SUSTAINABLE TRAVEL INTERNATIONAL
Making A Better World The Destination

FINAL REPORT

Tourism Carrying Capacity for the inner islands of Seychelles (Mahe and Praslin)

PREPARED FOR:

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Introduction

Objective of the Study

This document presents the findings of the **Tourism Carrying Capacity for the inner islands of Seychelles (Mahe, Praslin)** commissioned to Sustainable Travel International by the Seychelles Ministry of Tourism, Civil Aviation, Ports and Marine in October 2019.

Since the inception of this study, the World Health Organization declared COVID-19 a public health emergency of international concern and a world pandemic. The effects of the pandemic brought global travel to a halt, greatly affecting the economy of Seychelles. Everyone's lives have been affected by the global emergency and subsequently the timeline and direction of this project. Since then, the content of this report has been modified to take into consideration the effects of the covid19 pandemic.

The objective of this Carrying Capacity study is:

- To establish the current tourism development status with regards to a number of key environmental, social, cultural, and economic indicators
- To define recommendations that help stakeholders manage acceptable change of certain parameters to achieve sustainable tourism development on these small and vulnerable islands

Sustainable tourism is defined by the UNWTO as "tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities." Therefore, a *sustainable* tourism approach ensures industry gains while also:

- Safeguarding local cultures, communities, peoples, and traditions;
- Elevating local economies; and
- Minimizing impacts on natural resources, ecologically sensitive areas, wildlife, and the environment.

These three core components are often referred to as the "three Ps" of sustainability: people, profit, and planet, as depicted below.

- People – Socio-cultural impacts: impacts on *people*, such as ways of life, traditions, fair treatment of employees, worker and community health, safety, and quality of life.
- Profit – Economic impacts: impacts on local and global economies.
- Planet - Environmental impacts: impacts on the environment resulting from travellers and business operations, both positive and negative.

The outputs of this study are the:

- Identification of tourism Carrying Capacity Priority Issues
- Establish a carrying capacity baseline
- Recommendations on the tourism development model

The **desired outcome** is to define desired conditions and thresholds for tourism growth and associated impacts from tourism that balances:

Through stakeholder consultation and data analysis, the carrying capacity study determines the right mix and growth strategy to achieve this balance.

The resulting output from this study provides Seychelles with practical tools that complement Seychelle's increased efforts to develop a sustainable destination.

This document is composed of the following five chapters:

- Chapter 1 Current snapshot of existing conditions related to tourism's impact including economy, arrivals, productive infrastructure, socio-economic conditions, land use, and public service utilities.

- Chapter 2 provides an analysis of visitor perceptions as it relates to crowding and how that might influence their decision to return.

- Chapters 3 introduces the Carrying Capacity Indicator Framework: a template that sets the baseline for Seychelles to monitor and manage its carrying capacity thresholds. It is the foundation of a more thorough monitoring and evaluation model.

- Chapter 4 Growth Scenarios: This chapter discusses potential growth scenarios, the advantages and disadvantages of each scenario, and concludes with a strategic direction that supports the high value, low impact tourism model Seychelles is striving for.

- Chapter 5 presents the Roadmap towards a "high-value, low-impact" destination model by providing grounded Recommendations with a strategic direction and implementation implications.

Background and Context of the Study

Introduction to the Situation

The 115 islands of the Seychelles form an island archipelago in the Indian Ocean that boast world renowned natural heritage, pristine beaches, and clear tropical waters that attracted 384,204 international tourists in 2019. This figure has more than doubled in the last 20 years and tourism now contributes total 67%[1] of the country's gross domestic product (GDP) and employs two thirds of the workforce (direct and indirect). Cruise tourism to the islands is growing as well, expanding from 15,634 arrivals in 2010 to 43,978 in 2019.

In a country of only 97,625 people, these dynamics present particular visitor management and impact mitigation challenges for the country's fragile coastal ecosystems and local communities. As climate change and extreme weather events also increasingly impact the region, Seychelles' leadership has recognized the need for continued vigilance and monitoring of visitor impacts and proactive destination management. These principles are enshrined in the country's National Tourism Master Plan, which seeks to generate economic growth while ensuring environmental protection, a quality visitor experience and the well-being of local residents.

Consequently, the Seychelles has managed to maintain its reputation as a non-mass tourism destination. Infrastructure development has been closely regulated. Following four carrying capacity studies undertaken on Mahe, the inner islands, and La Digue between 2013 and 2016, the government introduced a five-year moratorium on the construction of hotels with more than 24

[1] WTTC, 2019

rooms in order to curb new developments and reduce environmental impacts. (See appendix I for a summary and analysis of key predecessor's tourism planning and policy tools)

Carrying capacity studies as a tool for Island Destinations

Carrying capacity studies have been used as a tool for small islands since unplanned and rapid growth of tourism has led to the transformation of landscapes, coastlines, economies and social structures. This has increased the urgency to find more alternative solutions and to develop carrying capacity studies to measure and control tourism impacts on destinations. As noted in previous carrying capacity studies conducted in Seychelles since 2013, the island nation has been at a saturation point for many years and continuous monitoring of density and capacity is a pro-active management agenda.

Some examples of destinations that have conducted studies related to sustainable tourism planning and tourism carrying capacity are presented below.

The island of Tobago undertook a tourism carrying capacity assessment in 2007 because, despite its relatively early stages of tourism development, there were concerns about impacts of the tourism activity on their environment, economy and culture. The study highlighted critical issues in these areas, specifically with regards to water, solid waste, coastal water and public safety, and it set recommendations to address the issues.

Lanzarote, in the Canary Islands (Spain) conducted a carrying capacity study in 2012, as a requirement for planning any intervention in a touristic designated land. The study concluded that Lanzarote currently has a 'limited carrying capacity'. However, the report analyses the current conditions and does not include specific corrective actions.

St. Maarten conducted a Carrying Capacity Study in 2004, which concluded that "while environmentally the carrying capacity of the island has not been exceeded, it is close to its limits at certain times and locations. However, the impacts of tourism on society give cause for concern. Furthermore, the economic value of tourism has yet to be fully optimised for the resident population". Some areas of concern included balance between stay-over, cruise and yachting visitors; rapid population growth, economic leakages; and overdevelopment of scarce land, coastal and other natural resources. The Study provided several recommendations to re-address the island's situation and foster future sustainable development, including: spatial planning and zoning, capacity building, tourism awareness, environmental impact monitoring, establishing a protected area, among others.

Other islands or coastal destinations within nations have also conducted tourism carrying capacity assessments. Some examples are the beaches in the South Andaman Island in India (Sridhar et.al, 2016); Chongming Island in China (Liu et.al., 2009) or the Islands of Kalymnos, Kos And Rhodes in Greece (Tselentis, et.al., 2006). These examples also highlighted similar concerns to the ones experienced in Seychelles, related to congestion, public services, and growth in hotel beds.

Current trends in unbalanced tourism growth around the world

Several destinations globally perceive the negative effects of unbalanced tourism growth, such as

resident discontent, damage to the environment and to heritage assets. Some examples of these impacts are:

- **Barcelona** (Spain): A huge influx of visitors to the Catalan capital (8.8 million overnight tourists 2017) is causing discontentment of locals, leading to a growing community-driven counter-movement, referred to as tourism-phobia, with several anti-tourism marches. “Of around 16,000 holiday rentals in the city, 7,000 are believed to be unlicensed. This is over 40 percent of Barcelona’s tourist apartments considered illegal. This growth is leading to a shortage of housing for those who live and work here and driving up rents, which increased by 16.5 percent in 2016” (Coldwell, 2017; López Díaz, 2017). This trend led to a one-year moratorium on new accommodation licenses in 2015.
- **Boracay** (The Philippines): A popular tourist destination receiving 2 million visitors a year (2017). This island's famous beaches and clear blue waters have suffered extensive environmental damage from mounting sewage problems, transforming its once pristine beaches into a ‘cesspool’. In response the government took drastic measures and declared a six-month closure of the popular tourist destination starting April 26, 2018. The government activated a “Calamity Fund” to provide financial support to those affected by the closure. “In a survey of the island's sewerage facilities, the clear majority -- 716 of 834 -- residential and business properties were found to have no discharge permit and were presumed to be draining waste water directly into the sea. In February, over 50 hotels and restaurants were given notices after failing to comply with the country's water treatment laws” (McKirdy, 2018).
- **Dubrovnik** (Croatia): The heritage city is taking drastic measures to tackle tourism overcrowding within the UNESCO World Heritage Site, including cancelling and reducing cruise ship arrivals. “Last year in August, in one day alone, 10,388 visitors bought tickets to walk Dubrovnik’s ramparts, a record number expected to be topped this summer, while the number of permanent residents has slipped from 5,000 in 1991 to 1,157” (Morris, 2017).
- **Venice** (Italy): Receiving more than 20 million annual visitors with a population of just 55,000 residents. In July 2017, 2,000 locals marched through the city to protest against tourism, arguing mass tourism has “eroded their quality of life, is damaging the environment and driving residents away.” Venetians voted to ban and divert giant cruise ships away from the historic centre. “Almost 99% of the 18,000 Venetians who voted in an unofficial referendum in June 2017 supported the ban.” Recently, for May Day 2018 weekend, Venice decided to establish a system to segregate locals from tourists by redirecting tourist flows from more popular streets to back streets. Allowing only residents and regular visitors who have Venezia Cards to access those streets. (Coldwell, 2017; Giuffrida, 2017; Squirres, 2018).

These examples show what can happen if unchecked growth takes place in a tourist destination. Establishing appropriate sustainable tourism planning and management measures is crucial for Seychelles before surpassing the tipping point that will require drastic measures to mitigate.

Methodological Approach

Tourism carrying capacity in destinations has been discussed for several decades and its understanding has been evolving. The concept first appeared related to ecological issues and the availability of resources in natural environments in the eighties. The World Tourism Organization (UNWTO) defined tourism carrying capacity as “the maximum number of people that may visit a

tourist destination at the same time, without causing destruction of the physical, economic and socio-cultural environment and an unacceptable decrease in the quality of the visitors' satisfaction" (WTO, 1981).

Given that any tourism activity impacts a destination, there was later a shift in the understanding of the concept, including socio-cultural parameters as to how much impact is acceptable in relation to the conditions of an area. Developed by the US National Forest Service in 1985, the Limits of Acceptable Change (LAC) framework established acceptable and appropriate environmental and social conditions in recreation settings to improve wild land recreation management. It defines nine clear steps to planning, including the identification of concerns and issues, the selection of indicators and specification of standards for those resource and social indicators, and the identification of alternative opportunities and the management and monitoring of those options. In summary, it guides the planning process towards the implementation of actions that ensure acceptable conditions.

Carrying capacity has been addressed and included in the process of integrated planning and management to ensure sustainable tourism at various destinations and since 1994 it has been part of a UNEP/MAP/PAP-Priority Actions Programme in the Mediterranean, which resulted in the publication of the 'Guidelines for carrying capacity assessment for tourism in Mediterranean coastal areas. These guidelines present the parameters to be assessed (physical-ecological, infrastructural, socio-demographic, and political-economic parameters) and the phases to be followed, highlighting that the value of carrying capacity is assessed in the light of a choice of tourism development scenarios.

It is also widely understood in literature that there is not a single solution to solve destination issues, impacts and the perception of crowding, as it differs from ecological limits, to visitors or residents, and the specific sites. This has been particularly seen with the current 'over tourism' trend affecting several natural and cultural attractions. A fundamental component of a carrying capacity approach is managing visitor use at specific sites, as well as managing tourism flows across the destination. For this, the Visitor Use Management Framework[2] provides tools to develop long-term strategies for providing access to natural and cultural tourism attractions, maintaining desired resource conditions of sites, achieving satisfactory visitor experiences and managing visitor use.

Hence, the methodology that has been used to conduct this study incorporated the three following approaches:

- *Limits of Acceptable Change Planning System*: to understand the desired conditions and the indicators to be monitored and thresholds not to exceed
- *Guidelines for carrying capacity assessment for tourism in Mediterranean coastal areas, developed by UNEP/MAP/PAP-Priority Actions Programme*: to identify the parameters to be assessed and the tourism development options or scenarios to be analysed.

[2] Interagency Visitor Use Management Council (2016) *Visitor Use Management Framework*. https://visitorusemanagement.nps.gov/Content/documents/lowres_VUM%20Framework_Edition%201_IVUMC.pdf

- *Visitor Use Management Framework*: to assess visitor use at each priority site and make recommendations on its management and tourism flows, to enhance overall visitor experience.

Therefore, this methodology differs from the previously conducted carrying capacity studies in Seychelles, as it takes into consideration scientific research methodologies to derive practical implementable solutions. Our approach seeks to incorporate stakeholder concerns as well as to actively engage them in the solutions, obtaining buy-in from the start of the study and therefore guaranteeing follow-up and implementation.

The following steps were taken to complete the study and to meet the needs of the Seychelles Depart of Tourism effectively manage its Tourism Carrying Capacity constraints and impacts:

Chapter 1: Socio-Economic and Physical-Environmental Carrying Capacity Analysis

Mahé is the largest (157.3 km2) and the most populated island in Seychelles with a total of 85,462 (NBS, 2019) habitants, accommodating 87.5% of the country's total population (97,625). Surrounded by Mahe's 111.3km of coastline, the Morne Seychellois holds the highest peak in Seychelles (905m), home to a vast amount of indigenous flora and fauna. The mountainous granitic island, surrounded by several other smaller islands and islets, is the most developed in the country and is home to both the international airport and Port Victoria, the largest port in Seychelles.

Praslin is the second largest island (38.5km2) of the Seychelles islands and holds the second largest population in the country, with a total of 8,622 habitants (NBS, 2019), composing 8.8% of Seychelles' total population. The three main settlements are the Baie St Anne, Grand Anse and Anse Volbert.

Although not as mountainous as Mahe, its highest peak, Mont Azore, reaches 375m. With a landmass 12km long and 4.6km wide, the island however similarly has many granite outcrops, lush diverse vegetation and red earth. Amongst its tracts of tropical forests lies the Vallee de Mai nature reserve, one of Seychelles' World Heritage Sites, known for its large numbers of coco de mer, endemic palms and rare black parrots.

The tourism industry in Seychelles has grown aggressively in a very short period of time. Tourism has helped elevate quality of life of residents by providing higher income generating opportunities and a boost in the economy. However, the increased pressure on infrastructure, land, environment and utilities risks reducing the quality of life of residents by

competing for the same resources. By design the tourism model focus on sun and beach and little product diversification has taken place resulting in low expenditure per visitor and low repeat rate.

The island nation is also exposed to economic, environmental and health vulnerabilities, such as; the over dependency on tourism as the main economic activity, labour market shortages, the risk of climate change impacts leading to natural disasters and the over reliance on food imports, creating food security concerns.

The current tourism product life cycle is reaching a tipping point of saturation and may soon decline. In order to compete in the international market Seychelles needs to invest in infrastructure improvements, product innovation, protection of its key assets, capacity increase of basic services and skills development.

This report focuses on the islands of Mahe and Praslin, building on past Carrying Capacity Studies in 2014 for the Districts of Beau Vallon, Bel Ombre and Glacis in Northern Mahe, as well as the overall Carrying Capacity Study for the Inner Islands of the Seychelles in 2016. The 2014 study for Northern Mahe found that the area was close to reaching its maximum carrying capacity at the time, while comparing Beau Vallon Beach density to those observed in mass tourism destinations in the Mediterranean. Despite the favourable social environment for tourism in Northern Mahé, the report recommended limitations concerning type of developments and development density aimed to discourage additional large developments. The 2016 Carrying Capacity study called to limit future large hotel developments and keep the moratorium on new large developments in place for all Inner Islands, at least until 2020. It noted that there was still demand for more small boutique hotels/resorts with a maximum of 15 rooms. It suggested to limit growth rates of beds in self-catering establishments by setting a policy of restricting new self-catering developments to 5 rooms per establishment. Similar to the 2014 Northern Mahe study, this report encouraged promoting investments in catering facilities (e.g., Restaurants and Bars) suggesting tourism infrastructure still holds potential for growth. Additionally, both reports urged for the continued investment in upgrading public infrastructure (electricity, water supply, centralized sewage and waste facilities).

With moratoriums on the construction of large hotels in place, bed supply of small establishments continued to develop rapidly on the islands of Mahe and Praslin since the last 2016 study. With increasing visitor arrivals, pressure on utilities, safety concerns and the lack of product diversification have become very apparent on both islands. Mahe has been subject to issues related to an increase in traffic and traffic offenses. The rapid growth in cruise ship arrivals have been putting an increased burden on Port Victoria, as well as Baie Ste Anne jetty which has led to concerns by residents and tourism stakeholders about the limited positive impacts of cruise ships on local island communities. This chapter will explore in depth the situation on both islands in terms of key areas of concern that were identified and highlights the importance of recognizing the crossroad both Mahe and Praslin are at, to take the faith of their tourism offer in hand to ensure a sustainable long-term future of their natural, cultural and human assets.

Economy

Like in most small island economies, the tourism sector in Seychelles contributes significantly to the domestic economy. This contribution is particularly important in terms of generation of foreign-exchange earnings, stimulation of economic activity, generation of income through linkages with other sectors, employment creation, government revenue, and the preservation of natural and cultural heritage. (Tourism Master Plan, 2018).

Seychelles has a comparatively high level of GDP per capita. At USD 14 385 (in constant 2010 USD) in 2018, Seychelles' GDP per capita was above the levels in comparable small island states in the Indian Ocean (Mauritius and Maldives) and the Caribbean (Dominican Republic and Belize). In 2016, Seychelles also had the highest GDP per capita in Africa. As a result, Seychelles reached "high-income" status according to World Bank standards in 2015, becoming the second African country to be included in that category. Nevertheless, Seychelles' GDP per capita remains low in comparison to more advanced economies and GDP per capita alone is an insufficient indicator of a country's economic health, particularly for an island state with a small population and a high vulnerability to external shocks (OECD Tax Policy Review 2020).

Real GDP growth was estimated at 4.1% in 2018, against 4.3% in 2017 (IMF, 2019[2]). Growth in recent years has been driven primarily by the service sector – reflecting in particular greater earnings from tourism – and by increased output from the fishing industry (IMF, 2019). In comparison to other small island states, GDP growth in Seychelles has been close to the average in recent years and prior to the impact of covid19 pandemic it was expected to continue growing over the next few years (OECD Tax Policy Review, 2020).

Tourism's Contribution to GDP

In Seychelles, tourism is considered the first pillar of the economy, followed by fisheries and financial services. According to NBS sources, the direct contribution of tourism to gross domestic product (GDP), at current prices, increased steadily from 16.3% in 2004 to 25.2% in 2017. At constant price it grew from 18.2% to 23.6% in the same time period. The World Tourism and Travel Council (WTTC) estimates that the direct contribution of tourism to GDP in Seychelles was 28.6% in 2018 and forecasted that it would rise by 2.9% per annum from 2018 to 2028. The WTTC also estimates tourism's total contribution to GDP in Seychelles was 67.1% in 2018.

The tourism sector is also an important source of revenue to the Government of Seychelles and in 2017 contributed 32% of total domestic taxes. In 2020, the OECD pointed out that the tourism sector contributes only marginally to the collection of business tax revenues in comparison to its role in the economy. In 2017, tourism accounted for only 8% of business tax revenues while it accounted for 32.9% of total value added in the country and for 47% of total VAT collected. (OECD Tax Policy Review, 2020).

Tourism also generates high quality, well paid jobs. According to the National Bureau of Statistics, average direct employment in tourism-related industries (i.e., Private + Government and Parastatal) amounted to 12,780 persons in the third quarter of 2019, which represented 23.6 per cent of formal employment at that time. The World Travel & Tourism Council estimates that 66 per cent of

Seychellois workers depend on the sector for their employment either directly or indirectly in 2017. Due to the small population size, low unemployment rates (3.5%) and high demand for labour associated with tourism, Seychelles is in a position whereby the ratio of expatriate employees to Seychellois workforce is 1 to 5 in the tourism sector.

The economic contribution of tourism GDP is only available as a national indicator, and therefore not currently desegregated by Island. However, it can be inferred, based on the fact that in Mahe there are more diversified jobs, such as government and trade, that the economy is more diversified and less reliant on tourism. And in Praslin, as its heavily dominated by hotel activity, can be inferred that its economy is a lot more reliant on tourism. Even though having the data desegregated will validate these assumptions and allow for setting economic targets individually per island it does not affect the overall results of this study, as targets can be set at a national level.

FDI Growth

WTTC estimated that in 2017, the tourism sector accounted for 29 per cent of total capital investment. Structurally, Seychelles is a net importing country. Its tourism industry requires significant levels of imports, while its domestic production and export capacity are constrained by land scarcity and high input costs. Seychelles' current account deficit is deemed high, at 17.6% of GDP in 2018 (African Development Bank, 2019) and have largely been financed by foreign direct investment (FDI) and currently, a large part of FDI goes to tourism. FDI flows as a share of GDP have been high in comparison to peer countries Mauritius and Maldives.

Tourism Investment vs Total FDI (2015-2019)

	Tourism Investment (million USD)[1]	**Total FDI (million USD)[2]**
2015		197.26
2016		144.81
2017	171.1	165.36
2018	247.0	140.91
2019	229.2	202.22

[1] FDI and non-FDI tourism projects; [2] Total Foreign direct investment;
Source: Seychelles Investment Bureau, 2020

According to the Seychelles Investment bureau yearly total FDI has oscillated between 140million and 200 million between 2015 and 2019, reaching USD 202 million in 2019. While total tourism investment reached USD 229 million (both with FDI and non-FDI sources). Historically Seychelles government provided incentives to attract foreign investments in the tourism industry leading to many large international hotel investments, making up 35% of the room stock. Recent fiscal policies have reviewed these incentives with the aim to stimulate more national investment and reduce economic leakages in the sector. The Value Chain Analysis from 2010 showed that 69% of tourist expenses in Seychelles are for accommodation, of which 48% are going towards large

establishments who represent 31% of total bed stock and predominately of foreign or mixed investment (McEwen & Bennett, 2010). This is evident in Praslin and especially in Mahe where both have several large-scale brand name hotel complexes, such as Constance Ephelia on Mahe and Constance Lemuria on Praslin, as well as Four Seasons, Kempinski, Banyan Tree on Mahe.

Comparative performance

According to the WTTC (2019) Seychelles is the 20th fastest growing tourism economy in the world, based on the high percentage of T&T contribution to GDP, behind the other island states of St. Kitts and Nevis which ranked third, Sao Tomé and Principe 14 and St. Vincent and the Grenadines which ranked 18. Seychelles ranks as the 5th most directly dependent tourism economy in the world, right after Maldives, BVI, Macao and Aruba (WTTC, 2018). When it comes to visitor exports, the percentage in Seychelles lies at 40.2%, largely exceeding the global average of around 6.5% of total exports (WTTC, 2019).[3]

Though tourism has enabled a rapid economic prosperity, this excessive dependence on tourism also exposes the country to economic risks. Seychelles is vulnerable to the economic uncertainties in key visitor source markets such as Germany and France. Because of its high dependence on tourism, any shocks that have significant negative consequences on the travel space such as the current COVID 19 pandemic (see text box below), will have dire consequences for the country's economy, as well as specifically on Mahe and Praslin as they both rely on the tourism industry.

Effect of COVID 19 pandemic on the islands of Mahe and Praslin

Seychelles closed its borders to European visitors as the COVID 19 pandemic's epicentre moved to Europe from China, which has led to a drastic drop in visitor arrivals in the first quarter of 2020.

The international airport shut on March 14th 2020 and Seychelles imposed a lock-down from April 8th-May 4th 2020 shutting non-essential services and banning all movement aside from grocery shopping as well as introducing a night-time curfew. Ferries to Praslin were limited and travel for local residents was only allowed for essential services purposes. Even after the lift of the lockdown, ferries continue to operate on a reduced schedule.

Due to the halt of international tourism, certain local tourism businesses on Mahe and Praslin have developed stay-cation offers and special resident prices to foster domestic travel and local consumption with reduced prices for overnights and services.

A survey of 72 hotel establishments, representing 866 rooms in total, indicated that between February 25 and March 23, there have been 2,367 booking cancellations and 271 booking postponements, amounting to an estimated loss of US$3.8M. The establishments reported an average occupancy of 19% at the time of the survey. The Minister of Finance declared

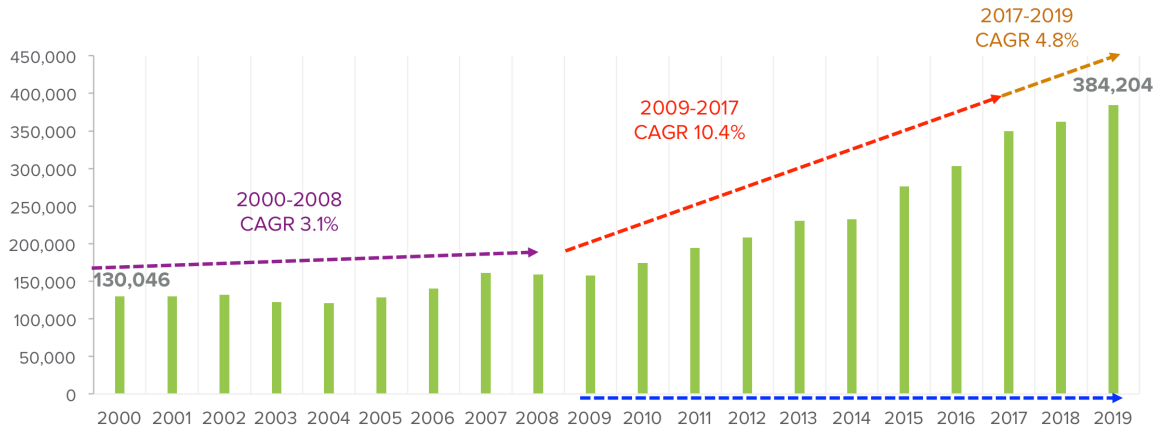
[3] https://www.wttc.org

in the National Assembly that they expect a contraction by 50% in the tourism industry versus a 5% growth forecast for 2020. The Finance Minister also forecast a 64% decrease in visitor arrivals for this year. The effect on the economy is expected to be drastic and a worst-case scenario it is expected that there will be a negative GDP growth of -10.8% compared to a 3.5% projected growth in 2020. (Seychelles News Agency, 24 March 2020).

Arrivals

International visitor arrivals by air to Seychelles have more than doubled over the last 20 years from just over 130,000 in 2000 to just under 400,000 in 2019. After unusually high growth rates between 2009 to 2017 of 10.4% CAGR, growth rates decreased to a steadier rate of 4.8% CAGR from 2010-2019. By contrast, The Seychelles Strategic Land Use Plan 2015 – 2040 had forecasted a very modest growth that would deliver 400,000 visitors by 2040, a number that was almost reached in 2019.

Visitor Arrivals by Air (2000-2019)



- 10.1 nights average length of stay, 2019
- 10% increase in average length of stay from 2017

2009-2019
Increased by 2.4

Source: MOT Tourism Master Plan, Tourism Department

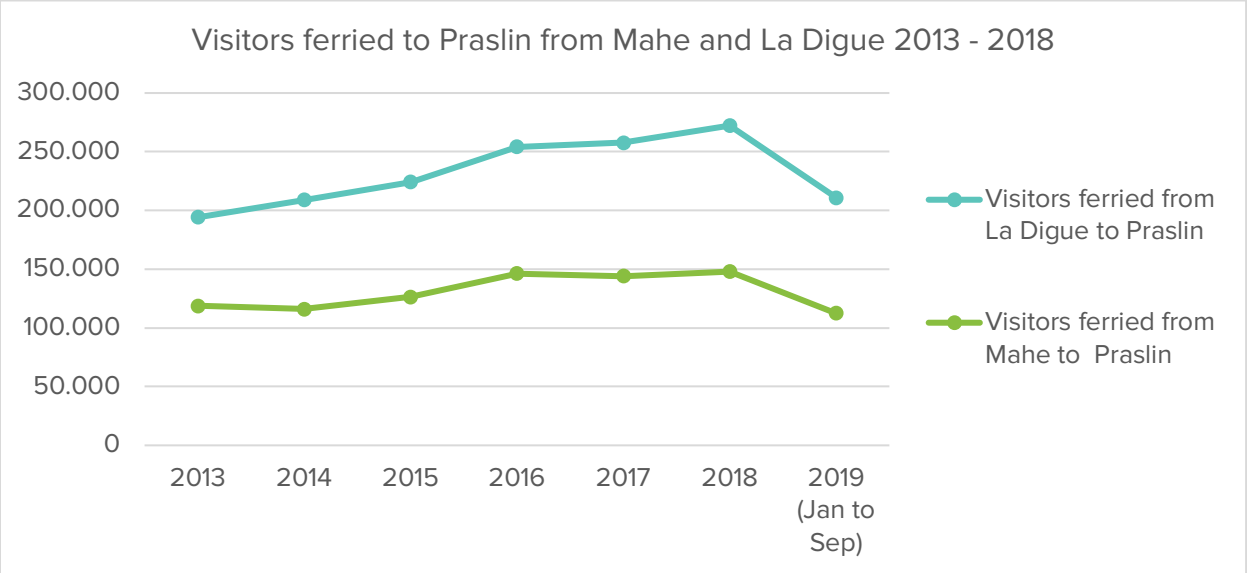
The following table shows the distribution of international visitors by island. In 2019, 63% of international visitors stayed on Mahe (240,924 visitors), 19% stayed on Praslin (71,310 visitors), 5% stayed on La Digue, 5% stayed on other islands and 9% stayed on vessels. Apart from 2016, this has been a steady trend for Mahe. Similar applies for Praslin, which has received 19% of international overnight visitors from 2015-2019.

Visitors' stay by location, 2015-2019

	2015		2016		2017		2018		2019	
	Nos	**%**	**Nos**	**%**	**Nos**	**%**	**Nos**	**%**	**Nos**	**%**
Mahe	176,320	64	198,015	15	230,634	66	236,925	65	240,924	63
Praslin	53,582	19	57,909	19	66,480	19	67,406	19	71,310	19
La Digue	13,347	5	14,498	5	16,879	5	17,260	5	17,863	5
Other islands	21,933	8	21,510	7	22,211	6	19,144	5	19,250	5
On vessel	11,051	4	11,245	4	13,657	4	21,109	6	34,852	9
Total	**276,233**		**303,177**		**349,861**		**361,844**		**384,852**	

Source: National Bureau of Statistics

Seychelles remains highly dependent on Europeans as the main tourism market, even though this dependence is gradually being eroded. In 2017,62 per cent of total visitor arrivals came from Europe, down from 80 per cent in 2000 and 2005.



Growth rates of international visitor arrivals are reflected in terms of the number of international visitors ferried from Mahe to Praslin, with an increase of 24.6% from 2013 to 2018 from 118,671 to 147,930 passengers. As for visitors ferried from La Digue a growth of 64% was accounted for, is to say 75,483 visitors ferried in 2013, compared to 124,316 in 2018. Comparing the visitors ferried with the official number of overnight visitors on Praslin, these numbers indicate that there is also a considerable number of day trippers and excursionists between the islands.

From 2001 to 2019 visitor's average length of stay have oscillated between 9.7 and 10.4, stabilizing at 9.9 in 2019. The general decrease in visitors' length of stay can be partly explained by the

diversification of the tourism market away from the European market, who tend to travel for longer periods of time.

Tourism Earnings

Tourism revenue is an important source of foreign currency for the Government of Seychelles. Gross receipts from international tourism grew from US$343 million in 2010 to US$430 million in 2013, before falling to US$398 million and US$393 in 2014 and 2015 respectively. Gross total earnings recovered from 2016 to 2018 to reach US$483 million in 2017 and US$564 million in 2018.

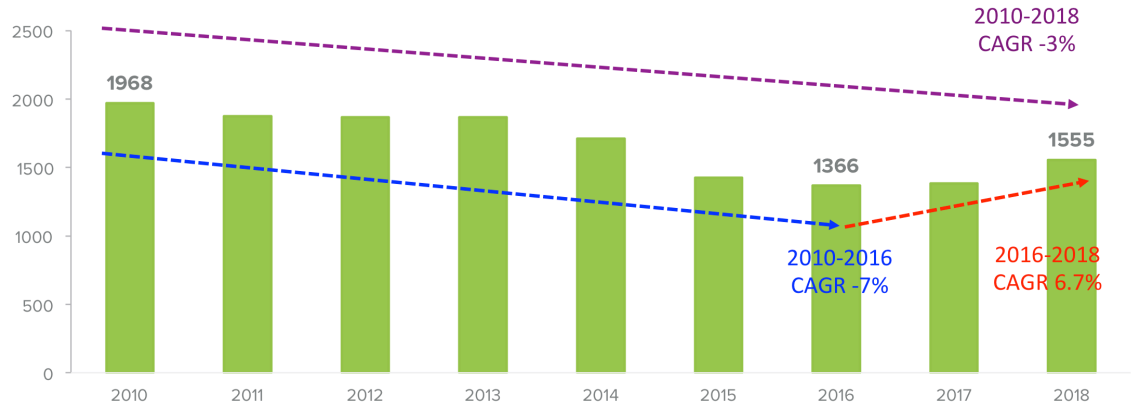
Tourism earnings by (million USD)

	2010	2011	2012	2013	2014	2015	2016	2017	2018[1]	2019
Total Tourism Earnings million (USD)	343	364	388	430	398	393	414	483.33	559.2	589.7

Source: Central Bank of Seychelles

However, Tourism earnings per visitor have decreased significantly between 2010 and 2016 from an average of 1,968 USD per person to 1,366 USD per person. In recent years there has been a slight increase of 6.7% to reach 1,555 USD in 2018. The decrease in average per visitor spending can be related to different factors. Firstly, the steep drop that started in 2010 could be linked to the "*Affordable Seychelles*" tourism marketing campaign started at that time. This was also associated with fast tracking the approval process for small tourism establishments and eventually allowing conversion of residential properties for tourism use or "Change of Use". This led to a boom in small, self-catering tourism establishments which changed the product offering profile. This may also have had an effect on the visitor profile as it is believed that on average visitors booking self-catering and small guesthouses generally tend to spend less.

Tourism Earnings Per Visitor USD$

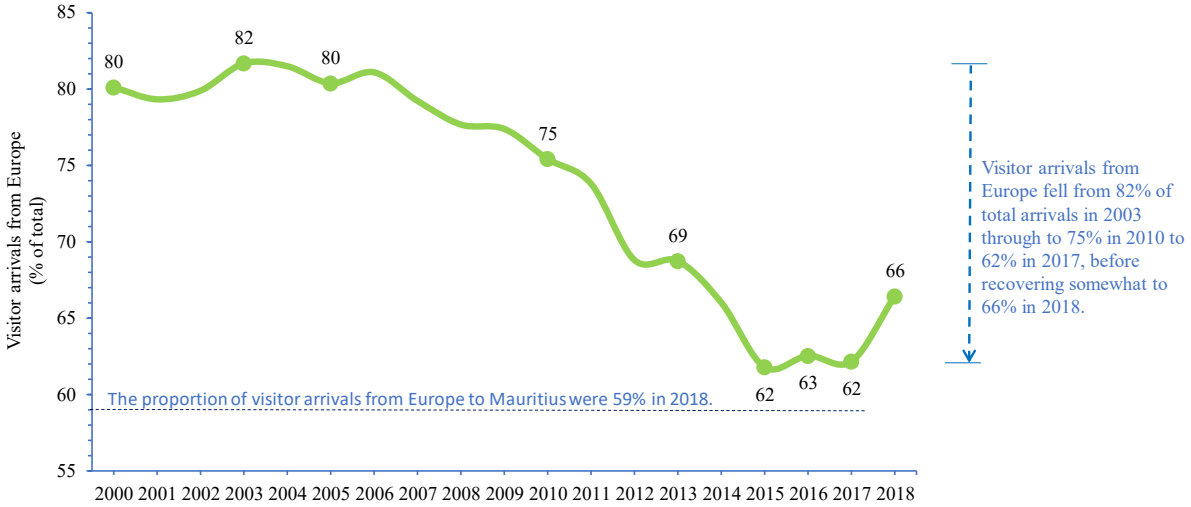


- Benchmark: Mauritius $1233 ; Maldives $2133 (2016)

Source: MOT Tourism Master Plan, 2018

Secondly, it is important to note that the sharp drop in tourism earnings per visitor between 2010 and 2015 coincided with the equally sharp drop in the share of European visitors. Then, the uptick in the share of European visitors in 2017 and 2018 coincides with a recovery in per visitor spending. This could be a combination of purchasing power parity of visitors using the Euro and Pound and length of stay. The average length of stay of visitors from Europe is higher than for other regions, they tend to average from 10-14 days vs 4-10 days from other regions (NBS, visitor survey 2017).

Share of visitor arrivals from Europe, 2000-2018 (% of total)

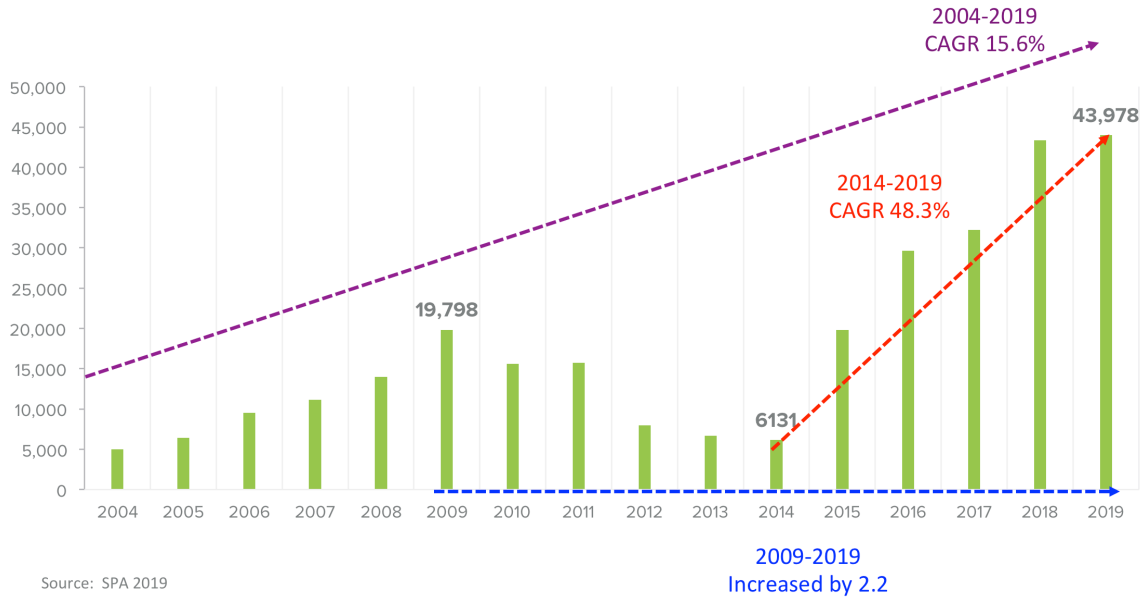


Sources: Analysis by Valsen Consulting based on data from the National Bureau of Statistics and Mauritius Statistics.

