Evaluation of the Cruise Sector in Seychelles:

A Cost-Benefit Analysis (2026–2033)

United Nations
Economic Commission for Africa

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FOREWORD

Over the last two decades, the cruise sector in Seychelles has experienced steady growth, buoyed by strategic investments in port infrastructure, targeted policy reforms, and an increasing global appetite for immersive, sea-bound travel experiences. With its strategic location bridging Africa, Asia, and the Middle East, Seychelles has become a natural waypoint for regional and transoceanic cruise routes, offering visitors unforgettable encounters with nature and culture alike. Yet, while the cruise industry presents undeniable economic promise, it also raises urgent questions about environmental sustainability and community well-being.

It is within this context that we requested the United Nations Economic Commission for Africa (UNECA), through its Sub-Regional Office for Eastern Africa (SRO-EA), to extend technical support to better understand the impacts of the cruise sector. This report, *Evaluation of the Cruise Sector in Seychelles: A Cost-Benefit Analysis (2026–2033)*, represents a landmark effort to provide a rigorous, data-driven examination of the sector's multidimensional impacts, quantifying both the tangible economic gains and the often less-visible social and environmental costs.

The findings are both revealing and instructive. Over an eight-year horizon, cruise tourism is projected to contribute $531 million directly to Seychelles' Gross Domestic Product (GDP) from 2026 to 2033. This reflects a robust return on investment of over 200%, underscoring the sector's potential to stimulate inclusive economic growth and diversification. However, these gains come with trade-offs: projected environmental costs amounting to $35.2 million and social costs approaching $86 million remind us that unchecked development carries long-term consequences, particularly for small island ecosystems and communities.

This report thus goes beyond financial calculus. It challenges, us, policymakers, industry leaders, civil society, and communities to reflect on the kind of tourism future Seychelles wishes to embrace – one where economic ambitions are harmonized with environmental stewardship and cultural

integrity. By presenting a holistic cost-benefit analysis, it equips stakeholders with the evidence needed to craft informed, forward-looking strategies that align with Seychelles' Sustainable Tourism Master Plan and the nation's broader Vision 2033.

The successful realization of the insights and recommendations in this study will depend on the collective commitment of public institutions, private actors, community organizations, and international partners. Sustainable cruise tourism cannot be achieved through sectoral action alone; it demands cross-sectoral coordination, participatory planning, investment in green infrastructure, and a strong regulatory framework that upholds environmental and social safeguards.

On behalf of the Ministry of Foreign Affairs and Tourism I wish to express deep appreciation to the dedicated team at the Department of Tourism and to the UNECA SRO-EA for their technical and financial support. May this report serve not only as a technical document but as a catalyst for dialogue, innovation, and renewed resolve to build a cruise tourism sector that truly benefits all Seychellois, protects our natural legacy, and positions Seychelles as a global model for sustainable island tourism.

Sylvestre Radegonde
Minister for Foreign Affairs and Tourism

ACKNOWLEDGEMENT

This study on the cost-benefit analysis of the cruise sector was made possible through the generous technical and financial support of the United Nations Economic Commission for Africa (UNECA), Sub-Regional Office for Eastern Africa (SRO-EA). The study was meticulously led by Pius Odunga under the direct supervision of Geoffrey Manyara, with invaluable guidance from Emelang Leteane, Head of Sub-Regional Initiatives at SRO-EA.

The overall leadership for this initiative was initially provided by Mama Keita, Director of SRO-EA, and later taken forward by Andrew Mold, Officer in Charge of SRO-EA. Their strategic oversight and dedication ensured the study's successful completion. Special appreciation is also extended to the administration cluster of UNECA SRO-EA, whose contributions behind the scenes were instrumental in facilitating this project.

Heartfelt gratitude goes to Madam Sherin Francis, Principal Secretary for Tourism, and her dedicated team for their unwavering support. Their commitment was evident in their active role in providing logistical assistance, coordinating planning efforts, and facilitating stakeholder consultations, all of which were crucial in the execution of this study.

The research process was marked by extensive consultations and collaborations, drawing upon insights and expertise from a diverse array of stakeholders, including representatives from the public and private sectors, academia, and civil society organizations. Their engagement in discussions, constructive feedback, and invaluable contributions enriched the study significantly.

Sincere appreciation is, therefore, extended to all esteemed stakeholders and institutions whose participation and critical perspectives shaped the depth and quality of this analysis. Their willingness to share knowledge, exchange ideas, and challenge assumptions has played a fundamental role in ensuring that this study serves as a robust and insightful assessment of the cruise sector in Seychelles.

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ABBREVIATIONS

BPM	Balance of Payments Manual
CBS	Central Bank of Seychelles
CVS	Cruise Visitor Survey
DfCAPM	Department of Civil Aviation, Ports and Marine
DICT	Department of Information Communications Technology
DMC	Destination Management Companies
DoT	Department of Tourism
IRTS 2008	International Recommendations for Tourism Statistics 2008
MoFAaT	Ministry of Foreign Affairs and Tourism
NBS	National Bureau of Statistics
QLFS	Quarterly Labour Force Survey
SCCA	Seychelles Civil Aviation Authority
SHTA	Seychelles Hospitality and Tourism Association
SMSA	Seychelles Maritime Safety Administration
SLA	Seychelles Licensing Authority
SNA	System of National Accounts
SPA	Seychelles Port Authority
SRC	Seychelles Revenue Commission
SSTL	Seychelles Sustainable Tourism Label
STA	Seychelles Tourism Academy
STB	Seychelles Tourist Board
TSA	Tourism Satellite Account
UNWTO	World Tourism Organization
VES	Visitor Exit Survey

GLOSSARY

All Inclusive:
The cruise price in a package form where most of the costs are enveloped into one single price which could include meals, lodgings, and some activities. Keep in mind that most cruises also have specific add-ons, which can be anything from upgraded dining or alcohol to excursions.

Balance of Payments Manual (BPM):
A standardized framework by the International Monetary Fund (IMF) that guides the compilation of a nation's balance of payments, ensuring consistency in tracking financial transactions between Seychelles and other countries. For instance, port fees paid by foreign cruise lines are recorded here.

Central Bank of Seychelles (CBS):
The apex financial institution responsible for monetary policy, currency stability, and oversight of Seychelles' banking sector. The CBS monitors foreign exchange earnings from cruise tourism, critical for a tourism-dependent economy.

Cost-Benefit Analysis (CBA):
A systematic approach to estimating the strengths and weaknesses of alternatives by quantifying benefits and costs in monetary terms.

Cruise Visitor Survey (CVS):
A data collection tool used to analyze passenger demographics, spending patterns, and satisfaction levels. In Seychelles, CVS data informs marketing strategies and infrastructure planning.

Department of Civil Aviation, Ports and Marine (DfCAPM):
The government body regulating maritime activities, port operations, and aviation. It oversees cruise terminal upgrades and environmental compliance at ports like Victoria Harbour.

Disembarking Passenger:
A passenger who terminates his or her cruise at a certain port, which means the passenger goes ashore and does not re-join the vessel to continue further.

Embarking Passenger:
Any passenger embarking a ship from a given port. That is to say, they will embark at a port and stay on the cruise until the end or get off at another destination.

Crew:
The crew members consist of the staff and personnel involved on the ship, including those operating the ship and service staff attending to the passengers. Crew may also get off board for a short duration at ports but normally are expected to stay on board the ship.

Home Port:
A port from which a cruise ship operates or at which it normally begins and ends its cruises. It is usually the principal port for the greater part of the embarking and disembarking passengers. For the majority of cruise lines this could be Miami or Barcelona.

Port of Call:
A place visited by the cruise ship on its voyage, usually staying in the port for only a few hours to allow passengers to go ashore and explore the local destination. It is not considered as one of the points of origin or arrival. The turnaround port is a port where many passengers go ashore, and new passengers come aboard during the same day. Often used in conjunction with full "turnaround" of passengers

Economic Leakage:
The outflow of tourism revenue from Seychelles due to foreign-owned cruise lines, imported goods, or repatriated profits. For example, 50-70% of cruise passenger spending may leave the economy via global supply chains.

Marine Protected Area (MPA):
Zones where human activity is restricted to conserve biodiversity. Seychelles' MPAs, such as Aldabra Atoll, face pressure from cruise ship anchoring and waste discharge.

Multiplier Effect:
The ripple effect whereby $1 spent by a cruise tourist generates additional economic activity. In Seychelles, every dollar spent on tours may yield $1.50 in local supplier purchases.

Return on Investment (ROI):
A measure used to evaluate the efficiency of an investment.

Seychelles Hospitality and Tourism Association (SHTA):
A nonprofit advocating for sustainable tourism practices. The SHTA collaborates with cruise lines to reduce single-use plastics and promote eco-certified excursions.

Shore Excursion:
A tour or activity option offered to cruise passengers while the ship is in port. These may include tours of local culture, cities, snorkeling and hiking.

Sustainable Tourism:
Tourism that takes full account of its current and future economic, social, and environmental impacts.

System of National Accounts (SNA):
A UN-endorsed framework for measuring economic performance. Seychelles uses SNA metrics to quantify the cruise sector's contribution to GDP.

Tourism Satellite Account (TSA):
A standard statistical framework and main tool for the economic measurement of tourism.

Transit Passenger:
A passenger of a cruise coming into a port but not completing their journey at the port. They normally go ashore for several hours and later re-board the vessel to proceed with their cruise.

EXECUTIVE SUMMARY

This study provides a comprehensive analysis of the cruise tourism sector in Seychelles over an eight-year period, focusing on its economic, environmental, and social impacts. The cruise tourism industry is expected to contribute $531 million directly to Seychelles' Gross Domestic Product (GDP) from 2026 to 2033. When including multiplier effects—secondary impacts on other sectors of the economy—the total economic impact rises to $1,247 million. With a 205% return on investment (ROI) and a cost-benefit ratio (CBR) of 3.05, the sector demonstrates strong financial viability, generating nearly three dollars in benefits for every dollar invested.

The cruise sector is also anticipated to drive significant infrastructure development, with $273 million allocated for improving ports, roads, and public spaces by 2033. These infrastructure enhancements are expected to benefit both tourists and local residents. Additionally, the cruise sector is projected to generate crucial foreign exchange earnings, which are estimated to reach $60.4 million over the next eight years. The government is expected to earn $30.2 million in revenue from cruise-related activities, including port fees, VAT, and sustainability levies, up to 2033.

In terms of employment, the sector will create an estimated 144 direct full-time equivalent jobs in port operations, retail, logistics, and other sectors related to cruise tourism. Furthermore, $6 million in workforce training programs will be needed to enhance skills in customer service and environmental stewardship to support the long-term growth of the industry.

Despite these economic benefits, the sector faces significant environmental and social challenges. Environmental costs, including pollution management, coral reef degradation, and waste mitigation, lead to a net deficit of $2.3 million. This highlights the need for sustainable practices to minimize the ecological impact of the sector. Social costs, such as overcrowding, cultural commodification, and the strain on public infrastructure, contribute to a net loss of $75.2 million. These challenges underscore the need for a delicate balance between economic growth, environmental preservation, and community well-being.

Sensitivity analyses highlight both the vulnerabilities and opportunities within the sector. A 10% reduction in economic leakage (loss of revenue to foreign entities) could increase net benefits by $124.7 million, emphasizing the importance of developing local supply chains. On the other hand, a 20% increase in environmental costs would reduce net benefits by $7 million, indicating the risks of ecological strain. A 20% increase in social benefits would add $2.2 million to net benefits, suggesting that enhancing social equity can contribute positively to the sector's overall success.

Several key recommendations are put forward to maximize the potential of the cruise tourism sector in Seychelles:

1. To reduce the environmental footprint of the cruise sector, investments in sustainable practices are essential. These practices can help minimize pollution and energy consumption and ensure that the natural beauty of Seychelles is preserved for future generations.

2. Retaining more of the tourism revenue within Seychelles by developing local supply chains will help reduce economic leakage. Encouraging local businesses to provide goods and services for the cruise industry will ensure that more of the generated income benefits the local economy and contributes to sustainable economic growth.

3. Promoting community-driven models ensures that local communities are actively involved in tourism development and benefit more equitably from the sector. By focusing on community empowerment, Seychelles can create a more inclusive tourism industry that offers opportunities for local residents, particularly in small businesses and cultural preservation.

In conclusion, while the cruise tourism sector remains a significant economic contributor to Seychelles, its long-term success depends on the implementation of policies that promote sustainability, reduce economic leakage, and ensure that the benefits of tourism are shared more equitably among local communities. These efforts are essential to ensuring that cruise tourism continues to support Seychelles' development while protecting its environment and fostering social cohesion.

1 INTRODUCTION

1.0 Background

Seychelles, an archipelago of 115 islands located in the western Indian Ocean, has steadily evolved into a prominent cruise tourism destination over the last two decades. Its unique blend of rich biodiversity, pristine beaches, and a temperate climate make it an attractive location for international tourists. Tourism plays a vital role in Seychelles' economy, contributing directly or indirectly to approximately 72% of the nation's Gross Domestic Product (GDP). Additionally, tourism accounts for around 70% of total foreign exchange earnings and provides over 30% of employment. In 2019, Seychelles welcomed 384,204 visitors, more than four times its population, marking a 6.2% increase from 361,844 visitors in 2018, and generating an income of $602 million. European markets, especially from countries like France, the UK, Italy, Germany, and Switzerland, continue to be the cornerstone of Seychelles' tourism sector. However, the COVID-19 pandemic caused a significant decline in tourist arrivals, with numbers falling to 182,849 in 2021 (source: https://www.tradeportal.sc/tourism/).

The country's strategic location at the crossroads of Africa, Asia, and the Middle East enhances its accessibility as a prime port of call for regional and transoceanic cruise itineraries. The expansion of the cruise tourism industry in Seychelles has been largely facilitated by government efforts and significant investments in infrastructure. For example, the modernization of Victoria Harbour,

including the addition of deep-water berths and the improvement of terminal facilities, has enabled Seychelles to accommodate larger cruise vessels. These infrastructural upgrades have been complemented by supportive policy frameworks, such as the Seychelles Sustainable Tourism Master Plan (2022–2030), which aims to use cruise tourism as a tool for economic diversification and regional development.

