



**PIMS 3820 Mainstreaming
Prevention and Control Measures for
Invasive alien Species into Trade,
Transport and Travel across the
Production Landscape**

Terminal Evaluation Report

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Project title	<i>Mainstreaming Prevention and Control Measures for Invasive Alien Species into Trade, Transport and Travel Across the Production Landscape</i>
Implementing agency	United Nations Development Programme
GEF project ID	3254
UNDP PIMS ID	3820
Region and countries included in the project	Seychelles, Africa
Strategic Program	BD-2; BD-4
Executing agency	Department of Environment, Ministry of Environment and Energy
Implementing partners (in alphabetical order)	Custom Services (Seychelles Revenue Commission), Marine Conservation Society of the Seychelles, Ministry of Health, Seychelles Agricultural Agency, (Ministry of Natural Resources and Industry), Plant Conservation Action Group, Seychelles Island Foundation
Evaluation timeframe	November 2014
Date of evaluation report	December 2014

Evaluation team members

The terminal evaluation of the project PIMS 3820 has been conducted by an international expert on project management with experience in implementation of projects on biodiversity conservation, protected areas and climate change impacts.

Acknowledgements

The terminal evaluation would not have been possible without the support of all the stakeholders and the time and information they shared and that constitute the very substance of this report. The evaluator would like to thank especially the biosecurity advisor, Mr. Sidney Suma, and project manager, Mr. Lindsay Chong-Seng, for their invaluable support in organizing and arranging the interviews and all the time they took to educate this evaluator on the national context, biosecurity and more, special thanks to the program coordinator Mr. Andrew Grieser Johns and staff of the Government of Seychelles-UNDP-GEF Programme Coordination Unit, Mr. Norman Lucas, Ms. Line Mancienne, Ms. Lisette Rose, for their support and logistical arrangements (and all the coffee).

Special thanks to the UNDP team, Mr. Roland Alcindor, Ms. Preethi Sushil and Ms. Brenda Crea who supplied valuable information and their facilities for their evaluation, and all the evaluation respondents, especially Mr. Dobin Sampson (CAA), Ms. Genila Valentin (Customs), Mr. Ronley Fanchette, Mr. Flavien Joubert and Mr. Didier Dogley (DoE), Mr. Leon Bekker (GIF), Ms. Cillia Mangroo (MoF), Mr. Antoine-Maire Moustache and Ms. Mermedah Moustache (MoNR), Ms. Katy Beaver (PCA), Ms. Veronique Herminie (former programme coord., PCU), Mr. Hervé Barois, Ms. Ellen Carolus and Ms Iris Carolus (consultants, PCU), Mr. Marc Naiken, Mr. Will Dogley, Dr. Jimmy Melanie and Mr. Randy Stravens (SAA), Ms. Wilna Accouche and Dr. Frauke Fleisher-Dogley (SIF).

The evaluator would also like to very to pay a special tribute to the departed project manager Ms. Danielle Dugasse, in remembrance. Although her untimely death prevented her participation in this process, she has contributed to it in great measure through her words in the project reports and the constant remembrance of her crucial role in the implementation of the project by her colleagues.

Acronyms and Abbreviations

DOE	Department of Environment (both of the defunct Ministry of Environment and Natural Resources and the current Ministry of Environment and Energy)
DONR	Department of Natural Resources (of the defunct Ministry of Environment and Natural Resources)
EMPS	Environmental Management Plan of the Seychelles
GEF	Global Environmental Facility
GIF	Green Island Foundation
GOS	Government of Seychelles
IAS	Invasive Alien Species
IPPC	International Plant Protection Convention
MCSS	Marine Conservation Society of the Seychelles
MEE	Ministry of Environment and Energy
MENR	Ministry of Environment and Natural Resources
MoFP	Ministry of Finance and Planning
MoNRI	Ministry of Natural Resources and Industry
MoU	Memorandum of Understanding
NBC	National Biosecurity Committee
NBSAP	National Biodiversity Strategy and Action Plan
NGO	Non-government organization
NIASC	National Invasive Alien Species Committee
OIE	World Organization for Animal Health
OVI	Objectively Verifiable Indicator
PAHS	Plant and Animal Health Service
PC	Program Coordinator (of the PCU)
PCA	Plant Conservation Action Group
PCU	Programme Coordination Unit
PM	National Project Manager
PSC	Project Steering Committee
SAA	Seychelles Agricultural Agency
SCR	Seychelles Rupees
SIF	Seychelles Islands Foundation
SNPA	Seychelles National Parks Authority
SSDS	Seychelles Sustainable Development Strategy
TMU	Technical Management Unit (of UNDP)
UNDP	United Nations Development Programme
USD	Dollars of the United States of America
WTO	World Trade Organization

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Executive Summary

Project Summary Table

Project Summary Table				
Project title	<i>Mainstreaming Prevention and Control Measures for Invasive Alien Species into Trade, Transport and Travel Across the Production Landscape</i>			
GEF project ID	3254	GEF financing	At endorsement (million USD)	At completion (million USD)
Country	Seychelles		2.0	1.9
Region	Africa	IA/ EA own		
Focal area	Biodiversity	Government	2.9	18.5
Operational program	GEF trust fund	Other	2.5	2.57
Executing agency	DOE	Total co-financing	5.1	21.0
Other partners involved	MoNR, MoF, MoH, SRC	Total project cost	7.1	22.9

Project Description (brief)

The GEF-funded, UNDP-supported project *Mainstreaming Prevention and Control Measures for Invasive Alien Species into Trade, Transport and Travel across the Production Landscape* (PIMS 3820) is a full-sized project funded under the GEF 4 Biodiversity Resource Allocation Framework with a grant of USD 2,000,000.00 and committed co-finance amounting to USD 4,995,624.

The project aims to address the threats posed by invasive alien species (IAS) to the biodiversity of the Seychelles and the crucial ecosystem services on which the economy and society of the islands depend. The project strategy intends to build-up national capacities to efficiently control entrance and manage the spread of IAS in the islands by tackling systemic, institutional and knowledge barriers. Thus, the project strategy is articulated in three outcomes, each addressing one of the barriers:

Outcome 1: “Policy and regulatory framework for effective control of the introduction and spread of IAS in place”.

Outcome 2: “Strengthened Institutional capacity to prevent and control the introduction and spread of IAS”.

Outcome 3: “Improved knowledge and learning capacities to control the introduction, establishment and spread of IAS”.

Evaluation Rating Table

Criteria	Rating
Monitoring and evaluation	
Overall quality of M&E	Satisfactory
M&E design	Satisfactory
M&E implementation	Highly Satisfactory
IA (UNDP) and EA (Ministry of Environment) execution	
Overall quality of project implementation	Satisfactory
Implementing agency execution	Satisfactory
Executing agency execution	Marginally satisfactory
Outcomes	
Overall quality of project outcomes	Satisfactory
Relevance	Relevant
Effectiveness	Satisfactory
Efficiency	Satisfactory
Sustainability	
Overall likelihood of risks to sustainability	Moderately likely
Financial risks	Moderately likely
Socio-economic risks	Moderately likely
Institutional framework and governance	Moderately likely
Environmental risks	Moderately unlikely
Impact	
Environmental Status Improvement	Minimum
Environmental Stress Reduction	Significant
Progress towards stress/status change	Significant
Overall project results	Satisfactory

Summary of conclusions, recommendations and lessons

Brief summary

The project has significantly contributed to effect reforms in the Seychelles regulatory framework that would provide an enabling environment for the implementation of an effective biosecurity system.

Said system comprises a designated biosecurity agency, the Seychelles Agricultural Agency, responsible for risk assessments and treatments to prevent IAS entry into the Seychelles and a National Biosecurity Committee to coordinate the enforcement of the newly enacted Biosecurity Act among government agencies, as well as constitute a forum to share information on status, trends and treatments for invasive alien species.

However, the reform process suffered delays that make it take a longer timeframe than expected. Consequently, the project needed to extend its implementation timeframe from five to seven years to be able to accompany said reform process to its conclusion.

Moreover, it took almost three quarters of a year for the project implementation to recover from the untimely death of Ms. Danielle Dugasse, project coordinator and official of the Biosecurity Agency. This tragedy affected the project at the critical midterm point of implementation.

The project did recover and was able to achieve vast majority of its targets. However, there were some shortcomings in project achievements, including sustainability issues related to the retention of capacities and financial sustainability of the strengthened biosecurity system, as well as coordination issues related to divergent visions on biosecurity by different stakeholders.

Summary of Conclusions

The project was well designed, with strong vertical coherence in its strategy, i.e. the results chain logically led to the project objective of achieving *increased capacities to prevent and control the introduction and spread of Invasive Alien Species through Trade, Travel and Transport across the Production landscape*.

The results are well formulated and based on a sound situational analysis of the context relevant to the development objective that was agreed with national stakeholders. However, the project strategy assumed a common vision of biosecurity among relevant stakeholders, as well as the absence of major risks to the planned timeframe for policy and regulatory framework reforms. Both assumptions did not hold true and constituted factors that hampered project implementation

Political and institutional changes effected after project design, including the downsizing of the public sector and the split of environment and natural resources responsibilities among two ministries played a role in the implementation of the project but did not substantially alter the

conditions for its implementation, as the impact of the institutional reform affected the project mostly by introducing new coordination dimensions among newly created agencies.

The project management structures demonstrated its solidity throughout the project implementation timeframe, managing to complete the vast majority of outputs of the project. The coordination unit demonstrated to have the capacity to address challenges posed by different views or even indifference towards biosecurity by some institutional players.

The monitoring and evaluation system was well planned and executed in general terms. However, there were some weaknesses in terms of quality of one outcome indicator, monitoring data of several indicators and the timeframe of the midterm review. One critical outcome indicator on ratio of government to non-government expenditure on IAS control was non-specific, i.e., changes of the variable could have been caused by factors other than the intended financial sustainability of the biosecurity agency, as well as being based in the wrong assumption that the biosecurity service could retain at least part of the income generated by fees and fines.

Monitoring and reporting was generally well conducted albeit with insufficient data on the following indicators: “ratio of IAS expenditure”, “threaten species status change” and “awareness on biosecurity”.

The project strategy is very relevant to the Seychelles, both as an instrument for the implementation of the main environmental policy, and as an answer to the main threat to the islands’ unique native terrestrial ecosystems.

The project decisively contributed to policy and regulatory reforms, developing a biosecurity policy and strategy that laid the ground for the final enactment of the Biosecurity Act in 2014. This act does not only provide the legal framework for risk assessments, inspections, treatments and collection of fees and fines, but, by being aligned with internationally recognized standards, has substantially facilitated the successful WTO membership candidature of the Seychelles.

However, the project could only partially achieve the objective of establishing a cost-recovery mechanism for the biosecurity service. Although the Biosecurity Act does provide the tools necessary for the collection of fees for processing permits and fines for violations, the fees and fines are not necessarily linked with the costs involved in processing permits and conducting inspections, nor with the potential damages caused by violations. More importantly, even increased revenue from fees and fines will be directed back to the treasury’s consolidated fund, without any guarantee of reinvestment in biosecurity activities. Thus, a cost-recovery mechanism that would include these two elements, correspondence between service/ damage to fee/ fine, and commitment with investment in biosecurity should be established for financial sustainability.

The project did not develop a concrete awareness strategy that included specific targets and indicators. Thus, awareness measures for the general public and travelers may have only had minor

effects. Furthermore, key institutional stakeholders still need more awareness on the implications of the new policy and regulatory framework supported by the project.

The project's support for the Plant and Animal Health Service as biosecurity agency was both strategic and in conformity with the project design, as well as being suggested as the best option by relevant institutional stakeholders from the Ministry of Environment at the design and inception stages of the project.

In spite of having the support of a majority of institutional stakeholders, the project approach was perceived by a minority yet key institutional actors as a divergence from a more traditional control and rehabilitation approach, primarily based on implementation of field activities. However, the project strategy did not prevent the deployment of "traditional" IAS eradication and control measures and in fact decisively supported such activities through a comprehensive effort in knowledge management and direct financial support of field activities.

In spite of this differences, and thanks to project support, the designated biosecurity agency, the Plant and Animal Health Service, together with the Customs Service is currently better able to inspect incoming passengers and cargo and hence the prevention of entry of IAS in the country has been significantly strengthened.

However, the biosecurity service has not yet sufficient capacity in terms of human and financial resources to conduct all necessary inspections, as mandated by the Biosecurity Act due primarily to lack of biosecurity approved premises, i.e. premises approved for the inspection, testing and treatment, and scarcity of qualified staff. Other biosecurity gaps still present are the lack of inspection of transit passengers at the Victoria International Airport, as well inter-island transport by boat and plane.

The National Biosecurity Committee (NBC), created with project support will play a crucial role in the successful enforcement of the biosecurity act. The NBC is mandated under the biosecurity act to act as the primary advisory body on biosecurity, thus advising actions by the biosecurity agency, as well as serving as an inter-agency coordination body.

Threats to the coordination among agencies are difference in levels of awareness of the economic and ecological threat posed by IAS, which can affect willingness to invest resources in IAS prevention and eradication, and, more marginally, competition for resources between advocates of a "preventive" approach that stresses control of entry paths and supporters of eradication actions against IAS already present in the country.

In fact, the NBC offers an opportunity to raise awareness on IAS among institutional actors, and to forge a common understanding of the necessary complementation of prevention and eradication actions based on the established fact that preventing entry of new IAS is more cost-efficient than eradication and rehabilitation, which was indeed the driver behind the project strategy. Yet again, it must be noted that civil society and private organizations involved in eradication and

rehabilitation actions, as well as the vast majority of institutional actors from the two relevant ministries, Natural Resources and Environment, support the project's approach.

The project has contributed to increase the current knowledge on IAS status, trends and management methods by producing and disseminating baseline stocktaking reports and funding research projects that yielded important results, such as better understanding of IAS ecology or determining the presence/ absence of pests in the country. Knowledge gaps still prevail in terms of documenting costs and cost-effectiveness of IAS management strategies.

More importantly, the project has significantly contributed to the development of capacities at the designated biosecurity agency, the Plant and Animal Health Service through trainings, and development of manuals. However, constraints of said biosecurity service in terms of capacity to recruit and retain qualified staff could hamper the implementation of the acquired capacity if the service budgets are not raised accordingly. In this respect, it must be noted that an important component of the project's capacity development strategy involved the financing a masters degree in biosecurity for the project manager that included specific and critically needed skills for the biosecurity service. Only her death prevented the incorporation of this capacity into the service.

Although capacity issues at the Seychelles Agricultural Agency have hampered the development of the planned national IAS database, the National Invasive Alien Species subcommittee of the NBC is expected to have a central role in sharing knowledge on trends, status and management methods for IAS among stakeholders.

The project suffered important delays during the first two years of implementation, mostly related to the efforts to set-up the unified project coordination unit, for the new approach to the implementation of a significantly different GEF project portfolio. Also, government recruitment procedures for the recruitment of a new project manager resulted in delays of almost half a year.

Administration and disbursement of the project by the PCU and the UNDP was conducted in a timely and agile manner, only affected by factors beyond the control of both institutions, e.g. government procedures.

There were not any major shortcomings related to either disbursement or procurement processes.

The common management structure for the complete GEF-funded project portfolio resulted in lower management cost against the alternative of setting-up separated management structures. Hence, in spite of the extension of over two years from the original timeframe, management expenses have amounted only to 16% of the total project grant. Additionally, the terminal evaluation could account for a five-fold increase in the committed level of co-finances.

In terms of sustainability, and although policy instruments such as the National Agricultural Investment Programme and the National Biodiversity Strategy and Action Plan support funding the biosecurity system, there are significant risks of budget cuts affecting the Plant and Animal Health Service.

Failure to provide budgets according with the responsibilities acquired by this agency as designated biosecurity agency would not only compromise the sustainability of the project investments in capacity, but the whole enforcement of the new regulatory framework. Funding should not be dependent on externally funded project are likely to continue support for IAS management efforts in the Seychelles, as these projects tend to focus on eradication and rehabilitation actions.

The impacts of climate change on the entry and spread of IAS in the Seychelles are poorly understood and more research in the topic should be needed to assess this threat. However, two environmental factors do pose a threat to the sustainability of the biosecurity system: native species that can become invasive e.g. *Acanthaster planci* in coral reefs or *Merremia paltata* in terrestrial ecosystems and purportedly beneficial organism e.g. for biological control or to boost productivity.

Summary of Recommendations

Recommendations constitute short to medium term actions needed to consolidate project benefits or to address risks to sustainability. Recommendations of the terminal evaluation are contained in the following table with indication of the main actors for their implementation.

