SUSTAINABLE TRAVEL INTERNATIONAL
Making A Better World The Destination

# FINAL REPORT

*Tourism Carrying Capacity for the island of La Digue*

**PREPARED FOR:**

Seychelles Ministry of Tourism, Civil Aviation, Ports and Marine

**SUBMITTED BY:**

Sustainable Travel International

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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 for La Digue** commissioned to Sustainable Travel International by the Seychelles Ministry of Tourism, Civil Aviation, Ports and Marine on 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 Seychelles' 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 it 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 action agenda.

# 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% 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 moratorium on the constructions of new hotels to no more than five rooms per developer for La Digue in 2013 and in 2015 introduced a five-year moratorium on the construction of hotels with more than 24 rooms in order to curb new developments and reduce environmental impacts. (See appendix I for a summary 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 reaching (more) levels that require mitigation and 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 ‘magic’ number 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[1] 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.
- *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 Ministry of Tourism.


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

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

La Digue Island is the third most populated island in Seychelles, with a total of 2,926 habitants in 2019 (2.99% of Seychelles' total population), and the fourth largest granitic island of Seychelles after Mahe, Praslin and Silhouette. With an area of 10.08km2, La Digue is located 53,8km North East of Mahe, lying East of Praslin and West of Felicite. Whilst the highest elevation in Seychelles is 905m, La Digue's Nid D'Aigles Mountain reaches up to only 333m, surrounded by 15.4km of coastline.


Unlike like the two largest islands, there is no airport on La Digue, so travel to and from the island relies on boat ferries and helicopter rides. La Digue has one main jetty located at La Passe.

In his 2017 SONA, the President of Seychelles called for La Digue to become the ecotourism island of Seychelles. Following this, the different stakeholders worked on the La Digue Vision to uphold this designation. The participatory and consultative process which defined this vision also outlined La Digue's mission to "ensure through sector policies that La Digue remains the ecotourism island destination of Seychelles, sought after by visitors and locals alike for its pristine beauty, tranquillity, culture and friendliness." The document clearly stated that physical development of the island should be kept at a minimum, restricted and strictly controlled, in line with future climate change risks and environmental fragility.

The La Digue Foreshore Guidelines reflect these ambitions by highlighting the importance of development projects on La Digue to have smaller footprints and be well integrated in the environment. This applies for leisure infrastructure, infrastructure for children, beach restaurants, cafes and bars. The guidelines emphasize the importance of working with resilient material for construction (La Digue Foreshore Guidelines, n.d.).

However, the vision and mission and the sector objectives outlined in the ambitious La Digue 2032 document are in stark contrast to the current reality on La Digue.

Already in 2013 a previous Carrying Capacity Study of La Digue Island found that visitors' satisfaction had decreased and reached an "unacceptable" level". Additionally, the report 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. La Digue hosts 3% of Seychelles" population and carries 10% of Seychelles tourism bed stock, thus recording a far higher bed per capita ratio than Mahé or Praslin. The 2013 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 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 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 inadequate. 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.

Based on the results and recommendations of the 2013 Carrying Capacity Study, the GoS introduced a moratorium on the constructions of new hotels with more than five rooms per developer for La Digue.

What followed since 2013 was a growth of 10.57% in the number of rooms (as well as an additional 123 rooms in the pipeline, accounting for a total increase of 33.73%), combined with a substantial increase in international day visitors / ferry arrivals of 43.3 % from Praslin and 315% from Mahe between 2013 and 2018 pushing the environmental resources and utility services of the island, as well as social resources to a limit, with visible effects in terms of pollution, flooding and overcrowding being experienced by visitors and residents alike. The current carrying capacity study comes at a crucial moment in time to reassess the main priority areas and to identify areas of concern.

## Tourism Economy

Economic data in Seychelles is collected for the country as a whole, but is not disaggregated per island. There is therefore no detailed data and breakdown about the economic contribution of La Digue to Seychelles' economy. The 2013 carrying capacity study highlighted that unavailability or inconsistency of official data on business licenses and tourism fiscal receipts on La Digue were a

major constraint for a complete economic and tourism carrying capacity analysis of La Digue. The report made certain statements based on business consultations at the time. These consultations showed that competition on La Digue had increased and the profile of tourism demand on La Digue had shifted towards a volume-driven form of tourism growth with decreasing yield. This is reflected by business operators such as souvenir shops turning towards the production and selling of low value items. An oversupply was observed at the time at the level of tourism bed supply (see bed stock section below), which led to an intensive price competition and establishments starting to offer additional services to adapt to new market conditions. Bike rental companies confirmed that vertical integration had increased, with increasing numbers of accommodations providing also bicycles to their guests adding to the increased competition of more bike operators on the market (David & Richter, 2013). This additional competition leads to disorganisation and hazzling at the jetty, as bike operators try to convince arriving visitors to rent a bike, the price policy being untransparent and the experience unpleasant for the visitor.

During this current 2019-2020 Carrying Capacity study, field research and stakeholder consultations confirmed the same situation persists. Stakeholders confirmed that tourism in La Digue went from high end to low end tourism, whereby the average spending has gone down and operators are struggling. They expressed frustration in the low distribution of wealth, as it is accumulated by a few whereas most locals lack land and or the financial means or opportunities to invest in productive tourism infrastructure. Participants confirmed that there is desire from locals to pursue a low-density model, but with the proper planning, keeping in mind local architecture and maximization of earnings. However, their most critical concerns included productive infrastructure, e.g., the fossil fuel reliance, frequent power cuts, recent flooding due to sewage problem.

La Digue is heavily reliant on tourism, compared to Mahe, which as the main island of Seychelles hosts a diversity of tourism businesses, government agencies and other non-tourism related sectors and services, La Digue has positioned itself and catered its infrastructure, local workforce and services nearly entirely on tourism. 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 box below), will have dire consequences for the local livelihoods on La Digue.

**Effect of COVID-19 pandemic on the island of La Digue**

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 La Digue were limited and travel for local residents was only allowed for essential services purposes. Even after the lifting of the lockdown, ferries continue to operate on a reduced schedule.

Due to the halt of international tourism, certain local tourism businesses on La Digue have developed stay-cation offers and special resident prices to foster domestic travel and local consumption with reduced prices for overnights and services as well as special events for locals (e.g., Domaine de l'Orangerie organized an open-air cinema night for residents).

**Tourism profile**

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.

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 first 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, 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 65.3% in 2017. (WTTC, 2019)

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.

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.

### Comparative performance

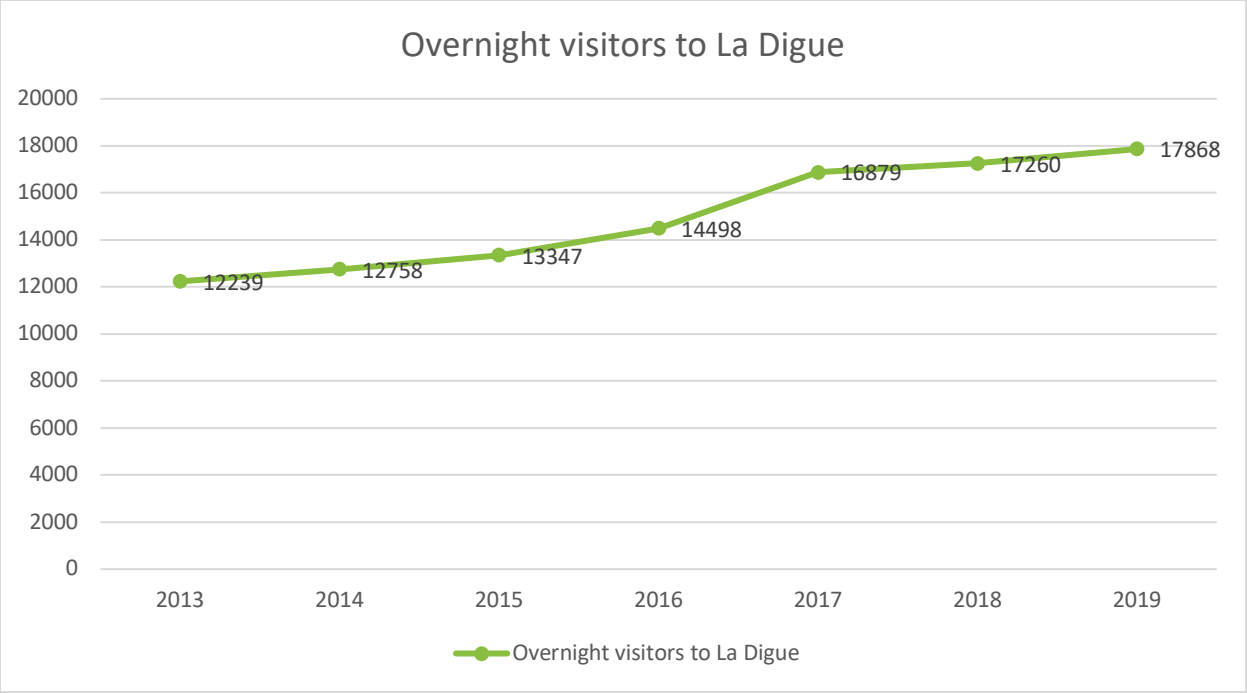
According to the WTTC (2019) Seychelles is the 20th fastest growing tourism economy in the world, based on the high percentage of T&T contribution to GDP, behind the other island states of St. Kitts and Nevis which ranked third, Sao Tomé and Principe 14 and St. Vincent and the Grenadines which ranked 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).[2]

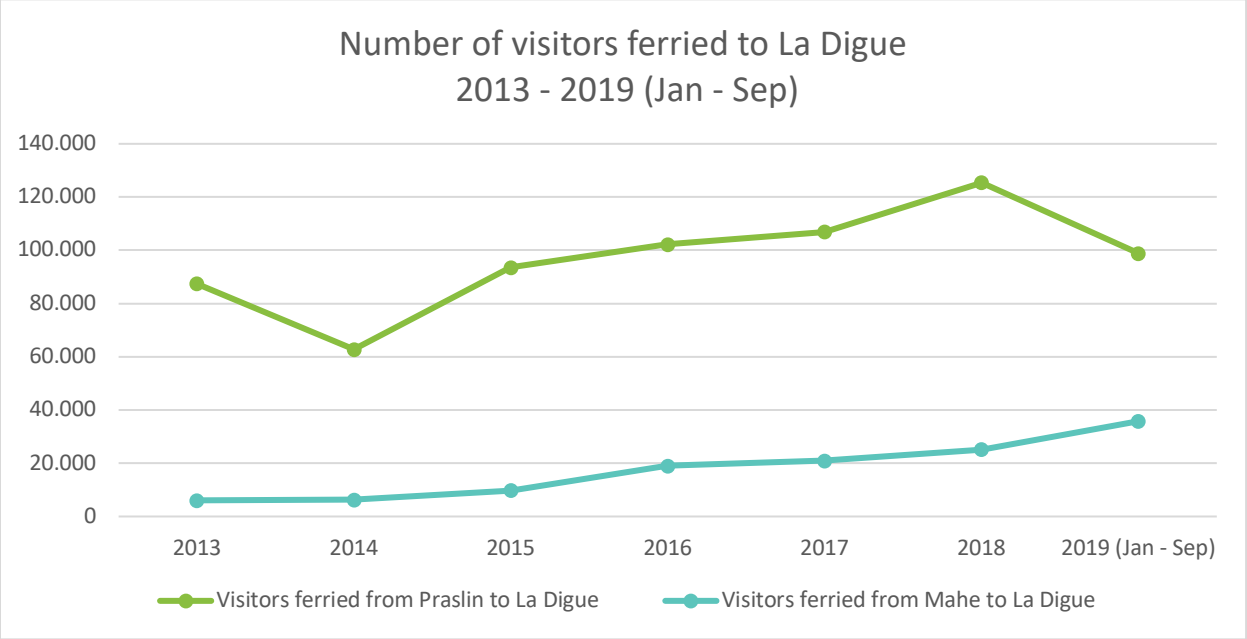
Though tourism has enabled a rapid economic prosperity, this excessive dependence on tourism also exposes the country to economic risks. Seychelles is vulnerable to the economic uncertainties in key visitor source markets such as Germany and France. Because of its high dependence on tourism, any shocks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

## Tourism Arrivals

In 2019 4.6% of international visitors to Seychelles stayed overnight on La Digue, a total of 17,868 international visitors. This was an increase of 3.5% compared to 2018, which registered 17,260 international visitors to La Digue. Tourism arrivals to La Digue grew at a 7% CAGR over the past six years (2012-2019), a slightly lower pace then national tourism arrivals which grew at a 10% CAGR over the same time horizon.

[2] https://www.wttc.org/-/media/files/reports/economic-impact-research/regions-2019/world2019.pdf




The growth in the number of overnighters is also reflected in the number of overall international visitors ferried to La Digue from Mahe and Praslin (including excursionists and cruise visitors from Praslin). The numbers of visitors ferried from Mahe to La Digue has increased by 315% over the past years from 6,069 in 2013 to 25,190 in 2018. International passengers ferried from Praslin to La Digue also increased by 43.3% from 87,464 in 2013 to 125,375 in 2018. This trend meets growing concerns from La Digue stakeholders about the increasing number of day trippers, who fear that economic contributions of these visitors are limited and the growing number of day guests may further contribute to congestion at key sites of interest.

After falling from 10.4 in 2001 to 9.7 nights in 2005, visitors' average length of stay in Seychelles increased steadily starting in 2006 to reach 10.4 nights in 2010 and have since vacillated to reach 9.9 nights 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. No recent data on the length of stay on La Digue exist, but 2012 data showed that large hotels recorded the lowest length of stay (4.2 days) and self-caterings the highest (5.4 days), with the average length of stay at 4.7 days. Thus, it is important to bear in mind that length of stay tends to be relatively higher in smaller establishments.

The 2013 CCS on La Digue highlighted the importance of monitoring the average length of stay, room price and bed occupancy to determine the number of overnight tourists, the level of tourism spending and the daily yield. The report stated that the longer the average length of stay, the smaller the number of overnight tourists required to achieve equivalent occupancy targets (David & Richter, 2013).

| **Hotel Occupancy and ALOS by category** | All types | Large & medium hotels | Guesthouses | Self-catering | Small hotels |
|---|---|---|---|---|---|
| **Reported bed occupancy (%) (2019)** | 57% | 65% | 47% | 59% | |
| **Reported average length of stay (nr of days) (2012)** | 4.7 | 4.2 | 5.0 | 5.4 | 4.4 |

*Source: NBS, 2020*

Occupancy rates from 2019 showed that guesthouses and self-catering establishments on La Digue had a considerably lower occupancy rates (47% and 59%) compared to large and medium hotels (65%).

## Tourism Earnings

As pointed out previously statistical performance data is not disaggregated by island, therefore the economic contribution of La Digue to overall tourism earnings is unavailable. As for the average room rates per island in 2019, it can be noted that La Digue records an average of 304 USD per night, the highest of the three inner islands.[3]

### 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 |

[3] 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.

| Average Rack rates | SCR | USD | Minimum USD | Maximum USD |
|---|---|---|---|---|
| **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

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.

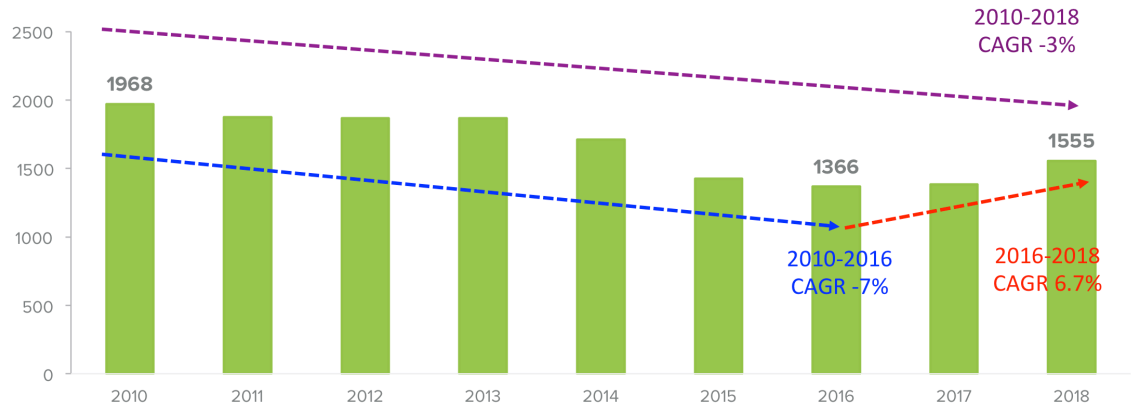
### Tourism earnings by (million USD)

| YEAR | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total Tourism Earnings million (USD)** | 343 | 364 | 388 | 430 | 398 | 393 | 414 | 483.3 | 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$

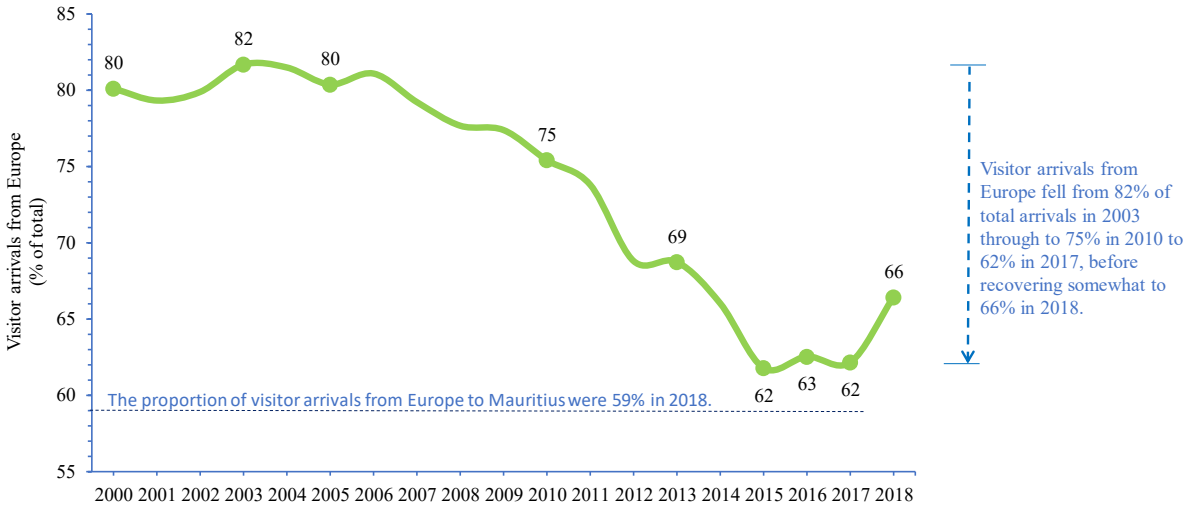



- Benchmark: Mauritius $1233 ; Maldives $2133 (2016)

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 (*see chart above STMP Part II*). 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 Tourism

Cruise tourism as one of three modes of tourism in Seychelles (beside land-based and yacht-based tourism) is also of importance for the island of La Digue. After a stagnation period from 2009-2014 due to piracy in the region, cruise ship visits have recently expanded to 7 cruise ship arrivals in the 2017/2018 cruise year and 6 in 2018/2019 cruise year.