However, the rapid growth of this sector has also introduced several complex challenges. From an environmental standpoint, the fragile marine ecosystems—particularly coral reefs and marine protected areas—are becoming increasingly vulnerable to damage caused by ship anchors, ballast water discharge, and air emissions. These environmental pressures not only jeopardize the ecological integrity of the islands but also threaten the long-term sustainability of tourism itself.

Socially, the seasonal influx of cruise passengers can overwhelm local infrastructure, especially on the main islands of Mahé and Praslin. Public services, including transportation, waste management, and healthcare, face significant strain during peak tourism periods. Additionally, the commercialization of cultural practices for tourist entertainment risks eroding the authenticity of Seychelles' unique Creole heritage.

In light of these dynamics, this report aims to undertake a comprehensive cost-benefit analysis of the cruise sector for the period 2026–2033. The objective is to evaluate whether the economic benefits derived from cruise tourism justify the associated environmental and social trade-offs and to offer strategic recommendations to ensure that cruise tourism becomes a sustainable and inclusive pillar of national development.

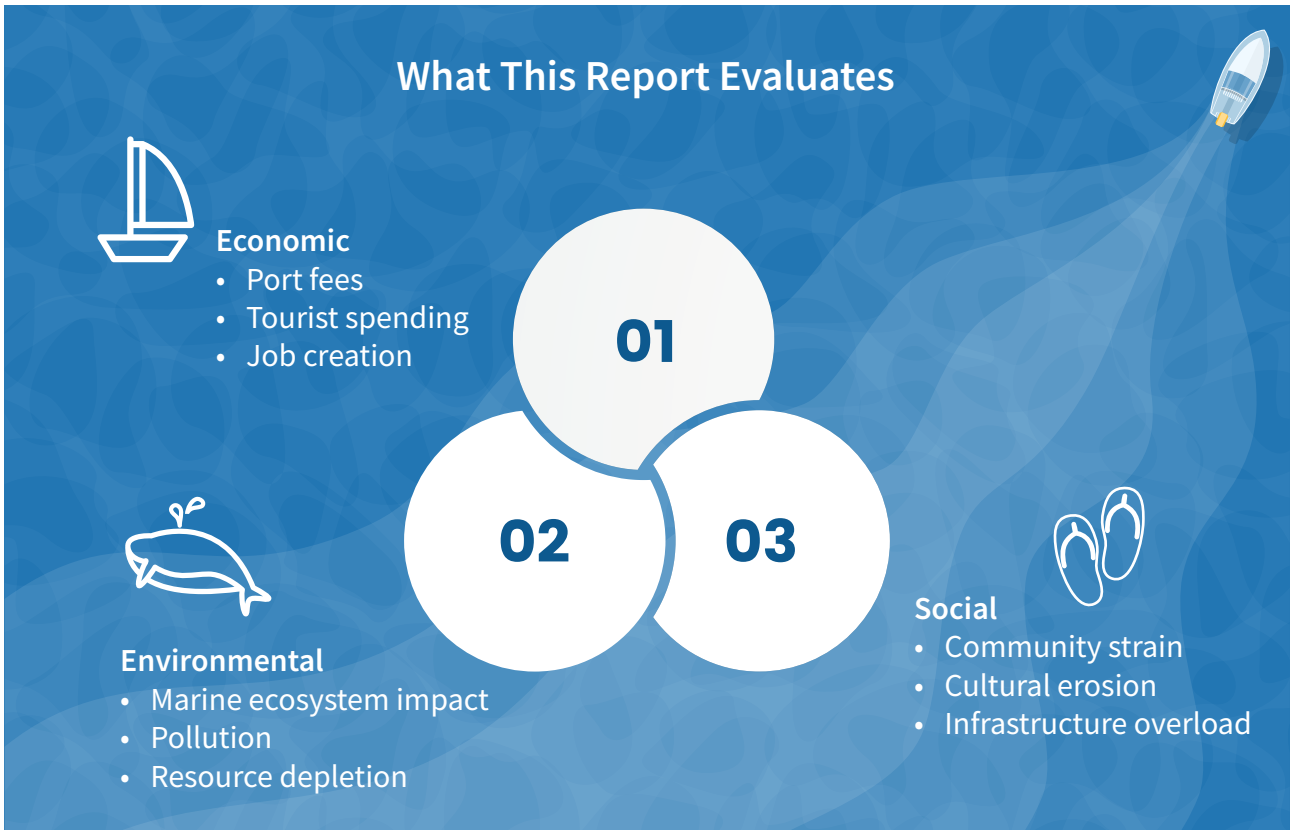
The next section of this introductory chapter outlines the development of the cruise industry in Seychelles, followed by the objectives, scope of work, and methodology used to conduct the cost-benefit analysis.

1.1 Seychelles Cruise Sector

Seychelles, known for its pristine beaches and unique biodiversity, has seen a notable rise in cruise tourism over the past two decades, establishing itself as one of the premier cruise destinations in the Indian Ocean. The rapid growth of the cruise industry has been driven by several factors, including Seychelles' strategic location, its appeal as an exotic and luxurious destination, and the worldwide surge in demand for cruise vacations.

The expansion of the cruise sector has been facilitated by the modernization of cruise terminals and significant improvements at ports to accommodate larger vessels while enhancing the overall visitor experience. These investments have boosted the local economy, especially in areas such as transportation, retail, and hospitality, creating new job opportunities and supporting ancillary businesses. However, the rapid growth of the industry has raised concerns regarding the balance between economic gains and the protection of the environment and social welfare.

1.2 Net Cost-Benefit Analysis Objectives



The primary objective of this cost-benefit analysis is to assess the overall impact of the cruise sector in Seychelles by systematically evaluating the economic, environmental, and social costs and benefits. Specifically, the analysis will quantify the economic contributions of the cruise industry by analyzing key revenue sources, such as port fees, tourist spending, and job creation.

In addition to economic factors, the study also seeks to evaluate the environmental consequences of cruise tourism. This includes assessing the degradation of marine ecosystems, pollution, and the depletion of natural resources that can result from increased cruise activity.

The analysis further aims to explore the social implications of increased cruise tourism, including the impact on local communities, the preservation of cultural heritage, and the strain on public infrastructure. By comparing the economic, environmental, and social costs to their corresponding benefits, the study will determine the net effect of the cruise sector in Seychelles.

1.3 Scope and Methodology

This Net Cost-Benefit Analysis (NCBA) provides a comprehensive evaluation of the multifaceted impacts of the cruise industry in Seychelles. The analysis considers the economic gains from increased tourism spending, employment opportunities, and government revenues, alongside

the environmental costs related to pollution and habitat loss. Furthermore, it evaluates a broad range of social effects, from impacts on community well-being to changes in cultural integrity and pressures on infrastructure.

A quantitative analysis was conducted using financial models and economic multipliers to calculate indicators such as the contribution to GDP, employment rates, foreign exchange earnings, government revenues, and infrastructure investments. Environmental performance was assessed using environmental impact assessments and statistical analyses of pollution levels, resource depletion, biodiversity loss, and the effectiveness of conservation efforts. Social metrics were examined through surveys, including Focus Group Discussions (FGDs) and standardized social impact measures, focusing on issues such as overcrowding, cultural erosion, social inequality, and overall community welfare.

Qualitative analyses included thematic reviews of interview transcripts and open-ended survey responses to identify emerging themes related to social cohesion, cultural impacts, and community sentiment. Case studies of both positive and negative experiences with cruise tourism were also analyzed to extract best practices and lessons learned.

The overall cost-benefit analysis totals all economic, environmental, and social costs and benefits to determine the net value of cruise tourism in Seychelles. Future cash flows were discounted at a rate of 5% to account for the time value of money. Sensitivity analyses were performed to assess the robustness of the findings by varying key assumptions such as discount rates, economic leakage rates, and growth projections. Scenario planning was conducted to explore potential outcomes under different economic, environmental, and social conditions.

Data was cross-validated from multiple sources to ensure accuracy and reliability, with subject matter experts consulted to review the methodologies and findings, further enhancing the credibility of the analysis.

While the approach is comprehensive, several limitations were acknowledged. These include data availability issues, particularly in relation to long-term environmental impacts, and the sensitivity of certain assumptions that could influence the results. This analysis also identifies areas for future research to address these gaps.

1.4 Structure of the Report

The report is structured into key sections, each examining different facets of the cost-benefit analysis of the cruise industry. These sections include the economic analysis, environmental assessment, social impacts, and policy recommendations, as well as an in-depth look at the sensitivity analyses and scenario planning that guide the conclusions and strategic recommendations.

2 BENEFITS OF THE CRUISE TOURISM SECTOR

2.0 Introduction

This section examines the economic, environmental, and social benefits of Seychelles' cruise tourism sector over the next eight years (see Appendix I, II and III).

2.1 Economic Benefits

2.1.1 Benefits

The cruise tourism sector in Seychelles brings substantial economic benefits, contributing both to the local economy and the broader national development agenda. It directly contributes to the GDP through tourist spending on goods and services such as tours, transportation and retail purchases. Additionally, national income benefits from port fees, docking charges, and services purchased by cruise lines. The sector also has an indirect economic impact by creating demand for suppliers and ancillary services, such as fuel and maintenance, thus boosting local businesses and further stimulating GDP growth. Forecasts indicate that the sector's contribution to GDP will increase substantially in the coming years.

Cruise tourism generates direct employment opportunities at restaurants, tour companies, and retail shops catering to tourists. It also supports employment in sectors such as hospitality, logistics, transportation, and event management. Indirect employment is created in service industries that supply services to cruise lines and related enterprises. The sector also demands an increasing number of skilled workers for port management, customer service, tourism marketing, and environmental stewardship, necessitating investments in training and providing better-paid jobs for locals.

The international tourists arriving on cruise ships spend foreign currency in Seychelles, contributing to the nation's foreign exchange reserves. This inflow is particularly important for Seychelles, a small economy that is highly dependent on imports and requires foreign currency to pay for these imports. Foreign exchange earnings from cruise tourism enhance the current account balance, reduce dependence on foreign borrowing, and stabilize the local currency, the Seychellois rupee.

The government benefits from revenues generated through various taxes and fees charged to cruise ships for services such as docking and port charges. Cruise tourists also contribute through value-added taxes on goods and services purchased locally. Moreover, the government may impose tourism or sustainability levies on cruise operators and tourists to fund conservation projects, infrastructure development, and other government initiatives that strengthen Seychelles' fiscal position. Companies operating under various licenses to provide services for cruise tourists, such as tour operators, transport companies, and hotels, also pay for permits, further contributing to government revenues.

Cruise tourism stimulates investments in both public and private infrastructure, including ports, roads, and transportation networks. Enhanced port facilities allow Seychelles to accommodate larger cruise ships and welcome more visitors, expanding tourism revenues accordingly. Investment in cruise tourism infrastructure often benefits other sectors of the economy, such as domestic tourism and trade, and can have positive spillover effects for local communities.

The growth of the cruise tourism industry opens opportunities for local entrepreneurs and small and medium-sized enterprises (SMEs) to directly sell goods and services to tourists. SMEs have diversified their offerings to include cultural tours and luxury experiences to meet tourists' expectations.

Economic benefits are distributed across islands and regions by encouraging the development of diverse tourism products that appeal to cruise passengers, reducing reliance on traditional beach tourism. Cruise tourism can also help mitigate seasonality in Seychelles' tourism industry by attracting visitors year-round, thereby stabilizing demand and providing consistent income for businesses and workers in the tourism sector. This stable demand fosters growth in sectors such as agriculture, fuel, and maintenance services, enhancing the general investment and business climate. Local firms can develop partnerships with cruise operators to offer customized tours and experiences, promoting long-term private sector development.

The cruise industry's growth does not neglect sustainability. Measures such as waste reduction, responsible garbage disposal, and fuel efficiency are increasingly being adopted by cruise liners, aligning with Seychelles' commitment to sustainable tourism. The government may impose or increase tourism levies earmarked for environmental conservation to support projects aimed at protecting fragile ecosystems.

Diversifying and expanding the cruise tourism sector positions Seychelles to reduce its vulnerability to external economic shocks. A fully developed cruise industry provides an additional revenue stream that can help buffer the economy during downturns in other sectors. Cruise tourism also has the potential to attract foreign investment in hospitality, retail, and infrastructure, which further contributes to economic development. Foreign investors may also be interested in developing hotels, restaurants, marinas, or other facilities to serve the cruise tourism market.

In summary, the cruise tourism sector plays a significant role in Seychelles' economy, driving growth in key areas such as GDP, employment, foreign exchange earnings, and government revenues. By stimulating investments in infrastructure, expanding the private sector, and promoting sustainable tourism, the cruise industry can contribute to Seychelles' long-term economic resilience and development. To fully influence these benefits, Seychelles must continue investing in infrastructure, environmental conservation, and workforce development to ensure the sustainable and equitable growth of the cruise sector across the islands.

2.1.2 Magnitude of Economic Benefits

This report indicates the economic benefits accruing from the cruise sector in Seychelles, pegged on contributions to the GDP, employment, and government revenues through investment in infrastructure and other related economic impacts forecasted to 2033 (Table 1).

TABLE 1: **Economic Benefits of Cruise Industry**

(See Appendix I)

COMPONENT	ASSUMPTION	EXPLANATION	ESTIMATED VALUE
Contribution to GDP	Direct and Indirect Contributions	The cruise sector contributes to GDP through direct spending by tourists on goods and services and through indirect effects such as supply chain expenditures (e.g., local businesses supplying cruise ships).	
	GDP Contribution	Estimated at $50 million (2024). Assuming 5% annual growth rate, the GDP contribution in 2033 would be $78 million (Appendix I).	
	Total GDP Contribution Over 8 Years		The cumulative contribution from 2026 to 2033 was calculated using the formula for the sum of a geometric series giving $531 million.
Employment Impact	Job Creation in Tourism and Related Sectors	The cruise sector generates direct employment in tourism-related fields and indirect jobs in areas such as agriculture, manufacturing, and services.	
	Job Creation		
	Total New Jobs Created Over 8 Years		An additional 144 jobs would be created over the next 8 years.