Cruise arrivals

Cruise tourism is one of three modes of tourism in Seychelles (beside land-based and yacht-based tourism). After a stagnation period from 2009-2014 due to piracy in the region, cruise ship visits have recently expanded to 46 cruise ship arrivals in the 2017/2018 cruise year and 39 in 2018/2019 cruise year, at par with the record year of 2009 which had listed 39 numbers of port calls. In 2018, the Seychelles Ports Authority (SPA) recorded 43,375 cruise passengers' arrivals (excluding crew members) and 43,978 in 2019, indicating that Seychelles was receiving larger vessels.

Cruise Passenger Arrivals (2010-2019)



Source: SPA 2019

Cruise arrivals Mahe and Praslin

Season	Nr. of cruise vessels Mahe (total inner islands)	Nr. of cruise vessels Praslin
2017/2018	46	13
2018/2019	39	12

Port Victoria is the main port of call for cruise ships arriving to Seychelles. Certain vessels also dock outside of Praslin and tender their visitors in for day visits of Praslin, or visits to La Digue (for which the services of the Cat Rose are used). Cruise passenger numbers are accounted for at national level, however it is estimated that approximately 13,524 cruise passengers visited Praslin in 2019.

Both the island of Praslin as well as Mahe are affected by the increase in cruise visitors. Despite a small number of businesses benefitting from the arrival of cruise passengers (such as souvenir shops, taxi drivers tour guides, and DMCs based on Mahe), for the majority of local tourism stakeholders there is no clear evidence of how the local communities are benefitting from the arrivals of cruise ships. The length of stay on the islands is very short (mainly half a day for Praslin

and one full day for Mahe); the excursions are prearranged by DMCs; uncoordinated arrivals lead to road congestion and in certain key areas of interest, such as Victoria City on Mahe and Anse Lazio on Praslin; and there are concerns of unfair distribution of income. Due to its size, Mahe feels less pressure as visitors are more dispersed throughout the island. However due to the limited time, cruise visitors' itineraries tend to focus on the Botanical Gardens, Victoria and Mission Lodge, as well as panoramic drives along the island to give visitors an overview from North to South. Some itineraries include boat rides to Cap Ternay Marine Park or Moyenne Island (Costa Mediterranean, Oceania). Some cruise visitors opt to explore the island by themselves (with hired cars or drivers).

The issue of unfair distribution and congestion become more apparent for Praslin. There have been complaints about the high volume of cruise passengers adding additional stress on the already over-stretched jetty facilities and on local utilities, such as waste management. Pre-arranged itineraries focus mainly on Vallée de Mai (reflected in the increase in visitor numbers, see below in Visitation of Key Sites and Congestion) as well as Côte d'Or and Anse Lazio (Regent Seven Seas Cruises, Oceania). The short duration of stay (half a day) limits the positive economic impacts the visitors can have on the local community of Praslin.

Cruise tourism is a seasonal activity from October to April but the SPA management indicates that this may change in 10-15 years' time and with improved maritime technology, it might become a year-round activity even in inclement weather conditions.

Presently, marketing for cruise ships is done at a regional level by the Association of Ports in the Indian Ocean (APOI) made up of Madagascar, Comoros, Reunion, Mauritius and Seychelles. Over the period 2005-2015, the overall cruise market in the Indian Ocean has grown by more than 60%. Before the COVID-19 outbreak, APOI estimated that if the Indian Ocean cruise market continued to grow at the same pace as the other more mature markets, growth could reach 8% per year between 2016 and 2026 and based on current figures, this would bring the number of cruise passengers to 100,000 in the maritime zone by 2030 (APOI http://apioi.net/project/1). The management of SPA indicates that Port Victoria will not be able to accommodate that many cruise passengers because of capacity issues elaborated below.

Currently Seychelles is a turn-around port where passengers embark and disembark and this is logistically intensive to handle as it requires the setting up of temporary infrastructure for screening passengers and their luggage, to carry out border control formalities and transport passengers from the port to the airport and vice-versa. Port Victoria does not have a dedicated cruise terminal and presently, the north part of the port is usually reserved for cruise ships. SPA management indicates that because of land scarcity and the seasonal nature of the activity, it is not deemed feasible to build a dedicated cruise terminal.

On Praslin, the smaller cruise ships (less than 500 rooms) can dock at the new passenger jetty on Eve Island, which will potentially further increase cruise arrivals to Praslin, as it will guarantee direct access for day excursions and possibly even longer stays.

As a covid19 risk mitigation measure the government of the Seychelles has placed a ban on cruise ships until 2022, see text box below. This pause has a direct implication on the tourism Carrying

Capacity of the islands, during this time the government can focus on defining a cruise tourism strategy, a visitor management plan and invest in the appropriate infrastructure to efficiently manage the cruise tourism market. Secondly, during the halt less crowding and pressure will be perceived at key tourism sites, enhancing the experience of the overnight market.

2 Year ban on cruise ships

On May 14th 2020 Seychelles Minister of Tourism Didier Dogley announced a ban on the entry to cruise ships to Seychelles, effective until 2022 in an effort to prevent and minimize the impact of another outbreak of COVID-19 in the country (Seychelles News Agency, May 14th 20204). The Ministry recognizes that this will impact the revenue streams of certain organizations and businesses such as boat charters, National Botanical Gardens and Seychelles Ports Authority.

Visitation to Key Sites & Congestion

Seychelles is characterized by a relatively steady year-round tourism activity with occasional small peaks, such as during Christmas period and the European summer holidays. However, Seychelles tourism product relies on a number of key sites of interest, which are increasingly under pressure from increasing numbers of tourists, especially when in combination with cruise visitor days (between October and April).

Visitor data from the key attraction on Praslin, Vallée de Mai, show that visitor numbers have increased steadily over the past nine years. Especially the numbers of cruise ship visitors, that nearly doubled, as well as walk-ins which also doubled, which is an indication that there is increasing numbers of FIT travellers. With an estimate 13,524 cruise visitors on Praslin in 2019, it shows that a large percentage of these visitors (63.6%) stop at Vallée de Mai, which emphasizes the concentration of visitation on certain key points of interest, possible related overcrowding and limited distribution of earnings locally.

Number of visitors to the Vallee de Mai, Praslin, 2010-2019

YEAR	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Residents	3090	2560	3275	2323	2478	3335	4385	4596	4510	4048
DMC's	21638	18243	25075	24447	27329	27893	30333	31896	28201	23815
Cruise ship visitors	4512	3484	1424	469	176	3658	5420	6262	8714	8598

[4] http://www.seychellesnewsagency.com/articles/12907/Seychelles%27+-year+ban+on+cruise+ships+understood+even+by+businesses+that+will+suffer+financially

Number of visitors to the Vallee de Mai, Praslin, 2010-2019										
YEAR	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Walk ins	39870	48410	46799	55609	56485	63275	65988	75051	76659	74137
Complimentary (STB) & special visit s	475	849	849	957	517	1044	1546	1254	1037	760
Total Visitors	**69585**	**73546**	**77422**	**83805**	**86985**	**99205**	**107672**	**119059**	**119121**	**111358**

Source: Seychelles Island Foundation

The international benchmark calculation of ratio of local residents to annual tourist arrivals ratio can indicate seasonal pressure on the environmental and social resources of host regions and populations (UN, 2007)[5]. Generally, the higher the figure, the more risk there is for tourism impacting the daily life of residents in terms of pressure on public spaces and public services, increasing cost of living, and other conflicts of interest. If the balance of tourists to resident ratio is not adequately managed it could lead to possible frustrations and discontent of locals as well as a degraded tourism experience.

In Seychelles the ratio is at 3.94 placing Seychelles under the top 20 countries in the world where tourists outnumber residents (NBS, 2019; TD, 2019; Telegraph.uk, 2017). As a benchmark, Maldives records 2.95 in 2017. The calculation per island shows, that Mahe is under the national average with 3 visitors per resident, due to the fact that the island holds the majority of Seychelles' population. Praslin however has an alarmingly high tourist to resident ratio, which is double the overall ratio, with eight visitors per Praslinois.

RATIO OF LOCAL RESIDENTS TO ANNUAL TOURISM ARRIVALS		MAHE	PRASLIN
Total population of Seychelles	97,625	86,000	8,700
Total Stay-over Arrivals	384,204	240,924	71,310
Tourists per resident	3.94	2.8	8.2
Tourists to Resident Ratio	4 : 1	3 : 1	8 : 1

[5] https://www.un.org/esa/sustdev/natlinfo/indicators/methodology_sheets/demographics/ratio_localresidents_tourists.pdf

Productive Infrastructure

Tourism is the principal contributor to the economy in Seychelles, yet at the same time that the destination experienced exponential growth in tourism arrivals, the transfer infrastructure capacity has not grown at the same speed, resulting in the airport, jetties and seaport operating at maximum capacity and deterioration.

Airport Capacity

Air access is an important determinant of tourism demand in Seychelles where air arrivals account for 99% of total visitor arrivals. Seychelles is served by one international airport on Mahe and two domestic airports on Mahe and Praslin. Seychelles airport infrastructure ranks 32nd globally and first in Sub-Saharan Africa as a result of having a high concentration of airport facilities (WEF, 2019). The Seychelles International Airport currently caters for approximately 1,200,000 passengers annually and in 2019, it handled 475,029 incoming and 533,686 outgoing passengers amounting to 1,008,715 passengers compared to 927,856 passengers in 2018 (SNA, 10 Feb 2020). This included 34,113 transiting passengers connecting with other carriers to their final destinations. This effectively means that existing terminals are operating at capacity, which constrain future growth in passenger numbers and in addition, there is pressure on aircraft parking space as a direct result of the increase in scheduled flights.

Before the COVID-19 pandemic, 14 airlines had scheduled services to Seychelles and in 2019, there were a total of 7,374 flights working out at an average of 71 incoming flights a week. Seychelles ranks among the countries with the highest number of aircraft departures per 100 people (214 per 100 residents). Despite a parallel increase in airline seat capacity and passenger arrivals, overall load factor dropped from 715 passengers for every 1, 000 available seats in 2014 to 660 in 2019. It is estimated that the break-even load factor for most airlines flying to Seychelles is in the range of 75-80%. Airlines bringing in more visitors to improve load factor will put more pressure on the infrastructure and ecosystem.

In 2019, the new domestic terminal was officially launched, a USD6 million investment. The domestic terminal processes more than 50 flights a day serviced by Air Seychelles to and from Praslin as well as charter planes to a number of resort islands. Additional work was being conducted at the international airport facility aimed at improving passenger experience for visitors coming to Seychelles[6].

Port facilities

Despite the potential benefits in terms of foreign currency earnings, government revenue and employment that cruise tourism can bring, the necessary facilities to support the growth of this subsector such as cruise passenger arrival facilities at the Victoria Port is not in place. The main port infrastructure, Port Victoria, dates to the colonial days and plans to renovate the jetty just started and are expected to finish in 2021. Presently, Port Victoria is very congested with a berth occupancy of 108% (the international benchmark is 75%) resulting in congestion and ships waiting

[6] https://voyagesafriq.com/2019/07/01/seychelles-international-airports-new-domestic-terminal-revealed/

long to be unloaded/loaded and cruise ships are unable to dock. Seychelles receives less cruise ships compared to the other Indian Ocean islands, given the constraint of the size of its port infrastructure.

Despite the rapid growth in cruise passenger arrivals, a cruise tourism strategy has yet to be developed, although the promotion of cruise tourism is an important aim of the Seychelles Ports Authority's long-term plan. In November of 2019, the APOI commissioned a pre-feasibility study to develop the cruise industry in the Indian ocean islands and allow the standardisation of cruise docking conditions in the ports[7]. The management of SPA reported that the preliminary results of this study recommend that Seychelles minimize port-of-calls of large cruise ships of more than 2500 passengers and replace them with targeted smaller, luxury cruise ships of between 200-500 passengers each, with higher spending power. Another proposal suggested that the Seychelles islands can constitute a full circuit on its own archipelago for an optimum cruise duration of seven days. Presently there are small cruise ships coming to the Seychelles, but they have been the exception rather than as a result of a focused strategy. The implications of focusing on smaller vessels would mean that Seychelles could cease to be a turn-around-port for large cruise ships and therefore eliminate the need to further develop port handling services. However, this new strategy would bring the need to develop facilities such as jetties and service facilities, on other islands to be able to welcome smaller cruise ships.

The Port Victoria Rehabilitation & Extension project is currently in its detailed design phase. SPA expects to be tendering out the construction works towards the end of 2020 and will also be launching the market sounding for the Terminal Operator contract shortly before and the tender for the Terminal Operator 2/3 months thereafter (SPA, personal communication, 2020).

The new passenger jetty at Eve Island on Praslin has been completed and has very recently been commissioned to SPA. The procedures are underway for the construction of the passenger terminal building (SPA, personal communication, 2020).

Roads

There are approximately 538 km of roads in Seychelles, the bulk of which is on Mahe. The primary road network connects the main economic centres and also the different districts of the country on the three main islands of Mahé, Praslin and La Digue. The road network translates to a density of 118 km/100km2 a slight increase on the 2010 road density of about 110km/100km2. Over 96% of the roads are surfaced.

The increase in Seychelles' fleet of motorized vehicles has not been accompanied by a timely maintenance, expansion or redesign of Seychelles' road network hence traffic congestions and shortage of parking space particularly in the city of Victoria. The Department of Transport has implemented a number of projects to address this challenge including the Victoria Traffic Management Plan aimed at limiting traffic congestion in and around the capital, consisting of a dual carriageway from Victoria to La Retraite (North Mahé) which serves new reclaimed areas and

[7] http://apioi.net/project/1

reduce congestion in the northern part of Victoria. The Providence to Victoria road has also been upgraded.

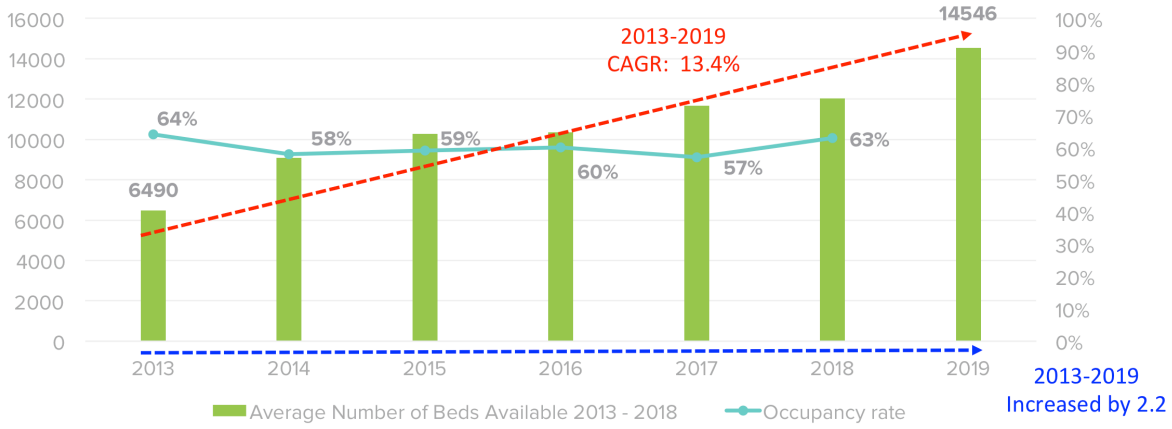
Between 2007 and 2018, vehicle registrations increased by 120% from 11,853 in 2007 to 26,015 in 2018, implying an annual growth averaging 9.1%. Road traffic accidents remain at about 2000 a year between 2015-208. Road traffic deaths a year average at 7 per 100,00 population between the years 2007-2018, ranking Seychelles #142 in the world according to the World Health Organization (WHO). (Road Safety Policy, 2018; WHO Global Status Report on road safety, 2018).

According to the US Department of Service Overseas Security Advisory Council qualifies road conditions in Seychelles as fair, with driving only practical on Praslin and Mahe.

Bed Stock

As of December 2019, there were 699 licensed tourist accommodation establishments in Seychelles. This was equivalent to 13,116 beds (or 6,558 rooms), and represents an increase of 102 per cent compared to the 6490 beds (or 3,245 rooms) registered in 2013; that is growing at an annual compound growth rate of 13.4% from 2013-2016. With the addition of 1430 beds from yachts live-a-boards, the aggregate bed capacity for the Seychelles was 14,546 tourism beds at the end of 2019.

Bed Supply Growth and Occupancy Rate (2013-2019)



Source: NBS Migration, Tourism 2018 Report (table 20)

The number of total registered room stock grew at a CAGR of 13.4% from 2013 and 2019 compared to the CAGR of 9% of tourism arrivals growth in the same time period, hotel stock grew at a faster rate. However, the occupancy rate has remained relatively stable at an average of 60% in the same time period. International benchmark shows that hotel occupancy ranges from 50% to 80% across the world. Research collected by the STAR report shows that 100% occupancy is not necessarily conduce to maximum profit margins, but that profit margins are optimized between occupancy rates and ADRs. While upscale and full-service hotels maximize profit at a higher rate, closer to 80%, small hotels and budget hotels maximize at a lower rate, closer to 70% (STAR, 2016).

The extent of the impact to occupancy rates caused by unregistered establishments securing business through platforms such as AirBnB and unregistered leasing of live aboard yachts is unknown, but deemed potentially significant.

Of the total 699 land-based establishments in the inner islands, only 21 hotels (0.14%) have adhered to the Seychelles Sustainable Tourism Label (SSTL). All of them are located on either Mahe or Praslin.

Room Density

With a population of almost 98 thousand in the Seychelles the total tourism bed density per 100 people is 5.97 the highest in the world (WEF TTCI, 2019). Likewise, the ratio is high per individual island with 40.5 tourism beds per 100 residents on Praslin followed by 10.1 on Mahe.

Tourism Bed Density, 2019

TOUIRSM BED DENSITY	MAHE	PRASLIN	LA DIGUE
Population	85,503	8,622	2,926
Number of Beds	8,786	3,494	1,350
Number of Beds per 100 Residents	10.3	40.5	46.1

Tourism Bed Density Benchmark, 2020

COUNTRY NAME	PERCENT CONTRIBUTION OF TOTAL TRAVEL & TOURISM GDP (%) *WTTC 2019*	PERCENT CONTRIBUTION OF TOTAL TRAVEL & TOURISM EMPLOYMENT (%) *WTTC 2019*	WEF TTCI HOTEL ROOMS PER 100 RESIDENTS *WEF 2019*
Seychelles	63.89	62.11	5.94
Iceland	36.37	38.23	4.26
Malta	27.15	28.49	4.04
Greece	20.13	25.30	3.85
Cyprus	23.96	23.87	3.53
Austria	14.74	16.21	3.30
Montenegro	25.10	19.74	2.69
Spain	14.94	15.05	1.97
Croatia	25.75	23.78	1.94
New Zealand	18.09	22.12	1.85

High levels of bed density can lead to saturation and can lead to over tourism and ultimately tourist and resident dissatisfaction reducing the competitiveness of the destination and quality of life of

residents. However, according MDPI sustainability researchers "estimating the optimal level of accommodation density is not an end of itself, but rather an instrument that can provide continuous, relevant information to those in charge of making decisions related to planning and managing mature tourist destinations" (MPDI, 2019). Therefore, it should be a data point tool that should be correlated to visitor and resident satisfaction as well the availability of productive infrastructure to service both resident and accommodations facilities alike.

Room Rates

According to the Tourism Department 2019 survey results, the average room rates are the lowest in Mahe and Praslin compared to the other island destinations of Seychelles, averaging USD176 and USD230 respectively[8]. The reason could be attributed to the sheer volume of low budget accommodation compared to higher value properties are larger in the Mahe and Praslin then the other islands.

Average room rates by island in 2019

Average Rack rates	SCR	USD	Minimum USD	Maximum USD
Inner islands	12371.3	884	144.714	1745.43
La Digue	4249.57	304	60.0714	8346.5
Mahe	2,469	176	49.2857	1851.57
Praslin	3,222	230	70	1884.14
Outer islands	18,031	1288	1287.93	1287.93
Average overall	3077.88	220	49	8347

Total no. of establishments = 695; No. of establishments surveyed = 404;
Source: Tourism Department, October 2019

Hotel managers described a 'race to the bottom', in which a combination of lower spending visitors and the rise of heavily discounted accommodation, especially from larger establishments, puts downward pressure on prices in order to fill rooms. This, along with ever increasing costs, puts pressure on profits, limiting the capital available for reinvestment and leading to poorer quality stock, which reduces competitiveness of the Seychelles offer and leads to downgrading by outbound tour operators, who are making comparisons across destinations, creating pressure to reduce prices further in a 'vicious spiral' (Seychelles Tourism Value Chain Analysis, 2016).

The results of the 2016 Value chain analysis seem to indicate that hotels generate much higher revenue than self-catering and guesthouse establishments, with small and larger hotels sharing comparable profitability. The very large number of self-catering establishments means that they make a very significant contribution to total revenue despite the implied relatively low profitability.

[8]Although 60% of tourism establishments participated in this survey, it is not certain what % of the overall rooms they represent, hence this study might not be fully representative.

Guesthouses, with their relatively small number of rooms and poorer profitability, make the smallest overall contribution to earnings. In October 2019, the Tourism Department conducted a survey of the rack rates of 404 tourism establishments, representing 58% of accommodation establishments. The average room rates by island were USD 176 and USD230 per night on Mahe and Praslin respectively. The data does not allow comparison of room rates by product type but the large proportion of self-catering establishments on Mahe may explain the lower room rates despite having the largest number of medium and large hotel beds.

Following three carrying capacity studies undertaken on the inner islands, with separate studies for La Digue and North Mahe, between 2013 and 2016, the government introduced a moratorium on the construction of hotels with more than 24 rooms in 2016, in order to curb new developments and reduce pressure on the environment.

Hotel Bed Distribution

Accompanied by a substantial increase in the tourism bed stock between the years 2000 and 2019, there has been a major shift in the structural profile of tourism beds in Seychelles. The number of land-based beds increased by 286% between the years 2000 and 2019 to reach 14546 beds in 2019. The increase was highest on Mahé, followed by La Digue and Praslin.

There has been a 482,6% increase in the number of land-based beds on Mahe between 2000 and 2019 and during that period 3078 self-catering beds were added to the bed stock on the main island representing an increase of 2267% over the 2000 figures. Praslin saw a more moderate increase of 217% in its bed stock over the 2000 to 2019 period, fuelled by a 938% increase in self-catering beds. By 2019, in terms of the bed distribution, self-catering takes up the largest share on all islands, amounting to 35% of total beds, followed by large hotels, which account for 31% of the market.

The sharp increase in the number of self-catering beds occurred between 2000 and 2019, where Mahe experienced a 23 times growth in the number of self-catering beds from just 142 in 2000 to 3,220 beds in 2019. It is to be noted that the occupancy rate of self-caterings and guesthouses on Mahe is substantially lower than that of large and medium sized hotels. The ramifications, as previously stated, include lower rack rates attracting a lower end market who tend to spend less resulting in an overall lower expenditure per tourist. It can be noted that the same time period expenditure per tourist reduced there has been an exponential increase in self-catering rooms. Ultimately, this means that more tourists are needed to reach the same economic benefit, resulting in more resources consumption and higher footprint for the same economic benefit.

Mahe Bed Supply and Occupancy Rate

	# OF TOURISM BEDS IN 2000	# OF TOURISM BEDS IN 2016	# OF TOURISM BEDS IN 2019	INCREASE FROM 2000 → 2019 [X TIMES]	OCCUPANCY RATE 2018
LARGE + MEDIUM HOTELS	1,050	3,502	3630	3.5	77%
SMALL HOTELS	268	640	318	1.2	
GUESTHOUSES	136	514	534	4	49%
SELF-CATERING	**142**	**2,670**	**3220**	**23**	**52%**
TOTAL	**1,596**	**7,326**	**7702**	**4.8**	

Praslin registered a 9,4 times growth in the number of self-catering beds from 138 in 2000 to 1,294 beds in the same category in 2019. The occupancy rate is also lower for self-catering facilities than for large and medium hotels, yet not as pronounced of a difference as for Mahe.

Praslin Bed Supply and Occupancy Rate

	# OF TOURISM BEDS IN 2000	# OF TOURISM BEDS IN 2016	# OF TOURISM BEDS IN 2019	INCREASE FROM 2000 → 2019 [X TIMES]	OCCUPANCY RATE 2018
LARGE + MEDIUM HOTELS	1,038	1,390	1400	1.4	69%
SMALL HOTELS	230	374	302	1.3	
GUESTHOUSES	68	170	208	3.1	63%
SELF-CATERING	**138**	**1,032**	**1294**	**9.4**	**62%**
TOTAL	**1,474**	**2,966**	**3204**	**2.2**	

This increase in bed stock reflects the product development policies adopted over this period. The *Tourism (Incentives) Act, 2003* aimed to attract private investment in the tourism sector and targeted high standard projects, including 5-star hotels so as to enhance the marketing image of Seychelles as an exclusive and high standard destination. This policy fuelled the over 300% increase in medium and large hotel beds on Mahe between the years 2000 and 2019 and more impressively, the aggregate number of beds increased by more than 4 times between 2000 and

2019 in the group of other islands with the construction of hotels notably on Ste Anne, Silhouette, Desroches, North Island, and Cerf Island (STMP, 2018).

In addition, at the end of 2010, the *Change-of-Use* license for "fast-track" tourism accommodation establishments was introduced, primarily to curb the practice of illegal tourism accommodation and also to create lower budget accommodations and to facilitate the market entry of small Seychellois owners. The result was a profusion of smaller establishments offering rooms in family homes, emerging on the three main islands, which vary greatly in quality and service standards. Following the advice of the 2014 carrying capacity study of North Mahe, the "fast track" policy was discontinued in July 2015. At the same time the Government introduced a moratorium on the construction of hotels with more than 24 rooms in order to avoid breaking new ground and reduce pressure on the environment. (Seychelles Tourism Value Chain, 2016)

By 2019, the 699 hotel establishments, Mahe holds 55% or 383, followed by Praslin accounting for 26% or 180 of total establishments. As far as number of beds, Mahe holds 60% or 8786 (including floating beds) and Praslin 26% or 3494. Self-catering beds represent 40% of the Praslin bed stock and 42% of the Mahe bed stock, while large hotels represent 23% of bed stock in Praslin and 36% in Mahe.

Hotel Establishments Distribution, 2019

	MAHE	PRASLIN	LA DIGUE	INNER ISLANDS	OUTER ISLANDS	TOTAL	%
LARGE HOTELS (24+ ROOMS)	12	5	1	1	1	**20**	3%
MEDIUM HOTELS	5	9	2	1	1	**18**	3%
SMALL HOTELS	19	14	10	8	1	**52**	7%
GUEST HOUSES B&B	23	4	5	4		**36**	5%
GUEST HOUSES	13	8	16	5		**42**	6%
SELF-CATERING	311	140	76	4		**531**	76%
TOTAL ESTABLISHMENTS	**383**	**180**	**110**	**23**	**3**	**699**	
%	**55%**	**26%**	**16%**	**3%**	**<1%**		

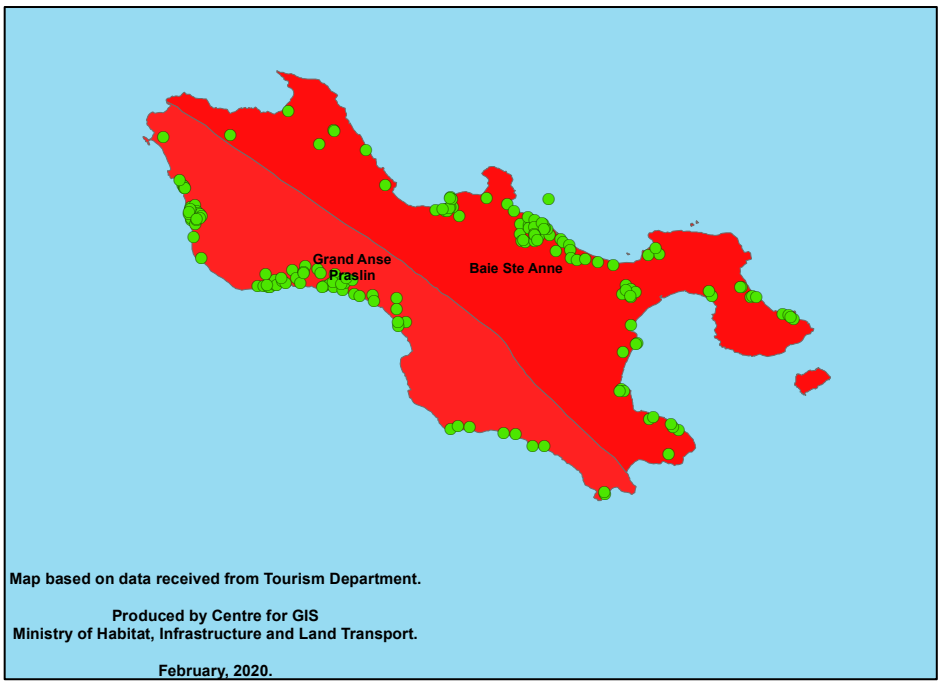
Hotel Beds Distribution, 2019

	MAHE	PRASLIN	LA DIGUE	INNER ISLANDS	OUTER ISLANDS	TOTAL	%
LARGE HOTELS (24+ ROOMS)	3172	802	138	234	142	**4488**	31%
MEDIUM HOTELS	318	598	176	60	50	**1202**	8%
SMALL HOTELS	458	302	186	252	32	**1230**	8%
GUEST HOUSES B&B	320	72	68	22		**482**	3%
GUEST HOUSES	214	136	160	58		**568**	4%
SELF-CATERING	3220	1294	588	44		**5146**	35%
TOTAL LAND BEDS	**7702**	**3204**	**1316**	**670**	**224**	**13116**	**90%**
FLOATING BEDS	1084	290	34	22		1430	10%
GRAND TOTAL	**8786**	**3494**	**1350**	**692**	**224**	**14546**	
%	**60%**	**24%**	**9%**	**5%**	**2%**		

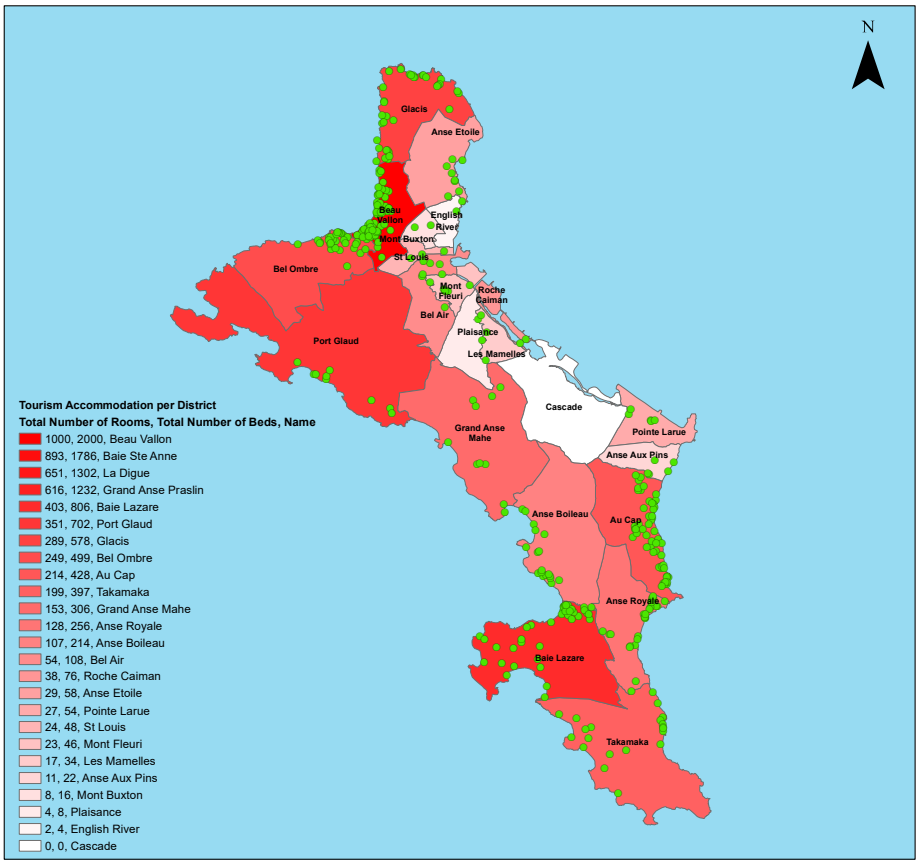
It is worth noting that by Dec 2020, following a 70% reduction in tourism arrivals due to the impact of the Covid19 global pandemic, a total of 716 of accommodation licensed establishments have been recorded, at which time all remain officially open. However, in order to operate all establishments are required a Safe Certificate, of which 517 (72%) have already obtained the certificate to date. (DOT, 2020)

Maps provided by the Planning Authority show that tourism bed development has taken place in a very concentrated manner, in hotspots around the North and South of Mahe, as well as at Grande Anse and Côte d'Or on Praslin. This concentration of hotel development is related to the coastal nature of the tourism product with a strong sun and beach positioning, as well as convenience in terms of infrastructure, such as the proximity to the harbour, jetty and airport.

Map of Tourism Accommodation Concentration per district, Praslin 2020



Map of Tourism Accommodation Concentration per district, Mahe 2020



Hotel Bed Development Pipeline

Consultation with Planning Authority and Tourism Department found that there is a considerable number of hotel beds in the development pipeline, totalling 10,626. In other words, a 73% increase of existing supply is to be anticipated.

For the projects of less than 20 beds, there is a total number of beds of 2,374 planned, of which the large majority are self-catering beds, 2,078in total. Mahe has 1,552 self-catering beds in the pipeline, 54 guesthouse beds, 50 hotel beds and 16 bed and breakfast beds. As for Praslin there is a similar tendency, with a majority of self-catering beds in the pipeline, totaling300, followed by 100 guesthouse beds, 14 bed and breakfast beds and 14 hotel beds. Both Mahe and Praslin would experience an increase in self-catering room bed stock of 48% and 23% respectively.

Despite the moratorium on large hotels there are a total of 8,252 beds for large hotels (>24 rooms) in the pipeline that had obtained prior approval from GoS. The majority of which will be distributed between Mahe and Praslin, with 5,858 beds and 1528 beds respectively in the pipeline. If realized, Mahe and Praslin will experience a 185% and 191% increase in large hotel bed supply.

Hotel Bed Development Pipeline

	Mahe	Praslin	La Digue	Others	Unclassified	Total
More than 24 rooms	**5858**	**1528**	**0**	**866**	**0**	**8252**
Less than 24 rooms	**1672**	**428**	**246**	**12**	**16**	**2374**
Bed & breakfast (rooms)	16	14	16	0	0	**46**
Guest house (rooms)	54	100	20	12	0	**186**
Hotel (rooms)	50	14	0	0	0	**64**
Self-catering (rooms)	1552	300	210	0	16	**2078**
Total Pipeline*	**7530**	**1956**	**246**	**878**	**16**	**10626**
Existing supply	**8786**	**3494**	**1350**	**916**	**916**	**14546**
Existing + Pipeline	**16316**	**5450**	**1596**	**1794**	**932**	**25172**
% Increase	***86%***	***56%***	***18%***	***96%***	***2%***	***73%***

** There are 122 project entries on the database where the number of rooms/beds is not stated. The figures below are at best an estimate.*

The table below shows the distribution of hotel density (beds per 100 residents) per districts in Mahe and in total for Praslin and other Islands. It can be appreciated that currently in Mahe there

are different levels of saturation by district, ranging from 0.10, in areas such as Cascade, to 46 such as in Beau Vallon, a tourism hotspot. The table also reveals how the development pipeline will influence the bed density in each district, for example in areas such as Mont Fleuri where the bed density is 0.23 realizing the development pipeline will increase it to 1.4 that is a 500% increase. And in an already highly saturated area such as Beau Vallon, where the previous 2014 carrying capacity called for restrictions in development, if the current pipeline was realized density levels will increase from 46 to 64, a 40% increase in an already highly saturated area. Per Island, If the development pipeline is realised Mahe's total bed density per 100 residents will increase from 9 to 17, and Praslin from 40 to 63.

As previously mentioned, the bed density indicator alone is not sufficient to determine point of saturation or ideal condition. However, it is an important decision-making tool for land use planning and tourism development strategy. For example, areas that area already experiencing a high bed density may have some room for additional beds, determining the threshold will require determining the productive infrastructure capacity needed to handle and increase as well as the social well-being of the residents and visitor satisfaction. Areas that currently have a low bed density and the change in bed density will double if the pipeline where to be realized poses a greater threat to damaging the already existing social fibre and dynamics of the district. However, alternatively to increasing the number of beds, there is opportunity to increase investments in catering facilities such as restaurants and bars to cater to those same visitors and increase expenditure in the same district, increasing employment opportunities as well as adding value to the visitor experience.