### Cruise arrivals

| Season | Nr. of cruise vessels Mahe (total inner islands) | Nr. of cruise vessels La Digue |
|---|---|---|
| **2017/2018** | 46 | 7 |
| **2018/2019** | 39 | 6 |

Port Victoria is the main port of call for cruise ships arriving to Seychelles. Cruise passenger numbers are accounted for at national level, however it is estimated that of those cruise ships docking directly in La Digue waters, the numbers range around 6,762 cruise passengers in 2019. 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.

It is important to note that the numbers in the table above are cruise ships that anchor directly in La Digue waters, mostly arriving the evening prior to the visit of the island. Other cruise ships such as Regent Seven Seas Cruises anchor in front of Praslin, tender their guests to Baie St. Anne Jetty, where they take a Cat Rose ferry to reach La Digue for a day trip.

Cruise tourism is a seasonal activity from October to April, but the SPA management indicates that 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.

The island of La Digue is heavily affected by the increase in cruise visitors. Despite a small number of businesses benefitting from the arrival of cruise passengers (such as souvenir shops in the La Passe area and DMCs based on Mahe), for the majority of Diguois there is no clear evidence of how the local communities are benefitting from the arrivals of cruise ships. The length of stay on La Digue is very short (mainly half a day, approx. 3 hours), all activities and transportations are prearranged with a selected few vetted local operator, giving little to no room for others. The sheer volume of day trippers at a time cause congestion and high concentration in certain key areas of interest, such as Anse Source d'Argent and almost no spending opportunities locally. Cruise visitors are transported in mini vans/shuttle buses which augments traffic and downgrades the typical La Digue bike experience to Union Estate. They mainly visit Anse Source d'Argent and if time allows, they visit the Veuve Reserve, before being transported back to the jetty. There is also

been evidence the high volume of cruise passengers at a time add additional stress on the already over-stretched jetty facilities of La Digue Jetty.

**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 2020). 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, La Digue's tourism product relies on a number of key sites of interest, which are increasingly under pressure from rising numbers of tourists, especially when in combination with cruise visitor days (between October and April).

Visitor data from the key site L'Union Estate/Anse Source D' Argent on La Digue show that visitor arrivals have increased by 8.5% from 2018 to 2019, with strong implications for beach density and pressure on the environment (limited toilets and limited waste disposal). The numbers reflect certain high visitation months, such as March and April as well as October and November, in line with the cruise season. Additionally, the month of August has recorded comparatively high numbers of visitors to l'Union Estate in 2018 and 2019.

**Number of visitors to the l'Union Estate La Digue, 2018-2019**

| YEAR | 2018 | | 2019 | |
|---|---|---|---|---|
| | L'Union Visitors | National Arrivals | L'Union Visitors | National Arrivals |
| JAN | 11,700 | 24,543 | 14,879 | 29,463 |
| FEB | 14,629 | 31,179 | 16,317 | 36,807 |
| MAR | 18,449 | 35,968 | 17,259 | 35,244 |
| APR | 13,683 | 31,111 | 17,916 | 37,103 |

| Number of visitors to the l'Union Estate La Digue, 2018-2019 | | | | |
|---|---|---|---|---|
| **YEAR** | **2018** | | **2019** | |
| | L'Union Visitors | National Arrivals | L'Union Visitors | National Arrivals |
| **MAY** | 13,647 | 25,368 | 13,026 | 22,730 |
| **JUN** | 11,258 | 23,930 | 11,755 | 25,761 |
| **JULY** | 13,910 | 29,026 | 14,413 | 29,319 |
| **AUG** | 17,011 | 32,278 | 18,764 | 33,536 |
| **SEPT** | 13,403 | 27,458 | 13,344 | 24,860 |
| **OCT** | 20,895 | 33,725 | 22,778 | 35,960 |
| **NOV** | 17,977 | 31,042 | 18,528 | 34,511 |
| **DEC** | 13,210 | 36,216 | 16,053 | 38,910 |
| **TOTAL** | **179,771** | **361,844** | **195,032** | **384,204** |

*Source: L' Union Estate, La Digue*

In comparison, the La Digue Veuve Special Reserve recorded 2,642 annual visitors to its reserve in 2019 (visitor numbers were not recorded until introduction of visitor fees for non-Seychellois visitors to the reserve in 2019), a fraction of the yearly visitors of l'Union Estate which is in close vicinity to the reserve[4].

As part of the 2013 Carrying Capacity Study, 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.

### Beach density at Anse Source d'Argent

| | |
|---|---|
| Beach length | 531.96 m |
| Average number of daily visitors in 2012 (based on data from L'Union Estate) | 240 |
| Beach density in 2012 | 2.22 m / person |

[4] Due to numerous unmonitored entrances to the reserve, the Vev Reserve Management Plan suspects that this number is an underestimate

| | |
|---|---|
| Average number of daily visitors in 2019 (based on data from L'Union Estate) | 534 |
| Beach density in 2019 | 0.99 m / person |

Since the last beach density assessment, the average number of daily visitors to Anse Source d'Argent has more than doubled with severe implications for the beach density, which reduced from 2.22 m / person in 2012 to 0.99 m / person in 2019. As the 2013 Carrying Capacity Study pointed out, the beach density numbers at the time were already too high, meaning that the current situation is alarming, risking not only the overall quality of experience of the visitor, but the reputation of this renowned beach, not to mention the environmental pressure on an area which has very limited toilet facilities and waste collection points. This year 2020, this current study further analysis the experiential carrying capacity of Anse Source de'Argent and finds 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 from all beaches of interest in the Seychelles. And additionally reported, that along with Beau Vallon, the least level of satisfaction with a mean rate of 7.3 over 10 rating (see chapter 2 for the results of the visitor survey).

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. For La Digue one can calculate the ratio based on total international visitors that were ferried to the island (including day trippers and cruise visitors), as well as for overnight visitors only. The ratio of 52 international visitors to one local person is alarmingly high and the ratio of 7 overnighters to one local Diguois is nearly double the ratio in the rest of Seychelles.

| RATIO OF LOCAL RESIDENTS TO ANNUAL TOURISM ARRIVALS | | LA DIGUE (ALL FERRY ARRIVALS) | LA DIGUE (OVERNIGHT) |
|---|---|---|---|
| **Total population of Seychelles** | 97,625 | 2,900 | 2,900 |
| **Total Stay-over Arrivals** | 384,204 | 150,565 | 19,210 |

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

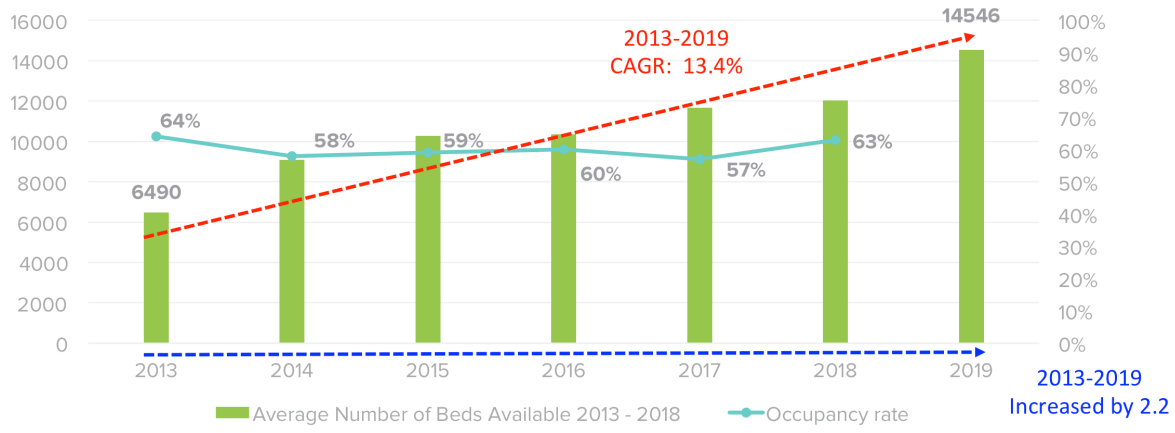
| RATIO OF LOCAL RESIDENTS TO ANNUAL TOURISM ARRIVALS | | LA DIGUE (ALL FERRY ARRIVALS) | LA DIGUE (OVERNIGHT) |
|---|---|---|---|
| **Tourists per resident** | 3.94 | 51.91 | 6.62 |
| **Tourists to Resident Ratio** | 4 : 1 | 52 : 1 | 7 : 1 |

# Tourism Products

## 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.

### Bed 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 46.2 tourism beds per 100 residents in La Digue followed by 40.3 and 10.3 in Praslin and Mahe respectively.

Tourism Bed Density, 2019

| TOURISM BED DENSITY | MAHE | PRASLIN | LA DIGUE |
|---|---|---|---|
| **2019 Population** | 85,503 | 8,622 | 2,926 |
| **Number of Beds** | 8,786 | 3,494 | 1,350 |
| **Number of Beds per 100 Residents** | 10.3 | 40.34 | 46.21 |

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.

In the case of La Digue, whose vision is to be the Eco Tourism Island Destination of the Seychelles, having a high bed density could greatly degrade this aspirational positioning. Eco-tourism defined by the International Ecotourism society, is "responsible travel to natural areas that conserves the environment, sustains the well-being of the local people, and involves interpretation and education" (TIES, 2015). The high bed density in La Digue, leads to a higher risk of displacement of local residents, loss of traditional culture, competition for productive resources, loss of forest cover and ultimately loss of the quality of life of the local residents.

### Hotel Bed Distribution

In terms of the bed distribution, nationally Mahe holds the greatest number of establishments with 383 (55%); while self-catering facilities representing 76% (533) of the accommodation category across all islands. And La Digue holds 110 (16%) of all establishments in the three main inner islands. Similarly, as the rest of the country, self-caterings on La Digue represents the largest majority of establishments with 76 (69%).

Hotel 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%** | | |

As far as total beds, self-catering also takes up the largest share on all islands, amounting to 35% of total beds, followed by large hotels, which account for 31% of the supply. The prevalence of small establishments on La Digue is also reflected in the bed distribution, self-caterings accounting for 44.7%, followed by small hotels and medium hotels with 14.1% and 13.3% of total beds respectively.

Hotel Bed 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%** | | |

Of the total 699 land-based establishments on Mahe, Praslin and La Digue, only 21 hotels (0.14%) have adhered to the Seychelles Sustainable Tourism Label (SSTL). As part of the La Digue vision the aim was stated to get all accommodations certified. Of the 21 certified hotels, the majority is on Mahe with currently no certified establishments on La Digue. Stakeholders who manage small accommodation facilities have found the certification criteria and tools are not adapted to their reality, and therefore a barrier to entry. Considering the predominant number of small guesthouses on La Digue, this might explain the low take-on of the label by establishments on La Digue.

### Hotel Bed Growth

The moratorium on the constructions of new hotels with more than five rooms per developer for La Digue in 2013 had an impact on the profile of accommodations in La Digue, but did not impact the continued rapid growth of overall tourism bed supply. Besides being smaller properties in size, self-caterings continued to explode on La Digue with an increase from 28 self-caterings in 2000 (before the moratorium) to 506 in 2016 and then to 588, a 20% compound annual growth rate (CAGR) from 2000-2016 to 17% (CAGR) from 2016-2019. This growth rate stands out compared to the increase of bed stock in other categories of guesthouses, small hotels and large + medium hotels who only grew at 7%, 4% and 2% CARG respectively.

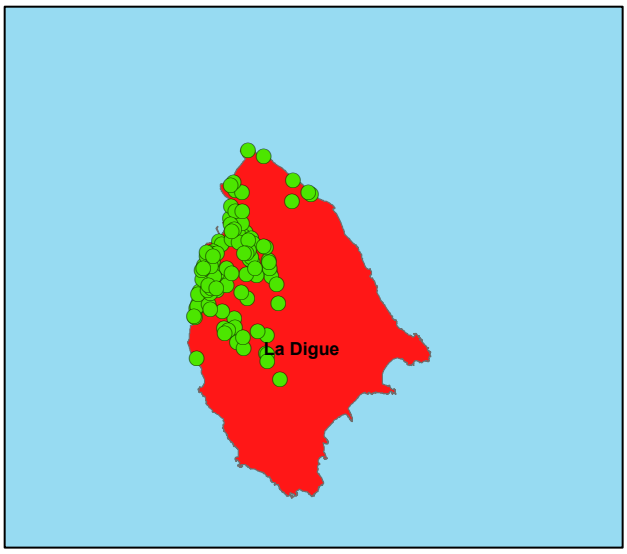
Occupancy rates reflect similar trends as on the other islands, with guesthouses and self-caterings registering a significantly lower occupancy rate than large and medium hotels.

Trend in La Digue Bed Supply and Occupancy Rate

| | # OF TOURISM BEDS IN 2000 | # OF TOURISM BEDS IN 2016 | # OF TOURISM BEDS IN 2019 | COMPUND ANNUAL GROWTH RATE (200-2019) (%) | OCCUPANCY RATE 2018 |
|---|---|---|---|---|---|
| LARGE + MEDIUM HOTELS | 198 | 304 | 314 | 2 | 65% |
| SMALL HOTELS | 88 | 176 | 186 | 4 | |
| GUESTHOUSES | 68 | 204 | 228 | 7 | 47% |
| SELF-CATERING | 28 | 506 | 588 | 17 | 59% |
| TOTAL | 382 | 1,190 | 1316 | 2.1 | |

Maps provided by the Planning Authority show that tourism bed development has taken place in a very concentrated manner, in hotspots around the Northwest of La Digue, concentrated around La Passe. This concentration of hotel development is related to the coastal nature of the tourism product with a strong sun and beach product positioning, as well as convenience in terms of infrastructure (proximity to jetty).

Map of Tourism Accommodation Concentration per district, 2020




## Hotel Bed Development Pipeline

Consultation with Planning Authority and Tourism Department found that there is a considerable overall number of hotel beds in the development pipeline for Mahe, Praslin and La Digue, totalling 10,626. In other words, a 73% increase of existing supply is to be anticipated. For La Digue the pipeline suggests an additional 246 beds, an 18% increase from current supply. The breakdown of new beds for La Digue shows 210 self-catering beds, followed by 15 bed and breakfast and 20 guesthouse beds.

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.*

For La Digue this increase of bed supply will also increase bed density by 18%, reaching about 55 tourism beds per 100 residents, in a very concentrated area. The large increase in self-catering room will put additional pressure in the current supply likely further downgrading occupancy rate and profitability of these types of operations.

| | Area (Km2) | Mid-Year Population 2019 | EXISITING BEDS (MAY 2020) | Total Pipeline | FORECAST NO. OF ROOMS (Existing + pipeline + allocated) | Bed Density ACTUAL (2019) | Bed density pipeline | *% change* |
|---|---|---|---|---|---|---|---|---|
| **Mahe** | **248,92** | 85.462 | **7762** | **7.530** | **15.292** | 9,08 | 17,89 | *97%* |
| **Praslin** | 37,56 | 8662 | 3494 | 1.956 | 5.450 | 40,34 | 62,92 | *56%* |
| **Other Islands*** | 211,8 | 574 | 896 | 878 | 1.774 | 156,10 | 309,06 | *98%* |
| **La Digue** | 9,81 | 2.926 | 1352 | 246 | 1.598 | 46,21 | 54,61 | *18%* |
| | | | | | | | | |
| **Total** | **574,57** | **97.625** | **13504** | **10.626** | **24.130** | 13,83 | 24,72 | *79%* |

On top of the physical and psychological pressure the additional bed supply in La Digue brings to the environment, society and tourism experience. The new developments in bed supply have veered away from building code guidelines set for La Digue as well as from the celebration of authenticity that is laid out in the vision 2032. Leading to the inconsistency of design and place making of the destination, loss of heritage buildings and ultimately failure to meet the eco-tourism promise of the vision.