COMPONENT	ASSUMPTION	EXPLANATION	ESTIMATED VALUE
Government Revenue from Taxes and Fees	Government Revenue	Current Government Revenue (2024) is estimated at $3 million. Assuming a 5% annual growth rate, government revenue from the cruise sector in 2033 would be $4.7 million.	
	Total Government Revenue Over the Next 8 Years		The cumulative revenue from 2026 to 2033 would be $30.2 million.
Foreign Exchange Earnings	Earnings from Tourist Spending	Cruise passengers bring in foreign currency, which helps improve Seychelles' trade balance and foreign reserves.	
	• Foreign Exchange Earnings • Passengers disembarking (60% of 50,000) • Average length of stay is 2 days • Average spending per visitor is $100 • Therefore, 60%*50,000*2*100 =6m	Estimated at 6 million (2024). Assuming 5% annual growth rate, earnings in 2033 would be $9.3 million.	
	Total Foreign Exchange Earnings Over the Next 8 Years		The cumulative earnings would be $60.4 million.
Infrastructure Investment	Development of Ports, Roads, and Public Spaces	Investments in infrastructure to support the cruise sector benefit both tourists and locals by improving transportation and public amenities.	
	Investment (20% of total infrastructure investment of $107 million)	Annual Infrastructure Investment (2024) is estimated at $21.4 million. Assuming a 10% annual growth rate, the investment in 2033 would be $50 million.	

COMPONENT	ASSUMPTION	EXPLANATION	ESTIMATED VALUE
Infrastructure Investment *Cont.*	Total Investment Over the Next 8 Years		The cumulative investment will be $273 million.
Revenue for Local Businesses and SMEs	Tourist Spending on Local Goods and Services	Cruise passengers contribute to the local economy by purchasing souvenirs, food, local transportation, and other services.	
	Expenditure by Passenger	• Annual revenue for local businesses is estimated to be $10 million (2024). • Assume average spending per passenger of $100. • Assume $85 of the $100 goes to non-cultural activities (revenue from cultural activities is captured in the social section). • Assume a total of 50,000 passengers annually by 2033.	
	Total Revenue Over the Next 8 Years		The cumulative revenue for local businesses will be $34 million.
Investment in Human Capital and Training	Skill Development Programs for Tourism Workforce	Training programs enhance the quality of services provided to tourists and improve the employability of local workers.	
	Training Costs	• If 125 people receive training annually, then 1,250 people would be trained over 8 years. • Assume training cost per person of $6,000.	
	Total Investment in Training till 2033		$6 million.

COMPONENT	ASSUMPTION	EXPLANATION	ESTIMATED VALUE
Economic Diversification and Resilience	Reduced Dependence on Single Industries	The cruise sector helps diversify Seychelles' economy, making it more resilient.	
	Additional Income Streams	If 10% of households (2,934 households) engage in cruise-related economic activities, with an average annual income of $2,000 per household, this would result in $5.8 million annually.	
	Total Additional Income Over the Next 8 Years		Cumulative income will be $46.4 million.
Multiplier Effect on the Broader Economy	Spill-over Effects from Cruise Sector Growth	Increased demand for goods and services stimulates other sectors, such as construction and manufacturing.	
	Multiplier Effect	If the cruise sector has a multiplier of 1.5, every $1 spent by tourists generates $1.50 in additional economic activity.	
	Total Economic Impact Over the Next 8 Years		Given the projected $531 million direct GDP contribution, the total economic impact will be $796.5 million.
SUB TOTAL			**$1,246.5 MILLION**

The total estimated economic benefits associated with the Seychelles cruise sector over an eight-year period amount to approximately $1,246.5 million, including multiplier effects.

The quantified economic benefits show that the Seychelles cruise sector will continue making a plausible contribution toward economic growth, job opportunities, revenue for the government, foreign exchange earnings, and generally building resilience within the economy. Growth by the year 2033 will contribute to diversifying Seychelles' economy and render it more sustainable and robust.

2.2 Environmental Benefits

While the cruise sector in Seychelles has traditionally been associated with certain environmental challenges, it also presents numerous opportunities to contribute positively to the environment. With sustainable practices, growth in the cruise industry can have significant environmental benefits for the archipelago.

2.2.1 Benefits

The development of cruise tourism can bring about valuable environmental gains. With increasing global awareness of environmental sustainability, many cruise lines have initiated the adoption of environmentally friendly technologies and practices on their vessels. These measures include the use of cleaner fuels such as waste reduction programs and energy efficiency measures on-board.

Partnerships with environmentally conscious cruise liners can ensure that the ships visiting Seychelles are greener. Cruise operators are also promoting initiatives to reduce carbon emissions and environmental footprints through measures such as reducing single-use plastics and installing advanced wastewater treatment systems. Collectively, these initiatives contribute to minimizing the overall environmental impact of cruise tourism.

Another significant environmental benefit of the cruise industry is its support for marine conservation. Seychelles can enhance environmental taxes, levies, or fees directed at cruise tourism, with the proceeds used to fund marine conservation.

Education and awareness play a vital role in maximizing the positive environmental impacts of the cruise industry. Passengers can be educated in Seychelles' unique ecosystems and ways to minimize their environmental impact during their visits through onboard programs, local nature-conservation tours, and eco-conscious excursions. Responsible tourism guided by local legislation and cruise lines' sustainability policies can promote responsible waste reduction and behavior that does not harm the local environment.

To manage the environmental impact of cruise tourism, Seychelles should regulate visitor numbers and dispersion to prevent overloading fragile ecosystems.

Another environmental benefit associated with cruise tourism is the development of sustainable infrastructure. Such infrastructure includes eco-friendly terminals, shore side power facilities that allow ships to turn off their engines while docked, and waste and recycling facilities. Investment in sustainable infrastructure not only increases the capacity to accommodate larger cruise ships but also promotes environmentally sustainable practices. Ports in Seychelles can aim for certifications like the Green Marine environmental certification by implementing operational practices that reduce emissions, manage waste efficiently, and protect local marine life.

Cruise lines that meet stringent environmental standards further enhance the environmental contributions of the cruise sector. Seychelles can enforce stricter environmental regulations, such

as limits on fuel emissions, control of wastewater, and adherence to environmentally responsible waste disposal practices, ensuring only environmentally friendly ships can dock in Seychelles. Cruise ships that meet or exceed such standards could receive incentives like reduced port fees or priority docking, encouraging further investment in greener technologies and practices.

Cruise operators can support studies on marine biodiversity, coral reef monitoring, and other research initiatives in collaboration with local organizations or universities. Cruise passengers can also be involved in citizen science programs, such as wildlife monitoring and data collection on marine conditions or beach cleanups. This participation fosters greater public awareness and a deeper appreciation of the importance of protecting Seychelles' natural heritage.

The cruise sector also plays a role in the enforcement of Marine Protected Areas (MPAs). Cruises can be used to introduce tourists to MPAs in a regulated and non-destructive manner. Carefully monitored tours can help highlight the importance of MPAs while educating visitors about marine biodiversity without causing harm to these critical environments.

Partnerships with international environmental organizations also lead to significant environmental gains for the cruise industry. The Government of Seychelles can collaborate with international organizations and non-governmental organizations (NGOs) to implement initiatives that promote sustainable tourism among cruise operators. These initiatives can include best practices in marine conservation, sustainable tourism policies, and eco-certification for companies and tour operators that serve cruise passengers. As one of the main cruise destinations in the Indian Ocean, Seychelles is well-positioned to ensure the adoption of higher international environmental standards for the cruise industry. In this regard, Seychelles can serve as a role model for other island nations and encourage cruise operators to adopt sustainable practices that benefit global marine ecosystems.

While the cruise industry in Seychelles has faced criticism for contributing to environmental degradation, it also presents numerous opportunities to achieve significant environmental benefits if guided by appropriate policies and practices. By promoting eco-friendly activities, raising environmental awareness among tourists, and investing in green infrastructure, Seychelles can develop the cruise segment as a tool for environmental conservation and sustainable development. With strict environmental legislation and a commitment to sustainability from cruise operators, the development of the cruise industry can support Seychelles' commitment to the protection of natural resources and biodiversity.

2.2.2 Magnitude of Environmental Benefits

This section describes the magnitude of the environmental benefits accruing to the Seychelles cruise sector by focusing on carbon emission gains, conservation funding, management of waste, marine ecosystem protection, and other sustainability-related impacts (Table 2).

TABLE 2: **Environmental Benefits of Cruise Sector**

(See Appendix II)

ITEM	ASSUMPTION	EXPLANATION	Estimated Value	Estimated Value (8 Years To 2033)	Main Source Of Model Information
Contribution to Conservation Initiatives (Levy)	Annual Levy Increase	$20 per passenger levy for 50,000 tourists annually, with a 3% increase each year.	$1.0 million (initial)	$9.1 million	BIOFIN
Value of Ecosystem Services Maintained	Annual Growth in Ecosystem Value	Value of ecosystem services is expected to increase due to conservation success, with a 5% annual increase.	$1.5 million (initial)	$14.7 million	BIOFIN, NDC
Reduced Carbon Footprint	Annual Improvement in Carbon Reduction	Ongoing improvements in fuel technology, energy efficiency, and waste reduction with a 7% annual increase.	$0.25 million (initial)	$2.5 million	BIOFIN, NDC
SUB TOTAL				**$26.3 MILLION**	

NB:

i. *Increasing the conservation levy annually by 3% ensures contributions keep pace with inflation and conservation needs (Annual Levy Adjustment).*

ii. *The value of ecosystem services is enhanced as conservation measures succeed, with a 5% annual increase (Ecosystem Services Growth).*

iii. *Increasing adoption of clean technology and efficiency gains are projected to enhance the value of carbon reduction efforts by 7% per year (Carbon Reduction Efficiency).*

In the long term, the estimated total environmental benefits that could be associated with the Seychelles cruise sector over the eight-year period comes to about $32.9 million.

Environmental Benefits of the Cruise Sector in Seychelles

At a Glance

Potential Environmental Benefits:
Cruise tourism can drive positive change when paired with sustainable policies.

KEY ENVIRONMENTAL CONTRIBUTIONS

- Cleaner Ships
- Plastic Reduction
- Advanced Wastewater Treatment
- Sustainable Infrastructure
- Carbon Emission Reduction
- Support for Conservation
- Scientific Research
- Global Environmental Standards
- Support for MPAs

2.3 Social Benefits

Beyond its economic and environmental impacts, Seychelles' cruise industry also delivers several social benefits that positively affect local communities, culture, and overall well-being.

2.3.1 Benefits

One of the key social benefits of the cruise sector is cultural exchange and awareness. Cruise tourism introduces Seychelles to people from different parts of the world, enhancing interactions between residents and visitors. This interaction fosters understanding, tolerance, and respect for each other's cultures, traditions, and ways of life. Cruise passengers often participate in cultural tours and experiences, providing an opportunity for locals to showcase and preserve their culture. This helps preserve traditional music, dance, arts, and crafts through performances and exhibitions for tourists. These interactions also provide opportunities for locals to improve their language skills in English, French, and other languages spoken by cruise passengers, facilitating better cultural exchange and communication.

Another significant social benefit of the cruise industry is community empowerment. Cruise tourism creates opportunities for small businesses to develop and sell local goods, empowering community members to become economically self-sufficient and independent. Moreover, the cruise industry's demand for cultural experiences encourages local communities to safeguard and promote traditional art forms, crafts, music, and folklore. Artisans, performers, and cultural practitioners benefit economically by sharing their heritage with visitors, ensuring these traditions continue for future generations. Tourism initiatives focused on culture such as village tourism, food, and handicraft workshops not only provide authentic experiences for tourists but also help conserve and promote local talents and culture.

The sector also creates employment opportunities, particularly for women and youth. Women often find work in hospitality, retail, and as local tour guides, while youth receive training in customer service, contributing to a socially inclusive and gender-responsive tourism sector. As the cruise industry develops, new educational and training opportunities emerge. Institutions offering hospitality and tourism programs benefit from the increased demand created by cruise tourism. Additionally, the cruise industry's focus on eco-tourism and sustainability promotes environmental education for local communities, especially those interacting regularly with tourists. Training in eco-tourism practices instills a sense of environmental stewardship among residents.

Other social benefits provided by the cruise industry include improved public services and infrastructure. Investments in ports, roads, transportation networks, and other public facilities for cruise tourism have positive spillover effects that benefit residents as well. Enhanced transportation networks and upgraded public spaces improve accessibility and quality of life for local citizens. Cruise tourism also drives the need for improvements in health facilities, sanitation, and safety in tourist areas.

Health and safety standards are also improved through cruise tourism. Seychelles has heightened public health standards to accommodate cruise passengers, focusing on hygiene, food safety, and medical readiness. Improvements in health infrastructure to meet the needs of tourists also benefit local residents. Safety protocols and infrastructure receive similar upgrades, as cruise ships require developed emergency services, maritime safety measures, and security arrangements. These enhancements provide a safer environment for local communities and visitors alike.

Another significant social benefit of cruise tourism is the revitalization of underdeveloped regions. Many cruise itineraries include stops at smaller, less developed islands and regions, helping spread the social and economic benefits of tourism beyond major urban centers. This revitalization brings new revenue sources to these communities, whether rural or coastal, and fosters local economic growth. Cruise tourism also encourages governments to invest in infrastructure such as transportation links, community facilities, and utilities that benefit both residents and tourists.

The cruise sector can also contribute to sustainable and responsible tourism. Eco-tourism and responsible tourism initiatives encourage local communities to adopt resource management practices, such as waste reduction, conservation management, and energy efficiency. These practices not only improve the environment but also enhance the living standards of people in those areas. Responsible tourism initiatives also promote direct engagement between cruise passengers and local communities, fostering mutual respect and cooperation. Community-based tourism initiatives, such as guided excursions and homestays, provide value-driven relationships between visitors and residents, enriching the tourism experience for both. Cruise tourism also promotes social inclusion and community cohesiveness. The industry provides job opportunities for women, youth, and underprivileged individuals, helping to reduce social inequalities. Community-based tourism models adopted by cruise lines and local operators ensure that tourism revenues benefit local communities directly. This helps foster social cohesion as communities unite in responsibly managing tourism and sharing its benefits.

Finally, the cruise industry improves cultural diplomacy and international relations. By welcoming tourists from around the world, Seychelles enhances its international reputation as a safe, hospitable, and culturally rich destination. Positive international relations and diplomatic ties can be strengthened, as Seychelles' hospitality contributes to the country's positive global image. Through cruise tourism, Seychelles can use its rich cultural heritage to foster goodwill and mutual understanding with international visitors. This "soft power" helps strengthen Seychelles' international standing and encourages cross-cultural partnerships.