Hotel Bed Development Pipeline – Bed Density by region

	Area (Km2)	Mid-Year Population 2019	EXISITING BEDS (MAY 2020)	PLANNING AUTHORITY PIPELINE AT JAN 2020	ALLOCATED (> 24 ROOM DEVELOPMENTS	Total Pipeline	FORECAST NO. OF ROOMS (Existing + pipeline + allocated)	Bed Density ACTUAL (2019)	Bed density pipeline	*% change*
Mahe	**248,92**	85.462	**7762***	**1.874**	**5656**	**7.530**	**15.292**	**9,08**	**17,89**	***97%***
District not identified				16	0	16	16			
Central Region										
Bel Air	4,39	2.963	124	0	0	0	124	4,18	4,18	*0%*
Eden Island	0,44		0	0	0	0	0			
English River	1,38	3.737	28	**0**	**0**	**0**	28	0,75	0,75	*0%*
Isle Aurore	0,58		0	0	0	0	0			
Les Mamelles	1,66	2.720	16	0	0	0	16	0,59	0,59	*0%*
Mont Buxton	1,7	3.169	16	**0**	**0**	**0**	16	0,50	0,50	*0%*
Mont Fleuri	1,83	3.418	8	40	**0**	40	48	0,23	1,40	*500%*
Perseverance	0,96	4.586	0	**0**	**0**	**0**	0	0,00	0,00	*0%*
Plaisance	3,37	3.974	34	38	**0**	38	72	0,86	1,81	*112%*
Roche Caiman + Eden Island	1,14	2.905	894	16	736	752	1.646	30,77	56,66	*84%*
Saint Louis	1,38	3.241	34	2	**0**	**0**	34	1,05	1,05	*0%*
Sub-total	**19**	**30.713**	**1.154**	**96**	**736**	**830**	**1.984**	**3,76**	**6,46**	***72%***
North Region										
Anse Etoile	5,95	4.935	94	18	176	194	288	1,90	5,84	*206%*
Beau Vallon	4,46	4.020	1852	240	492	732	2.584	46,07	64,28	*40%*
Bel Ombre	9,41	3.996	728	144	742	886	1.614	18,22	40,39	*122%*

	Area (Km2)	Mid-Year Population 2019	EXISITING BEDS (MAY 2020)	PLANNING AUTHORITY PIPELINE AT JAN 2020	ALLOCATED (> 24 ROOM DEVELOPMENTS	Total Pipeline	FORECAST NO. OF ROOMS (Existing + pipeline + allocated)	Bed Density ACTUAL (2019)	Bed density pipeline	*% change*
Glacis	6,84	4.016	608	258	222	480	1.088	15,14	27,09	*79%*
Sub-total	**26,66**	**16967**	**3282**	**660**	**1632**	**2292**	**5574**	**19,34**	**32,85**	***70%***
South Region										
Anse Aux Pins	2,46	4.236	132	16	350	366	498	3,12	11,76	*277%*
Anse Royale	7,15	4.665	300	296	152	448	748	6,43	16,03	*149%*
Au Cap	8,26	4.312	350	188	132	320	670	8,12	15,54	*91%*
Cascade	10,21	3.810	4	2	**0**	**0**	4	0,10	0,10	*0%*
Pointe Larue	3,46	3.215	56	24	**0**	**0**	56	1,74	1,74	*0%*
Takamaka	14,19	2.850	420	144	1658	1.802	2.222	14,74	77,96	*429%*
Sub-total	**45,73**	**23088**	**1262**	**670**	**2292**	**2936**	**4198**	**5,47**	**18,18**	***233%***
West Region										
Anse Boileau	12,03	4.093	276	72	480	552	828	6,74	20,23	*200%*
Baie Lazare	12,07	3.951	792	208	276	484	1.276	20,05	32,30	*61%*
Grand Anse Mahe	15,69	3.568	318	26	240	266	584	8,91	16,37	*84%*
Port Glaud	26,69	3.082	678	142	**0**	**0**	678	22,00	22,00	*0%*
Sub-total	**66,48**	**14694**	**2064**	**448**	**996**	**1302**	**3366**	**14,05**	**22,91**	***63%***
Other Islands*	211,8	574	896	434	444	878	1.774	156,10	309,06	*98%*
La Digue	9,81	2.926	1352	246	**0**	246	1.598	46,21	54,61	*18%*
Praslin	37,56	8662	3494	480	1476	1.956	5.450	40,34	62,92	*56%*
Total	**574,57**	**97.625**	**13504**	**3050**	**7576**	**10.626**	**24.130**	**13,83**	**24,72**	**79%**

*** When the hotel data desegregated by district Mahe was received (May 2020) it totalled a slightly different number that the original number evaluated at the beginning of the report (Dec 2019).**

****Area of other islands with hotel facilities. >24 Rooms allocated = 222-133 (allocated to Ste Anne resort included in the pipeline figures).**

Highlighted in yellow areas where the bed density will increase considerably if the pipeline where to be realized.

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Tourism Experiences

In the twenty years of rapid tourism development, there has been a one-sided focus when it comes to product development, namely strong focus on investments in accommodation facilities and comparatively little innovation in terms of visitor experience (F&B, museums, specialised activities, shops and boutiques). Since 2010, by design *("Affordable Seychelles"* campaign and *Change-of-Use* license for "fast-track" tourism accommodation policy) the tourism demand model in place calls for less expenditure and minimal value chain linkage opportunities for a section of residents that lack properties and/or capital investments. As a matter of fact, the tourism product has mainly included beaches and accommodation development, the lack of other visitor experiences choices consequently leads to a lack of spending opportunities. The decreasing average spend per visitor as well as the low % of returning tourists (McEwen & Bennett 2010) reflects this one-sided product development strategy[9].

As mentioned previously, there has been a strong focus on bed supply and the overall tourism product remains relatively undiversified. This becomes clear by the fact that there are low numbers of Creole and specialty restaurants on Mahe and Praslin, as well as low numbers of ecotourism and cultural tourism attractions and activities, e.g., museums, specialised guides and activities.

The number of restaurants on all three inner islands has increased slightly between 2016 and 2019. There is a relatively equal divide between the number of restaurants in large hotels and stand-alone restaurants on Mahe. However, on Praslin the number of restaurants as part of large hotels more than doubles the number of public restaurants.

Number of restaurants in 2016 and 2019

	MAHÉ		PRASLIN		LA DIGUE		OTHERS		TOTAL	
	2016	**2019**	**2016**	**2019**	**2016**	**2019**	**2016**	**2019**	**2016**	**2019**
Restaurants in large hotels	44	43	26	28	6	6	8	8	84	85
Public restaurants (outside of hotels)	47	50	9	10	6	9	0	2	62	71
Total	**91**	**93**	**35**	**38**	**12**	**15**	**8**	**10**	**146**	**156**

Source: Tourism Department 2019

Globally there is a growing importance of local food experiences, in terms of being a key deciding factor of choosing a destination (Zhang et al, 2019). The success of cooking shows such as Pacific Island Food Revolution have demonstrated the pride and diversity of small island nation's cuisine

[9] Seychelles visitor return rate is very low – 17% in 2017 (NBS, 2017), in comparison with 28% for the Maldives and 37% for Mauritius.

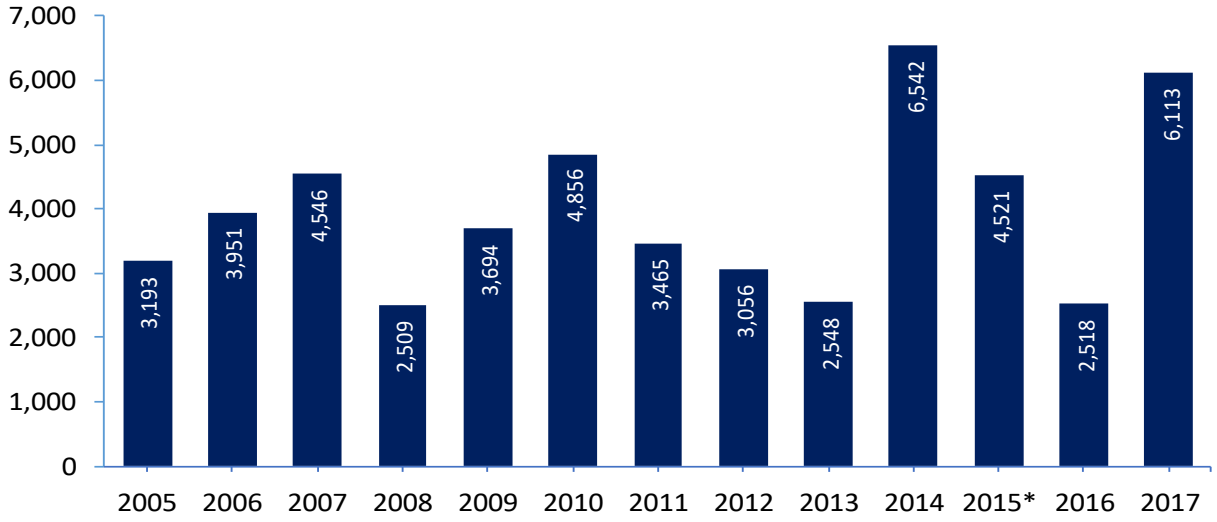
and the cultures and traditions connected to it[10]. Considering the high reliance on food imports, strengthening local food products and recipes in the tourism offer is an important step towards building more resilient economies and higher food security.

Seychelles with its rich Creole past and pride in national cuisine has a lot to offer in showcasing its diverse food offer to tourists by the means of restaurants, food experiences (workshops, cooking classes), farm visits, excursions with fishermen, etc. However, currently alternative food experiences are very limited to a few single operators and not offered on a regular basis. Therefore, there is an opportunity to further diversify and enrich the tourism offer, allowing for higher spending on the local economy, ultimately increasing the value per visitor and less reliance on mass tourism.

There are 46 declared national monuments, and many of them are located on private land. The cultural sites located in public land are mostly free public access, such as Venn's Town, with limited signage and limited public services, such as toilets and security, therefore, visitation statistics are not currently collected. Except for the National Museum, La Plaine St. Andre and Domaine de Val de Pres where there is an entrance fee and associated services.

The number of yearly visitors to the National History Museum on Mahe has ranged between 2500 to over 6500 from 2005-20017, having reached its highest point in 2014 with 6,542 visitations. It is to be noted that these numbers include Seychellois and international visitors. Nonetheless they represent a fraction of international tourist arrivals. However, according to the Seychelles Heritage Foundation website, 10% of visitors pay a visit to Domaine de Val des Pres.

Number of visitors to the National History Museum, 2005-2017 (STMP, 2018)



Source: National History Museum | * The data for 2015 is for January to September.

[10] https://www.pacificislandfoodrevolution.com/

Of the limited cultural offer on Mahe and Praslin, the majority of attractions are located on Mahe (such as Domaine Val de Près and Mission Lodge), with very few cultural sites and access to local handicraft on Praslin. Seychelles has two UNESCO world heritage sites (Aldabra Atoll and Vallée de Mai), despite efforts to list Moutya dance as a cultural heritage (Seychelles News Agency, 2018).

Socio-economic conditions

Over the past twenty years tourism has helped elevate the quality of life of residents by providing higher income generating opportunities and a substantial boost to the economy. Tourism contributed to Seychelles classification as high-income country in 2015 by becoming the richest country in Africa's continent with a gross national income GINI per capita level of US$12,736 (World Bank, 2019). Seychelles made a remarkable come back from the financial crisis of 2008, achieving higher standard of living, a more even distribution of wealth and higher standard of education and health as well as personal freedom and media. There are extremely low unemployment rates (3.5%) in the country, indicating a tight labour market (World Bank, 2019, Nation, 2016)[11].

However, the increased pressure on infrastructure, risks reducing the quality of life of residents by competing for the same resources needed to cater to tourism arrivals. This becomes apparent through with examples of electricity cuts in the South of Mahe, past water shortages, traffic congestion and limited recycling on Praslin.

Yet, a 2015 survey on poverty and inequality by the National Bureau of Statistics found that 39.3% of the population live at or below the national poverty line, equivalent to an adult monthly income of SCR 3,945.[12] Hence sharing prosperity is a key concern for Seychelles. Therefore, the productivity of the tourism industry, the main economic driver, is crucial to create more value trickle down to the communities.

Regarding the socio-economic conditions in Seychelles, it is important to highlight the greying population with aging demographics (NBS, 2018). In view of the tight labour market and plans to limit the number of expat workers, the limited available workforce in Seychelles is decreasing, bringing with it challenges to ensure the level of quality and service of the existing (and growing) tourism product to remain competitive (BBC, 2018; Seychelles News Agency, 2018)[13]

According to the Agency for the Prevention of Drug Abuse and Rehabilitation (APDAR) about 5.6% of the general adult population (equivalent to 10% of the workforce) are people who use heroin, causing marginalization within society, major issues for the productivity of the workforce, especially the young generation being affected. Per capita this is the highest rate of heroin abuse in the world.

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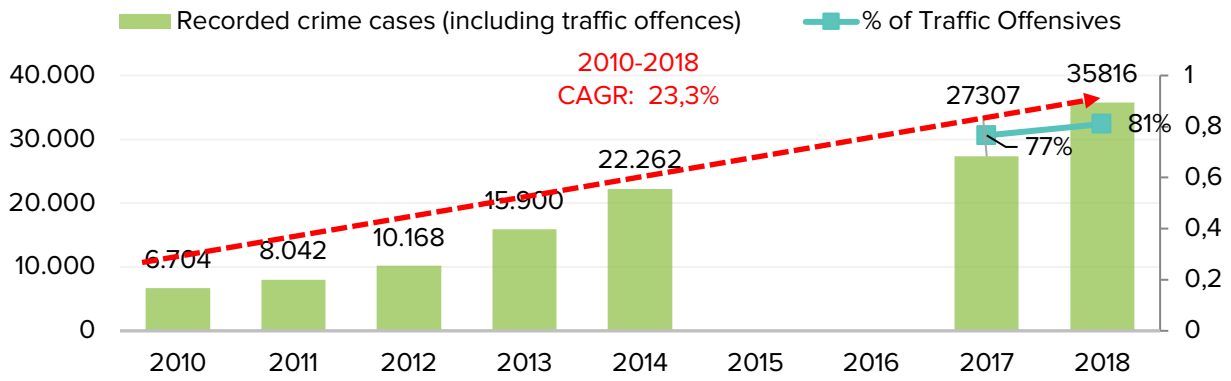
[11] https://www.worldbank.org/en/country/seychelles/overview;
http://www.nation.sc/archive/250070/seychelles-consolidates-its-high-income-country-status

[12] https://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/country_notes/Seychelles_country_note.pdf

[13] http://www.seychellesnewsagency.com/articles/9090/Alarming+drug+results+for+Seychelles+survey+shows++pct+of+population+has+used+heroin
https://www.bbc.com/news/world-africa-50488877

Recorded crime cases, including traffic offences, rose exponentially from 2010 to 2018, raising from 6.7 thousand to over 35 thousand cases, a 23% compounded annual growth rate. Yet, according the police data, about 80% of reported cases are traffic offenses. A Safety & Security Committee has been created to address crimes against visitors. A 10% decrease in the number of crimes against visitors has been observed since its inception.

Recorded crime cases (including traffic offences) (2010-2019)



Crimes against visitors in 2019: 152 (Mahe, 92; Praslin 51; La Digue, 9)

Food security

As a small island state with limited available land for agriculture, Seychelles only produces a small percentage of its food, namely eggs, tea to some extent, fish and some livestock, such as poultry and pig rearing, and beverages such as soft drinks, beer, mineral water and juice. The vast majority of food, especially in T&T is imported and UAE, Spain, France and South Africa were the main countries of origin for imports in 2017 (NBS, 2018). The amount of imported food and live animals have steadily risen over the last years from 2013 to 2017 to meet the increase in demand (NBS, 2018). According to Trend Economy open data portal, Seychelles edible products have been steadily increasing since 2002, peaking at USD$320million in 2017 and reducing to USD$257million by 2019.

In Small Island Developing States (SIDS)[14], such as Seychelles, the overreliance on imported foods and lack of a productive agricultural sector creates an important food security situation. The moment when tourism, the main economic driver, receives a shock, these losses make it more difficult to pay for the imported food required for survival in these countries.

[14] The SIDS were first recognized as a distinct group of developing countries at the United Nations Conference on Environment and Development in June 1992

Total Edible Products Imports (2002-2019)

Source: TrendEconomy Open Data Portal, 2020

Labour Market

The national human resource capacity available for work in the tourism sector is virtually exhausted, meaning that further growth of tourism establishments will automatically have to rely on increased foreign labour (Richter, 2016), which in turn is contradictory to the recent labour policies regarding limitation in the recruitment of expatriates in tourism industry, which led to a decrease in number of Gainful Occupation Permits (GOPs) issued. Many operators and tourism establishment owners report that it is increasingly difficult to recruit locally and to be able to provide the service culture that is needed for a destination like Seychelles to remain competitive. The more tourism will develop, the tighter the local job market will get and the more difficult it will be to fill the gap locally and with adequately trained professionals. Seychelles as a tourism product is still perceived as an expensive destination, but will not be able to meet the expectations of the visitors from a quality service point of view under the current labour development scenario. The “You First” campaign and now the “We are Tourism” are trying to tackle this issue and the Tourism Sector Strategy calls for scaling up the campaign to target a wider public and create awareness related to cultural, environmental and social impacts of tourism.

From the Seychelles Tourism Academy (STA) graduation class of 2019, 88% were placed in local tourism jobs (91% in Mahe, 7% in Praslin, 3% in La Digue). Their program offers 1 Full time advance

diploma in Hospitality Management and one short course on leadership skills. Product development is briefly touched upon under the Tourism & Tour Guiding Programme & Advanced Diploma in Hospitality Management. STA Plans to have a better monitoring and interaction of its graduates through the creation of the Alumni body for the Academy. Through their leadership training they aim to have more Seychellois in leadership roles and with a better attitude which is often a feedback cited as an issue by the industry. They will also like to see more support from the industry in introducing welfare plans as well as a mentorship program and specifically employ students in their Reception Operations & Services, who have traditionally been difficult to place. And finally, STA aims to introduce a "talent development program" in 2021 to help young Seychellois to specialize in different area in the hotel, however they will need support from the industry and government to ensure that these students are properly mentored while they are on attachment. (STA, 2020)

Investment Climate

Investment in accommodation requires considerable initial capital investments, combined with the need for collateral and high interest rates, it favours developers who already have considerable assets. High bank lending interest rate means that local developers cannot compete with their foreign counterparts who have access to favourable rates abroad e.g., investments in yachts. Incentives for tourism development has targeted FDIs and large hotel developments. Policies where the banks did not consider movable assets as collateral, meant that credit facilities and incentive regimes favoured development of land-based rooms.

Land Use

The majority of land in Seychelles (88.4%) is under forest cover. Nearly 48% of terrestrial area in Seychelles is protected, by far exceeding the 2020 Aichi Biodiversity target of 17% (Convention on Biological Biodiversity, 2010). The Seychelles Marine Spatial Plan Initiative focuses on the sustainable and long-term use of the Exclusive Economic Zone (EEZ), comprised of 1,374,000 km2 of ocean and 115 islands (30% of territorial waters). Seychelles' former Presidents Danny Faure and James Michel received the Planetary and Leadership Award at the National Geographic Awards in 2019 in recognition to world leadership, having successfully established globally significant protected areas, such as national parks, wilderness areas, or marine reserves, that are fully shielded from exploitation.

In 2014, Seychelles was named one of five small island nations declared world leaders in conserving threatened species (Rodrigues et al. 2014). Seychelles is home to a number of endangered or threatened species (18%). On a global scale, Seychelles ranks 39th on the Environmental Performance Index which compared 180 countries on 24 performance indicators across and ten issue categories covering environmental health and ecosystem vitality (benchmark regional countries: Mauritius ranks 90, Maldives 111 and Madagascar 175). The results give an indication at a national scale of how close Seychelles is in establishing environmental policy goals.

Despite the positive status of protection of land and sea, with the increase in tourism and the rapid expansion of tourism bed supply, the Planning Authority indicates that there is pressure on land

for development and the negative effects of urban sprawling are evident already. Coastal areas are saturated; most of the undeveloped areas, which also happens to be forested, are privately owned and owners are looking to sell their land to developers or develop their properties.

Blue Bond

The Seychelles is example to the world by having committed to protect 30% of their waters and establishing the Exclusive Economic Zone (EEZ). A Blue Economy system that promotes the sustainable use of the ocean's resources for economic growth, improves jobs and the livelihoods of those with ocean-related work, and helps preserve the health of ocean ecosystems and coastal areas. In October 2018, Seychelles launched the world's first sovereign blue bond—a pioneering financial instrument designed to support sustainable marine and fisheries projects. The bond raised USD$15 million from international investors for the expansion of marine protected areas, improved governance of priority fisheries and the development of the Seychelles' blue economy. Grants and loans will be provided through the Blue Grants Fund and Blue Investment Fund, managed respectively by the Seychelles' Conservation and Climate Adaptation Trust (SeyCCAT) and the Development Bank of Seychelles (DBS).

Environment

Seychelles is vulnerable to climate change and other environmental risks, particularly to the effects of rising temperatures and sea levels. Rising sea levels are already affecting the islands given their low-lying elevation and the high concentration of economic development (about 80 percent) along its narrow coastal zones. In Seychelles, sea levels are estimated to rise by a 2.3 mm every year, posing serious threats to livelihoods as a result of coastal erosion and flooding impacting roads and tourism-related infrastructure. Although the direct effects of sea-level rise are not comparable with low-lying island states such as the Maldives (UN-OHRLLS 2015), entire coastal sections such as the Anse Kerlan on Praslin and associated tourist hotspots are already threatened by erosion. A study by the Japan International Cooperation Agency (JICA) (2014) showed that, in the worst case, if a tropical cyclone with the highest flood water level and simultaneous flooding were to occur, buildings and roads would be inundated below 2.5 m above the current average sea level. This would affect 2,017 buildings on Mahe (14% of all buildings) and 1,601 on Praslin (63%). These would include 21 restaurants and 69 hotels/guesthouses on the three inner islands. The experts also recorded that 67 km of roads on Mahe (42 % of all roads there) and 43 km on Praslin (72 %) were at risk of flooding (JICA 2014). Less obvious is the danger of ocean acidification contaminating Seychelles fresh water source and reducing fresh water supply (IMF, 2017).

Climate-induced natural disasters have already caused significant damage to the Seychelles' economy. Given its steep terrain, low-lying archipelago, and geographic location, Seychelles is highly vulnerable to extreme weather events. During the period 1997-2016, Seychelles experienced seven natural disasters that affected around 26,000 people or 30% of the population and led to a combined economic damage of over 4.6 percent of GDP (IMF, 2017). The increased severity of these natural calamities challenges the country's capacity to cope with such events.

The increases in temperature have also led to coral bleaching and more extreme rainfall has caused significant crop losses in the last decade.

Seychelles faces other environmental challenges, in part linked to the environmental footprint of its main sectors. The Environment Department reports sustainability concerns in the fisheries sector, with some evidence in particular of overfishing and declining catch rates for some species of fish. In the tourism sector, a moratorium on new large hotels has been introduced until 2020, reflecting concerns about the environmental footprint of the sector. Despite diversification away from tourism into fisheries and financial services, economists forecast that tourism will remain the economic mainstay for the next 25-50 years (IMF, 2017). Consequently, it is important to minimize the impact of all tourism activities and ensure that they are as non-intrusive as possible.

The combination of risks of natural disasters and the pressure on scarce land are increasingly informing the debate around further tourism development and making it a high priority. Considering the fact that Seychelles natural environment, flora and fauna constitute its main tourism asset, it is of utmost importance to find a balance in allowing regulated tourism development, whilst taking necessary future-oriented planning measures which safeguard the environment and livelihoods.

Turtle Nesting

Two species of sea turtle nest in the Seychelles: the hawksbill turtle and the green turtle. The green turtle breeds all over the islands throughout the year, unlike the hawksbill turtle which breed mostly between mid-October and mid- January. Both species are on the International Union for Conservation of Nature's (IUCN) red list. Green turtles are classified as endangered while the hawksbills are critically endangered.

Sea turtles in Seychelles are protected under the Wild Animals and Birds Protection Act and the penalty for offences is up to two years in prison and a fine of up to $37,000. Despite the strict laws, poaching is still a major concern because of the country's tradition of eating turtle meat as a delicacy. In most cases, females are more vulnerable because they are the ones that come to shore to lay their eggs on the same beach they were hatched.

According to the Ministry for Environment, Energy and Climate Change, there have been already 15 confirmed cases of poaching during this season, by august 2020. In 2019, 14 cases were recorded while in 2018 there were only eight cases. Apart from human-related threats, other menaces include marine debris, eggs that are washed away by waves and steep crests and obstacles inhibiting the female's progress across the beaches to lay eggs. Once hatched, babies are a favourite food for ghost crabs, birds, and fish.

In order to monitor the rising poaching incidences, the ministry has recently launched a volunteer programme where adolescents assist with its turtle monitoring activities. The young volunteers will be trained and will assist the Biodiversity Conservation Section of the ministry as there is a lack of human resource to effectively monitor beaches, especially those used by nesting turtles

The monitoring is done in key nesting areas all over the three main islands. These include Anse Capucins, Bazarka, Intendence, Grand Police in the South of Mahe. Anse Kerlan, Anse Lablague,

Anse Georgette and Anse Gouvernment on Praslin. Anse Severe, Anse Marron, Anse Koko and Petit Anse on La Digue.

From the tourism sector, in Mahe both Kempinsky Resort and Banyan Tree Resort support the conservation of turtle nesting. The Wildlife Conservation and Rehabilitation Centre, established in 2015, is located on the Banyan Tree resort grounds. Hawksbill turtles' nest on the nearby beach, while yellow bellied and black mud turtles (terrapins) live in the adjacent wetlands. The project now hosts the largest terrapin monitoring programme in Seychelles as well as several other wetland-oriented projects including restoration of wetlands and removal of invasive species.

Turtle monitoring tracks and nesting on Mahe between 2010-2020

Season	Number of tracks	Number of nesting sites
2010-2011	38	27
2011-2012	250	166
2012-2013	353	251
2015-2016	223	255
2016-2017	257	269
2018-2019	19	11
2019-2020	74	57

Source: Ministry of Environment, Energy and Climate Change

Notes:

1. *Information on turtle nesting is collected by both the Environment Department and the environmental NGO Marine Conservation Society of Seychelles (MCSS). The Environment Department did send a request to MCSS but by the time this information was submitted, they had not responded. The information above is therefore only from Environment Department Patrols.*
2. *Turtle monitoring tracks and nesting information is provided for Mahe only. Information for Praslin and La Digue are yet to be compiled.*
3. *Information is missing for seasons 2013/14, 2014/15 and 2017/18. The low figures for the last 2 seasons are because there were very few patrols resulting from the department having a staff and transport problem. Regular patrols have restarted in 2020 because they now have their own vehicle.*

Beach water quality

In 2015, at the request of the cabinet, the Public Health Engineering Unite within the Public Health Authority initiated a sea water quality monitoring program, initially at the North Area Beach Front. The program was to last 5 years with periodic reporting of the analysis presented to cabinet. The

sea water quality data could be used as tool to evaluate and determine bathing water classification and standardization.

The results of the initial water test conducted in North Mahe established that the sea water analysed meet the limits set by the WHO Guidelines for safe recreational water environment (2003). Except for the first sample, collected at Bel Ombre, that showed the presence of Salmonella bacteria an indication of faecal pollution. However, the subsequent sample cleared the appearance of the bacteria.

Since then, between 2016-2020, 230 water testing samples have been analysed across all three most populated islands. Between 2016-2016 and again in 2019 Seychelles was having algae bloom problems resulting unsatisfactory bacterial results of Coliform, E.coli, and I.E.. It must be noted that at these periods the Salmonella bacteria were absent in the samples which indicated the contamination were not of sewage origin. During this time period Salmonella has showed up four times in Glacis, La Digue, Beau Vallon and Praslin.

Waste Management

Waste management under optimum conditions is a challenge. This becomes increasingly difficult when high volume tourism is spread around numerous small islands.

As with many small island states, Seychelles faces major challenges when it comes to sustainable waste management. Scarce available land creates conflicts in land use ranging from settlement development, nature conservation, and solid waste management, specifically the use of land filling which is the current waste management strategy in Seychelles (Krütli et al, 2018). Seychelles also has to deal with the dilemma that it produces large numbers of waste in relation to its landmass, yet the comparatively low volume of the collected overall waste and the subsequent missing financial incentives make it challenging to develop technically and financially sound recycling units (ETH Zürich, 2016). Finally, efforts to remove items such as plastic bags, Styrofoam takeaway boxes, and other single use plastic items (e.g., cutlery and plastic straws) from the waste stream have been formally banned and widely communicated, but the implementation and enforcement is still not sufficiently effective.

There are landfills on Mahe and Praslin which are expanding at a rapid rate due to economic development, consumer behaviour, increasing tourist arrivals and absence of other waste reduction measures.

Amitie landfill on Praslin is a non-engineered (no liner, no leachate collection, no LFG management) dumping site that has been in operation for more than 20 years. The site was originally being used for extraction and sale of coral sand for the construction industry. There is a simple registration and payment system at the gate, but no weighbridge. There are separate zones for various waste streams (e.g., organic, metals, mixed waste), but in practice this is not fully adhered to. A separate part at the back of the site is used to dispose liquid waste. The site is managed by LWMA, who has subcontracted the daily operation to "BS Excavation". In 2005 Consultants from Carl Bro prepared a feasibility study for the construction of a sanitary landfill on Praslin. At the time the government

could not invest in such facility and concentrated its investment on Mahe. It was mentioned by LWMA that there are plans to extend the disposal site in the future and such an extension should be sanitary (Solid Waste Management Masterplan, 2019).

The Providence landfill on Mahe is divided in an old (I) and new (II) part. The old part has been in operation since around 1996 and does not have a bottom liner. Leachate is impacting the ocean, which borders the site on two sides. In 2016, landfilling at Providence I officially stopped and moved to a new, adjacent site (Providence II). However, small amounts of (liquid) waste are still disposed and the site has never been properly rehabilitated. The area of Providence II covers 7.9 ha with a void capacity 710,000 m3. A recent study cited as part of the 2019 Solid Waste Management Masterplan estimated that Providence II sanitary landfill has a remaining lifespan of 15 years. The new site is constructed as a sanitary landfill, funded by the EU, and it includes drainage channels for the collection of leachates, as well as a pre-treatment facility (Solid Waste Management Masterplan, 2019).

The Anse Royale landfill on Mahe was funded by an EU grant under the 8th European Development Fund (EDF) and includes a plastic bottom liner. The facility was commissioned in the year 2000 and designed for a 20-years lifetime. However, the site has rarely been used due to public opposition and today it only accepts small amounts of inert waste (glass and incinerator ash) (Solid Waste Management Masterplan, 2019).

No large-scale waste recycling effort exists on Mahe. Four classes of solid waste are partly recycled or pre-processed locally, three of which are scrap metal, beverage cans and PET bottles (Krütli et al, 2018). PET bottles and beverage cans are collected and exported for recycling, with glass bottles to be launched soon. Voluntary reuse schemes are implemented by bottled water manufacturers and hotels, who allow users to bring their own bottles for re-filling. The local beer producer collects their used bottles through a redeem programme for re-use. A study conducted in 2018 found that there is untapped potential for recycling, specifically regarding fraction glass, paper and cardboard, wood and probably also to other fractions (Krütli et al, 2018).

A central composting plant on Mahe landfill has been built and initially operated. The plant was opened in 2000 and has a capacity of 3,000 tons of compost per year. The plant was designed to also function as a Materials Recycling Facility (MRF) to sort municipal waste into its various components for recycling. It operated for a short time but due to several reasons, including a difficult market to sell the produced compost, it is currently out of function. There are some small-scale initiatives on home composting of green (garden) and kitchen waste, amongst others in hotels, but this is not widespread.

Waste generated and collected

YEAR	URBAN GENERATED KG/CAP/DAY	RURAL GENERATED KG/CAP/DAY	VISITOR GENERATED KG/CAP/DAY	URBAN GENERATED TON/YR	RURAL GENERATED TON/YR	VISITOR GENERATED TON/YR	WASTE COLLECTION RATE %	TOTAL WASTE COLLECTED TON/YR	RECYCLING / COMPOSTING RATE %	WASTE TO LANDFILL TON/YR
2018	1.50	0.75	1.50	29.67	11.66	5247.92	90%	41.91	5% / 1%	39.40
2019	1.51	0.76	1.51	30.13	11.84	5292.00	90%	42.53	5% / 1%	40.00

Source: Adapted from Medium Growth Scenario, Solid Waste Masterplan Seychelles, 2019

Collection of household waste on Mahe is ensured by different contractors based on the regions South, North, West, East, Central and Central East. On Praslin the contract BS Excavation is in charge of household waste collection. There are four redeem centres on Mahe and one on Praslin for PET bottles and beverage cans.

Besides the issues related to the landfills, there are also challenges related to managing tourism at sea, notably liveaboards, currently there are 241 boats (charters and yachts) registered in Seychelles, which do not follow clear and enforced guidelines when it comes to waste disposal.

The effects from unsustainable waste management can have far reaching effects in terms of health and safety risks and environmental pollution. A recent study has shown that approximately 50% of the total waste disposed of at the landfill is bio waste (Krütli et al, 2018). Most of the landfills are in close vicinity to the sea or to streams which can pose further risk of water and soil pollution and threats to flora and fauna. Communities on Mahe have complained about the smell related the landfill. The health hazard related to non-engineered landfills is substantial, with a risk of ground water contamination. Due to high methane production of the content of the landfills, fires have been reported at landfills on Mahe in the past (ETH, 2016). As land is scarce and expensive, the cost for landfilling will only increase further in the future and constitute a financial burden for Seychelles' government (Krütli et al, 2018).

Waste management carrying capacity constraints at Mahe and Praslin, are summarized below:

- **Lack of measurement.** Waste generated per tourist and/or accommodation facility is not currently collected and monitored. In order to effectively plan for waste management solutions policy makers should know what the expected waste generation will be as the tourism market grows.
- **Environmental and health hazards**. Facilities in both Mahe and Praslin are operating as non-engineered landfills poses a higher risk of leakages leading to beach water contamination and bather's health risks.
- **Land use conflict.** Increasing waste streams and scarce available land creates conflicts in land use, specifically the use of landfilling which is the current waste management strategy in Seychelles.
- **Financial burden.** As land is scarce and expensive, the cost for landfilling will only increase further in the future and constitute a financial burden for Seychelles' government.

- **Ineffective plastics reduction policy.** Efforts to remove items such as plastic bags, Styrofoam takeaway boxes, and other single use plastic items (e.g., cutlery and plastic straws) from the waste stream have been formally banned and widely communicated, but the implementation and enforcement is still not sufficiently effective - *plastic bags we use in our everyday life take 10-20 years to decompose, while plastic bottles take 450 years.*
- **Sea Pollution.** There are also challenges related to managing tourism at sea, notably liveaboards, currently there are 241 boats (charters and yachts) registered in Seychelles, which do not follow clear and enforced guidelines when it comes to waste disposal.

As a solution, the Seychelles Energy Policy provides direction on conversion of wastes and biomass to energy and using the landfill at Providence on Mahé as an important source of energy and estimates that it can produce the equivalent of up to 8.000 tons of oil from this process. It recommends extracting landfill gas that could be used for electricity production and to consider a waste incineration facility for the future.

Sewage Management

Sanitation is primarily dealt with by the Division of Environment while the Public Utility Corporation (PUC) provides piped sewerage services and sewage treatment plants on Mahe and Praslin.

There are 29 treatment plants in Seychelles used for treatment of domestic sewage from residential houses and hotels. Twenty-four treatment plants including, activated sludge systems (8 treatment plants), Bio-Disc (9 treatment plants), waste stabilization ponds (one treatment plant), SBR (one treatment plant), USB (one treatment plant) and fixed film (one treatment plant) are installed in the hotels for wastewater treatment. There are five treatment plants used to treat wastewater generated from the community. The treatment plant installed for domestic wastewater treatment includes three activated sludge systems and two bio-discs[15].

There are four sewage plants on Mahe - one in Providence and one in Beau Vallon as large catchments, and two small catchments, one at Point Larue and another at Chetty Flats at Anse Aux Pins. In Mahe, there is an urgent need to connect more households and businesses to the sewage system, as currently only 15% are connected (Seychelles News agency, 2018). There are no sewage plants on Praslin. Collection and treatment of sewage for most households and smaller establishments is limited to septic tanks or private, stand-alone sewage treatment tanks. (PUC, personal communication, 2020).

[15] https://wedocs.unep.org/bitstream/handle/20.500.11822/21062/Regional_MWWM-UNEP-final.pdf?sequence=1&isAllowed=y

Sewage generated in 2018

SECTOR	NUMBER OF CUSTOMERS	SEWAGE PROCESSED (M^3)
Domestic	4661	899,728
Commercial	397	559,878
Government	76	320,823

Source: PUC Annual Report 2018

Overall, 85% of establishments in Seychelles are relying on septic tanks for disposal of wastewater, most of them older systems with considerable amounts of wastewater flowing in the environment and having negative effects, e.g., at some housing estates (Seychelles News agency, 2018)[16]. Generally, the usage of septic tanks is associated with high utilization of water. With the assumption that each person per year uses 7.5m^3 for flushing to septic tank, amounting to 732.187 m3 per year in Seychelles. Wastewater from septic tanks may overflow to the open channels or rivers in the case of poor soil permeability. Therefore, wastewater from septic tanks is also a potential source of pollution to the ocean water (UNEP-GEF). Due to soil and hydrogeological unfavourable conditions and insufficient design and maintenance, septic tanks on Seychelles islands often do not perform as planned, causing a significant risk of contamination.

On Mahe, 25% of the wastewater infiltration is due to pipe damage. Currently, there are plans for rehabilitation of existing sewage system in Greater Victoria. Hotels in North Mahe are connected to the PUC sewage system. Most other hotels have their own treatment plants with bacterial tests every 2 years for license renewal. However, development density in certain areas combined with topography and limited connection to the centralised sewage system, provides indication that pollution from wastewater is an issue. As previously mentioned, water tests conducted in between 2015-2020 at selected sites across all islands provided evidence of salmonella bacteria suggesting wastewater pollution occurs. Investments in the extension of the sewage system are of highest priority. Despite a balanced development in Seychelles embracing relatively large areas under protection, pollution levels in particular related to sewage are a serious threat to Seychelles' reputation as a high-end pristine-destination as well as poses health risks to bathers in general (Richter, 2016). As a result of the combination of demographic, commercial and tourism trends, the water quality of most rivers is under threat on these islands.