Recommendation	Actors for the implementation
Current confusion among some key stakeholders, particularly institutional actors on <u>their roles and responsibilities</u> under the Biosecurity Act, including membership, roles and functions of the National Biosecurity Committee should be immediately addressed through awareness and communication measures.	PCU, SAA and MoNRI, cooperation with NGOs
The Ministry of Natural Resources and the Ministry of Environment, with the support of the PCU should seek funding to further training and studies for staff from the biosecurity agency. This can not only be an important factor in bringing in critically needed skills and know how, but can also serve to motivate and increase visibility and prestige of the biosecurity agency.	PCU, MEE, MoNRI
Efforts should be made to disseminate the knowledge products generated by the project, with active engagement of the PCU, the Ministry of Natural Resources and the Ministry of Environment. Key results in this endeavor would be finalizing the installation of the IAS database, promoting the activation of the National Invasive Alien Species Subcommittee (of the NBC) and incorporating the project's research results in the communication actions of government and non-government actors.	PCU, key government agencies, particularly the SAA and the DoE-MEE, SIF (as member of the NBC and expert in IAS), other NGOs

Recommendation	Actors for the implementation
<p>Support must be given to a more needs-based allocation of budgets for biosecurity service functions¹, involving a better coordination among the agencies and departments involved and making use of the new budget allocation mechanism, i.e. performance-based budget allocation and mid-term expenditure framework.</p> <p>Also, fees and fines included in the Biosecurity Act should be reviewed to more accurately reflect the costs incurred by the biosecurity service.</p> <p>The potential economic impacts of violation of the Biosecurity Act may reach enormous proportions, e.g. in the case of introduction of agricultural pests or accidental introduction of rats or parasites to outer islands. Hence, strict enforcement of a system of fines correlated with the damage cost is unrealistic and it could be even counterproductive if investments are scared away. Hence, the possibility of setting aside a fund or a liability insurance for agricultural, trade and tourism operators should be studied.</p>	<p>PCU, MoNRI, MEE, Ministry of Finance and Planning, General Attorney's Office, UNDP's BIOFIN</p>
<p>Include species with high risks of "invasiveness" such as <i>Acanthaster planci</i> in the list of regulated IAS to be included as one of the administrative provisions of the Biosecurity Act. This will likely prompt relevant government agencies to provide the necessary support to include monitoring and treatment of these species in management protocols</p>	<p>MEE, SNPA, MCSS, PCA, other NGOs</p>

Summary of Lessons Learned

Lessons learned constitute recurrent factors identified by the terminal evaluation that should be taken into consideration at the design and implementation phases of new projects. Therefore, lessons learned do not include implementation actors.

Project LFA indicators and its monitoring are critical to establish progress towards development objectives and therefore constitute the primary tool for adaptive management. Hence, at design and inception, it is necessary to rigorously test all indicators against SMART quality standards, particularly specificity, i.e. to establish if any factor other than the project can cause changes of the indicator variable.

Awareness strategies should have clearly defined objectives and target groups, as well as measuring mechanisms, i.e. the indicators and the methods to collect information e.g. surveys, as well as be provided with sufficient budget to cover the costs of monitoring. Failing to do that denies stakeholders the possibility of learning what strategies are most cost-effective for what awareness

¹ i.e., for the PAHS and other government agencies involved in IAS control measures, e.g. Customs or DoE

objectives. Strategic, specific investment in awareness, would likely yield better results than general, diluted messages.

As recruitments constraints are nothing new in SIDS context, contingency plans to avoid halts in project delivery could be developed by e.g. designating deputy project managers, pre-identification of experts, and signature of memoranda of understanding with implementing partners. However, it must be noted that the PCU and the UNDP did in fact implement all the measures mentioned above, including signing agreements with both the Department of Environment and the Seychelles Agricultural Agency and interim covering vacant positions by reassigning tasks of the remaining staff.

Accounting of expenditure should be consistent with budgeting. Mechanism to ensure this are, at project design, double check budget accounts and budget notes, and, during implementation coordinate expenditure accounting between UNDP and project implementation unit and keep documentation on “expenditure notes” to enable to track down project costs to activities.

1. Introduction

1.1. Purpose of the evaluation

The purpose of a terminal evaluation, as expressed in the terms of reference is to assess the overall performance against the project objectives as set out in the Project Document and revisions thereof. In accordance with the evaluation terms of reference, the terminal evaluation has specifically:

- Assessed project relevance to national priorities
- Assessed the effectiveness, i.e. the extent to which the project has achieved the targets set at project inception and efficiency, i.e. the extent to which results have been delivered with the least costly resources possible of the project
- Critically analyzed the implementation and management arrangements of the project, including financial management
- Assessed the sustainability of the project interventions and consider project impacts
- Documented lessons and best practices concerning project design, implementation and management which may be of relevance to other projects in the country and elsewhere in the world.

The terminal evaluation differs from the other mandatory independent assessment of the project, the midterm review, in their objective and their timeframe. The midterm review is a monitoring tool applied at midterm project implementation to identify challenges and outline corrective actions to ensure that a project is on track to achieve maximum results by its completion. Thus the focus of the midterm review is to independently assess the progress towards results and recommendations to improve implementation, while the terminal evaluation focus on verification of their implementation and attainment of objectives, and synthesizing lessons learned for use in future projects.

The terminal evaluation has been conducted according to the guidance, rules and procedures established by UNDP and GEF as reflected in the UNDP Evaluation Guidance for GEF Financed Projects (2011) that include the UNEG ethical guidelines for evaluation. The evaluator has signed the Code of Conduct form attached to this report.

1.2. Scope & Methodology

1.2.1 Scope

The scope of the terminal evaluation is the GEF-funded, UNDP-supported project, *Mainstreaming Prevention and Control Measures for Invasive alien Species into Trade, Transport and Travel across the Production Landscape* (PIMS 3820), including its inputs (financial and human resources),

activities, outputs, outcomes and impacts, its target beneficiaries, implementing and executing agencies, as well as its development and environmental context.

The terminal evaluation has taken into account the views of all implementing partners (executing and implementing agencies) and relevant stakeholders.

1.2.2 Methodology

The terminal evaluation will objectively assess the relevance, effectiveness, efficiency, sustainability of the project.

The primary tool to conduct the evaluation is the evaluation matrix, attached to this report as annex 1a. The evaluation matrix lists the purpose and specific objectives of the terminal evaluation as formulated in the terms of reference in the form of questions for which the evaluator devises indicators, sources of information and methods of collection.

Data sources to answer the evaluation questions are detailed in the matrix. Redundant sources of information were sought to permit “triangulation” with primary and secondary sources, i.e., to establish the reliability and validity of the evidence collected by contrasting different sources.

Quality criteria

The terminal evaluation applies SMART quality standards to the formulation of both results (outcomes, outputs) and indicators. SMART stands for specific, measurable, achievable, relevant and time-bound.

Data collection

Primary sources were project beneficiaries and stakeholder that the evaluator interviewed during the course of the evaluation’s field mission. The main purpose of the primary data collection was to record the views and perceptions of stakeholders and to confirm the secondary information sources, as well as direct observation of project outputs.

For this terminal evaluation, semi-structured individual or group interviews of an approximate duration of 45 minutes were conducted with relevant stakeholders listed in annex 2. Also, the terminal evaluation included one field visit to the Victoria International Airport and another to commercial warehouses where biosecurity inspections were conducted, to assess in-situ how equipment and training provided by the project was being applied.

Secondary sources consisted of relevant documents including project implementation and technical reports, as well as other papers, publications and knowledge products produced by the project, the Seychelles Sustainable Development Strategy, National Biodiversity Action Plan and other relevant national planning and strategy documents, strategy and programming documents of bilateral and

multilateral actors, such as the African Development Bank and the European Union, as well as peer reviewed papers, grey literature and on-line databases on the project's topic and geographical area.

Rating

Conforming to UNDP-GEF guidance for terminal evaluations the terminal evaluation will provide ratings for the relevance and effectiveness of the project outcomes, the effectiveness of the monitoring and evaluation system, the efficiency of the project strategy, the sustainability of project results and the impacts of the project. The rating will follow the following system:

1. Outcomes, Efficiency, M&E system, IA&EA execution

(HS) Highly Satisfactory: no shortcomings in the achievements of objectives

(S) Satisfactory: minor shortcomings in the achievements of objectives

(MS) Moderately satisfactory: moderate shortcomings in the achievements of objectives

(MU) Moderately unsatisfactory: significant shortcomings in the achievements of objectives

(U) Unsatisfactory: major shortcomings in the achievements of objectives

(HU) Highly Unsatisfactory: severe shortcomings in the achievements of objectives

2. Project relevance

Relevant: The project supports national and subnational development objectives, as well as international environmental agreements and it is implemented with active national participation.

3. Sustainability

(L) Likely: negligible risks that affect sustainability

(ML) Moderately likely: moderate risks that affect sustainability

(MU) Moderately unlikely: significant risks that affect sustainability

(U) Unlikely: severe risks that affect of sustainability

4. Impact

(S) Significant: significant environmental stress reduction/ environmental status improvement

(M) Minimal: minimal environmental stress reduction/ environmental status improvement **(N)**

Negligible: negligible environmental stress reduction/ environmental status improvement

Ratings are only shown in the ratings summary table exposed in the report summary. All ratings are based in the indicators of the evaluation matrix as follows. Outcomes and effectiveness are based on the achievement of targets of the project's indicator framework, which can be consulted in annex 1b, Monitoring table, and scores in annex 1c, score table. Efficiency is based on the indicators defined in the evaluation matrix (annex 1a) and tallied in the score table (annex 1c). The basis for the execution ratings are in the efficiency indicators of the evaluation matrix organized as shown under IA and EA execution ratings in the score table (annex 1c).

Sustainability is rated based on indicators for its financial, socio-economic, institutional and environmental dimensions, according to a risks analysis shown in section 2.5 *Sustainability* of this report.

Impact is rated based on the removal of barriers identified at project design, achievement of outcomes and effects on biodiversity as analyzed in section 2.3.3 Attainment of objectives of this report and tallied as shown in the score table (annex 1c).

2. Findings

2.1. Project design/ Formulation

2.1.1 Analysis of the results framework (Project strategy/ assumptions and risks)

The project strategy had the objective of ensuring the flow of ecosystem services for sustainable development in the Seychelles by creating enabling conditions to develop and implement effective measures to address threats to biodiversity.

In the early stages of project design, the very same engines of economic and social development in the Seychelles were identified as the main threats to biodiversity: tourism development and consequent land use change, fisheries and overexploitation of marine resources, as well as trade and connectivity as vehicle for the introduction and spread of invasive alien species. Consequently, a program originally called Integrated Ecosystem Management was designed to address these threats and implement components of the main national environmental strategy, the Environmental Management Plan of the Seychelles. The original strategy was articulated in two components, the first aimed at mainstreaming biodiversity management into policies and plans of the fisheries and tourism sectors and the second intended to mainstream prevention and control measures into trade and transport.

However, in view of the different approaches and stakeholders involved in the two components, the original program was split in two projects: *Mainstreaming Biodiversity into Production Sector Activities* (PIMS ID 2053) and *Mainstreaming Prevention and Control Measures for Invasive Alien Species into Trade Transport and Travel* (PIMS ID 3820).

The strategy of PIMS 3820, with the short title Biosecurity project, was based on the weaknesses acknowledged in the control of entry paths of invasive alien species, both at and within the country's borders, as well as the piecemeal and uncoordinated manner in which eradication or control measures for invasive species already present in the country was being conducted.

These weaknesses were formulated in the project document as barriers that affect the implementation of effective control measures at the systemic, institutional and technical levels:

- **Systemic barriers:** Outdated and partially contradictory legal and regulatory framework combined with low awareness on impacts of invasive alien species (IAS) and importance of control measures
- **Institutional barriers:** Capacity gaps in terms of human resources, equipment and training at the government agencies involved in IAS control and weak coordination among them and with non-government actors
- **Technical barriers:** Knowledge gaps on status and trends of IAS in the Seychelles, as well as insufficient documentation of lessons learned and best practices.

These problems and barriers are validated by several studies and papers² and had been confirmed by the stakeholders at project inception and in the course of the interviews conducted during the field mission of the terminal evaluation. Accordingly, the project's strategy was formulated in three outcomes to address each of the barriers:

- **Outcome 1:** Policy and regulatory framework for effective control of the introduction and spread of IAS in place
- **Outcome 2:** Strengthened Institutional capacity to prevent and control the introduction and spread of IAS
- **Outcome 3:** Improved knowledge and learning capacities to control the introduction, establishment and spread of IAS. Assumptions and Risks

Each of the outcomes were expected to come about **if the project delivered** the products/ outputs listed in table 1.

Table 1. *Project results*

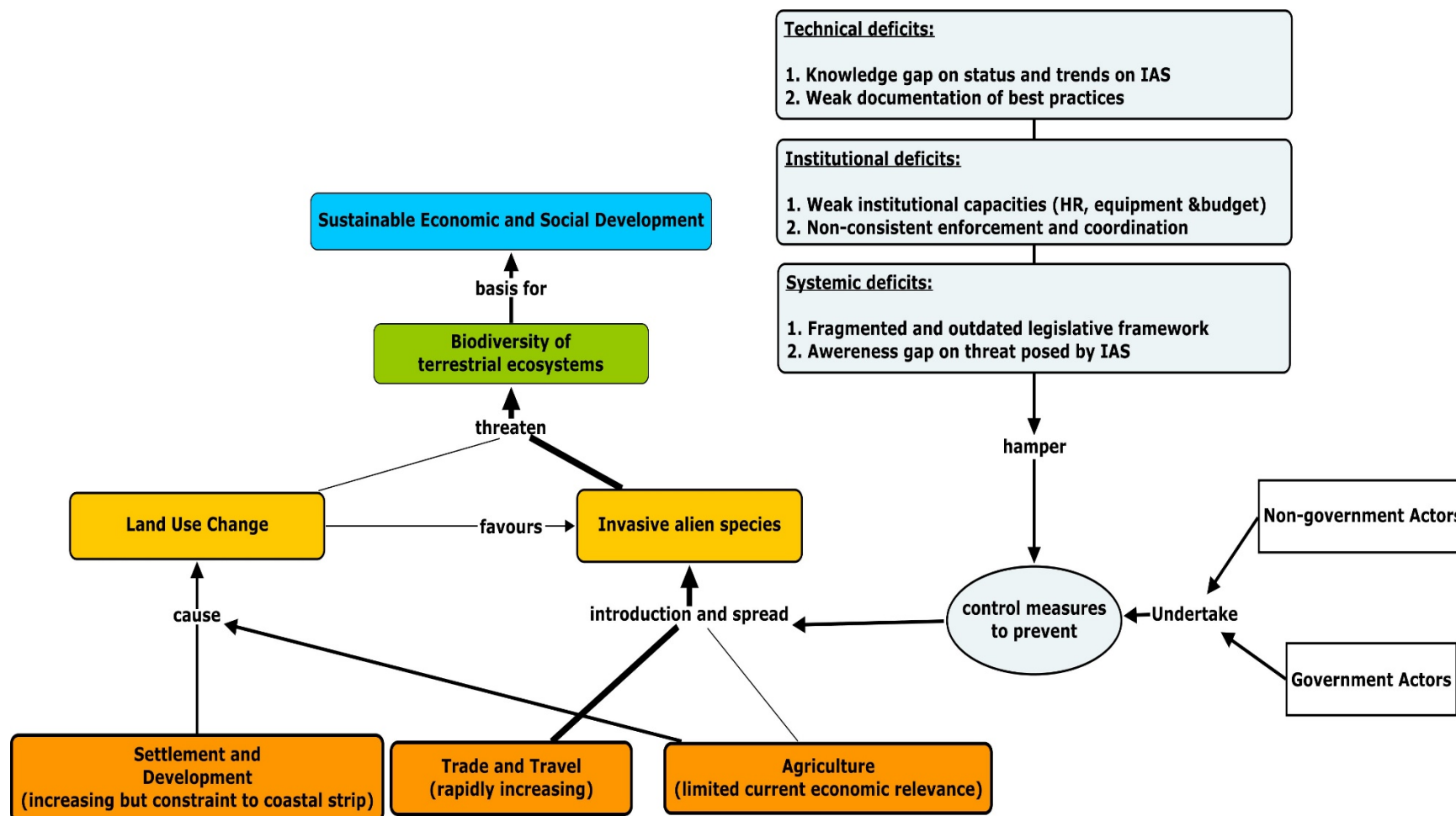
Outcomes	Outputs
1. Policy and regulatory framework for effective control of the introduction and spread of IAS in place	1.1 An overarching and comprehensive IAS policy developed
	1.2 National legislative framework dealing with IAS amended and brought in line with international standards
	1.3 Cost recovery system for Biosecurity Service is in place
	1.4 National Communication Plan / Public Awareness Strategy on IAS management developed and Implemented
2. Strengthened Institutional capacity to prevent and control the introduction and spread of IAS	2.1 "Biosecurity Service" created
	2.2 Biosecurity Service equipped and staffed with capacitated human resources
3. Improved knowledge and learning capacities to control the introduction, establishment and spread of IAS. Assumptions and Risks ³	3.1 IAS baseline established
	3.2 Lessons learned and best practices on IAS eradication & control, and habitat restoration established and disseminated

All results formulated in the project document (outcomes, outputs) respond to SMART criteria as they refer to **specific** and **measurable** results, e.g. the development/ establishment/ enactment/ approval of a state policy/ law/database/state service, and **relevant** to the project's objective (e.g. policy on IAS, comprehensive legal framework on IAS, creation of a biosecurity service, IAS database). All results are also **achievable** within the 4 year timeframe of the project if the assumptions discussed below hold true. By definition, project results are **time-bound** as they must be achieved within the implementation timeframe.

² E.g. C. Kueffer and P. Vos (2004), Vielle (2003)

³ The wording of this outcome was changed at the inception workshop in 2008 from *Improved knowledge and learning capacities to control the introduction, establishment and spread of IAS* to *Improved knowledge and learning capacities for the management of IAS* as it was felt that the formulation was restrictive, and not inclusive of all aspects of IAS, e.g. mitigation, eradication, etc. (Project Inception Report, 2008)

Figure 1. Problem tree and barriers. Root problems represented in dark orange, ultimate causes light orange, immediate and ultimate impacts in green and blue respectively. Thickness of the lines represent relative importance of the causes leading to the impacts.



Assumptions and risks

Assumptions are crucial elements of the project strategy. Assumptions are the *necessary elements that allow for a successful cause-and-effect relationship between different levels of results*⁴. This means that an assumption should be a necessary condition very likely to be present, but beyond the influence of the project.

