a universal set of goals, targets and indicators that UN member states will be expected to use to frame their agendas and political policies to reach those goals ultimately 2030.

The Official Agenda for Sustainable Development adopted on 25 September 2015 by the 193 countries of the UN General Assembly has 92 paragraphs, with the main paragraph (51) outlining the 17 Sustainable Development Goals and its associated 169 targets. This includes – among others - the following goals:

- end poverty in all its forms everywhere,
- end hunger, achieve food security and improved nutrition and promote sustainable agriculture;
- ensure healthy lives and promote well-being for all at all ages;
- ensure inclusive and equitable quality education and promote lifelong learning opportunities for all;
- achieve gender equality and empower all women and girls.
- promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels;

There are 169 proposed targets for these 17 goals and 304 proposed indicators to show compliance. These are described in general terms leaving it to the responsibility of the individual member states to determine priorities and concrete output. In the text below this is elucidated related to the topics described in this strategy.

The Spatial Development Strategy mainly focuses on the spatial planning, development and (spatial) effects. The SDG's are formulated in a general way. Not all of them have a focus on spatial planning and development itself. Goals 6, 7 8, 9, 11, 13, 14, 15 are of spatial relevance.
Topics of most (spatial) relevance in this perspective seem to be:

- **Goal 9**: Build resilient infrastructure, promote sustainable industrialization and foster innovation;
- **Goal 11:** Make cities inclusive, safe, resilient and sustainable.

Targets under goal 9 are, amongst others:

- Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans border infrastructure [...]

- Promote inclusive and sustainable industrialization […]

- By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes […].

Targets under goal 11 are, among others:

- By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums;

- By 2030, provide access to sustainable transport systems for all, improving road safety, notably by expanding public transport;

- By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management;

- Strengthen efforts to protect and safeguard the world's cultural and natural heritage;

- By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management;

- By 2030, provide universal access to safe, inclusive and accessible, green and public spaces;

- Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning;

- By 2020, implement integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop holistic disaster risk management at all levels;

- Building sustainable and resilient buildings utilizing local materials.

The other goals 6, 7 8, 13, 14, 15 also have some targets with spatial impact

These are:

- By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse (goal 6);

- By 2020, protect and restore water related ecosystems, including mountains, forest, wetlands, rivers, aquifers and lakes (goal 6);

- By 2030, increase substantially the share of renewable energy in the global energy mix (goal 7);

- By 2030, double the global rate of improvement in energy efficiency (goal 7);

- By 2030, decouple economic growth from environmental degradation (goal 8);

- By 2030, implement policies to promote sustainable tourism (goal 8);
- Strengthen resilience and adaptive capacity to climate related hazards and natural disasters (goal 13);

- By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution (goal 14);

- By 2020, sustainably manage and protect coastal ecosystems to avoid significant adverse impacts, including strengthening their resilience, and take action for their restoration (goal 14);

- By 2020, conserve at least 10 per cent of coastal and marine areas (goal 14);

- By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands (goal 15);

- By 2020, integrate ecosystem and biodiversity values into national and local planning, and development processes (goal 15).

The targets are formulated in general terms to get them established by the members of the United Nations. This means that the detailing and specifying of the targets needs to take place by the members individually or in cooperation with other regional partners.

This Spatial Development Strategy tries to adhere to the goals and objectives as mentioned before. When making choices on which direction to go and which executing measures to take, the SDG's are taken into consideration. The detailing needs to take place in execution programs on how specifically reach the goals/objectives (what, how, when, who, costs). That is the next step after approval of this document. More can be read in detail in attachment 7.

6.2. Cooperation

For effective policy setting and implementation in terms of spatial development, cooperation with other entities is necessary. Cooperation between several committed stakeholders can contribute to an easy execution of the strategy.
In this regard, reference is made to cooperation between the Ministries of the Government of Sint Maarten, non-government organizations (NGO's) and especially between the French and the Dutch part of the Island.

Given the interdependency of both governments in so many ways, cooperation between the north and south sides of the island is of crucial importance for successful implementation of policies to foster good cooperation between the two governments. Therefore, alignment needs to be sought between policies and development strategies to some extend. This is also the case in respect to policies and development strategies in the area of spatial planning, considering the small size of the island and the open shared borders.
A dialogue with the French Side to seriously seek ways of collaboration in the development of the island, to obtain consensus on realistic strategies towards more effective ways to manage the spatial development in a sustainable manner may be fruitful. The respective governments can benefit from each other's resources, expertise and facilities.
While formal cooperation between the two territories of the island was limited in the past due to lengthy decision making procedures that were influenced by central governments, the change of status of Saint Martin to afford the Collectivity greater autonomy and the attainment of the status of Sint Maarten as an autonomous country within the Dutch Kingdom, have brought about a new context that is more propitious to change.

It is advisable to foster further future cooperation between the two governments that jointly govern the small land mass in the Caribbean Sea, aimed at the sustainable development of the island, including the spatial development.
Taking into consideration items that have an impact on spatial development, cooperation can be centered around targets to:

- Support actions to protect natural maritime and terrestrial resources, and to establish a cross border nature park;

- Clean up, protect and jointly manage the Simpson Bay lagoon;

- More effective management of common drainage concerns;

- Development of common sewage treatment networks and systems in cross-border areas;

- Cooperation in waste management and renewable energy development;

- Cooperation in the management of utilities, such as electricity and water production and distribution.

Regarding specific spatial development projects, further research will be conducted to explore the possibilities for deepening the cooperation between the two governments. In that perspective, it might be prudent to indicate the several roles government might be take on per topic, namely:

1. Cooperation: works together;
2. Facilitation: government creates the necessary space for and seeks to join initiatives from others;
3. Directing and setting out frameworks.