Sewage management carrying capacity constraints at Mahe and Praslin, are summarized below:

- **Environmental and health hazards:** 85% of establishments in Seychelles are relying on septic tanks for disposal of wastewater, most of them older systems with considerable amounts of wastewater flowing in the environment is a potential source of pollution to the ocean water as well as poses health risks to bathers in general.

[16] http://www.seychellesnewsagency.com/articles/9051/Seychelles+utilities+company+seeks+to+raise+++million+to+implement+sanitation+master+plan

- **Inefficient system:** On Mahe, 25% of the wastewater infiltration is due to pipe damage. And only 15% of households and businesses are connected to the central sewage system. Praslin lacks a centralized sewage system.

Water Management

The steep topography, poor soil types, periods of drought, and rapidly growing population and tourism market are placing significant pressure on the water system[17].

Most of the population is dependent on pipe borne water (around 95%). Issues with water shortages are most pronounced on the main island of Mahe due to pressure from an increasing population and demand from the commercial and hotel sectors. The water shortages being experienced will continue to worsen due to growth in population, tourism activities and other commercial developments. The crisis is worse during the dry season (June to November) with water restrictions and rationing more common and regular in recent years and this will get worse if appropriate measures are not taken immediately. The limited availability and access to water supply services continue to pose severe challenges for the development of other sectors constraining the overall social and economic development of the Island State[18].

Despite frequent tropical rain falls, harvesting and storage is limited. PUC started a support scheme in 2018 towards rainwater harvesting and potable water storage for 350 households (PUC, 2018[19]). In addition to water abstraction, desalination plans were introduced in 2002, which now accounts for 16% of water supply. The increase in demand for desalinated water quickly outstripped the supply contribution from these sources. Due to their topography, Mahe and Praslin have higher amounts of surface water and better storing facilities, such as dams.

Water produced in 2018

	TOTAL PRODUCTION M^3	DESALINATION VOLUME M^3	POTABLE WATER* VOLUME M^3
Mahé	10,985,378	1,790,245	9,195,133
Praslin	1,678,521	121,792	1,556,729
La Digue	581,175	195,785	385,390
Total	**13,245,074**	**2,107,822**	**11,137,252**

PUC Annual Report 2018.
**primarily from water storage in reservoirs*

[17] https://www.pseau.org/outils/ouvrages/bafd_fae_seychelles_water_supply_development_plan_2008_2030_2008.pdf
[18] https://www.afdb.org/sites/default/files/documents/projects-and-operations/seychelles_-_approved_-_la_gogue_water_supply_study_mic_grant_memorandum_final_for_board_english_2_2.pdf
[19] http://www.puc.sc/wp-includes/pdfs/Notices/2018/September/29-08-2018-RAINWATER-HARVESTING-AND-WATER-STORAGE-SCHEME.pdf

The annual water use per capita is at 104m^3, Mahe registering the lowest with 102.2 m^3, followed by Praslin with 111.6m^3. The average tourism consumption of water is estimated at 70l – 600l per room night. Total water consumption has been increasing by 4-5% per year and with the high consumption through tourism, there is increasing demand and pressure for fresh water.

Water management carrying capacity constraints at Mahe and Praslin, are summarized below:

- **Lack of measurement.** Water consumption per occupied bed is not currently collected and monitored. In order to effectively plan for fresh water management solutions policy makers should know what the expected demand will be as the tourism market grows.
- **Water scarcity.** Insufficient fresh water sources and storage to meet current and growing water demand leading to the reliance on desalination plants to supplement supply.

As a solution the Seychelles Sanitation Master Plan foresees to increase water storage. A large-scale extension project is currently being undertaken for La Gogue reservoir on Mahe to increase the water storage capacity (by June 2020) by 60% to prior condition. The Master Plan also foresees incentives to increase individual household water storage and increase water harvesting.

Energy Management

In Seychelles, almost all of the energy supply is based on oil products, imported and resold by Seychelles Petroleum Company (SEPEC). Currently 97% of the energy supply is based on fossil fuels with plans to increase renewable energy sources by 5% in 2020 and 15% by 2030. In 2013, a 6-megawatt wind farm became operational as the country's first large-scale renewable energy project. Investments in Photo Voltaic (PV) systems have been promoted over the last years (Richter, 2016). There are power plants on Mahe and Praslin, but no electricity generation on La Digue, the island depends on Praslin for energy supply via an undersea cable susceptible to damage, causing numerous power outages in la Digue.

A number of large establishments operate backup generators as an addition to the public supply. The 2016 CCS found that in particular on Praslin, establishments described electricity supply as being insufficient in terms of stability and stated the amount of service interruptions. The majority of establishments expressed a general interest in the use of alternative energy sources at the time. Solar water heating systems are already widely used. PV systems for electricity generation are becoming more popular (Richter, 2016). Small hotels and guest houses, which are Seychellois owned, have been more forthcoming in adopting renewable energy sources and photovoltaic systems have been installed on 14 accommodation establishments on Mahe, Praslin and La Digue. Government has also put in place the SME financing scheme to facilitate the uptake of PV systems by businesses and is currently working on energy performance legislation which will require business premises to comply with minimum energy performance standards (Tourism Sector Strategy, 2019). Of note, in 2016, large hotels (>24 rooms) represented 34% of energy consumed (Energy Study, 2016). Carbon emission per capita are at 5.4 MTCo2, compared to 13.06 MT Co2 per guest night. To date there is no functioning and enforced tropical building code for tourism developments, which increases reliance on air conditioning for many of the tourism establishments.

The annual energy consumption per capita per day 11.13 kWh, whereas the energy consumption per guest night is at 26.42 kWh, more than double the average consumption of residents per night.

Electricity generated in 2013-2018

TOTAL UNITS GENERATED	2013 KWH	2014 KWH	2015 KWH	2016 KWH	2017 KWH	2018 KWH
Mahe						
From fossil fuel	307,728,098	**314,075,210**	**324,883,835**	352,147,815	363,326,896	366,158,574
Wind energy	6,951,050	7,090,810	6,795,420	6,856,893	6,616,620	7,392,410
PV		393,398	1,295,909	1,904,530	2,378,554	2,919,796
Total	**314,679,148**	**321,559,418**	**332,975,164**	**360,909,238**	**372,322,070**	**376,470,780**
Praslin						
From fossil fuel	**39,545,503**	40,806,376	44,411,393	48,366,687	50,902,992	50,737,907
PV		77,805	245,295	394,510	603,211	615,017
Total Energy produced	**39,545,503**	**40,884,181**	**44,656,688**	**48,761,197**	**51,506,203**	**51,352,924**

Electricity consumed in 2018

SECTOR	NUMBER OF CUSTOMERS	ELECTRICITY CONSUMED (KWH)
Domestic	32,278	126,291,758
Commercial	5,498	212,298,886
Government	1,044	47,442,727

Source: PUC Annual Report 2018

The number of electricity customers based on Mahé, Praslin and La Digue have risen to 38,820 in 2018 compared to 37,435 the previous year (3.7% increase). During the year, a total of 386 GWh of electricity were sold, of which 341.6 GWh were on Mahé, 31.7 GWh on Praslin and 12.7 GWh on La Digue. Whilst the vast majority of electricity customers are domestic (83%), they consumed only a third of electricity supplied (126.3 GWh), equivalent to SCR 234million in revenues (18%) in 2018. In contrast, commercial customers constituted only 14% of the customer base but they consumed 55% of total electricity supplied (212.2 GWh). Almost SCR 900million of total electricity revenues (66%) came from the commercial sector during the year. Government customers comprised only 3% of the customer base.

Energy management carrying capacity constraints for Mahe and Praslin, are summarized below:

- **Continuous data Measurement.** Energy consumption per bed night is not consistently measured and monitored. In order to effectively plan for energy management solutions policy makers should know what the expected needs of the growing tourism market.
- **High demand of tourism sector.** Energy consumption per guest night is more than double the average consumption of residents per night adding additional strain on the energy system as tourism grows.
- **Over reliance on fossil fuels.** Almost all of the energy supply is based on imported oil products, which at the same time implies a high vulnerability to crude oil price volatility as well directly contributing to the high green gas emissions footprint of the tourism sector.
- **Energy insecurity.** Energy supply brought from Praslin to La Digue via an undersea cable adds additional pressure the energy system in Praslin as tourism grows in La Digue.

Chapter 2 Visitor Experience Carrying Capacity

Research Introduction and Purpose

The beaches of the Seychelles are at the heart of the tourism industry and the primary draw for visitation. They are the key demand drivers for the country. So much so, many sites are beginning to feel crowded and overrun which could possibly lead to diminished visitor satisfaction. With the number and diversity of visitors to the Seychelles increasing annually, destination stakeholders are recognizing the importance of visitors' attitudes towards and preferences for the number of people they engage with at various sites across the island nation.

Ecological conditions, visitor use, visitor preferences, management decisions and resulting outcomes are intricately linked and interdependent. Specific to the work outlined in this report, the reciprocity and linkages between these elements influences an area's carrying capacity, which is the amount, type and spatial distribution of visitor use activity that can be accommodated without unacceptable impacts to resource or social conditions.

Experiential carrying capacity describes a threshold or range of conditions that are acceptable to visitors, such as "no more than 10 people within view at one time." When conditions remain within an experiential carrying capacity, the quality of the experience is maintained, provided the ecological capacity is also sustained. However, without understanding the relationships between current conditions and visitors' thresholds for crowding, managers do not have defensible information for management actions (Manning, 2009). Contemporary planning and management frameworks aid in establishing carrying capacities by applying the concepts of indicators and thresholds. *Indicators* are manageable and measurable proxies for desired ecological or experiential conditions (e.g., number of people within view at one time at the beach) and *Thresholds* are the minimal acceptable condition of the indicator variable (e.g., 100 people). Visitor's normative thresholds for varying experiential (e.g., crowding) conditions were evaluated.

This study was primarily designed to collect data about current and desired preferences regarding experiential conditions at seven beaches on the islands of Mahe, Praslin and La Digue (Anse Lazio, Anse Royal, Beau Vallon, Grand Anse, Port Launay, Cote D'Or and D'Argent) between February 10 and March 5, 2020. A total of 323 visitors participated in the quantitative survey.

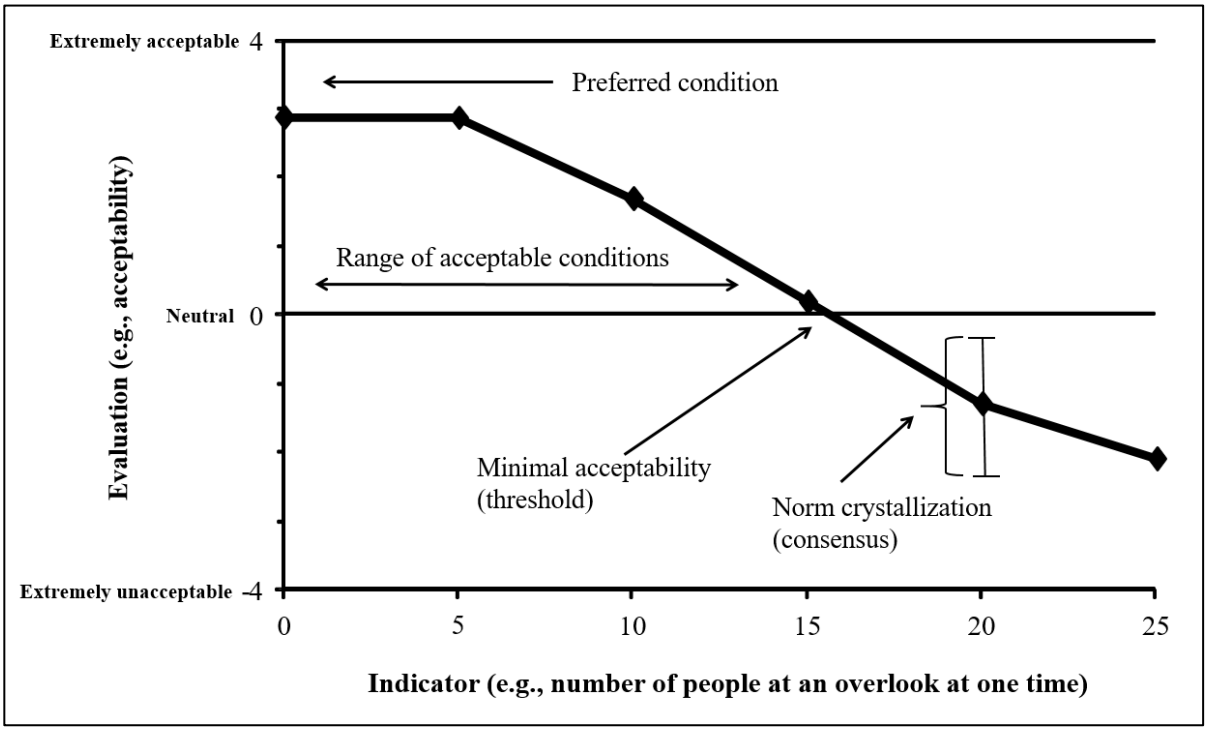
At the onset of the research study, impacts related to "overtourism" were at the core of the study's objectives. However, with the Covid-19 global pandemic, the issues related to crowding are now relevant to social distancing guidelines but were not the purpose of the study, therefore the survey questions were not designed to capture perceptions in that regard. However, the photo panels used to understand perceptions of crowded beaches may correlate with defined guidelines for social distancing and is worth further interpretation.

Methodology

To gauge visitors' preferences for conditions and crowding, the research team used a norm-based approach, which suggests that visitors have shared beliefs about important aspects of their

experiences, including desired experiential and managerial conditions. These preferences for conditions and 'how things ought to be,' are often referred to as norms (Shelby, Vaske, & Donnelly, 1996). A threshold and associated evaluative dimensions are often displayed on a social norm curve, where, generally, the highest point on the curve represents the preferred or optimal condition, while points below the neutral line represent conditions that are unacceptable or violate the threshold of the indicator.

Example of social norm curve to identify visitors' threshold for number of people at one time at a popular overlook.



Questionnaires

Researchers distributed a quantitative visitor questionnaire about seven primary locations across the islands of Mahe, Praslin and La Digue. The questionnaire evaluated visitors' preferences for crowding conditions at the different locations and researchers used standard best practices for survey construction. The questionnaire also captured visitors' past use history (PUH; or past visits) in the Seychelles, sites visited in the Seychelles, perceptions of general conditions during their experience and general demographics using standard census categories. To ensure a representative sample at specific locations across the three main islands of study (Mahe, Paslin and La Digue), the researchers used a sampling procedure which was stratified across time of day and day of the week to intercept visitors (Vaske, 2008). The questionnaires were administered from February 10 to March 5, 2020 primarily at the Seychelles International Airport. This location was chosen for ease of intercept, as the vast majority of visitors to the Seychelles must leave from the airport. Other locations were added late in the study period due to changes in rules accessing visitors in the waiting room of the airport. During sampling, 608 emails were collected, with 323

following the link to the survey in Qualtrics, yielding a response rate of 53%. An overall margin of error of 4.56% at the 90% confidence level was achieved.

Photo Panels

To understand visitor's perceptions of crowding, visual approaches to measuring standards of quality were employed using computer-generated photographs to represent a range of people at one time (PAOT). Photographs were presented (sequentially) to visitors through an online survey. Photos were used in the study because they may better communicate or focus attention on the variables intended for evaluation by respondents, particularly when these variables are difficult or awkward to describe in a narrative format (Hallo & Manning, 2009; Manning & Freimund, 2004). When measuring visitors' preferences and thresholds for crowding at the seven beaches identified by partners at the Seychelles, visitors were asked to study multiple photographs that depicted a range of conditions from solitude (e.g., no people) to saturation (e.g., a large amount of people). The research team paid special attention to depict crowding and congestion at the different locations, which involved such variables as people, boats and beach chairs in most photographs.

Photographs were presented (sequentially) to visitors through an online survey platform (Qualtrics). While viewing the photographs, visitors rated each photo by indicating how acceptable it was based on the conditions displayed. Respondents rated photos on a nine-point Likert scale ranging from - 4 (''very unacceptable'') to + 4 (''very acceptable''), with a midpoint of 0.

GPS Tracker

Visitors were intercepted at the Praslin/La Digue ferry dock and select hotels on Mahe, a total of 10 trackers were collected. Intercepted visitors voluntarily participated in the study and received a GPS unit to carry with them throughout their day. The researchers distributed one GPS unit per travel party. The researchers converted the data into shapefiles that would visually depict the geographic and descriptive information for each GPS tracking device. Each shapefile was used to collectively represent the movement of visitors within all of the Seychelles locations and to display the level of density not only overall, but with each specific area. Though the sample is not statistically significant, it provides some insight to tourism movement across the islands.

Study Limitations

The results of this study are from a month of data collection during February and March of 2020, and thus may not represent visitation levels and visitation patterns at other times of the year. Although all efforts were made by the research team to obtain a representative study, several conditions hindered out ability to do so: 1) postcard (e.g., survey) administrators were unable to sample every day during the sampling period because of various obstacles (e.g., transportation issues); 2) changes in procedures at the Seychelles International Airport that no longer allowed administrators to access outgoing visitors in the waiting area; 3) bad weather, the survey was conducted during the rainy season; 4) survey administrators became increasingly reluctant to approach visitors due to the COVID-19 epidemic. Due to these limitations, some locations (e.g., Port Launay) did not get an ideal number of responses for the photo panels. Although these limitations do exist, and caution should be exercised in overstating some of the results, the

research team is confident that this data does provide decision makers at the Seychelles with important and relevant information for decision-making.

Overall Results

Visitation History and Characteristics

Regarding the visitation history of all visitors to the Seychelles, 80.34% of visitors reported that their current visit was their first time to the area. The remainder of visitors (19.66%), reported that they were returning visitors to the Seychelles (Table 1). In addition to the reported time period, recurring visitors conveyed the existence of a previous visitation range of 1 to 50 or more visits and a mean of 5.5 past visits to the Seychelles. When inquiring about the transportation that was utilized when arriving to the Seychelles, 97.93% of visitors reported using a plane and 2.07% reported using a ship.

When spending time in the Seychelles, 81.72% of visitors reported visiting more than one location. Contrastingly, 18.28% of visitors conveyed the visitation of a single location during their trip. Of all of the locations, Mahe was reported as the most visited location with 43.35% of visitors stating that they spent time on this specific island. La Digue was the second most visited location with 28.48% of visitors reporting that they visited this location. The lowest visited location by a small margin was Praslin with a visitation rate of 28.16% of visitors stating that they travelled to this specific island. For visitors that reported traveling to Mahe, Beau Vallon was selected as the most visited location (74.07%). Anse Royale was listed as the second most visited location (55.56%) and Port Launay Beach was listed as the third location (37.78%) (Table below).

When considering La Digue, Anse Source D'Argent was selected as the most visited location (87.57%). Within La Digue as well, Grand Anse was reported as being the second highest visited site (62.15%) (Table 8). For visitors who reported going to Praslin, Anse Lazio was chosen as the highest visited site (75.43%). The second most visited site was Vallee De Mai National Park (62.29%) and the lowest visited site for Praslin was found to be Cote D'Or (59.43%). For all of the locations (e.g., Mahe, La Digue and Praslin) in this study, the site that was reported by visitors as being their main or primary destination included Beau Vallon at 38.87%, 14.72% of visitors selecting Anse Royale as a primary destination and Anse Source D'Argent with 12.45%. The remaining rankings of primary destinations for visitors include Grand Anse (9.06%), Cote D'Or (7.92%), Port Launay (6.79%), Anse Lazio (5.66%) and Vallee De Mai National Park (4.53%).

Most visited beaches during stay.

BASED ON THE LOCATIONS YOU VISITED, WHAT WAS YOUR PRIMARY DESTINATION?		
	PERCENTAGE (%)	COUNT (N)

Anse Royale Beach	14.72	39
Port Launay Beach	6.79	18
Beau Vallon Beach	38.87	103
Anse Source D'Argent Beach	12.45	33
Grand Anse Beach	9.06	24
Anse Lazio Beach	5.66	15
Cote D'Or Beach	7.92	21
Vallee De Mai National Park	4.53	12

The mean group size reported by visitors was 2 to 3 people (2.7), with a range of 1 to 20 people per group (Table 11). The average length of a stay for each group or individual was 9 to 10 days (9.4) (Table 12). While this reflects the mean length of stay for individuals and their groups in days, the overall length of stay for all visitors ranged from 1 to 50 or more days (Table 12). During their time in the Seychelles, visitors reported using a large hotel the most for lodging purposes with 27.73% of participants selecting this specific accommodation. Additional accommodations that were reported by visitors from most used to least used include self-catering (e.g., Airbnb) (26.61%), small hotels (20.17%), guest houses (14.85%) and other accommodations (10.64%)

Types of accommodations stayed in.

WHAT TYPE OF ACCOMMODATION(S) DID YOU STAY IN?		
	PERCENTAGE (%)	COUNT (N)
Small Hotel	20.17	72
Self-catering (e.g., Airbnb)	26.61	95
Large Hotel	27.73	99

Guest House	14.85	53
Other	10.64	38

Sociodemographic Characteristics of Visitors

A total of 39 individuals reported France as their home country. The second highest country that was listed as a residential location includes Germany with 35 selections. For all of the visitors that participated in this research, the mean age was found to be between the values of 43 and 44 years of age with a mean birth year between 1976 and 1977 (1976.3). The years that compose the average age of visitors to the Seychelles ranged from 1941 to 2002. When assessing the reported gender of all visitors, the highest percentage of participants were female (52.65%). The remaining visitors reported to be male (46.64%) or other (0.71%). Lastly, the main employment categorization that was selected by visitors included full-time employment status (73.85%). The remainder of selected employment categorizations included part-time (10.60%), retired (8.83%) and unemployed (6.71%).

Visitor Perceptions of Conditions on Selected Beaches:

These primary results include visitor reports of the level of crowding they experienced during their time within the Seychelles and their overall experiential rating of their trip. For the level of crowding that was reported by visitors, Anse Source D'Argent was selected as having the highest level of crowding with a mean of 5.35 on a 9-point scale. The remainder of sites were reported as having a range of 4.79 to 3.46 concerning the mean level of crowding that was provided.

Reported Level of Crowding Experienced at All Sites.

WHAT IS THE LEVEL OF CROWDING YOU EXPERIENCED DURING YOUR VISIT (9-POINT SCALE WITH 9 BEING THE HIGHEST LEVEL OF CROWDING)?		
	MEAN	COUNT (N)
Grand Anse Beach	3.99	85
Anse Source D'Argent Beach	5.35	97
Anse Lazio Beach	4.43	98
Cote D'Or Beach	4.09	88
Anse Royale Beach	3.46	65
Port Launay Beach	3.95	42
Beau Vallon Beach	4.79	90

Reported Overall Experience Satisfaction for All Sites.

HOW WOULD YOU RATE YOUR EXPERIENCE TODAY (10-POINT SCALE WITH 10 BEING THE BEST)?		
	MEAN	COUNT (N)
Grand Anse Beach	8.05	85
Anse Source D'Argent Beach	7.30	90
Anse Lazio Beach	7.50	90
Cote D'Or Beach	7.83	84
Anse Royale Beach	7.32	63
Port Launay Beach	7.77	43
Beau Vallon Beach	7.30	88

Mahe

Anse Royale

Without the presence of photos, visitors were accepting (acceptable to very acceptable) of increased volumes of people on site. However, there was support for increased management actions at high numbers (60 people) of visitors (61.0%) and an expression of a reduced level of use (73.7%). Additionally, these selections did contrast to the reported conditions of visitors that aligned with seeing 15 people (50.0%). The involved photo panels revealed that visitors displayed a higher level of agreement for a majority of the photos. When presented with the photo containing the highest value of individuals, visitors displayed the lowest level of agreement concerning the present conditions. As the number of individuals presented in each photo increased, the level of acceptability declined slightly while also remaining above the 0 point that is associated with minimally acceptable conditions. This conveys an overall acceptance of the diverse conditions displayed in the photo panels by visitors that participated in this research. Over half (60%) of the respondents stated that none of the photos displayed conditions so unacceptable that mangers should take actions. Additionally, a fifth (20%) of visitors to this location stated that that visitor use should never be limited. Almost three quarters (67%) of the visitors to this beach stated that none of the conditions in the photos would cause them to no longer visit this location (e.g., displacement).

Norm curve displaying encounters per visit conditions for Grand Anse

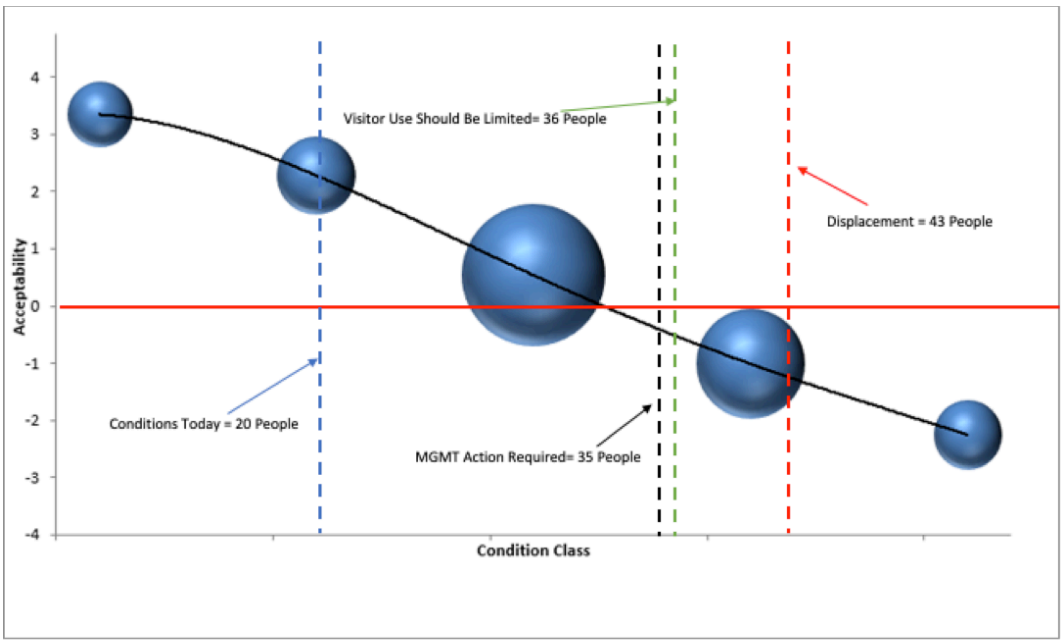



Photo 1: 10 People


Photo 2: 20 People


Photo 3: 30 People


Photo 4: 40 People


Photo 5: 50 People

Port Launay

Without the presence of photos, visitors were accepting (acceptable to very acceptable) of increased volumes of people on site. However, there was support for increased management actions at high numbers (60 people) of visitors (48.84%) and an expression of a reduced level of use (69.77%). Additionally, these selections did contrast to the reported conditions of visitors that aligned with seeing 30 people (34.88%). The involved photo panels revealed that visitors displayed a higher level of agreement for a majority of the photos. When presented with the photo containing the highest value of individuals, visitors displayed the lowest level of agreement concerning the present conditions. In addition to a general consensus amongst visitors concerning their level of agreement regarding the conveyed conditions in each photo, the expressed level of acceptability displayed a similar pattern within visitor responses. As the number of individuals presented in each photo increased, the level of acceptability declined slightly while also remaining above the 0 point that is associated with minimally acceptable conditions. This conveys an overall acceptance of the diverse conditions displayed in the photo panels by visitors that participated in this research. Nearly half (48%) of the respondents stated that none of the photos displayed conditions so unacceptable that mangers should take actions. Additionally, a quarter (25%) of visitors to this location stated that that visitor use should never be limited. Almost half (49%) of the visitors to this beach stated that none of the conditions in the photos would cause them to no longer visit this location (e.g., displacement).

Norm curve displaying encounters per visit conditions for Port Launay

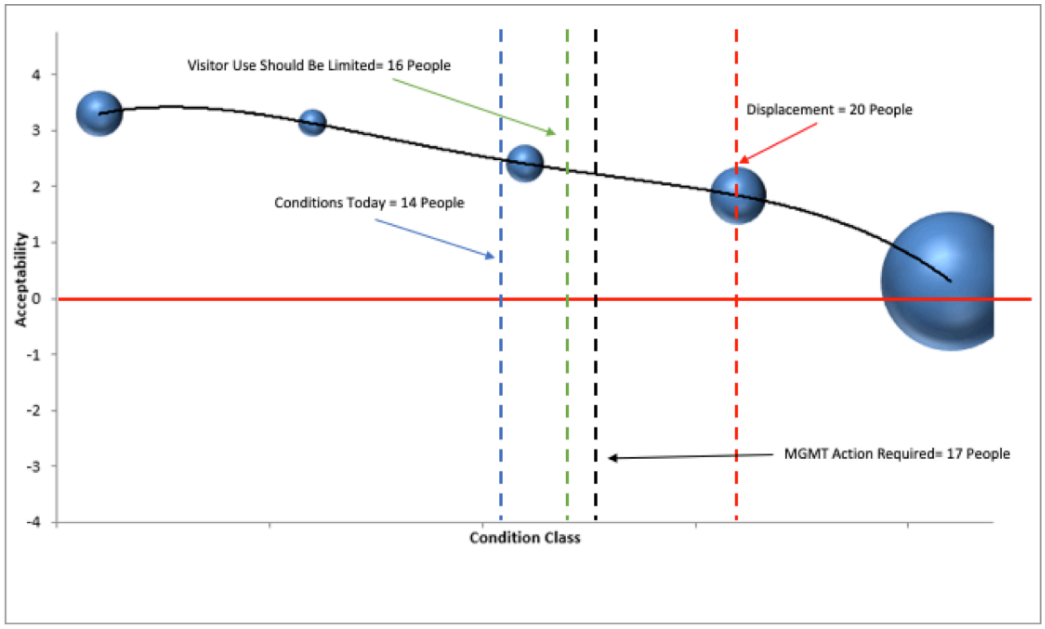


Photo 1: 5 People | Photo 2: 10 People | Photo 3: 15 People | Photo 4: 20 People | Photo 5: 25 People

Beau Vallon

When not assessing photos, visitors conveyed a collective acceptance (acceptable to very acceptable) of increased numbers of people within this specific site. Despite this level of acceptance concerning the increasing presence of individuals at one time, there was support for management at high numbers (60 people) of visitors (60.71%) and an expression of a reduced level of use (77.78%). It was also found that the selections for management action and displacement did contrast the experienced conditions that were reported by visitors as seeing 30 people (40.45%). The included photo panels revealed that visitors displayed a level of disagreement when viewing each photo in the photo panels. While photo 2 contained the second lowest level of individuals portrayed an increased presence of agreement, the level of disagreement amongst visitors continuously increased as the number of people in each photo was enhanced. Notably, visitors displayed a slight increase in the level of agreement when viewing the photo with the highest number of individuals (photo 5). While the level of agreement increased, an overall inconsistency of agreement was present throughout the reported responses. Only 26% of the respondents stated that none of the photos displayed conditions so unacceptable that mangers should take actions. Additionally, 20% of visitors to this location stated that that visitor use should never be limited. Less than half (41%) of the visitors to this beach stated that none of the conditions in the photos would cause them to no longer visit this location (e.g., displacement).

Norm curve displaying encounters per visit conditions for Beau Vallon.

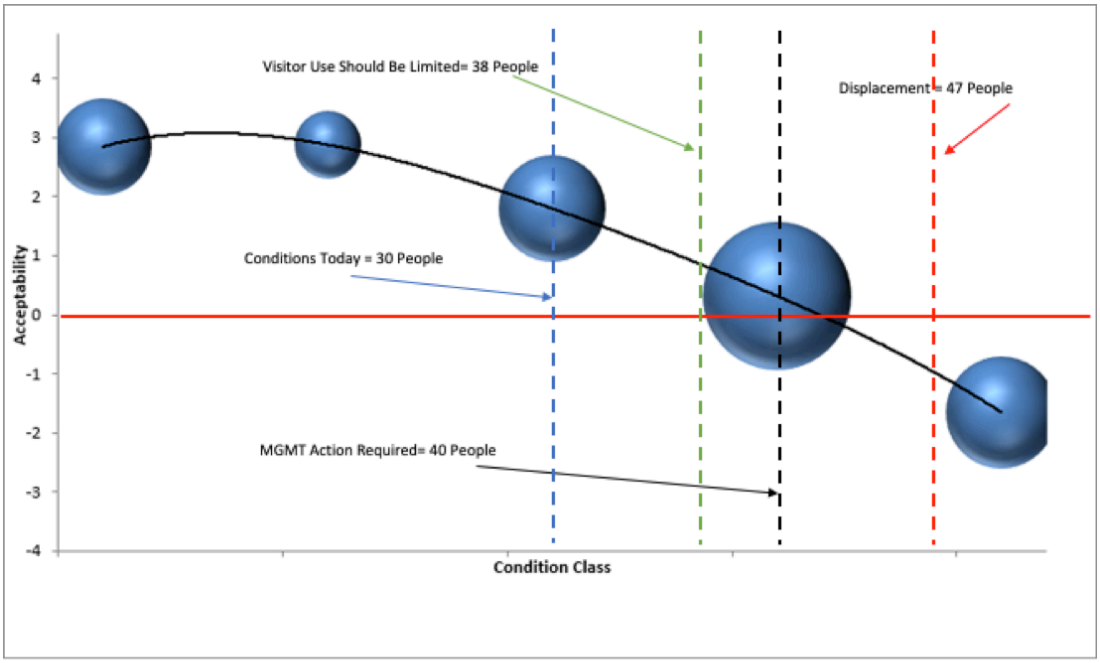


Photo 1: 10 People | Photo 2: 20 People | Photo 3: 30 People | Photo 4: 40 People | Photo 5: 50 People

Praslin

Anse Lazio

Without the presence of photos, visitors expressed a general acceptance (acceptable to very acceptable) of increased volumes of people on site as a whole. When considering the presence of 60 people at one time, visitors did display a level of disagreement or unacceptability. Based on this item, there was a displayed level of support for management at high numbers (60 people) of visitors (50%) and an expression of a reduced level of use (73.8%). Additionally, these selections pertaining to 60 people were found to contrast their experienced conditions that was reported by visitors as experiencing 30 people (38.7%). Photo panels displayed a higher level of agreement amongst visitors when presented with a lower level of individuals in a photo. When presented with an increasing value of individuals, visitors displayed a lower level of agreement regarding the conditions in the photo panels. Within the graph, a declining presence of acceptability was also observed within visitor responses as the number of people in each of the photos increased. A third (34%) of the respondents stated that none of the photos displayed conditions so unacceptable that mangers should take actions. Additionally, a small percentage (13%) of visitors to this location stated that that visitor use should never be limited. Nearly half (42%) of the visitors to this beach stated that none of the conditions in the photos would cause them to no longer visit this location (e.g., displacement).

Norm curve displaying encounters per visit conditions for Anse Lazio

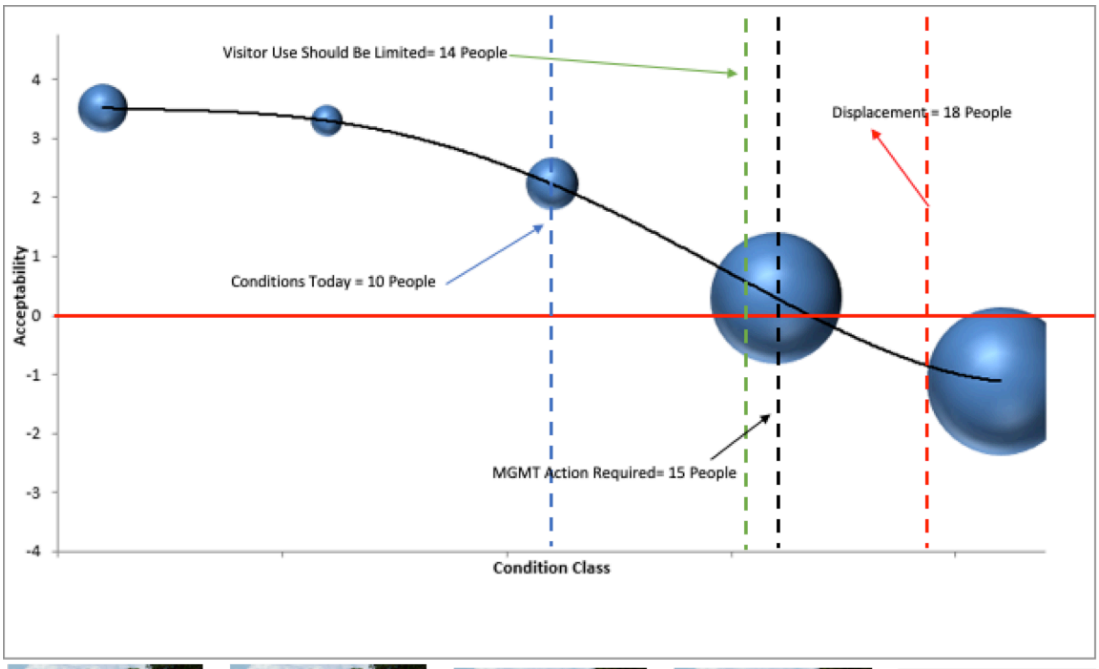



Photo 1: 0 People


Photo 2: 5 People


Photo 3: 10 People


Photo 4: 15 People


Photo 5: 20 People

Cote D'Or

When not viewing photos, visitors were accepting (acceptable to very acceptable) of increased numbers of people on site as a whole. In contrast to this finding, visitors did display a level of unacceptability (unacceptable) when considering the presence of 60 people at one time. Due to this level of observed disagreement, there was support for management at high numbers (60 people) of visitors (52.9%) and an expression of a reduced level of use or displacement (69.1%). In addition to these specific selections, these reported items were found to contrast the experienced conditions of visitors that conveyed seeing 15 people during their trip (42.5%). Photo panels revealed that visitors displayed a higher level of agreement when presented with a lower level of individuals in a photo and a slight increase in disagreement continued as the number of individuals increased. When presented with the highest number of individuals in a photo, visitors displayed a notable increase in disagreement. Only 15% of the respondents stated that none of the photos displayed conditions so unacceptable that mangers should take actions. Additionally, a small percentage (16%) of visitors to this location stated that that visitor use should never be limited. A quarter (24%) of the visitors to this beach stated that none of the conditions in the photos would cause them to no longer visit this location (e.g., displacement).