As shown in table 2, the assumptions made by the project design were in general true with the following exemptions: assuming that biosecurity fees will be used for recurrent costs of the biosecurity service, that all actors will agree on what policy and regulatory reforms are needed and that these reforms will not be delayed. Although the three factors mentioned do indeed constitute necessary conditions for project success and are largely beyond project control, they were not very likely to occur, and in fact none of them materialized. Thus, making these assumptions had some consequences in the development of the cost-recovery mechanism and financial sustainability, as well as in the development of reforms to the regulatory framework that will be discussed in the section 3.2.2 *Attainment of Outcomes*.

Furthermore, the assumption related to the retention of capacity by the biosecurity service and the agreement needed for the policy reforms are not valid assumptions but are rather products that the project is committed to deliver under outcomes 2 and 1 respectively.

The project document identifies four risks to the project implementation. Risks are similar to assumptions in that they are necessary factors for project success but differ in that the project can exert some degree of control over them. The risks identified were: conflicts among stakeholders, lack of public support for IAS measures, increase in trade leading to more IAS imported into the country and climate change. All risks are rated as modest except for climate change, rated substantial.

Only the first identified risk actually complies with the UNDP operational definition of risk, albeit somehow contradictorily, since the harmonious cooperation among stakeholders had been previously assumed. The mitigation strategy suggested is valid: formalize cooperation through memoranda of understanding.

The second risk, lack of public support, is actually one of the barriers the project intends to address with output 1.4 and the last two do constitute risks to the sustainability of the project but that are largely beyond project control. As it will be argued in section sustainability, climate change and increase in trade and connectivity do indeed pose a threat to project sustainability but not to the implementation of the project and achievement of its objectives.

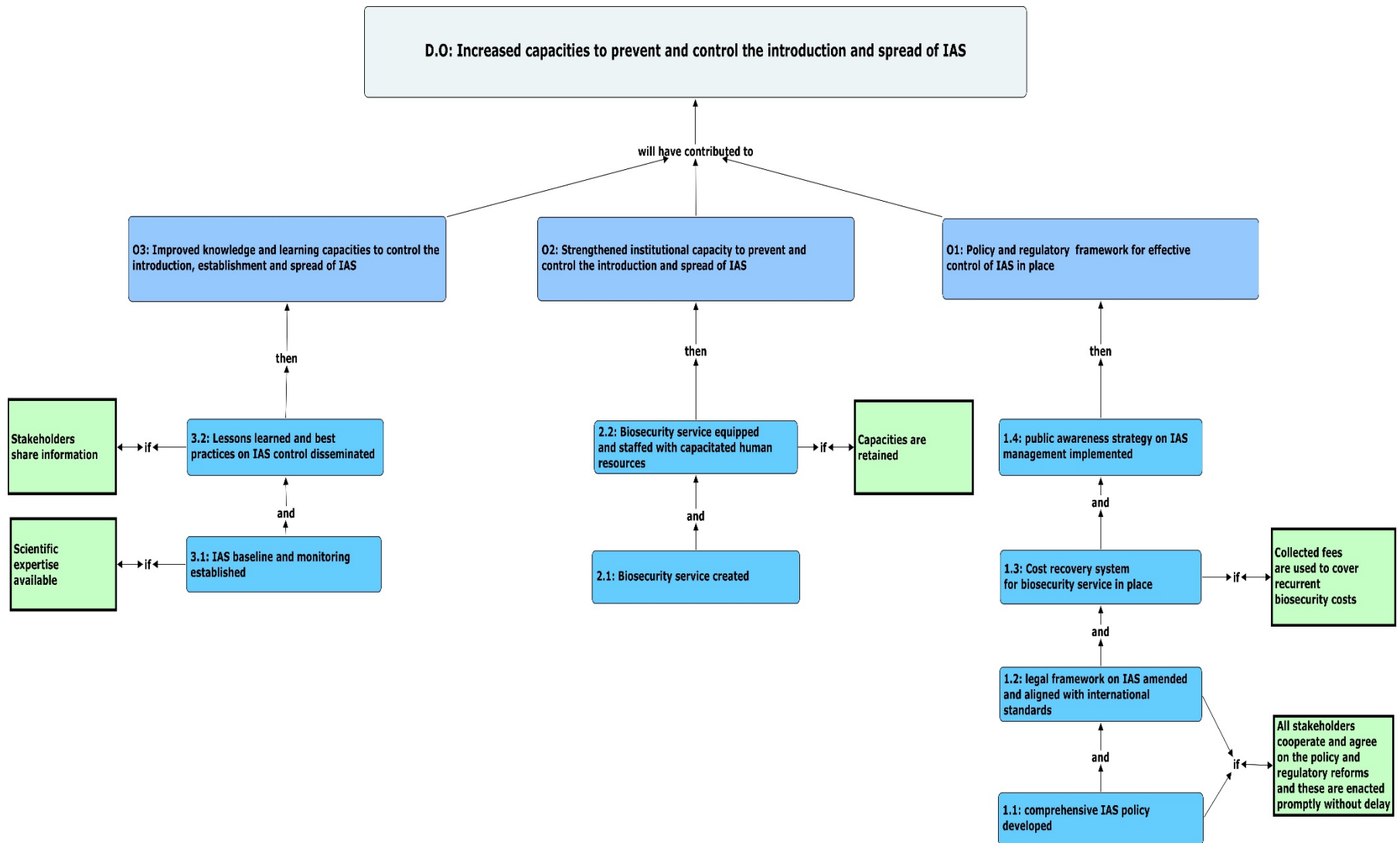
Figure 2 illustrates the connections between the outputs and the outcomes and of these with the development objective, including the assumptions that need to hold true.

⁴ UNDP, 2009

Table 2. Project assumptions against assumptions validity criteria. Assumptions must not be a project result, they must be necessary for project success, outside project control and very likely or certain to occur. T stands for True and F for False

Result	Assumption	Not project result	Very likely to occur	Outside project control	Necessary for project success
Objective	Continued interest in IAS from Government.	T	T	T	T
	Cooperation of other government regulatory authorities continues.	T	T	T	T
	Collected fees from Biosecurity Service are used for own recurrent costs.	T	F	T	T
	Red lists of threatened species continued to be updated	T	T	T	T
Outcome 1	Government, civil society and private sector continue to work together in a participatory, constructive fashion.	T	T	T	T
	Key stakeholders reach agreement of policy and legal reforms needed.	F	F	F	T
	Laws and policies will be enacted promptly without delays that would constrain the timely implementation of the project.	T	F	T	T
	Theme is acceptable to all sectors of the public and interpreted in a positive manner.	T	F	F	T
Outcome 2	Biosecurity Service is able to develop and retain the capacity to undertake the technical risk analysis to an international standard.	F	F	F	T
Outcome 3	Stakeholders willing to share information	T	T	T	T
	Specific expertise available	T	T	T	T

Figure 2. Project logic. O= Outcome, D.O= Development Objective. Results in bluish rectangles and assumptions in green rectangles



2.2. Project Implementation

2.2.1 Changes in the institutional context during project implementation

Although the bulk of the work on project design took place 2-3 years before implementation, the basic premises were still valid, i.e. systemic, institutional and technical barriers prevented the introduction of more effective control measures to limit the entry and spread of invasive alien species through trade and travel.

However, in 2008, as the project began implementation, the country's socio-economic, political and institutional situation had suffered important changes that particularly affected the project's executing agency, the Ministry of Environment and Natural Resources.

Years of macroeconomic unbalances, i.e. negative current account balance and increasing external debt, together with the global financial crisis, led to a sovereign debt default in 2008. This caused a paradigm shift at government level that started re-negotiating its international debt and introduced an IMF-supported liberalization program that included market-based reforms, liberalized foreign exchange policy and structural reforms, i.e. downsizing of the public sector.

These two latter measures in particular had significant effects on the biosecurity project. The liberalization of the foreign exchange led to an abrupt devaluation of the Seychelles rupee that caused some delivery related challenges since the project was funded by a grant in USD, while national professional services and goods remained priced in SCR.

More importantly, the structural reforms caused a deep rationalization of government services, including a staff reduction of over 30% at the Ministry of Environment and Natural Resources and the split of its responsibilities between the new ministries of Environment and Energy and of Natural Resources. Although these reforms did weaken the institutional framework, it must be noted that the budget and staff cuts were made across all government institutions, i.e. the government environment sector was not relatively weakened. Also, the reforms prompted more cooperation with non-government environmental actors. The role of the Ministry of Environment was focused henceforth in policy and strategic direction and away from direct implementation of projects.

Of particular importance for the biosecurity project was the creation of the Seychelles Agricultural Agency (SAA), an autonomous agency under the Ministry of Natural Resources in 2009. Within the SAA, the plant protection and veterinary services of the former Department of Natural Resources were combined in one Plant and Animal Health Service (PAHS). The PAHS, with responsibilities on quarantine and import inspections, including prevention and control of invasive species and hence fell within the scope of the biosecurity service that was a key result of the biosecurity project. The fact that the PAHS/ biosecurity service was placed under the Ministry of Natural Resources, now distinct from the executing agency, the Ministry of Environment and Energy had some impacts on some of the project's outcomes, as it will be described in section 3.2.2 *Attainment of Outcomes*.

2.2.2 Management arrangements

Planned stakeholder participation and management arrangements (relevant stakeholders and country ownership)

The Project was designed by a team of consultants that included national and international experts from 2005 until 2007. The project preparation team undertook extensive consultations with interested parties through a series of presentations, interviews, and workshops. Progress reports were submitted to the Environmental Management Plan of Seychelles (EMPS) Steering Committee, which comprises all major environmental stakeholders.

As normative for any UNDP implemented project of the National Implementation modality, the overall supervision of the project was held by a project steering committee (PSC), comprised of the most pertinent stakeholders of the project, proposed by the EMPS Steering Committee and endorsed by Government and UNDP. The PSC was to meet periodically to *consider progress, budgets & workplans, set policies and targets for the different projects, and evaluate major TORs and bids for contracts and periodically report to the EMPS Steering Committee.*⁵ The steering committee would have been composed of the Department of Environment, Ministry of Environment, MENR (Chair), Department of Land Use, Ministry of Land Use and Habitat, Department of Natural Resources, Fishers' organization, Seychelles Hospitality and Tourism Association (SHTA), Seychelles Fishing Authority, Seychelles Tourism Board, NGOs and the UNDP-GEF Program Coordinator (Secretary).

The overall management of the project was to be directed by a Project Coordination Unit (PCU). The PCU was constituted as a government service under the Department of Environment. The PCU would be in charge of the implementation of all the projects of the UNDP-GEF portfolio in Seychelles and would be led by a Program Coordinator (PC), national or international expert, supported by an administrative team, with the assistance of the UNDP Technical Management Unit (TMU) to ensure transparency and accountability, especially with procurement processes.

Within the PCU, a National Project Manager (PM), would have been responsible for the Biodiversity thematic level, i.e. the combined Biodiversity Sector Mainstreaming and Biosecurity Mainstreaming Projects while the implementation of the projects will actually conducted by the government and non-government implementation partners of the project. To this effect, *broad participation will be sought within the relevant production sectors and civil society* including existing platforms such as the IAS committee, national parks committee, legal review committee etc.

A National Project Director would be appointed by the Government to ensure the liaison between the PCU and government, as well as the timely and adequate disbursement of funds

⁵ Biosecurity project document

Management structures during implantation and country ownership

All management structures functioned as planned with the following differences: from 2010 onwards the biosecurity project counted with its own separate manager, as opposed to a joint manager for the two biodiversity projects (*Biosecurity* and *Mainstreaming Biodiversity*). The project steering (PSC) committee kept its role of supervision over both projects, meeting on a quarterly basis.

Coordination between PCU, UNDP and national partners directly involved in specific project activities was seamless. However, project reports point out the regular absence of key partners, particularly the Ministry of Environment, in project steering committee meetings. This is likely related to the project focus on the Plant and Animal Health Service, identified since project inception as taking key responsibilities of a biosecurity agency. This service is part of the Seychelles Agricultural Agency under the Ministry of Natural Resources, a fact that generated the perception of the project having been “diverted” from a traditional IAS “environmental” approach to an “agricultural” project. These divergent ideas on how the project should have addressed IAS, essentially, the weight that should have been given to field activities of control and eradication, played an important role during the implementation of the project and have not yet been reconciled.

In spite of the different perceptions on the issue, the Programme Coordination Unit was able to gain support for the implementation of almost all of the project outputs. However, notwithstanding the fact of the PCU being part of the Department of Environment, under the newly formed Ministry of Environment and a senior member of MEE being appointed as National Project Director (as well as GEF operational focal point), the PCU was generally perceived as external by government partners, what sometimes made it challenging to reach out to some agencies outside the environmental domain. However, it demonstrated ability to establish alliances and synergies within the “environmental” sector and beyond.

2.2.3 Monitoring and evaluation: design at entry and implementation

The project design comprised a monitoring and evaluation system and plan that included the following instruments: log-frame (LFA) indicators, project reports (inception report, annual project report, project implementation review, quarterly project reports, and a project terminal report), annual tripartite reviews, as well as a project midterm review and a terminal evaluation.

LFA indicators

The project’s logical framework incorporated 11 objectively verifiable indicators (OVI), of which two corresponded to the project’s development objective and the rest to the project outcomes. The

outcome indicators follow SMART criteria in general, with the exception of two of the indicators for outcome 1, as it will be explained below.

The achievement of the development objective should have been indicated by two OVIs:

1. *Well-functioning national IAS inspection and quarantine system in place that functions across all production sectors of the country*
2. *No up-grading or addition of threatened or vulnerable species from Seychelles on IUCN red list of threatened species due to effects of IAS.*

The first OVI is identical with the indicator of outcome 2 and hence seems not to reflect all the dimensions of the development objective of *increased capacities to prevent and control the introduction and spread of Invasive Alien Species through Trade, Travel and Transport across the Production landscape*. However, the good logic behind the choice of indicators is evident: if we could attest that there is a *functioning national IAS inspection and quarantine system in place that functions across all production sectors of the country* so that negative impacts of invasive alien species on the native biodiversity are avoided, as shown by the lack of negative change in the threaten status of native species, then the objective of *increased capacities to prevent and control the introduction and spread of Invasive Alien Species* would have been achieved.

Yet, the first OVI on a functional biosecurity service, necessarily needs the achievement of an enabling policy and regulatory framework, as well as improved knowledge on status and trends of IAS and management methods, i.e. the achievement of the other two outcomes.

The second indicator, *up-grading or addition of threatened or vulnerable species from Seychelles to the IUCN Red List due to effects of IAS* is indeed a good SMART indicator for the development objective and similar to the objective indicator used in another UNDP-GEF project on IAS titled *Populations of indicator endemic and native species are maintained at stable levels*⁶, as well as being an indicator of the status and trends of the components of biological diversity by the Convention on Biological Diversity.

Since ca. a third of the species in the Red List for the Seychelles have been assessed in the period 2012-2014, the change in Red List status is a valid indicator of impacts of IAS on biodiversity. However, it would not allow us to establish a causal relationship with any current effect of the project actions, since the systemic and institutional changes the project intended to introduce have not yet been or are just starting to be realized.

Moreover, any changes in population parameters of a native species threatened by IAS would depend on timeframes related to the life cycle and ecology of both species (native and IAS) and

⁶ Project document, GEF ID 763 Control of Invasive Species in the Galapagos Archipelago

other natural and/ or anthropogenic factors, as well as the Red List assessment timeframe (five years)⁷.

Terminal Evaluation Rating

The rating of project effectiveness should have been made entirely based on the degree to which the targets for the objective and outcome indicators have been achieved. However, two indicators for the first outcome lack the criteria of specificity, i.e. the degree to which changes in the indicator are solely caused by project effects and/ or relevance to the intended effect:

- *Amount spent from non-government sector on IAS control*
- *Management and Traveling public, tourism operators, importers and shipping agents aware of risks of IAS and need for biosecurity.*

Amount spent from non-government sector on IAS control and Management intends to measure the success of the project in creating a cost-recovery mechanism for biosecurity services and the increase in NGO investment under an improved legal framework. However, changes in government and non-government expenditure depend on a variety of factors, most of which are related to fund availability and budget priorities. For instance, biosecurity budget cuts, with or without cost-recovery mechanism would be rated positively by the indicator, or funds from external donors could change the government/ non-government expenditure ration independently of any project action.

Traveling public, tourism operators, importers and shipping agents aware of risks of IAS and need for biosecurity merely lacks specificity, and any measure of it would need to control for any other source of awareness on biosecurity other than the project. So, for instance, a survey intending to measure this indicator should test for changes in awareness in the different target groups as a result of the actions of the project.

To solve the problem presented by the weak specificity of these two indicators, the terminal evaluation will assess the degree to which a cost-recovery mechanism has been developed and implemented and the level of awareness of different groups targeted by the project's awareness actions.

To evaluate the overall results and impact, the terminal evaluation will be using a combination of the global achievement in terms of outcome targets, together with an evaluation of the indicator on biodiversity status and an assessment of development changes at the systemic, institutional and technical barriers.

⁷ IUCN, 2012

Project reports

The project produced the GEF required Project Implementation Reviews (PIRs) and Quarterly Project Reports (QPRs). PIRs are submitted annually after the second quarter of the year and contain information on progress against the targets set in the logical framework, as well as justified ratings by the project manager and the UNDP on project implementation. Preparation of the PIR was the responsibility of the project manager. Thus, the 6 PIRs produced by the project between 2009 and 2014 have constituted one of the primary information sources for this terminal evaluation. QPRs are submitted at the end of every quarter and constitute the basic monitoring instrument. Some QPRs and PIR contain some information on project expenses and co-finance, but the bulk of information on the project expenditure has been obtained from the UNDP Combined Delivery Reports that summarize project expenditures per budget account and outcome.

PIRs and QPRs are informative and clearly written. However, some of the information in the PIRs is duplicated, mainly due to the dual role of the second objective indicator as outcome two indicator and the indicator achievement table includes abundant narrative that is partially repeated at the justified rating section.