Old 1986 versus new 2020, lots of change can be appreciated. The small red roof house can still be seen in the background of both pictures. The house is still standing but is in a bad shape as can be seen in last photo.

## Tourism Activities

In the twenty years of rapid tourism development in the inner islands of Seychelles, 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, accommodation development and bicycle rental for La Digue, 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) at national level reflects this one-sided product development strategy[6].

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

La Digue Vision 2023 highlights that Diguois want to "promote the economic values of the island's historical and cultural heritage" and "promote and facilitate diversification of the tourism product and services to increase visitor experience and spending". This was also echoed by the La Digue Business Association which calls for promoting culture and traditional gastronomy, together with entertainment and activities which reflect the real authentic Seychelles' vibe.

The number of restaurants offer on La Digue increased by three, from twelve to fifteen, only three new public restaurant establishments have been introduced between 2016 and 2019.

**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). For example, the success of cooking shows such as Pacific Island Food Revolution have demonstrated the pride and diversity of small island

[6] Seychelles visitor return rate is very low – 12% in 2015, in comparison with 28% for the Maldives and 37% for Mauritius.

nation's cuisine and the cultures and traditions connected to it.[7] Considering the high reliance on food imports, strengthening local products and recipes is a key step for more resilient and independent islands. The image of a sustainable, high quality destination needs to be reflected in its food offer. La Digue as an eco-destination with its own cultural attributes and Creole food has a lot to offer in showcasing its diverse food offer to tourists by the means of restaurants, food experiences (workshops, cooking classes), excursions with fishermen, etc. Currently there are limited alternative food experiences on La Digue.

There is one history museum on La Digue, Musee de La Digue located within L'Union Estate, a National Heritage site, which itself can be visited for its gardens and heritage buildings as well as viewing a population of giant tortoise and access to Anse Source D'Argent. There is one dance group, The Masezarin, who play mostly in hotels mainly in high season, bring traditional song and dance such as the Mardilo.[8] Additionally, very limited and homogenic tourism experiences (hiking, boat excursions, kayaking) are offered with limited cultural tourism offer. It has been set as a priority in the La Digue Vision to identify new sites for tourism development, especially eco-tourism activities and also clear objectives for culture and heritage promotion have been set.

## 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 continents 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)[9].

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 electricity cuts, near to zero recycling, limited fresh water sources and no central sewage system on La Digue.

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.[10] Hence sharing prosperity is a key concern for Seychelles. Therefore, the productivity

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

[8] Source: Interview with Kamal Soukhoon, Staff from La Digue Island Lodge.

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

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

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)[11]

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.

Recorded crime cases including traffic offences rose substantially in Seychelles in the last years. A Safety & Security Committee at national level has been created to address crimes against visitors. A 10% decrease in the number of crimes against visitors has been observed since inception.

**Reported crimes against visitors on La Digue**

| Year | No of Reported crimes against visitors |
|---|---|
| **2015** | 14 |
| **2016** | 6 |
| **2017** | 9 |
| **2018** | 4 |
| **2019** | 2 |

*Source: Police Bureau of Statistics*

According to the Police Bureau of Statistics, the number of reported crimes against visitors have decreased over time. However, it is in contradiction to testimonies compiled by the La Digue Business Association who have observed an increase in petty crime directly correlated to the increase in heroin users on the island. Safety and security are some of the greatest concerns for international travels when choosing a destination, if tourists perceived safety and security is jeopardized in La Digue, it could result in bad reputation and ultimately displacement of tourists (i.e., choosing another destination perceived safe over La Digue).

11
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

### Labour Market

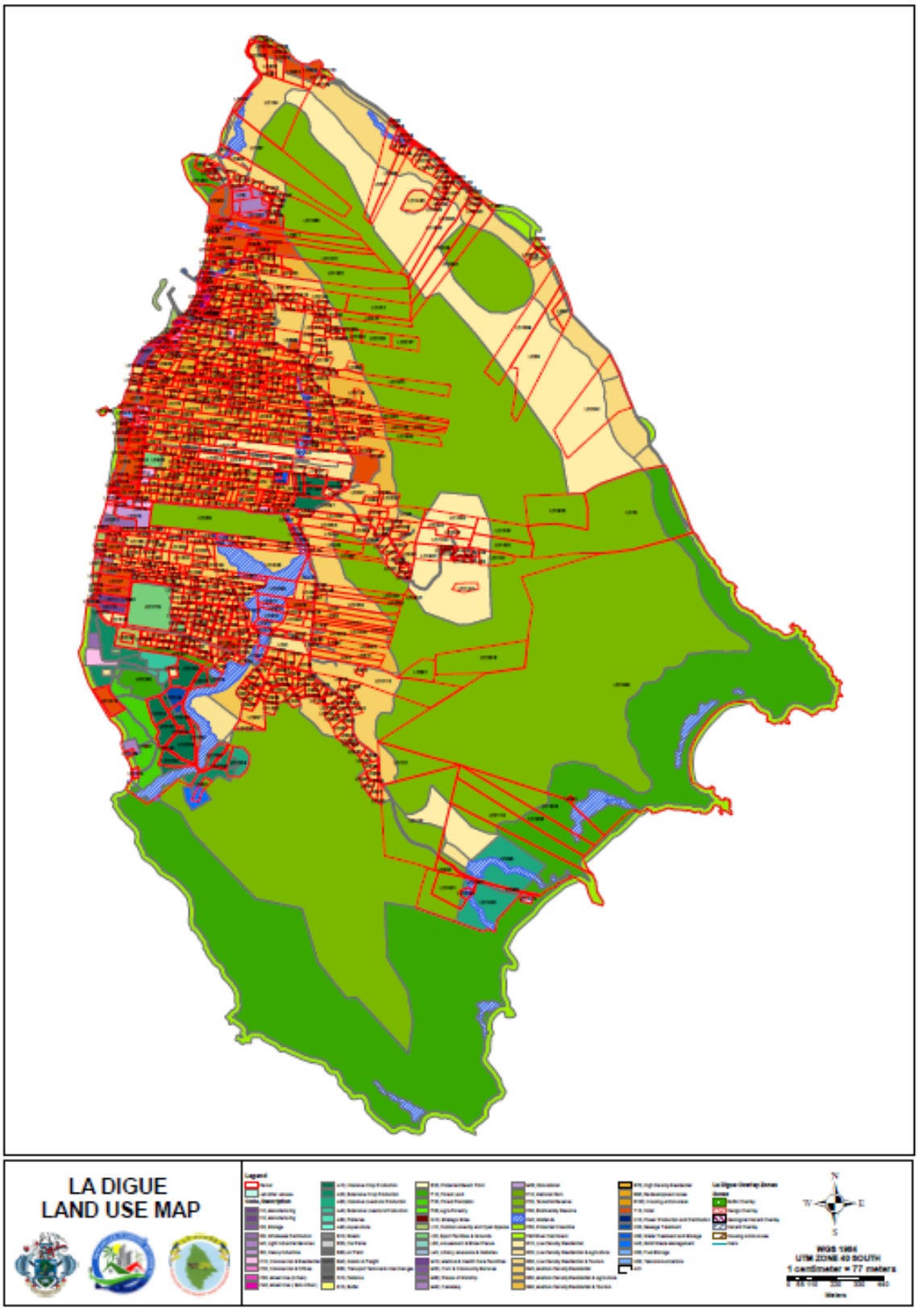
According to the La Digue Business Association La Digue has a tight labour market due to several factors. Firstly, young Diguois tend to leave the island for educational purposes, often going to Mahe for their studies and many of them not returning to La Digue, due to better job opportunities on the main island. Secondly many young people are involved in substance abuse and are not available to take active part in the tourism workforce. Therefore, an increasing number of expats move to La Digue to fill positions in the tourism sector, which has led to increasing housing costs.

## Land Use

The La Digue Land Use Map from 2017 highlights the current distribution of land on the island. With the Western plateau area being mainly occupied by high density residential areas, tourism establishments, the commercial center of the island being around the Jetty at la Passe area. Due to the limited size and geography of the island, only small pockets of agriculture and manufacturing exist. It becomes clear that the Western side of the island has been densely populated and developed for main commercial and tourism services. The Western and North Eastern coastline are not under coastline protection (as it is the case for the rest of the island).

Tourism establishments are concentrated along the Western and Northern coast of the island. La Digue Vision 2032 aims for a controlled development of La Digue through legislated land use plan and physical development guidelines. The 50m contour line policy shall be replaced with new land classification which considers non development in sensitive ecosystems and controlled development in areas of favourable terrain for development. It also calls for an up-to date land use plan that incorporates foreshore guidelines, focusing on protecting existing and future tourism sites, maintain minimum plot size of 600sqm for new tourism developments, only allow building heights of grounds plus 1 plus attic or ground plus 2. According to the visions the development on hill slopes will be controlled by a guideline and uphill development on hill slopes will be restricted to ground floor level only. Solid fences should be discouraged and picket fences and natural hedges promoted.

However, the reality is different to the ambitious targets set by the stakeholders who participated in the definition of La Digue vision. Non-enforcement of existing planning guidelines seems to be the main cause of concern, as long-term plans such as SSLUD and the 2017 Land Use plans and Guidelines exist, yet they are not being effectively implemented and enforced.




LD-DRAFT 1 | STRATEGIC LAND USE PLANNING UNIT ( November 2017)

## Environment

La Digue has a very diverse landscape. Besides its iconic beaches, the island hosts one of Seychelles' largest remaining wetlands in Seychelles, forests with endemic trees such as Takamaka and Badamier (David & Richter 2013). La Digue is home to a number of endemic species such as the Seychelles Paradise-Flycatcher (Terpsichore corvina), two species of terrapins, and yellow-bellied mud turtle, as well as the cave swiftlet. The Seychelles Paradise-Flycatcher has been considered Critically Endangered under the IUCN red list criterion B1ab(iii), however, as the population is increasing, this listing is no longer appropriate. La Digue's classification as an 'Important Bird Area' and the La Digue Special Veuve Reserve as an IUCN Category Special Reserve Ib (Wilderness Area), highlight the importance of preserving the habitats of the endemic species as well as other flora and fauna.

The Veuve Special Reserve, a protected habitat for the endemic Seychelles Paradise Flycatcher, covering 21 hectares, forms part of a 200-hectare plateau located on the western side of the island. The reserve was originally established in 1980-1981 by Christopher Cadbury and Tony Beamish and officially inaugurated in 1982. A survey conducted in 2001 confirmed the population of at least 200 individuals. Populations of Seychelles Paradise-Flycatcher have been increasing over the last decade, from 143-190 pairs in 2007 (R Bristol, unpublished survey data) to 140-217 pairs in 2017 (Bristol et al. 2018). However, the species is still threatened by habitat loss for development projects, and the number of territories on the western plateau of La Digue continue to decline as a result (Bristol, 2016; Gamatis & Bristol, 2018). Repeated surveys of the area bounded by the canal between 1999 and 2016 found that the number of territories decreased by 19 over the 17-year period. The last census of the Seychelles paradise flycatcher population on La Digue was undertaken in May-June 2018 and found 47 territories on the whole plateau (the main habitat of the endangered bird), a decrease from the census in 2016, which counted 49 territories.

Nr. Of Paradise Flycatcher territories of time

| Year of census | Nr. of Paradise Flycatcher territories |
|---|---|
| 1999 | 63 |
| 2001 | 59 |
| 2016 | 49 |
| 2018 | 47 |

Source: Gamatis & Bristol (2018)

The officially protected area of the Veuve Nature Reserve is large enough for 9 territories (Gamatis & Bristol, 2018). This leaves an estimated 38 territories at risk from development. If 4 territories are lost every generation, it would take 9.5 generations to completely eliminate the population on the unprotected plateau. Rounded, this would equal an estimated 10 locations. The area within the Veuve reserve is protected from development, and is not known to be under threat from invasive species or excess predation. It would therefore be considered as 1 location.

Reduction in territories is possibly due to development driven habitat loss taking place on the plateau. On the La Digue plateau there is an ongoing conflict between the protection of the

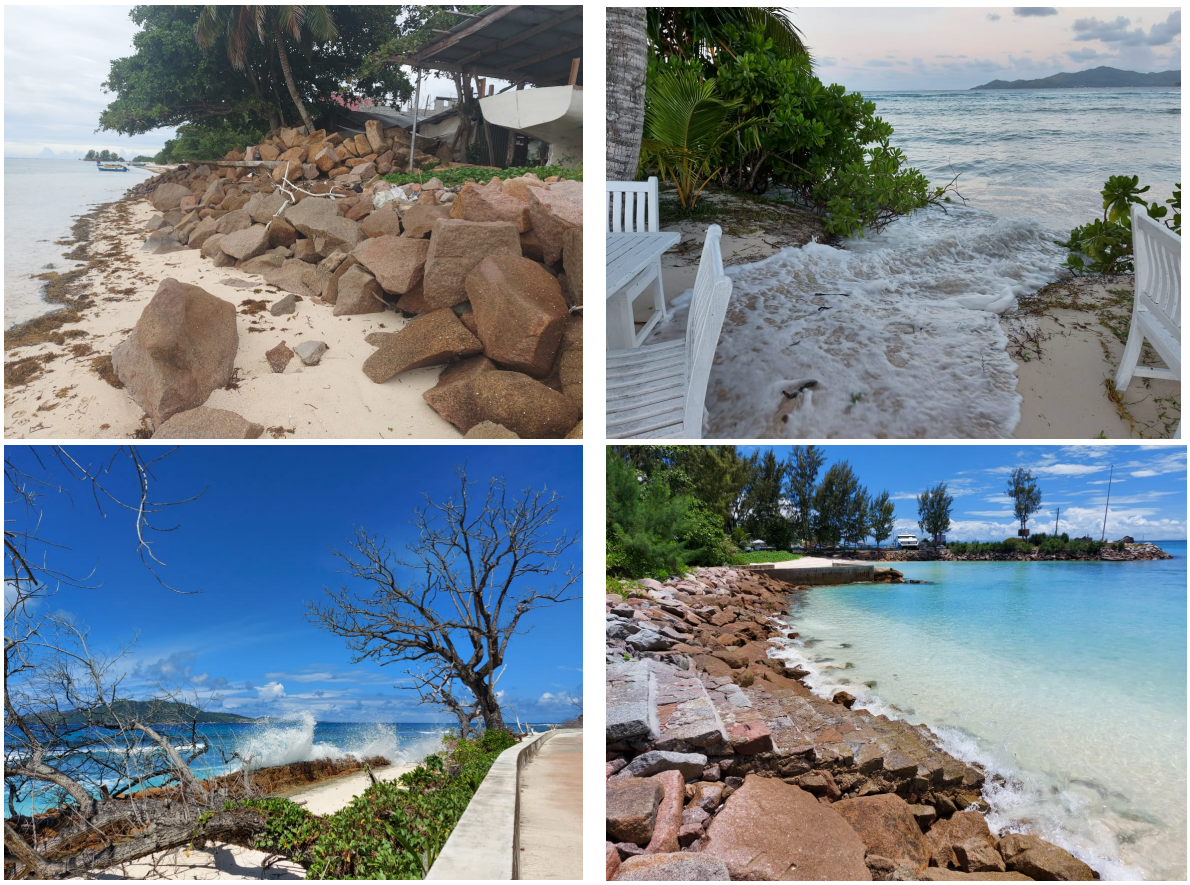
paradise flycatcher territories and land development. Although the bird can also be found uphill, it is more productive in the lowland areas (Gamatis & Bristol, 2018). The La Digue plateau has been subjected to major and ongoing human development over the years resulting in a considerable amount of tree felling (Bristol, 2016). More management approaches must be undertaken to conserve the La Digue plateau population, as the plateau population is crucial as it likely plays an important role in sustaining the whole island population (Gamatis & Bristol, 2018).

In 2015, at the request of the cabinet, the Public Health Engineering Unit 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. Between 2016-2020, 15 water testing samples have been analyzed across numerous sites in La Digue. Between 2016-2016 and again in 2019 Seychelles was having algae bloom problems resulting in unsatisfactory results due to the presence of certain bacteria (Coliform, E.Coli, and I.E.). However, as Salmonella bacteria was absent in the samples it has been determined safe as a recreational water environment, according the 2003 WHO Guidelines. During this time period Anse Source D'Argent was tested twice in 2016 and 2018, both times yielding unsatisfactory results except for Salmonella. And in 2016, Bellevue-Ste Ange River – Catchment PUC presented concentrations of salmonella deemed unsafe. (Public Health Authority, 2020)

According to the Coastal Management Plan Seychelles 2019-2024 the west coast of La Digue is very low lying and at risk of flooding. Beach erosion is a problem, especially on the Western side of the island, which might have been increased by land use changes, such as developments in close vicinity to the coastline as well as the jetty (David & Richter, 2013). Beach erosion and vegetation collapse have been observed at La Passe, where rock armoring and beach nourishment activities, which involved adding sand in front of the rock armoring to facilitate the re-creation of a small beach, had to be conducted in 2015. The effects of climate change and the threat of extreme weather events poses a significant risk especially for the low-lying and densely populated areas of La Digue.