The cruise industry in Seychelles offers numerous social benefits that contribute to the well-being and development of local communities. It fosters cultural exchange, empowers entrepreneurship, preserves cultural heritage, and expands public services, improving the quality of life for Seychelles residents while creating opportunities for economic and social development. With a commitment to sustainable tourism practices, these social benefits—along with responsible management—can secure the cruise sector as a vital contributor to Seychelles' comprehensive development while preserving its rich cultural and natural heritage for future generations.

2.3.2 Magnitude of Social Benefits

The cruise sector brings many social benefits, like creating jobs, generating incomes, preserving culture, empowering communities, and improving infrastructure, health, and education (Table 3).

TABLE 3: **Social Benefits of Cruise Sector**

COMPONENT	ASSUMPTION	EXPLANATION	ESTIMATED VALUE
Cultural Preservation and Promotion	Revenue from Cultural Activities	Tourists often participate in cultural experiences such as performances, festivals, and craft markets.	
	Cultural Tourism Participation		If 10% of cruise passengers (10,000 passengers by 2033) participate in cultural activities and spend an average of $15 each, the annual revenue generated would be $150,000 annually.
	Total Revenue from Cultural Tourism (2026–2033)		Over 8 years, this would generate $1.2 million.
Infrastructure Development and Social Amenities	Investment in Public Infrastructure		
	Spill-over Benefits	These investments improve transportation, utilities, and public spaces, enhancing the quality of life for residents.	
	Total Revenue from Infrastructure Development and Social Amenities over an 8-year Period		$9.6 million
SUB TOTAL			**$10.8 MILLION**

According to the estimates, the overall contributions of social benefits generated within the Seychelles cruise sector in the eight-year period amount to approximately $10.8 million. These detailed quantifications underpin the level of social benefits accruable to the Seychelles economy through the cruise sector by 2033. Indeed, with possible cruise sector growth driving positive social change, it further underpins sustainable tourism principles while enhancing economic resilience in the country.

Social Benefits of the Cruise Sector in Seychelles

ENRICHING CULTURE & COMMUNITIES

Cultural Exchange
Interaction between tourists & locals enhances mutual understanding.

Heritage Preservation
Local music, dance, crafts showcased to visitors.

Language & Skills Development
Locals improve multilingual communication skills.

Empowering Women & Youth
Jobs in hospitality, guiding, tourism services.

Support for Small Businesses
Local artisans & producers benefit from visitor spending.

Training & Education
Eco-tourism and hospitality programs expand.

INCLUSIVE GROWTH

01 Revitalizing Remote Regions

02 Community-Based Tourism

03 Social Inclusion

04 Eco-Conscious Living

3 COSTS OF CRUISE SECTOR

3.0 Introduction

This section covers economic, environmental and social costs of the Seychelles cruise sector over a period of eight years (see Appendix I, II and III).

3.1 Economic Costs

Although tourism is the backbone of the Seychellois economy, the cruise sector presents unique challenges, yielding significant economic benefits while also incurring considerable costs. An analysis of the economic costs of the cruise industry in Seychelles has identified several key areas of concern.

3.1.1 Costs

The primary economic costs are associated with infrastructure that sustains the industry in the long run. Seychelles will need to invest heavily in building and maintaining port facilities capable of accommodating large cruise ships. This includes dredging to accommodate deeper drafts, strengthening docks to handle the size and weight of modern ships, and upgrading navigation

systems to ensure safety and efficiency. Additionally, there are recurring expenses that add to the overall economic cost, such as personnel for customs and immigration services, security staff to maintain optimal safety levels, and maintenance personnel to keep facilities in good condition. Moreover, the space used for berthing cruise ships could otherwise be used for alternative economic activities, such as cargo shipping or supporting the local fishing industry, which is an important sector of the Seychellois economy, highlighting the opportunity cost involved.

The environmental costs are also substantial. Activities associated with cruise ships, including anchor damage, the discharge of wastewater, brine from desalination plants, hot water from thermal distillation, solid waste and oil spills, often cause large-scale destruction of marine ecosystems, particularly coral reefs and marine life. In some cases, the rehabilitation of these ecosystems often incurs significant financial costs, requiring long-term investments and resources. Furthermore, the government may be required to allocate resources for monitoring and controlling pollution and implementing effective waste management practices, which may be strained by the presence of cruise ships. Emissions from cruise ships also contribute to global warming, putting Seychelles and other island nations at greater risk of rising sea levels and more frequent severe storms, which have damaging effects on both the environment and the economy.

Another concern related to cruise tourism is economic leakage. Unlike land-based tourists, cruise passengers tend to spend less locally, as most of their dining and shopping occurs onboard the ship, reducing revenue for local businesses hoping to benefit from tourist spending. Therefore, opportunities for restocking supplies in the country should be expanded. Most cruise lines are foreign-owned, meaning much of the revenue generated does not remain in the Seychelles economy. Governments may also offer tax breaks or reduced port fees to attract cruise lines, which, while potentially beneficial for attracting business, can further erode potential revenue that could otherwise be reinvested locally.

Over-tourism is another challenge, as it can strain local resources such as water supplies, waste management systems, and public transportation infrastructure. An influx of visitors can also cause friction with the local community, negatively affecting their quality of life. The social dynamics, traditions, and way of life of the local community may be impacted by foreign visitors, leading to a dilution of local culture. Additionally, the increased pressure on basic facilities—such as the healthcare system and police—due to rising immigration can result in increased government expenditures and, over time, a decline in the quality and availability of public services for residents.

These challenges are further compounded by the costs of regulation and enforcement. Ensuring that cruise ships comply with environmental and safety standards requires investment in monitoring and enforcement mechanisms, such as regulatory frameworks, frequent inspections, and compliance standards. Addressing violations of such regulations also involves high legal costs for prosecuting offenders and handling potential international disputes that may arise from non-compliance with established environmental standards.

In summary, while the cruise sector offers certain economic benefits for Seychelles—such as increased revenue and tourism-related employment—it also involves substantial costs. These

costs range from infrastructure development and maintenance to environmental degradation and pollution, economic leakages, social impacts on the local population, and the financial burdens of regulatory and enforcement measures. Balancing these costs with the benefits requires careful planning and strategic policy implementation, with an emphasis on ensuring that the cruise sector contributes to Seychelles' economy without compromising the nation's environmental integrity and social well-being.

3.1.2 Magnitude of Economic Costs

Some of the economic costs from the cruise sector are linked to infrastructure development, environmental management, government expenditures, opportunity costs, and negative externalities (Table 4).

TABLE 4: **Economic Costs of Cruise Sector**

COMPONENT	ASSUMPTION	EXPLANATION	ESTIMATED VALUE
Infrastructure Development Costs	Port Upgrades and Maintenance	Investments are required to accommodate larger cruise ships, improve docking facilities, and maintain existing port infrastructure.	
	Annual Port Upgrade Costs	Assuming an average annual cost of $5 million for port upgrades and maintenance, over 8 years, the total investment required would be $40 million.	
	Additional Costs for Expanding Facilities	If further expansions are needed to support increased cruise traffic, estimated at $2 million annually, the additional costs over 8 years would be $16 million.	
	Total Infrastructure Development Costs Over 8 Years		$72 million (including contingencies)
Environmental Management and Mitigation Costs	Waste Management and Pollution Control	Costs associated with managing waste from cruise ships, addressing marine pollution, and implementing environmental protection measures.	
	Annual Waste Management Costs	Average yearly expenses for cleaning of rivers, roads, waste collection, landfill management etc. is $15 million (not including pollution control).	

COMPONENT	ASSUMPTION	EXPLANATION	ESTIMATED VALUE
Environmental Management and Mitigation Costs *Cont.*	Marine Conservation and Monitoring	Costs for monitoring marine ecosystems, restoring coral reefs, and expanding MPAs, estimated at $3 million annually: $24 million over 8 years.	
	Total Environmental Management Costs Over 8 Years		$144 million
Government Administrative and Regulatory Costs **Government Administrative and Regulatory Costs**	Regulation and Enforcement	Costs incurred by the government for regulating cruise activities, monitoring compliance with environmental standards, and managing tourism-related services.	
	Annual Regulatory Costs	Estimated at $1.5 million annually, covering enforcement of environmental regulations, tourism management, and administrative tasks.	
	Additional Government Expenditures	If increased cruise traffic necessitates extra expenditures, such as upgrading customs and immigration services, it could cost an additional $0.5 million annually.	
	Total Administrative and Regulatory Costs Over 8 Years		$16 million
Opportunity Costs	Loss of Alternative Land Uses	Investing in cruise tourism infrastructure may limit the potential for other land uses, such as real estate development or conservation initiatives.	
	Land Opportunity Costs	If land used for port expansions could have been utilized for high-value real estate or other projects, with potential returns of $2 million annually, the opportunity cost over 8 years would be $16 million.	
	Alternative Tourism Revenue	If cruise tourism leads to a shift away from other higher-value tourism activities (e.g., luxury eco-tourism) that could generate $1 million annually in lost revenue.	
	Total Opportunity Costs Over 8 Years		$24 million

COMPONENT	ASSUMPTION	EXPLANATION	ESTIMATED VALUE
Environmental Degradation and Remediation Costs	Costs of Addressing Environmental Damage	Cruise tourism can contribute to environmental degradation, such as coral reef damage, water pollution, and loss of biodiversity, leading to remediation costs.	
	Coral Reef Restoration Costs	Estimated at $500,000 annually for coral reef restoration and marine ecosystem rehabilitation.	
	Pollution Clean-Up Costs	Costs associated with cleaning up oil spills, waste dumping, or other forms of marine pollution, estimated at $1 million annually.	
	Total Environmental Degradation and Remediation Costs Over 8 Years		$12 million
Social Costs Related to Tourism Management	Managing Overcrowding and Tourist Impact	Costs incurred to manage increased tourism's impact on local communities, such as infrastructure strain, social services, and cultural preservation.	
	Annual Social Management Costs	Estimated at $1 million annually to manage tourism-related issues such as overcrowding, traffic, and public space maintenance.	
	Cultural Preservation Efforts	Costs to support cultural programs and mitigate the social impact of tourism, estimated at $500,000 annually.	
	Total Social Costs Over 8 Years		$12 million
Increased Wear and Tear on Infrastructure	Maintenance and Repair Costs	Increased cruise traffic can lead to higher wear and tear on infrastructure, necessitating more frequent maintenance and repairs.	
	Road and Public Facility Maintenance Costs	Estimated at $1.2 million annually due to increased tourist usage.	
	Port Facility Repairs	Maintenance costs for port facilities increase by $800,000 annually.	
	Total Maintenance and Repair Costs Over 8 Years		$16 million

COMPONENT	ASSUMPTION	EXPLANATION	ESTIMATED VALUE
Costs Due to Potential Negative Externalities	Disruption to Local Industries	Cruise tourism can negatively impact local industries such as fishing or traditional artisanal activities due to competition for resources. Over-tourism may increase traffic and congestion, thus reducing labor productivity. Rising tourism demand can drive up real estate prices and strain local transportation and services.	
	Impact on Local Fishing Industry	Competition for marine resources results in a $500,000 annual loss for the fishing industry.	
	Loss of Cultural Heritage	Costs associated with the potential commercialization or degradation of cultural practices, estimated at $300,000 annually.	
	Total Costs Due to Negative Externalities Over 8 Years		$6.4 million
SUB TOTAL			**$302.4 MILLION**

The estimated total economic costs associated with the Seychelles cruise sector over the eight-year period amount to approximately $302.4 million. These have underlined the need to apply sustainable tourism practices, manage negative impacts, and invest in longer-term solutions which balance economic benefits against the costs likely incurred.

3.2 Environmental Costs

The Seychelles archipelago is a “biodiversity hotspot with high levels of endemism” featuring extensive marine ecosystems, beautiful beaches, and unique wildlife. While the cruise tourism industry forms an important part of Seychelles’ economy, it also raises significant environmental concerns. The environmental costs associated with the cruise industry in Seychelles are numerous and demand serious attention.

3.2.1 Costs

One of the most serious impacts of cruise ships is the degradation of marine ecosystems. Cruise ships traveling near the shore cause physical damage to coral reefs and other ecosystems (such as seagrass) by grounding and dropping anchors, while propellers generate turbulence that suspends

sediments, which can smother corals and inhibit their ability to photosynthesize. This makes corals more susceptible to stress and even death, thereby endangering these valuable ecosystem. Moreover, cruise ships produce large volumes of sewage and greywater. If not properly treated, the disposal of these wastes into the ocean introduces nutrients and pathogens, leading to algal blooms, which pose health risks to both marine life and humans. Accidental oil and fuel spills further exacerbate these problems by contaminating water, harming wildlife, and necessitating costly clean-up efforts. Additionally, ballast water discharged by ships often introduces invasive species into coastal waters.

Air pollution and climate impact are also major environmental costs associated with the cruise industry. Cruise vessels are among the largest emitters of carbon dioxide (CO_2), which contributes to global climate change. Increased greenhouse gas emissions result in more frequent extreme weather events and rising sea levels—direct threats to island nations like Seychelles. Additionally, sulfur oxides (SO_x), nitrogen oxides (NO_x), and particulate matter emitted by cruise ship engines degrade air quality. Acid rain caused by these pollutants has harmful consequences for both terrestrial and marine environments.

Waste management is another critical issue. Cruise ships generate large quantities of solid waste, including plastics, food waste, and packaging materials. Improper disposal of this waste can create marine litter, posing ingestion and entanglement risks to wildlife. Hazardous waste, such as batteries, electronic waste, and chemicals, require proper disposal to prevent environmental contamination. When these substances are not managed correctly, toxic materials may leach into the environment, causing long-term ecological damage.

Noise pollution is another environmental cost often overlooked in cruise tourism. Noise generated by ship engines and propellers causes underwater disturbances that affect the communication, navigation, and feeding patterns of marine animals, such as whales and dolphins. Additionally, above-water activities and tourist excursions can disturb nesting birds and other sensitive species on the islands, compounding ecological disruptions. The waves generated by large vessels contribute to coastal erosion, endangering beaches and mangrove forests that protect against storm surges and serve as important habitats for marine life. Building and expanding port facilities often involves dredging, leading to the loss of coastal habitats like seagrass beds and coral reefs. Furthermore, the presence of large cruise ships alters the natural beauty of the seascape, resulting in aesthetic degradation that affects the quality of life for residents and diminishes Seychelles' appeal as a pristine tourist destination.