If the national interest or specific task cannot only be effectively tackled through cooperation and facilitation, then government can take on a managerial role in setting out the necessary frameworks. Point of departure when aiming to achieve the national interests and targets are among others:

- realizing projects based on its own responsibilities;
- designating or excluding areas for particular purposes (for example national parks), in accordance with national and international frameworks;
- setting standards and threshold values, for example in the form of requirements for environmental safety and standards for noise, water quality, environmental safety and air quality, and imposing the necessary restrictions;
- using instructional rules to encourage or discourage desirable or less desirable developments.

Instruments can –for example - be:
- Spatial Development Strategy
- Cooperation agreement
- Legislation/regulation
- Programs /projects

In general, most of the aspects mentioned are a responsibility of the Ministry of VROMI. To some extend, some items are already being prepared and ready for further decision making. Most of that is indicated in the VROMI Multi Annual Ministryplan and departmental yearplans.

7. Closing remarks; steps to the future

Our environment is influenced by a raft of trends and developments; changing and growing urban areas, a transition to a sustainable economy and adaptation to the consequences of climate change are all part of the bigger picture. Although these could offer opportunities, they do call for careful choices. After all, the space available to us is a scarce commodity.

The SDG's which intend to contribute to sustainable development are used as input for this Strategy document.

We want a clean, healthy, recognizable and safe environment, but at the same time we want a flourishing economy. We need space to live, work, manufacture, build and move about. We want to learn, play, recreate, relax, exercise and enjoy sporting activities. We want to improve the accessibility and quality of the living environment. We want to guarantee that we are safe from the risks of flooding, that we are protected against the hazards inherent in high-risk production and activities and we want to work towards sufficient housing and vital living and working conditions. We also want to offer space to nature and water.

But how do we balance all these wishes? How can we further reinforce the quality of our living environment? How can we ensure that we maintain a country in which we continue to live and work happily in and beyond 2030? These are important questions that affect us all.

Choices will be necessary. Before making those choices we have to look at the specific characteristics, identity and historical background of the areas in question. What are the economic foundations for an area and what is the current quality of the living environment? (including nature, cultural heritage, environment, beauty of the landscape) What is the condition of the soil, water and air? How is the area currently laid out? Where do people currently live, spend their leisure time and work, and how do they move around? How are local residents organized, and what grassroots initiatives are there?
In other words, we have to lay out strengths and underlying principles of each area.

The challenge lies in structuring the living environment in such a way that wherever possible, the various functions complement one another, while being able to develop without hindering another unnecessarily, so that maximum fulfilment is reached. Based on that approach, together we can achieve a good-quality living environment, without unnecessarily and irresponsibly shifting responsibilities to other areas or future generations.

We must take account of sustainable development, the habitability of the countryside and the protection and improvement of the physical living environment. This Spatial development Strategy provides proposals that contribute to the SDGs as well as the objective of this Strategy being:

To provide a coherent and comprehensive direction for sustainable spatial development of Country Sint Maarten until 2030,

With its sub-goals:
1. Sustainable development;
2. Enhancement of the resilience of the country;
3. Enhance the quality of life for citizens.

Thereby contributing to a safe and healthy physical living environment.

In that perspective we use a broad interpretation of the term *physical living environment*: the built and natural environment including the large waters and natural landscapes, agricultural landscapes, networks and infrastructure for traffic and passengers, goods, data, materials and energy, and the archaeological, agricultural and built heritage.

The physical living environment is closely linked with the *social physical living environment*. Activities related to spatial and functional division of the living environment, influence the living environment and quality of life in the broadest sense, including the quality of the natural environment, water, soil, air and natural capital.

After this strategy document, the second step needs to be taken, namely; choosing direction with concrete executive measures. The spatial development strategy is intended to provide some guidance and a glimpse of a vision on (future) spatial planning to secure a good quality of life for us all:

Sint Maarten, a country that is healthy and (still) a pleasant place to live. Where the residents enjoy and appreciate a high quality of life and living environment. Where everyone has space for personal development. A country with a healthy, futureproof economy; an economy that is sustainable, circular and flourishing. A country where we leave scarce natural resources in the ground or reuse them, and where we have replaced fossil fuels with clean energy sources. A country that enjoys close ties with its neighbors cooperating when possible, learning from each other, step by step.
Urban areas that are attractive and vital. Natural/rural areas that are productive if possible and pleasant and for sure. A country that offers excellent access and in which people enjoy smooth mobility thanks to a broad raft of innovations, with the lowest possible levels of harmful emissions and nuisance. Where there is sufficient space to exercise, to interact, to relax and to take time for ourselves. Where nature flourishes. A healthy, clean and climate proof country with plenty of space for planting and water. A safe country, protected against flooding and other hazards. Where there is a solid balance between the built environment and open landscape, between nature and agriculture and between land and water. A country that is open to change, but where the strength of its traditions, culture and identity are reflected in the layout of the physical living environment.

Sint Maarten can be become a cultural, economic and environmental mosaic with allure. Based on this strategy, awareness is created for the fact that for future sustainable development, the stakeholders involved should invest in people and planet first, and generate pleasure and profit as a result. Reflecting on the variety and diversity Sint Maarten has to offer, both from its nature as from its cultures, collective research has illustrated that exploiting and flowering this diversity can lead to a new and prosperous development. The multilingual and internationally orientation, paired with the rich flora, fauna and culture lay the foundation for a uniquely diverse area, a socio-cultural and geopolitical mix. While the one-sided development that has governed the development of the past and aided to put Sint Maarten on the map, a gradual reorientation which flowers the hidden potentials, paves the way for a sustainable progressive development awaiting ahead. Laying the foundation for a new mosaic of interdependent potentialities which positively alter Sint. Maarten’s image in the future Caribbean constellation.