La Digue in 1970 vs 2020. Presence beach erosion and the addition of a sea wall can be appreciated.

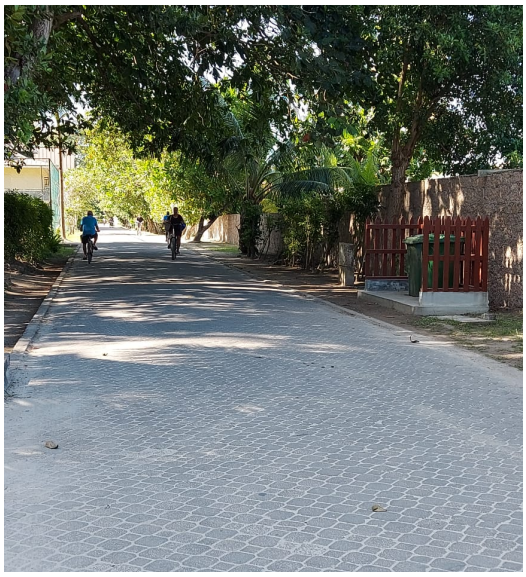
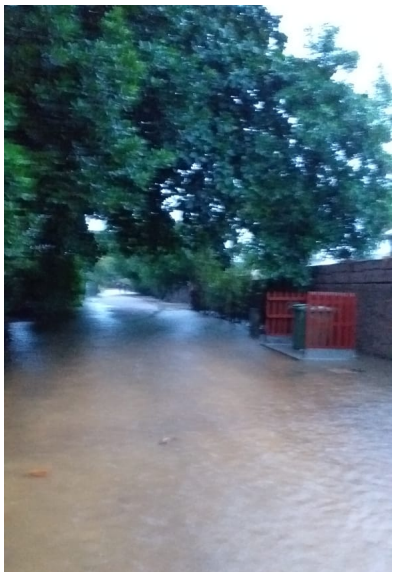
A study by the Japan International Cooperation Agency (JICA) (2014) showed that, in the worst case, if a tropical cyclone with the highest flood water level and simultaneous flooding were to occur, buildings and roads would be inundated below 2.5 m above the current average sea level. This would affect 321 buildings on La Digue (48%). These would include a total of 21 restaurants and 69 hotels/guesthouses on Mahe, Praslin and La Digue. The experts also recorded that 7 km of roads on La Digue (27 %) 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).



Further evidence of the threat of beach erosion on La Digue, 2020.





Evidence of flooding across multiple areas of la Digue.

For the case of La Digue, its Vision 2032 foresees that all developments consider the environmental fragility of the island, promote usage of sustainable, green practices and technologies in construction. However, there has been a disregard of this vision in certain areas of the island, with over-development, the construction of solid walls and a lack of drainage system have led to repeated flooding events in La Digue, the last one in mid-August 2020.

# Productive Infrastructure

## Transportation

### Jetty

With no airport (apart from a small landing strip for helicopters) or major port facilities on La Digue, the jetty in the main point of access for all visitors to La Digue.

La Digue Jetty is running at capacity and plans to upgrade it are already in place. A recent Investment Plan by the Seychelles Port Authority highlights several major investments plans for La Digue jetty, among them an extension of the jetty by 150 m and of the ramp by 40 m in 2020. Further plans for 2020 include the distillation of the harbour/ turn-in basin. Additionally, 2021 foresees the extension of the passenger terminal building.[12] The La Digue jetty project has officially kicked off on the 1st of July 2020. The project will take up 2 years max (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 centers 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.

As part of the La Digue Vision 2032, green transportation was identified as a key sector objective by promoting the cultural value of walking, bicycle riding and ox-cart as a means of transportation and tourism attraction. It was also put forward to maintain and limit the quota on conventional motorized vehicles on La Digue and to implement the strategic replacement of all conventional motorized vehicles with environmentally friendly motorized vehicles, e.g., electric or hybrid.

Growth of motorized vehicles on La Digue

| Year | Nr. of vehicles | Nr. of buggies |
|---|---|---|
| **2011** | 44 | 2 |
| **2019** | 50 | 49 |

*Source: Department of Transport*

According to an inventory conducted by Department of Transport in May 2011, there were 46 self-powered vehicles on La Digue, all of which are fuel based except for two electric golf carts used

[12] http://www.finance.gov.sc/uploads/national_budget/PSIP%20-%20SPA%20-%20investment%20plan%20-%20Pg%2056.pdf

on the public road. All vehicles are licensed for commercial use. The same document suggested to limit the quota for commercial vehicles on La Digue to 45. However, the 2019 Transport Policy for La Digue increased the quota on the number of conventional vehicles to 60. In 2019, there were 50 motorized vehicles and 49 buggies registered in La Digue, an increase of 2,350% in the number of buggies from 2011 to 2019.

The road conditions on the island of La Digue constitute a major safety issue for visitors and locals alike. The high bicycle traffic, increased traffic of motorized vehicles, lack of adequate street lighting at night, limited signage, and frequent risk of animal crossing (e.g., stray dogs), pose a dangerous situation for people. Additionally, the state of rental bicycles is often questionable, as maintenance is not transparent and the majority of bicycles have no lights.

## Waste Management

Ineffective waste management along with an increasing load possess a high risk to the health of environment and host communities as well as increasing land use and financial pressures on the government. Therefore, the tourism carrying capacity of any destination is limited by the amount additional waste (above residential needs) the destination can safely manage without harming the environment and the community under the allotted space and budget available.

Collection of household waste in La Digue is ensured through the private contractor Island Waste Collection. There is one redeem centre on La Digue for PET bottles and beverage cans. Though the agency does not have a weighting facility at the landfill, The Landscape & Waste Management Agency of the government of Seychelles estimates that in 2019, approximately 5840 tons of municipal and commercial solid waste was produced in La Digue.

The La Digue landfill is located within l'Union Estate, the touristic hotspot of the island. It was Seychelles' first operational sanitary landfill, built in 1998 with assistance from the EU. It has a leachate collection and evaporation/recirculation facility, but this is currently out of function. There are three areas on the site for different waste streams: (1) Mixed waste; (2) Metal waste (including e-waste); and (3) Green waste. The Solid Waste Masterplan points out that several improvement measures are required for l'Union landfill, especially in reinstalling a functioning leachate treatment facility.

Additionally, by using the scale provided from the website (www.webgis.gov.sc) it can be estimated the distance between the Solid Waste Management site and Anse Source D'Argent is about 250 to 300 meters from the beach. It is important to note that The United States Environmental Protection Agency requires that the distance between municipal solid waste landfills (MSWLs) to maintain an isolation distance of 500 m from the surrounding residents and water bodies. According the Public Health Authority the water at Anse Source D'Argent has been tested twice in 2016 and 2018, both times yielding unsatisfactory results, however with the absence of Salmonella in the sample it has been deemed safe for recreational bathing use. (Public Health Authority, 2020).

Scenes from L'Union Landfil. Evidence of plastic waste. Evidence of proximity to Anse Source D'Argent can be seen from the head of the giant granite boulder in the third picture, 2020.

Waste management carrying capacity constraints at La Digue, 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.
- **Land use conflict.** 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.
- **Environmental and health hazards**. Current landfill needs repair, especially in reinstalling a functioning leachate treatment facility. Landfill proximity to Anse Source D'Argent, poses a higher risk of leakages leading to beach water contamination and bather's health risks.
- **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.

The effects from unsustainable waste management can have far reaching effects in terms of health and safety risks and environmental pollution. Although modern sanitary landfills are designed and constructed to prevent the leakage of leachate and its harmful components, accidental leachate leakage can still occur owing to damage to the geomembrane during the construction and operation of the landfill site. For example, statistics from the United States Environmental Protection Agency (USEPA) show that most landfills actually leak.

Landfill leachate, which contains many toxic and harmful substances such as heavy metals, persistent organic pollutants and bacteria, has become one of the main anthropogenic sources of groundwater pollution. Groundwater polluted by leachate will not only cause ecological problems such as water blooms and soil salinization, but also cause various aquagenic diseases once exposed to the human body through drinking or bathing. For example, drinking groundwater polluted by heavy metals (such as manganese and arsenic) in leachate for a long time will increase the risk of cancer and infant death, as well as induce motor and cognitive dysfunction in children. Moreover, nitrate ($NO_3^-$) is ubiquitous in municipal solid waste landfills (MSWLs), and studies have shown that it is related to blue baby disorder, spontaneous abortion and increased risk of non-Hodgkin's lymphoma. Moreover, recent studies have revealed emerging pollutants with

genotoxicity, reproductive toxicity and embryotoxicity, including hormones, antibiotics, personal care products and nanoparticles, in landfill leachate and groundwater aquifers near landfill sites.[13]

Currently available waste management solutions for La Digue is limited, as large-scale waste recycling effort don't exist in Seychelles. It needs to be noted that recycling initiatives and research conducted in the area of sustainable waste management have mostly focused on Mahe, due to the fact that it is the main island with the majority of the population living there. 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).

Additionally, 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. Yet, there is no mention of a potential waste to energy solution for La Digue.

## Waste Water 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. No central sewage facility is present on La Digue but a feasibility study has been completed14.

There are no centralized sewage plants on La Digue, with most households and smaller establishments connected to sceptic tanks. 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)15. Generally, the usage of septic tanks is associated with high utilization of water. With the assumption that each person per year uses 7.5m3 for flushing to septic tank, amounting to 732.187 m3 per year in Seychelles. Wastewater from septic tank 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. As previously mentioned, according to the Public Health Authority records, water tests conducted in 2016 at the Bellevue-Ste Ange River – Catchment PUC presented concentrations of salmonella bacteria suggesting wastewater contamination from black water.

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[13] www.nature.com/scientificreports (2019) 9:17881 | https://doi.org/10.1038/s41598-019-54506-2

[14] https://www.pseau.org/outils/ouvrages/bafd_fae_seychelles_water_supply_development_plan_2008_2030_2008.pdf

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

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 eco-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. The Integrated and Comprehensive Sanitation Master Plan 2020-2030 provides for the construction of sewage treatment plants on the islands of Praslin and La Digue. Sewage treatment plant for La Digue is considered priority because the soak away pits are contaminating ground water during the rainy season, one of La Digue's drinking water sources among surface and desalinated water. The disposal of sewage from point sources in the plateau will seriously hinder the present abstraction of groundwater on the island (PUC, 2019). Wastewater needs to be treated and disposed of in an inoffensive manner. The rapid growth in developments poses a serious risk for the environment, if proper wastewater solution is not introduced in La Digue. According to PUC this is of utmost priority. Therefore, a project to construct a sanitation system for La Digue has started (Tourism Master Plan, 2018), with the aim of 90% of the households and businesses to be connected to sewage system, was to be completed by the end of 2020 (PUC AR, 2018). The project comprises of a piped sewerage system with manholes, pumping and lifting stations. This sewage treatment plant has been delayed and postponed to 2021 as there were issues with the contractor who won the original bid (PUC, personal communication, 2020).

## Water Supply Management

Overnight tourist consume water, and in tropical destination, the Cornell Hotel Sustainability Benchmark Index (CHSB) suggests an average consumption of 891 litres per occupied rooms in 2017. While to date tourism water consumption data has not been systemically measured or tracked, in 2009, the Seychelles Water Development Plan reported that the tourism sector accounted for 31% of water sales for the year in La Digue, by contrast Mahe and Praslin tourism sector only accounted for 18% and 15% respectively. 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 la Digue total water demand.

The annual water use per capita in the Seychelles in m3 is at 104, however La Digue registered 123m3. 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.

La Digue is dependent on a combination of surface water, groundwater, and desalination water for its drinking water sources. With fresh water resources being limited, desalination is an important source of water for La Digue. During 2018, 581175m3 of water was produced, of which 195785m3 (33%) was produced by the desalination.

Most of the population is dependent on pipe borne water (around 95%). One third of the pipe distributions system in the three islands has reached the end of its economic lifespan, leading to pipe bursts, reduced water quality and high level of Unaccounted-For-Water (UFW), and deterioration of service levels to the consumer. UFW is also connected to meters which are under

registering or not registering, and illegal connections. Therefore, UFW in all three islands is a cause for concern, with the UFW on La Digue around 25%.

Water management carrying capacity constraints at La Digue, 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.
- **Cost of Inefficiencies.** High Unaccounted-For-Water (UFW) due to pipe damage and other issues.
- **Risks associated to desalinated water production**. Desalination has the potential to increase fossil fuel dependence, increase greenhouse gas emissions, and exacerbate climate change impacts. Additionally, desalination surface water intakes are a huge threat to marine life. And consumption prolonged consumption of desalinated (low pH) water has adverse health effects such as increasing the risk of kidney disorders and gastrointestinal troubles.

## Energy Management

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 and causing frequent electricity cuts on La Digue. Damages to the undersea electricity cables led to the installation of a generator in the La Passe area in 2019, which due to noise concerns had to be stopped.

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, which generated 7,392,410 kWh in 2018 (PUC).

The annual energy consumption per capita per day is 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. And carbon emission per capita are at 5.4 MTCo2, compared to 13.06 MT Co2 per guest night 8 (National Energy Report 2015 and Hotel Carbon Management Initiative, 2015). 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 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 234 million 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.

### Electricity generated in 2013-2018

| TOTAL UNITS GENERATED | 2013 KWH | 2014 KWH | 2015 KWH | 2016 KWH | 2017 KWH | 2018 KWH |
|---|---|---|---|---|---|---|
| ***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** |

*The electricity generated for La Digue falls under the units generated by Praslin.

Energy management carrying capacity constraints at La Digue, 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 via an undersea cable susceptible to damage and causing frequent electricity

As part of the visioning exercise, stakeholders clearly outlined their desire to make La Digue 100% energy efficient by exploring the utilization of appropriate low carbon and passive technologies. The 2016 CCS found that 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).

# *Chapter 2 Visitor Experience Carrying Capacity*

## Research Introduction and Purpose

The beaches of La Digue 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 La Digue 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.

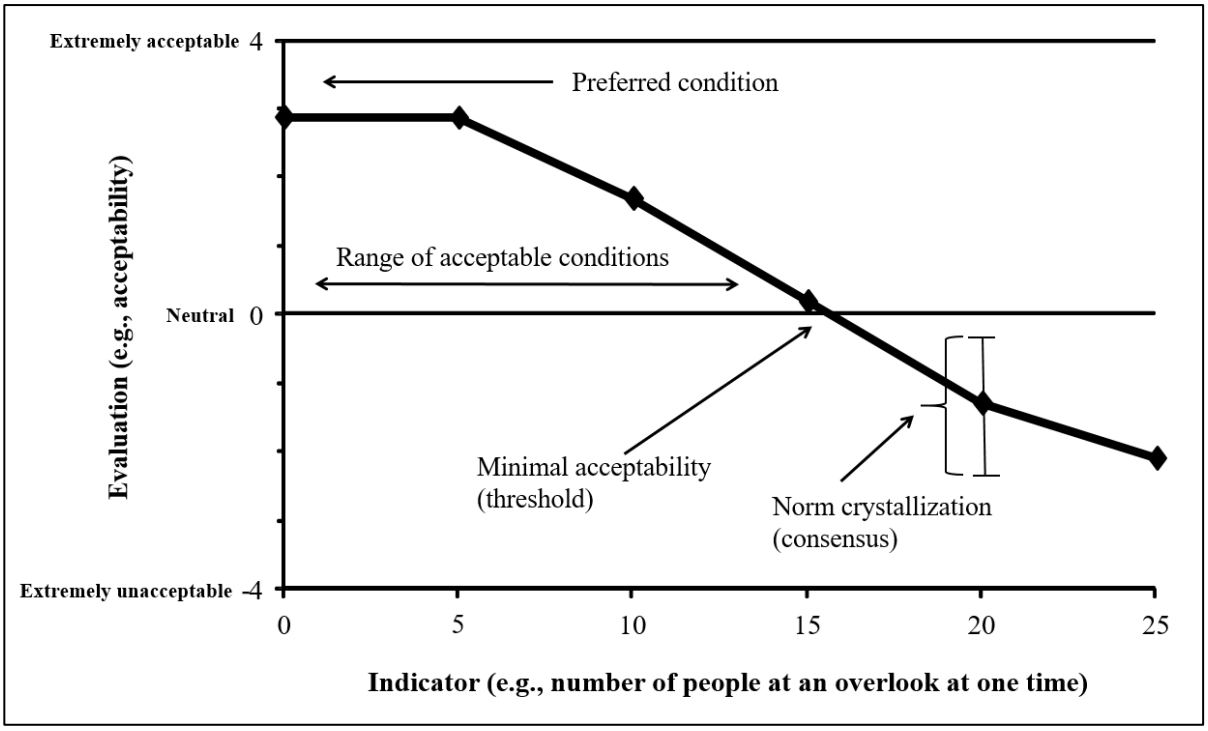
As a part of the Tourism Carrying Capacity Study for Mahe & Praslin and for the Tourism Carrying Capacity Study of La Digue the experiential carrying capacity study was conducted to support both reports. The primary purpose was to collect data about current and desired preferences regarding experiential conditions at the most visited beaches of the Seychelles inner islands, including Grand Anse and Source D'Argent in La Digue, between February 10 and March 5, 2020. A total of 323 visitors participated in the quantitative survey, of which only 28% visited La Digue.

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 their experience when visiting seven different beaches in Seychelles, including two specific beaches in 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 all the baches studied, 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 an overall 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

A GPS tracker was used to determine the movement of tourist between all three islands, and therefore determine the intensity of day trippers to la Digue. 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.