Another environmental concern is the increased pressure on fish stocks. The demand for seafood from cruise tourists can lead to overfishing, negatively affecting fish populations and degrading the health of marine ecosystems. Additionally, human activities associated with cruise tourism can disrupt the breeding grounds of endemic species—many of which are already threatened or endangered, posing a further threat to Seychelles' unique biodiversity.

Cruise ships also place a strain on local freshwater resources, which are already limited for local communities and ecosystems. This added pressure can lead to conflicts over water use and

exacerbate resource shortages on the islands. Tourists arriving on cruise ships can also overwhelm the capacity of local waste treatment facilities, leading to the discharge of untreated or partially treated wastewater into the environment. This degrades water quality and poses serious risks to human health and marine life.

Another significant environmental concern is the increased carbon footprint associated with the cruise sector. Most onshore excursions involve transportation and activities that contribute to greenhouse gas emissions and environmental disturbances, further aggravating the impact of the cruise industry on climate change and local ecosystems.

3.2.2 Magnitude of Environmental Costs

These costs range from waste management to pollution control, degradation of ecosystems, resource depletion among other negative externalities pertinent to the Seychelles cruise sector. A detailed quantification of such costs is projected over the eight-year period (Table 5).

TABLE 5: **Environmental Costs of Cruise Sector**

ITEM	ASSUMPTION	EXPLANATION	Estimated Value (Per Year)	Estimated Value (8 Years To 2033)	Main Source Of Model Information
Marine Ecosystem Damage Mitigation	Reef Anchoring Mitigation	Installation and maintenance of mooring buoys to protect coral reefs from anchor damage.	$0.85 million	$6.8 million	BIOFIN, NDC
MPA Management	Increase in Marine Protected Areas	Funding for staffing, monitoring, and enforcement of MPAs to manage tourism and marine traffic.	$0.4 million	$3.2 million	BIOFIN, NDC
Reef Restoration Projects	Rehabilitation of Coral Reefs	Restoration to rehabilitate damaged coral reefs to maintain marine biodiversity.	$0.2 million	$1.6 million	BIOFIN, NDC
Biosecurity Measures	Invasive Species Prevention	Inspection, monitoring, and treatment programs to stop the introduction of invasive species.	$0.2 million	$1.6 million	BIOFIN, NDC
Waste Management Modernization	Upgrading Waste Treatment Systems	Accommodation of appropriate waste management/sorting infrastructures at the port to improve sewage systems and energy recovery facilities.	$0.35 million	$2.8 million	BIOFIN, NDC

ITEM	ASSUMPTION	EXPLANATION	Estimated Value (Per Year)	Estimated Value (8 Years To 2033)	Main Source Of Model Information
Mangrove & Seagrass Conservation	Protection of Blue Carbon Ecosystems	Protecting and restoring these degraded habitats and seagrass ecosystems to enhance carbon sequestration.	$0.4 million	$3.2 million	NDC
Monitoring and Enforcement	Protection Enforcement for Blue Carbon Ecosystems	Monitoring and enforcement to prevent illegal activities impacting ecosystems.	$0.3 million	$2.4 million	NDC
Nature-Based Solutions	Coastal Protection	Investment in nature-based solutions like planting mangroves to protect coastlines.	$0.3 million	$2.4 million	NDC
Community-Based Adaptation Initiatives	Community Climate Adaptation Projects	Local projects to improve resilience against climate change impacts.	$0.2 million	$1.6 million	NDC
Research and Development	Climate Adaptation Research	Understanding climate impacts and adaptive measures for ecosystems Comprehending the effectiveness of PAs in monitoring and undertaking research on threatened species for conservation and for habitat rehabilitation etc. Establishing long term trends for ecosystems and species, which are all necessary to inform management decisions	$0.1 million	$0.8 million	NDC
Aesthetic Value Loss	Visual and Sensory Pollution	Mitigation of visual pollution, noise pollution, and maintaining natural viewscapes.	$0.2 million	$1.6 million	NDC
Property Impact	Infrastructure Strain	Additional costs to infrastructure maintenance, potential property devaluation, and opportunity costs of port allocation.	$0.35 million	$2.8 million	NDC

ITEM	ASSUMPTION	EXPLANATION	Estimated Value (Per Year)	Estimated Value (8 Years To 2033)	Main Source Of Model Information
Environmental Regeneration	Extended Ecosystem Recovery	Additional costs associated with longer recovery timeframes and reduced ecosystem resilience.	$0.4 million	$3.2 million	NDC
Option Value Loss	Future Use Opportunities	Value of foregone future opportunities due to current usage patterns.	$0.15 million	$1.2 million	NDC
SUB TOTAL				**$35.2 MILLION**	

The total estimated environmental cost of the Seychelles cruise industry is about $35.2 million for a duration of eight years.

3.3 Social Costs

While the cruise sector contributes significantly to economic growth in Seychelles, it also imposes substantial social costs on the local population.

3.3.1 Costs

These costs include cultural dilution and commodification, which are inherent risks of international tourism development. The influx of tourists may accelerate the erosion of indigenous customs, traditions, and languages, as locals often feel compelled to accommodate tourist expectations. This accommodation frequently leads to the commercialization of cultural practices, turning sacred rituals or traditions into performances for the entertainment of tourists. Such commercialization diminishes the cultural significance of these practices and may ultimately lead to a loss of authenticity.

Over-tourism and overcrowding further exacerbate social tensions. When cruise-ship passengers arrive in large numbers, local infrastructure, including transportation, sanitation facilities, and other public amenities, comes under immense pressure. This reduces the availability and quality of services for residents and disrupts daily life, leading to frustration and a decline in quality of life. The continuous influx of tourists disrupts the peaceful routines of local people, creating an atmosphere of overcrowding, stress, and unsustainability.

Another critical issue associated with cruise tourism is inequality. The economic benefits of the cruise industry are often concentrated among foreign interests and a small number of local businesses, which increases income disparities at the community level. This uneven distribution of income can result in economic disparities, with only a few individuals benefiting significantly from the industry's growth, while the wider community gains little. Additionally, increased demand for goods and services can drive up local prices, making essential items unaffordable for many residents and contributing to inflation and a higher cost of living.

Employment in the cruise industry also presents challenges. While the industry creates job opportunities, these are often low-paying, seasonal, and insecure, with limited prospects for career advancement. This leads to precarious employment for locals, making their livelihoods vulnerable to fluctuations in tourism. Overdependence on tourism can destabilize the local economy, as downturns in the tourism sector have ripple effects on employment and overall welfare.

Social disruption extends beyond economic factors, encompassing an increase in crime and social issues. The presence of larger numbers of tourists can lead to petty crime, drug use, and other social problems, which put additional pressure on law enforcement and social services. Cultural conflicts may also arise due to misunderstandings or differing norms of behavior between tourists and locals, undermining social cohesion and fostering distrust and resentment within communities.

Cruise tourism also places pressure on public services. The influx of tourists can strain healthcare facilities, reducing access and quality of care for residents. Educational resources may be redirected to support tourism infrastructure, detracting from the quality and funding of local education. This overemphasis on tourism, often at the expense of local needs, can hinder the development of essential community services.

Environmental health risks are closely linked to the social costs of cruise tourism. Inadequate waste disposal from cruise ships can lead to environmental degradation and negatively affect residents' health. Overuse of local resources, such as water and food supply, depletes their availability for residents, leading to scarcity and potential conflicts over resource use. These environmental pressures directly affect public health and overall well-being, undermining residents' quality of life.

Another significant social cost is the loss of community identity. Catering extensively to tourists often shifts community priorities away from local needs and traditions, leading to the erosion of cultural heritage and social cohesion. Younger generations may become disengaged from traditional practices, choosing instead to work in the tourism industry rather than preserving their cultural heritage. This shift in focus results in the gradual erosion of community values and the loss of unique cultural identities.

The movement of large numbers of people also raises health and safety concerns as was the case during the COVID-19 pandemic. Interactions between tourists and residents increase the risk of disease transmission, putting the health of isolated communities at greater risk. Additionally, increased traffic and tourism-related activities contribute to higher rates of accidents and injuries, compromising the safety of both residents and visitors.

3.3.2 Magnitude of Social Costs

The social costs associated with the Seychelles cruise industry may be considered as the potential detrimental effects on host communities, cultural heritage, social infrastructure, and quality of life (Table 6).

TABLE 6: **Social Costs of Cruise Sector**

COMPONENT	ASSUMPTION	EXPLANATION	ESTIMATED VALUE
Costs Related to Overcrowding and Infrastructure Strain	Increased Pressure on Social Services	Cruise tourism can lead to overcrowding in popular destinations, putting a strain on public services such as healthcare, transportation, and waste management.	
	Impact on Local Communities	High volumes of tourists can reduce the quality of life for residents by increasing traffic, noise, and congestion.	
	Social Services Costs	If additional investments in healthcare, transportation, and waste management are required at an estimated $3 million annually, the total cost over 8 years would be $24 million.	
	Community Impact Mitigation	To address the negative impact on local communities, mitigation efforts such as traffic management and noise reduction programs may cost $1.5 million annually and $12 million over an 8-year period.	
	Total Overcrowding and Infrastructure Strain Costs till 2033		$36 million
Cultural Degradation and Loss of Cultural Heritage	Commercialization of Culture	The arrival of tourists may lead to the commercialization of cultural practices, reducing the authenticity of traditional customs and festivals.	
	Cultural Preservation Costs	Efforts may be needed to maintain cultural heritage and support local artisans whose crafts may be undervalued due to mass-produced souvenirs.	
	Cultural Preservation Programs	Estimated at $600,000 annually to fund cultural initiatives, support local artisans, and protect traditional customs.	
	Costs of Managing Cultural Tourism	Expenses associated with regulating cultural tourism to ensure it benefits local communities, estimated at $400,000 annually.	
	Total Cultural Degradation and Preservation Costs till 2033		$8 million

COMPONENT	ASSUMPTION	EXPLANATION	ESTIMATED VALUE
Social Inequality and Displacement Costs	Economic Disparities	The cruise sector may contribute to uneven economic benefits, where certain areas or groups profit while others experience little gain.	
	Rising Cost of Living	Increased tourism demand can drive up the costs of goods, services, and housing, affecting local affordability.	
	Social Program Costs to Address Inequality	If programs to promote inclusive economic benefits and reduce disparities cost $450,000 annually, the total cost over 8 years would be $3.6 million.	
	Housing and Living Cost Mitigation	Programs to control rising costs in affected areas, estimated at $350,000 annually.	
	Total Social Inequality and Displacement Costs till 2033		$6.4 million
Increased Wear and Tear on Public Spaces	Higher Maintenance Costs for Public Areas	The heavy use of beaches, parks, and public facilities by tourists increases the need for maintenance and repairs.	
	Impact on Natural Attractions	Popular natural attractions may suffer from overuse, leading to environmental degradation and the need for rehabilitation.	
	Maintenance and Repair Costs	Estimated at $700,000 annually for maintaining public spaces affected by cruise tourism.	
	Rehabilitation of Natural Attractions	Costs to restore beaches, parks, and other public areas, estimated at $350,000 annually.	
	Total Wear and Tear on Public Spaces Costs till 2033		$8.4 million
Tourism-Related Crime and Safety Costs	Increased Risk of Petty Crime	Higher numbers of tourists may lead to an increase in petty crime, requiring additional law enforcement resources.	
	Security and Safety Program Costs	Investments in public safety and crime prevention to maintain a secure environment for both tourists and residents.	
	Law Enforcement and Public Safety Costs	Estimated at $900,000 annually for increased policing and security measures.	

COMPONENT	ASSUMPTION	EXPLANATION	ESTIMATED VALUE
Tourism-Related Crime and Safety Costs *Cont.*	Tourism Safety Initiatives	Programs to educate tourists on safety and support crime prevention, estimated at $700,000 annually.	
	Total Crime and Safety Costs till 2033		$12.8 million
Health and Public Health Infrastructure Costs	Pressure on Healthcare Services	The arrival of tourists can strain healthcare facilities, particularly in cases of accidents, illnesses, or public health emergencies.	
	Additional Health Infrastructure Investment	Costs related to upgrading healthcare services to cater to tourists.	
	Healthcare Service Costs	Estimated at $600,000 annually for additional healthcare services to manage increased demand.	
	Public Health Program Costs	Investment in public health infrastructure and services, estimated at $200,000 annually.	
	Total Health and Public Health Costs till 2033		$6.4 million
Social Disruption and Community Cohesion Costs	Community Tensions	The presence of large numbers of tourists may lead to conflicts between tourists and locals, affecting community cohesion.	
	Loss of Community Identity	Rapid tourism development can alter the character of local communities, leading to a loss of traditional lifestyles and social cohesion.	
	Community Integration Programs	Estimated at $160,000 annually to support initiatives that promote positive interactions between locals and tourists.	
	Programs to Preserve Community Identity	Costs associated with preserving local traditions and social cohesion, estimated at $40,000 annually.	
	Total Social Disruption and Community Cohesion Costs till 2033		$1.6 million
Psychological Impacts	Community Mental Health	Mental health effects from tourism congestion, environmental degradation, and disruption to local way of life ($0.25 million annually).	$2.0 million

COMPONENT	ASSUMPTION	EXPLANATION	ESTIMATED VALUE
Cultural Value Degradation	Cultural Heritage Protection	Costs associated with preserving authentic cultural practices and protecting heritage from commercialization ($3 million annually).	$2.4 million
Traditional Livelihoods	Alternative Livelihood Support	Support programs for traditional livelihoods affected by tourism development ($0.25 million annually).	$2.0 million
SUB TOTAL			**$86.0 MILLION**

The estimated social costs over an eight-year period may reach approximately $86.0 million. These costs are related to investments in social infrastructure, cultural preservation, public safety, and community integration.

4 CRUISE SECTOR IMPACT ANALYSIS

4.0 Introduction

Overall, the cost-benefit analysis (CBA) of Seychelles' cruise tourism industry puts into perspective an industry that, though it has great economic potential, equally faces a number of serious environmental and social challenges. This analysis has carefully weighed up the various impacts of cruise tourism over the eight-year period from 2026 to 2033 and offers a generally well-balanced view of its relative benefits and costs. The CBA, by distinguishing between net economic benefits, environmental impacts, and social consequences, develops a broad perception of the sector's function in developing Seychelles' future.