8. Appendixes

1. Acknowledgements and references
2. Consultation process Spatial Strategy and Development plans
3. Plan map visual summary proposals
4. Overview legal framework Spatial Development Strategy
5. Overview main VROMI regulations with spatial effects
6. Sustainable Development Goals (elaborate)
7. Acronyms

Appendix 1

Acknowledgements and references

A wide range of information was used to prepare this Spatial Development Strategy. Desk research was done in order to collect and analyze existing policies and the many (spatial) ideas, studies and visions that have been developed in the past. This includes, but is not limited to the following list:

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Appendix 2

Consultation Process Spatial Development Strategy

While preparing the draft development (zoning) plans some time ago, several consultations were held in the districts involved. This gave worthwhile input related to the future spatial development in these districts that was also used to prepare this document. In addition, the intention is to avoid the general Spatial Development Strategy from being too far behind the more detailed Development Plans. Therefore, the choice was made to have a relatively brief consultation regarding the draft Strategy document before finalizing it.

Process

Steps for stakeholder consultation in short:

a. presentation for SG's of all Ministries;

b. presentation for Ministry VROMI and other Ministries;

c. presentation for specific target groups/ stakeholders;

The table below shows the specific stakeholders involved in the consultations:

Governmental stakeholders	
Ministry ECYS	2016 / 2020
Ministry Justice	2016
Ministry TEZTT	2016 / 2020
Ministry VROMI	2016 / 2020
Ministry VSA	2016 / 2020
Secretary Generals all Ministries	2016 / 2020

Government related / Government owned companies	
Harbor/SLAC	2020
Utilities Company GEBE	2020
Princess Juliana International Airport	2020

In 2016, first consultation took place, mainly with the Secretary Generals of the Ministries and the representatives of the Ministries of VSA, TEATT, ECYS and VROMI.

In 2020 a second consultation took place with the Ministries of TEATT, VSA and ECYS (actively involved in 2016), based on the updated/reviewed draft document.

The input of the stakeholders contributed to the fine-tuning of this document.

Appendix 3

Plan map overview proposals

Appendix 4

Overview proposals spatial development strategy
This attachment is giving an overview of the proposals as put into the Spatial Development Strategy document summary in the same format as the content-structure. This means based on three pillars of sustainable development: 'economic', 'social' and 'environment'. The topics which has spatial impact on the plan map(s) has been written down here.
When a special remark on the map is indicated it is said so in the 'comment' with the indication 'mapmark' followed by 'text' which means that about this item a short summary/ elucidation is given in the corresponding text-block on the map.

ECONOMIC

TOURISM	
Carrying capacity	• Social and environmental policies need to be set at the fore of future economic development, including both macroeconomic and climate change developments. To mitigate the risks and costs of overtourism and foster a more inclusive – less intrusive – model of tourism development, it is vital that [...] environmental health and ecological biodiversity are restored. • Integral to circular tourism is the improved flow of visitors, especially in congested and crowed areas. The strict enforcement of land use and zoning rules, as well as the retrofitting of buildings and infrastructures should be pursued. Building codes and environmental zoning rules should be adapted with explicit consideration of overtourism and climate change risks.
Stay-over tourism	• A new large-scale hotel/resort might be facilitated at a strategic location in vicinity of the harbor and/or airport with a focus on conference and events tourism and/or a luxury brand name hotel/resort; • With respect to the "traditional" hotel and timeshare business additional space reservation is neither required nor desirable. The focus should be rather on refurbishment/improvement of existing stock and use of vacant locations, such as the abandoned Aquarius development at Red Pond. • The development of a niche market for small scale boutique or lifestyle hotels will be facilitated in terms of zoning with a focus on the Simpson Bay, Philipsburg and Little Bay Beach areas and -under strict environmental conditions- a few hillside locations (eco-lodge type) under strict conditions.
Marine industry	• Selective space reservation for marina expansion in the Simpson Bay lagoon, in particular near the airport (also intend for ferry services and the target group of private planes), in order to prevent unbridled growth. • Reserve space for mega/ giga yacht harbor facilities in particular in the Great Bay area, provided that possible adverse environmental effects are minimized and mitigated.

Other tourism related activities	• Facilitate the restaurant and nightlife sector in terms of zoning, subject to certain conditions in order to avoid excessive nuisance and non sustainable development on the long run. • Facilitate and encourage the development of land based tours/ attractions, in particular in the field of cultural heritage and eco-tourism • Beautification of tourist areas.
MAIN PORTS	
airport	It is advisable that the government looks very carefully at the intended land reclamation plans for the expansion of the airport operations. It should be properly justified by means of a sound cost benefit analysis and environmental impact assessment prior to any decision making. Furthermore, the point of departure should be that the land reclamation be kept to a minimum that is strictly needed for a proper finalizing of the airport on the long term, as a key contributor to the larger economy of Sint Maarten, however land reclamation that exceeds this requirement should not be permitted.
harbor	• Completion of the boardwalk along Great Bay to connect directly to the harbor; • Intensifying and improving the public waterfront, e.g. hotel, conference center in line with the points of departure of the Development Perspective Great Bay (TKA et al., 2003); • Ensuring a greater diversity of functions which are complementary to what Philipsburg currently has to offer; • Ensuring that possible adverse environmental effects will be kept to a minimum and mitigated; • Due consideration for the congestion problems of Juancho Yrausquin Blvd
INDUSTRIAL FUNCTIONS AND UTILITIES	
Energy cluster	Partial redevelopment of the Cay Bay area will be required. It is advised that a buffer zone will be realized between the heavy industry and the residential area. This buffer zone can cater to light industrial activities such as warehousing and/or a green zone. A new main road (Link 1, phase 3) is planned to be constructed through Cay Bay and the Cole Bay industrial area. The construction of this road can be used as an incentive and medium for the redevelopment of the area and realization of the buffer zone, where the road can function as a 'natural' border between the industrial and residential/mixed use area. This also allows the possibility to close off the current Cay Bay access road in the vicinity of the GEBE power plant for public traffic for safety reasons. The different GEBE premises will then no longer be dived by a public road which will benefit the security of the power plant.