## 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. 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. La Digue was the second most visited location after Mahe with 28.48% of visitors reporting that they visited this location. 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).

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** |

| BASED ON THE LOCATIONS YOU VISITED, WHAT WAS YOUR PRIMARY DESTINATION? | | |
|---|---|---|
| | PERCENTAGE (%) | COUNT (N) |
| **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 in La Digue was selected as having the highest level of crowding with a mean of 5.35 on a 9-point scale. While the level of crowding at Grand Anse Beach was lower, with a mean of 3.99/9. Conversely the level satisfaction was higher at Grand Anse with an average of 8/10 the highest of all the beaches in the Seychelles inner islands. By contrast, even with the reputation of one of the most beautiful beaches of the world, the level of satisfaction at Anse Source D'Argent was one of the lowest with an average of 7.3/10.

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 |

# La Digue Beaches Experiential Carrying Capacity

## Grand Anse

When not viewing photos, visitors expressed an overall acceptance (slightly acceptable to very acceptable) of increased numbers of people on site. Contrastingly, visitors did display a level of disagreement when considering the presence of 60 people at one time. When considering this value of people present at one time, visitors were divided between a notable level of unacceptability and a slight acceptance. Additionally, there was support for management at high numbers (60 people) of visitors (59.30%) and an expression of a reduced level of use (76.19%). These values did not reflect the reported experienced conditions of visitors during their trip, with only 8% of visitors stating they saw 60 people. Photo panels revealed that visitors displayed a higher level of agreement when presented with both ends of the visitor number continuum. Visitor disagreement was highest for the center point of the scale (30 people). Additionally, visitors conveyed a declining level of acceptability concerning conditions as the photo panels included more people. This conveys the enhanced level of unacceptability by visitors as the quantity of people increases. Only 23% of the respondents stated that none of the photos displayed conditions so unacceptable that mangers should take actions. Additionally, a small percentage (11%) of visitors to this location stated that that visitor use should never be limited. About a quarter (26%) 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

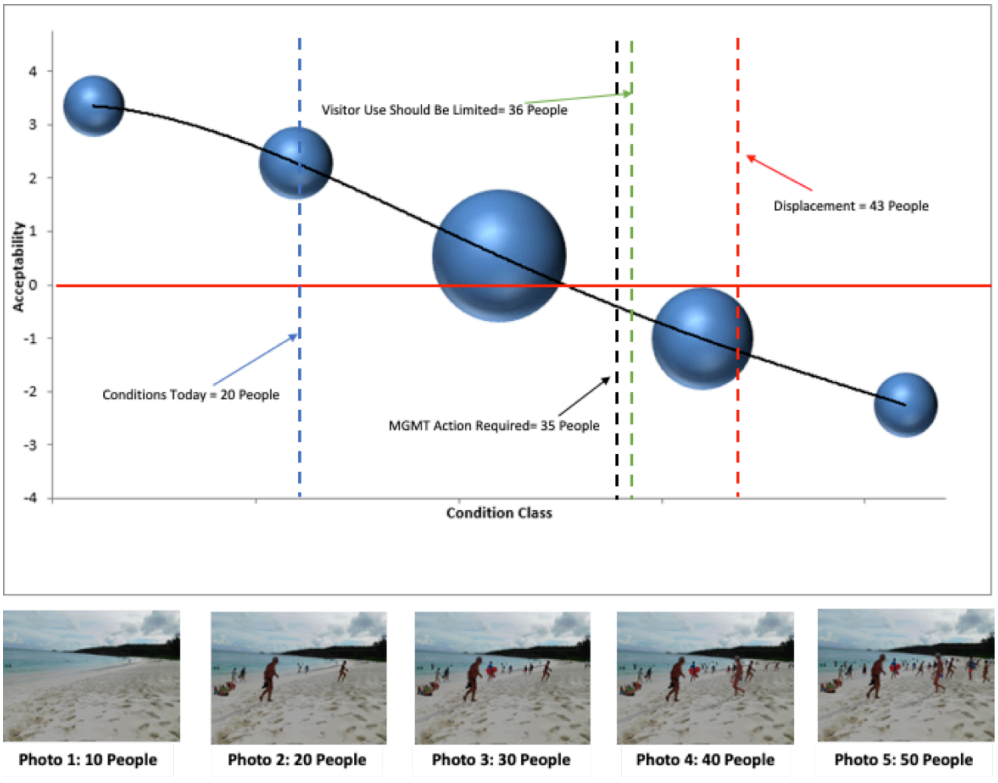




Photo 1: 10 People


Photo 2: 20 People


Photo 3: 30 People


Photo 4: 40 People


Photo 5: 50 People

## Anse Source D'Argent

Visitors expressed an overall acceptance (acceptable to very acceptable) of increased volumes of people on site when not viewing the involved photo panels. Contrastingly, visitors did display a significant level of unacceptability when considering the presence of 60 people at one time, however, the mean (-0.69), was just below the minimal level of acceptability (0 point). Also, support for management at high numbers (60 people) was reported by visitors (56.67%) and an expression of a reduced level of use (73.86%) as well. Throughout the photo panels, visitors displayed a higher level of agreement when presented with a reduced value of individuals in a photo and a lower level of agreement as the people present at one time increased. This pattern was notably present within the photos that contained the highest value of individuals (photo 4 and photo 5). Regarding the level of acceptability conveyed by visitors, reported responses displayed a declining level of acceptability as the photo panels incorporated more people. A third (35%) of the respondents stated that none of the photos displayed conditions so unacceptable that mangers should take actions. Additionally, a small percentage (15%) of visitors to this location stated that that visitor use should never be limited. Nearly half (43%) 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 Source D'Argent

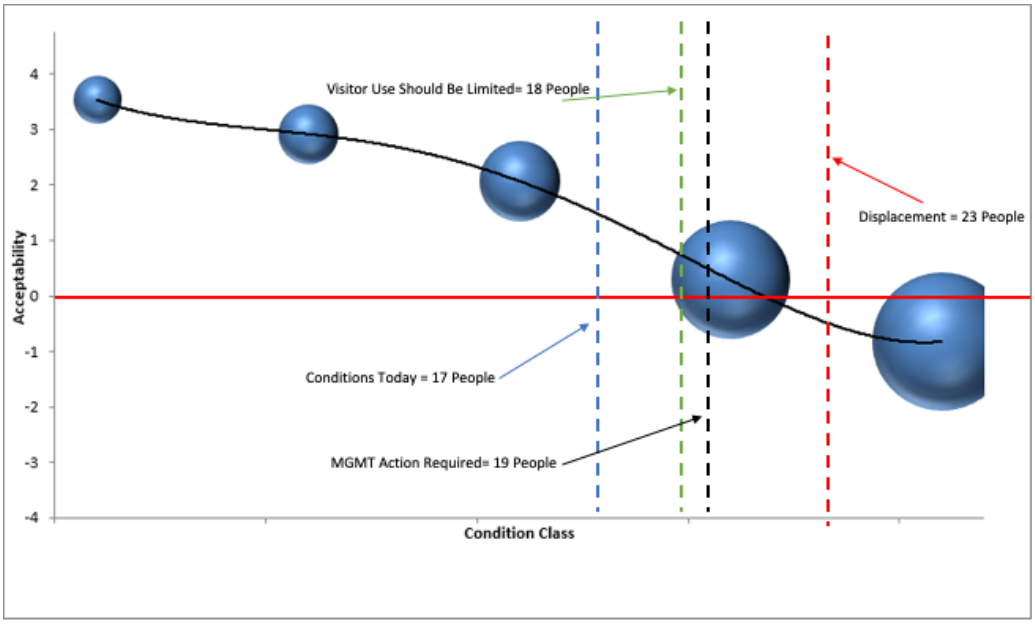



Photo 1: 5 People | Photo 2: 10 People | Photo 3: 15 People | Photo 4: 20 People | Photo 5: 25 People

## Visitor Satisfaction

### Visitors that visited La Digue during their trip

For only the visitors that travelled to the location of La Digue during their visit to the Seychelles, a specific item or condition was presented to each participant to assess an additional aspect of their experience. Specifically, the item that was presented to participants includes their evaluation of motorized vehicles in the context of their satisfaction and perceived influence of this item in regard to their decision to return to the Seychelles. Concerning the reported level of satisfaction expressed by visitors relating to the experienced level of motorized vehicles on La Digue, 30.15% reported that they found this condition to be acceptable. Regarding the influence or role that motorized vehicles play in their decision to return to the Seychelles, visitors reported that the notable presence of motorized vehicles within La Digue would be very influential in their decision to return (27.21%).

### 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%.

### 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.

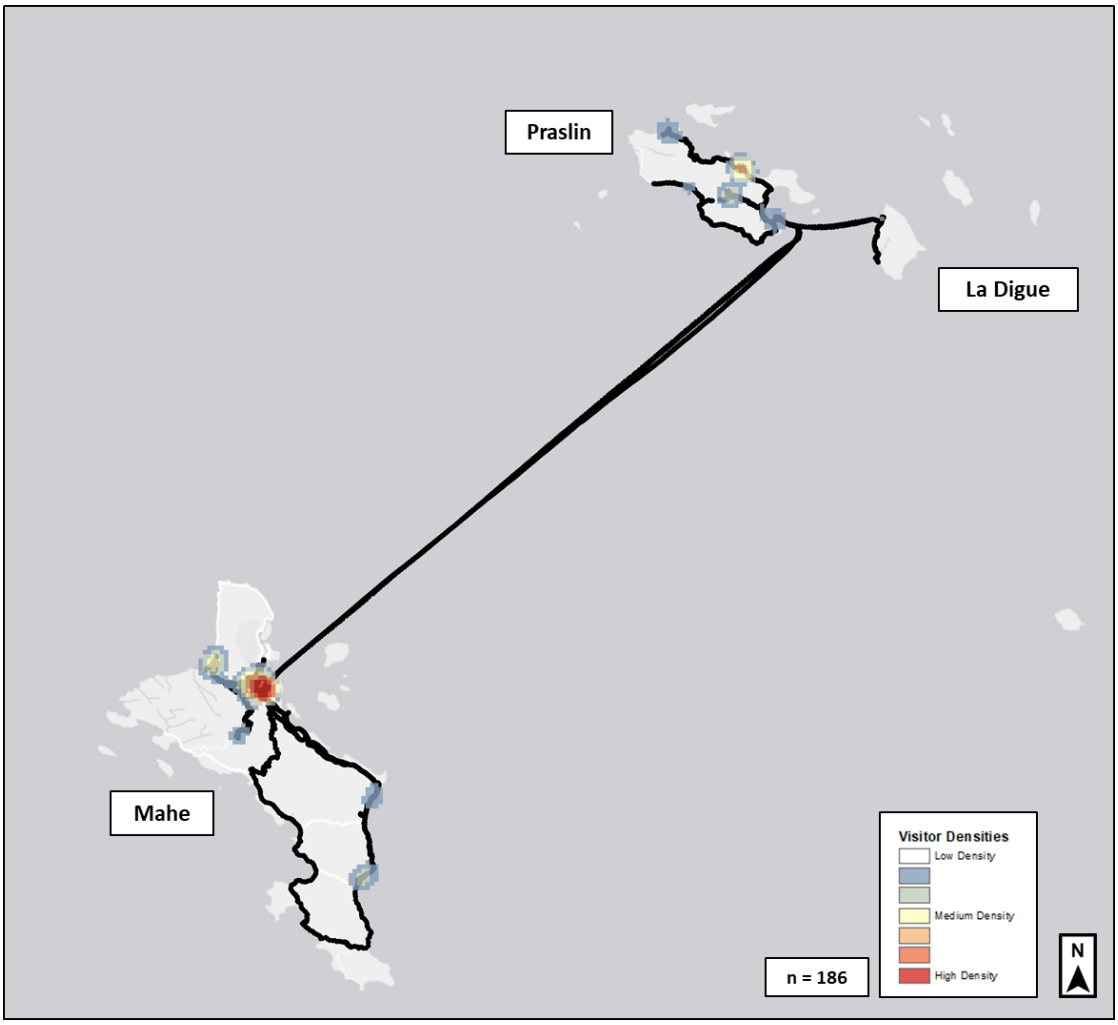
**Probability of return reported by visitors based on current and potential conditions.**

| 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 |

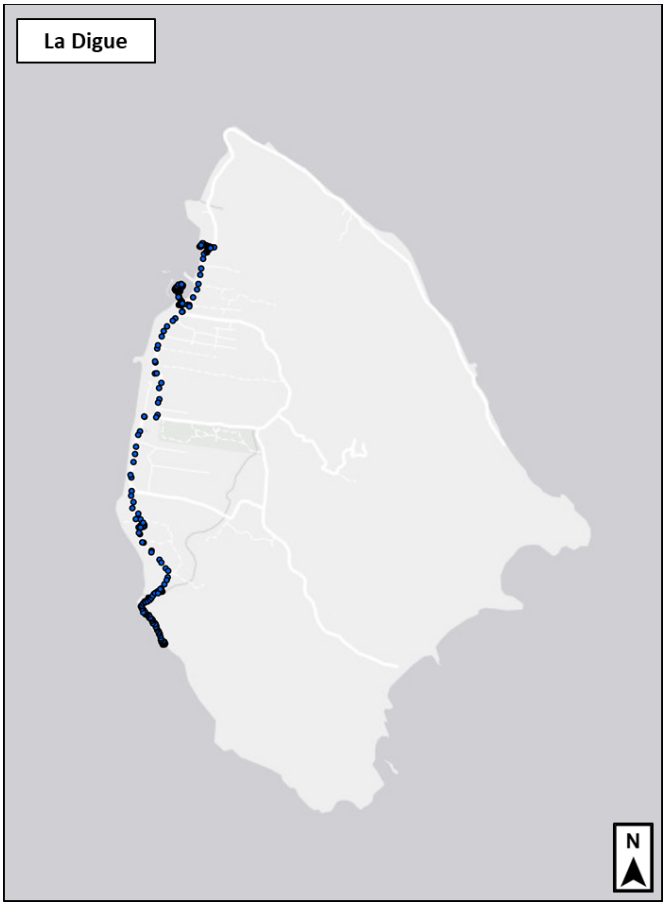
## Visitor Movement and Density Within the Seychelles

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. 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. 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. This progression of low to high density was conveyed in a colour gradient that transitions from white colour tones to red colour tones in the graphs below. Based on the evaluation of visitor densities, Mahe remained as the location that experienced the highest level of visitor density. In regard to La Digue, this specific location displayed the lowest level of visitor density with the presentation of one specific site that conveyed a blue colour tone. Therefore, the data analyses can only infer that La Digue day tripper density is much lower than in Mahe and Praslin.

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



Density of visitor movement on La Digue 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 Anse Source D'Argent many visitors (43%) 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 0 to 15 people at this location (based on the acceptability curve in the section above). 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 beaches in La Digue 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 La Digue 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 first two 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. It presents a subset of the Seychelles Tourism Carrying Capacity Indicator Framework as it relates to La Digue only, the national framework is presented in the Mahe & Praslin Carrycing Capacity Study conducted at the same time as the La Digue study.

## 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/La Digue 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/La Digue 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 La Digue 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. The following La Digue Tourism Carrying Capacity Indicator Framework is a subset of the National Seychelles Carrying Capacity Indicator Framework derived for the Mahe and Praslin Tourism Carrying Capcity Study conducted at the same time as the La Digue study. The framework should be used as a national strategic approach for policy development with per island implications and implementation plans.

### Socio-Economic Theme

Considering that La Digue economy is heavily reliant on tourism, visitation up until 2020 halt on tourism due to the global pandemic continued 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 (2 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.