PIRs must include ratings by the project manager, UNDP country office and the UNDP Regional Technical Advisor. These ratings were included and were always based on data contained in the reports and related to the reporting period. The ratings were updated and justifications wrote anew in every reporting period.

Midterm review

The project midterm review (MTR) has the purpose of assessing the project's progress at midterm and produce useful recommendations to improve project implementation, including achievement of results and sustainability. The MTR for this project would have been conducted in 2010, had the project implementation gone according to plan. However, due to slow delivery in the first two years of implementation, by 2010 the project had barely started achieving its targets. Thus, the project MTR was reschedule for early 2012 in sequence with the MTR of its sister project Mainstreaming Biodiversity. Still, a change in the UNDP-GEF evaluation policy effected in June 2012 prompted a further delay in the MTR, which finally took place in November that year.

The MTR included recommendations that were responded with corresponding measures or justified answers by the project management. The MTR expressed criticism of the placement of the biosecurity agency under a primarily agricultural agency and found shortcomings in the project's alignment with the country's environmental policy as well as considered the project's indicator framework to be non-compliant with SMART criteria. Moreover, the MTR also had recommendations on collection of monitoring and financial information. More importantly, the MTR critically discussed technical aspects of the biosecurity bill, being developed at that time and the Biosecurity Policy approved in 2011. The project management, while not accepting some of the

conclusions, such as strategic misalignment did take note of the recommendations and introduced corrections e.g. to the Biosecurity Policy.

Table 3 Objectively verifiable outcome indicators. Colors indicate conformity (green) or disconformity (reddish) with SMART criteria

Outcome	Indicator	Specific	Measurable	Achievable	Relevant	Time-bound
1. Policy and regulatory framework for effective control of the introduction and spread of IAS in place	New overarching and comprehensive Policy on IAS implemented	Yes, it directly responds to a project action. However, it does not indicate criteria to evaluate implementation of the policy	Yes, but additional criteria needed. The TE considers implementation if used as basis for action, e.g. new laws, budgets, etc.	Yes, accepting the assumption that the project can actually influence the policy-making cycle	Yes, reforming the policy framework lies at the core of the intended effect	Project timeframe by definition
	New legislation which conforms with international standards is enacted for IAS prevention, control and management	Yes, it directly responds to a project action. However, it does not indicate criteria to evaluate “conformity with int. standards”	Yes, but, criteria must be made explicit to assess alignment with international standards. The TE follows the project criteria: IPPC and OIE standards.	Yes, accepting the assumption that the project can actually influence the legislative cycle	Yes, reforming the legal framework lies at the core of the intended effect	Project timeframe by definition
	Amount spent from non-government sector on IAS control and management	No, since there are a number of other factors that can modify the govt.-NGO expenditure ratio	Yes, in principle, if counting with adequate data, i.e. accurate, disaggregated govt. and NGO financial data	No, expenditure beyond project control	No, changes in NGO expenditure are mostly related to availability of funds	Project timeframe by definition
	Traveling public, tourism operators, importers and shipping agents aware of risks of IAS and need for biosecurity	No awareness levels may depend on other factors	Yes, if surveys are conducted related to project actions	Yes, if project awareness actions directed at target groups	Yes, if surveys test for results of project’s awareness actions	Project timeframe by definition

Outcome	Indicator	Specific	Measurable	Achievable	Relevant	Time-bound
2. Strengthened Institutional capacity to prevent and control the introduction and spread of IAS	Fully functioning Biosecurity Service (conducting routine inspections, identifications and effective treatments over all pathways)	Yes, it responds to project actions	Yes, with variables: 1. capacity for risk profiles 2. inspecting all risk goods, passengers, conveyance, 3. doing treatments 4. collecting fees for service	Yes, main target of project strategy	Yes, development of institutional capacities lies at the core of the project strategy	Project timeframe by definition
	% of commodities, conveyances, goods and passengers that are inspected or undergo targeted or random baggage searches for IAS	Yes, it responds to institutional capacities	Yes, if data and access provided	Yes, logical conclusion of improved regulatory framework and capacities	Yes, as this has been identified as main entry pathway for IAS	Project timeframe by definition
3. Improved knowledge and learning capacities for the management of IAS	IAS that pose significant economic and ecological threat established in Seychelles are identified	Yes, IAS baseline needed for knowledge system	Yes, existence of IAS baseline report or database	Yes, output of the project	Yes, main component of project strategy	Project timeframe by definition
	Economically efficient, feasible and practical control and mitigation programs of IAS in place	Yes, but it needs criteria to assess quality	Yes. Project eventually defines criterion as cost-effectiveness	Yes if criterion is cost-effectiveness	Yes, main component of project strategy	Project timeframe by definition
	Sustainable knowledge & learning network in place and used	Yes, but it needs criteria to assess use of "use of knowledge"	Yes, criteria would be existence and use based on TE respondents	Yes, logical conclusion of project strategy	Yes, main component of project strategy	Project timeframe by definition

2.3. Project results: relevance and effectiveness

2.3.1 Relevance

The constitution of the Seychelles includes a clear commitment with the preservation of the environment. This commitment has been expressed in a number of national plans and strategies. The main environmental policy at the time of project design was the Second Seychelles Environmental Management Plan (EMPS) 2000-2010. The EMPS II had the objective of coordinating and mainstreaming sustainable development efforts in all sectors, including governmental and non-governmental actors. It consists of programs divided in 10 thematic areas, including an estimation of the implementation costs. Invasive alien species was identified as one of the management priority areas and hence the EMPS included one program, with a cost of 810,000 USD, dedicated to control of invasive species. The program intended to strengthened control measures for invasive species already present within the national borders.

A new environmental plan was developed under the name of Seychelles Sustainable Development Strategy (SSDS) 2012-2020 during the implementation of the project. With a structure similar to the previous EMPS, the SSDS also considers IAS a priority area and again includes an invasive species control program. Again, focus is on field activities of control and eradication on a more “traditional” approach while priorities in agriculture do not reflect their biosecurity role. However, the institutional arrangements for the implementation of the SSDS have not yet been concluded to date. The role of the Seychelles Agriculture Agency in biosecurity is expressed in the sector most important policy documents, the Seychelles National Agricultural Investment Programme (SNAIP) 2015-2020 and the National Food and Nutrition Security Policy.

The project itself strongly supported the development of a national policy on invasive alien species and a strategy (2011-2015) that were approved and adopted by the government, as well as a comprehensive biosecurity act that includes administrative arrangements, procedures and fines and penalties related to the introduction and spread of invasive species and other pests.

Furthermore, the Seychelles is signatory to several multilateral environmental agreements including the Convention for Biological Diversity (CBD). The CBD recognizes the *urgent need to address the impact of invasive alien species* (IAS) on biodiversity and urges parties to implement strategies and plans to address the threats posed by IAS by, among others, promoting cooperation among different sectors facilitating involvement of all stakeholders, promoting awareness, mainstreaming IAS considerations in national and sector policies and *developing capacities to use risk assessment to address threats of invasive alien species to biological diversity*⁸.

⁸ COP Decision VI/23

One of the most important mechanism for the implementation of the convention is the National Biodiversity Strategy and Action Plan (NBSAP). The current NBSAP 2013-2020, currently under review, includes the control of invasive species and the prevention of its introduction in the country, therefore taken a more preventive approach than the EMPS or the SSDS. In fact the NBSAP includes the implementation of the National Invasive Alien Species Strategies 2011-2015 and the enforcement of the Biosecurity Act as two of its main components.

Also, the reforms to the country's legal framework with the enactment of the Biosecurity Act, which was developed and promoted by the project, have strongly contributed to the country's commitment to the International Plant Protection Convention (IPPC) and the World Organization for Animal Health (OIE), by including the standards set by these conventions. Moreover, the legally binding commitment to the IPPC and OIE standards has strongly promoted the fast-tracking of the country's candidature to the World Trade Organization, which was one of the current government's priorities.

The economy of the Seychelles depends on biodiversity services to a great degree as the two most important national economic sectors of the country, tourism and fisheries are based on direct use values of biodiversity. Tourism is the most important economic sector, accounting for 29% of the GDP in 2012⁹ and employing about a third of the total national workforce¹⁰. Fisheries, comprising both the artisanal and commercial fishery contribute with 8% to the GDP¹¹ and 12% of the jobs¹². Finally, directly depending on biodiversity and other environmental services agriculture, amounts to 1.2% of the GDP in 2013¹³ and 8% of the labor market¹⁴. Although the agricultural sector currently has less economic relevance than e.g. financial services, it is still a crucial strategic sector in terms of food security.

Seychelles has both its terrestrial and marine habitats included in the WWF Global Ecoregions list of most biologically outstanding habitats, and its territory includes two UNESCO World Heritage Sites: Aldabra Atoll and Vallé de Mai (Praslin Is.). High level of endemism typical of oceanic islands. The limited geographical distribution of native Seychellois species make them vulnerable to threats, including threats posed by invasive alien species. The IUCN Red List evaluates 150 species of plants and animals of which 92 are either extinct or are rated as threatened (20 critically endangered, 37 endangered and 27 vulnerable)¹⁵.

Globally, IAS are among the most important threats to biodiversity, together with habitat destruction, land use change and overexploitation. The current GEF 6 programming directions

⁹ National Bureau of Statistics, 2013

¹⁰ 5th National Report to the Convention on Biological Diversity

¹¹ GOS, 2012

¹² 5th National Report to the Convention on Biological Diversity

¹³ National Bureau of Statistics, 2013

¹⁴ FAO, 2013

¹⁵ The IUCN Red List, www.iucnredlist.org, consulted the 22/11/2014

include a program on prevention, control and management of Invasive Alien Species in recognition of their potential negative on global biodiversity and consequently on ecosystem services and national economies. Small island states are particularly vulnerable to the threat of IAS, as acknowledged by the Convention for Biological Diversity (check) and the GEF biodiversity focal area strategy.

Seychelles' Fifth Report to the Convention of Biological Diversity, as well as key stakeholders, including the GEF operation focal point underlined the threat posed by IAS to biodiversity in the Seychelles, rating the threat posed by IAS above land use change and overexploitation.

The total annual economic value of the impact of IAS on the national biodiversity, agriculture and human health have been estimated around 31 million USD in 2009¹⁶ or 4% of that year's GDP in current USD¹⁷.

2.3.2 Attainment of outcomes

This section describes the achievement towards the targets per outcome set in the project document and revisions thereof.

Outcome 1 Policy and regulatory framework for effective control of the introduction and spread of IAS in place

The project aimed to support reforms in the country's policy and regulatory framework to address systemic gaps, especially the lack of an official, comprehensive policy on IAS and the outdated, partially contradictory legal framework, as well as conduct an awareness campaign aimed at all segments of society to gain its support for IAS control measures. A key point of the project strategy was the development of a cost recovery mechanism that would cover up to 30% of the costs of the government IAS control measures.

The targets under this outcome were the implementation of a new overarching and comprehensive policy and strategy on IAS, the enactment of new legislation for IAS control and management that conforms with international standards, the increase in non-government expenditure in IAS control up to 75% of total national IAS-related expenditure, and that 75% of travelling public and 100% of risk commodity importers, agents and tourism operators would be aware of the risks posed by IAS and the need for biosecurity measures.

Through project support, two important development changes have occurred: the development, approval and operationalization of a comprehensive state policy on IAS and the enactment of the

¹⁶ Paul Mwebaze, Alan MacLeod, Hervé Barois, 2009

¹⁷ World Bank Data, data.worldbank.org, retrieved on 22/11/2014

Biosecurity Act that not only creates a solid legal basis for IAS control measures but has in fact facilitated the access of the Seychelles to the World Trade Organization.

Policy and regulatory framework

Although the government of Seychelles included IAS among its environmental priorities, as articulated in the Environmental Management Plan and later Sustainable Development Strategy, this priority was expressed mainly as plans to strengthen control measures for invasive species already occurring within the country's borders. Hence, the project supported the development of a biosecurity policy that would focus on a more comprehensive, preventive approach by supplying the technical and legal expertise needed by the executing agency. The basis for the policy were provided by a review of the institutional quarantine and control functions¹⁸ IAS threat analysis¹⁹ and the economic valuation of the impact of IAS on the national economy²⁰. The policy was approved by the council of ministers in 2012. The policy, modified in 2013²¹ to strengthen the importance of internal control and its relation to the protection of biodiversity, constituted the basis for the development of the final stages of the biosecurity bill. Moreover, the project continued its support by developing a strategy for the implementation of the policy for the period 2011-2015 that has been incorporated into the National Biodiversity Strategy and Action Plan, including an estimation of its implementation costs.

More importantly, the project played a critical and decisive role in the formulation, development and final enactment of a new law, finally called Plant and Animal Biosecurity Act of 2014 that was enacted on April this year (2014). The project funded the ground analysis and assessments, including the cost benefit analysis, an institutional review and threat analysis mentioned above, as well as the legal consultants that drafted the bill and the necessary round of consultations.

The act has the purpose of *preventing the entry of animal and plant pests and diseases into, and their establishment and spread in, Seychelles (and) to regulate and control the movement of animal and plant pests and diseases (...), to facilitate international trade and cooperation*. It establishes a biosecurity agency that has the functions of *regulating entry, carry on surveillance, prevent, eradicate invasive alien species and pests, as well as facilitate export and international cooperation*. The agency would carry on these functions in agreement and cooperation with other agencies, government and non-government.

The act also mandates the creation of a National Biosecurity Committee (NBC), with membership of 16 different ministries and government agencies, as well as representatives of farmers and civil society. The NBC would advise the function of the biosecurity agency. The NBC was in fact already

¹⁸ Ikin and Dogley, 2009

¹⁹ Dogley, 2009

²⁰ Paul Mwebaze, Alan MacLeod and Hervé Barois, 2009

²¹ Modification as a result of the evaluation of the policy conducted as part of the Project midterm review in 2012.

convened with the support of the project, but had just to be reconstituted to make it compliant with the act.

The law clearly delimits the functions of the biosecurity agency, including basing assessment on science-based risk analysis, as well as defines what constitutes a violation, including a comprehensive lists of fees and fines. This latter provision constitutes in effect a form of cost recovery mechanism that the project was also intending to achieve. In September 2014 a presidential order confirmed the Seychelles Agricultural Agency as the biosecurity service.

The development of the bill was led by the project coordinating unit, particularly by the biosecurity advisor, together with the legal consultants in charge of the actual drafting. The work was assisted by a *group of senior technical, technically competent and administratively responsible officers from relevant departments and agencies responsible for IAS and biosecurity*²² in the country.

The formulation process counted with the political support of senior figures of the Ministry of Environment and the Ministry of Natural Resources and eventually from the Ministry of Finance, Trade and Industry, as it became a substantial support in the ongoing negotiations for the accession of Seychelles to the World Trade Organization (WTO). Accession to the WTO was a political priority of the government and the synergy between the negotiations and the development of the bill facilitated the normally long and burdensome process of drafting and enacting a bill. The synergy between the WTO negotiations and the development of the biosecurity act are related to the alignment of the biosecurity act with the International Plant Protection Convention and World Organization for Animal Health guidelines that are WTO-binding.

However, the process of the development of the bill was not free from trouble. Work on the bill started in 2010 and it was forwarded to the General Attorney's office in 2012. The consultation processes were arduous and not exempted from delays. The last of the 11 administrative provisions needed for the enforcement of the law, a list of regulated IAS was drafted with the support of national experts in December 2014 (during the review of the TE report) and has been forwarded to the NBC for validation prior to onward transmission to the Minister of Natural Resources and Industry for approval.

Relevant stakeholders, including top officials from the Ministry of Environment, Natural Resources, Finance, Customs and Civil Aviation Authority agree that the project has provided the legal framework ("*the tools*") that enable institutional coordination and action to control IAS, that the new law provides sound legal framework for technical decisions that cannot be overruled for political reasons and that failing to enforce the law would be detrimental for the Seychelles in view of its WTO membership.

For Non-government actors, the new act provides the legal basis for more effective control and monitor/ prevent entry of IAS into islands under their management.

²² PCU, 2013, Brief to the Minister of Natural Resources

IAS control finances and cost recovery mechanism

The project document included projections of decreasing government budgets for biosecurity based on the projected recovery of up to 30% of the biosecurity agency costs. This would be accompanied by an increase in investment by non-government actors, hence reducing the percentage of total government expenditure on IAS control. The basis for this assumption was the cost-recovery mechanism for the biosecurity agency and the enabling conditions for private and NGO investment on IAS control measures.

Yet, the evidence on NGO expenditure shows that the level of IAS expenditure by non-government actors depends mostly on external funding rather than on enabling conditions for investment (Figure 3). Nonetheless, NGO actors that participated in the terminal evaluation acknowledged that the new regulatory framework provides a more enabling environment for IAS control, so there may be some effect on the level of NGO expenditure in the midterm future. However, since the Biosecurity Act was only enacted in April 2014, any changes in NGO expenditure to date could not be attributed to the policy and legal reforms supported by the project.

More importantly, the level of government investment in IAS control would not necessarily be determined by the amount collected in fees and fines related to the enforcement of the biosecurity act, as any revenue collection by any government agency is reverted to a general consolidated fund and would not necessarily result in an increased budget of the collecting agency.

In this sense, the cost-recovery mechanism foresaw in the project document has not been realized. In fact the budget of the Plant and Animal Health services has been cut repeatedly, coming down to 4.3 million SCR (ca. 300,000 USD) in the 2014 budget from 6.8 million SCR (ca. 480,000 USD) in 2013.

Currently, *the total amount of fees collected by the Animal Health Section was 1,026,105 SCR in 2013 (mostly related to veterinary services for pets)*²³ what constitutes ca. 14% of the agency's total 2013 budget. Furthermore, the fees foreseen in the Biosecurity Act are not necessarily based on the costs incurred by the agency for the service, i.e. even if the agency could actually retain collected fees and/ or fines, these would not cover up to 30% of its recurrent costs.