Building (material) cluster	The Over the Pond- Sucker garden area should be zoned to facilitate the current industrial activities . It is advisable that the area also will be restructured / improved. A master plan for the area should be established with special attention for the access, a more sufficient subdivision and better drainage. Space can also be created to relocate industrial activities from the neighboring residential areas to the Over the Pond - Sucker Garden area through an improved subdivision.
Waste cluster	A Waste to Energy [WTE] plant is projected on Pond Island in the vicinity of the landfill. The purpose of this facility is to process all waste streams, as well as the mining of the current landfill for fuel to produce electricity for sale to the local electricity supply company (NV GEBE).
Commercial and light industrial	• Mixed use along the main roads facilitated in terms of zoning • Facilitating and enhancing of a commercial node in vicinity of Churchill Roundabout and logistical/light industrial activities in Cole Bay (in vicinity of Orange Grove Road) and Point Blanche (in vicinity of the harbor) • Explore the possibilities for a light industrial park in the former quarry area in Hope Estate, also for eventual reallocations • Facilitate home-based occupations that do not provide any type of nuisance in residential and mixed use areas in terms of zoning. The point of departure is that along the main roads, mixed and commercial activities will be allowed, much in the same way it has been allowed to develop autonomously, while on the other hand such activities need to be discouraged and prohibited in (residential) areas not designated for such purpose. The existing mix of functions along the main roads will be facilitated in the development plans as much as possible within certain conditions. Along the main roads in existing clusters some more intense commercial and light industrial activities can be allowed. In particular the already existing clusters of warehousing and logistics in Cole Bay and Point Blanche and the commercial node in vicinity of the Church Hill roundabout can be enhanced and facilitated through zoning. In addition, the former quarry area in Hope Estate is potentially a suitable location for light industrial functions, provided that proper accessibility is ensured among other criteria. Light industrial functions which are causing nuisance in residential areas could then also be relocated to this area, because currently there are hardly any alternatives. Small-scale enterprises without any hazards or nuisance to the surrounding environment might be allowed in or near residential areas. Regulations are already in place and will be improved to prevent excessive hindrance (Hindrance Ordinance, Civil Code). Certain occupations may be exercised anywhere also within solely residential areas, namely the type of occupations that do not have any or too great an impact on the enjoyment of residing, these so called home-based occupations such as small administration offices will be facilitated in terms of zoning.

MOBILITY and TRANSPORTATION	
Main road network	High priority These Links should be realized on the short term (< 5 years) since the realization will alleviate congestion at key traffic bottlenecks. Furthermore, studies and (preliminary) designs are already finalized and ownership situations have been sorted out, or negotiations are in an advanced stage. • Link 6: Connection from Weymouth Hills to the Bethlehem area. This will alleviate L.B. Scott Road to a certain extent and provides for an alternative connection between Dutch Quarter/ Middle Region and Cul de Sac. The road will allow for better development possibilities for the Bethlehem area • Link 2: Alternate route from Philipsburg to Cul de Sac avoiding and alleviating the congestion at Bush Road and the congested Churchill Roundabout area. A draft design for the this road was already made and there are no (major) ownership issues. • Link 3, section from Salt Pickers Roundabout to Zagersgut Road: this section will alleviate the heavily congested Walter A. Nisbeth Road and the southern section of A.T. Illidge Road. Furthermore it will also create a physical barrier in order to halt further land reclamation from the Great Salt Pond. The draft design is ready and there are no ownership issues (Government land) • Link 4: Upgrading and expansion of Alexis Arnell Blvd. to serve as an alternative to the crucial A.J.C. Brouwer Road. • Link 1, phase 3: final phase of the alternate route from Philipsburg to Cole Bay, alleviating congestion at the Brouwers Rd., Union Rd, Welfare Rd intersection. Existing land use in the Cay Bay area makes the realization of this road rather complicated. lower priority These Links should be realized on the longer term (5-10 years). The necessity of these links is sufficiently clear, however further detailing and/or land ownership situations still deserve attention. • Link 3 Ring Road northern section: this will alleviate the congestion at A.Th. Illidge Road and Arch Road. Conduct further research for the long term into the benefit and necessity of Link 8, Link 7 and a tunnel (Link 10). Reserve space in terms of zoning for the proposed.

Upgrading of existing main roads	Upgrade existing main roads: • improve though flow of traffic by limiting the number of intersection, driveways etc., eliminate parking directly alongside the main roads and improve traffic measures such as left turn lanes, lane separation, and parallel (service) roads; • reserve space in terms of zoning between 18-22 meters for the required upgrading.
Improvement secondary road system	See summary Further study into the improvement of the secondary road network, in order to increase the capacity of main roads and provide alternative access to vulnerable areas. • Establish minimum design criteria "design manual" for the construction of new roads in accordance with their specific function.
Bicycle and pedestrian traffic	Improve facilitates for slow traffic: • realization of bicycle and pedestrian route network in particular in the Greater Philipsburg and Simpson Bay- Cole Bay areas; • create safe pedestrian facilitates whenever a new main road is being constructed.
Public transportation	Improve the physical infrastructure for public transportation e.g. bus stops, central bus terminal and ferry terminals.
parking	• Realization of central parking facilities (possibly through a public-private partnership) in central commercial areas, such as Philipsburg and Simpson Bay (Kim Sha Beach area) in combination with the improvement of facilities for pedestrians. • Parking standards for any new developments (as part of the building regulations and the development plans (zoning)) • Prohibit parking directly alongside the main roads through physical improvements of the main road