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*<br><br>*Total GDP: USD$1.59B* | National | World Bank | 2018 | $14,385 | 3.6% growth in GDP per year<br><br>Based on avg 2010-2018 | Sustainable Development Goals (8.1) |
| **T&T Direct Contribution to GDP (USD$)** | *2010: $343 M*<br>*2019: $589.7 M*<br>*71.9% growth (6.21% CAGR)*<br><br>*37.1% of GDP*<br><br>*9.54% increase in arrivals during same period* | National | CBS | 2019 | $589.7 M | 6% CAGR Growth Targets: US D$946M by 2023 | Tourism Master Plan<br><br>Growth Targets: USD$946M by 2023 |
| **Tourism Earnings per Visitor (USD$)** | *2010: $1,968*<br>*2018: $1,559*<br>*-21% growth (-2.87% CAGR)*<br><br>*9.54% increase in arrivals* | National | CBS | 2018 | $1,559 | $1,968 | Tourism Master Plan<br><br>Growth Targets: $1,968 by 2023 |

| INDICATOR | *SUPPORTING INDICATORS* | SCOPE (NATIONAL OR BY ISLAND) | SOURCE | YR | BASELINE | DESIRED CONDITION (5YR) | TOURISM MASTER PLAN STRATEGIC PRIORITY AREA |
|---|---|---|---|---|---|---|---|
| | *Avg Length of Stay:*<br>*2010: 10.4*<br>*2019: 9.9*<br><br>*Visitors from Europe:*<br>*265,025 (69%)* | | | | | | |
| **Arrivals (n=3)** | | | | | | | |
| **Total # of Visitors** | *Arrivals by air/overnight visitors:*<br>*2010: 174,529*<br>*2019: 384,204*<br>*120% increase*<br>*9.16% CAGR*<br><br>*Arrivals by cruise ship:*<br>*2010: 15,634*<br>*2019: 43,978*<br>*181% increase*<br>*12.2% CAGR*<br><br>*Overnight Visitors 2019*<br>*La Digue: 17,868* | National | NBS<br>SPA | 2019 | 17,868 | 23000 overnight visitors to La Digue by 2025 | Tourism Master Plan<br><br>Growth Targets: 5.8% CAGR<br><br>390,000 to 480,000 by 2023<br><br>Strategic Priority Area 1.5: Surveys of residents' attitudes |
| **Hotel Occupancy Rate (average % of bed occupancy)** | *By Island*<br>*La Digue: 63%*<br><br>*By Accommodation*<br>*Hotels: 73%*<br>*Guest Houses: 54%* | National<br><br>Island | NBS | 2018 | National: 62 %<br><br>By Island<br>La Digue: 63% | >65% | Tourism Master Plan<br><br>Growth Targets: 63% in off peak seasons |

| INDICATOR | *SUPPORTING INDICATORS* | SCOPE (NATIONAL OR BY ISLAND) | SOURCE | YR | BASELINE | DESIRED CONDITION (5YR) | TOURISM MASTER PLAN STRATEGIC PRIORITY AREA |
|---|---|---|---|---|---|---|---|
| | *Self-Catering: 56%*<br><br>*By Island & Accommodation*<br>*La Digue Hotel 65%*<br>*La Digue Self-Catering 63%* | | | | By Accommodation<br>Hotels: 73%<br>Guest Houses: 54%<br>Self-Catering: 56 % | | |
| **Visitor to Resident Ratio** | *Total Population 2019: 97,625*<br><br>*Total Overnight Visitors 2019: 384,204*<br><br>*Avg Daily Overnight Visitors 2018: 7,615/day**<br><br>*Island Population 2019*<br>*La Digue: 2,926*<br><br>*Avg Daily Overnight Visitors 2018**<br>*La Digue: 786/day*<br><br>*Visitors 2019*<br>*La Digue: 17,868* | National | NBS | 2019 | National Overall Ratio 4 : 1<br><br>La Digue Overall Ratio 7 : 1<br><br>National Based on Daily Average 1 : 14<br><br>La Digue based on Daily Average 1 : 4 | 7 : 1 La Digue Overall ratio<br><br>Ideal conditions may change when resident's sentiment is surveyed | Tourism Master Plan<br><br>Strategic Priority Area 1.5: Surveys of residents' attitudes<br><br>La Digue Carrying Capacity Study: 1 : 2 visitor to resident |

| INDICATOR | *SUPPORTING INDICATORS* | SCOPE (NATIONAL OR BY ISLAND) | SOURCE | YR | BASELINE | DESIRED CONDITION (5YR) | TOURISM MASTER PLAN STRATEGIC PRIORITY AREA |
|---|---|---|---|---|---|---|---|
| **Tourism Workforce (n=3)** | | | | | | | |
| **T&T Direct Employment** | *2012: 8,479*<br>*2019: 9727*<br>*47.58% (5.72% CAGR)*<br><br>*Total Labour Force*<br>*2019: 53,426*<br><br>*T&T Direct Contribution: 23.4%* | National | NBS | 2019 | 9727 | 14,500 | Tourism Master Plan<br><br>Strategic Priority Area 1.5: Surveys of residents' attitudes<br><br>Strategic Priority Area 5.1: National tourism talent development plan<br><br>Strategic Priority Area 5.2: Grow local talent pool to reduce reliance on expatriate workers<br><br>Strategic Priority Area 5.4: Promote tourism careers |
| **Expat to Seychellois T&T Employee Ratio** | *Expatriate employees in T&T (#)*<br>*2012: 2,213*<br>*2019: 3,470*<br>*6.64% CAGR*<br><br>*Seychellois employees in T&T (#)*<br>*2012: 6,266*<br>*2019: 9,043*<br>*5.38% CAGR* | National | NBS | 2019 | 1 : 3 | 1:10 | Tourism Master Plan<br><br>Strategic Priority Area 1.5: Surveys of residents' attitudes<br><br>Strategic Priority Area 5.2: Grow the domestic talent pool in order to reduce reliance on foreign labour |

| INDICATOR | *SUPPORTING INDICATORS* | SCOPE (NATIONAL OR BY ISLAND) | SOURCE | YR | BASELINE | DESIRED CONDITION (5YR) | TOURISM MASTER PLAN STRATEGIC PRIORITY AREA |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| **STA/Unisey Graduates Currently Working in Tourism** | *% of current STA students from each island*<br>*La Digue: 1.9% (9)* | | | | *%of STA graduates working in tourism: 88%*<br><br>*% of UniSey graduates working in tourism:*<br>*6 from 15 graduates (40%)* | 90% | Tourism Master Plan<br><br>Strategic Priority Area 1.1: Allocate more resources to promoting eco-, marine and cultural tourism<br><br>Strategic Priority Area 3.1. Promote cultural and natural heritage tourism<br><br>Strategic Priority Area 3.4: Assess potential of niche tourism products including sports, agri- and adventure tourism<br><br>Strategic Priority Area 5.2: Realign the hospitality training approaches and programmes to better respond to current and emerging industry needs |

| INDICATOR | *SUPPORTING INDICATORS* | SCOPE (NATIONAL OR BY ISLAND) | SOURCE | YR | BASELINE | DESIRED CONDITION (5YR) | TOURISM MASTER PLAN STRATEGIC PRIORITY AREA |
|---|---|---|---|---|---|---|---|
| | | | | | | | Strategic Priority Area 5.3: Create new specialty courses at STA<br><br>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)<br><br>Strategic Priority Area 7.4: Support small establishments to improve service standards |
| **Productive Infrastructure (n=2)** | | | | | | | |
| **Estimated Cruise Ship Density** | *Total # of Ships ÷ Total Passengers + Crew*<br>*2004 = 84*<br>*2014 = 557*<br>*2019 = 1680*<br><br>*202% increase 5yr* | National | Seychelles Port Authority | 2019 | 1,680 | 1680 | Tourism Master Plan<br><br>Strategic Priority Area 1.5: Surveys of residents' attitudes |

| INDICATOR | *SUPPORTING INDICATORS* | SCOPE (NATIONAL OR BY ISLAND) | SOURCE | YR | BASELINE | DESIRED CONDITION (5YR) | TOURISM MASTER PLAN STRATEGIC PRIORITY AREA |
|---|---|---|---|---|---|---|---|
| | *1900% increase 15yr* | | | | | | Strategic Priority Area 2.5: Cruise tourism economic impact study<br><br>Strategic Priority Area 6.4: Marine tourism policy<br><br>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*<br>*Island Population 2019*<br>*La Digue: 2,926*<br><br>*Avg Daily Overnight Visitors 2018*: 7,615*<br>*La Digue: 786/day*<br><br>*Available Hospital Beds: 413*<br>La Digue: 12 | National<br>La Digue | NBS | 2019 | 3.9<br>3.2 | 6.0 on average across the islands | |
| **Tourism Enterprises (n=4)** | | | | | | | |
| **Bed Supply** | *Number of Beds*<br>*2000: 3,452*<br>*2019: 13,218*<br>*280% increase*<br><br>*Number of Beds* | National<br>La Digue | NBS<br>Planning | 2019 | 1,352 | 1,352 | Tourism Master Plan<br><br>Strategic Priority Area 1.5: Surveys of residents' attitudes |

| INDICATOR | *SUPPORTING INDICATORS* | SCOPE (NATIONAL OR BY ISLAND) | SOURCE | YR | BASELINE | DESIRED CONDITION (5YR) | TOURISM MASTER PLAN STRATEGIC PRIORITY AREA |
|---|---|---|---|---|---|---|---|
| | *La Digue: 1,352*<br><br>*Island Population 2019*<br>*La Digue: 2,926*<br><br>*# of beds per 100 residents*<br>*National Density: 131*<br>*La Digue: 46* | | | | | | Strategic Priority Area 7.1: Additional 3,000 additional rooms, particularly in the 3-and 4-starcategories<br><br>Strategic Priority Area 7.2: New regulatory system for 'floating rooms" |
| | *Number of Beds in Pipeline*<br><br>*# of beds per 100 residents*<br>*2019: 13,218*<br>*Pipeline: 10,360*<br>*C+P: 23,578*<br>*C+P density: 228* | National | NBS Planning | 2019 | 10,360 beds (368 La Digue) | 5-10% of current bed supply | Tourism Master Plan<br><br>Growth Target: 3000 (6000 beds) new rooms by 2023<br><br>La Digue Carrying Capacity: 100 new rooms (200 beds) from 2016-2020 |
| **Number of Hotels Holding Seychelles Sustainable Tourism Label Certification** | | National<br>Mahe<br>Praslin<br>La Digue | STMP | 2019 | 22 | 60% of all licensed tourism enterprises | Tourism Master Plan<br>Strategic Priority Area 1.1: Allocate more resources to promoting eco-, marine and cultural tourism<br>Strategic Priority Area 6.2: 50% of large hotels and guesthouses |

| INDICATOR | *SUPPORTING INDICATORS* | SCOPE (NATIONAL OR BY ISLAND) | SOURCE | YR | BASELINE | DESIRED CONDITION (5YR) | TOURISM MASTER PLAN STRATEGIC PRIORITY AREA |
|---|---|---|---|---|---|---|---|
| | | | | | | | "Seychelles Sustainable Tourism Label" (SSTL) certified by 2023 |
| Number of Regulated/ Licensed F&B and Handicraft Vendors | | National | Seychelles Societe D'Investissmenet (SSI)<br><br>Enterprise Seychelles Agency (ESA) | 2020 | La Digue: 11 F&B | 90% of all F&B and vendors are licensed | Tourism Master Plan Strategic Priority Area 1.1: Allocate more resources to promoting eco-, marine and cultural tourism<br>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)<br>Strategic Priority Area 3.4: Assess potential of niche tourism products including sports, agri- and adventure tourism<br>Strategic Priority Area 3.5: Develop distinctive branded product |

| INDICATOR | *SUPPORTING INDICATORS* | SCOPE (NATIONAL OR BY ISLAND) | SOURCE | YR | BASELINE | DESIRED CONDITION (5YR) | TOURISM MASTER PLAN STRATEGIC PRIORITY AREA |
|---|---|---|---|---|---|---|---|
| | | | | | | | 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)<br>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:*<br>*La Digue - 12* | Identify experience providers<br><br>12 La Digue | Tourism Master Plan<br>Strategic Priority Area 1.1: Allocate more resources to promoting eco-, marine and cultural tourism<br>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; |

| INDICATOR | *SUPPORTING INDICATORS* | SCOPE (NATIONAL OR BY ISLAND) | SOURCE | YR | BASELINE | DESIRED CONDITION (5YR) | TOURISM MASTER PLAN STRATEGIC PRIORITY AREA |
|---|---|---|---|---|---|---|---|
| | | | | | | | Guidelines for tourism eco-lodges in natural parks)<br>Strategic Priority Area 3.2: Grow the number of creole and specialty restaurants<br>Strategic Priority Area 3.3: Promote trade between local agro-producers and accommodation establishments<br>Strategic Priority Area 3.4: Assess potential of niche tourism products including sports, agri- and adventure tourism<br>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) |

| INDICATOR | *SUPPORTING INDICATORS* | SCOPE (NATIONAL OR BY ISLAND) | SOURCE | YR | BASELINE | DESIRED CONDITION (5YR) | TOURISM MASTER PLAN STRATEGIC PRIORITY AREA |
|---|---|---|---|---|---|---|---|
| | | | | | | | Strategic Priority Area 5.2. Grow local talent pool to reduce reliance on expatriate worker<br>Strategic Priority Area 5.4: Promote tourism careers |
| **PHYSIO-ENVIRONMENTAL (n=8)** | | | | | | | |
| **Land Use (n=1)** | | | | | | | |
| **Land Use Distribution** | Protected Terrestrial Area (%)<br><br>*La Digue only protected area: Veuve Reserve (21 hectares) 2% of total area*<br><br>*Endangered/threatened species: 18% (WEF)* | National<br><br>La Digue | Seychelles Environment Department | 2019 | <48%<br><br>2% | 50%<br><br>2% | |
| | Non-Protected Undeveloped / Forested Terrestrial Area (%)<br><br>*Total forested %: 88.4*<br>-<br>*Total protected %: 48* | National | WEF Sustainable Development Impact Summit | 2019 | 40.4% | 38% | |
| | Developed Area (%)<br><br>*Total area %: 100*<br>- | National | Formula | 2019 | 12.6% | 12% | |

| INDICATOR | *SUPPORTING INDICATORS* | SCOPE (NATIONAL OR BY ISLAND) | SOURCE | YR | BASELINE | DESIRED CONDITION (5YR) | TOURISM MASTER PLAN STRATEGIC PRIORITY AREA |
|---|---|---|---|---|---|---|---|
| | *Total forested %: 88.4* | | | | | | |
| | *Agricultural Land %: 0.9% (420 hectares)*<br>*Yearly demand of restaurants for locally produced vegetables, herbs and root crop (% of total): 21.79%*<br>*% locally caught fish sold to hotels and restaurants: 50%*<br><br>*% of imported fish products of total volume of fish consumed by tourism establishments: 10%*<br><br>*Trading with Hotels Potential: 4,386 tons of locally produced crops* | National | CLISSA<br><br>Min of Ag<br><br>World Bank<br><br>CLISSA | 2014<br><br>2020<br><br>2017<br><br>2014 | *Yearly demand of restaurants for locally produced vegetables, herbs and root crop (% of total): 21.79 %*<br>*% locally caught fish sold to hotels and restaurants: 50%* | *LA DIGUE: Yearly demand of restaurants for locally produced vegetables, herbs and root crop (% of total): 25%*<br><br>*% locally caught fish sold to hotels and restaurants: 60%* | Tourism Master Plan<br><br>PA3.3: Promote trade between local agro-producers and accommodation establishments<br><br>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)*<br><br>*Total recycling diverted = 5% or 1.94 t* | National | Solid Waste Master Plan | 2019 | 6% | 25% for La Digue & "significantly reduce" single-use plastics by 2030 | Tourism Master Plan<br><br>Strategic Priority Area 6.5: Sustainable utilities services<br><br>UNEP Plastics Reduction Pledge |

| INDICATOR | *SUPPORTING INDICATORS* | SCOPE (NATIONAL OR BY ISLAND) | SOURCE | YR | BASELINE | DESIRED CONDITION (5YR) | TOURISM MASTER PLAN STRATEGIC PRIORITY AREA |
|---|---|---|---|---|---|---|---|
| | *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)*<br><br>*Total population = 97,625*<br><br>*Waste Generated in Kg per Capita per Day (kg/c/d): 1,56 (2016, World Bank)*<br><br>*Total food waste by accommodation sector: 2665 tonnes per year (Data from SSTF in 2019)* | National<br>La Digue | *Landscape & Waste Management Agency* | *2019* | *TBD* | *2* kg of solid waste per capita per day *(kg/c/d)* | Tourism Master Plan<br><br>Strategic Priority Area 1.5: Surveys of residents' attitudes<br><br>Strategic Priority Area 6.2: 50% of large hotels and guesthouses "Seychelles Sustainable Tourism Label" (SSTL) certified by 2023<br>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*<br><br>*Desalination Production: 2.1m3 M (16%)* | National<br>La Digue | PUC (est of 125 facilities in 2019) | 2019 | *La Digue large hotel consumption: 123,954 m3* | 900 liters per occupied room per day | Tourism Master Plan<br><br>Strategic Priority Area 1.5: Surveys of residents' attitudes |

| INDICATOR | *SUPPORTING INDICATORS* | SCOPE (NATIONAL OR BY ISLAND) | SOURCE | YR | BASELINE | DESIRED CONDITION (5YR) | TOURISM MASTER PLAN STRATEGIC PRIORITY AREA |
|---|---|---|---|---|---|---|---|
| | *Held in Reservoirs: 11.1m3 M (84%)*<br><br>*Total water customers = 32,127*<br><br>*Total commercial customers = 2,774*<br>*Total hotels = 699*<br>*Share of hotels = 25.2%*<br>*Hotel demand share of consumption: ____*<br><br>*Total water consumed = 9.9m3 million*<br>*Population = 97,625*<br>*Daily Visitor Avg = 7,617*<br>*Water Use per Resident + Visitors per Day (l/c/d) 258 L/d*<br><br>*Calculated water demand based on existing water customers: 1100 L/d per customer acct* | | | | | | Strategic Priority Area 6.2: 50% of large hotels and guesthouses "Seychelles Sustainable Tourism Label" (SSTL) certified by 2023<br>Strategic Priority Area 6.5: Sustainable utilities services |
| **Proportion of Hotels & Self-** | *Total water customers = 32,127* | National<br>La Digue | PUC | | 15% | 50% | Tourism Master Plan |