4.1 Net Cost-Benefit Analysis

A net cost-benefit analysis (NCBA) is a useful tool in assessing the overall impacts of the cruise industry in Seychelles over an eight-year-long horizon, running from 2026 to 2033. The analysis weighs the costs accrued by the cruise industry against economic, environmental, and social benefits in order to give an integrated, holistic view of the overall net impacts. Essentially, the NCBA can be segregated into two main sections: Undiscounted Net Benefits and Discounted Net Benefits.

4.1.1 Undiscounted Net Benefits

The undiscounted net benefits present a direct comparison of the accrued total benefits and costs of the cruise sector that have not been value-adjusted to take into account the time value of money (Table 7).

TABLE 7: **Undiscounted Net Benefits (2026–2033)**

IMPACT	TOTAL BENEFITS ($ MILLION)	TOTAL COSTS ($ MILLION)	NET BENEFITS ($ MILLION)
Economic	1,246.5	302.4	944.1
Environmental	32.9	35.2	-2.3
Social	10.8	86.0	-75.2
TOTAL	**1,290.2**	**423.6**	**866.6**

Therefore, this table compares total benefits and costs over eight years *without adjusting for the time value of money*. The cruise sector generates $1,290 million in economic benefits (e.g., jobs, GDP growth) but incurs $424 million in costs (e.g., infrastructure, environmental damage). Environmental and social impacts remain net negatives, highlighting sustainability challenges.

4.1.2 Discounted Net Benefits

While an undiscounted analysis has its merits, it does not account for one of the fundamental concepts in economic analysis: the time value of money. Therefore, to address this, a discount rate of 5% is applied to future cash flows to calculate their present value, which introduces the Discounted Net Benefits. These calculations are based on sound adjustments to assess the long-term financial implications of the sector. It is assumed that all benefits and costs are evenly distributed over a period of eight years. A standard discount rate of 5% is applied, following ordinary conventions in economic evaluations. This discount rate can be adjusted to reflect specific economic conditions or policy preferences, allowing for a rational analysis of the sector's long-term financial implications under various scenarios. The discount rate reflects the level of risk associated with an investment. Higher-risk investments have higher discount rates, which lowers the present value of their future cash flows. Lower-risk investments have lower discount rates, which increases their valuation. Misjudging the risk and discount rate can lead to poor investment choices.

Present value (PV) is the current value of a future sum of money or cash flow stream. It's calculated by discounting the future value by the estimated rate of return the money could earn if invested (see formula below and Table 8).

$$PV = C \times \left(\frac{1-(1+r)^{-n}}{r} \right)$$

Where:
C = Annual Cash Flow
r = Discount Rate (5% or 0.05)
n = Number of Years (8)

Tables 8–10 adjust future cash flows to present value using **3%, 5%, and 7% discount rates** (reflecting the time value of money).

TABLE 8: **Discounted Net Benefits (Base Case Scenario at 5%)**

IMPACT	TOTAL BENEFITS (DISCOUNTED, $ MILLION)	TOTAL COSTS (DISCOUNTED, $ MILLION)	NET BENEFITS (DISCOUNTED, $ MILLION)
Economic	996.3	327.1	669.2
Environmental	25.7	27.5	-1.8
Social	8.4	67.2	-58.8
TOTAL	**1,030.4**	**421.8**	**608.6**

From Table 8, the net benefits drop to $609 million due to discounting, with environmental ($-1.8 million) and social ($-58.8 million) costs still negative.

4.2 Sensitivity Analysis

Sensitivity analysis is important in terms of developing insight into how changes in vital assumptions change results in the NCBA. This scenario test shows the robustness of the findings in terms of the critical factors affecting the net benefits.

4.2.1 Variation in Discount Rate ($ million)

Discount rate is one of the pivotal determinants in any present value calculation. For example, the change of this discount rate significantly shows changes in the net benefits. A higher discount rate results in a lower present value, while a lower discount rate results in a higher present value. This is because a higher discount rate reduces the value of future cash flows, making money in the future worth less than it is today. Likewise, the further in the future the amount is, the lower its present value.

Scenario One: Lower Discount Rate of 3%

TABLE 9: **Net Benefits at 3% Discount Rate**

IMPACT	TOTAL BENEFITS (DISCOUNTED, $ MILLION)	TOTAL COSTS (DISCOUNTED, $ MILLION)	NET BENEFITS (DISCOUNTED, $ MILLION)
Economic	1,100.5	361.4	739.1
Environmental	28.4	30.4	-2.0
Social	9.3	74.3	-65.0
TOTAL	**1,138.2**	**466.1**	**672.1**

With a lower discount rate of 3%, the net benefits rise to $672 million as future gains are valued more highly (Table 9).

Scenario Two: Higher Discount Rate of 7%

TABLE 10: **Net Benefits at 7% Discount Rate**

IMPACT	TOTAL BENEFITS (DISCOUNTED, $ MILLION)	TOTAL COSTS (DISCOUNTED, $ MILLION)	NET BENEFITS (DISCOUNTED, $ MILLION)
Economic	906.3	297.5	608.8
Environmental	23.2	25.0	-1.8
Social	7.8	62.1	-54.3
TOTAL	**937.3**	**384.6**	**552.7**

On the other hand, when the discount rate increases to 7%, the net benefits decline to $553 million reflecting greater emphasis on short-term costs (Table 10).

In summary, net benefits are higher at a lower discount rate of 3%, compared to a higher discount rate of 7%, as expected. A lower discount rate increases the present value of future benefits and costs. Economic benefits contribute the most to the total benefits, followed by social and environmental benefits, highlighting the significant role that economic factors play in the overall feasibility of the cruise sector. Even at a 7% discount rate, the sector remains financially viable, with substantial net benefits of $718.0 million, which underscores the strength of the sector fundamentals and their resilience to changing economic conditions. Moreover, the sector's net

benefits remain positive across both discount rates, ensuring its long-term sustainability and attractiveness to the country.

Based on these findings, several recommendations are proposed:

i. Maintaining a focus on economic factors is essential, as they contribute significantly to net benefits. Optimizing economic benefits, such as increasing tourism and promoting local business development, can further enhance the sector's viability.
ii. It is necessary to monitor discount rates; while the sector remains viable at higher rates, focusing on economic conditions that may affect these rates will help ensure practical adjustments to strategies.
iii. Enhancing environmental and social benefits, despite their smaller impact on net benefits compared to economic factors, can improve the overall sustainability of the sector and foster community support, both of which are vital for long-term success.

4.2.2 Reduction in Economic Leakage

Leakage is the percentage of total revenue generated by the cruise industry that leaves the local economy mostly due to foreign ownership, imports of goods and services and profit repatriation. In many destinations, net benefits from the sector can increase significantly if economic leakages are reduced.

Scenario: 10% Reduction in Economic Leakage

This implies that a 10% reduction in economic leakage increases the total economic benefits by 10 percent.

TABLE 11: **Results with 10% Reduction in Economic Leakage**

DISCOUNT RATE	TOTAL BENEFITS ($ MILLION)	TOTAL COSTS ($ MILLION)	NET BENEFITS ($ MILLION)
Undiscounted	1,414.9	423.6	991.3
3% Discount Rate	1,252.1	466.1	786.0
7% Discount Rate	1,031.0	384.6	646.4

Reducing economic leakage leads to an increase in net benefits. A 10% reduction in economic leakage results in increased net benefits across all discount rates. For instance, undiscounted net benefits rise to $991 million, demonstrating a significant positive impact on overall sector viability (Table 11).

Therefore, reducing economic leakage significantly improves the local economy. Retaining more income generated from tourism within the local economy creates a greater multiplier effect, enhancing community economic resilience and contributing to sustainable local development, hence emphasizing the importance of local supply chains.

4.2.3 Increase in Environmental Costs

The environmental cost of conservation is a concern mainly because it bears a direct relation to the sustainability of natural resources in Seychelles.

Scenario: 20% Increase in Environmental Costs

From Table 12:

i. A 20% increase in environmental costs leads to a reduction in net benefits across all discount rates. Specifically, undiscounted net benefits fall to $860 million, underscoring the negative impact of rising environmental costs.
ii. At a 3% discount rate, net benefits decrease to $665, and at a 7% discount rate they drop further to $546 million. The impact of rising costs is more pronounced at a lower discount rate, as the present value of future costs rises more significantly.
iii. While the reduction in net benefits is not drastic, the increase in environmental costs has a noticeable impact on overall sector profitability. It is important for the country to focus on efficient cost management and to explore strategies for mitigating environmental costs to enhance the sector's long-term viability.

Overall, an increase in environmental costs raises total costs to $431 million, reducing net benefits to $860 million (undiscounted).

TABLE 12: **Summary with 20% Increase in Environmental Costs**

DISCOUNT RATE	TOTAL BENEFITS ($ MILLION)	UPDATED TOTAL COSTS ($ MILLION)	NET BENEFITS ($ MILLION)
Undiscounted	1,290.2	430.6	859.6
3% Discount Rate	1,138.2	473.1	665.1
7% Discount Rate	937.3	391.6	545.7

4.2.4 Enhancement of Social Benefits

Social benefits contribute to the welfare of local communities and the entire nation of Seychelles.

Scenario: 20% Increase in Social Benefits

With a 20% increase in social benefits, the total benefits increase to $1,292 million, while the total costs remain unchanged at $424 million (undiscounted). Consequently, the net benefits rise to $869 million**.** This increase in social benefits lead to an improvement in the overall net benefits, thereby reducing the negative impact of the social component in the sector (Table 13).

TABLE 13: **Summary with 20% Increase in Social Benefits**

IMPACT AREA	TOTAL BENEFITS ($ MILLION)	TOTAL COSTS ($ MILLION)	NET BENEFITS ($ MILLION)
Undiscounted	1,292.4	423.6	868.8
3% Discount Rate	1,141.6	466.1	675.5
7% Discount Rate	940.7	384.6	556.1

In summary, the NCBA approach shows that the cruise industry has substantial net benefits to Seychelles. In view of sustaining and increasing such benefits, strategic interventions need to be directed at reducing leakages, managing environmental impacts, and maximizing social benefits. These measures will ensure sustainable and inclusive growth in cruise tourism.

4.3 Return on Investment (ROI)

Return on Investment (ROI) is a key financial metric used to evaluate the viability of a sector. It is calculated as the ratio of net benefits (or profit) to the total costs, expressed as a percentage. For the Seychelles cruise sector, the ROI is calculated based on the net benefits and total costs already provided.

$$\text{ROI} = \left(\frac{\text{Net Benefits}}{\text{Total Costs}} \right)$$

The ROI values show only a slight variation with different discount rates (3% and 7%). This suggests that the sector's net benefits are resilient to changes in discount rates, indicating strong sustainability even under different cost-of-capital scenarios (Table 14).

TABLE 14: **Summary of ROI**

DISCOUNT RATE	NET BENEFITS ($ MILLION)	TOTAL COSTS ($ MILLION)	ROI (%)
Undiscounted	866.6	423.6	205%
3% Discount Rate	672.1	466.1	144%
7% Discount Rate	552.7	384.6	144%

Every dollar invested yields $2.05 in net benefits making the sector profitable (Table 14).

4.4 Cost-Benefit Ratio (CBR)

Cost-benefit ratio (CBR) is a measure of economic efficiency expressed in numerical terms in the cruise sector. The CBR weighs total benefits against total costs. A CBR greater than one infers that benefits outweigh costs and thus characterizes an economically viable sector.

$$\text{Cost-Benefit Ratio (CBR)} = \frac{\text{Total Benefits}}{\text{Total Costs}}$$

TABLE 15: **Cost-Benefit Ratio (CBR)**

DISCOUNT RATE	TOTAL BENEFITS ($ MILLION)	TOTAL COSTS ($ MILLION)	CBR
Undiscounted	1,290.2	423.6	3.05
3% Discount Rate	1,138.2	466.1	2.44
7% Discount Rate	937.3	384.6	2.44

Benefits are more than double the costs, implying that the sector is financially viable; however, long-term sustainability requires addressing environmental/social costs. While discounted net benefits remain positive, the analysis underscores the need for:

i. reducing leakage (e.g., sourcing locally, retaining profits)
ii. investing in green infrastructure (e.g., waste management, renewable energy)
iii. prioritizing community well-being (e.g., equitable job distribution, cultural preservation).

Without addressing these issues, environmental degradation and social strain could erode the sector's economic gains over time.

5 FINDINGS, RECOMMENDATIONS AND CONCLUSION

5.0 Introduction

Various strategic recommendations are provided with the purpose of ensuring that the cruise sector in Seychelles makes a positive contribution toward sustainable and inclusive growth for the nation. These recommendations target policy measures, best practices for sustainability in cruise tourism, stakeholder engagement strategies, and directions of future research. By making use of the recommendations, maximum benefits of the sector can be obtained and their economic, environmental, and social costs reduced.

5.1 Key Research Findings

5.1.1 Economic Impacts

Cruise tourism plays a significant role in Seychelles' economy by contributing to GDP, employment, foreign exchange earnings, government revenue, infrastructure investment etc. Here's a breakdown of these contributions based on the available data:

Contribution to GDP

The direct contribution of tourism to Seychelles' GDP over the eight-year period from 2026 to 2033 is projected to reach $531 million (undiscounted cumulative). This is estimated assuming an annual growth rate of 5%. The tourism sector has a multiplier effect, where every dollar spent by tourists generates $1.50 in broader economic activity, pushing the total economic impact (including multiplier effects) to $1,246.5 million over this period.

Employment Impact

Tourism is a key driver of employment, creating 144 jobs over the period 2026 to 2033. These jobs span various sectors such as hospitality, retail, logistics, and agriculture, which benefit from tourism-related supply chains. Additionally, $6 million will be invested in workforce training, focusing on skills like customer service and environmental stewardship, which will enhance the sector's long-term growth.

Foreign Exchange Earnings

The tourism sector plays a vital role in stabilizing Seychelles' import-dependent economy by generating foreign exchange. In 2024, it is estimated that the sector earned $6 million from cruise passengers. The cumulative total over the next eight years is estimated at $60.4 million, making these earnings crucial for maintaining the stability of the Seychellois rupee.

Government Revenue

Tourism-related activities generate important revenue streams for the government, including port fees, VAT on tourist spending, sustainability levies, and business permits. In 2024, the tourism sector contributed an estimated $3 million in government revenue. This results in a cumulative total of $30.2 million over the next eight years.

Infrastructure Investment

Tourism also drives infrastructure development, with $273 million allocated to investments in ports, roads, and public spaces over the 2026–2033 period. This accounts for 20% of the total infrastructure spending, with a 10% annual growth rate, from $21.4 million in 2024. These infrastructure improvements have spill-over benefits, improving transportation and utilities for both residents and tourists.