Norm curve displaying encounters per visit conditions for Cote D'Or

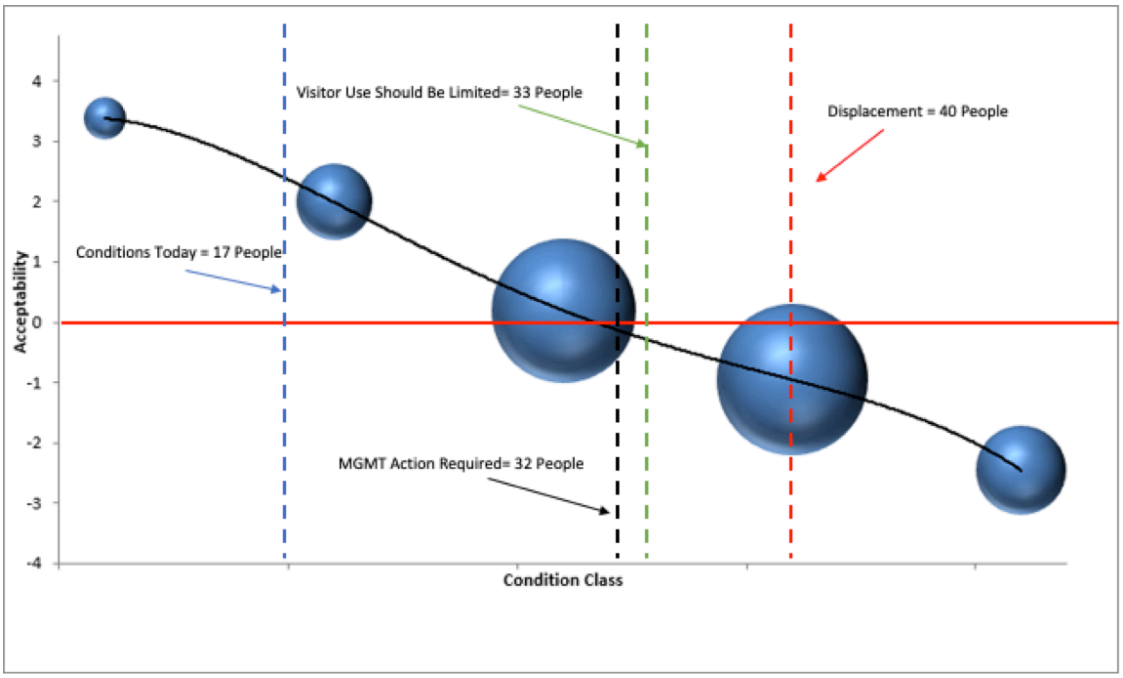


Photo 1: 10 People | Photo 2: 20 People | Photo 3: 30 People | Photo 4: 40 People | Photo 5: 50 People

Satisfaction of All Visitors

When inquiring about specific conditions within the varying Seychelles locations, visitors expressed an overall consensus of acceptability with the current conditions. Specifically, visitors reported a level of acceptability for a notable portion of current conditions and the remainder of conditions were selected by visitors as being not applicable. The items that were selected as acceptable from highest to lowest include congestion at airports (46.50%), noise at the beach (39.80%), sense of safety and security on the beach (38.80%), number of excursions available to choose from (37.80%), overall satisfaction with quality and condition of roads (36.40%), hotels are doing their part to address environmental issues (36.00%), litter on the beach (34.80%), congestion at ports (33.80%), sense of safety and security after dark (33.60%), sense of safety and security at the ports (32.90%), sense of safety and security concerning stray dogs (31.90%), overall satisfaction with safety on the road (27.80%) and number of cultural activities available to choose from (26.90%) (Table 36). The remaining item pertaining to the overall satisfaction with public transportation was reported by visitors as not applying with a percentage of 28.40%.

Visitor Satisfaction and Likelihood to Return

Regarding the decision by visitors to return to the Seychelles, the current conditions were reported as being somewhat influential to very influential in impacting their choice. The items that were considered to be very influential in the decision of visitors to return to the Seychelles from highest to lowest include sense of safety and security on the beach (38.20%), sense of safety and security after dark (34.10%), litter on the beach (32.30%), hotels are doing their part to address environmental issues (31.90%), overall satisfaction with safety on the road (30.40%), number of excursions available to choose from (28.30%), noise at the beach (26.80%) and sense of safety and security at the ports (25.70%). The items that were chosen as somewhat influential items from highest to lowest include overall satisfaction with quality and conditions of roads (36.60%), number of cultural activities available to choose from (28.50%), sense of safety and security concerning stray dogs (26.90%), noise at the beach (26.80%), overall satisfaction with public transportation (26.40%) and congestion at airports (26.10%). The remaining item that was observed by visitors as being non-applicable in their decision to return includes congestion at ports with 23.70%.

Concerning the probability of return by visitors, a differentiation was observed among participants. If the current conditions within the Seychelles were maintained, 79.20% of visitors selected that they would return. If the current level of crowding was increased, the percentage distribution was found to shift with only 44.62% of individuals stating that they may return. Regarding environmental degradation, 54% of visitors selected that they would not return to the Seychelles based on the progression of this specific factor.

Probability of return reported by visitors based on current and potential conditions.

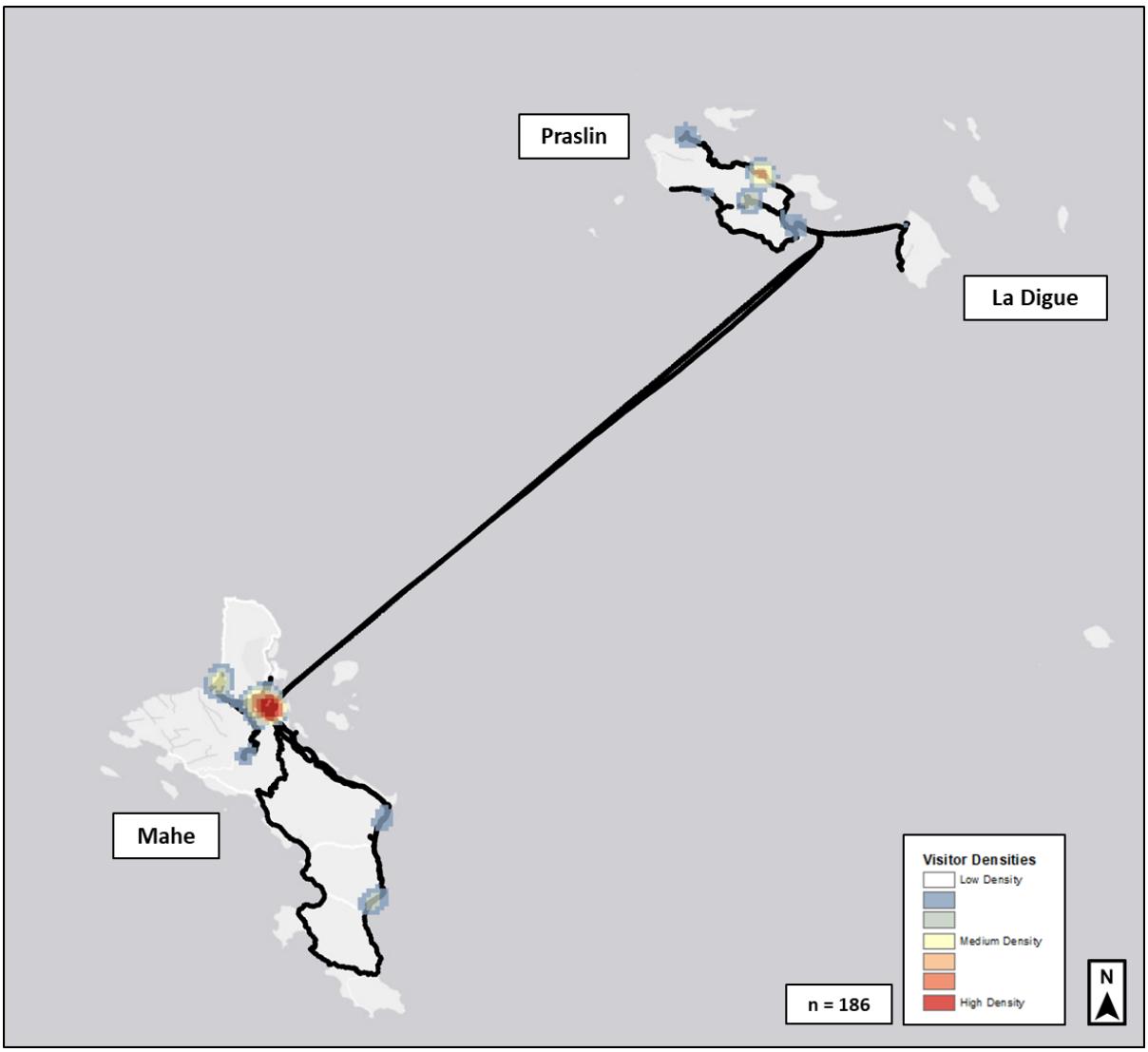
WOULD YOU RETURN TO THE SEYCHELLES IF....			
	CURRENT CONDITIONS WERE MAINTAINED	MORE CROWDING PRESENT	MORE ENVIRONMENTAL DEGRADATION PRESENT
Yes (%)	79.20	31.87	11.60
No (%)	2.00	23.51	54.00
Maybe (%)	18.80	44.62	34.40

Visitor Movement and Density Within the Seychelles

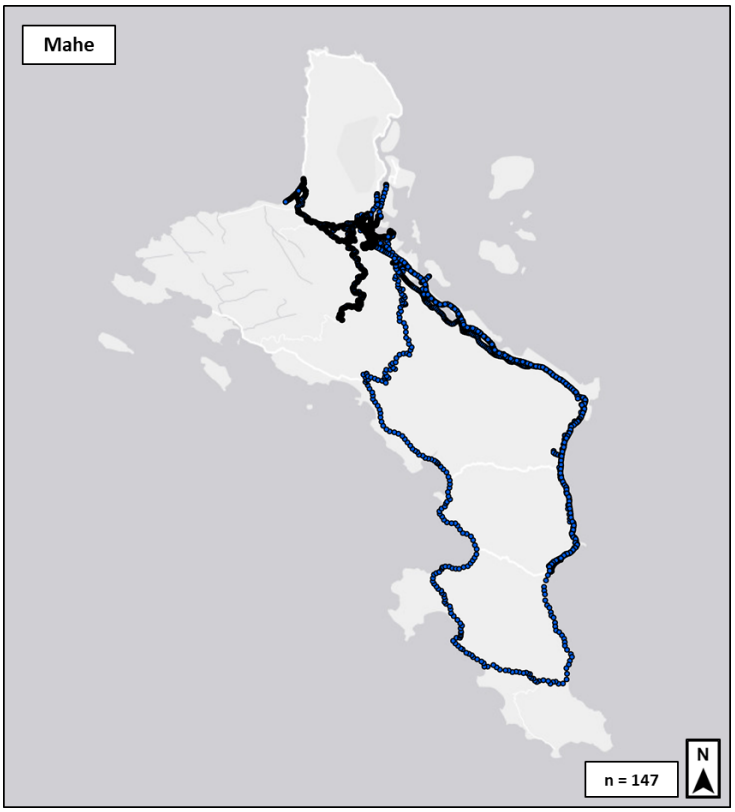
Throughout the locations for this study, visitor movement was observed in each of the islands and sites. Through the use of GPS tracking devices, visitor movements from each of the three primary locations (e.g., Mahe, La Digue and Praslin) were analyzed. A total of 186 GPS tracks were assessed and conveyed in a visual depiction of the movement that took place within all of the locations, see graphic representations below.

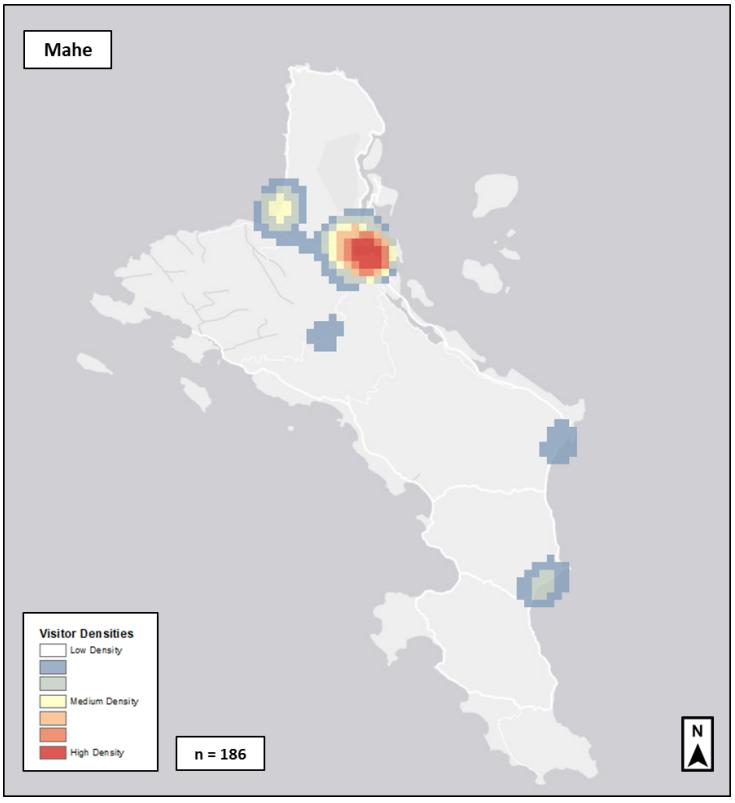
Based on this sample of GPS tracks, the primary portion of visitor traffic was observed on Mahe. Praslin was observed to be the location with the second highest level of visitor traffic and La Digue being the third. When collectively assessing the visitor traffic in the context of visitor density, the tracks within each location were analysed and reflected on a scale from low density to high density. Based on the evaluation of visitor densities, Mahe remained as the location that experienced the highest level of visitor density and included a notable presence of specific sites of interest in this study (e.g., Beau Vallon). Praslin also displayed specific sites of visitor concentration and density related to this study (e.g., Valles de Mare) with a presence of primarily white to coral color tones.

Density of visitor movements and reported pathways in the Seychelles displayed through GPS tracking devices.

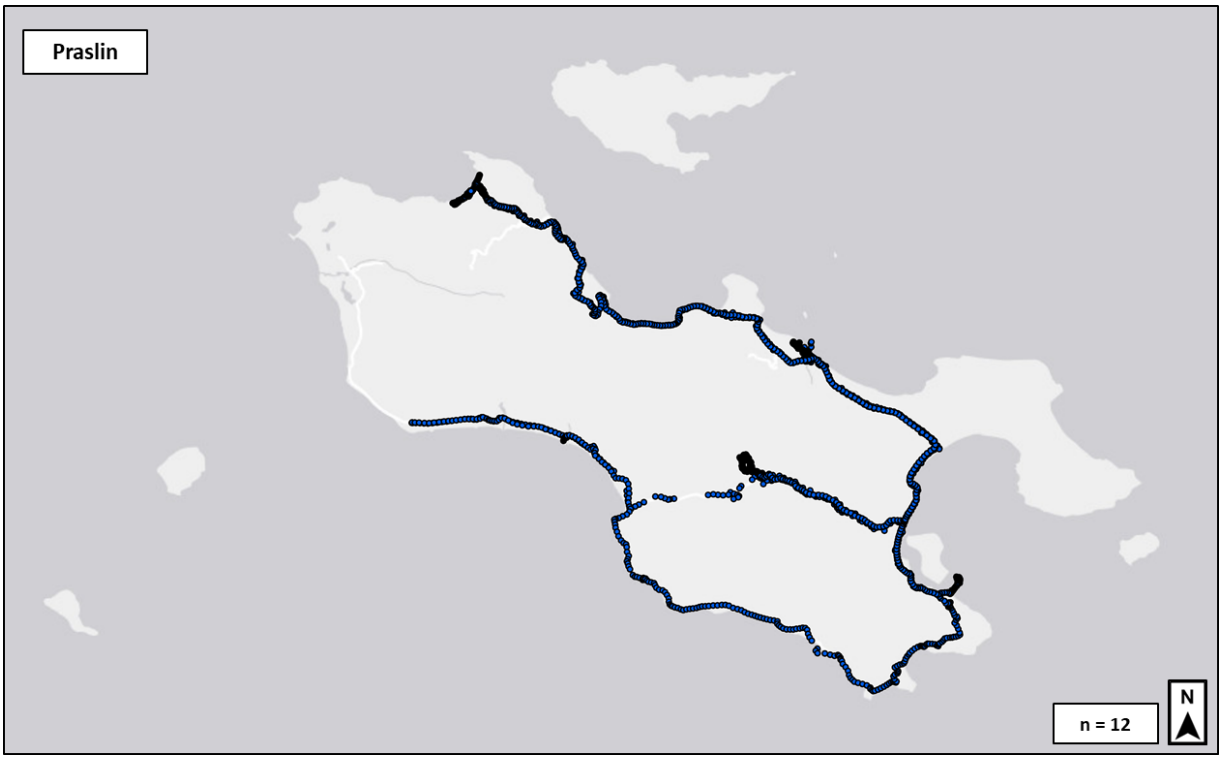


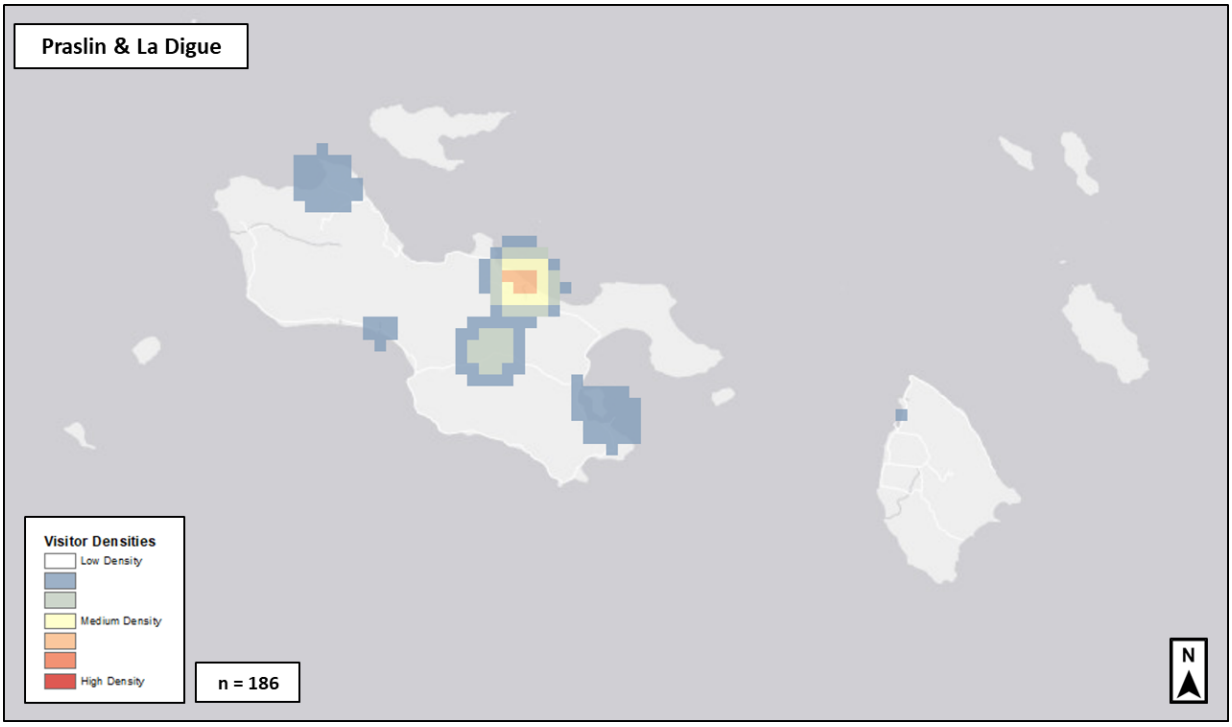
Density of visitor movements and reported pathways in Mahe displayed through GPS tracking devices





Density of visitor movements and reported pathways in Praslin displayed through GPS tracking devices





Conclusions

Overall, visitors find the current number of people visiting the seven beaches surveyed to be acceptable. Thus, current management at the site level may be appropriate for the short term. However, visitors stated that they would be less likely to visit if environmental conditions become more degraded and many of the saturated photos (photo 5) presented to visitors were either minimally acceptable or unacceptable. Additionally, a significant portion of visitors stated that if conditions were to grow more crowded, they would not return to the Seychelles. Therefore, more restrictive site management may need to begin to maintain current, acceptable conditions, thus results and outcomes of this project must be integrated into future planning and management efforts. This includes setting formal thresholds for the indicator variable (people at one time) investigated in this report. Results presented in this report offer a range of potential thresholds and triggers that might be used for each indicator. Also, responsibilities and schedules for future monitoring of indicators should be designated. It is crucial to develop detailed management alternatives to enact in case monitoring indicates that thresholds are violated, or triggers are activated.

It is important to note that although current conditions are not exceeding visitors' thresholds (either minimally acceptable conditions or displacement), many visitors across all the locations stated that no set of conditions presented would cause them to not return. These numbers, however, are not as high as in other places previously studied (e.g., Aruba and Alaska) due to the large number of first-time visitors (80%). Since most visitors have no point of comparison upon which to make evaluative judgements, they are likely responding to current conditions. If surveys continue to be a primary form to understand how visitors perceive crowded conditions on beaches in the Seychelles, decision makers need to ***manage for desired conditions*** and NOT current conditions. It is likely that a shifting baseline effect will occur if decisions are based on current conditions, and not desired conditions, thus leading to increasingly degraded ecological and experiential conditions. Thus, even though visitors stated that conditions may never reach a point of unacceptability, they did identify (at the very least) a set of desired conditions. For example, at Beau Vallon (one of the most popular destinations), many visitors stated that no conditions presented in the photos would cause them to not return to this location, that does not necessarily mean that they do not have desired conditions. Visitors desired conditions appear to be between 10 to 40 people at this location (based on the acceptability curve in Figure 8). It cannot be stressed enough that visitor reported conditions are important to the decision-making process, but the desired conditions should drive long-term management and monitoring of the locations in this study.

Current conditions are not violating visitors' expectations, but if visitation trends shift, these thresholds may begin to be violated. If the number of people at one time is a metric that is chosen to monitor on a regular basis, management actions that can be implemented if thresholds are violated should be identified. Examples of management actions may be education, off-peak time marketing, permitting, reservations or in extreme cases closure of certain areas. The potential effectiveness and impacts of these management alternatives should be assessed prior to their

implementation. This might include outside review/assistance by subject matter experts or developing a computer model to simulate and test the outcomes of potential management alternatives. It is also suggested that pulses of use (e.g., cruise ships) continue to be monitored (or further studied) to anticipate high use weeks or weekends. Consider managing visitor expectations through social media, websites, additional marketing and outreach, especially if management action occurs at times of high use. Commercial operators should be encouraged to be a part of any proposed management strategies that may alter the temporal, spatial and/or experiential components of tourism in the Seychelles.

The following conclusions are taken into consideration to derive the recommendations derived in Chapter 5 Roadmap to High-Value Low-Impact model:

- Overall, visitors find the current number of people visiting the seven beaches surveyed to be acceptable (during our sampling period). Thus, current management at the site level may be appropriate for the short term during the time frame sampled. Other times of the year may have different visitation patterns, and thus visitors may perceive crowding during these times differently. However, only 32% would return if conditions were more crowded, a case for more intensive, purposeful long-term monitoring.
- Visitors stated that they would be less likely to visit if environmental conditions become more degraded and many of the saturated photos (photo 5) presented to visitors were either minimally acceptable or unacceptable. Therefore, more restrictive site management may need to begin to maintain current, acceptable conditions.
- Visitors found most conditions and amenities acceptable during their visit. However, almost a quarter of visitors found the amount of litter on the beaches, the quality of the roads and the safety of the roads to be slightly to totally unacceptable. Decision makers at the Seychelles may consider paying additional attention to these items.

CHAPTER 3. Tourism Carrying Capacity Framework

Chapter 1 presents a current snapshot of conditions in Seychelles related to social, environmental, and economic impacts. Chapter 2 provides an analysis of visitor perceptions as it relates to crowding and how that might influence their decision to return. These chapters provide a baseline understanding of current conditions and potential thresholds of capacity. Chapter 3 starts by explaining how the Tourism Carrying Capacity Indicators Framework was created, and follows with a presentation of the Carrying Capacity Key Findings.

Tourism Carrying Capacity Indicators Framework

The Tourism Carrying Capacity Indicators Framework serves as a guide to identify, monitor and control the impact that tourism arrivals have on the destination's physical-ecological, political-economic and socio-demographic situations. It helps identify a baseline, desired conditions and thresholds as a tool to monitor and control if targets are being met. If used as an on-going monitoring tool, the framework will help destination managers make informed decisions in terms of policy-making, visitor management, and resources management.

The Seychelles Carrying Capacity Framework was established following the methodology of the "Guidelines for carrying capacity assessment for tourism in Mediterranean coastal areas", developed by UNEP/MAP/PAP-Priority Actions Programme. This framework divides indicators into three main themes:

- *Physical – Ecological*: which comprises components of the natural and built-cultural environment, as well as infrastructure systems, like water supply, sewerage, electricity, transportation, etc.
- *Political – Economical*: which refers to the impacts of tourism on local economic structure, activities, etc., including contribution to the economy and visitor arrivals. Institutional issues are also included to the extent that they involve local capacities to manage the presence of tourism.
- *Socio – Demographic:* which refers to those social aspects that are important to local communities, as they relate to the presence and growth of tourism. Social and demographic issues, such as population, unemployment, social and health services, etc.; including also socio-cultural issues, such as the quality of life of the local community or visitor satisfaction, etc.

The following steps were followed to build the Seychelles Tourism Carrying Capacity Framework:

1. International indicators were selected following the UNEP/MAP/PAP methodology. A complete list of indicators with baseline data, as appropriate, was compiled and included in the Annex.
    - Environmental/Ecological (53 indicators)
    - Physical (22 indicators)

- Socio-Cultural (34 indicators)
- Economic (41 indicators)

2. Baseline data for Seychelles was collected for each indicator, based on desktop research and information provided by local stakeholders and experts in the field through one-to-one interviews.
3. International benchmarking data was also sought to complement analysis and to find standards for indicators, this is what other countries in the region and internationally are achieving and how they are performing in specific areas.
4. Stakeholders' workshops were held in February 2020 to review the critical issues which were identified as part of the desktop research. Participants were asked to rank the importance of all issues to determine which were considered a priority. A full explanation of each workshop can be found in the Annex.
5. An analysis of the workshop findings was conducted to determine if there was consensus among stakeholders on which issues had the greatest impact on their lives and therefore, were a priority issue. These findings assisted in the consolidation of Tourism Carrying Capacity themes and reducing the long list of UNEP indicators into a unique monitoring framework for Seychelles.
6. To develop the measurable indicators, the following considerations were taken:
    a. The Carrying Capacity Indicator Framework needs to include applicable and achievable indicators to set a baseline, define desired conditions and thresholds, and measure change over time.
    b. Primary data should come from a local agency.
    c. Data needs to be readily available.
    d. Data analysis needs to be repeatable.
7. In most cases, multiple data points were aggregated into a single Carrying Capacity Indicator. Once indicators were selected, baseline data was identified.
8. The next step was to validate if the Seychelles Carrying Capacity Indicators could effective measure short-, medium-, and long-term outcomes from the carrying capacity recommendations.

Tourism Carrying Capacity Indicator Selection

The Seychelles Tourism Carrying Capacity Indicator Framework is comprised of a set of selected indicators that measure the highest priority impacts in those areas that are most at risk of being exacerbated by the rate of tourism development in Seychelles.

Socio-Economic Theme

Within the socio-economic theme, there were four sub-themes selected due to the fact that the tourism sector in Seychelles contributes significantly to the domestic economy. In fact, according to World Travel & Tourism Council, the total contribution of tourism to GDP and employment is over 65%. International tourist arrivals to Seychelles have more than doubled over the last 20 years, from just over 130,000 in the year 2000 to 384,204 in 2019. Additionally, cruise arrivals and the size of ships have grown as well, ultimately increasing the number of day-trip cruise passengers.

Tourism is the principal contributor to the economy in Seychelles, yet at the same time the destination has been experiencing this exponential growth, productive infrastructure, such as the airport and jetties/ports, did not develop or expand at the same pace. Furthermore, to accommodate the increase in arrivals, tourism bed stock in Seychelles increased substantially since the year 2000. In addition to increased bed stock, the composition of establishments has changed to accommodate a more "affordable" Seychelles, with more investment seen in self-catering guest house accommodations. Finally, with current global events related to the COVID-19 pandemic, the health and safety of residents and visitors has never been more important. On the one hand, the national economy may be gravely impacted with a reduction in arrivals, however this in turn reduces the strain on airports, jetties, and accommodations and provides an important opportunity to plan for a sustainable future. The pandemic should also bring attention to the ability of Seychelles' health care system to respond effectively to residents and visitors in times of crisis if the country is operating at or above its carrying capacity.

Considering that Seychelles' economy is heavily reliant on tourism, visitation continues to increase, and infrastructure capacity is potentially being strained, the following indicators were selected:

- Socio-Economic Theme (16 indicators)
    - Economy (3 indicators)
    - Arrivals (3 indicators)
    - Tourism Workforce (3 indicators)
    - Productive Infrastructure (3 indicators)
    - Tourism Enterprises (4 indicators)

Physio-Environmental Theme

The four Physio-Environmental sub-themes and their associated indicators were selected primarily based on feedback from resident stakeholders and review of key policy documents from national agencies that identified environmental management impacts.

Seychelles is composed of 115 islands with a total land area of only 455 km^2. With limited available land area, large parts of the country being protected, and climate change threats such as sea level rise, landslides and flood risks, competition for suitable land is increasing. Land scarcity is also a major limiting factor for landfilling, which is the current waste management strategy. Most landfills are in close vicinity to the sea or to streams, posing additional risk of water and soil pollution and

threatening flora and fauna. Public littering and landfill capacity are also seen as limitations that could negatively impact the image of Seychelles.

Currently, rapidly growing demand is putting increased pressure on the water system. Traditionally water has been obtained through abstraction, but despite frequent tropical rain falls, harvesting and storage is limited. Desalination plants were introduced in 2002, which now account for 16% of water supply. Most of the population is dependent on pipe borne water (around 95%). One third of the pipe distribution system in the three islands has reached the end of its economic lifespan, leading to pipe bursts, reduced water quality, high levels of Unaccounted-For-Water (UFW), and deteriorating service levels to consumers. Only 15% of households are connected to sewage treatment facilities, meaning 85% of establishments in Seychelles are relying on septic tanks for wastewater disposal; most of them are older systems with considerable amounts of wastewater flowing into the environment and generating negative effects. Therefore, wastewater from septic tanks is also a potential source of pollution of ocean water.

Until recently, the Seychelles was entirely dependent on imported fossil fuels for its energy needs. In 2013, a 6-megawatt wind farm became operational as the country's first large-scale renewable energy project. Investments in Photo Voltaic (PV) systems have been promoted over the last years. There are coal fired power plants on Mahe and Praslin, but no electricity generation on La Digue, which depends on Praslin for energy supply via an undersea cable. A number of large establishments operate backup generators to supplement the public power supply. The 2016 CCS found that on Praslin in particular, establishments reported insufficient and unstable electricity supply, with frequent service interruptions. Tourism is a key economic sector in Seychelles that is projected to grow substantially towards 2030. At the same time, hotels are large energy consumers for air conditioning, hot water and other purposes.

Considering continued increases in tourism arrivals have a potential to negatively impact current physio-environmental conditions, the following indicators were selected:

- Physio-Environmental Theme (8 indicators)
    - Land Use (1 indicator)
    - Waste Management (2 indicators)
    - Water & Sewage (2 indicators)
    - Energy and Emissions (3 indicators)

For each theme and sub-theme, the following aspects are included for each indicator:

- **Carrying Capacity Indicator** is the suggested indicator to measure changes over time that impact the country's ability to effectively manage tourism.
- **Supporting Indicators** are a collection of multiple data points that were aggregated into a single Carrying Capacity Indicator.
- **Scope** refers to the geography of the data as national or island specific.

- **Source** provides the data source for the indicator's baseline. To the greatest extent possible, the tourism carrying capacity indicator data comes from local agencies.
- **Year** provides the year of the baseline data.
- **Baseline** is the current condition of the tourism carrying capacity indicator.
- **Desired Condition (5yr)** is a proposed data point for optimum conditions. In many cases these conditions were set using 2019 baseline conditions as a target to return to within five years. Additionally, this has been estimated with a combination of benchmarking data from regional countries and stakeholders' input through the expert workshops held in February 2020. Desired conditions should not be seen as static figures, but rather should be regularly reviewed and updated, and seek continuous improvement of conditions once targets have been met.
- **Tourism Master Plan Strategic Priority Area** provides links to Tourism Master Plan that also addresses or relates to the indicator, its corresponding data, or issue have been exhaustively reviewed and agreed upon.