| INDICATOR | *SUPPORTING INDICATORS* | SCOPE (NATIONAL OR BY ISLAND) | SOURCE | YR | BASELINE | DESIRED CONDITION (5YR) | TOURISM MASTER PLAN STRATEGIC PRIORITY AREA |
|---|---|---|---|---|---|---|---|
| **Catering Connected to Sewage Treatment** | *Total sewage customers = 5,134*<br><br>*Total hotels connected to sewage treatment – 15%*<br><br>*Proportion of water customers connected to sewage treatment: 16%*<br><br>*Proportion of Wastewater Treated (%): 18%* | | | | | | Strategic Priority Area 1.5: Surveys of residents' attitudes<br><br>Strategic Priority Area 6.2: 50% of large hotels and guesthouses "Seychelles Sustainable Tourism Label" (SSTL) certified by 2023<br>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*<br><br>*Commercial Customers: 5,498*<br>*Total Hotels: 699*<br>*Share of Hotel Use: 17%*<br>*Large hotels: 8.23%*<br>*Small hotels: 3.25%*<br>*Guest houses: 3.17%*<br>*Self-catering: 1.39%*<br>*5 star: 0.77%* | National<br>La Digue | PUC<br><br>Energy Baseline Study | 2018 | 141.44 kWh/d *an average per hotel* | 250 Mj per guestnight | Tourism Master Plan<br><br>Strategic Priority Area 1.5: Surveys of residents' attitudes<br><br>Strategic Priority Area 6.2: 50% of large hotels and guesthouses "Seychelles Sustainable Tourism Label" (SSTL) certified by 2023 |

| INDICATOR | *SUPPORTING INDICATORS* | SCOPE (NATIONAL OR BY ISLAND) | SOURCE | YR | BASELINE | DESIRED CONDITION (5YR) | TOURISM MASTER PLAN STRATEGIC PRIORITY AREA |
|---|---|---|---|---|---|---|---|
| | *Commercial Energy Consumed: 212.3 GWh Share of Hotel Consumption: 36.1 GWh Corresponding to an average per hotel figure of 141.44 kWh/day*<br><br>*Domestic Energy consumed: 126.3 GWh Domestic Customers: 32,278*<br><br>*Total Electricity Consumed per Domestic Customer per Day: 10.72 KWh/d* | | | | | | Strategic Priority Area 6.5: Sustainable utilities services |
| **Renewable energy share (%)** | *Total available electricity capacity: 93.5 MWh*<br><br>*Wind Farm Mahe: 7.4 GWh*<br><br>*PV Mahe/Praslin: 3.5 GWh* | National | PUC | 2018 | 2.55% | 25% for La Digue | |
| **CO2 Emissions of Hotel Industry** | *Share of Hotel Consumption: 27.6 GWh* | National | PUC | 2018 | 11,373 MT CO2e | 9667 MTCo2 | Tourism Master Plan |

| INDICATOR | *SUPPORTING INDICATORS* | SCOPE (NATIONAL OR BY ISLAND) | SOURCE | YR | BASELINE | DESIRED CONDITION (5YR) | TOURISM MASTER PLAN STRATEGIC PRIORITY AREA |
|---|---|---|---|---|---|---|---|
| | *CO2 Factor: 0.41205 (kg CO2e per KWh)*<br><br>*CO2 per capita: 5.4 kg/CO2*<br><br>*CO2 per guest night: 13.06 kg/CO2*<br>*Source: National Energy Report 2015 and Hotel Carbon Management Initiative* | | | | | | Strategic Priority Area 1.5: Surveys of residents' attitudes<br><br>Strategic Priority Area 6.2: 50% of large hotels and guesthouses "Seychelles Sustainable Tourism Label" (SSTL) certified by 2023<br>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

The following indicators that comprise the tourism economy are not currently disaggregated by island, therefore, data interpretation and recommendations focus on a national level strategic approach that will have a direct effect on La Digue. As Seychelles moves towards decentralizing policy development the government should strive to monitor and evaluate disaggregated economic performance indicators.

##### *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.

Given La Digues unique positioning as the ecotourism island of the Seychelles, profiling its tourism market and identifying its contribution per tourist should be sought. Understanding the profile and how it contributes to the overall country level tourism target will allow for more targeted market growth and product development. Ultimately allowing for minimizing negative tourism impacts while maximizing positive impact and balancing the carrying capacity of the island.

### 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 will require an aggressive growth from 2021-2023. Therefore, it is recommended that Seychelles strives to target reaching 2019 arrivals numbers by 2023 instead, bouncing back to 384 thousand tourism arrivals. This means that La Digue should also strive to recuperate to prepandemic arrivals (2019 numbers) and reach approximately 18 thousand tourism arrivals by 2023 and then reaching 23 thousand by 2025.

#### *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 and La Digue was almost double with a 7:1 ratio. As a comparison with other small nations, according the world atlas, other small island nations such as the British Virgin Islands at 13:1, have higher ratios[16]

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). The previous carrying capacity for La Digue called for a reduction of the visitor to resident ration to 1:2, the economic implication to the island economy would be greatly affected, therefore it is suggested that the ration remain as it is, however, the will and needs of local residents should be prioritized moving forward.

The ideal tourism model for Seychelles, and La Digue, will continue to prioritize quality versus quantity, therefore economic growth over arrivals growth is the strategic target. The desired condition should evolve overtime as the tourism model changes and visitor flow is better mitigated in a post covid19 recuperation reality.

### 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.

Currently tourism workforce data is not compiled and reported by island, therefore, the following data interpretation and recommendations focuses on a national level strategic approach that will

[16] https://www.worldatlas.com/articles/countries-of-the-world-where-tourists-outnumber-locals.html

have a direct effect on La Digue. As Seychelles moves towards decentralizing policy development the government should strive to monitor and evaluate disaggregated tourism workforce performance indicators.

***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 labor, 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. And as additional higher quality service-oriented accommodation facilities and new tourism products are introduced increase T&T direct employment to 14500 by 2025. 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 decreased 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. Stakeholder consultations should establish a firm strategy to reduce overreliance on foreign workers. For example, there could be incentives to Seychellois who enrol

in STA and UniSey and for local operators to hire them. A suggested target of reducing reliance on foreign workers by 10% a year will yield a 1:10 ratio by 2025.

#### *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.*

The following indicators refer to national level productive infrastructure baseline and desired conditions that directly affect the capacity to handle tourism overnight and day trip arrivals, as well as the health of residents and visitors to La Digue.

#### *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 1,680 passengers/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.[17] 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 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 NBS Planning department, an additional 10,626 beds (5313

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

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.

For La Digue specifically, the recommendation is to maintain 2019 baseline levels for the next five years and focus on reconverting the bed supply.

### *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 (3.1% of hotel stock) held the Seychelles certified sustainable label, and none of them are located in La Digue. While in the African continent similarly only 3.7% of hotel establishments hold a sustainability label, the world average is 6.2%, led by North America with 10.1% followed by Europe with 6.1%[18]. 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[19].

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 for 2023. 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

[18] https://www.oneplanetnetwork.org/sites/default/files/khg_certifications.pdf

[19] http://www.greenlodgingnews.com/wp-content/uploads/2017/09/Green-Lodging-Trends-Report-2017_Final.pdf

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 a to be established 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 (e.g. only includes heritage sites), conducting an inventory to identify existing cultural heritage products (ie 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). In La Digue there is only one protected area reserve, Veuve Reserve with a size of 21 hectares of land representing 2% of the island's territory.
- 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).
- Food sources for the tourism sector:
    - 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%
- 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 in conservation, the fragility of La Digues environmental ecosystems (i.e. endemic species habitat), the aligned objectives of the Strategic Land Use Development Plan, and already saturated beachfronts/over-supply in the lodging sector, it's recommended that La Digue does not infringe anymore on the forest coverage and protected areas and therefore maintains the current baseline levels of land use distribution as the desired condition in 5 years' time. The Western Plateau is the natural habitat of the endangered Paradise Fly Catcher and only a fraction is under protected area designation, therefore, the rest of the Wester Plateau should be safeguarded and development prohibited.

Regarding local food sources for the tourism industry, La Digue should strive to increase local food supply from the national average, in line with its eco-tourism destination promise. Therefore, increasing yearly demand of restaurants for locally produced vegetables, herbs and root crop (% of total) from 21.79% to at least 25% and % locally caught fish sold to hotels and restaurants from 50% to 60% in the next five years.

### 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.

Though baseline data for La Digue is unknown, it is recommended that to keep true to its eco-tourism destination promise an aggressive target of 25% of total waste is recycled or composted by 2025. Additionally, baseline data for solid waste generated by the accommodation sector should be collected and monitored, and a target set to be less or equal to the Global Sustainable Tourism Dashboard of 2kg per visitors/day[20].

***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

[20] http://tourismdashboard.org

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 liters 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 liters 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 for La Digue 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. The construction of a new sewage system for the island of La Digue is currently underway and should make immediate improvements over baseline quite feasible. 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 pool pumps 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 in La Digue.

#### *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.

For La Digue, given its ecotourism destination promise, a more aggressive target than the national average is suggested, therefore, increasing renewable energy sources to 25% by 2025.

### *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 National target to increase renewable energy sources by 15%, the target reduction for the National 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. However, once a baseline is determined for La Digue specifically, the target green gas emissions reduction should be equally proportional to the renewable energy sources target of 25%.

# 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 those same 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: 3% 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 liters per guest/night

## Scenario 1. Slow Growth

| SCENARIO 1. Slow Growth – 5 yr recovery | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **NATIONAL TOTAL** | | | | | | | | | | |
| | *Growth Rate* | **Tourism Arrivals** | **Bed nights 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

| SCENARIO 1. SLOW GROWTH. LA DIGUE | | | | | |
|---|---|---|---|---|---|
| | *Growth* | **Tourism Arrivals** | **Bed nights Occupied** | **Expected Occupancy Rate @ current bed supply** | **Beds needed @70% occupancy** |
| **2019 (actuals)** | | **17,868** | **296,765** | **67%** | **1192** |
| **2020** | *-70%* | 5.360 | 91.127 | 21% | 357 |
| 2021 | *50%* | 8.041 | 136.690 | 31% | 535 |
| **2022** | *30%* | 10.453 | 177.697 | 41% | 695 |
| 2023 | *20%* | 12.543 | 213.237 | 49% | 835 |
| **2024** | *20%* | 15.052 | 255.884 | 59% | 1002 |
| 2025 | *20%* | 18.062 | 307.061 | 71% | 1202 |

- Considering, 5% of national tourism arrivals overnight at La Digue; similarly, to the national scenario, in La Digue occupancy rate will slowly recover reaching the target level of 70% between 2024-2025, in which case by 2025 the arrivals market demand would exceed the current bed supply allowing room for growth when only considering economic carrying capacity.
- The decision to allow for additional rooms to be built in La Digue is also conditioned by the capacity limitations of land use distribution as well as productive infrastructure management aforementioned before, such as waste, sewage, water and energy. These conditions can be mitigated by increased the capacity and efficiencies of current utilities services.
- Additionally, the decision to allow more tourism arrivals is also conditioned by the socio-economic implications and resident sentiment towards visitor to resident ratio. Resident resistance to tourism growth can be mitigated by ensuring socially equitable value chain linkage opportunities and distribution of wealth.

## Scenario 2. Medium growth

| SCENARIO 2. 3yr recovery. Max at 500k | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **NATIONAL TOTAL** | | | | | | | | | | |
| | *Growth Rate* | **Tourism Arrivals** | **Bed nights 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. A likely scenario according to UNWTO predictions that foresee a likely return of international tourism movement to pre-pandemic times 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

**SCENARIO 2. MEDIUM GROWTH. LA DIGUE**

| | Growth | Tourism Arrivals | Bed nights Occupied | Expected Occupancy Rate @ current bed supply | Beds needed @70% occupancy |
|---|---|---|---|---|---|
| **2019 (actual)** | | **17,868** | **296,765** | **67%** | **1192** |
| **2020** | *-70%* | 5.360 | 91.127 | 21% | 357 |
| 2021 | *50%* | 8.041 | 136.690 | 31% | 535 |
| **2022** | *50%* | 12.061 | 205.035 | 46% | 802 |
| 2023 | *50%* | 18.091 | 307.553 | 70% | 1204 |
| **2024** | *15%* | 20.805 | 353.686 | 80% | 1384 |
| 2025 | *12%* | 23.302 | 396.128 | 90% | 1550 |

- In this case, occupancy rate will recover to the target level of 70% between 2022-2023 and by 2024 market demand will exceed current bed supply. And in order to meet market demand, without considering other carrying capacity factors (i.e. physical-environmental and social), an additional 358 new beds would be needed. In which case bed density would grow from 46 to 57 beds per 100 residents.
- For La Digue, this scenario poses higher environmental and socio-economic carrying capacity risk than scenario 1 given the short timeframe to allow for appropriate utilities investment needs identified.

## 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 |

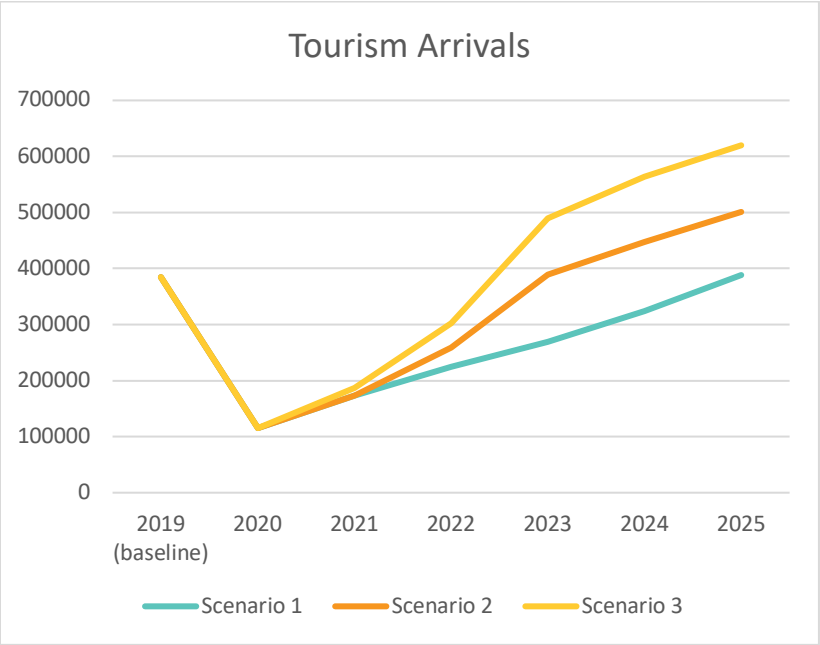
- The accelerated recovery scenario assumes an 24% CAGR between 2020-2025, surpassing the masterplan target of 480k arrivals by 2023
- In this case the target is to realize the ambitious additional 10.6k beds in the pipeline by 2025, new bed supply can increase by 2023 to surpass 24k
- In this case there 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.
- Given UNWTO expert current predictions, this scenario is highly unlikely to be realized.

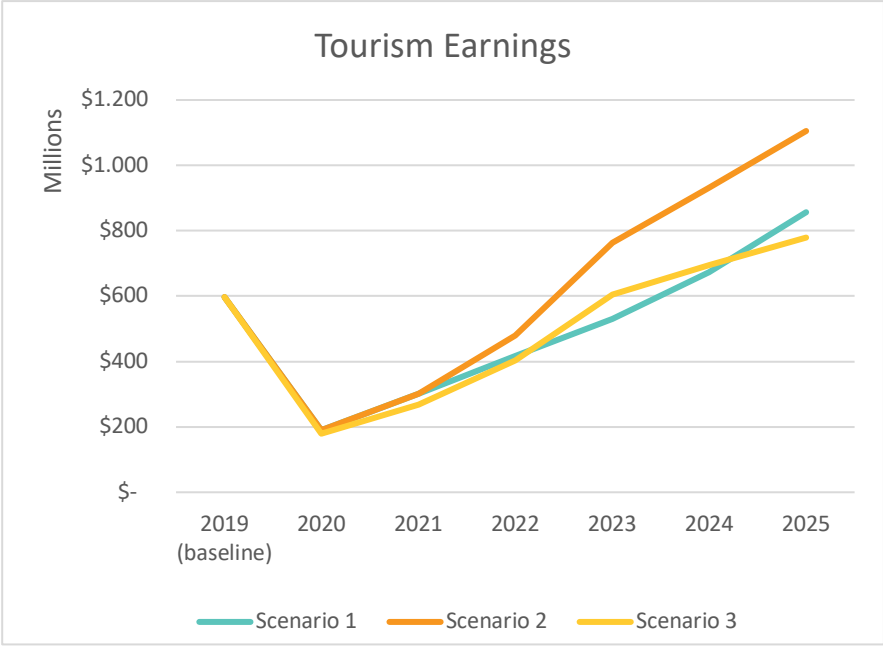
**SCENARIO 3. ACCELERATED GROWTH. LA DIGUE**

| | *Growth* | **Tourism Arrivals** | **Bed nights Occupied** | **Expected Occupancy Rate @ current bed supply** | **Beds needed @70% occupancy** |
|---|---|---|---|---|---|
| **2019 (actual)** | | **17,868** | **296,765** | **67%** | **1192** |
| **2020** | *-70%* | 5.360 | 91.127 | 21% | 357 |
| 2021 | *62%* | 8.684 | 147.625 | 34% | 578 |
| **2022** | *62%* | 14.068 | 239.153 | 55% | 936 |
| 2023 | *62%* | 22.790 | 387.428 | 89% | 1516 |
| **2024** | *15%* | 26.208 | 445.542 | 102% | 1744 |
| 2025 | *10%* | 28.829 | 490.097 | 113% | 1918 |

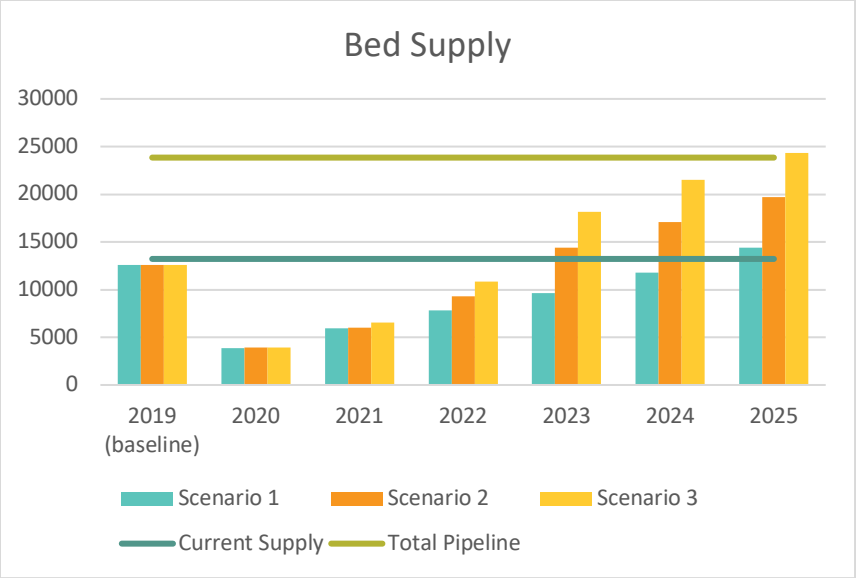
- In an accelerated growth scenario, occupancy rate will recover to the target level of 70% by 2023 and by 2024 market demand will exceed current bed supply.
- And in order to meet market demand, without considering other carrying capacity factors (i.e. physical-environmental and social), an additional 726 new beds would be needed. In which case bed density would grow from 46 to 71 beds per 100 residents.
- This scenario poses the highest threat of massification and over tourism, increasing congestion, displacement of locals and degradation of the tourism experience and authenticity.