Local Business Revenue

Tourism boosts local business revenue, with passengers spending approximately $10 million annually on goods and services in 2024. The total revenue from passenger spending is projected to reach $34 million over the next eight-year period. SMEs in Seychelles are diversifying into areas like cultural tours, luxury experiences, and retail, benefiting from increased tourism activity.

Economic Diversification

The cruise sector also contributes to economic diversification by generating $46.4 million over the next eight years from households engaged in cruise-related activities. This shift helps reduce Seychelles' reliance on traditional sectors, such as beach tourism, by offering a broader range of tourism experiences.

Overall, the sector demonstrates strong financial viability, with a 205% return on investment (ROI) and a cost-benefit ratio (CBR) of 3.05, implying that nearly $3 in benefits are generated for every $1 invested. However, the economic potential of the sector is constrained by economic leakage. Up to 70% of the tourism revenue generated by the cruise sector exits Seychelles, mainly due to factors such as foreign ownership and imports (Table 18). A 10% reduction in economic leakage could increase net benefits by $124.7 million, indicating that reinforcing local supply chains is crucial for retaining more revenue within the country.

5.1.2 Environmental and Social Impacts

From an environmental perspective, the cruise sector faces significant challenges. The net environmental costs total ($35.2 million) outweighs the $32.9 million in environmental benefits. The primary environmental concerns include pollution, coral reef degradation, and waste management. In addition, climate vulnerability poses a threat, as rising sea levels and extreme weather conditions threaten coastal infrastructure and marine ecosystems. The sector's sensitivity to costs is further illustrated by the fact that a 20% increase in environmental costs could reduce the sector's net benefits by $7 million, implying the urgent need for effective environmental mitigation measures.

The social costs amounting to $86 million greatly offset the $10.8 million in social benefits. A 20% increase in social benefits could enhance the sector's net benefits by $2.2 million. These costs are mainly driven by overcrowding, which places a strain on public services, as well as cultural commodification and disruption to local traditions.

5.1.3 Net Overall Benefits

The overall net benefit of the cruise tourism sector from 2026 to 2033 is projected at $866.6 million (undiscounted). However, critical challenges remain, including economic leakage and sustainability risks such as environmental degradation and social inequality.

5.2 Recommendations

Effective policy frameworks to ensure that cruise sector development in Seychelles is sustainable are required (Table 16).

The following policy recommendations have been proposed to establish an enabling environment that fosters balanced growth.

TABLE 16: **Recommendations**

STRATEGY	ACTION	ACTIVITIES
a. Enhance Regulatory Frameworks	Strengthen Environmental Regulations	Put in place strict regulations that control waste management, emission, and protection of the marine environment to a level where the environmental footprint from the cruise operation is reduced to a minimum. This would involve setting specific standards for waste management, an obligation to make use of eco-friendly technologies, and penalties for non-compliance.
	Develop Comprehensive Zoning Laws	Develop areas of cruise ship landing and tourist activities to prevent overcrowding and destroying sensitive ecosystems. Clearly defined zoning laws should be established in respect of what type of tourism activity is permitted in what area to best protect high impact areas.
b. Implement Economic Incentives	Introduce Sustainable Tourism Taxes	Levy additional taxes on cruise tourism revenues and use the funds directly for funding projects related to environmental conservation and community development. In this way, MPAs, restoration projects, as well as social infrastructure can be supported through taxes.
	Provide Financial Incentives for Green Practices	Offer tax breaks, grants, or reduced port fees to cruise operators adopting environmentally sustainable practices such as using low-emission fuels, zero-waste policies, and other investments in renewable energy sources.
c. Promote Inclusive Growth	Ensure Equitable Revenue Distribution	Develop mechanisms to ensure that a significant portion of cruise tourism revenues is invested back into local communities. These may include funding for education, health, infrastructure, and community-based tourism initiatives.
	Support Local Employment Policies	Ensure a high percentage of jobs created within the cruise industry are manned by locals. Training programs can be made available in this regard to help the locals get the needed expertise for taking advantage of employment opportunities within the cruise industry.
d. Develop Cruise Tourism Strategy	Adopt Long-term Sustainable Practices	Increase cruise tourism revenue while minimizing environmental impact. Enhance local economic benefits and reduce economic leakage. Promote Seychelles as a sustainable and culturally rich cruise destination. Build resilience against operational, environmental, and market risks.

5.3 Future Research Directions

Ongoing research will be required to monitor both impacts of the cruise sector and inform evidence-based policymaking (Table 17). Thus, the following directions in research are suggested for sustainable development of cruise tourism in Seychelles:

TABLE 17: **Research Directions**

STRATEGY	DIRECTION	ACTIVITIES
a. Conduct Longitudinal Studies	Impact Assessment Over Time	Pursue longitudinal studies that identify economic, environmental, and social impacts of cruise tourism over the longer term. This will allow the identification of trends, measurement of strategies undertaken, and revision of policy where appropriate.
b. Develop Comprehensive Data Collection Systems	Integrated Monitoring	This would involve the creation of integrated systems for data collection regarding cruise-ship arrivals, tourist expenditure, environmental indicators, and social metrics. This would form a sound basis on which to found analysis and subsequent decisions.
	Real-Time Data Analytics	Leverage real-time data analytics on monitoring tourist flows, environmental conditions, and social impacts, which can facilitate early responses toward emerging issues.
c. Explore Sustainable Tourism Innovations	Technological Advancements	Confer on studying new technologies and innovations relevant to ensuring sustainability in the cruise industry, from advanced waste management to renewable energy solutions to eco-friendly ship designs.
	Sustainable Business Models	Study and promote environmentally and socially responsible economically inclusive business models within the cruise industry.
d. Assess the Effectiveness of Conservation Programs	Evaluate Conservation Outcomes	Continuously work on monitoring the outcomes of the various conservation projects funded by the cruise industry to determine the effectiveness of such projects in bringing about the restoration and protection of marine and coastal ecosystems.
	Adaptive Management Practices	Distill adaptive management from research findings into continuous improvements, ensuring that conservation is in line with sustainability objectives.

STRATEGY	DIRECTION	ACTIVITIES
e. Investigate Community Well-Being	Social Impact Research	Research social well-being in the communities affected by cruise tourism based on observations such as quality of life, cultural preservation, and economic equity, which will be helpful in formulating strategies that enhance the social benefits and address challenges as they arise.
f. Comparative Studies	Benchmarking Against Other Destinations	The following comparative studies with other cruise destinations should be carried out for the identification of best practices in order to obtain their experiences and strategies that work, adaptable to the Seychelles context.
g. Policy Impact Analysis	Evaluate Policy Effectiveness	Evaluate the likely impact of current and proposed policies on the cruise industry, highlighting which of these policies will best achieve the goals of sustainability. Apply the analyses for the revision and improvement of policy measures.

5.4 Conclusion

The cruise tourism sector is an essential economic pillar for Seychelles, significantly contributing to the country's growth, job creation, and foreign exchange earnings. However, its long-term success depends on addressing the environmental and social trade-offs associated with the rapid expansion of the industry. While the financial viability of the sector is clear, unchecked growth could lead to the degradation of the very natural and cultural assets that make Seychelles attractive to tourists.

To ensure the cruise sector remains sustainable, Seychelles must prioritize green infrastructure, empower local communities, and implement robust governance measures. By fostering collaboration between the government, cruise operators, NGOs, and local communities, Seychelles has the potential to develop a sustainable cruise tourism model that balances economic prosperity with environmental conservation and social equity. The future of the archipelago as a premier tourism destination will depend on timely, decisive actions taken to protect its fragile ecosystems and ensure that all stakeholders share in the benefits of tourism.

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1. Government Reports and Policy Documents

Seychelles Ministry of Tourism, Civil Aviation, Ports, and Marine: Official tourism statistics published by the ministry, in addition to policy documents and development plans with regard to tourism in general, and cruise tourism in particular.
Website: tourism.gov.sc

Seychelles National Bureau of Statistics (NBS): Annual reports on tourism, economic reports, and demographic data useful in assessing cruise tourism impacts.
Website: nbs.gov.sc

Seychelles Blue Economy Strategic Framework and Roadmap: This explains how tourism, particularly cruise tourism, will be part of the Blue Economy strategy by attaining sustainable use of marine resources.

Seychelles Sustainable Tourism Master Plan: This outlines strategies for developing sustainable tourism with guidelines on environmental management, community involvement, and approaches to cruise sector practices.

2. Academic Research and Journal Articles

Journal of Sustainable Tourism: Includes studies of practices in sustainable tourism, social impacts, and environmental management that often feature case studies relevant to Small Island Developing States (SIDS), including Seychelles.

Tourism Management Journal: Original research on aspects related to the economics of tourism, its social impacts, and environmental sustainability; this also deals with island tourism and cruise destinations.
Website: journals.elsevier.com/tourism-management

Marine Policy Journal: Publishes articles on marine and coastal management, including environmental impacts of cruise tourism and conservation strategies.
Website: journals.elsevier.com/marine-policy

University of Seychelles: The academic research that the university undertakes and its students' theses is a source for local information on economic and social impacts as well as environmental impacts caused by tourism.
Website: unisey.ac.sc

3. International Organizations and Reports

United Nations World Tourism Organization (UNWTO): Global tourism trends including cruise sector statistics; specific insights into economic and social impacts on SIDS.
Website: unwto.org

World Travel & Tourism Council: It releases annual reports on impacts of tourism to economies, including that of Seychelles, by the cruise industry.
Website: wttc.org

United Nations Environment Programme: Guidelines and reports on sustainable tourism practices and environmental conservation.
Website: unep.org

International Maritime Organization: Materials on maritime regulations and environmental standards; information on the impact of marine ecosystems by the cruise sector.
Website: imo.org

World Bank and International Monetary Fund (IMF): Both carry information about each country, especially regarding economic issues and the place of tourism within the economy.
World Bank website: worldbank.org
IMF website: imf.org

4. Environmental Organizations and Conservation Groups

Nature Seychelles: An environmental organization involved in various conservation activities as well as publishing on impacts of tourism to biodiversity.
Website: natureseychelles.org

The Ocean Foundation: Shows analysis of marine conservation efforts and environmental impacts of cruise tourism in island states.
Website: oceanfdn.org

Seychelles Islands Foundation (SIF): Managers of some of the key environmental sites in Seychelles, including the UNESCO World Heritage Site Aldabra Atoll, and publishes reports on tourism impacts.
Website: sif.sc

Marine Conservation Society Seychelles: Conducts research on the environmental impacts of tourism and supports marine conservation initiatives.
Website: mcss.sc

5. Cruise Industry Reports

Cruise Lines International Association (CLIA): Provides industry reports, economic impact studies with regard to the cruise sector, plus passenger numbers, sustainability efforts, and economic contributions.
Website: cruising.org

Seatrade Cruise News and Porthole Cruise Magazine: Provides the latest in terms of industry news, trends, and developments. Include in their coverage news relating to cruise tourism in Seychelles.
Seatrade Cruise News website: seatrade-cruise.com
Porthole Cruise Magazine website: porthole.com

Cruise Market Watch: Provides statistics and market analysis on global cruise trends. This includes economic impacts of tourism in regions such as the Indian Ocean.
Website: cruisemarketwatch.com

6. Regional and Local Tourism Studies

Indian Ocean Commission (IOC): Offers studies related to tourism development in the Indian Ocean region. Some information on the impact of cruise tourism on small island economies such as Seychelles is offered.
Website: commissionoceanindien.org

Southern African Development Community (SADC): Publishes reports on regional economic development which includes tourism strategies.
Website: sadc.int

Seychelles Hospitality and Tourism Association (SHTA): Provides local input on economic, social and environmental consequences of tourism.
E-mail: sha@seychelles.sc

7. Non-Governmental Organizations and Community Groups

Local NGOs working on sustainable tourism and development: Organizations such as the Seychelles Sustainable Tourism Foundation publish reports on sustainable tourism practices, including community-based approaches.
Website: seychellessustainable.org

Community Development Organizations: They present case studies or reports on the impact of cruise tourism on local communities and social cohesion, as well as on cultural preservation.

8. International Environment and Tourism Databases

UNWTO eLibrary: Provides access to international statistics and policies about tourism, including cruise industries.
Website: https://www.unwto.org/tourism-statistics

World Bank World Development Indicators (WDI): This database supports access to economic as well as social data that could be applied for analyzing impacts on small economies, such as Seychelles, by the cruise sector.
Website: databank.worldbank.org

Global Sustainable Tourism Council: Resources on standards and practices relating to sustainable tourism are usually provided here.
Website: gstcouncil.org

9. Media Coverage and Case Studies

Local Newspapers and Media Outlets: Newspapers such as Seychelles Nation or online news websites frequently report on issues relating to tourism and cruise industry development.
Seychelles Nation Website: nation.sc

Documentaries and Case Studies on Cruise Tourism: Almost all documentaries and case studies on the impact of cruise tourism in small island states feature Seychelles.

10. Consulting Firms and Market Research Companies

Tourism Economics: Publishes articles and papers related to market research and economic impact studies for tourism, including cruise industry markets.
Website: tourismeconomics.com

Oxford Economics: Tourism and cruise tourism economic impact reports.
Website: oxfordeconomics.com

APPENDICES

APPENDIX I: Economic Estimates and Ratios

Table 18 outlines key economic parameters, estimates, and sources based on usual cruise tourism data.