Tourism Carrying Capacity Indicator Framework

INDICATOR	*SUPPORTING INDICATORS*	SCOPE (NATIONAL OR BY ISLAND)	SOURCE	YR	BASELINE	DESIRED CONDITION (5YR)	TOURISM MASTER PLAN STRATEGIC PRIORITY AREA
SOCIO-ECONOMIC (N=16)							
Economy (n=3)							
GDP per Capita (constant USD$)	*Total Population: 97,625* *Total GDP: USD$1.59B*	National	World Bank	2018	$14,385	3.6% growth in GDP per year Based on avg 2010-2018	Sustainable Development Goals (8.1)
T&T Direct Contribution to GDP (USD$)	*2010: $343 M* *2019: $589.7 M* *71.9% growth (6.21% CAGR)* *37.1% of GDP* *9.54% increase in arrivals during same period*	National	CBS	2019	$589.7 M	6% CAGR	Tourism Master Plan Growth Targets: USD$946M by 2023
Tourism Earnings per Visitor (USD$)	*2010: $1,968* *2018: $1,559*	National	CBS	2018	$1,559	$1,968	Tourism Master Plan

	-21% growth (-2.87% CAGR) *9.54% increase in arrivals* *Avg Length of Stay:* *2010: 10.4* *2019: 9.9* *Visitors from Europe:* *265,025 (69%)*						Growth Targets: $1,968 by 2023
Arrivals (n=3)							
Total # of Visitors	*Arrivals by air/overnight visitors:* *2010: 174,529* *2019: 384,204* *120% increase* *9.16% CAGR* *Arrivals by cruise ship:* *2010: 15,634*	National	NBS SPA	2019	380,000	Reach 380,000 (back to 2019 pre-pandemic numbers) If world tourism dynamics bounces back faster than expected, cap growth	Tourism Master Plan Growth Targets: 5.8% CAGR 390,000 to 480,000 by 2023 Strategic Priority Area 1.5: Surveys of residents' attitudes

	2019: 43,978 *181% increase* *12.2% CAGR* *Overnight Visitors 2019* *Mahe: 240,924* *Praslin: 71,310* *La Digue: 17,868* *Other Islands: 19,250* *On Vessel: 34,852*					to 500,000 by 2025	
Hotel Occupancy Rate (average % of bed occupancy)	*By Island* *Mahe: 64%* *Praslin: 66%* *La Digue: 63%* *Other Islands: 56%* *By Accommodation* *Hotels: 73%* *Guest Houses: 54%* *Self-Catering: 56%*	National Island	NBS	2018	National: 62 % By Island Mahe: 64% Praslin: 66% La Digue: 63% Other Islands: 56% By Accommodation	>65%	Tourism Master Plan Growth Targets: 63% in off peak seasons

	By Island & Accommodation *Mahe Hotel 77%* *Mahe Self-Catering 52%* *Praslin Hotel 69%* *Praslin Self-Catering 62%* *La Digue Hotel 65%* *La Digue Self-Catering 63%*				Hotels: 73% Guest Houses: 54% Self-Catering: 56 %		
Visitor to Resident Ratio	*Total Population* *2019: 97,625* *Total Overnight Visitors* *2019: 384,204* *Avg Daily Overnight Visitors 2018: 7,615/day** *Island Population 2019* *Mahe: 85,503*	National Mahe Praslin La Digue Other Islands	NBS	2019	National Overall Ratio 4 : 1 National Based on Daily Average 1 : 14 By Island on Daily Average 1 : 19 1 : 5 1 : 4	1: 19 Mahe 1: 5 Praslin (based on island daily population average) Ideal conditions may change when resident's sentiment is surveyed	Tourism Master Plan Strategic Priority Area 1.5: Surveys of residents' attitudes

	Praslin: 8,622 *La Digue: 2,926* *Other Islands: 574* *Avg Daily Overnight Visitors 2018** *Mahe: 4,415/day* *Praslin: 1,907/day* *La Digue: 786/day* *Other Islands: 509/day* *Visitors 2019* *Mahe: 240,924* *Praslin: 71,310* *La Digue: 17,868* *Other Islands: 19,250* *On Vessel: 34,852*				1 : 1		
Tourism Workforce (n=3)							
T&T Direct Employment	*2012: 8,479* *2019: 9727* *47.58% (5.72% CAGR)*	National	NBS	2019	12,513	12,500	Tourism Master Plan

	Total Labour Force 2019: 53,426 *T&T Direct Contribution: 23.4 %* *Total Labour Force and Tourism Employment per island* *Mahe* *Praslin* *La Digue* *Other Islands*						Strategic Priority Area 1.5: Surveys of residents' attitudes Strategic Priority Area 5.1: National tourism talent development plan Strategic Priority Area 5.2: Grow local talent pool to reduce reliance on expatriate workers Strategic Priority Area 5.4: Promote tourism careers
Expat to Seychellois T&T Employee Ratio	*Expatriate employees in T&T (#)* *2012: 2,213* *2019: 3,470* *6.64% CAGR* *Seychellois employees in T&T (#)*	National	NBS	2019	1 : 3	1:10	Tourism Master Plan Strategic Priority Area 1.5: Surveys of residents' attitudes Strategic Priority Area 5.2: Grow the domestic talent pool in order to reduce

	2012: 6,266 *2019: 9,043* *5.38% CAGR* *Expat or Seychellois Employees (#):* *Mahe* *Praslin* *La Digue* *Other Islands*						reliance on foreign labour
STA/Unisey Graduates Currently Working in Tourism	*% of current STA students from each island* *Mahe: 90.0% (432)* *Praslin: 7.2% (34)* *La Digue: 1.9% (9)* *Number of course directed at product development: several courses cover product development* *Number of courses directed at management training: Advanced Diploma*				*%of STA graduates working in tourism: 88%* *%of UniSey graduates working in tourism: 6 from 15 graduates (40%)*	90%	Tourism Master Plan Strategic Priority Area 1.1: Allocate more resources to promoting eco-, marine and cultural tourism Strategic Priority Area 3.1. Promote cultural and natural heritage tourism Strategic Priority Area 3.4: Assess potential of niche

							tourism products including sports, agri- and adventure tourism Strategic Priority Area 5.2: Realign the hospitality training approaches and programmes to better respond to current and emerging industry needs Strategic Priority Area 5.3: Create new specialty courses at STA Strategic Priority Area 5.4: Promote tourism careers (study on the cause of high staff turnover and low productivity; Quota for Seychellois participation in the senior management of large tourism

							properties and businesses) Strategic Priority Area 7.4: Support small establishments to improve service standards
Productive Infrastructure (n=3)							
Total Scheduled Inbound Flights	*Total Scheduled Inbound Flights* *2013: 3,944* *2019: 7,876* *90% increase*	National	Seychelles Civil Aviation Authority	2019	7,876	7,876	Tourism Master Plan Growth Target: Grow airline seats to 2,260 / day Strategic Priority Area 1.5: Surveys of residents' attitudes Strategic Priority Area 7.5: Sustain and improve air access (Improve airport access and infrastructure; Air Access Task Force)

Estimated Cruise Ship Density	*Total # of Ships ÷* *Total Passengers + Crew* *2004 = 84* *2014 = 557* *2019 = 1680* *202% increase 5yr* *1900% increase 15yr*	National	Seychelles Port Authority	2019	1,680	1,680	Tourism Master Plan Strategic Priority Area 1.5: Surveys of residents' attitudes Strategic Priority Area 2.5: Cruise tourism economic impact study Strategic Priority Area 6.4: Marine tourism policy Strategic Priority Area 7.7: Improve regulation of sea transportation
Hospital Bed Availability (hospital beds per 1,000 residents + visitors)	*Total Population* *2019: 97,625* *Island Population 2019* *Mahe: 85,503* *Praslin: 8,622* *La Digue: 2,926*	National Mahe Praslin La Digue	NBS	2019	3.9 4.1 3.0 3.2	6.0	

	Avg Daily Overnight Visitors 2018: 7,615* *Mahe: 4,415/day* *Praslin: 1,907/day* *La Digue: 786/day* *Available Hospital Beds: 413* *Mahe: 371* *Praslin: 30* La Digue: 12						
Tourism Enterprises (n=4)							
Bed Supply	*Number of Beds* *2000: 3,452* *2019: 13,218* *280% increase* *Number of Beds* *Mahe: 7,762* *Praslin: 3,208* *La Digue: 1,352* *Other Islands: 896*	National Mahe Praslin La Digue Other Islands	NBS Planning	2019	13,218 7,762 3,208 1,352 896	13,218 7,762 3,208 1,352 896	Tourism Master Plan Strategic Priority Area 1.5: Surveys of residents' attitudes Strategic Priority Area 7.1: Additional 3,000 additional rooms, particularly in the 3-and 4-starcategories

	Island Population 2019 *Mahe: 85,462* *Praslin: 8,662* *La Digue: 2,926* *Other Islands: 574* *# of beds per 100 residents* *National Density: 131* *Mahe: 10* *Praslin: 41* *La Digue: 46* *Other Islands: 156*						Strategic Priority Area 7.2: New regulatory system for 'floating rooms"
	Number of Beds in Pipeline *# of beds per 100 residents* *2019: 13,218* *Pipeline: 10,360* *C+P: 23,578* *C+P density: 228*	National	NBS Planning	2019	10,360 beds (5000 rooms)	10-20% of the current bed supply	Tourism Master Plan Growth Target: 3000 (6000 beds) new rooms by 2023 La Digue Carrying Capacity: 100 new rooms (200 beds) from 2016-2020

Number of Hotels Holding Seychelles Sustainable Tourism Label Certification		National Mahe Praslin La Digue	STMP	2019	22	60% of all licensed tourism enterprises	Tourism Master Plan Strategic Priority Area 1.1: Allocate more resources to promoting eco-, marine and cultural tourism Strategic Priority Area 6.2: 50% of large hotels and guesthouses "Seychelles Sustainable Tourism Label" (SSTL) certified by 2023
Number of Regulated/Licensed F&B and Handicraft Vendors	Nr. of participants of Bazar Labrine (Beau Vallon, Mahe): 31 (F&B) 27 (Handicraft)	Mahe	Seychelles Societe D'Investissmenet (SSI) Enterprise Seychelles Agency (ESA)	2020	Mahe: 114 F&B Praslin: 16 F&B La Digue: 11 F&B	90%	Tourism Master Plan Strategic Priority Area 1.1: Allocate more resources to promoting eco-, marine and cultural tourism Strategic Priority Area 3.1. Promote cultural and natural heritage tourism (develop authentic natural and cultural products; Improve services provided by heritage assets; Policies on cultural

							and natural heritage tourism; Guidelines for tourism eco-lodges in natural parks) Strategic Priority Area 3.4: Assess potential of niche tourism products including sports, agri- and adventure tourism Strategic Priority Area 3.5: Develop distinctive branded product Strategic Priority Area 5.2. Grow local talent pool to reduce reliance on expatriate workers (Increase training of divers and skippers and provide scholarships to allow in-service skippers to become certified) Strategic Priority Area 5.3: Create new specialty courses at the Seychelles Tourism Academy

Number of Cultural Heritage Products	*Number of cultural experiences*	National	Master Plan	2020	*Number of heritage sites:* *Mahe - 77* *Praslin - 7* *La Digue - 12* *Long island - 1* *Curieuse - 1* *Silhouette - 2* *Fregatte Island - 1* *Farquar - 1*	Identify experience providers Encourage new product development	Tourism Master Plan Strategic Priority Area 1.1: Allocate more resources to promoting eco-, marine and cultural tourism Strategic Priority Area 3.1. Promote cultural and natural heritage tourism (develop authentic natural and cultural products; Improve services provided by heritage assets; Policies on cultural and natural heritage tourism; Guidelines for tourism eco-lodges in natural parks) Strategic Priority Area 3.2: Grow the number of creole and specialty restaurants Strategic Priority Area 3.3: Promote trade between local agro-producers and accommodation establishments

							Strategic Priority Area 3.4: Assess potential of niche tourism products including sports, agri- and adventure tourism Strategic Priority Area 3.5: Develop distinctive branded product (Expert support to craft disciplines to improve craft design; Set up a multi-sectoral working group to promote distinctive branded products relative to competing destination) Strategic Priority Area 5.2. Grow local talent pool to reduce reliance on expatriate worker Strategic Priority Area 5.4: Promote tourism careers
PHYSIO-ENVIRONMENTAL (n=8)							
Land Use (n=1)							

Land Use Distribution	Protected Terrestrial Area (%) *UNESCO Sites: 2* *Endangered/threatened species: 18% (WEF)*	National	Seychelles Environment Department	2019	<48%	50%	
	Non-Protected Undeveloped / Forested Terrestrial Area (%) *Total forested %: 88.4* - *Total protected %: 48*	National	WEF Sustainable Development Impact Summit	2019	40.4%	38%	
	Developed Area (%) *Total area %: 100* - *Total forested %: 88.4*	National	Formula	2019	12.6%	12%	
	Agricultural Land %: 0.9% (420 hectares)	National	CLISSA	2014			Tourism Master Plan

	Yearly demand of restaurants for locally produced vegetables, herbs and root crop (% of total): 21.79% *% locally caught fish sold to hotels and restaurants: 50%* *% of imported fish products of total volume of fish consumed by tourism establishments: 10%* *Trading with Hotels Potential: 4,386 tons of locally produced crops*	National National National	Min of Ag World Bank CLISSA	2020 2017 2014			PA3.3: Promote trade between local agro-producers and accommodation establishments PA3.4: Assess potential of niche tourism products including sports, agri- and adventure tourism
Waste Management (n=2)							
Amount of Waste Diverted (%)	*Total Municipal waste generated 2019 = 38.95 tons (estimated)* *Total recycling diverted = 5% or 1.94 t*	National	Solid Waste Master Plan	2019	6%	15% & "significantly reduce" single-use plastics by 2030	Tourism Master Plan Strategic Priority Area 6.5: Sustainable utilities services UNEP Plastics Reduction Pledge

	Total composting diverted = 1% or 0.39 t						
Solid Waste Generated of Hotels & Self-Catering Facilities (Tons/Yr)	*Total Municipal waste generated 2019 = 38.95 tons (estimated Landscape & Waste Management Agency)* *Total population = 97,625* *Waste Generated per Capita per Day (kg/c/d): 1,56 (2016, World Bank)* *Total food waste by accommodation sector: 2665 tonnes per year (Data from SSTF in 2019)*	National Mahe Praslin La Digue	*Landscape & Waste Management Agency*	*2019*	*baseline data is not available*	*2 kg/c/d*	Tourism Master Plan Strategic Priority Area 1.5: Surveys of residents' attitudes Strategic Priority Area 6.2: 50% of large hotels and guesthouses "Seychelles Sustainable Tourism Label" (SSTL) certified by 2023 Strategic Priority Area 6.5: Sustainable utilities services

Water & Sewage (n=2)							
Calculated Water Demand of Hotels &Self-Catering Facilities	*Total water produced = 13.2m3 million* *Desalination Production: 2.1m3 M (16%)* *Held in Reservoirs: 11.1m3 M (84%)* *Total water customers = 32,127* *Total commercial customers = 2,774* *Total hotels = 699* *Share of hotels = 25.2%* *Hotel demand share of consumption: ___* *Total water consumed = 9.9m3 million*	National Mahe Praslin La Digue	PUC (est of 125 facilities in 2019)	2019	*Mahe large hotel consumption: 612,354 m3* *Praslin large hotel consumption: 220,716 m3* *La Digue large hotel consumption: 123,954 m3*	900 litres per occupied room per day	Tourism Master Plan Strategic Priority Area 1.5: Surveys of residents' attitudes Strategic Priority Area 6.2: 50% of large hotels and guesthouses "Seychelles Sustainable Tourism Label" (SSTL) certified by 2023 Strategic Priority Area 6.5: Sustainable utilities services

	Population = 97,625 *Daily Visitor Avg = 7,617* *Water Use per Resident + Visitors per Day (l/c/d) 258 L/d* *Calculated water demand based on existing water customers: 1100 L/d per customer acct*						
Proportion of Hotels & Self-Catering Connected to Sewage Treatment	*Total water customers = 32,127* *Total sewage customers = 5,134* *Total hotels connected to sewage treatment – 15%* *Proportion of water customers connected to*	National Mahe Praslin La Digue	PUC		15%	50%	Tourism Master Plan Strategic Priority Area 1.5: Surveys of residents' attitudes Strategic Priority Area 6.2: 50% of large hotels and guesthouses "Seychelles Sustainable Tourism Label" (SSTL) certified by 2023

	sewage treatment: 16% *Proportion of Wastewater Treated (%): 18%*						Strategic Priority Area 6.5: Sustainable utilities services
Energy & Emissions (n=3)							
Total Electricity Consumed per Hotel per Day	*Total Energy consumed: 415.7 GWh* *Commercial Customers: 5,498* *Total Hotels: 699* *Share of Hotel Use: 17%* *Large hotels: 8.23%* *Small hotels: 3.25%* *Guest houses: 3.17%* *Self-catering: 1.39%* *5 stars: 0.77%*	National Mahe Praslin La Digue	PUC Energy Baseline Study	2018	141.44 kWh/d	250 Mj per guestnight	Tourism Master Plan Strategic Priority Area 1.5: Surveys of residents' attitudes Strategic Priority Area 6.2: 50% of large hotels and guesthouses "Seychelles Sustainable Tourism Label" (SSTL) certified by 2023 Strategic Priority Area 6.5: Sustainable utilities services

	Commercial Energy Consumed: 212.3 GWh *Share of Hotel Consumption: 36.1 GWh* *Domestic Energy consumed: 126.3 GWh* *Domestic Customers: 32,278* *Total Electricity Consumed per Domestic Customer per Day: 10.72 KWh/d*						
Renewable energy share (%)	*Total available electricity capacity: 93.5 MWh* *Wind Farm Mahe: 7.4 GWh* *PV Mahe/Praslin: 3.5 GWh*	National	PUC	2018	2.55%	15%	

CO2 Emissions of Hotel Industry	*Share of Hotel Consumption: 27.6 GWh* *CO2 Factor: 0.41205 (kg CO2e per KWh)* *CO2 per capita: 5.4 kg/CO2* *CO2 per guest night: 13.06 kg/CO2* *Source: National Energy Report 2015 and Hotel Carbon Management Initiative*	National	PUC	2018	11,373 MT CO2e	9667 MTCo2	Tourism Master Plan Strategic Priority Area 1.5: Surveys of residents' attitudes Strategic Priority Area 6.2: 50% of large hotels and guesthouses "Seychelles Sustainable Tourism Label" (SSTL) certified by 2023 Strategic Priority Area 6.5: Sustainable utilities services

Carrying Capacity Key Findings

Indicators and collected data have been divided into two main areas: Socio-Economic and Physio-Environmental. Each of those areas is divided into different sub-themes and carrying capacity indicators identified and validated by stakeholders.

The most compelling result of the analysis is the relationship between tourism's consumption of resources and impacts on residents' quality of life. Knowing that current levels of tourism may be negatively impacting quality of life, there is still development of bed stock and a less than ideal occupancy rate. Critical issues that are interwoven and linked with carrying capacity include:

- **Bed stock development, occupancy rate, and earning per visitor**
- **High volume visitation and consumption of non-renewable resources**

Risks associated to the critical issues:

- Reduction of quality of life of residents
- Loss of tourism competitiveness
- Economic leakages
- Environmental degradation

Socio-Economic Theme

This theme has the following five sub-themes: economy, arrivals, tourism workforce, productive infrastructure, and tourism enterprises. Together these subthemes contain 16 indicators identified by destination stakeholders as greatest priorities for monitoring and managing the socioeconomic impacts of tourism in the Seychelles.

Economy

GDP per Capita

The Seychelles was designated as a "high income" economy in 2015 due primarily to the economic impact of tourism's growth. Therefore, a key indicator for measuring how tourism's economic impact translates to standard of living is GDP per Capita. Per capita GDP is a measure of the total output of a country that takes the gross domestic product (GDP) and divides it by the number of people in that country. Data from the National Bureau of Statistics have the current population at 97,625 (NBS, 2019) and GDP at USD$ 1.59 Billion (WTTC, 2019). The World Bank (2019) shows that GDP per Capita inconstant USD was $14,962. It has grown an average of 3.6% per year from 2010-2018.

Seychelles has the highest GDP per Capita in Africa (World Bank, 2018) and is much higher than regional destinations such as Mauritius with 10,949 GDP and Maldives 8,033 GDP (World Bank, 2019).

The desired condition would be for Seychelles to continue a similar annual average growth in GDP per capita of 3.6% per year. However, the negative impacts of Covid-19 may require the actual annual growth for the next 2-3 years to be higher than 3.6% to meet this average within five years.

Developing a value-based tourism model in which emphasis is placed on higher earnings from fewer visitors should be considered. Additionally, continuing to have tourism as the main economic driver and source of jobs for the country should strategically aim to increase GDP without increasing the population disproportionately.

Travel & Tourism's Direct Contribution to GDP

Seychelles' economy relies heavily on tourism income. The direct contribution of Travel & Tourism (T&T) in 2019 was USD $589.7 million, 37.1% of total GDP (CBS, 2019). This figure represents a compound annual growth rate (CAGR) of 6.2% since 2010, when tourism directly contributed USD $343 million to GDP. In the World Travel and Tourism Council (WTTC) rankings, Seychelles' Total Contribution to GDP of 65.3% (WTC, 2018) places it fourth highest in the world. Seychelles WTTC ranking is preceded by Maldives where the total contribution of tourism to GDP was 76.6% in 2016 (WTTC, 2017).

Although these figures might seem positive, they reveal a very dependent economy, which in turn makes Seychelles vulnerable to external market shocks and other factors (climate change, major events such as Covid19, etc.). A more diversified economy can help the country become more resilient to potential downturns of the tourism industry, such as that prompted by the current global pandemic, as well as supply a growing workforce with higher productivity jobs. Therefore, it is crucial to foster diversification of the economy.

Under optimum conditions, the Seychelles Tourism Master Plan established a goal of USD $946 million in direct contribution of tourism to GDP by 2023. To reach this target in four years' time based on 2019 baseline conditions, growth in tourism's contribution to GDP would need to accelerate to a CAGR of 12.54%, an unrealistic figure under optimum conditions, much less those currently prevailing under COVID-19. It is recommended to reassess the Master Plan target based both on the major shifts brought on by the pandemic, and the goal of reducing the disproportionate reliance of Seychelles' economy on tourism.

Tourism Earnings per Visitor

Tourism earnings per visitor is an aggregated value of expenditures over multiple days. In 2010, the earnings per visitor was USD $1,968; in 2018 it had dropped to USD $1,559 (CBS, 2018). This is a 21% drop in earnings per visitor while arrivals increased by 9.54% over the same period of time. One reason for this decline may be related to the length of stay reducing from 10.4 to 9.9 days. It could also be attributed to changes in accommodation choices and vacation preferences (e.g., more demand for low budget accommodation).

The proposed Desired Condition agrees with the Tourism Master Plan's target of returning to the 2010 earnings per visitor of USD $1,968 by 2023. This requires growing earnings per visitor by a CAGR of 4.8% between 2018 and 2023; key to doing so will be increasing the average trip duration and attracting high end, niche markets. This model would allow for less visitors and equal revenues, the core tenet of a high value, low impact approach. For example, if Seychelles had maintained earnings per visitor at 2010 levels, it would only have taken 299,000 overnight visitors to generate 2019's USD $589 million in direct contribution of T&T to GDP. Conversely, if earnings per visitor

stay at USD $1,559, Seychelles would require 607,000 overnight visitors to reach the target of USD $946 million in tourism revenue in 2023.

Arrivals

This sub-theme is comprised of three indicators described below: total number of visitors, occupancy rates for the lodging sector, and the visitor-resident ratio.

Total Number of Visitors

Total number of visitors is the total number of international tourist arrivals in a given year. It is recorded as both stayover and cruise visitors.

Arrivals by air was 384,204 in 2019, this is a 120% increase (9.16% CAGR) since 2010 (NBS, 2019). Cruise visitors account for another 43,978 arrivals in 2019, a 181% increase (12.2% CAGR) since 2010 (SPA, 2019). Mahe welcomed 240,942 visitors, Praslin saw 71,310, and La Digue had 17,868. According to the Tourism Master Plan, the 2023 growth target was set at 5.8% CAGR to reach 380,000 to 480,000 visitors per year. Given the tourism sector arrival rates have already dropped 70% by December 2020 when compared to 2019, reaching a 480k tourism arrivals by 2023, as planned in the Tourism Masterplan, will require an aggressive growth rate of 62% per year from 2021-2023.

Therefore, as global tourism recovers from the pandemic, a target to reach at least pre-pandemic numbers of 384,000 should be sought, and if tourism recovers at a faster rate, cap tourism growth to a maximum of 500,000.

Occupancy Rates – Accommodation

This indicator calculates the total number of beds provided by accommodations in Seychelles that are occupied/night over the total number of beds provided by accommodations *available*/night, averaged across all accommodation types or all islands for the year, to generate an average occupancy rate for Seychelles' lodging sector. This indicator helps to measure whether available hotel stock is meeting or exceeding visitor demand.

In 2018, the overall occupancy rate, across all accommodation types and all islands was approximately 62%. This figure is an average of the 2018 average occupancy rates of Seychelles hotels(73%), self-catering accommodations (56%), and guest houses (54%) across all islands. Occupancy rates in 2018 for the islands of Mahe, Praslin, and La Digue were all relatively similar (64%, 66%, and 63% respectively), with other islands' rate of 56% bringing down the country-wide average.

According to the Tourism Master Plan, the strategic target for average accommodation occupancy rate of 64% for off peak seasons. The desired condition for this indicator proposes maintaining that goal. And therefore, suggests that an overall yearly occupancy rates increase to at least 70%, in accordance of the growth of higher value accommodation facilities who realize maximum profit margins at a higher rate of occupancy.

Visitor to Resident Ratio

The visitor to resident indicator calculates the total number of overnight visitors divided by the national population to generate a visitor to resident ratio. Only overnight visitors are included.

With the total number of overnight visitors for 2019 at 384,204, and a national population of 97,625, the visitor to resident ratio in Seychelles in 2019 was 4:1. Andorra's ratio is 34 : 1 and Aruba is 10 : 1 (www.worldatlas.com, 2019).

Previously, the occupancy indicator baseline suggested that even with the current bed stock you need more visitors to get the occupancy rates up (i.e., there is more supply than demand), but by increasing the demand this also increases the visitor to resident ratio (which is currently within acceptable limits). Additionally, higher number of visitors will also demand more resources and strain on existing infrastructure.

The ideal tourism model for Seychelles will continue to prioritize quality versus quantity, therefore economic growth over arrivals growth is the strategic target. The desired condition is to maintain the status quo, however, survey and monitor resident's sentiment regarding visitor to resident ratio. There may be districts where there is a high saturation of hotel accommodation, where resident maybe show resistance for higher growth, therefore, this indicator should also be monitored with bed density ratio per district.

Tourism Workforce

This sub-theme is comprised of three indicators, described below to quantify and characterize the current and desired tourism workforce in Seychelles: Direct Employment in Travel & Tourism, ratio of expatriates to Seychellois T&T employees, and STA/UniSey Graduates Currently Working in Tourism.

Travel & Tourism Direct Employment

Travel and tourism is a major source of employment in Seychelles, with job growth in the sector mirroring visitation growth over the last decade. In 2019, travel and tourism directly employed 9726 people nationwide, representing 19% of the total labour force (NBS, 2019). This figure represents a 15% increase over the number of people directly employed in T&T in 2012 (8,479), a CAGR of 3% over the five-year period. The employee to bed ratio is about 0,37; international benchmarks indicate that higher luxury hotels have a higher employee to bed ratio than budget hotels who offer less services, additionally, the ratio varies between developed and developing nations given the access to technology compared to cheaper labour, for example Japans ratio in 2017 was also 0,32 whereas in India it was 1,6. According to the World Travel & Tourism Council, in 2017 travel and tourism's *total* contribution to local employment was 66%, or approximately 33,044 jobs (WTTC, 2018).

If the global pandemic causes drastic reductions in arrivals, employment in the sector will be significantly impacted as well, leaving much of Seychelles' labour force unemployed for an unknown period of time. Therefore, the proposed desired condition for 2023 is a return to 2019

baseline conditions of T&T directly employing 9726 people. In order to achieve this target, and in line with the recommendation of increasing the quantity of mid-scale accommodation facility, one mean of reaching the target would be to increase the employee to bed ratio while reducing the reliance on foreign employment.

During the current downturn of tourism arrivals, it's an optimal moment to encourage the enrolment of displaced workers in tourism training and career development programs, such as those proposed in the Tourism Master Plan Priority Areas 5.1 and 5.4, will be important for improving Seychelles' tourism workforce. To better evaluate the results of such programs, it is suggested that tourism employment data be disaggregated by island rather than captured at the national level only.

Expat to Seychellois T&T Employee Ratio

According to the National Bureau of Statistics, of the 9726 people directly employed in T&T in Seychelles in 2019, 1816 of them, or 19% were considered expatriates and 7910, or 81%, were Seychellois. This is an approximate ratio of 1:5. Expatriates' share of the T&T labour force has increased slightly compared with 2012, when they represented 26% of T&T jobs.

The Tourism Master Plan suggests growing the local talent pool to reduce Seychelles' reliance on expatriate workers and reach ratio of 1:10. This study concurs with the Tourism Master Plan targets, see chapter 4 for the hotel growth model projections including growth in local vs foreign employment in the sector. Continued stakeholder consultations should define management actions to stay within the desired conditions. For example, there could be incentives to Seychellois who enrol in STA and UniSey to advance their knowledge and skills for working in the tourism industry.

STA/UniSey Graduates Currently Working in Tourism

The Seychelles Tourism Academy and University of the Seychelles offer programs to prepare Seychellois for careers in the tourism sector. In 2019, 88% of STA graduates and 40% of UniSey graduates were found to be working in the Seychelles tourism industry, suggesting that these programs are potentially indeed meeting some of their core objectives.

However, to gain a more in-depth understanding of the outcomes of these programs, it is suggested that additional indicators be considered, such as: the % of current tourism workforce that studied at STA; the breakdown of STA students by island. Also, it is suggested that program administrators speak with graduates who did not pursue work in tourism to understand why this was the case. As well as closer collaboration with the private sector for mentorship, incentives, placement and program design.

The Tourism Master Plan has a strategic priority of expanding and promoting cultural and natural heritage tourism. A suggestion for supporting this goal is to develop new STA courses around product development, heritage interpretation, customer service standards, and business management.

Productive Infrastructure

This sub-theme is comprised of three indicators, described below, that will help evaluate whether core visitor and resident infrastructure is in line with the desired and threshold conditions established for visitation: *Total Scheduled Inbound Flights, Estimated Cruise Ship Density,* and *Hospital Bed Availability.*

Total Scheduled Inbound Flights

For its size and visitor numbers, the Seychelles has strong international airlift, with the Seychelles Civil Aviation Authority reporting 7,896 scheduled inbound flights in 2019. This figure represents a 90% increase over 2013, and ranks Seychelles #1 in the world in number of departures/1000 people (WEF TTCI). Mauritius by comparison ranks 31st globally on this indicator. The *quality* of airport infrastructure is assessed lower however, with Seychelles receiving a score of 4.6 and global ranking of 65th per the WEF, whereas Mauritius scored a 5 and ranked 48th. Stakeholder consultations reinforced this perception, with plans for renovations currently under discussion.

The tourism master plan establishes a growth target for 2023 of 2,260 airline seats/day servicing Seychelles. However desired conditions should reflect airlift in line with revised targets for 2023 overnight visitation and existing physical capacity of the international airport. Therefore, the proposed desired condition for 2023 is the current 2019 baseline of 7,876 scheduled inbound flights/year. Investments in the air transport sector should focus on improving quality rather than quantity.

Estimated Cruise Ship Density

Considering the increasing importance over the last decade of cruise tourism in the Seychelles and its associated impacts on economic, physical, and social parameters, monitoring ship size and visitor volumes is important for undertaking informed investments and mitigation measures. This indicator measures cruise ship density - the total number of cruise ships arriving in Seychelles during a given year divided by the number of crew and passengers they carry.

In the 2018-2019 cruise year, 39 ships carrying 43,978 passengers and crew visited the Seychelles, generating an average density figure of 1,680passengers/ship. This figure represents a 202% increase over 2014 and a 1900% increase over 2004 resulting from increases in both the quantity and volumes of cruise ships visiting the country. Cruise visitors to the country have grown at a CAGR of 12.2% since 2010, far exceeding the global CAGR in cruise passengers during the same period (4.55%), yet in line with regional benchmarks.[20] In 2018 for example, Mauritius received 42 ships carrying 36,796 tourists.

Despite cruise's increasing contribution to Seychelles' international arrivals, considering the existing port capacity issues highlighted in Chapter 1 and the generally low value, high impact

[20] https://cruising.org/-/media/research-updates/research/clia-2019-state-of-the-industry-presentation-(1).ashx

model associated with cruise tourism, as well as the moratorium on cruise arrivals until 2022 the proposed desired conditions for this indicator is no change from 2019 baseline.

Hospital Bed Availability

This indicator tracks the ratio of available hospital beds country and island-wide per 1,000 people, the latter comprising the total resident population *plus* average daily overnight visitors. It is suggestive of the ability of Seychelles' healthcare system to serve a growing resident and visitor population, particularly important in light of the COVID-19 pandemic. Monitoring this indicator aids management decisions around either increasing the capacity of facilities or limiting visitation to avoid potentially overwhelming available healthcare resources.

In 2019, nation-wide, Seychelles had 419 available hospital beds for a resident population of 97,625 and an average daily overnight visitor population of 7,615, resulting in a ratio of 3.9 available hospital beds/1000 people. Island specific ratios in 2019 were 4.1 for Mahe, 3.1 for Praslin, and 3.2 for La Digue. These figures are on par with the global average (3.0) and competitors such as Mauritius (3.4), and far exceed the regional average for Sub-Saharan Africa (1.3). Nevertheless, considering a target of at least returning to current visitor levels in 2023, the proposed desired condition for 2023 is a nationwide average of 6.0 available hospital beds/1000 people.

Tourism Enterprises

Bed Supply

In 2019, there were 699 licensed accommodation establishments in the country offering 6,558 rooms and 13,218 beds. With 7,147 beds in 383 establishments, Mahe boasts just over half of all tourism beds in the country, followed by Praslin with 3,122 and La Digue with 1,192. However, bed *density,* measured by # of available beds per 100 residents, is reversed, with 46 beds per 100 residents in La Digue, 40 in Praslin, and 10 in Mahe. Indeed, Seychelles ranks highest in the world in terms of hotel density, with 5.9 rooms per every 100 people according to the WEF TTCI (2019). This figure in Mauritius and Jamaica were 1.1 and 1 respectively.

Seychelles' bed supply has grown from 3,452 in the year 2000 to 13,218 in 2019, a 280% increase or 7.7% CAGR. While some growth is expected in order to accommodate increased overnight visitation during the period, growth in lodging supply has outpaced the equivalent CAGR of international arrivals during the period. Occupancy rates have also hovered around 60% over the last decade, which despite being on par with regional and international benchmarks, suggest that infrastructure development in the lodging sector has not necessarily been well-aligned with demand. Furthermore, according to Seychelles Planning Authority, an additional 10,626 beds (5313 rooms) were in the pipeline for development in 2019, again despite a nation-wide average occupancy rate of 62% in 2018 and the moratorium on large hotels over 24-rooms.

Considering the significant impacts of lodging development on physio-environmental and social conditions, and the poor alignment of already existing stock and occupancy rates, the proposed desired condition for 2023 is to maintain bed supply at current 2019 levels, both nation-wide and for each island. The Tourism Master Plan targets 3000 additional new rooms, particularly in the 3-

and 4-star categories, a target already achieved given the reported number of rooms in the pipeline as of 2019; increasing 3- and 4-star bed supply is still supported as long as bed stock does not grow. Specially as the tourism sector recuperates after covid19, establishing growth targets for lodging stock should be more strictly tied to achieving occupancy rate targets that demonstrate need for increased supply as well as linking bed supply growth to increasing efficiency of productive infrastructure.

Number of Hotels Actively Using Sustainability Label

In 2012, Seychelles developed a national sustainable tourism certification program that recognizes hotels complying with internationally recognized sustainability criteria with the Seychelles Sustainable Tourism Label (SSTL). As of 2019, 22 lodging establishments held active certifications meaning just 3.1% of all licensed accommodations in Seychelles are certified sustainable comparable to the rest of the African Continent which is 3.7%. While the world average is 6.2%, led by North America with 10.1% followed by Europe with 6.1% of the hotels already have a sustainability label[21]. However, a growing trend is observed by the Greenlodging trends report, where 10% of hotels responded they are planning to obtain a green label in the future[22].

Improving business practices is absolutely critical to achieving desired conditions across the economic, social and environmental realms. While not holding the SSTL does not necessarily mean that businesses are not pursing sustainability best practices, certifications provide assurance to both authorities and consumers that establishments are managing their operations in ways that mitigate resource use and enhance their communities. Consequently, increasing the share of certified businesses to 60% of all licensed establishments is the proposed desired condition in line with Seychelles' global brand and reputation as a leader in conservation. Expanding the SSTL to cover additional sectors beyond lodging is recommended to help achieve this target and promote sustainability practices across the private sector.

Number of Regulated/Licensed F&B and Handicraft Vendors

This indicator monitors the number of food and craft vendors operating with a license in an effort to track formalization of the sector. An inventory of existing operators should first be conducted to determine the extent of operations before developing a licensing policy to help better regulate the sector.

Number of Cultural Heritage Products

This indicator monitors the number of products sharing or representing tangible or intangible cultural heritage assets or experiences as identified by or to be established by a nation-wide inventory. Developing quality, authentic products in this area was identified in the Tourism Master Plan as a priority strategy for augmenting competitiveness, visitor spending, and enhancing local pride in Seychelles' unique heritage. While there is only limited depth for the data on this indicator

[21] https://www.oneplanetnetwork.org/sites/default/files/khg_certifications.pdf
[22] http://www.greenlodgingnews.com/wp-content/uploads/2017/09/Green-Lodging-Trends-Report-2017_Final.pdf

(e.g., only includes heritage sites), conducting an inventory to identify existing cultural heritage products (i.e., current baseline) is a necessary first step.

Physio-Environmental Theme

This theme has the following four sub-themes: Land Use, Waste Management, Water & Sewage, and Energy & Emissions. Together these subthemes contain eight indicators identified by destination stakeholders as greatest priorities for monitoring and managing the environmental impacts of tourism in the Seychelles.

Land Use

This sub-theme contains one composite indicator, *Land Use Distribution,* described below.

Land Use Distribution

This indicator pulls from various data points to monitor use of Seychelles' terrestrial ecosystems, which fall into 4 main categories:

- Protected terrestrial areas: % of total terrestrial territory that falls under protected area status. The baseline for this indicator is 48% (2018).
- Developed terrestrial areas: % of total terrestrial territory that is considered urban or built environment. Baseline for this indicator is 12.6% (2018).
- Agricultural terrestrial areas: % of total terrestrial territory under cultivation, or otherwise cleared but not developed. Baseline for this indicator is 0.9% (2018).
- Undeveloped terrestrial areas, alternatively denoted as "non-protected forested areas": this corresponds to the % of total terrestrial territory that is still forested and/or undeveloped for agricultural or urban use, but is not part of a protected area - i.e., land that does not fall under the other three categories. Baseline for this indicator is 40.4% (2018).

As of 2018, the majority of land in Seychelles (88.4%) is under forest cover and almost half (48%) is under protected area status, making it a global leader in protecting terrestrial ecosystems and biodiversity. 14.7% of terrestrial area under protected area status is the global average for this indicator, while regionally Mauritius formally protects only 4.7% of its land area, Madagascar 5.6%, and Maldives a mere 1.2% (World Bank, 2018). Seychelles has been recognized for its efforts by international bodies and conservation organizations and has established a robust framework for regulating and planning future land use changes through 2040 through its Strategic Land Use Development Plan. The relatively pristine nature of its coasts and forests is also one of Seychelles greatest tourism assets, and the country has benefitted significantly from its positioning as a leading ecotourism destination.

Given the importance of its strong performance to date to maintaining the quality of its terrestrial resources and its highly regarded global reputation, the aligned objectives of the Strategic Land Use Development Plan, and already saturated beachfronts/over-supply in the lodging sector, it's recommended to more or less maintain the current baseline levels of land use distribution as the desired condition in 5 years' time.

Waste Management

This sub-theme contains two indicators aimed at tracking improvements in waste management and generation: *Amount of Waste Diverted (%)* and *Solid Waste Generated by Hotels & Self-Catering Facilities*.

Amount of Waste Diverted (%)

This indicator reports the total amount of waste, in tons, diverted from landfill disposal through recycling or composting as a percentage of all waste generated country-wide. Therefore, data inputs include:

- Total waste generated, municipal waste (tons). 2019 baseline is 38.95 tons.
- Total waste recycled (tons). 2019 baseline is 1.95 tons.
- Total waste composted (tons). 2019 baseline is 0.39 tons.

Therefore total % of waste diverted from landfill in 2019 was 6%, as 5% was recycled and 1% was composted. This is despite a recent estimate of 50% of waste arriving at landfill being organic in nature (Krütli et al, 2018). While these figures in part speak to the particular waste management challenges confronted by small island states such as Seychelles discussed in Chapter 1, comparable destinations do manage to perform better than the Seychelles when it comes to both waste generation and treatment. According to the World Bank, in 2016 Seychelles generated 1.57kg of solid waste per capita per day, by far the highest in Sub-Saharan Africa, where the regional average is 0.46 kg/capita/day. Cabo Verde, Madagascar, and Sao Tome & Principe by contrast generated 0.71, 0.41, and 0.37 kg/capita/day respectively. The global average is 0.74 kg. At 3.5%, 7%, and 9% respectively, the comparable island destinations of Madagascar, Maldives, and Mauritius all also reported higher composting rates than the Seychelles (World Bank, 2018).

Given the widely known negative environmental consequences associated with increasing waste generation and poor waste management, particularly in a destination prized for its pristine environment, the recommended desired condition for this indicator is to make improvements year over year. Investments in improved composting and recycling facilities along with continuing waste reduction education will be important strategies for achieving improvements in this critical area. Establishing separate baselines and subsequent data collection on waste disposal for each main island should also be considered to facilitate more targeted management and investment decisions. The recommendation is to pledge to reduce single use plastic waste significantly by 2030 to meet UNEP Plastic Pledge initiative, and increase waste recycling from 6 To 15% by 2025.

Solid Waste Generated by Hotels & Self-Catering Facilities

Though precise data is not currently collected or available, as a highly tourism dependent economy, significant shares of the solid waste generated in the Seychelles can reasonably be attributed to the sector. Indeed, in 2019, the NBS estimated that overnight visitors to the Seychelles generated 5.29 tons of solid waste, approximately 14% of the total solid waste generated in Seychelles that year. Lodging establishments are the primary recipients of overnight visitors' waste, and generate considerable organic waste in particular as a by-product of serving their guests.