Additionally, the customs airport section reports increased collection of fees since the project strengthened its screening capacities, but this will not be necessarily translate on increased or even maintenance of their current financial capacities.

²³ Barois, 2013

Figure 3. Awareness posters



Awareness on invasive species

The project document called for the development and implementation of a national communication plan or public awareness strategy on IAS management. While an explicit strategy was not developed, the project did implement awareness measures such as posters placed at the arrival and departure area at the international airport, radio and television shows, documentaries and magazine articles. Table 4 summarizes the awareness actions and measures undertaken by the project.

Table 4. Awareness actions and measures

Awareness action/ measure	Description
Biosecurity Posters	Two big posters installed at the arrival and departure area describing danger posed by IAS
Magazine article	Article in Seychelles Tourism Board magazine Sessel Sa!; 2 pages defining the problem and the actions taken by the project
TV and radio shows/ programs	Seychelles Broadcasting Corporation Zoom program, aired nation-wide on October 2013. 1 hour special featuring the project, including the project manager and some of the main partners that focus on the dangers posed by introduced invasive species and pests, and the measures taken to control its entry and spread. The project manager has also appeared on radio talk shows and call-ins in a number of times during 2013 and 2014
Documentary	Seychelles Road to Sustainability. 25 minutes documentary produced by the NGO Seychelles for Sustainability to be featured at Air Seychelles flights (as part of the entertainment menu) that focuses on biodiversity and habitat loss, climate change, energy, agriculture and food security, waste and recycling and 3 minutes dedicated to biosecurity
Footprint video	Short video shown to all incoming passengers with Air Seychelles with messages about the environment of Seychelles that also will be including a section on biosecurity
PCU webpage	Public access repository containing all documents relevant to the project, including all the project's products and reports
Diverse	Awareness activities such as the ones on account of world Biodiversity Day 2010, as well as a number of stakeholder's workshops with presentations on Biosecurity related issues, like introduction of the project and presentation of tasks delivered under specific outputs of the project

These actions, with the exception of those aimed specifically at incoming and departing passengers, did not follow a concrete strategy with a determined and measurable effect, such as e.g. messages directed at importers that would be expected to increase their readiness to cooperate with the biosecurity services, to government officials involved in budgeting to lobby for increased biosecurity budget, or messages directed to the general population that would be expected to result in an increase of IAS related reports to the environmental telephone Green Line²⁴.

However, the project did examine awareness on IAS through surveys conducted in 2013. The survey, based on a sample of 117 Seychellois travelers conducted in the course of one week at the Victoria International Airport, showed that most people were aware of the impact of IAS and of the existence of regulated/ prohibited items. However, between 15 and 20% of the sample confessed to have brought in items they knew to be not authorized without proper permits or declaring them. Also, the knowledge on biosecurity could not have been gained through the project's awareness measures, as only over a third of the respondents manifested having seen the posters, of which over 60% actually read them, i.e., under a fifth of national travelers did actually take notice.

The Project Coordinating Unit has set-up a webpage (www.pcusey.sc) that includes comprehensive information on this and the other projects of the GOS-GEF project portfolio. The information is accessible to all publics and includes a general description of the project, all the products and consultancy reports funded by the project, as well as project implementation reviews, including the midterm review, and other reports. The information is well organized according to outcomes and type of document.

Moreover, starting in 2014, the PCU has also implemented a program-wide communications strategy that included and integrated biosecurity issues within wider initiatives, including various presentations for different audiences, including district officials, and media professionals, as well as the listed videos TV and radio spots.

Awareness of the reformed policy and regulatory framework

During the conduct of the interviews and consultations of the terminal evaluation, respondents that were not directly involved in the development of the reformed regulatory framework manifested doubts about the scope and regulations, as well as their institutional roles under the new biosecurity act. Furthermore, key institutional respondents had important doubts about membership and functions of the National Biosecurity Committee.

Additionally, key knowledge products of the project, such as the Economic Valuation of the influence of invasive alien species on the national economy (2009), Institutional and threat analysis and others have indeed been extensively used for internal project purposes but have been hardly communicated outside the circle of stakeholders directly involved in project activities.

²⁴ The Green Line is a service of the Department of Environment that allows citizens and residents to report on perceived environmental violations but could also include sightings of invasive species.

Outcome 2 Strengthened Institutional capacity to prevent and control the introduction and spread of IAS

The project's strategy called for the creation and strengthening of a biosecurity service that would be capable of *identifying risk profiles and inspecting all risk goods, passengers, conveyance, doing treatments and collecting fees for service*²⁵. According to the project document, the biosecurity service would have been created by consolidating the IAS control and quarantine functions that were shared between the Plant Protection and Veterinary Sections of the Department of Natural Resources (DONR), and the Nature Conservation Division of the Department of Environment (DOE), in coordination with Trade, Tax (Customs), Immigration and Port and Airport Authorities, etc. The biosecurity service would have been integrated into the Minister for Environment and Natural Resources.

Specifically, the biosecurity service would be an *amalgamation of some of the functions of the current Seychelles plant protection, animal and human health regulatory frameworks and require functional cooperation with other agencies such as Customs, Immigration and Post and Airport authorities*²⁶ according to the analysis conducted in 2005 that first drafts the biosecurity project's strategy.

The amalgamation mentioned above was realized in 2009 when, as part of the public sector reforms initiated by the government, the Seychelles Agricultural Agency was established as an autonomous agency reporting to the newly formed Ministry of Natural Resources. Within this agency, the veterinary and plant protection services of the former Ministry of Environment and Natural Resources were joint together in a Plant and Animal Health Service (PAHS).

An institutional analysis conducted by the project in 2009, with active participation of relevant stakeholders from the government and non-government actors, identified PAHS as the core of the future biosecurity service. Hence, the project adopted PAHS as the biosecurity service required by its strategy and proceeded to strengthen its capacities. The soundness of this decision is confirmed by the vast majority of stakeholders from the Ministry of Environment and the Ministry of Natural Resources interviewed for the terminal evaluation.

However, there are some divergences to this general line, as reflected in interviews for the terminal evaluation and in the project's midterm review, as well as project implementation reviews. The critic view is based on the doubts of the capacities and priorities of an agency with primary agricultural focus, to implement IAS programs. The critic view understands biosecurity primarily as field activities of control, eradication and rehabilitation measures.

Yet the project strategy's emphasis is on prevention of entry and spread of IAS in the Seychelles through trade and travel, hence the central role played by the agency in charge of quarantine services and border control. Eradication and control measures have been also supported by the

²⁵ Biosecurity project document

²⁶ Ikin and Dogley, 2005

project by a) promoting policy and regulatory reforms that enable the conduct and sustainability of such actions (outcome 1) and b) strengthening knowledge systems on IAS control and eradication (outcome 3).

Having established PAHS as biosecurity agency, the project contributed to the strengthening of capacities of the PAHS, investing ca. 50% of the total project grant for this purpose. The capacity building measures included the provision of trainings and equipment, as well as the establishment and strengthening of coordination structures.

Trainings and equipment

The project significantly contributed to the development of capacities of officials involved in biosecurity, including PAHS officials and inspectors, as well as Customs and Civil Aviation Authority personnel.

A central part of the capacity development actions, the project funded a Master Degree on Biosecurity at the Murdoch University of Australia (distance learning) for the project manager. The Master was successfully completed by the project manager, Ms. Danielle Dugasse, as her batch's top student. The project manager was herself a member of PAHS and the new capacity was expected to significantly strengthen the service. Most unfortunately, the untimely passing of the project manager frustrated this effort. The project also supported participation by the project manager at international fora on phytosanitary measures as part of the strategy on capacity development.

Trainings included specific trainings led by the biosecurity advisor and other consultants in a number of topics relevant to biosecurity for officials of the PAHS, customs, civil aviation, immigration and public health but also are more continuous coaching by the project of the SAA-PAHS. The project also funded the development of a new biosecurity operating manual in 2011 to substitute the outdated 1998 version and the version developed by an EU-funded project in 2006. The Biosecurity Operations Manual *is designed to assist Inspectors assess a range of potential pathways by which biosecurity risks might enter the country and to evaluate those risks. The Manual documents a risk analysis process which identifies a range of pathways and rates them from "almost certain" to "rare"*. It further scopes these pathways and provides a guide to responses by Biosecurity Officers.²⁷

The project has also developed a corporate strategy, including human resource capacity, for the Biosecurity Service. This activity was undertaken in collaboration with a FAO-funded project and it is closely linked to the development of the Seychelles National Agricultural Investment Plan.

The project completely funded the acquisition of 2 x-ray screening machines (figure 5), including training for operators and spare parts. The screening machines, are currently functional, operated by Civil Aviation (SCAA) officials to help customs and PAHS inspectors. Relevant stakeholders from

²⁷ G.C. Schultz, 2011

the SCAA, customs and PAHS confirm the significance of this equipment in facilitating and supporting inspections.

Another central element for the screening of incoming air passengers was the development of a new arrival declaration card that includes 2 questions on biosecurity issues. The card facilitates both the declaration of regulated items and the selection of passengers for screening at the customs area at the Mahe international airport, as confirmed by relevant officials of PAHS, customs and Civil Aviation Authority.

The project also funded furniture and equipment for a new PAHS facility at the sea port. However, this office has not yet been occupied by the PAHS despite equipment being furnished in 2010. Other equipment acquired for the PAHS included computers, laboratory equipment and a vehicle, currently used for project activities and that will be transferred to the service at project closure.

PAHS and other relevant officials value very positively the contribution from the project both in terms of knowledge acquired through trainings and coaching, as well as the backing provided by the new biosecurity manual. However, the PAHS has not been able to retain all the capacity developed due to staff turnover. In this respect, PAHS officials themselves do not rate current conditions of the service as being very attractive to retain or recruit qualified personnel. Moreover, needed specialists such as plant pathologists are not currently available nationally. Plant pathology was one specific expertise included in the master degree successfully concluded by the former project manager and PAHS official.

Current level of inspections and treatment of consignments

Despite the improvements in terms of equipment and training provided by the project, there still exist some gaps in passenger screening, as 1) the inspection area at arrivals easily clogs-up and hampers inspection activities. Also, the number of customs and PAHS officials scarcely covers the current volume of incoming passengers and 2) according to relevant respondents, some international passengers on transit to the island of Praslin and other islands that can constitute up to 50% of incoming passengers in a given day, are currently not screened at the Victoria International Airport and neither at their final destinations, as these airfields do not count with the necessary facilities. The biosecurity act requires all incoming passengers and their baggage to be screened for biosecurity items.

Customs and PAHS continue to perform their regular inspections of all incoming air and sea consignments. However, some of these inspections do not take place within biosecurity controlled areas as required by the Biosecurity Act but at the trader's warehouses or destination point of the cargo. Moreover, *the ability of the (biosecurity) service to be all-encompassing is also constrained by the nature of the islands of Seychelles, with boat traffic between the islands within Seychelles and*

*further, including Madagascar, not always docking at the main ports and thus transferring cargo without inspections.*²⁸

In terms of treatment, PAHS officials treat confiscated goods and commodities of biological origin by blast freezing them and then disposal at the main landfill in Mahe. The effectiveness of this method to eliminate all risks is discussed among stakeholders. However, there is consensus in the eventual need for additional disposal facilities, viz. incinerators.

Although not directly related to this project, it is noteworthy that two incinerators provided by a European Commission funded project on fruit fly control in 2006, are not being used, as there are not any government agencies willing to assume the operation and maintenance costs.

Coordination structures and protocols: National Biosecurity Committee and Emergency Response Plan

The project supported the establishment of a National Biosecurity Committee (NBC). The NBC was intended to substitute the Invasive Alien Species Committee that was not active at the time the project started implementation. The NBC was first convened in 2010 and has met at irregular intervals ever since. This NBC was dissolved and then reconstituted by Presidential appointment under the new Biosecurity Act. The new NBC is chaired by the Ministry of Natural Resources and co-chaired by the Ministry of Environment and with representation of relevant government and non-government actors: Ministries of Foreign Affairs, Finance, Trade and Investment, Tourism, the Civil Aviation, Sea Ports and Fisheries Authorities, the Bureau of Standards, Island Development Company, Seychelles Island Foundation, Farmers Association and a representative of the civil society.

However, although the reconstituted NBC has started to function regularly, having conducted two meetings at the time of the terminal evaluation, there are important uncertainties among members on membership and terms of reference of the NBC. More importantly, there are some resistance to participate in the National Biosecurity Committee by some key government actors due to a different understanding of roles and responsibilities of the government agencies as that designated by the current institutional framework under the Biosecurity Act. This situation has been duly documented in project implementation reports²⁹.

The emergency response plan funded by the project was a requirement of the Biosecurity Act with the purpose of *providing consistent guidelines describing the management structures for decision making, critical procedures and information flow systems in the event of an emergency response*. This plan has only been published and disseminated in the third quarter of 2014 and has yet to be put to the test. The plan identifies three phases in dealing with a newly detected pest/ IAS, investigation, operational and review phases. All three phases require active leadership by the

²⁸ Biosecurity project implementation review (PIR), 2014

²⁹ E.g. PIR 2014

biosecurity agency, i.e. the Seychelles Agricultural Agency and the Ministry of Natural Resources. Also, the plan reserves a central and critical role for the National Biosecurity Committee to provide the necessary expertise and technical inputs need for both the investigation and operational phases. In any case, decisions to take measures to eradicate or control IAS/ pest would be based on a sound risk assessment and cost-benefit analysis.

Also, the project is finalizing an Inter-island biosecurity protocol at the time of the terminal evaluation. The protocol is composed of three parts, a list of regulated species, inter-island and protected area protocols. The inter-island biosecurity protocol should facilitate action and coordination among different institutional actors, particularly those involved in the management of outer islands and should be accompanied by relevant trainings.

Figure 4 *Passenger screening at Victoria International Airport. The x-ray screening machine is one of the two acquired with project funds. The investment made in both machines and other equipment constitute over a quarter of the total project fund.*



Outcome 3 Improved knowledge and learning capacities for the management of IAS

Under outcome 3, the project intended to support the production of systematized knowledge on IAS and cost-efficient eradication and control measures in the Seychelles, as well as its dissemination through a knowledge system and learning network. Achievement of this objective would be indicated by three metrics: 1) identification of IAS (that pose) significant economic and ecological threats, 2) implementation of economically efficient, feasible and practical control and mitigation programs and 3) the establishment of a sustainable knowledge and learning network.

IAS with significant economic and ecological threat established in Seychelles are identified

The project funded the conduct of studies and reviews on the status and trends of IAS present in the Seychelles, as well as their impacts on the country's ecology and economy and the best treatment practices.

An exhaustive review was conducted in 2009 that resulted in the publication of a National IAS Baseline report. The report includes current distribution, status and impacts of 57 species of plants, 16 species of invertebrates, 2 species of fish, 4 reptiles, 11 birds, 11 mammals. A web forum was established for consultations for this report.

The same year, the project published and disseminated another important review on of IAS control and eradication activities that have been conducted in the Seychelles. The authors reviewed all documented control and eradication measures conducted in the Seychelles since the XIX century, including 6 mammal, 6 bird, 1 reptile, 1 insect and 1 equinoderm species, as well as a number of agricultural pests, including coccoids, moths, fruit flies and viruses. The authors encountered that documentation on control measures was scarce and almost inexistent when it came to financial details. The project continued this endeavor to fund a follow-up study that was originally called IAS field guide and was supposed to include the results of the two previous reviews and function as field guide and manual. The work, developed between 2010 and 2014 is ready to be printed as in cooperation with Biotope France and the University of the Seychelles.

In the same line, the project called for proposals from national institutions, both government and non-government to study IAS and control methods. Five proposals were accepted, from the Ministry of Health on rodent control, from the Seychelles Islands Foundation (SIF) on black rat abundance, distribution and impacts on Aldabra , from the Seychelles Agricultural Agency on coconut diseases (lethal yellowing and cadang-cadang) and from the Department of Environment (DoE) on treatments for *Acacia concinna* and from the Marine Conservation Society of the Seychelles (MCSS) on *Acanthaster planci* (Crown of Thorns starfish). All studies were finalized and final reports submitted to the project with the exception of the study on *A. Concinna*, conducted by the Department of Environment, which was delayed due to problems in securing authorization to import the needed herbicides, but which was completed in late 2014 (final report still pending).

Implementation of economically efficient, feasible and practical control and mitigation programs

Different organizations, including the DoE, the SIF, the Green Island Foundation and the MCSS have been conducting control measures for different organism, ranging from ringed-necked parakeets to crown-of-thorns starfish with different approaches, including trapping, shooting, and other capture methods, as well as offering bounties as incentive, with appropriate documentation and publication of results. However, the implementation of control actions is currently determined only by the availability of funds. This will be discussed further in section *Sustainability*.

Sustainable knowledge and learning Network

The project worked on this target in two directions: the constitution of a functional national invasive alien species committee and the development of a web-based data base.

The National Invasive Alien Species Committee (NIASC), in existence since 2005 but not active at the time of the project implementation was revived in 2013 with revised TORs as a sub-committee of the National Biosecurity Committee (NBC), with specific functions including facilitating the implementation of the Biosecurity Strategy. It is expected that this body will form the focal point within Seychelles for IAS knowledge management and information sharing. However, at the time of the terminal evaluation the NIASC was not yet active.

The project funded a study and the acquisition of the necessary components to set-up a web-based data base maintained by the Seychelles Agricultural Agency. However, this data-base has not yet been launched to date. This particular case is directly related to the capacities of PAHS to retain qualified personnel, as the staff responsible for the set-up and operation of the data base left the service.