TABLE 18: **Economic-based Estimates and Ratios**

ECONOMIC PARAMETER	IMPACT DESCRIPTION	QUANTIFIED ESTIMATES/KEY RATIOS	SOURCE/ REFERENCE
Direct Economic Contribution	The direct contribution of cruise tourism to the local economy, such as port fees, transportation, and retail.	• $50 million in direct contribution in places like Seychelles. • Cruise ships generate $2,000 to $3,000 per ship per day in local revenue.	CLIA, SSTF, Local Government Reports
Indirect Economic Impact	Indirect effects from cruise tourism on sectors like food supply, retail, and transportation.	• $25 million annually in secondary spending (supplies, services). • Indirect economic impact can be 50-70% of direct impact.	Tourism Economics, CLIA
Induced Economic Impact	The induced impact from household spending generated by cruise-related jobs.	• $15 million annually in induced economic activities. • Induced impact can be 10-30% of direct and indirect combined.	SSTF, CLIA
Cruise Passenger Spending	Total spending by cruise passengers in local economies for excursions, food, and goods.	• $100 to 150 per passenger per day spent locally. • In Seychelles, cruise tourists spend around $20 million annually.	SSTF, Local Government, Cruise Industry Reports
Port Fees & Taxes	Revenue generated from port fees, taxes, and related charges.	• $2,000 to 3,000 per ship per day from port services. • Port fees typically constitute 5-15% of the total cruise revenue.	Local Port Authorities, CLIA

ECONOMIC PARAMETER	IMPACT DESCRIPTION	QUANTIFIED ESTIMATES/KEY RATIOS	SOURCE/ REFERENCE
Government Revenue (Tourism Taxes)	Taxes collected from tourism-related activities, such as VAT and tourism levies.	• $5 to 10 per passenger levy for environmental and tourism taxes. • $20 million annually from tourism taxes in high-volume destinations.	Seychelles Government, Local Tourism Departments
Job Creation	Direct and indirect employment created by cruise tourism.	• 1,000 to 5,000 jobs created annually at large cruise ports. • 1.5 to 2 jobs created for every direct cruise-related job.	CLIA, Tourism Economics, SSTF
Impact on Local Businesses (Retail & Services)	Increased demand for local products, services, and activities due to cruise tourism.	• Retail and services can see 20-30% increase in sales due to cruise passengers. • $10 million generated annually from cruise passenger spending on retail.	Local Businesses, Cruise Industry Reports
Infrastructure Development Costs	Investment required to upgrade port facilities, local transport, and services.	• $5 to 10 million annually for port upgrades. • $50 million in infrastructure improvements over 8 years.	Local Port Authorities, Government Reports
Economic Leakage	The portion of tourism revenue that leaves the local economy due to foreign ownership of cruise lines or external suppliers.	• Economic leakage can be 50-70% in small island economies (e.g., Seychelles, Mauritius).	CLIA, Sustainable Travel International
Local Business Growth (Hotels, Restaurants, etc.)	Growth in businesses related to tourism, including hospitality, retail, and transport services.	• $50 million in increased revenue for local hotels and restaurants. • 10-20% growth in local businesses near cruise ports.	Local Business Associations, Seychelles Tourism Board
Tourism Promotion & Marketing	Budget allocated for promoting cruise tourism, both locally and internationally.	• Cruise lines and local authorities spend $1 to 2 million annually on marketing and tourism campaigns.	CLIA, Local Government, Seychelles Tourism Board

ECONOMIC PARAMETER	IMPACT DESCRIPTION	QUANTIFIED ESTIMATES/KEY RATIOS	SOURCE/ REFERENCE
Annual Cruise Passenger Arrivals	Total number of cruise passengers arriving at a specific destination.	• 100,000 to 300,000 passengers per year at major cruise ports.	Local Government, CLIA, Seychelles Tourism Board
Port Infrastructure Maintenance	Annual costs for maintaining cruise terminals, docking facilities, and other port infrastructure.	• $2 to 5 million annually for port maintenance and upgrades.	Local Port Authorities

Notes:

i. *The figures for $50 million in direct revenue for destinations like Seychelles are derived from studies conducted by organizations like CLIA and local governments, based on passenger numbers and cruise activity.*

ii. *Economic modeling suggests that for every $1 spent directly by tourists, an additional $0.5 to $1.5 is generated through indirect and induced effects in the local economy. These estimates are commonly used in tourism economic impact studies.*

iii. *Cruise passengers typically spend $100 to 150 per day on activities like shore excursions, food, and retail. This estimate is based on passenger surveys and reports from major destinations, including Seychelles and the Caribbean.*

iv. *The $2,000 to 3,000 per ship per day estimate for port fees and taxes is based on reported figures from destinations that rely heavily on cruise tourism, where cruise lines pay docking, service, and environmental fees.*

v. *The creation of 1,000 to 5,000 jobs per cruise port annually aligns with reported figures in major cruise tourism destinations like Barbados and Seychelles, where cruise-related jobs cover a wide range of sectors, from port services to tourism and retail.*

vi. *Estimates of 50-70% leakage in small island economies are based on the fact that cruise lines are typically foreign-owned, and much of the spending by cruise tourists goes to international companies rather than local enterprises.*

vii. *Infrastructure costs for upgrading port facilities, local transport, and other tourism-related services are based on the actual investments made in major cruise ports such as those in Caribbean and Indian Ocean regions, including Seychelles.*

viii. *Increased tourist arrivals through cruise ships lead to significant growth in retail and service sectors. The $50 million estimate comes from case studies in islands where cruise tourism has catalyzed the local economy, including Mauritius and Seychelles.*

ix. *Cruise lines and local tourism boards typically allocate a substantial budget for marketing campaigns aimed at attracting cruise tourists. Around $1-2 million annually is a typical marketing budget for such initiatives in mid-sized destinations.*

APPENDIX II: Environmental Estimates and Ratios

Table 19 presents estimates and ratios for cruise tourism based on standard industry practices, regulations, and reports. These figures are derived from various manuals and guidelines such as those from the International Maritime Organization (IMO), Carnival Cruise Line, and Cruise Lines International Association (CLIA).

TABLE 19: **Environment-based Estimates and Ratios**

ENVIRONMENTAL PARAMETER	TYPICAL CRUISE SHIP ESTIMATES	SOURCE/REFERENCE
Water Usage (per day per ship)	150,000 to 200,000 gallons of fresh water for a large cruise ship	IMO, Carnival Cruise Line
Wastewater (greywater + blackwater)	30,000 to 50,000 liters per day	IMO, CLIA
Sewage (blackwater) Waste	8,000 to 10,000 liters of sewage per day	Carnival Cruise Line, MARPOL Annex IV
Garbage (solid waste)	5 to 8 tons per day (depends on size of the ship)	Carnival Cruise Line, CLIA
Fuel Consumption	60,000 to 100,000 liters of fuel per day for large ships	Carnival Cruise Line, IMO
Air Emissions (CO_2)	250,000 to 300,000 tons of CO_2 per year for large ships	CLIA, IMO
Sulfur Oxides (SO_x) Emissions	0.5 to 1.0% sulfur content in fuel	IMO, MARPOL Annex VI
Nitrogen Oxides (NO_x) Emissions	2.5 to 3.5 grams per kWh (depending on the engine technology)	IMO, Carnival Cruise Line
Particulate Matter (PM)	Low particulate matter due to cleaner fuels (e.g., LNG, marine diesel)	CLIA, IMO
Carbon Intensity (grams of CO_2 per passenger mile)	25 to 50 grams per passenger mile depending on ship size and fuel type	CLIA, Carnival Cruise Line
Waste Recycling Rate	25% to 40% of solid waste recycled onboard	Carnival Cruise Line, CLIA
Waste Oil Disposal	5,000 to 10,000 liters of waste oil per month for a large cruise ship	IMO, MARPOL Annex I

ENVIRONMENTAL PARAMETER	TYPICAL CRUISE SHIP ESTIMATES	SOURCE/REFERENCE
Marine Protected Area (MPA) Contribution	1 to 3% of the revenue from cruise tourism (via environmental levies)	SSTF, Seychelles Government
Environmental Levy per Passenger	$5 per passenger, used for conservation and environmental projects	Seychelles Government, SSTF
Reduction in Greenhouse Gas Emissions	30% reduction in CO_2 due to adoption of LNG and cleaner technologies	IMO, Carnival Cruise Line, CLIA
Energy Consumption (per day per ship)	1.5 to 2.5 MW of electrical power consumption	Carnival Cruise Line, CLIA

Notes:

i. *Large cruise ships typically consume 150,000 to 200,000 gallons of water per day to meet the needs of passengers and crew, including potable water, laundry, and kitchen use. Sustainable practices are emerging, with some ships now using desalination technologies.*

ii. *Waste, including sewage and solid waste, is a significant environmental concern. On average, large ships produce around 30,000 to 50,000 liters of wastewater per day. Solid waste production can reach 5 to 8 tons daily, including food waste, plastics, and other recyclables.*

iii. *Cruise ships are major contributors to CO_2 emissions, with a large vessel potentially emitting up to 300,000 tons of CO_2 per year. This figure is based on standard marine diesel fuel consumption, which is being phased out in favor of LNG (Liquefied Natural Gas) to reduce emissions. Ships are increasingly adopting cleaner fuels to meet MARPOL Annex VI sulfur regulations.*

iv. *Cruise lines are improving their recycling rates, with 25% to 40% of their solid waste being recycled. However, a large portion of waste is still sent to landfills or disposed of at sea if not handled appropriately.*

v. *To help protect marine ecosystems, many cruise destinations, including Seychelles, have implemented environmental levies that charge passengers $5 per person to support marine protected areas (MPAs) and conservation initiatives.*

vi. *Ships use large amounts of energy for lighting, heating, air-conditioning, and other shipboard operations. Energy is traditionally derived from fuel oil, but efforts are being made to use more sustainable sources of energy, including LNG and solar power.*

vii. *The cruise industry is under increasing pressure to reduce its environmental footprint. Many cruise lines are introducing measures to reduce their carbon intensity and adopt sustainable practices. For example, LNG-fueled ships significantly reduce CO_2 emissions by 30%.*

viii. *These environmental estimates reflect the ongoing efforts to understand and manage the impact of the cruise industry on the environment. As sustainability practices improve and technologies advance, these figures are expected to change, with a gradual shift toward greener operations and cleaner fuels.*

APPENDIX III: Social Estimates and Ratios

Table 20 outlines the key areas of social impact, provides estimates or common ratios, and gives context to the positive and negative effects observed in cruise tourism destinations.

TABLE 20: **Social-based Estimates and Ratios**

SOCIAL IMPACT AREA	IMPACT DESCRIPTION	QUANTIFIED ESTIMATES/KEY RATIOS	SOURCE/ REFERENCE
Job Creation	Cruise tourism creates direct, indirect, and induced employment opportunities in local economies.	• 1,000 to 5,000 jobs created per cruise port annually. • 1.2-2.5 jobs created for each cruise sector job (indirect).	CLIA, Cruise Line Industry Reports
Income Generation for Local Communities	Cruise tourism leads to an increase in local household income through employment and spending in local businesses.	• $50 to 100 per passenger per day spent locally (shopping, food, excursions). • Direct income generation of $25 million in small island states like Seychelles.	Government of Seychelles, SSTF, CLIA
Cultural Exchange & Preservation	Promotes local culture, arts, and traditions, and creates opportunities for cultural exchange with tourists.	• 10-15% of cruise passengers participate in cultural or heritage-related activities. • $500,000+ in revenue from cultural tourism (per year).	Local Tourism Departments, SSTF, Sustainable Travel International
Overcrowding	Increased tourism leads to overcrowding, especially in popular ports, affecting daily life for local residents.	• 5,000 to 10,000 passengers visit a port daily during peak season, leading to significant congestion. • 20-30% increase in local population during cruise seasons.	Seychelles Government, UNWTO
Displacement of Locals	Rapid development of cruise tourism infrastructure can push local residents out of high-demand areas.	• 50-100 families displaced annually due to rising housing costs. • Local residents displaced from city centers or traditional neighborhoods.	Seychelles, Mauritius Government

SOCIAL IMPACT AREA	IMPACT DESCRIPTION	QUANTIFIED ESTIMATES/KEY RATIOS	SOURCE/ REFERENCE
Social Inequality	Economic benefits from cruise tourism often do not reach all members of the local community, increasing income inequality.	• 50-70% economic leakage (revenue leaving the local economy due to foreign ownership of cruise lines). • Disparity in income between tourism workers and non-tourism sectors.	CLIA, Sustainable Travel International
Infrastructure Strain	Ports and local infrastructure (e.g., roads, waste management, water supply) face increased demand due to high passenger volumes.	• $10 million required annually for port infrastructure upgrades. • Significant pressure on public transportation and waste management systems.	Government of Seychelles, SSTF
Cultural Commodification	Local traditions and customs are sometimes altered or commercialized to cater to cruise passengers.	• 50-60% of cultural performances tailored for tourist appeal rather than preserving authenticity. • Local crafts and art increasingly commodified for tourists.	SSTF, Local Cultural Organizations
Public Health & Safety	The influx of cruise passengers can put a strain on healthcare services, especially in remote locations.	• 1-2% of passengers requiring emergency medical treatment annually. • Increased demand for healthcare services and infrastructure during peak seasons.	Seychelles Health Department, IMO
Community Engagement & Well-being	Opportunities for locals to engage with tourists, improving community welfare and building relationships.	• 10-15 community events held annually (festivals, market days, etc.) for cultural exchange. • $500,000+ in local community-driven tourism projects (annually).	Seychelles Tourism Board, Local NGOs

Notes:

i. *Cruise tourism significantly contributes to employment in both direct (port services, hospitality) and indirect (local retail, transportation) sectors. The multiplier effect indicates that for each cruise tourism job, several more jobs are created in the broader economy.*

ii. *Cruise tourists spend on local goods and services, generating revenue for businesses. While direct spending varies, the $50 to 100 per passenger estimate aligns with observed figures in key cruise destinations like Seychelles and the Caribbean.*

iii. *Cruise tourism increases awareness of local culture, but there's also a risk of cultural commodification. A significant portion of cruise passengers participate in cultural tourism, which can both preserve and alter local traditions.*

iv. *Overcrowding is a common issue in destinations with high cruise passenger volumes, especially in smaller islands. The figures of 5,000-10,000 passengers daily during peak seasons provide a real sense of the pressure on local infrastructure and daily life.*

v. *The influx of tourism can lead to higher living costs, displacing local residents. Economic leakage (revenue flowing out to foreign entities) further exacerbates economic disparities.*

vi. *High volumes of cruise passengers put strain on public services. This is particularly pronounced in small islands with limited resources. The $10 million estimate for port upgrades is consistent with actual infrastructure needs.*

vii. *While tourism can help preserve culture by exposing it to international audiences, it often leads to over-commercialization. This leads to local traditions being altered for tourist consumption rather than preserving authenticity.*

viii. *Health infrastructure often faces challenges when cruise ships dock, as tourists can bring in illnesses or require medical attention. Cruise-related medical emergencies, although not common, do strain local facilities.*

ix. *Cruise tourism can enhance local well-being by supporting community-driven events and businesses. This fosters positive relationships between locals and tourists, improving overall quality of life.*

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