SOCIAL

HOUSING	• Reserve and secure land for housing and infrastructure development in various communities, including other community needs, such as community centers and recreational areas for residential communities; • Facilitate the creation of housing projects in the large succession land areas that are not too steep. Especially where improvements e.g. on infrastructure are already being executed or planned; • Promote urban renewal in the areas where houses below standard (shanty towns) are located, in public private partnerships, to improve the living standards of the residents; • Promote, through zoning, for the residential function to be strengthened within the commercial centers, such as Philipsburg, to return life back to town after closing hours; • Promote the development of higher density residential developments on flat land areas, but taking the future risks of flooding into account, in order to make efficient use of available infrastructure and to facilitate the demand in the housing market (7,000 homes in 10 years), bearing in mind proper planning principles; In that perspective the increase of densities will mainly be created by allowing in flat areas building to be one or two stories higher than we are used to. • Facilitate with the Sint Maarten Housing Development Foundation (SMHDF or others with same objectives) to realize more housing projects aimed at the purchasing market, in various forms of housing concepts and for varying demands in the market, to promote more home ownership; • Facilitate community gardens and playgrounds in each housing development project, to improve the livability of the areas. • Implement a inclusionary housing policy which require some regulations within the spatial development plans that prescribe certain mandatory percentages of social/ affordable housing within the (residential) zones to be (re-)developed. Developers can deviate from these percentages by contributing (preset) amounts of money to an in-lieu fund. That fund then provides financial means to cater for social/affordable housing projects elsewhere. This fund will preferably have to be managed by the Ministry of VROMI and will cater for developers (such as SMHDF) with social/affordable housing projects that need support from government and live up to the preset (publicly available) standards. • This policy can also be part of the principle of using the to be detailed residential designations in the spatial development plans as a natural starting point for negotiations with the various developers in order to establish a stronger influence on the building of certain percentages of social housing within these areas (for example 25% of the houses needs to be 'social' or 'affordable'). • In the new draft development plans is enough space reserved for residential use and to locate community centers. So, there is enough space for building new homes and develop new community centers. But as said before, the big challenge is to get developments started. The government could assume a greater facilitation and coordination role in this respect.

PUBLIC FACILITIES	
schools	• relocation of aging school buildings to accommodate the decongestion within the Cul de Sac area, as well as of aging school buildings in the congested Philipsburg area;
Sport and recreation	• space reservation for an additional sport stadium on pond island (possibly soccer or cricket); • facilitate private development of a cricket stadium in the Bethlehem area in terms of zoning; • encourage the realization of multipurpose courts in the several neighborhoods and facilitate this in terms of zoning for residential and mixed use areas; • encourage public space and parks with shaded areas, landscaping, community gardens etc. and facilitate this in terms of zoning for residential and mixed use areas.
Village centers	• encourage and reserve space for the bundling of commercial functions, for example in combination with the construction of schools, public squares or small parks, community centers and playgrounds within so called "village centers";
cemetries	• allocate space for additional public cemetery space (in the eastern part of Sint Maarten) in line with the following criteria: generally flat undeveloped land, not in direct vicinity a residential area (compliance with Burial Ordinance) and proper accessibility and parking; • facilitate initiatives for private cemeteries, provided that the criteria described above are met.
CULTURAL HERITAGE	
	In the development plans historical areas can be protected via zoning on the plan maps. In combination with restricting regulations excavations are only allowed under conditions. Redevelopment is possible under certain conditions in the development plans but needs also agreement according to the Monument ordinance.

ENVIRONMENT

ATMOSPHERE	
Air quality	The quality of life nearby air polluting industries or activities can be regulated via zoning distances in development plans and via conditions in the Hindrance permits. It is the intention to have additional policies and legislation into effect within a short period.
HYDROSPHERE	
Sea level	Further research needs to be carried out and fundamental choices need to be made based on the results of such assessment.
Main water bodies	
lagoons	A more balanced development of the Simpson Bay Lagoon is required whereby any further land reclamation should be limited to airport expansion that is required for autonomous growth and in order to comply with safety regulations. Marina development should be regulated and additional capacity should be limited to existing water rights and some designated strategic new locations, in particular in vicinity of the airport, in order to prevent unbridled growth. Furthermore, a better accessible lagoon shore, provisions for pedestrians and cyclists and eco-tourism are an opportunity for future development of the Simpson Bay Lagoon. The economic and scenic value of the lagoon could be better utilized by the creation of a public boardwalk along for instance the Simpson Bay 'strip'. Ongoing land reclamation could also be halted with the realization of such as a public quayside. A coherent management plan is also needed to adequately address eutrophication and habitat loss and in which guidelines are developed for future construction projects (best environmental practices) around and inside the Lagoon (Ecovision, 2010). The most ecologically important areas such as Little Key and Mullet Pond should get full protection in terms of zoning. Oyster Pond should be preserved as well, but should also be able to maintain its important role for the yachting industry.
Ponds	It is advisable that the filling for the Ring Road will be the last filling activity in order to not further threaten the critical water retention capacity of the Great Salt Pond. The remaining water surface area should enjoy full protection in terms of zoning. This is also of importance considering the historical and ecological value of Great Salt Pond. There should also be full protection in terms of zoning for Little Bay Pond, Fresh Pond and Red Pond as buffers for run-off water and because of their scenic and ecological value

Sea/ocean	Prepare and implement the Sint Maarten Maritime spatial plan Development of a long-term port diversification plan, Sint Maarten has demonstrated that their ports have the capacity to expand and it is recommended that they optimize port facilities to increase diversification, Improve the long-term environmental sustainability of Sint Maarten tourism exploitation; (avoidance of mass tourism model) to gain competitive advantage
Storm water management	Several structural measures such as dredging, channel alteration and improvement of outlets are required in order to discharge storm water from low lying areas. There should however also be more attention for water retention, infiltration and erosion control, particularly more upstream. The goal is: 1. to retain the water upstream as much as possible (via infiltration and retention) resulting in reduction and slowing down of the downstream and 2. discharge the water I lower urban areas as much and as soon as possible. A complete set of proposed measures is described more in depth in the Storm water Management Strategy Sint Maarten (Ministry of VROMI, 2015). The measures related to spatial planning are: • preserve the higher and/or steep slopes of the hillsides as conservation (nature) areas where no development is allowed; • in principle no building in or near natural gutters, unless sufficient mitigation measures are feasible and executed with regards to safety and effects downstream; • any new subdivisions (development) will require a storm-water management plan based on the premise that the development may not lead to any adverse effects downstream; • establish appropriate building regulations for flood prone areas and flood-proofing areas; • protect the (surface of the) ponds and reserve space for additional storm water retention areas in Cul de Sac and Dutch Quarter.