2.3.3 Overall results (attainment of development objectives)

This section will evaluate the following dimensions:

1. Changes have been effected at the level of the systemic, institutional and technical barriers identified in the project design, together with a summary of the assessment of the project logic, including coherence of the result chain and achievements towards the outcome targets. This manner follows the theory of change approach endorsed by the GEF as a proxy to construct impact evaluations³⁰.
2. Changes in the threatened status of species due to IAS in the IUCN Red List for Seychelles

Changes in systemic, institutional and technical barriers

The project has strongly supported the reform of the policy and regulatory framework, achieving the approval of a biosecurity policy to be implemented through its national biodiversity strategy and the benchmark enactment of a Biosecurity Act that complies with international trade, plant protection, animal health and sanitary standards and has strongly reinforced the country's candidature for membership at the WTO, obtained this year not least due to the project's contribution. This is one important, yet originally unexpected result of the intervention.

Moreover, the project has significantly contributed to the strengthening of technical and institutional capacities of the biosecurity service by both coaching and training and the provision of

³⁰ GEF evaluation office, 2009

legal coverage by the Biosecurity Act. Finally, the project has also financed important contributions to the knowledge on status and trends on invasive alien species in the Seychelles.

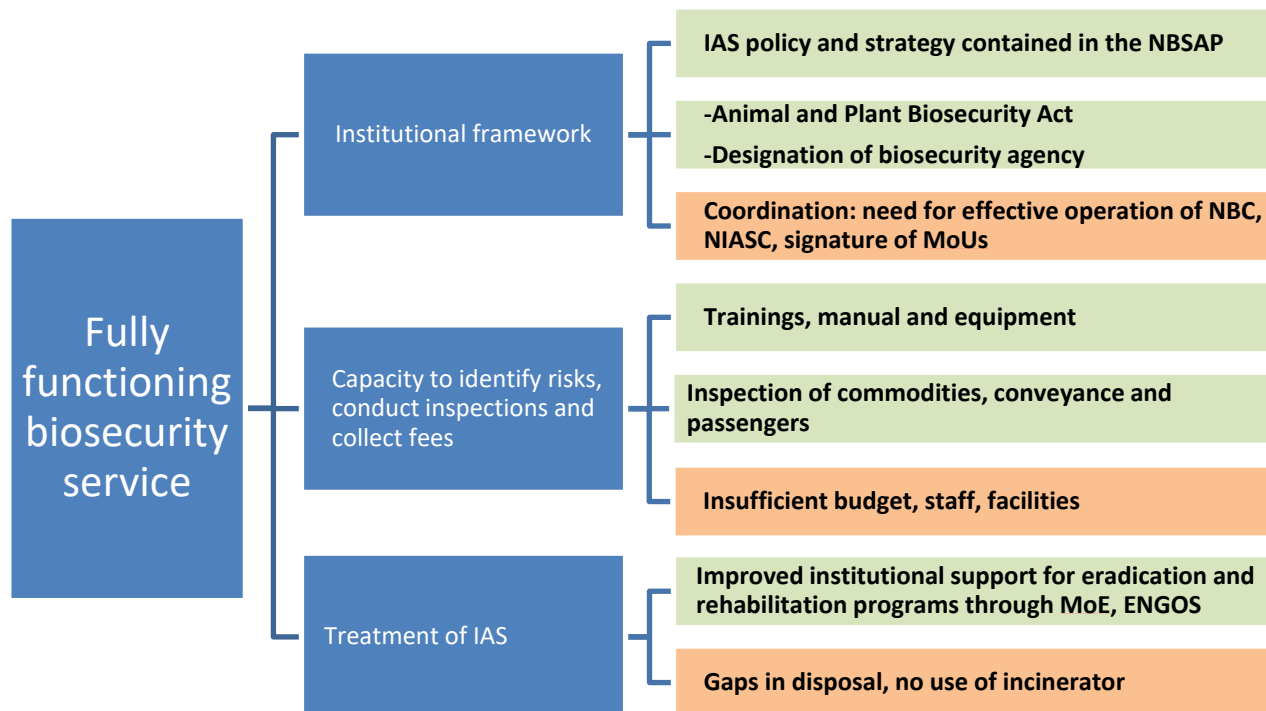
However, the new regulatory framework has yet to be enforced to enable implementation of acquired capacities and potentially generate an increased flow of revenue for the state that could be partially reinvested in IAS control activities. Also, there are still a number of significant capacity gaps in terms of institutional coordination, human resources and facilities to successfully enforce the new law and policy. Moreover, there are awareness gaps on biosecurity among the general public and on specific aspects of the new policy and regulatory framework among key government and non-government actors. Finally, the transition to a more systematic and comprehensive manner of knowledge sharing on IAS has merely taken its first steps with the support of the project. The positive changes and the areas where little advance has been registered can be visualized in table 5 and figure 5.

Table 5 changes in, systemic, institutional and technical barriers. Green shaded cells positive developments, reddish shaded cells limited advances

Systemic gaps	
Outdated legislation that is inconsistently implemented	Comprehensive legislation (biosecurity act) that establishes biosecurity services roles and responsibilities enacted based on a reformed policy framework (Biosecurity policy and strategy, NBSAP)
	Biosecurity act still not being enforced; limited awareness on the implications of the act and on functions and membership of the NBC
List of prohibited IAS, pest and diseases, not in compliance with international standards and guidelines	Alignment of the national regulatory framework with international standards: regulated IAS, pest and diseases based on risk analysis
Low awareness on IAS and importance of control measures	Increased awareness on regulations due to arrival declaration cards. General awareness on impacts of IAS
Institutional gaps	
Non-consistent enforcement and coordination of IAS control activities	Biosecurity service created with functions and responsibilities are covered by law.
Produce inspections conducted outside biosecurity areas, disposal of contaminated goods in landfill	Produce inspections conducted outside biosecurity areas, disposal of contaminated goods in landfill
Gaps in inspection of passenger and traded goods	Improved inspection of passenger and traded goods through training, comprehensive manual and improved equipment
	Limitations in terms of personnel and other resources; gaps at airport inspections for transit flights
Limitations in the number of qualified professionals capable to assess the risk posed by traded commodities, and the emergency responses necessary on the introduction of new IAS	Emergency response plan and operational manuals developed and used
	Limitations in the number of qualified professionals capable to assess the risk posed by traded commodities
Poor communication between stakeholders involved in IAS control and eradication exercises and in restoration programs	Improved conditions for better communications within the National Biosecurity Council and improved coordination among actors, e.g. Customs, SAA, ENGOS

	Some gaps in coordination for government control and eradication actions , such as treatments (incinerators), IAS control by DOE and inter-island control
Technical gaps	
Limited diagnostic capability to identify exotic and local species and few operational manuals that are not implemented	Improved diagnostic capabilities and updated manuals
Limited access to information resources that compile national and international IAS data	Improved knowledge on status and trends of IAS
	Gaps in data dissemination and accessibility

Figure 5. The creation of the biosecurity service and enabling conditions for its operations were central to the project strategy. The figure shows the advances on the conditions for a fully functioning biosecurity service as identified in the project activity. Shaded in green are positive changes brought about by project support and shaded in orange are current gaps.



Threaten species status

All data considered for this analysis have been obtained from the Red List for Seychelles, consulted the 29 and 30th November, 2014.

The national Red List for Seychelles currently includes 63 species, including 5 plants, 5 marine animals and 53 terrestrial animals, of which 49 had been assessed between 2009 and 2014. Of these, 2 are listed as extinct (EX), 8 are evaluated as critically endangered (CR), 15 as endangered (EN), 6

as vulnerable (VU), 2 as nearly threaten (NT), 14 as least concern (LC), and two as data deficient (DD).

To establish change of threaten status due to effects of invasive alien species (IAS), a subset of terrestrial species which are at risk due to IAS that has been assessed in the period 1996 to 2008 and 2009 to 2014 will be considered. Table 5 lists these species. Most of the species considered in this subset are endemic terrestrial arthropods with a very limited extent of occupancy and present at only one or two locations, whose habitat is endangered by invasive species, chiefly trees as *Cinnamomum verum* or shrubs such as *Clidema hirta*. A more comprehensive Red List for the Seychelles is shown in annex IV.

Table 6. Terrestrial organisms threaten by invasive alien species in the Seychelles

Scientific name	Year of assessment publication										
	96	98	03	04	06	08	09	10	12	13	14
<i>Benoitinus elegans</i>											CR
<i>Lychas braueri</i>											CR
<i>Impatiens gordonii</i>											CR
<i>Coleura seychellensis</i>				CR		CR					
<i>Archaius tigris</i>					EN						EN
<i>Sechelleptus seychellarum</i>									EN		
<i>Sechelliosoma forcipatum</i>											EN
<i>Seychellonema gerlachi</i>									EN		
<i>Grandisonia brevis</i>					EN					EN	
<i>Copsychus sechellarum</i>									EN		
<i>Enoplotettix gardineri</i>									EN		
<i>Graffaea seychellensis</i>									EN		
<i>Otus insularis</i>									EN		
<i>Seselphysis visenda</i>									EN		
<i>Seychellesia longicercata</i>									EN		
<i>Trigonidium bolivari</i>									EN		
<i>Lamprophis geometricus</i>					EN						
<i>Lycognathophis seychellensis</i>					EN						
<i>Charinus seychellarum</i>											VU
<i>Chiromachus ochropus</i>											VU
<i>Coracopsis barklyi</i>											VU
<i>Falco araeus</i>											VU
<i>Acrocephalus sechellensis</i>									VU		
<i>Aerodramus elaphrus</i>									VU		

To compare the situation before and after the project, the Red List Index (RLI) will be calculated for the periods 1996-08 and 2009-14. The RLI has been developed by the IUCN and is considered as

relevant to several CBD 2010 target focal areas, including assessment of trends in invasive alien species, to show trends in the impacts of invasive species and their management on biodiversity.

The RLI is calculated using the sum of the number of species in each threatened category weighted by a factor of 5 for EX, 4 for CR, 3 for EN, 2 for VU and 1 for NT ($\sum W_{c(t,s)}$) divided by the total number of species multiplied by the maximum weight ($W_{EX} \cdot N$) and then subtracting the results from one, as shown in equation 1.

$$RLI_t = 1 - (\sum W_{c(t,s)}) / W_{EX} \cdot N \quad [1]$$

Applying this calculation to the selected subset of species at the periods of time considered we obtain the values of 0.36 for the period 1996-08 and 0.42 for the period 2009-14.

Table 7 Species in threatened categories and RLI calculation

	CR	EN	VU	NT	TOTAL
2004-2008	1	4	0	0	5
2010-2014	4	14	7	0	25
Sum of species times category weight (2004-2008)	4	12	0	0	16
Sum of species times category weight (2010-2014)	16	42	14	0	72
RLI (2004-2006)			0.36		
RLI (2010-2014)			0.42		

As the best possible value of RLI is one, equating to all species being in the least concerned category, the calculated RLI suggests and improvement in the IAS threatened status of terrestrial species whose main threat are IAS.

However, the difference may not be significant, as this short analysis did not consider uncertainties involved both in the threatened status and the relative importance of IAS as a threat. Also, the great difference (five-fold) in species considered for both time series must be noted.

2.4 Efficiency

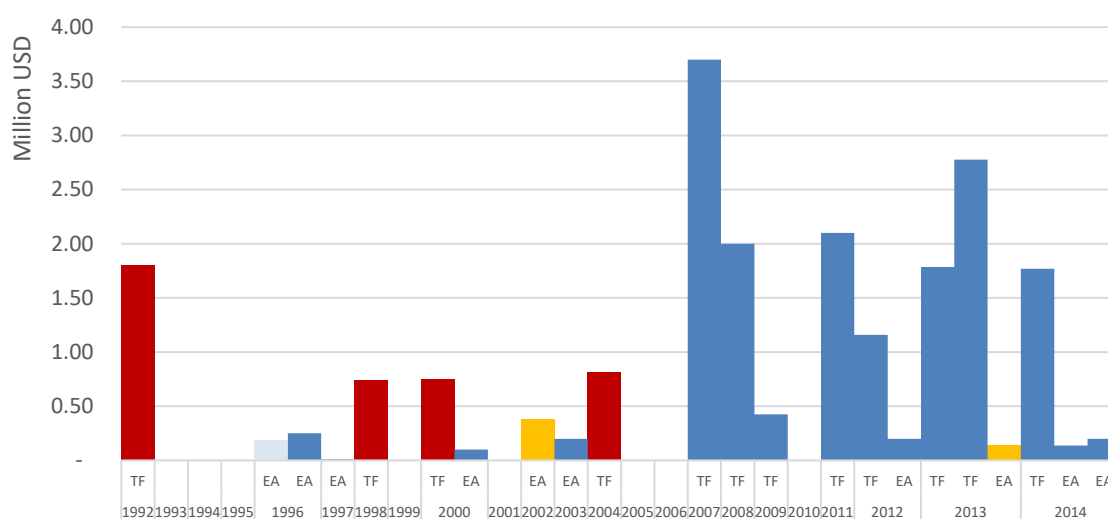
2.4.1 Divergence between planned and actual implementation timeframes

The project original implementation time frame comprised five years starting in 2008 with foreseen end of project date at the end of 2012. However, the project suffered significant delays and was granted two non-costs extensions that were approved in 2013 and 2014, finally postponing the end of project date to November 2014. Thus, the actual implementation time frame of the project was extended over seven years. The main factors behind the delay were mostly related to the time involved in the initial set-up of the management structures and challenges related to recruitment, as well as unforeseen events.

Setting-up the PCU

The end of the GEF third program cycle and beginning of GEF 4 brought along a shift in the GEF funded project portfolio in the Seychelles both in terms of implementing agency and of grant amount, from medium size projects (i.e. grants less than 1 million USD), mostly “enabling activities” to full sized projects funded from the GEF trust fund (Figure 6). Consequently, management structures for GEF funded projects were centrally organized in the Program Coordination Unit (PCU) that became operational in 2008. However, the first two years of the PCU constituted a learning period before project implementation started running at good pace (Figure 8). The PCU is administratively integrated in the Ministry of Environment.

Figure 6 GEF funded projects 1992-2014. The bars represent the amount of the grant (vertical axis), with the operational program (EA: enabling activity, TF: GEF trust fund) and year on the horizontal axis. The implementing agency are represented by the colors (Bordeaux=World Bank, Light blue=UNEP, dark blue=UNDP, orange=UNIDO)



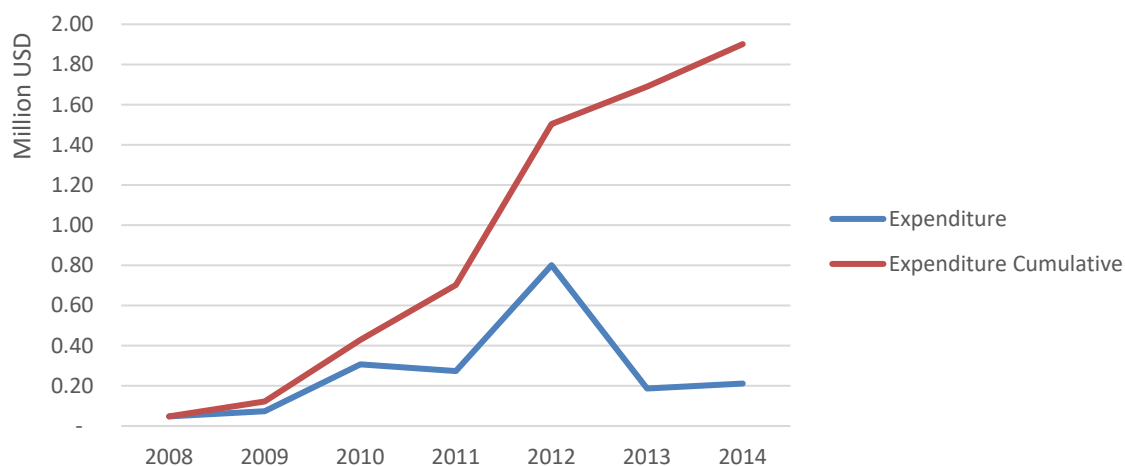
Recruitment constraints

Recruiting consultants and project managers proved to be challenging due to the constraints presented by a small island setting with a reduced, highly mobile pool of qualified personnel. Most qualified persons would therefore be already engaged, either with government or non-government organizations. Moreover, government rules for the approval of job placements and re-placements of civil servants involve a number of checks and authorizations from both the employment services of the government agency concerned and the Department of Public Administration and security services.

As reported as early as 2009, this procedure, including development and approval of TORs, advertising, selection by Tender Committee, governments and/or UNDP approvals, etc. may take 5-6 months. However, back in 2009 also an Aide Memoire was signed between UNDP and the executing agency (Department of Environment, MEE) regarding the functioning of the PCU. This Aide Memoire included some measures for streamlining selection and recruitment procedures of consultants. Moreover, procedures were discussed and agreed with the different entities dealing with selection and approval of contracts, i.e. DOE, Department of Public Administration, Ministry of Finance, National Tender Board, Employment Services, etc. In spite of the agreement, the situation persisted throughout the implementation of the project. Long-term international contracts were directly hired by the UNDP Country Office

At mid-project implementation, the project suffered a tragic and unexpected event with the untimely death of the second project manager, Ms. Danielle Dugasse. Beyond the terrible personal loss suffered by the project team, the absence of a manager and a program coordinator at this time caused a major slowdown of delivery in the first half of 2013, until a new project manager could take office. At this time, the PCU was already administering a project portfolio worth of over 14 million USD in GEF grants, making it challenging to cover the management needs of this project. Government recruitment procedures delayed the authorization of the new selected project manager for several months. The situation was partially solved only by the reemployment on a part-time basis (30%) of the Biosecurity Adviser to perform management tasks.