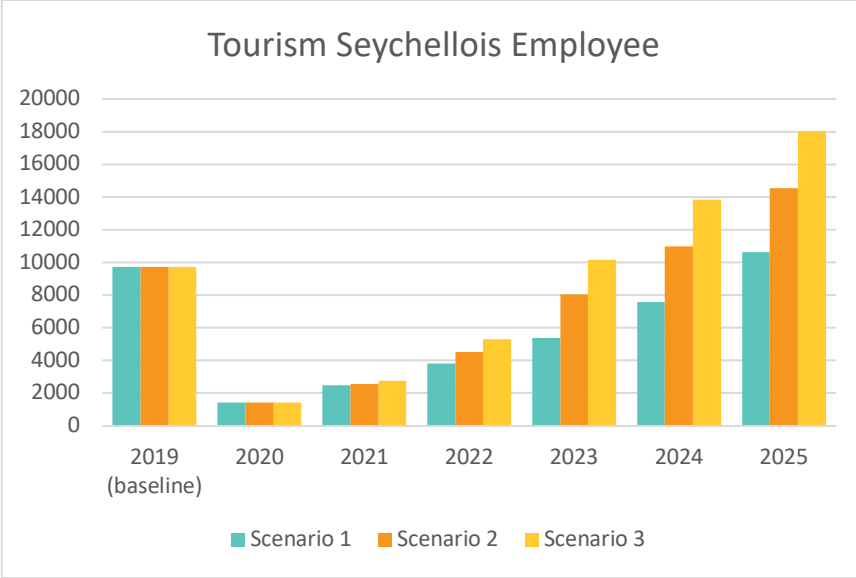
## Scenarios Comparisons



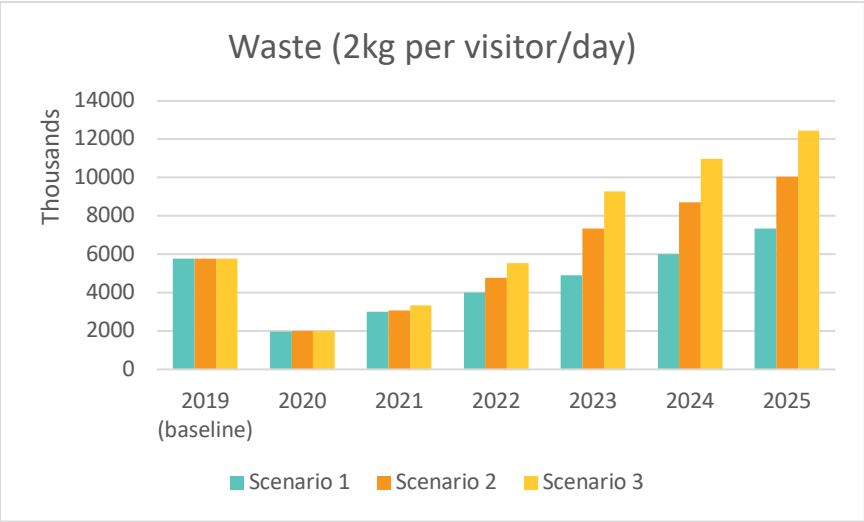



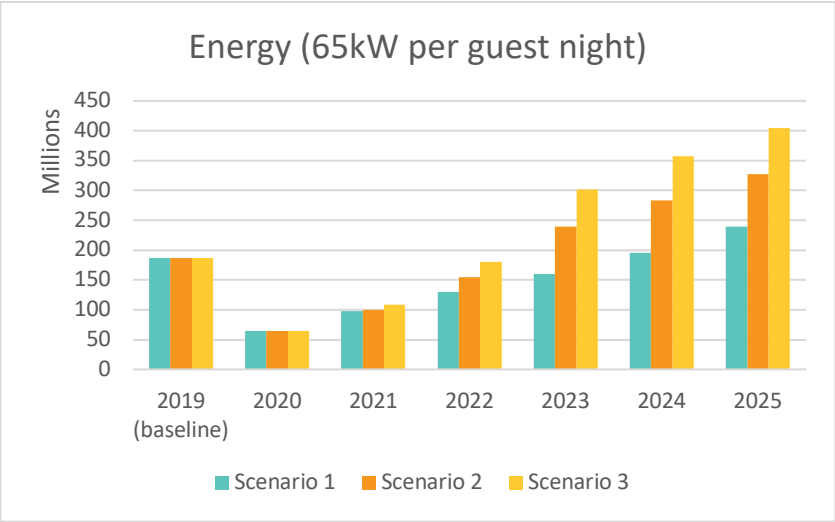

- By comparing the three scenarios, even though tourism arrivals targets are much larger in scenario 3 than 1, they have the similar tourism earnings potential. On the one hand, in scenario 1 the risk of an extended economic depression is high, in scenario 3 the risk of over tourism and degradation of ADRs is high.
- At a national level scenario 2 presents the highest chances of stimulating the economy faster while preserving destination competitiveness and increasing visitor expenditure.
- However, at La Digue, scenario 2 and 3 predict continued growth beyond 2019 baseline numbers and increasing bed supply beyond 2023 increasing the risk of overtourism adding additional pressure to environmental systems, productive infrastructure, resources and the social-cultural fibre of the destination, alienating further the promise of an eco-tourism destination.

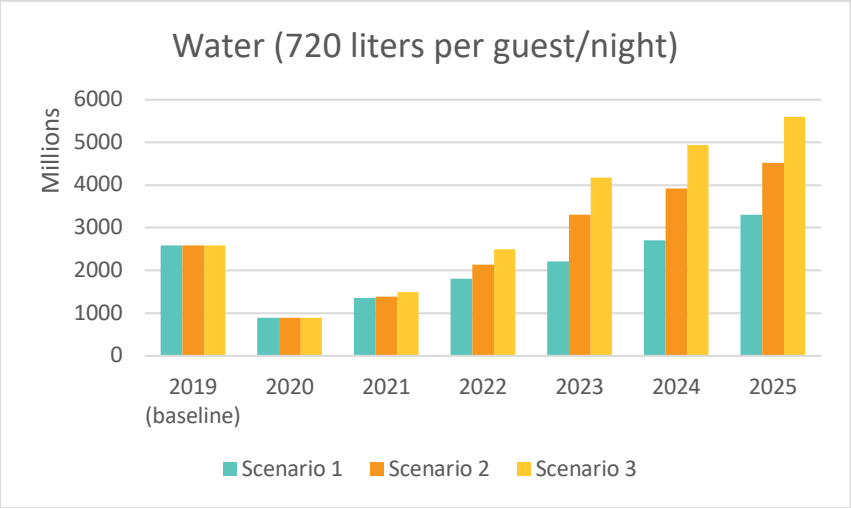



- In scenario 2 and 3 the needed bed supply to accommodate demand reaches current supply quicker than in scenario 1, reducing the risk of tourism reliant business to bankrupt and close doors and increasing employment rate sooner, therefore stimulating the economy.
- In scenario 3, the tourism pipeline 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 1 offers the best economic opportunity while minimizing the social and environmental risks at a national level. However, given the fragility of La Digue, continued unbalanced growth would further negatively impact the economy, society, and environment of the destination. Growth beyond 2019 numbers should be limited and monitored while investment in productive infrastructure takes place. See chapter 4 for specific planning and development recommendations for La Digue.

# 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 development strategy that helps balance the risks of unsustainable growth uncovered by the two simultaneously conducted Tourism Carrying Capacity Studies in the Seychelles, one for Mahe and Praslin and this one for La Digue. 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 La Digue.

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 La Digue
- **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 Seychelles 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 learned 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 La Digue is highly tourism dependent. The specific implementation plan for La Digue should prioritize resident's health, food security, social stress and business health issues.
- As the Seychelles designated ecotourism destination La Digue should reinforce the "pristine nature promise" of the countries positioning and uphold its promise.

**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 for La Digue include:

- A fragile ecosystem coupled with deficient utilities services and waste management systems makes the situation most pressing.
- Praslin provides La Digues island's energy via sea cable susceptible to damage, which often results in power cuts.
- The drainage and sewage system in La Digue is not up to current standards and the construction of a sewage treatment plant is overdue, posing a significant risk to the health of groundwater sources.
- 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.
- Reduce the rate of natural habitat and biodiversity loss
- Improve residents' quality of life by guaranteeing efficient utilities and waste management services.
- Position La Digue as the Eco-tourism destination according to the vision 2032 target

### Recommended Actions

- 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

        - On the ban the use of Styrofoam and plastics at take-away restaurants
        - Introduce ban the use non-eco-friendly detergents and cleaning products.
        - Introduce ban on reef-toxic sunscreens
    - 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 existing ban of single use plastics/Styrofoam
    - Ban the use of non-reef safe sunscreen
    - Introduce awareness raising campaign aimed to educate on waste reduction and sustainable consumption and production

**Island specific implications**

The aforementioned recommended actions should be a national approach, however, La Digue as the aspirational Eco-tourism destination of the Seychelles, has the opportunity to go above and beyond and truly become an example of sustainability and green solutions:

- Clean Energy:
    - Design a program to position La Digue as a carbon neutral destination by eliminating the reliance on fossil fuels. Invest in expanding renewable energy sources such as PV and biogas (a carbon offset can be used as a means to raise capital for a renewable energy project).
    - Strictly enforce vehicle quota and eliminate fuel vehicles allowing only a limited number of Hybrid or electric vehicles for specific purposes and regulated hours.
    - Introduce wildlife-friendly street lighting as well as signage for better navigation around the island
    - Enforce tropical building codes and design and the use of sustainable and low-carbon materials; maximizing airflow and natural light, greatly reducing the need for A/C
- Fresh Water:
    - Increase water catchment efficiency and sanitation.
    - Require tourism business to harvest rainwater and efficient and safe reuse of greywater

    - Strive to deliver the “best” drinking water of the Seychelles and ban the use disposable water bottles.

- Sewage and Drainage:
    - Realize the planned centralized sewage system
    - Invest in proper street drainage system.
    - Strictly enforce building regulations and connection to drainage system
- Zero Waste:
    - Design and implement a program aiming to become a “Zero Waste[21]” destination. Focusing on providing guiding principles and solutions for waste prevention and reduction through recycling and reuse.
    - Reinforce the ban the use of all single-use plastics
    - Maximizing composting and plastics recycling.

**Indicators**

- Amount of waste diverted
- Amount of waste generated by hotels and self-catering facilities
- Water production / demand by hotels and self-catering facilitates
- Proportion of hotels and self-catering accommodations connected to sewage treatment
- Renewable energy sources and production
- 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
- Number of vehicles on the island / % clean energy

[21] Zero Waste definition: The conservation of all resources by means of responsible production, consumption, reuse and recovery of all products, packaging, and materials, without burning them, and without discharges to land, water or air that threaten the environment or human health. *Zero Waste International Alliance* (ZWIA)

## 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 through an integrated approach of "placemaking"[22]. 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

[22] Placemaking is the process of creating quality places that people want to live, work, play, and learn in.

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 (ie 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**

The Island of La Digue already has defined its destination hub theme as the "Eco-Tourism Island Destination of Seychelles." Along these lines there are multiple business development opportunities that can be fostered in order to increase local livelihood opportunities, placemaking, destination competitiveness, and environmental conservation values. Specific implementation activates in line with this concept include, but are not limited to:

- Promotion of green transportation, such as bicycles, ox carts, and limited hybrid/electrical vehicles. Providing a fleet of good quality and maintained bicycle fleet available for visitors and guaranteeing street safety (i.e., lighting, signage, road condition, designated paths and timeslots for moving vehicles)
- Inventory and Heritage Building recuperation plan. Encourage 3-to 4-star boutique hotel experiences in heritage buildings and mansions.
- Open air local "fair trade" market including food stalls, local produce, artisan crafts and live performances. Including day and night activities.
- Creole and fusion dining experiences including fostering new gastronomic trending concepts such as of Km0, slow food, farm-to-table, fish-to-fork, organic, vegetarian/vegan options, among others.
- Innovate in new eco-tourism experiences, such as:

- Cultural and historic trails
- Hiking and nature trails
- Birdwatching
- Snorkelling trains
- Agritourism – promoting traditional farming and living
- Artisanal fishing – a day in the life of a fisherman

**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 working in La Digue
- Number of Cultural and Eco Products available on offer
- Number of heritage buildings recuperated
- 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 La Digue 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.

### Island specific implications

Given the unique eco-tourism destination aspirational positioning for La Digue, the SSTL label should develop a specific criterion with high standards of sustainability and adapted to the types of tourism operations unique to the island.

### 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 Anse Source D'Argent 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 for La Digue:

- Once cruise visitors return to the islands, expected by 2022, effectively manage and coordinate visitor flows:
    - Include a special environmental tax for cruise visitors to the island to be used to finance zero waste, clean energy, sewage and infrastructure projects
    - Require use of green mobility such as bicycles, ox carts and to a minimal electric/hybrid vehicle
    - Accept only pre-booking a limited number of visits to Anse Source D'Argent
    - Offer alternative 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 public toilet facilities and construct them by following regulations with regards to water supply and sewage system
- Monitor and ensure that all beach vendors and tour guides 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.
- Install more sorted waste bins at beaches and cultural sites along with zero waste principals' guidelines signage and 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 (i.e. flycatcher)
    - Require information about endemic and endangered species and guidelines on how to interact with them be provided 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 for Anse Source D'Argent.
- 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.

Specifically, for La Digue the 2013 moratorium on the construction of new hotels with more than five rooms per developer, impacted the profile of accommodations in La Digue; however, it did not lessen the rapid growth of overall tourism beds. The amount of smaller-sized, self-catering accommodation facilities exploded on La Digue, increasing from 28 self-caterings in 2000 (before the moratorium) to 588 2019 (with the moratorium still in place).

### 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 temporarily 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.
- 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**

For La Digue, echoed in all aforementioned recommendations, the hotel development strategy should also take into consideration the already established "ecotourism destination" vision. Therefore, specific recommendations to ensure meeting this promise include:

- Maintain moratorium on new hotel development at least until 2023 or when favourable conditions (i.e., hotel occupancy rates recovered, productive infrastructure investment in sewage/waste/water/energy/port)
- Once moratorium has been lifted, maintain low density per, while relaxing number of rooms per developer from 5 to maximum 24.
- New ground should not be impacted, only already impacted land should be used for any new accommodation facility.
- Development on the western plateau should be prohibited in favour of protecting the endemic Seychelles Black Paradise-Flycatcher habitat.
- Rebalance hotel category supply, reducing self-catering facilities and encouraging 3- to 4-star boutique hotel experiences. Special incentives for operations in designated and renovated heritage homes.
- Define and implement sustainable operational standards specifically for La Digue operations and strictly enforce. Operations that do not meet standards should be penalized and license revoked.
- Encourage adhesion to sustainability label
- Focus on productive infrastructure solutions (waste, energy, water, sewage, drainage) before increasing bed stock
- Increase in bed supply should not exceed market demand, therefore maintaining healthy occupancy rates

- Bed density per resident ratio is already is already high, consideration for increasing bed supply should take into consideration resident sentiment
- With the current bed supply the aspiration of developing an eco-tourism destination may still be possible. The unchecked and unbalanced growth that has been experienced until now, even with clear guidelines and planning tools, could lead to massification and overtourism.

**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 (Specific to La Digue)
- 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

Prior to the to the reintroduction of cruise visitor's day trippers to La Digue:

- Expansion of the port jetty
- Cruise visitor management protocols in place

### 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 5 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 8 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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