Water quality (waste water, drinking water)	It is important to take measures aimed at reducing the pollution of the water quality of for example the ponds, groundwater and the ocean by avoiding wastewater to mix with storm water runoff, mainly through the improvement of sewage systems, although some storm water management measures are also important for water quality. Proposed measures are: • expand the current sewage treatment network to collect and properly treat as much sewage as possible before disposal or use of the effluent. • Reserve space for a central sewage treatment plant in the area West of Cole Bay hill • The amount of connections between the (main) sewage line and the individual homes should be drastically increased with respect to the existing sewage treatment plant (Illidge Road) • For new buildings situated remotely from the public sewage collection and treatment system, septic tanks or private sewage treatment systems are required (Building Code). • determine targets for the quality of (surface) water in a national decree, entailing general measures based on the Waste ordinance (AB 2013, GT no. 137) • reduce pollution of ground water by means of adequate hindrance regulations and inspection. • increased runoff water retention upstream is proposed, minimizing the discharge of (contaminated) runoff water downstream (see 5.2.3). • require the construction of cisterns in certain areas (hillsides), to have drinking water in case the general water system is not functioning during calamities and also to decrease the amount of run-off-water.
LITHOSPHERE	
Soil pollution	The current Hindrance ordinance , Waste ordinance and Algemene Politiekeur are regulations given based on which pollution of the soil has been forbidden.
Solid waste (garbage)	To facilitate the realization of a waste to energy plant (location) under certain conditions via development plans and hindrance permit

Nature and nature conservation	It seems clear first to safeguard what is already in place regarding public spaces and public parks. This is possible via regulations in the development plans. **Protecting Beaches** The existing Beach policy is protecting the public accessibility of the beaches and giving restrictions such as building restriction within a zone of 50 meter from the sea if a beach is really there, or 25 meter if a beach is not really there to protect the functions 'nature' and 'recreation' and to strengthen the enforcement of the public accessibility. This policy is translated into the regulations of the (draft) development plans, with proper beach access and building setback restrictions to protect encroachment on the public beach areas. **Protecting Hill Sides** The existing Hill Side Policy gives building restrictions above the 50 m height-line and a general no build zone above the 200 meter height-line. The hill sides policy remains into effect until new development plans are established. This will be translated in the draft development plan 'Hillside Conservation Areas', aimed at the protection of the natural qualities of the hills. Natural areas like Fort Amsterdam, Genève Bay and the little islets, Emilio Wilson estate, Great Salt Pond, Little Bay Pond and Fresh Pond will be protected by regulations in the development plans. **Nature parks** Country Sint Maarten has already a National Ordinance which enables the protection with the special status 'nature park'. With the establishment of terrestrial nature parks there will be an extra legal protection for those areas. For example for the Hill Sides Areas it is proposed to establish a cross-border Hill Side Nature park in cooperation with the French side. Also combinations of nature and recreation are worthwhile to explore
BIOSPHERE	
Protecting biodiversity	The most recent biological inventory of Flora and Fauna on Sint Maarten indicates that more detailed research is needed. It is vital when developing large projects on Sint Maarten to view such projects with respect to their overall consequences and impacts. In that regard, 'environmental impact assessments' can be made a requirement for certain scales of projects. Prior to the decision to move forward with the proposed actions, formal impact assessments may be governed by rules of administrative procedure regarding public participation and documentation of decision making, and may be subject to judicial review. An impact assessment can for example propose measures to adjust or mitigate impacts to acceptable levels or to investigate new technological solutions. The intention is to formalize this possibility also for Sint Maarten by new legislation in the new National ordinance VROMI.

Climate change	A strategy needs to be developed how to deal with the effects of climate change and for coastal management. It is very important to be aware and be prepared on time. It is certain that this will be one of the main topics for future spatial planning on Sint Maarten
energy	Facilitating the coupling of rooftop with solar panels with large scale generation options via development plans. Study the possibility the installation of wind-turbines in a windpark at sea somewhere between Sint Maarten and St. Barthelemy. Stimulate Awareness: a common habit In the Energy Policy a concept is mentioned to be the point of attention in all we plan and do: reduce, re-use, recycle. Reduce the demand, use sustainable alternatives, produce and use as efficient as possible. This can be done regarding energy, but it is also a very good point of departure when consuming or producing goods. It can have a very positive effect on our waste production (by reducing and re-using). This concept can contribute to our (spatial) environment and to our quality of life. A good example how to implement it is the way waste will be handled in the near future in a new to be build Waste to Energy Plant on Pond Island. This plant will have besides the production of alternative energy spatial consequences for the objective to reduce the waste mountain on Pond island. Another example can be the choices that will be made regarding the transportation system. In the chapter about sustainable economic development the need for a mobility plan for public transportation is mentioned. The choices that can be made can have effect on air quality. Instruments as development plans and hindrance permits can facilitate these plans in a guiding way with respect to all interests involved.

Appendix 5

Legal framework of the Spatial Development Strategy

"We, the people of Sint Maarten resolved to provide for the continuing preservation of nature and the environment […]" (Preamble of the Constitution of Sint Maarten).

"It shall be the government's constant concern to keep the country habitable and to protect and improve the environment and of the living environment and welfare of animals" (art. 22 Constitution Sint Maarten).
In the National ordinance 'Foundations Spatial Development planning' it is stated: 'the Minister does the necessary in the preparation of a coherent and sustainable government policy for the development of the area [...] '(art. 2)

Referred to in article 2 and according to article 3 of that same ordinance Government's policy focuses on the following general objectives:

The policy of government focuses amongst other things on the upcoming general targets: there has to be guarded a balance between the available space and the developments in that space […];

The spatial conditions must be created to guard a healthy environment, such as to safeguard space for nature and recreation [...]as well as by keeping clean water, soil and air;

[…] respecting their natural conditions and serve as fully as possible to participate to the growth of prosperity and to the social and cultural development [...];

There should be a balance between the best possible space to be kept available and to promote the development, also in the light of population growth in which this will lead;

The spatial conditions should be created for the preservation of a healthy environment by, inter alia, the safeguarding of nature and recreational space in accordance with the future size of the population, as well as by the purifying of water, soil and air;

The availability of residential space and the associated social and cultural facilities should keep- - as much as possible -- pace with the growth of the population and the implementation of the development projects;

Timely measures should be taken to adjust the existing building cores to the new developments and for improving insufficient dwelling conditions.