Figure 7 Yearly delivery on the Biosecurity project. Note the rapid rise in expenditure, i.e. implementation, in 2010, 2012 (acquisition of equipment) and the nose dive in 2013 delivery



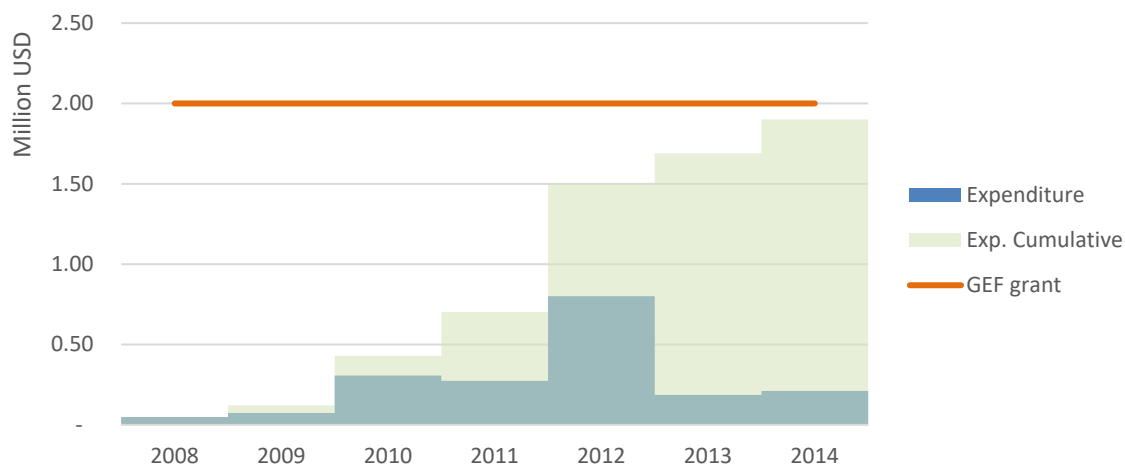
2.4.2 Discrepancy between planned and actual financial resources

The project document included a comprehensive budget per year and outcome with indication of the main ATLAS accounts and with a thorough description of the planned expenditures in its budget notes.

To track project expenditure, the terminal evaluation follows mainly UNDP's combined delivery reports, as quarterly progress reports and project implementation review do not contain sufficiently detail description of expenditures.

At the time of the terminal evaluation in November 2014 delivery has reached 95% with ca. 100,000 USD still pending.

Figure 8 yearly and cumulative delivery compared to the total GEF grant of 2 million USD



The main divergence between planned and actual expenditure per year is due to the late start of project activities and also, but much less importantly, by the slow delivery stage in early 2013. In figure 9 the late start and the progressive “catching up” of project delivery towards planned budget is evident. This effect is also visualized in figure 10 by combining the four years with less delivery rate (2008-09 and 2013-14) to obtain an image of delivery in the originally planned timeframe. Again the graphic representation shows the initial slow delivery rate and the rapid catching up in 2010, surpassing planned delivery in 2012, due to a single acquisition that year that represented 25% of the total project delivery.

All stakeholders agree that the project did not suffer major shortcomings in terms of delivery, except for the recruitment constraints mentioned above. The project disbursements were made according to the UNDP national implementation modality per quarterly cash advances. Some procurement processes, such as the acquisition of two x-ray machines that surpassed half a million USD were directly processed by the UNDP to facilitate the procedure.

Figure 9 cumulative delivery and budget. Budget remains constant after 2012 since planned timeframe only 2008-12

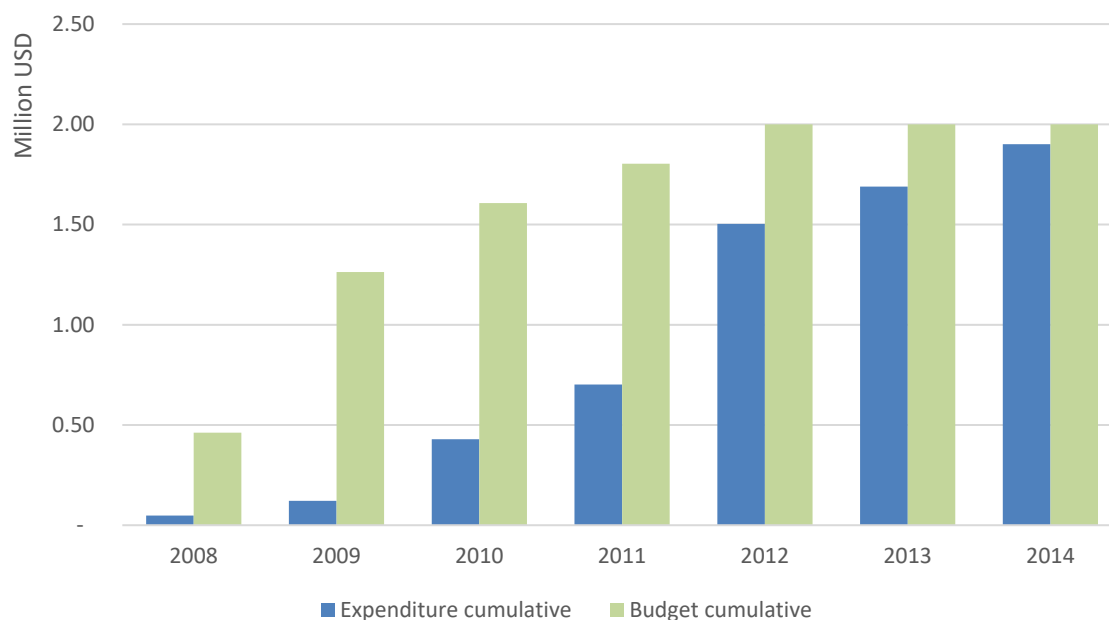
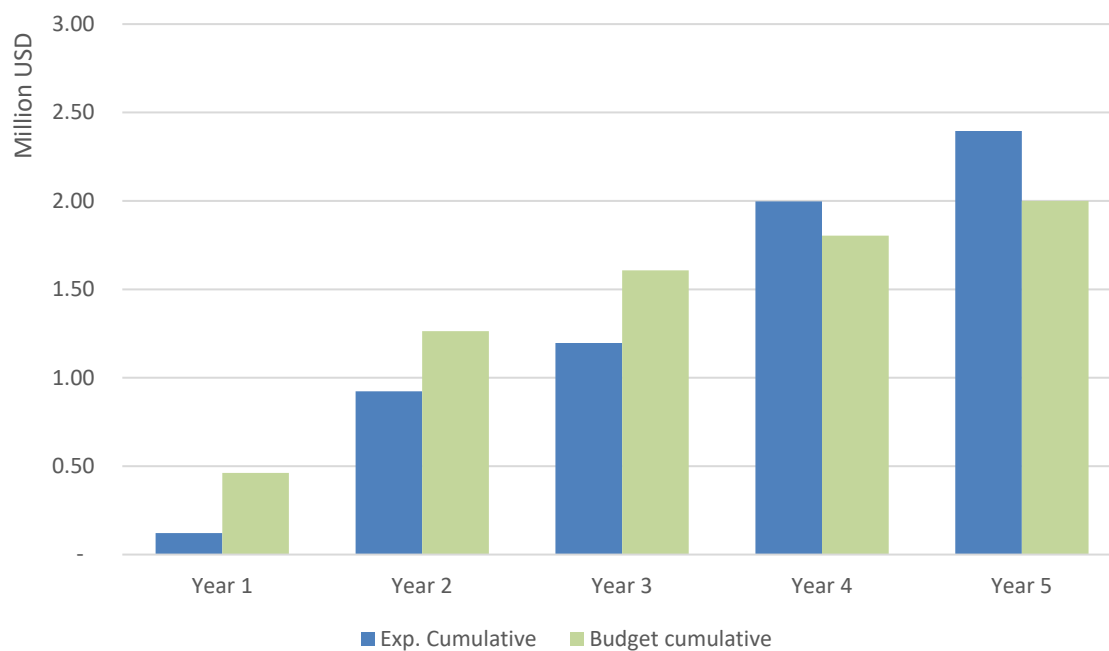


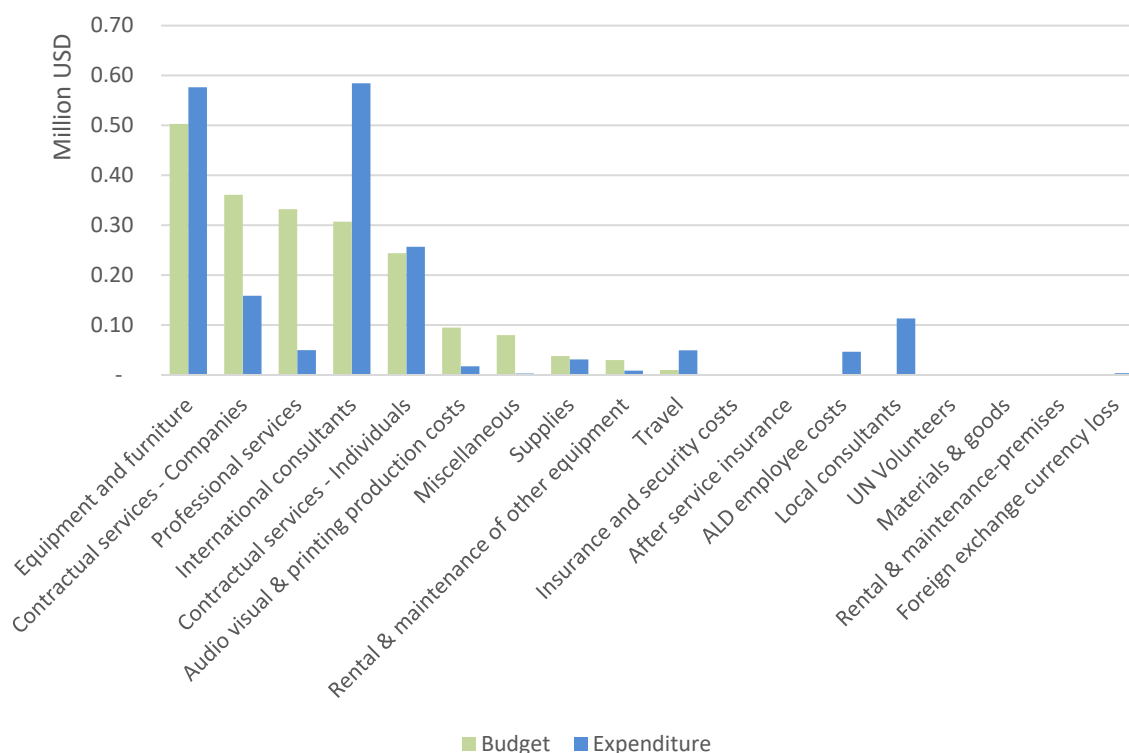
Figure 10 Project expenditure and budget (cumulative) compressed to a five-year timeframe by adding up lowest delivery year expenditures, i.e., 2008-09 and 2013-14



In terms of budget and expenditure accounts there were some differences, particularly in categories “professional services” “international consultants” “local consultants” and “contractual services, companies”. This is likely due to differences in account planning and expenditure recording, as e.g. “professional services” was intended for the capacity development costs and “contractual services-companies” for hiring local expertise. However, these costs had been mainly recorded under the accounts “local consultants”, “international consultants”. Figure 11 shows the main cost and budget accounts and their differences.

Planned and actual costs coincide almost exactly in the “equipment” and “contractual services, individuals”. “Equipment” accounting for 30% of total delivery at the time of the terminal evaluation was the main expenditure account. This reflects the costs of the two x-ray machines for biosecurity inspections foreseen in the project document.

Figure 11 **Budget and project expenditure per ATLAS account**



2.4.3 Management costs

Management costs, that were accounted under a separate “outcome 4” that included personnel costs (Insurance, ALD employee, local and international consultants, contractual services, UN volunteers), travel, contractual services with companies, equipment, rental and others diverge considerably from the planned budget. The project document foresaw management costs amounting to ca. 199,000 USD or 11% of the total budget, while actual expenditure accounted under

outcome 4 amounts up to 25% with ca. 497,000 USD. However, two factors must be taken into consideration:

- Personnel costs directly related to implementation of activities, specifically, those related to the biosecurity advisor were wrongly accounted under management costs. The total sum involved amounts to 179,402 USD hence reducing the total management costs to 317,223 USD or ca. 16% of the project grant.
- The extension of implementation for two additional years involved management costs of ca. 133,760 USD, or 66,880 USD yearly. Subtracting this additional management costs from the aforementioned wrongly accounted personnel costs, the management costs would have amounted to ca. 9% of the project grant, below the expected 11% and the 10% GEF benchmark value.

Personnel costs involved in the implementation of activities, as is the case of international consultants (with the exception of reviews, evaluations or audits) cannot be counted as management costs. Hence the terminal evaluation would not consider them as management costs.

However, and although the delays suffered by the project are related to the “PCU learning period” explained in the previous section, the terminal evaluation must account for the increased management costs caused by said delays.

Figure 13 *Planned and actual expenditures per outcome*

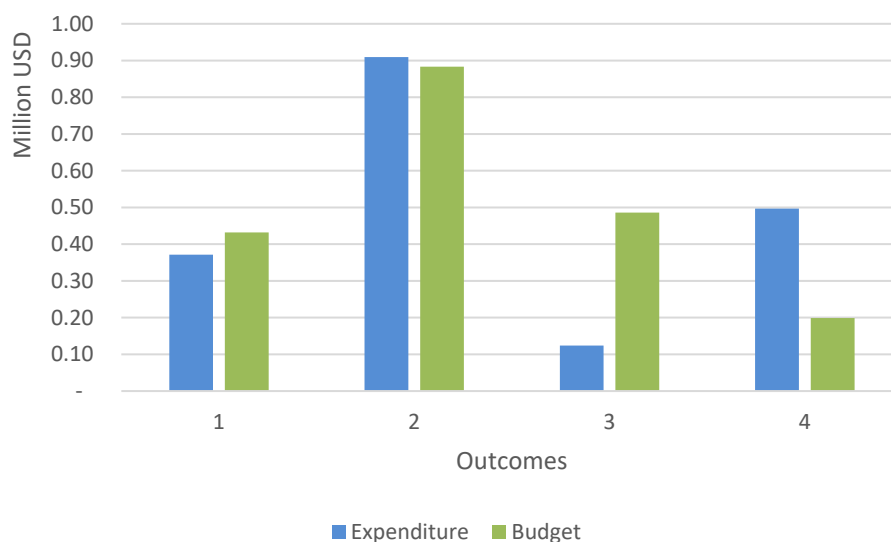
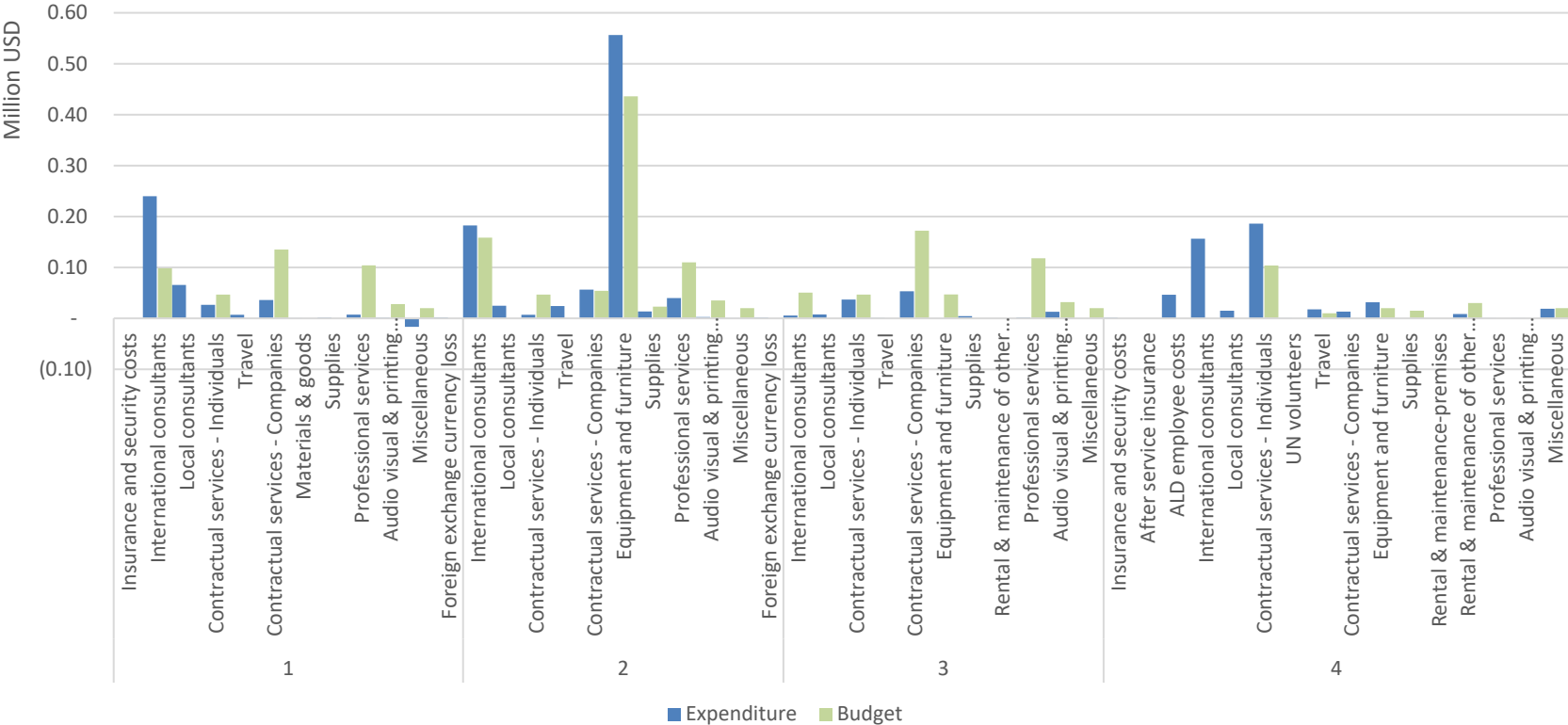


Figure 12 Planned and actual expenditures per ATLAS account per outcome



2.4.4 Co-finance

The project secured co-finance commitments both in cash and in-kind amounting to 4,900,624 USD. At the time of midterm review the amount of co-finances had reached already 6,429,310 USD, hence surpassing the originally foreseen amount. The terminal evaluation could account for 20,339,906 USD as co-finance, or ca. five-fold the originally planned quantity.