Therefore, this indicator seeks to quantify the amount of solid waste in tons/year cumulatively generated by Seychelles' lodging sector.

As data is not currently collected for this indicator in the Seychelles, data collection and reporting methodologies need to first be put in place in order to establish a baseline, set targets, and track subsequent changes over time. International benchmarks include a global average of 1.9 litres of waste produced per guest night (Global Sustainable Tourism Dashboard, 2017). As this figure is an average reported by hotels certified sustainable by Earth Check, and therefore likely reflects strong waste management and reduction practices, 2 kg/guest night of waste per guest night could represent a respectable target for Seychelles hotels.

Water & Sewage

This sub-theme includes two indicators aimed at monitoring water use and wastewater management in Seychelles' accommodation sector, which often figures amongst the largest consumers of scarce water resources: *Water Demand of Hotels & Self-Catering Facilities* and *Proportion of Hotels & Self-Catering Connected to Sewage Treatment*

Water Demand of Hotels and Self-Catering Facilities

Given the water scarcity issues discussed in Chapter 1, this indicator aims to quantify and track the water demand/consumption of Seychelles' lodging sector. While to date this indicator has not been systemically measured or tracked separately for accommodations in particular, in 2009, the Seychelles Water Development Plan reported that the tourism sector accounted for 18% of water sales for the year in Mahe, 15% in Praslin and 31% in La Digue. Given the significant growth in lodging supply in the subsequent decade, it's safe to assume that accommodations now account for far greater shares of Seychelles' total water demand.

More recent data from the PUC suggests that lodging establishments corresponded to approximately a quarter of all commercial customers in 2018. In fact, PUC estimates the total use for 125 tourism facilities is approximately 955,000m3.

International benchmarking would also suggest greater hotel water use as the Hotel Sustainability Benchmarking Index reported an average consumption of 891 litres per occupied room per day across 13 hotels in tropical climates (2017). The same figure averaged across 8 hotels in the Maldives was 2,721 litres per occupied room.

As accurate data is not currently collected for this indicator, data collection and reporting methodologies need to first be put in place in order to establish a baseline, set targets, and track subsequent changes over time. Desired conditions should be determined based on alignment with national environmental goals, but given the country's already dire water crisis should likely target reduced consumption. Promoting water management best practices in the private sector, by augmenting participation in the SSTL for example, or incentivizing investments in water efficiency technologies, will be critical to achieving improvements over baseline. Based on the Global Sustainable Tourism International Dashboard the average hotel visitor consumed about 658 litres

of water per guest night, and the tropical climate hotel sample consumed about 891 litters, it is recommended that once the baseline is determined a target of 900 litres is initially adopted.

Proportion of Hotels & Self-Catering Connected to Sewage Treatment

As highlighted in Chapter 1, the majority (85%) of establishments in Seychelles, especially outside of Mahe, are not connected to the centralized sewage treatment system administered by PUC. Most households and businesses instead have their own septic tanks for wastewater disposal, many of which are inadequate to prevent contamination of soils and groundwater. Therefore, this indicator monitors the percentage of all lodging establishments connected to municipal sewage treatment facilities, with the goal of minimizing pollution from wastewater.

As data is not currently collected for this indicator, data collection and reporting methodologies need to first be put in place in order to establish a baseline, set targets, and track subsequent changes over time. Given the importance of protecting the environment from potential sewage runoff It is recommended that an aggressive target of at least 50% of hotels be connected to a centralized sewage system; and a long-term target to get all hotels, except large hotels who should have their own system, to be connected.

Energy &Carbon Emissions

This sub-theme includes three indicators aimed at monitoring and reducing energy consumption and carbon emissions, particularly in Seychelles accommodation sector, which often figures amongst the largest commercial energy consumers in tourism dependent economies: *Total Electricity Consumed per Hotel per Day, Renewable energy share (%), and CO2 Emissions of the Hotel Industry.*

Total Electricity Consumed per Hotel per Day

In tourism dependent economies, the accommodation sector typically accounts for a significant share of total energy consumption, with tropical climates further exacerbating demand given the energy intensity of pools and air conditioning. Seychelles is no exception, with large hotels alone accounting for 34% of energy consumed countrywide in 2016 (Energy Study, 2016).

Given the significant role the lodging sector plays in Seychelles' energy consumption and therefore associated greenhouse gas emissions, this indicator tracks the average amount of electricity consumed per hotel per day in kilowatt hours. The most recent baseline data available for this indicator is from 2018, when Seychelles' 699 lodging establishments consumed a total of 36.1 GWh during the year, corresponding to an average per hotel figure of 141.44 kWh/day. Desired conditions should be determined based on alignment with national environmental goals, but should target a reduction in consumption as greater energy efficiency measures are put in place. Based on the Global Sustainable Tourism International Dashboard the average hotel visitor consumed about 242 MJ per guest night, it is recommended that once the baseline is determined a target of 250 MJ per guest night is initially adopted.

Renewable energy share (%)

As discussed in Chapter 1, Seychelles is extremely reliant on imported fossil fuels to meet its growing energy needs, with only 2.6% of energy generation coming from renewable sources in 2018. This places Seychelles amongst the most fossil fuel dependent nations in the world. Globally, renewable sources accounted for 22% of power generation in 2017. In comparable island destinations with available data, renewables comprised 21%, 17%, and 15% of total power generation in Mauritius, Jamaica, and the Dominican Republic respectively (International Energy Agency, 2017).

Nevertheless, Seychelles' public and private sectors have increasingly supported and adopted renewable energy options, suggesting that reaching a desired condition of 15% of electricity generation from renewable sources by 2030 is very much achievable. This target was established in the Seychelles Energy Policy 2010-2030.

CO2 Emissions of Hotel Industry

Seychelles' high dependence on fossil fuels, combined with the significant energy demands of the lodging sector, result in much of Seychelles' CO2 emissions resulting from the sector as well. Therefore, this indicator tracks the metric tons of CO2 emissions produced annually by Seychelles' lodging establishments, which in 2018 corresponded to 11,373. Estimated CO2 emissions per guest night were 13.06 kg in 2015, according to the National Energy Report. While this is still less than the global average of 35.11 kgCO2e per occupied room for hotels in tropical climates (Hotel Sustainability Benchmarking Index, 2017), desired conditions should still aim for a reduction over baseline at a rate in line with national environmental goals and targets. Achieving improvements in the other two indicators in this sub-theme above should result in corresponding declines from baseline in this indicator as well. Given the target to increase renewable energy sources by 15%, the target reduction for the hotel sector to reduce its Co2 emissions should be at least 15% during the same time frame, therefore the target should be 9667 MTCo2 per year.

Chapter 4 Growth Scenarios

The hotel development model for Seychelles is a highly contested topic amongst stakeholders. During the stakeholder consultation and validation workshops, stakeholders expressed different opinions regarding the hotel growth strategy, however they all agreed in the urgency of managing resources effectively, conserving the environment and social welfare. Additionally, previous carrying capacity studies have already influenced the hotel development model calling for a halt in large hotel development until this year 2020. And finally, we are faced with the economic shock never seen before due to the covid19 global pandemic that brought international tourism to halt in March 2020, of which the rate of recovery is difficult to predict.

> According to the UNWTO World Tourism Barometer international tourism arrivals plunged by 74% in 2020, suffering the greatest crisis on record due to widespread travel restrictions and a massive drop in demand. The collapse of international travel represents an estimated loss of USD 1.3 trillion in revenues, more than 11 times the loss experienced during the 2009 global economic crisis. Looking ahead, most experts do not see a return to pre-pandemic tourism movement levels happing before 2023, in fact they say it could take between 2.5 to 4 years to return to 2019 levels. Specifically, for African destinations, 50% of the UNWTO expert panels predict a return to pre-pandemic levels by 2023, and a rebound starting between Q42021 and 2022. These experts foresee when tourism does restart a growing demand for open-air and nature-based tourism activities, with domestic tourism and 'slow' travel experiences gaining more traction. (UNWTO Jan 28, 2021)

The following chapter aims to define a growth scenario framework for hotel development taking into consideration the recuperation of the tourism arrivals, profitability of current hotel stock, employment of Seychellois, tourism earnings and consumption of resources. It's important to note that the number of tourism arrivals and hotel infrastructure a destination can bare is limited only when the negative effects to the environmental and social wellbeing is at risk. However, that tipping point can change depending on the effective management and mitigation of tourism impacts.

The following three growth scenarios are analysed and compared:

- **Scenario 1. Slow growth- 5-year recovery:** Projects international tourism arrivals will slowly recover reaching 2019 numbers only by 2025. In this case the growth in bed supply is driven by the organic growth of tourism arrivals.
- **Scenario 2. Medium growth – 3-year recovery:** Projects a faster recovery to 2019 arrival numbers by 2023 and reaching 500k by 2025.In this case arrivals are driven by first filling up current bed supply and targeting a limited tourism arrival capacity.
- **Scenario 3. Accelerated growth – Masterplan target:** Projects a rapid recovery reaching tourism masterplan 2023 targets of 480k arrivals and realizing hotel development pipeline by 2025, which doubles current bed supply. In this case tourism arrivals growth are driven by the ambitious goal of growing and filling up the bed supply.

Growth targets considered for all scenarios based on the carrying capacity framework targets:

- Average Length of Stay: 2% CAGR (2020-2025)
- Target Occupancy rate: reach 70%
- Employee/Bed ratio: 15% CAGR (2020-2025)
- Foreign employment as a % of tourism employment: -10% CAGR (2020-2025)
- Earnings per visitor: 6% CAGR (2020-2025) – reaching 2010 numbers by 2023
- Waste: 2 kg per guest/night
- Energy: 65 Kw per guest/night
- Water: 900 litres per guest/night

Scenario 1. Slow Growth

SCENARIO 1. Slow Growth – 5 yr. recovery												
NATIONAL TOTAL												
	Growth Rate	**Tourism Arrivals**	**Bednights Occupied**	**Expected Occupancy Rate @ current bed supply**	**Beds needed @70% occupancy**	**Employee to bed ratio**	**Total Employees Hotel**	**Foreign Employees**	**Earnings per Visitors USD**		**Total Tourism Earnings USD**	
2019 (baseline)	*0*	**384.204**	**2880014**	**63%**	**12564**	**0,37**	**9726**	**1816**	$	1.555,00	$	597.437.220,00
2020	*-70%*	115.261	987.739	22%	3866	0,37	1422	239	$	1.648,30	$	189.985.035,96
2021	*50%*	172.892	1.511.241	33%	5915	0,42	2503	378	$	1.747,20	$	302.076.207,18
2022	*30%*	224.759	2.003.905	44%	7843	0,49	3816	519	$	1.852,03	$	416.261.013,49
2023	*20%*	269.711	2.452.780	53%	9600	0,56	5372	658	$	1.963,15	$	529.484.009,16
2024	*20%*	323.653	3.002.202	65%	11750	0,64	7561	834	$	2.080,94	$	673.503.659,65
2025	*20%*	388.384	3.674.696	80%	14382	0,74	10643	1056	$	2.205,80	$	856.696.655,07

- The slow recovery assumes a 12% CAGR between 2020-2025, returning to 2019 arrivals by 2025. A larger % increase is predicted between 2021 and 2022 as tourism rebounds from an unprecedented halt in 2020. As international tourism arrivals level out to pre-pandemic conditions a slower more stable growth pattern is predicted.
- Given the oversupply of bed stock compared to arrivals, occupancy rate will suffer considerably, potentially resulting in some hotel operations closing doors, as well as the opportunity to renovate obsolete stock and stimulate development of new category 3- and 4- star supply.
- By 2024 occupancy rates would recover and by 2025 new bed supply would be needed
- Hotel employees' numbers will recuperate by 2025
- A continuous focus on increasing visitor earnings by 6% a year will yield USD 856million by 2025

MAHE

	Growth	**Tourism Arrivals**	**Bednights Occupied**	**Expected Occupancy Rate @ current bed supply**	**Beds needed @70% occupancy**
2019 (baseline)	*0*	**221.936**	**1663644**	**63%**	**7147**
2020	*-70%*	66.851	514.066	20%	2012
2021	*50%*	100.277	794.232	30%	3109
2022	*30%*	130.360	1.063.477	40%	4162
2023	*20%*	156.433	1.314.457	50%	5145
2024	*20%*	187.719	1.624.669	62%	6359
2025	*20%*	225.263	2.008.091	76%	7859

PRASLIN

	Growth	**Tourism Arrivals**	**Bednights Occupied**	**Expected Occupancy Rate @ current bed supply**	**Beds needed @70% occupancy**
2019 (baseline)		**96.464**	**723102**	**63%**	**3494**
2020	*-70%*	28.815	223.439	20%	875
2021	*50%*	43.223	345.213	30%	1351
2022	*30%*	56.190	462.240	40%	1809
2023	*20%*	67.428	571.328	50%	2236
2024	*20%*	80.913	706.162	62%	2764
2025	*20%*	97.096	872.816	76%	3416

- Similarly, both in Mahe and Praslin occupancy rate will slowly recover reaching normal levels by 2024, and by 2025 hotel stock can grow.

Scenario 2. Medium growth

SCENARIO 2. 3yr recovery. Max at 500k										
NATIONAL TOTAL										
	Growth Rate	**Tourism Arrivals**	**Bednights Occupied**	**Expected Occupancy Rate @ current bed supply**	**Beds needed @70% occupancy**	**Employee to bed ratio**	**Total Employees Hotel**	**Foreign Employees**	**Earnings per Visitors USD**	**Total Tourism Earnings USD Million**
2019 (baseline)	*0*	**384.204**	**2880014**	**63%**	**12564**	**0,37**	**9726**	**1816**	**$ 1.555,00**	**$ 597,44**
2020	*-70%*	115.261	997.423	22%	3904	0,37	1436	241	$ 1.648,30	$ 189,99
2021	*50%*	172.892	1.541.018	34%	6031	0,42	2552	386	$ 1.747,20	$ 302,08
2022	*50%*	259.338	2.380.873	52%	9318	0,49	4534	617	$ 1.852,03	$ 480,30
2023	*50%*	389.007	3.678.448	80%	14397	0,56	8056	987	$ 1.963,15	$ 763,68
2024	*15%*	447.358	4.357.122	95%	17053	0,64	10973	1210	$ 2.080,94	$ 930,92
2025	*12%*	501.040	5.026.376	110%	19673	0,74	14558	1445	$ 2.205,80	$ 1.105,19

- The medium recovery scenario assumes an 18% CAGR between 2020-2025, surpassing 2019 arrivals by 2023
- Accelerated growth is needed between 2021-2022 then returning to lower levels of growth in order to reach a peak of 500k arrivals by 2025
- In this case occupancy rates will recuperate by 2023 and new bed supply should increase, reaching a peak of 14.5k
- Similarly, as in scenario 1 there is opportunity to renovate obsolete stock and stimulate development of new category 3- and 4-star supply.
- Hotel employees' numbers will recuperate by 2024
- A continuous focus on increasing visitor earnings by 6% a year will yield USD 1,105million by 2025

MAHE					
	Growth	**Tourism Arrivals**	**Bednights Occupied**	**Expected Occupancy Rate @ current bed supply**	**Beds needed @70% occupancy**
2019 (baseline)	*0*	**221.936**	**1663644**	**63%**	**7147**
2020	*-70%*	66.851	514.066	20%	2012
2021	*50%*	100.277	794.232	30%	3109
2022	*50%*	150.416	1.227.088	47%	4803
2023	*50%*	225.624	1.895.852	**72%**	**7420**
2024	*15%*	259.467	2.245.636	**86%**	**8789**
2025	*12%*	290.603	2.590.566	**99%**	**10139**

PRASLIN					
	Growth	**Tourism Arrivals**	**Bednights Occupied**	**Expected Occupancy Rate @ current bed supply**	**Beds needed @70% occupancy**
2019 (baseline)		**96.464**	**723102**	**63%**	**3494**
2020	*-70%*	28.815	223.439	20%	875
2021	*50%*	43.223	345.213	30%	1351
2022	*50%*	64.834	533.353	47%	2087
2023	*50%*	97.252	824.031	**72%**	**3225**
2024	*15%*	111.839	976.065	**85%**	**3820**
2025	*12%*	125.260	1.125.988	**98%**	**4407**

- Similarly, both in Mahe and Praslin occupancy rate will recover normal levels by 2023 and new bed supply can increase to 10k and 4.4K respectively by 2025 in order to meet the 500k tourism arrivals target.

Scenario 3. Accelerated growth

SCENARIO 3. Masterplan target + realize PIPELINE											
NATIONAL TOTAL											
	Growth Rate	**Tourism Arrivals**	**Bednights Occupied**	**Expected Occupancy Rate @ current bed supply**	**Beds needed @70% occupancy**	**Employee to bed ratio**	**Total Employees Hotel**	**Foreign Employees**	**Earnings per Visitors USD**	**Total Tourism Earnings USD Million**
2019 (baseline)	*0*	**384.204**	**2880014**	**63%**	**12564**	**0,37**	**9726**	**1816**	**$ 1.555,00**	$ 597
2020	*-70%*	115.261	997.423	22%	3904	0,37	1436	241	$ 1.648,30	$ 179
2021	*62%*	186.723	1.664.299	36%	6514	0,42	2756	417	$ 1.747,20	$ 269
2022	*62%*	302.491	2.777.050	61%	10869	0,49	5288	720	$ 1.852,03	$ 403
2023	*62%*	490.036	4.633.786	101%	18136	0,56	10148	1243	$ 1.963,15	$ 605
2024	*15%*	588.043	5.727.359	120%	21482	0,64	13823	1524	$ 2.080,94	$ 696
2025	*10%*	705.652	7.079.016	136%	24339	0,74	18011	1787	$ 2.205,80	$ 779

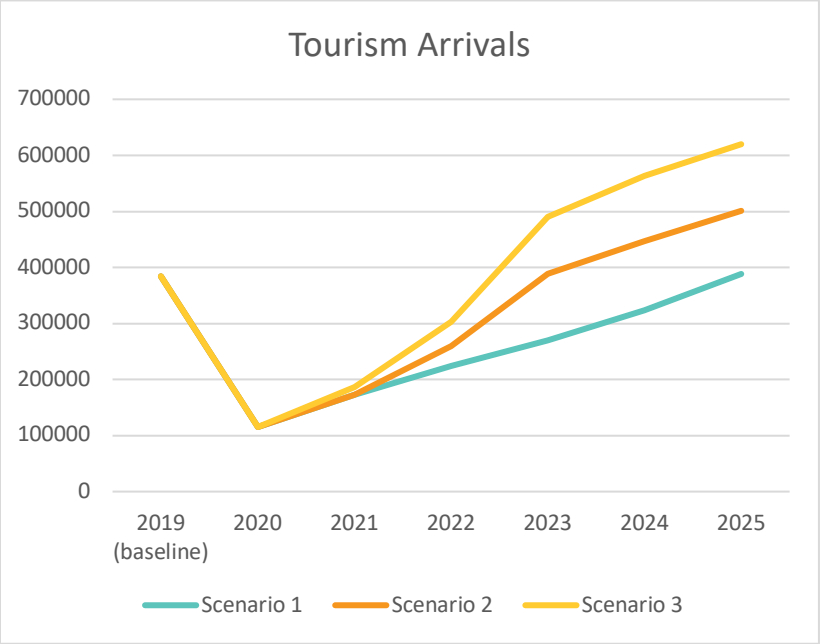
- The accelerated recovery scenario assumes an 24% CAGR between 2020-2025, surpassing the masterplan target of 480k arrivals by 2023
- In this case the target is to realize the ambitious additional 10.6k beds in the pipeline by 2025, new bed supply can increase by 2023 to surpass 24k
- In this case there is a risk of overdevelopment of large hotels and self-catering rooms as they have already been predetermined.
- Hotel employees' numbers will recuperate by 2024
- However, there is a higher risk of over tourism and degradation of the destination to a point that ADR would drop and visitor earnings per visitor target would not be reached. Therefore, it is estimated that in this case visitor expenditure per day will remain at 2019 levels therefore reaching USD 779Million by 2025.

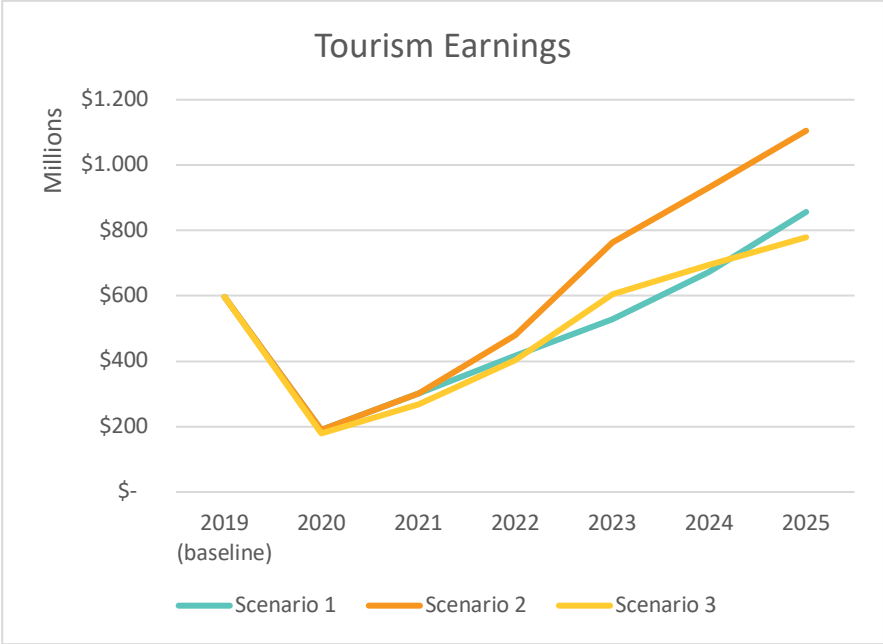
MAHE					
	Growth	**Tourism Arrivals**	**Bednights Occupied**	**Expected Occupancy Rate @ current bed supply**	**Beds needed @70% occupancy**
2019 (baseline)	***0***	**221.936**	**1663644**	**63%**	**7147**
2020	*-70%*	66.851	514.066	20%	2012
2021	*62%*	108.299	857.771	33%	3357
2022	*62%*	175.445	1.431.276	55%	5602
2023	*62%*	284.221	2.388.227	91%	9347
2024	*15%*	326.854	2.828.855	108%	11072
2025	*10%*	359.540	3.205.093	122%	12544

PRASLIN					
	Growth	**Tourism Arrivals**	**Bednights Occupied**	**Expected Occupancy Rate @ current bed supply**	**Beds needed @70% occupancy**
2019 (baseline)		**96.464**	**723102**	**63%**	**3494**
2020	*-70%*	28.815	223.439	20%	875
2021	*62%*	46.681	372.830	33%	1459
2022	*62%*	75.623	622.103	54%	2435
2023	*62%*	122.509	1.038.042	91%	4063
2024	*15%*	140.885	1.229.560	108%	4812
2025	*10%*	154.974	1.393.092	122%	5452

- Similarly, both in Mahe and Praslin occupancy rate will recover normal levels by 2023 and new bed supply can increase to 12.5k and 5.4K respectively by 2025. However, with this scenario the target to increase bed supply in Mahe to 15k falls short.

Scenarios Comparisons





- By comparing the three scenarios, even though tourism arrivals targets are much larger in scenario 3 than 1, they have the similar tourism earnings potential. On the one hand, in scenario 1 the risk of an extended economic depression is high, in scenario 3 the risk of over tourism and degradation of ADRs is high.
- Scenario 2 presents the highest chances of stimulating the economy faster while preserving destination competitiveness and increasing visitor expenditure.

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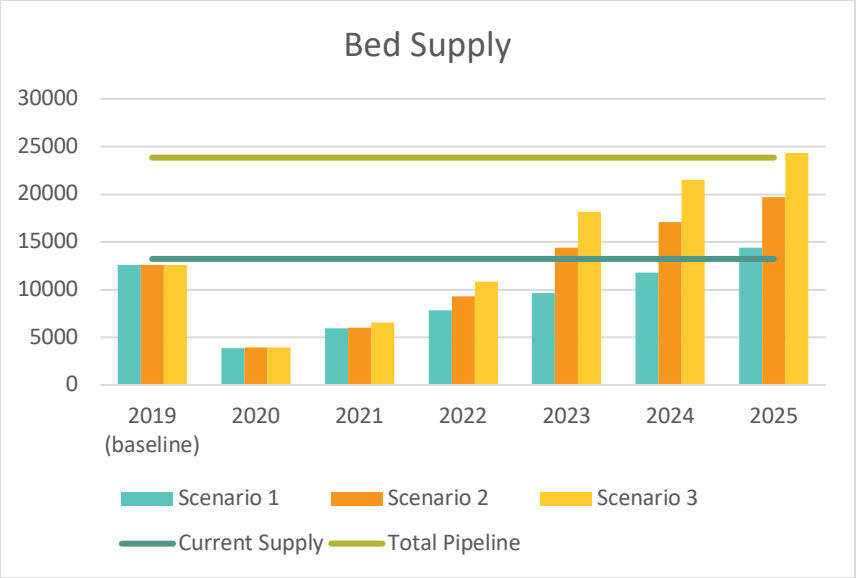
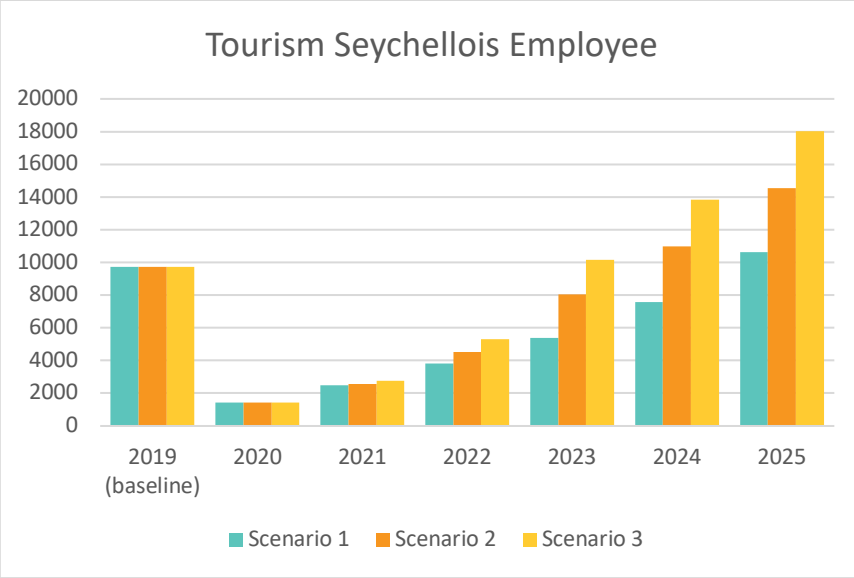
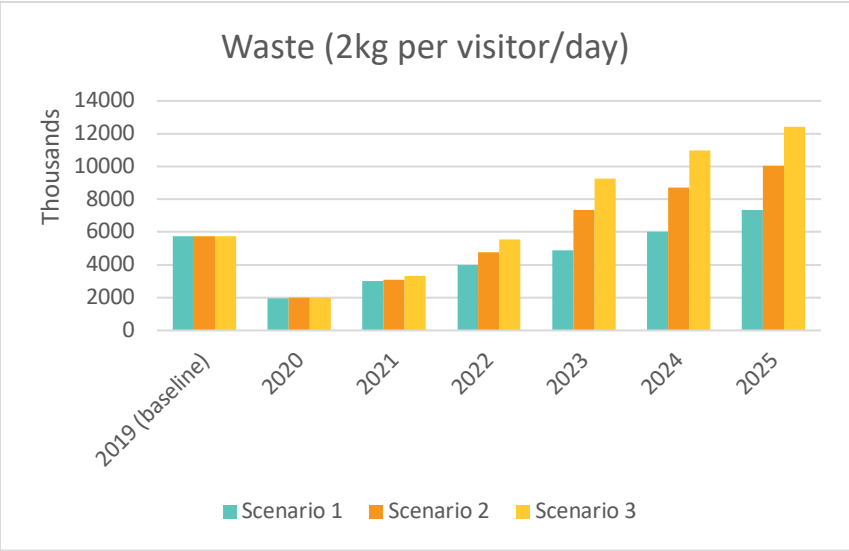
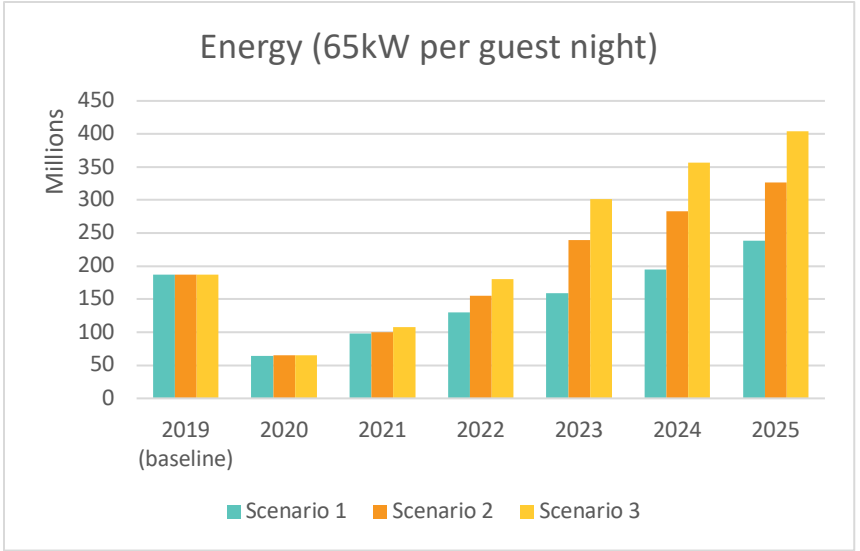
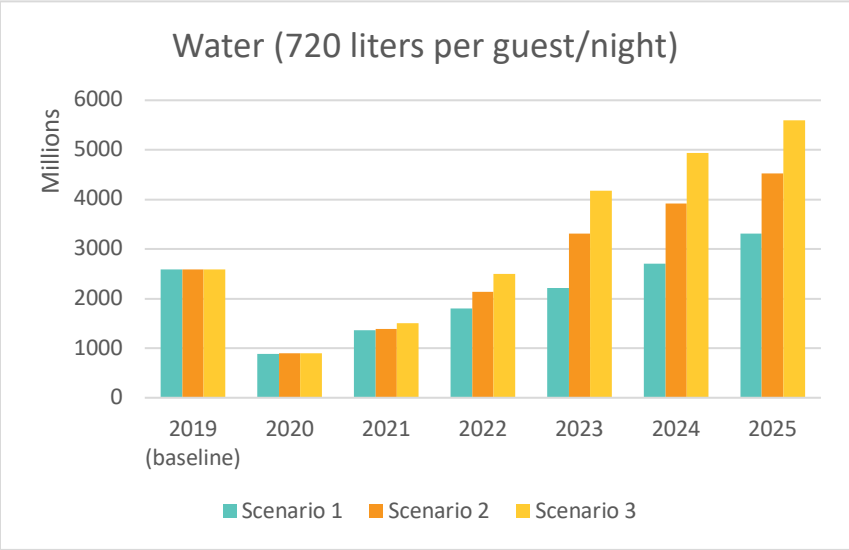




- In scenario 2 and 3 the needed bed supply to accommodate demand reaches current supply quicker than in scenario 1, reducing the risk of business closing and increasing employment sooner, therefore stimulating the economy.
- In scenario 3, the tourism pipeline is realized increasing the demand for employment, running the risk of not having enough local capacity and adversely increasing the reliance on foreign labour. Scenario 2, also runs the same risk at a lower scale.







- Even though the baseline of per visitor night consumption rates have yet to be determined and tracked by island, using the international benchmark to derive targets it can be appreciated the water, waste and energy consumption rates grow in each scenario.
- As tourism arrivals grow so does the risk of water and electricity shortages and increase pollution and green gas emissions.
- Any hotel growth scenario should be strategically paired with increasing the efficiency of productive infrastructure services in order to minimize risks.

Conclusion

Scenario 2 offers the best economic opportunity while minimizing the social and environmental risks

Chapter 4. Roadmap to High-Value Low-Impact Tourism

Chapter 4 presents the policy and management recommendations that will lead to a Low-Impact, High-Value tourism growth and balance the risks uncovered by the Tourism Carrying Capacity Study. It is important to note that given the centralized nature of the government the recommendations set a strategic national approach and discusses the specific implications for the island of Mahe and Praslin.

The following eight strategic recommendations were validated and prioritized in a series of focus group meetings with Public and Private Stakeholders which included representatives of at least the following authorities:

- Tourism Department, Seychelles Tourism Board
- Planning Authority
- Civil Aviation, Ports & Marine (CAPM)
- Environment, Climate Change and Energy
- Public Utilities Corporation
- Ministry of Finance Trade, Investment and Economic Planning
- Ministry of Health, UniSey & STA, Cultural Heritage
- Seychelles Hotel and Tourism Association
- La Digue Business Association

Recommendations are classified in five levels of priority based on the potential impact and urgency of implementation:

1. **Immediate/Critical:** Critical for the success of the industry
2. **Highest Priority:** Essential in order to mitigate the carrying capacity constraints
3. **High Priority:** Differentiator that will enhance the threshold of carrying capacity constraints
4. **Medium Priority:** Important for the ongoing management of carrying capacity
5. **Low Priority:** Important yet not urgent to implement right away

And included the following elements:

- **Rationale:** why the recommendation is necessary
- **Desired outcome:** what the change is that the recommendation aims to achieve
- **Recommended actions:** the actions that we are recommending, and that will lead to the desired outcome
- **Island specific implications:** specific actions to be implemented in the islands of Mahe and Praslin

- **Indicators:** criteria to be used to measure if progress is being made towards the outcome

Immediate/Critical Priority

Develop a Contingency and Recovery Plan

Rationale

Given the high dependence on tourism and the vulnerability of the destination to external shocks, such as the current COVID-19 pandemic, it is important to further understand the impact that the crisis is having on visitor arrivals. This information is necessary to determine specific growth scenarios and a path to economic recovery. System readiness to be able to handle the crisis, such as a possible pandemic resurgence, and maintain the credibility of the destination as safe for both visitors and residents is essential.

Desired outcome

- Have a management system in place that effectively plans for and responds to the impacts of COVID-19 on the tourism economy, tourism businesses, visitors, and residents alike.
- Reopen the destination in a manner that safeguards residents and visitors by minimizing the risk of future outbreaks and securing a faster recovery of the tourism economic of the islands.
- Minimize risks and secure faster economic recovery in the event of other future shocks to the tourism industry (i.e., extreme weather, economic depression, terrorism, pandemics, etc.)

Recommended Actions

- Develop a sector-wide COVID-19 Recovery Plan that includes health & safety guidelines for tourism enterprises, reopening & response strategies, coordination & communication management plans for health care services and tourism industry, and growth scenarios for economic recovery. Considerations to be included in the recovering plan are as follows:
    - **Government Response:** How quickly and effectively has the government formalized a crisis and emergency plan?
        - Collaboration and knowledge-sharing
        - Effective partnerships to facilitate crisis awareness
        - Communication & management
    - **Access to the destination:** How prepared is the destination to safely handle and manage tourism arrivals?
        - Travel bans
        - Mode of travel
        - Entry/Exit screenings
        - Quarantine measures (duration)

        - Change in visa requirements
        - Travel Insurance
    - **Tourism arrivals and behaviours:** How will tourism motivations, behaviours and expectations change? how adaptable is the destination?
        - Source of tourist arrivals
        - Ease of booking
        - Changes in consumer needs
        - Access to facilities and attractions
    - **Health and Safety Concerns:** How ready and robust is the health and sanitary system as well as safety standards and protocols of tourism services?
        - Health expenditures
        - Health care facilities capacity
        - Testing capacity
        - Sanitary conditions & standards
        - Disaster management policies
    - **Destination Vulnerability (temporary vs persistent shocks):** How susceptible to the shocks in the system is the destination?
        - Geographical proximity to hotspot countries
        - Prior frequency and occurrence of external shocks
        - Size and scale of event
        - Probability and frequency of recurrence
    - **Community Resilience:** How confident and ready is the community for recovery?
        - Faith in government policy and measures taken: Social responsibility
        - Population density
        - % of high-risk population
        - Adaptability of impacted communities
        - Social dimension psychological distress
        - Loss of income

- Re-brand from affordable to alluring pristine nature promise Illustrating the country's appeal as attractive post-pandemic destination that responds to the expected trends such as:
    - “Slow travel”: Longer stay in few locations
    - Off the grid travel: Escaping to the outdoors and discovering new destinations
- Apply lessons learnt to develop a national crisis contingency plan and task force for future possible shocks to the tourism industry. Evaluate options for diversifying the economy and reducing economic dependency on the tourism industry.

Island specific implications

- As Praslin is more tourism dependent than Mahe support during the economic downturn should be prioritized in the areas of food security, social stress and business health.

Indicators

- Number of COVID-19 cases / community transmissions
- Number of hospital beds per 1,000 residents and visitors
- Number of safe certified tourism related businesses
- Tourism arrivals
- Occupancy rate
- Tourism contribution to GDP

Highest Priority

Understanding Tourism's impact on Environmental Systems

Rationale

Most stakeholders agree that the inadequacy of existing utilities infrastructure is the most critical threat to resident quality of life and environmental health. Environmental systems are strained, for example landfills and wastewater treatment plants are at capacity, recycling diversion rates are low, and there is a heavy reliance on fossil fuels. Residents feel these are the most pressing issues that impact their quality of life and most visitors agreed that if environmental conditions worsen, it would dissuade them from returning. As tourism arrivals continue to grow due to increasing hotel supply and more and larger ships are arriving at port, more pressure is being put on the country's environmental systems and utilities. Specific risks include:

- A fragile ecosystem coupled with deficient utilities services and waste management systems makes the situation most pressing.
- Praslin provides La Digue island's energy, which often results in power cuts.
- The lack of proper sewage poses a significant risk to the health of groundwater sources.
- There is limited to no recycling on the island and the landfill are operating at capacity.
- 88% of visitors said they wouldn't return if environmental conditions worsen. Even though repeat rate to the Seychelles is historically low, which already is not ideal, word of mouth and social media has been proven a power tool for destination marketing.