In article 2 of the National ordinance 'Spatial Development planning' it is stated: "The Minister, for the purpose of a proper spatial development of Country Sint Maarten and in view of the establishment of Development Plans, makes an inquiry into the existing situation and into the possible and desirable development of the Island territory."

The National Ordinance Foundations Spatial Development Planning also indicates in article 4 that this government policy will be summarized in a *development program* to be established by national decree. That program gives a picture about the long-term socio-economic development, as far as of relevance for and fitting in (the framework of) the spatial development, as well as a proposal of government with which measures the aforementioned will be promoted. This development program serves as general framework regarding a multi annual planning and other executive projects.

In conclusion, the National Ordinance Foundations Spatial Development Planning and the National Ordinance on Spatial Development Planning urges the Minister of VROMI to draft government policy for the development of the Country. In that ordinance also a framework is given about the instruments to be used; a development policy, translated in a development program (1) and development plans (2) which are (according to article 7) taking the development program into consideration.

This Spatial Development Strategy can be seen as the result and outcome of a process inquiry as a step up to the establishing of development plans. This Spatial Development Strategy may be used:

• as integral strategy for long term;

• for collection and weighing of interests (in terms of content and process);

• as framework for review and inspiration for spatial decisions:

• as a base for:

- development into sectoral policy,
- development in legal frameworks (such as zoning/development plans),
- implementation: set location requirements, finance of costs, establish rights

Appendix 6

VROMI Regulations with spatial implications

National ordinance on Spatial Development Planning (AB 2013, GT no. 144)

In the development plans, regulations may be included to protect the landscape like the hillsides, the ponds and lagoons. Specific regulations can be set concerning what the types of construction on specific areas on the island, and for what the land may be used. In the development plans it is possible to regulate where and how to accept certain economic developments and industry. Through the zoning of areas, it is possible to designate areas to accommodate specific uses. The zoning plans carry the right of law and are therefore subject to enforcement through use of other ordinances.

Hindrance Ordinance (AB 2013, GT no. 139)

The Hindrance Ordinance aims to prevent possible conflict situations between several types of uses/activities of companies. In the draft development plans a cross-reference will be made to the Hindrance Ordinance to maintain certain distances between certain kinds of use/activities, for instance between a residential area and an industrial area. Enforcement of the regulations is vital to protect the environment: for the quality of life but -- in the end --for our economy.

Building Ordinance (AB 2013, GT no. 136)

The Building Ordinance regulates the manner in which building construction can occur. There will also be a cross reference between zoning plans and the Building Ordinance in terms of allowable land uses. Additional requirements for energy efficiency, sustainable building and cisterns can be incorporated within the Building code.

Waste Water Ordinance (**AB 2013, GT no. 142)**

Based on the Wastewater Ordinance sewage water is required to be connected to the sewage system if it is generated within a set distance from the collection system. The Waste water Ordinance makes it possible to establish targets for the quality of (surface) water.

National ordinance concerning management of nature and protection of the prevalent fauna and flora (AB. 2013, GT no. 809)

In accordance with this ordinance, it is possible to designate areas as protected areas: Nature parks. Since it is estimated that Sint Maarten has sufficient space for residential building in the coming 10 years (also see chapter Housing) development of the higher parts of the green slopes/hills is not necessary, and these areas can largely be designated as ‘Natural areas’, as stated in the draft development plan Hill Sides Conservation Areas. Furthermore, the Nature Ordinance allows for the protection of endangered species of flora and fauna.

Appendix 7

Overview Development Goals 2015-2030

The sustainable development goals (SDGs) are a universal set of goals, targets and indicators that UN member states will be expected to use to frame their agendas and political policies over the next 15 years. The Official Agenda for Sustainable Development adopted on 25 September 2015 by the 193 countries of the UN General Assembly has 92 paragraphs, with the main paragraph (51) outlining the 17 Sustainable Development Goals and its associated 169 targets. This includes the following goals:

1. **Poverty** - End poverty in all its forms everywhere;
2. **Food** - End hunger, achieve food security and improved nutrition and promote sustainable agriculture;
3. **Health** - Ensure healthy lives and promote well-being for all at all ages;
4. **Education** - Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all;
5. **Women** - Achieve gender equality and empower all women and girls;
6. **Water** - Ensure availability and sustainable management of water and sanitation for all;
7. **Energy** - Ensure access to affordable, reliable, sustainable and clean energy for all;
8. **Economy** - Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all;
9. **Infrastructure** - Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation;
10. **Inequality** - Reduce inequality within and among countries;
11. **Habitation** - Make cities and human settlements inclusive, safe, resilient and sustainable;
12. **Consumption** - Ensure sustainable consumption and production patterns;
13. **Climate** - Take urgent action to combat climate change and its impacts;
14. **Marine ecosystems** - Conserve and sustainably use the oceans, seas and marine resources for sustainable development;
15. **Ecosystems** - Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss;
16. **Institutions** - Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels;

17. **Sustainability** - Strengthen the means of implementation and revitalize the global partnership for sustainable development.

VROMI Output related to the Sustainable Development Goals – 2030 Agenda

It is important to relate the strategic objectives and activities to the so-called Sustainable Development Goals (SDGs). As indicated in the Spatial Development Strategy (SDS) the SDGs entail 17 strategic goals, established under paragraph 54 of the United Nations General Assembly Resolution A/RES/70/1 of 25 September 2015. In the SDS we have already made some connections between certain topics and the SDGs. In this attachment, more in detail is focused on de concrete output of the Ministry of VROMI on these SDGs.

The choice made is to better focus on a few aspects well and concrete, than on all of the (sub)goals and output-targets mentioned in the UN-overview list. It is a matter of prioritization, considering the modest means available. We simply cannot do it all.

The Ministry of VROMI aims to address the SDGs in the following areas, in undecided order:
1. Waste management, Wastewater management, Energy, Nature and environment
2. Storm water management, Climate change, Disaster management
3. Public housing, Spatial planning, Infrastructure

The output described is from the SDG UN overview list, of relevance for Sint Maarten. The output is frequently indicated in time related to the year 2020 or 2030.

I. Waste management (1), Wastewater management (2), Energy (3), Nature and environment (4)

Waste management has its current regulation in the waste ordinance but must be updated in accordance with a new vision on waste collection and treatment. The way the wastewater is regulated (wastewater ordinance) must also be updated/detailed. The wastewater treatment plant is not used to its capacity as yet.

St. Maarten has a National Energy Policy since 2014 to increase the use of renewable energy sources like solar power and energy from waste. The National Energy Policy contains a series of measures to ensure a secure supply of energy, at affordable prices, with efficient use in an environmentally sound manner.

Nature and environment have some protection via current legislation (law on flora, fauna, hinder ordinance) but have no formal policy in place with a vision and planned interventions to safeguard a sustainable future.

1. Waste management: SDG Goal 12: Ensure sustainable consumption and production patterns

Output:

- by 2020 achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment

- by 2030: reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.

- by 2030: substantially reduce waste generation through prevention, reduction recycling and reuse.

VROMI Strategy: draft a waste management plan (via staff buro and Worldbank); update current law on waste via new VROMI Ordinance.

2. Wastewater management; SDG Goal 6: Ensure access to water and sanitation for all

Output:

- by 2020: protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

- by 2030: improve water quality by reducing pollution, eliminate dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

- by 2030: prevent and significantly reduce marine pollution of all kinds, especially from

VROMI Strategy: develop a wastewater management plan; expand the area of protected waterbodies; expand the sewage collection and treatment network for wastewater.

3. Energy: SDG Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all

Output:

- by 2020: no specific indicators for 2020 are given

- by 2030: increase substantially the share of renewable energy in the energy mix

VROMI Strategy: Update the Energy Policy 2014 and develop an Implementation Plan.

4. Nature and environment: SDG Goal 15: Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss

Output:

by 2020:

- Promote the implementation of sustainable management of hillsides, green areas and halt the deforestation and destruction thereof;

- Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and protect and prevent the extinction of threatened species;

- Introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species;

- Integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts;

- Ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular our hillsides, wetlands and coast in line with obligations under international agreements;

- sustainably manage and protect marine and coastal ecosystems;

- conserve at least 10% of the coastal and marine areas.

VROMI Strategy nature and environment: execute/enforce the beach Policy and Hillside Policy; establish the Hillside Conservation zoning plan; work towards objectives of the Nature policy (action) plan, establish Sentry Hill terrestrial nature park; additional inventory of terrestrial flora and fauna to determine the impact these invasive species have on endemic species and to determine the best approach in sustainably maintaining (or eradicating) the invasive species; develop a sustainable environmental policy

II. Storm water management (1), Climate change (2), Disaster management (3)

With the passing of hurricanes Irma and Maria in 2017, the country is experiencing significant impacts of climate change, which include changing weather patterns, rising sea level, and more extreme weather events. The sea level is projected to rise one meter within the next 80 years, whereas the impacts on the economy, livelihood, housing, infrastructure and nature will be enormous. A Storm water management plan was approved in 2018 by the Council of Ministers with guidelines on prioritizing the execution of measures to decrease the adverse impact of flooding.

Climate change, storm water management, disaster management: SDG Goal 13: Take urgent action to combat climate change and its impacts

Output:

The general objectives that can be mentioned are:

- Strengthening resilience and adaptive capacity to climate-related hazards and natural disasters,
- Integration of climate change measures into policies, strategies and planning
- Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.

By 2030: substantially increase […] adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels.

VROMI Strategy: Optimize the working of the Geographical Information System (GIS) according to the in 2020 approved document on National Spatial Data Infrastructure (NSDI). Conduct a disaster risk assessment; conduct a climate change impact study to formulate scenarios for adaptation plans; Use LiDAR imagery as component for (baseline) studies on disaster management, climate change and storm water management

III. Public housing (1), Spatial planning (2), Infrastructure (3)

In Sint Maarten, many challenges exist in maintaining the living environment and the quality of life that continues to create jobs and prosperity while not straining land and resources. Common urban challenges include congestion, lack of funds to provide basic services, a shortage of adequate housing and declining infrastructure. Due to the lack of proper spatial and urban planning, there are few inclusive and accessible green public spaces and parks for recreation. St.Maarten is currently expanding its transport hub facilities, including its port and international airport, to support the economic development of the broader region while expanding production on the island itself. However, due to the unbridled growth of the tourism industry and population expansion, the present infrastructure is congested, which leads to adverse effects to the sustainability of economic growth and the overall quality of life of citizens.

Public housing + Spatial planning: SDG Goal 11: Make cities inclusive, safe, resilient and sustainable

Output:

- by 2020: adopt and implement integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels

- by 2030: ensure access for all to adequate and affordable housing and basic services and upgrade slums.

- by 2030: provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport.

- by 2030: Enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management

- by 2030: provide universal access to safe, inclusive, accessible, green and public spaces, in particular for woman, children, older persons and persons with disabilities.

- support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening development planning.

VROMI Strategy: prepare zoning plans; aesthetics policy (regarding quality of the (public) space); draft a housing policy; update performance agreement Gov SXM – SMHDF.

3. Infrastructure: SDG Goal 9: Build resilient infrastructure, promote sustainable industrialization and foster innovation

Output:

- to develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.

- by 2030: upgrade infrastructure […] and make it sustainable

VROMI Strategy infrastructure: establish norms for the development of infrastructure; establish development plans/zoning plans; draft an aesthetics policy (regarding quality of the (public) space), update parking policy.