Desired Outcome

- Reduce the level of pollution that is threatening Seychelles' pristine natural ecosystems and the visitor satisfaction-repeat rate.
- Improve residents' quality of life by guaranteeing efficient utilities and waste management services.

Recommended Actions

- Commission a series of environmental studies to better understand tourism's direct impacts on environmental systems and utilities. This includes studies on the following impacts, specifically related to hotels (by size) and self-catering facilities:
    - Water demand and consumption
    - Wastewater treatment demand and effectiveness (water quality)
    - Waste generated, recycled, and composted (including food waste)
    - Energy consumed and potential renewable production
- Based on these findings, improve the utility infrastructure in Seychelles so that it is more efficient, safer, modern, and environmentally sustainable.
- For business operations:
    - Develop and enforce tropical building code for new and refurbished accommodation facilities
    - Include measuring waste, energy, water and sewage needs and available in the hotel development permit process
    - Re-enforced environmental fees and penalties
        - Ban the use of Styrofoam and plastics at take-away restaurants
    - Require water/power-saving devices, as well as rainwater harvesting for all tourism accommodations.
    - Require use water heating solar panels for all tourism accommodations
    - Once recycling facility is in place, require waste sorting and recycling for all tourism accommodations
    - Require the provision of information about endemic and endangered species and guidelines on how to interact with them at every accommodation facility room.
- For the general public:
    - Reinforce fines on the already established ban of single use plastics/Styrofoam
    - Ban the use of non-reef safe sunscreen
    - Introduce awareness raising campaign aimed to educate on waste reduction,

Island specific implications

- Mahe
    - Enhance efficiency of current centralized sewage system and realize the Integrated and Comprehensive sanitation Master Plan objectives of building seven new sewage catchments in Mahe and two in Praslin.

- Using the landfill at Providence on Mahe for extracting landfill gas to generate electricity production.
- Invest in a waste incineration facility
- Invest in rainwater harvesting and storage

- Praslin
  - Invest in more efficient waste management such as a sanitary landfill facility, recycling facility, extraction of gas to generate electricity and a waste incineration facility.
  - Invest in a centralized sewage plant facility

Indicators

- Amount of waste diverted
- Amount of waste generated by hotels and self-catering facilities
- Water demand by hotels and self-catering facilitates
- Proportion of hotels and self-catering accommodations connected to sewage treatment
- Renewable energy generated
- Amount of energy consumed by hotels and self-catering facilities / % of energy consumed that is renewable
- CO2 emissions by hotels and self-catering facilities
- Forested Terrestrial Area

Diversify the Tourism Product and Advancement for Locals with Enhanced Capacity Building

Rationale

At the moment, Seychelles is offered as a single sun and beach destination without much distinction from its competitors. In the twenty years of rapid tourism development, there has been a one-sided focus when it comes to product development, namely a strong focus on investments in accommodation facilities and comparatively little innovation in terms of visitor experience (F&B, museums, specialised activities, shops and boutiques). The lack of other types of visitor experiences consequently leads to a lack of spending opportunities, local economic benefits and high-quality employment positions. The decreasing average spending per visitor, as well as the low % of returning tourists reflects this one-sided product development strategy. Additionally, Seychelles tourism product relies on a number of key sites of interest, which are increasingly under pressure from increasing numbers of tourists.

Desired Outcome

- Increase income generating opportunities within tourism

- Improve the capacity of local community members to fill higher level / higher quality roles
- Enhance the local cultural identity, increase cultural appreciation among visitors and strengthen the conservation of sites and traditions
- Increase visitor satisfaction and repeat rate by creating a more robust and distinctive tourism product and destination brand
- Increase resident satisfaction and quality of life
- Decentralise the destination and spread the activities and opportunities and in doing so reduce the negative impacts of high concentrations of people and activities

Recommended Actions

- Develop Distinctive Product and Destination Hubs with a strong sense of place and differentiated experiences centred around unique areas across and within the islands. This will set the stage for new inclusive and innovative niche product concept development and showcase the authenticity and uniqueness of Seychelles. Each destination hub will have its own unique market positioning and branding, and develop a distinctive offering in terms of accommodation types, gastronomy offer, living culture (art, festivals, events, etc.), activities/sites and services.
- Develop an inventory of cultural assets and further structure cultural products. This should be accompanied by defined policies that protect creole culture from exploitation and distortion for commercial purposes. Local gastronomy should be a key component of the cultural offering along increased local food production and linkages to the tourism value chain. Support the development and expansion of the 'Made in Seychelles' Label developed by Department of Industry and Entrepreneurship Development.
- Establish product development incentives for entrepreneurs (i.e., tax exemptions, access to credit, training, coaching, marketing support, etc.)
- Enhance local employability to the tourism sector by:
    - Expanding tourism management curriculum and training modules to include development of desired skills (i.e., business skills, service excellence, product innovation, etc.)
    - Defining a mentorship program with local tourism business
    - Develop an exchange program with other “sister” island nation (i.e., Singapore, Mauritius, Seychelles)
    - Strengthen programs offered at STA. Have them collaborate with TGMI to strengthen other managerial aspects of tourisms in terms of managing finances and strategic planning
- Once COVID-19 is not a threat anymore, rebrand from safe to a concept related to “Pristine Nature with Creole Flair”

Island specific implications

Examples of potential market positioning for Mahe Hubs include:

- Beau Vallon: The Tropical French Riviera - an ideal place to socialize day and night and experience the finer things in life. Offering - boutique hotels, boutique shops, arts and crafts, gastronomic experiences, open air restaurants overlooking the sea, walking paths, night market, spas, etc.
- Victoria: Historic and Cultural Centre - A place to immerse yourself in the history and living culture of Seychelles. Offering - historic buildings, the market experience, the museum, shopping, diverse restaurants offering all flavours of Seychelles heritage, nightlife, gateway to other islands, etc.
- Hinterlands: Nature Trails and Tea - A place to experience the beauty of the tropical forest, fresh air, beautiful views and the simple way of life. Offering: - Interpreted natural trails, viewpoints, birdwatching, agritourism, tea factory, historic sites, cafes with a view, bistros, etc.
- South Mahe - Family fun - A diverse place full of activities for the entire family. Offering - serviced resorts, family restaurants, pop-up restaurants, arts and crafts village and activities, the rum distillery, golf course, spas, beach activities, themed tours, etc.
- West Mahe - Slow Seychelles - a place to experience life in love and slowly. Offering: exclusive resorts, small hotels, exclusive restaurants, fusion creole food, pristine nature, unique dining experiences, boutique shops, artisans etc.

Indicators

- T&T Direct Contribution to GDP
- Tourism Earnings per visitor
- T&T direct employment
- Seychelles to Expat T&T employment ratio
- STA Programs and Graduates
- Number of Cultural Products available on offer
- Visitor to resident ratio

Develop an M&E Framework for Tourism Carrying Capacity

Rationale

Over the past six years, numerous tourisms carrying capacity studies have been commissioned for the Inner Islands of Seychelles. In the beginning of this document, it was determined that the carrying capacity conditions have not changed much over time, instead most indicators continue to show degrading trends, meaning the destination is swaying further away from the desired

conditions. Though the previous studies uncovered the root causes of the capacity issues and provided sensible policy recommendations, it failed to provide a means to monitor and regulate the carrying capacity critical issues.

In the words of management thinker Peter Drucker “you can't manage what you can't measure.” Drucker means that you can't know whether or not you are successful unless success is defined and tracked.

Desired Outcome
Policy makers are able to effectively monitor whether or not tourism carrying capacity desired conditions are met and design new policies and mitigation measures accordingly.

Recommended Actions
Design a Tourism Carrying Capacity Monitoring Framework and assign a specific agency to implement it. This framework should be integrated into existing monitoring efforts, updated on a regular basis, define specific actions to address issues that arise, and be reported to key stakeholders. A carrying capacity indicator framework has been developed (below) and it is suggested that data on these indicators be regularly collected and reported. The table includes carrying capacity indicators and sub-indicators to aggregate for specific data results. Additionally, desired conditions are defined based on current conditions and local resources, which describe specific goals and targets for tourism such as the Tourism Master Plan. It is suggested that thresholds be set for each indicator to help alert stakeholders before potential impacts arise.

Island specific implications
Both private sector and public sector stakeholders in Mahe and Praslin will need to start recording and reporting periodically decentralized data related to the socio-economic and physical-environment indicators as defined by the carrying capacity framework included in Chapter 3. Considerable effort in collaboration, data collection and trust are needed to accomplish this task.

Indicators
All priority carrying capacity indicators have been identified and baseline data and ideal conditions defined where possible in the carrying capacity framework included in Chapter 3.

High Priority

Develop a Quality Assurance Program

Rationale

The World Tourism Organization (UNWTO) defines quality of a tourism destination as “the result of a process which implies the satisfaction of all tourism product and service needs, requirements and expectations of the consumer at an acceptable price, in conformity with mutually accepted

contractual conditions and the implicit underlying factors such as safety and security, hygiene, accessibility, communication, infrastructure and public amenities and services. It also involves aspects of ethics, transparency and respect toward the human, natural and cultural environment." Based on UNWTO's definition, sustainability is an attribute of quality. Maintaining an adequate, uniform and stable level of quality is central to the overall visitor experience. Yet ensuring quality throughout the tourism value chain requires careful management.

Desired Outcome

Increase visitor satisfaction by improving the quality of the tourism offering.

Recommended Actions

- It is recommended that Seychelles develop a Tourism Quality Assurance program that would include all primary tourism sectors. This program should integrate key tenets of quality including compliance, risk assessment, capacity building, and sustainability management for business operations with special attention given to environmental conservation and climate change adaptation. The program would incorporate "compulsory compliance" and "voluntary good practice" options.
    - Compulsory Compliance would require all tourism operations to be legally compliant with applicable laws and issue permits and/or licenses for operations. This would build upon existing legislation such as Hire-Craft Act, Boat/Yacht Charter Policy, Tour Guide & Operator Policy, et al.
    - Voluntary Good Practice would be supported by the Seychelles Sustainable Tourism Label (SSTL). It is recommended that the standard for hotel operations first be revised and streamlined to allow for better adhesion to the program and be more inclusive of difference scales of hotel operations. Additionally, it should be expanded to include tour operators and other applicable sectors (e.g., water craft) to better support the variety of products and services. Additional improvements on capacity building and monitoring tools for businesses are also suggested. The Tourism Master Plan Priority Area 6.2 calls for 50% of all large hotels and guesthouses to adhere to the label by 2023.
    - Offer enhanced tourism training and capacity building programs in partnership with the Seychelles Tourism Academy (STA), Seychelles Hotel and Tourism Association (SHTA) and University of Seychelles.
- Reintroduce on a quarterly basis the visitor exit survey and systematically monitor visitor satisfaction, repeat rate, visitor trends, activities, spending and other important market performance metrics in order continuously improve on the quality of the destination experience.

Indicators

- Number of licensed beach vendors, tour operators, and charter boats (% licensed per sector)

- Number of tourism operators by category actively using Seychelles Sustainable Tourism Label (% licensed) – e.g., hotels, self-catering, restaurants, take-away, beach vendors, boat operators, tour guides, etc.
- Customer satisfaction and repeat rate

Medium Priority

Develop Visitor Use Management Plans for Key Assets and Areas

Rationale

Seychelles' popularity is directly related to its pristine beaches, some of which are in danger of being loved to death. This popularity has increased the number of visitors that arrive to the destination by air and sea, creating congestion in ports, roads and along some beaches. This visitor congestion can make it a hassle to get from one area to another and detracts from the appeal of Seychelles' coastal destinations. Additionally, crowding can pose a threat to the health and safety of visitors and residents amidst COVID-19.

Visitor use management is a holistic concept that allows for proactive and adaptive management of visitor use to ensure the experiential and ecological characteristics of the protected area are maintained, sustainably, over time (IVUMC 2016).

An integral part of visitor use management is the identification, and adherence to over time, of desired conditions. The desired conditions of an area reflect what managers would like to manage for, what conditions are ideal, and what types of experiences are acceptable to ensure the long-term sustainability of the resources and visitor experience (e.g., uncrowded conditions, cultural experiences, educational opportunities, etc.). Desired conditions are often categorized into "social," "cultural," and "natural." Through this process, managers have a clear understanding of when ecological or experiential conditions may no longer be acceptable (or when management is achieving its goals). Additionally, appropriate visitor activities, facilities, and services that match desired conditions can also be identified through this process.

After the identification of the desired condition, the development of indicators of quality can be developed. These indicators provide a measurable data point to understand how well the desired conditions are being achieved. A threshold for each indicator can also be developed for ongoing monitoring purposes. For example, a possible indicator for Beau Vallon could be visitor crowding as operationalized as the number of people on the beach at one time. The associated threshold could be "no more than a X number of people within view per X meters of beach." This approach, through **long-term monitoring,** will allow for the sustainable use of the beach for experiential and natural conditions and trigger management action if the threshold is being violated. A suite of management strategies for dealing with increased impacts associated with threshold violations (e.g., temporary closures, education programming, signage, redistributing visitor use) can then be enacted. When necessary, this process can also help to identify if visitor capacity restrictions are

needed to maintain the ecological and experiential conditions of a specific area. This approach provides a systematic and logical way to incorporate the interrelated topics of capacity, tourism management, and customer service.

A systematic approach to visitor use management (IVUMC 2016) will provide the conceptual and methodological basis for resource and experience protection by:

- Identifying desired outcomes for visitor experiences and opportunities, linked to the conditions for specific areas resources, facilities, and services;
- Committing managers to adaptive management and monitoring of visitor use to achieve the desired experiential and natural resources outcomes (Cahill et al. 2018: 33);
- Allowing destination managers to summarize visitor experiences, visitor preferences, and visitor outcomes.

Desired Outcome

Improve the ability of visitors and residents to move around the islands in an unobstructed manner, thus allowing for the highest level of visitor arrivals while maintaining the lowest perceived level of crowding and congestion at key sites.

Recommended Actions

- Gain an understanding of the visitor flow around the country on a daily, weekly, monthly, and seasonal basis beginning with the areas of highest concern.
- From that understanding, create a Visitor Use Management Plan that minimizes visitor congestion in those areas that are under the greatest pressure. This plan should consist of strategies and policies for limiting visitor numbers and/or distributing visitation across times/days/seasons/locations. For example, only allow cruise ships to disembark and visit popular beaches on days that are most typically air departure days. These plans can also align with COVID-19 guidelines to ensure specific sites can practice safe distancing and maintain an acceptable level of crowdedness. Rather than the research team providing static numbers for limiting visitors, it is more important to install management and monitoring protocols. Well-managed sites can have higher numbers of visitors if impacts are understood and remain at an acceptable level.

Island specific implications

- Visitor Management planning key actions on Mahe and Praslin key sites:
    - Designate limited parking spaces marked with signage and paint and regulate at beaches in Mahe and Praslin
    - Develop new themed itineraries that utilize local folklore, nature and cultural sites as key components, suggesting less beach times during peak times and days (example themes: legends of the coco de mer, adventures of the last dauphine, rhythm and tastes of Seychelles, etc.). These diverse and varied routes will help achieve the following favourable outcomes:

- Reduce congestion at popular tourism sites
- Provide more activity options for visitors
- Offer a more personalized visitor experience
- Create a more robust and diverse destination
- Highlight some of Seychelles lesser known natural and cultural assets
- Increase visitor satisfaction and spend
- Disperse visitors to areas other than just beaches

- Coordinate visitor flow from cruise day passengers so key sites isn't overly crowded with overnight visitors and cruise passengers
- Offer incentives and activities at less visited sites during peak times (i.e., local dance group, food tasting, arts & crafts making and sales, scavenger hunts, etc.)
- Identify an appropriate area for the toilets and construct them by following regulations with regards to water supply and sewage system
- Monitor and ensure that all beach vendors maintain high quality standards of service and comply with environmental regulations and sustainable practices to minimize damage to the natural setting
- Develop visitor use guidelines with health and safety rules included and install informational panels at beaches and heritage sites
- Additional interpretive panels or signage should be installed at all tourism sites to: raise visitor awareness of Seychelles' nature, wildlife, cultural traditions, and history; facilitate responsible visitor interactions with natural and cultural sites; and engage visitors in conservation of natural and cultural sites.
- Identify an appropriate area and system for the toilets and construct them by following strict environmental regulations at most visited beaches.
- Install more waste bins at beaches and cultural sites along with effective waste collection.
- Continue implementing research and monitoring programs, particularly with regards to species present in areas with high visitation to set up baseline biodiversity conservation indicators. Provide information about endemic and endangered species and guidelines on how to interact with them at every accommodation facility room.
- Continue monitoring and reporting beach water quality by the Public Health Authority and taking pro-active measures to maintain beach water safe and ultimately apply for beach quality certification such as blue flag.

- As Wi-Fi technology enhances, consider the use of smart technology such as the installation of data collection beacons and free Wi-Fi across various key tourism hotspots in the islands in order to monitor congestion and develop mitigation measures.

Indicators

- Total number of visitors
- Occupancy rates
- Total inbound airline flights
- Cruise ship density
- Bed density
- Beach density
- Resident to visitor ratio
- Land use distribution
- Inter-island transfers (ferries and flights)
- Visitation to key sites and attractions
- Number of bins on site
- Number of serviced public toilet facilities
- Number of interpreted panels on key sites

Hotel Development Strategic planning

Rationale

The growth in the bed supply has outpaced the growth in visitor arrivals, resulting in an overabundance of beds and low occupancy rates. Yet, there are still a substantial number of additional beds in the pipeline. If the bed supply continues to grow as planned, it will decrease the occupancy rate even further. The construction of new hotels, comes at a cost to the environment, and an over-supply will drive down the price that can be charged per room. This problem will only be exacerbated as COVID-19 continues to impact visitor arrivals for an unknown period of time.

Desired Outcome

Reach optimal occupancy rate to maximize the economic profit made from existing beds, while minimizing the amount of land unnecessarily converted/degraded for new construction or change of use as well as minimize the strain on productive infrastructure services (energy, water, waste, sewage).

Recommended Actions:

- Halt all new hotel development approvals and consider suspending all projects that have not yet broken ground until the impacts of the pandemic on visitor arrivals are better understood. It is important to communicate with stakeholders that there is a plan to reopen development, but under the premise that certain conditions are met. According to the tourism growth model scenario analysis, the earliest new hotel beds would be needed is 2023 if conditions permit a fast rebound of tourism arrivals. Therefore, the earliest new developments could begin is 2022.

- During this time, encourage and provide incentives (i.e., tax credits, marketing opportunities, coaching, training, enhanced interest rates, etc.) for investing in improving, rather than increasing the current bed supply. Improvements include higher quality of services (additional 3- and 4-star accommodation facilities), new product development and infrastructure (boutique hotel experience, new F&B offering), and retrofitting for better environmental performance management.

- Once new hotel development suspension is lifted, continue the moratorium on change of use from residential to self-catering, unless is for the development of the quality products sought after (Boutique hotels). Alternatively, encourage the reverse change of use from self-catering to apartment resident facilities again, increasing the availability of housing for local people.

- Develop a post moratorium Strategic Hotel Development Plan. The plan should set a target for the number of future bed development based on visitor arrival targets, occupancy rates, zoning and utilities capacity and define the appropriate investment incentives. Key considerations to include in the plan are:

    - Environmental sustainability: Based on the environmental studies recommended above (under Highest Priority), the destination should be able to determine the most environmentally friendly accommodation type.

    - Socio-economic implications: Any new construction should include guidelines on employment and advancement of locals; give incentives for local purchasing; and provide opportunities for better linkages with local food suppliers.

    - Market Opportunity: Conduct market research to understand the current supply and market demand, identify gaps, and focus development in those areas. An appropriate hotel category for Seychelles is the boutique hotel experience (ranging from 3star to luxury); it should be considered as a new concept to include in the plan as a means to attract higher end tourism in line with the proposed high-value, low impact tourism development model.

Island specific implications

See chapter 4 for hotel development targets for the island of Mahe and Praslin in balance with tourism arrivals, visitor spend, local employment and resources consumption and waste generated.

Indicators

- Bed supply (by island and by category; existing and pipeline)
- Occupancy rate (by island and by category)
- Tax revenue from accommodation operations
- Average spend day per visitor
- Land use distribution
- land use conversion (Change of Use)
- Local employment to foreign ratio
- Employees / bed ration
- Adoption of SSTL by establishments
- Amount of solid waste generated by accommodation facilities
- Water demand by accommodation facilitates
- Proportion of accommodation connected to sewage treatment
- Amount of energy consumed by accommodation facilities
- CO2 emissions by accommodation

Low Priority

Develop Cruise Tourism Strategy

Rationale

Cruise tourism arrivals have been growing exponentially from 2014-2019, reaching 44,000 by 2019. Additionally, the size of the cruise ships has also been growing, as well as the occurrence of multiple vessels docking at the same time. This trend has resulted in congestion at Port Victoria, which is not set up to be a cruise terminal, as well as congestion at key beaches and sites across all three islands. Even though a new moratorium has been put in place until the end of 2021, preparations to reopen the cruise terminal should come with a strategic plan to manage capacities and set targets.

Desired Outcome

The cruise tourism industry in Seychelles is profitable and well managed, taking port capacity, site crowding, local economic benefits, and environmental resources into consideration.

Recommended Actions

In anticipation of the cruise tourism ban lifting in 2022, develop a Cruise Tourism Strategy for the next 5 to 10-year horizon that takes into consideration the transition from the high-impact low value

model to the low-impact-high value model. This strategy should take into account every aspect of tourism within Seychelles, specifically visitor flow and use. Considerations should include risk mitigation, infrastructure requirements and optimal cruise ship size in accordance with the physical capacity limitations of the destination. The strategy should also consider scheduling specific days of the week for arrivals and visitor flow management to offset any potential crowding at popular destinations.

Island specific implications

- Expansion project of main port of Victoria in Mahe
- Expansion of jetty at Praslin

Indicators

- Cruise ship density
- Port Capacity
- Airport Capacity
- Beach density
- Cruise Tourism earnings per visitor

Appendix I. Summary of Policy documents consulted

Seychelles Tourism Planning and Policies

Seychelles Blue Economy Strategic Policy Framework and Roadmap: Charting the Future (2018-2030). Blue Economy Department, 2018.

The *Seychelles Blue Economy Strategic Policy Framework and Roadmap* was developed to provide a roadmap for integrating blue economy concepts into all aspects of development in Seychelles. It is premised on the use and sustainable management of the blue economy as a strategy for economic diversification and to contribute to reducing vulnerability and supporting economic growth, given the marine ecosystem and brand name of Seychelles.

The Policy defines the blue economy concept in the context of Seychelles as "*an integrated approach to ocean based sustainable development which brings together economy, environment and society*". It articulates Seychelles "*Blue Economy Brand*" as a unique comparative advantage based on sustainability credentials, builds on Seychelles national and international legal and policy frameworks, successful flagship initiatives such as marine spatial planning and innovative finance (blue bonds). It puts forward an ambitious blue economy agenda, in line with the UN Sustainable Development Goals, for action and investment to 2030. It provides for implementation around 4 key pillars:

- Economic diversification & resilience - to reduce economic vulnerability and reliance on a small number of sectors and to increase the % GDP derived from marine sectors.
- Shared prosperity – Creation of high value jobs and local investment opportunities;
- Food security and well-being; and
- Integrity of habitats and ecosystem services, sustainable use, and climate resilience.

In the context of the tourism carrying capacity studies, the results expected from implementation of this policy include increased investment in diversification of existing ocean-based economic sectors (particularly fisheries, tourism and ports) to realise greater value and efficiency from the existing resource base; creating sustainable wealth and diversification of existing ocean based sectors (fisheries, tourism, ports) focusing on value adding, value chains, quality not quantity; sustainability credentials and good practice.

Seychelles Energy Policy 2010-2030. Seychelles Energy Commission, 2010.

The *Seychelles Energy Policy 2010-2030* is a policy and plan of action to reduce Seychelles' dependency on fossil fuel in a sustainable way from 2010 – 2030.

The Policy identifies the five pillars for decreasing oil dependency in a sustainable way including having a vision for the sustainable development of the energy sector and a Plan of Action to follow this path; changing the framework to improve both public and private initiatives in the energy sector; focusing on increased energy efficiency and thereby reducing waste of energy and launching programs for increasing the contribution from renewable energy in the energy matrix in Seychelles.

It provides for diversification of the energy base and set as a long-term goal for energy supply to be 100% based on renewables. It also sets interim targets that by 2030, 15% of energy production will be from renewable sources and in 2020, 5% will be from renewable sources. It calls for investments to reinforce the image of Seychelles as energy conserving, greenhouse friendly and sustainable.

One of the core elements of the energy strategy is to provide incentives for energy conservation through the introduction of an appropriate "tropical building code". It also recommends for special efforts to make collective voluntary agreements with existing and coming hotel operators to comply with a "Green Seychelles". With such a policy, the hotels should commit to one of three alternatives: (a) Substantial and verifiable energy savings – and/or co-production of electricity, heating and cooling, (b) Installation of renewable electricity production on their own premises, or (c) Purchase of a certain percentage of renewable electricity from the public grid.

The Policy provides direction on conversion of wastes and biomass to energy and using the landfill at Providence on Mahé as an important source of energy and estimates that it can produce the equivalent of up to 8.000 tons of oil from this process. It recommends extracting landfill gas that could be used for electricity production and to consider a waste incineration facility for the future. This Policy also sets up the Seychelles Energy Commission to regulate the energy sector.

National Waste Policy 2018 – 2023. Land Waste Management Agency, 2018

The *National Waste Policy 2018-2023* was developed to provide an overarching framework and guiding principles to improve the management of solid waste in Seychelles. The Policy elaborates 11 thematic areas as follows: legal and institutional framework, infrastructures, financing and cost recovery, capacity building, public education and awareness, non-state actors, waste prevention and minimization, waste recovery and recycling, waste segregation, storage, transport and collection, waste treatment and processing and final disposal. For each theme, there are general objectives and concrete measures are suggested. However, no detailed plans are presented.

Solid Waste Master Plan – Draft. Land Waste Management Agency, July 2019

The draft *Solid Waste Master Plan* was developed to provide further details on the most important measures in the *National Waste Policy 2018-2023* and a plan of action for its implementation.

The Master plan provides a plan of action for waste management in the Seychelles until 2035 and establishes the foundation for transforming the current waste management system, in line with the

waste management policy. It offers direction for the development of waste management by identifying options for interventions that are cost-effective, sustainable and appropriate for the Seychelles. The Master Plan advocates the creation of a stable framework that will provide confidence, within which the necessary investments in waste collection systems and treatment infrastructure can be provided. The options expanded include: source segregated waste collection, recycling; composting of organic wastes, exporting clean dry wastes; sustainable waste management (SWM) technologies to be considered, introducing legislation to enforce existing policies, including making SSTL certification obligatory for tourism establishments. It contains detailed action plans and costing for plan implementation.

Seychelles Strategic Land Use Development Plan. Planning Authority, 2015

The Seychelles Strategic Land Use Development Plan sets out the long-term spatial planning framework for the three main islands of Mahe, Praslin and La Digue up to 2040.

The Plan is very comprehensive and presents a very detailed spatial strategy within the context of existing policies, development growth and population, growth of Seychelles as a tourism destination, responding to climate change, quality of life and planning for future growth. It provides comprehensive land use plans to guide the amount and location of development; help ensure infrastructure provision is aligned with growth locations and provide a tool for coordinated decision making and investment.

The Plan had forecast up to 400,000 visitors by 2040, based on a very modest growth in tourism numbers, during which time the airport and port would have been extended and modernised, the Master Plan for the redevelopment of Victoria, which makes provision for a Victoria Waterfront Project, would have been implemented and 3117 additional rooms would have been added to the room stock. It also provides detailed plans for the sustainable management of the provision of additional hotel rooms, detailing land use plans for each district on the 3 main islands of Mahe, Praslin and La Digue and indicating the ideal number of tourism rooms per district as well as providing proposals to support the diversification of the accommodation and activity offer in the tourism sector.

Seychelles Tourism Master Plan: Part I & II. Tourism Department, 2018

The *Seychelles Tourism Master Plan: Part 1*, updates the Tourism Master Plan document drawn up in 2010.

PART I is a detailed situational analysis of the Seychelles tourism sector using a value-chain framework developed for that purpose. It provides a descriptive analysis of the socio-economic importance of the travel and tourism industry in Seychelles. It concluded that tourism contributes significantly to GDP, employment and capital expenditure when compared to selected island states and that Seychelles is much more dependent on the tourism sector in relative terms than Mauritius and other similar, small Caribbean Island states. It highlighted the fact that visitor arrivals had more

than doubled between 2000 and 2017 from 130,046 to 349,861. It brought out that tourism earnings had not risen in tandem with visitor arrivals, increasing from USD343.4M IN 2010 to USD 414M in 2016 and earnings per visitor fell by 50% from 2010 to 2016 which also mirrors the fall in percentage visitors from Europe. It points to Seychelles high dependence on Europe as a tourism market with European visitors accounting for 62% of total visitors in 2017 down from 80% in 2000 and 2010.

Part 1 discusses the main natural and cultural tourism assets and the strategic issues that these entail from a sustainable tourism view point. It concludes that the main emphasis in tourism development has been on accommodation and related services and recommended exploring other niche areas such as marine tourism for future tourism growth. Recommendations to remedy the issues and gaps identified are proposed.

Seychelles Tourism Master Plan: Part II: DESTINATION 2023: A STRATEGY FOR SUSTAINABLE TOURISM GROWTH. Tourism Department, 2018

The *Seychelles Tourism Master Plan Part II: Destination 2023- A strategy for Sustainable Tourism Growth* details the tourism sector strategy up to 2023 and beyond. It builds on the situational analysis in Part I: above.

The strategy integrated a series of measures to support the development of sustainable tourism whilst balancing the objectives of economic returns, environmental protection, conservation and socio-cultural integration in tourism development. It proposes a gradual increase in visitor arrivals while adopting a balanced approach to tourism bed supply, air seat supply and visitor annual targets. It recommends a modest growth in visitor numbers and a focus on quality versus quantity of visitors and proposes an increase in per visitor earnings equivalent to the 2010 figure of US$1,968 is targeted by 2023; maintenance of a bed occupancy level at 64% during off-peak periods. It calls on the Seychelles tourism industry to commit to environmental preservation and sustainable tourism.

The strategy identifies eight priority areas for action plan implementation, the most important of which in relation to this exercise is to increase product diversification; invest in local talent development and management; increase investment in sustainable tourism practices; and deliver key enabling factors. It requested for carrying capacity studies to be conducted in order to guide future growth in bed supply. The underlying strategic actions for each priority area are identified and detailed action plans are elaborated for the implementation of the strategic actions.

Previous tourism carrying capacity studies in Seychelles

The first Tourism Master Plan drawn up in 2011 recommended undertaking carrying capacities on an island-by-island basis. Between 2013 and 2016, three carrying capacity studies were commissioned in the inner islands which applied similar methodologies to provide very practical answers to the development potentials and limits of the inner islands to policy makers in terms of

securing their sustainable development. In the following, a short summary of the respective studies is given (for a more detailed overview, please see annex).

Carrying Capacity Study of La Digue Island - Towards Sustainable Tourism and Residential Development, Marquise David & Iris Richter, 2013,

- The report found that the quality of some visitors' satisfaction has already decreased and reached an "unacceptable" level" and suggested to monitor and not exceed the **1:2 visitor to resident ratio** of the time to safeguard the creole character of the island and to maintain the quality of life of its residents while safeguarding visitor satisfaction and expectations.
- The study estimated that a maximum of 200 additional tourism beds (100 rooms) could be absorbed by the island between 2016 and 2020. This would mean that between 2016 and 2020 a maximum of 40 additional tourism beds per year could be permitted on La Digue.
- The introduction of a 3-year moratorium period on tourism beds on La Digue was proposed. The aim of this measure was intended to notably to give the island's existing tourism accommodation market an adjustment period.
- For the end of the moratorium, it was suggested to limit the development of new tourism beds to low-volume (maximum 5 rooms or 10 beds) establishments of a minimum 3-star standard and that adopt traditional architectural designs and eco-friendly practices. The combined number of rooms for establishments operating under the same ownership should not exceed 15 rooms (30 beds).
- In terms of utilities the study found that management of sewage on La Digue was inappropriate. Installation of a centralised sewage system and sewage treatment plant was overdue.
- Beach density calculations were conducted for Anse Source d'Argent as part of the Carrying Capacity Assessment of La Digue Island. The beach density of 2.22 m / person at the time of the study were asserted as being too high.

Carrying Capacity Study for the Districts of Beau Vallon, Bel Ombre and Glacis - Towards Sustainable Tourism and Residential Development Iris Richter and Gerard Adonis, 2014

- The study found that the Northern Area of Mahe was close to reaching its maximum carrying capacity at the time.
- The study calculated a first beach density scenario for Northern Mahe under a 60% occupancy scenario and with the assumption that 1/3 of all visitors residing within a distance of 500 m from Beau Vallon Beach would use the beach at the same time, the calculated beach density reached 5.89 m per person at present time. As a conclusion it was stated that the future beach density calculated for Beau Vallon Beach will be comparable with beach densities observed in mass tourism destinations in the Mediterranean.

- The report recommended the limitation for tourism development despite the favourable social environment for tourism in Northern Mahé, together with the application of restrictions concerning type of developments and development density according to classifications stipulated in the land use plans for the three districts, discouraging additional large developments.
- As other tourism infrastructure still holds potential for growth, investments in catering facilities (e.g., Restaurants and Bars) and entertainment infrastructure should be promoted instead.
- The conduction of more tax inspections in view of the results of the economic assessment which revealed differences between business tax and GST payments and calculated tax obligations were recommended.
- Regular water tests for health purposes and sound policy-making were recommended.

Carrying Capacity Study for the Inner Islands of the Seychelles - Towards Sustainable Tourism and Residential Development, Iris Richter, 2016

- The study found that visitor arrivals would not be able to fill the increasing bed supply in the coming years and automatically occupancy levels would risk to deteriorate further. It called to limit future large hotel developments and keep the moratorium on new large developments in place for all Inner Islands, at least until 2020. It noted that there was still demand for more small boutique hotels/resorts with a maximum of 15 rooms. The situation concerning hotel development needed to be critically reviewed again within the next 5 years.
- The study echoed recommendations from the Seychelles Strategic Land Use and Development Plan (2015), promoting the re-development of derelict tourism establishments (e.g., Reef Hotel, Mahé Beach Hotel, Equator Hotel, L´Auberge Danzil, Vanilla) possibly by providing special incentives. These sites should be excluded from the Moratorium.
- It suggested to limit growth rates of beds in self-catering establishments by setting a policy of restricting new self-catering developments to 5 rooms per establishment.
- It noted that change of use from dwelling houses to tourism establishments should only be possible after residential use for a minimum period of 5 years. Any change of use to tourism in social housing projects or land banks should be strictly avoided.
- Similar to the 2014 Northern Mahe study, this report encouraged further promoting investments in catering facilities (e.g., Restaurants and Bars) as such tourism infrastructure still holds potential for growth.
- A consolidation of the existing market was recommended through the introduction of the classification system the quality and standards (in particular of self-catering establishments).
- Measures to identify and legalise unlicensed establishments catering for tourists were recommended to be strengthened. The report encouraged the Ministry of Tourism and Culture

to be more active in monitoring the market and enforce (together with other agencies) existing regulations regarding licensing and tax declaration.

- The report further called for a revision of the current business and presumptive tax system. In 2018, the 8th schedule and other concessions were expected to be terminated.
- The application of restrictions concerning type of developments and development densities according to classifications stipulated in the land use plans was seen as mandatory. Development in protected and environmental sensitive areas should be avoided at all cost. Any necessary additional restrictions due to environmental concerns should be applied.
- Finally, the report emphasized to continue the upgrade of existing electricity, water supply, sewage and waste facilities and networks in accordance with the existing sector plans.

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Environmental Performance Index: https://epi.envirocenter.yale.edu/epi-topline
Ocean Health Index: http://www.oceanhealthindex.org/

ORGANISATIONS	PERSONS CONSULTED FOR DATA COLLECTION & VISITOR SURVEY
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Ministry of Tourism, Civil Aviation, Ports and Marine	Mr Didier Dogley
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Land Transport Department	Mr Pat Andre, by telephone
Culture Department	Ms. Cecile Khalebi,
Environment Department	Mr. Alain De Commarmond, Mrs Nanette Laure
	Dr Jude Bijoux, Coral Bleaching expert
Immigration Department	Ms Karen Pillay, Mr Michel Elizabeth
Agencies and parastatal organisations	
Land Waste Management Agency	Mr Flavien Joubert
L' Union Estate, La Digue	Mr Sheik Khodaboux
National Bureau of Statistics	Ms. Laura Ah-Time; Mr Aubrey FockTave, by telephone
	Mrs Marquise David, Chairperson NBS & Independent Consultant
Planning Authority	Mr. Joseph Francois, Mr Bernard Belle
Public Health Authority	Ms Eulalie Sabury
Public Utilities Corporation (PUC)	Mr. Philippe Morin; Mr Joel Valmont, Ms Doreen Bradburn; Mr Wingate Mondon; Ravin Sunassee, Mervyn Benoiton, Ibrahima Diallo
Seychelles Civil Aviation Authority	Ms Marie-Alice Amelie, Mrs Magalie Essack, Mrs Lina Barbe;
Seychelles Energy Commission	Mr. Tony Imaduwa, Mr Mamy Razanajatavo, Mr Jimmy Lenclume.
Seychelles National Parks Authority	Mr Selby Remy
Seychelles Maritime Safety Authority	Captain Joachim Valmont
Seychelles Ports Authority	Mr David Bianchi; Mr Ralph Charlette, Mr Vincent Dodin;
Private sector	
H Resort & Spa	Ms Melissa Naude
Hilton Double Tree Alamanda	Mrs Doreen D'Souza
Hilton Northholme	Mr Gavin Pentamah
Constance Ephelia	Mr Markus Unrath