However, as already noted by the midterm review, the information on co-finances was dispersed and vague, as the majority of the original co-financers could account for their actual *incremental* expenses to support the project objectives. In fact, as also noted by the midterm review, most of the co-finance does represent baseline expenditure, as is the case of government expenditure on IAS plus some new additionally mobilized external funding as is the case of NGO expenditure. However, some of this expenditure, such as the maintenance costs of X-ray machines at the airport by the government and investment in human resources by NGOs are indeed incremental expenses.

On top of the over 20 million USD reported, the project has also contributed to the additional mobilization of ca. 50,000 USD from the World Trade Organization and ca. 955,300 USD from the European Commission as grant for a project called *Mainstreaming the management of invasive alien species to preserve the ecological integrity and enhance the resilience of Seychelles World Heritage sites* that has also been actively supported by this project, not only by participating in its steering committee but also by creating enabling conditions for its implementation.

Table 8 records co-finance figures. Annex V gives more detail on co-finances and sources.

Table 8. Co-finance table.

Cofinance (Type/Source)	IA own financing (million USD)		Government (million USD)		Other sources ⁽¹⁾ (million USD)		Total financing (million USD)		Total disbursement (million USD)	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Grant			0.40	18.46	0.87	1.99	3.27	22.45	3.27	22.35 ⁽³⁾
Credit										
Equity										
In-Kind			2.54	0.00	1.49	0.58	4.03	0.58	4.03	0.58
Non-grant ⁽²⁾										
Other types										

- (1) “Other sources” refers to contributions mobilized by the project from other multilateral agencies, bilateral development cooperation agencies, NGOs, the private sector, etc. Other sources should be specified and quantified when possible
- (2) Instruments such as guarantees, contingent grants etc.
- (3) October 2014, delivery 95%

2.4.5 Cost-effectiveness of project strategy against alternatives

For purposes of efficiency, the GOS-UNDP-GEF Projects in different Focal Areas implementing from 2007 combined resources to create a common Program Coordination Unit (PCU). As explained in section 2.2.2 *Management arrangements*, the PCU counted with a Program Coordinator and Project Managers who will provide day to day coordination, management and accounting for the overall program and individual projects, respectively. Additionally, UNDP project oversight costs are covered through the IA Fee and are not charged to the project budget.

Planned management expenses amounted to 11% of total costs. Although the project implementation timeframe was extended over two years, for reasons related in good measure to the learning process of setting the PCU, total actual management expenses amounted only to 5% more than planned.

The slight increase in management expenses is very likely due to the “pooling” of management resources among the GEF-funded project portfolio. Discounting the expenses incurred by the project as a consequence of the extension, the total expenditure in management would amount to only 9% of the total GEF grant.

More importantly the project’s approach, i.e. supporting the development of an enabling environment for the prevention of entry and spread of IAS is the most efficient approach to the alternative “classical” approach of engaging in eradication or control efforts after the introduction. Certainly, this is true only if the alternative would be a “do-nothing” strategy of IAS entry and spread prevention. Current IAS eradication measures carried out in critical biodiversity areas are indeed paying the costs of such a strategy.

Thus, for the Convention on Biological Diversity, *prevention of IAS is significantly more cost-efficient than engaging in eradication or control efforts after their introduction. Thus, effective prevention efforts can serve as one way to reduce and re-focus existing expenditures used to combat IAS wherever they may appear.*³¹ Moreover, a cost-benefit analysis of IAS control measures, found out that *prevention measures were, on average, more than 300 times more cost effective per annum than the losses caused by established IAS.*³²

³¹ CBD, Island Biodiversity Programme, Invasive Alien Species <http://www.cbd.int/island/invasive.shtml>, retrieved on 15/11/2014

³² Paul Mwebaze, Alan MacLeod, Hervé Barois, 2009

2.5 Sustainability

The section sustainability analyzes the likelihood of sustainability of outcomes after project termination by assessing the risks that are likely to affect the continuation of project outcomes. The risks for the sustainability of project outcomes in UNDP-GEF evaluations are divided in financial, socio-economic, institutional framework and governance and environmental risks. Table 9 defines the four risk categories and shows the indicators used by the terminal evaluation to assess them.

Although the assessment is based on the risks, the evaluation will rate the likelihood of the four dimensions of sustainability (financial, socio-economic, institutional and environmental), i.e. a “likely” rating means that that particular dimension is likely to be sustained, not that the risk is high, i.e. that the threat is likely to be realized.

Table 9 Sustainability risks and indicators

Risk type	Definition	Indicators
Financial	Likelihood of financial and economic resources not being available after assistance ends	SAA-PAHS budget will not increase according with new responsibilities
		Development partners will not support IAS control programs
Socio-economic	Likelihood of social and/ or economic trends surpassing capacities installed by the project	Increase in trade and connectivity will overwhelm biosecurity services
Institutional	Likelihood of failure to implement institutional arrangements supported by the project	Biosecurity system vulnerable to political pressure
		Formal coordination among key institutions not established
Environmental	Likelihood that environmental factors will overwhelm/ bypass IAS management measures introduced by the project	Climate change induced invasive species will surpass institutional capacities to tackle them
		Threat by native invasive species (e.g. COT, Merremia, Caulerpa) will not be systematically addressed
		Organisms introduced as beneficial organisms or IAS biological control will be pushed by interest groups disregarding risk analysis

2.5.1 Financial risks

The current budget of the SAA-PAHS is currently rated by its own officials as insufficient to carry out its present responsibilities. Although the budget for the key biosecurity institution, SAA, represents only 0.5% of the total budget allocation to government agencies, it has been suffering consecutive cuts, e.g., *for the preparation of the budget 2014, the Plant Health Section had requested total budget of 5.1 SCR million and only a budget of 4.3 SCR million was approved*³³.

³³ Barois, H., 2013

The project developed a financial strategy that estimated the annual cost of the Biosecurity Agency to carry out its full responsibilities under the Biosecurity Act at 53.5 million SCR annually. The strategy involves mobilization of resources from different national (e.g. the Environmental Trust Fund), and international, as well as developing a cost-recovery mechanism, with fees associated with actual costs of the agency and the creation of an emergency fund. However, the implementation of this strategy would require increasing capacities for fund mobilization and increased coordination with other government institutions.

The Ministry of Finance, Trade and Investment initiated in 2013 a new approach to agency budgets with a performance-based budgeting, which includes the Ministry of Natural Resources and Industry as one of the pilots. The Ministry of Finance is also systematizing budgeting through a Medium Term National Development Strategy. It would be critical to mainstream the biosecurity strategy into this process to ensure adequate levels of government funding for biosecurity³⁴. Stakeholders pointed out the necessity of raising awareness of relevant budget decision-makers on the critical value of biosecurity for the country's economy and also foreign relations.

Support for funding in biosecurity may come from the recently approved Seychelles National Agriculture Investment Program (SNAIP) 2015-2020. This strategy, developed with FAO support, has the primary goal of promoting local agricultural promotion and food security, through the implementation of the National Food and Nutrition Security Policy and includes a program on biosecurity, with the goal of preventing damages to local production from pests, with costs estimated at 77.7 million SCR, i.e. 15.5 million SCR annually. The costing has been carefully calculated by the SAA and the Ministry of Natural Resources. However, it is uncertain however if the investment strategy will be fully implemented by the government.

There are a number of projects funded by international donors that are completely dedicated or include activities on control and eradication of invasive alien species. This includes projects to be implemented together with NGOs or parastatals and government agencies, and funded by international NGOs, like IUCN, the GEF with UNDP support, the Adaptation Fund, the European Commission, and UNDP. However, with the exception of UNDP's Biofin that supports mainstreaming of biodiversity conservation into budget instruments, they constitute funds for localized IAS eradication and habitat rehabilitation actions.

Table 10 summarizes the factors considered and its effects on financial risks to sustainability of the project outcome, i.e. the biosecurity service

³⁴ Barois, H. 2013

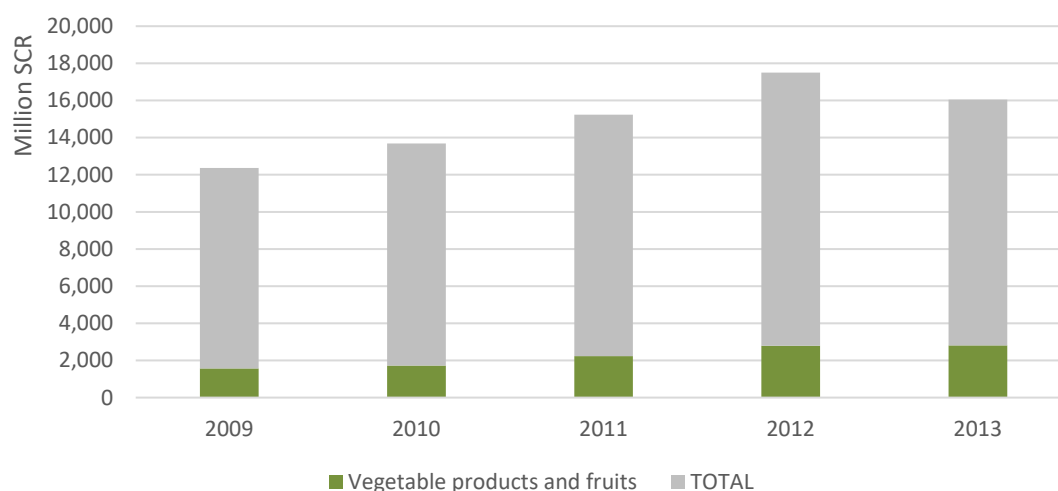
Table 10 Financial risk assessment

Risk	Positive	Negative
SAA-PAHS budget will not increase according with new responsibilities	SNAIP to support biosecurity agency with 77,7 million SCR	Cost of new responsibilities greatly surpass current budgets
	Biofin project to support mainstreaming of biodiversity into the country's financial instruments	Perspective of additional budget cuts Current lack of awareness on biosecurity at budget decision-making level

2.5.2 Socio economic risks

Seychelles has been experiencing an increment in both trade and connectivity at regional³⁵ and global scale, with an increase in the number of international tourism arrivals and trade. As both tourism and particularly trade are pathways of entry for invasive alien species, any increase in volume or number of connections would raise risks associated with IAS. Dealing with bigger risks should consequently involve supplemental funding for biosecurity services. This is however, uncertain, as described in the previous section.

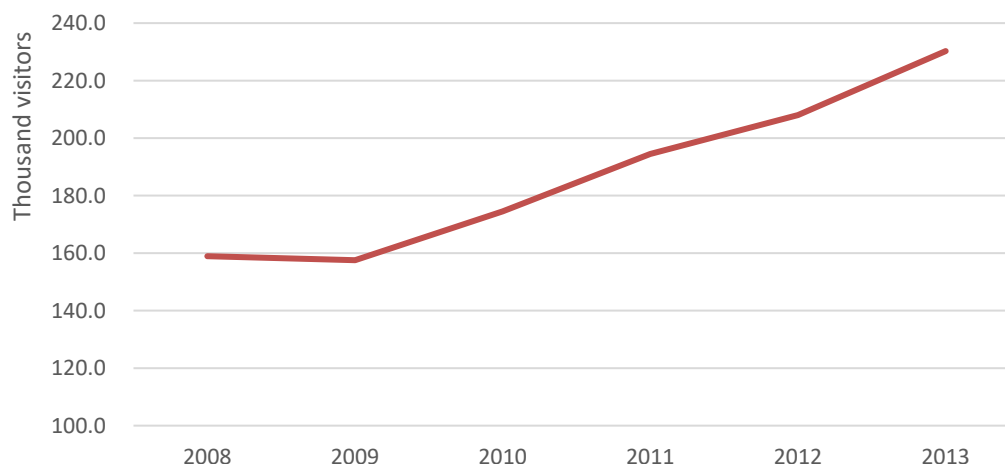
Figure 14 Total and vegetable imports 2009-2013³⁶



³⁵ Eastern Africa and the wider Indian Ocean region

³⁶ Seychelles Bureau of Statistics

Figure 15 Total number of arrivals (all origins, purposes and means of transportation) 2008-2013³⁷



2.5.3 Institutional risks

The enforcement of biosecurity services as required by the Biosecurity Act would need coordination among a number of government institutions involved in controlling invasive alien species, included but not limited to the Seychelles Agricultural Agency, Customs Services, Immigration, Ministry of Health, Department of Environment, Coast Guard, parastatals, such as the Seychelles Island Foundation or the Seychelles National Parks Authorities, as well as NGOs and private stakeholders.

The project has supported the creation of the National Biosecurity Committee that would play a key coordination and advisory role under the Biosecurity Act together with its sub-committees, such as the National Invasive Species Committee or the Sanitary and Phytosanitary Committee that would serve as primary fora for information sharing and coordination of action on invasive alien species and particularly on agricultural pests respectively.

Although the NBC has met twice already at the time of the terminal evaluation, it needs yet to become fully operational, including setting up the sub-committees mentioned above. Moreover, significant doubts persist among institutional stakeholders on roles and responsibilities both of the committee/ sub-committees and their members.

Additionally, cooperation among government and non-government actors has been dealt with at a personal level, without need for formal agreements or memoranda regulating functions and responsibilities. While this is in principle feasible given the relatively reduced pool of officials and experts dealing with these issues in the Seychelles, differences in approach or understanding of

³⁷ Seychelles Bureau of Statistics

priorities has also led to misunderstandings that have hampered coordination and cooperation, e.g. for the achievement of the outputs of this project.

Another institutional risk identified by the project's stakeholders is the biosecurity system's vulnerability to political pressure for diplomatic and economic reasons. The former refers to special treatment supposedly demanded by VIP visitors, particularly those with institutional responsibilities, e.g. foreign political officials or national officials on foreign visits and the latter to reported pressures to facilitate trade by decreasing or bypassing current biosecurity protocols.

Due to the delicate nature of such matters, the terminal evaluation did not find any documental evidence related to this risk. Stakeholders manifested different opinions and offered examples that are partially contradictory. However, it may be cautiously concluded that there have been cases of political pressure on both instances but that the pressures had been resisted or that the control measures are robust enough, even if sometimes still bypassed.

2.5.4 Environmental Risks

Climate change impacts, including increasing temperatures both in marine and terrestrial habitats, as well changing rain patterns can increase the risks of biological invasions by causing changes in phenology (species lifecycles), range shifts and CO₂ fertilization among others³⁸.

Although climate change projections for Seychelles indicate a likely increase in air and sea surface temperatures in the coming decade³⁹, the potential impacts on biodiversity, other than the potentially catastrophic effect on coral reefs are poorly understood and need to be the subject of more scientific research⁴⁰.

An even more pressing concern is posed by organism native to the Western Indian Ocean region that can become invasive under certain circumstances, such as land use change or habitat modification. An example of this is the crown-of-thorns starfish (*Acanthaster planci*), an Indo-Pacific coral predator whose population can boom with devastating effects on coral reefs. E.g. surveys conducted by the Marine Conservation Society of the Seychelles conclude that all reefs at Beau Vallon in Mahe, one of the main tourist destinations, could be completely destroyed within 18 months. While the causes leading to *A. planci* population explosions are not understood, there is a consensus on the need to develop management protocols for this organism that include regular surveys, survey methods and removal strategies. Due to its lifecycle, involving a planktonic stage, prevention of entry of new recruits on a non-infested or recovered coral reef is not feasible. As this species, together with organisms such as the algae *Caulerpa sp.*, *Padina sp.* or the creeper *Merremia paltata* etc., are native, biosecurity protocols and institutions may not be able to act and carry out the necessary management actions to prevent harmful effects under the current regulatory framework.

³⁸ FAO, 2005; Stanley W. Burgiel and Adrianna A. Muir, 2010

³⁹ Government of Seychelles, 2011

⁴⁰ Government of Seychelles, 2014

Another category of environmental risks is constituted by the importation of organisms perceived as beneficial, e.g. endophytes to boost agricultural production, which may be promoted by institutional or private actors. As the new biosecurity service needs yet to be enforced, stakeholders may not be yet aware of requisites and procedures under the Biosecurity Act and this may lead to import of “beneficial” organisms without proper risk assessment.

2.5.5 Summary of risks and sustainability

Table 11 summarizes the assessment of risks to sustainability

Table 11 Sustainability risk assessment summary

Risk type	Indicator	Likelihood	Consequences	Sustainability rating
Financial	SAA-PAHS budget will not increase according with new responsibilities	Moderate	Very high	Moderately likely
	Development partners will not support IAS control programs	Low	Moderate	
Socio-economic	Increase in trade and connectivity surpasses biosecurity capacities	Moderate	Moderate	Moderately likely ⁴¹
Institutional	Formal coordination among key institutions not established	Moderate	High	Moderately likely
	Biosecurity system vulnerable to political pressure	Low	High	
Environmental	Climate change induced invasive species will surpass institutional capacities to tackle them	Uncertain	Very high	Likely
	Threat by native invasive species will not be systematically addressed	Moderate	High	
	Organisms introduced as beneficial organisms or IAS biological control will be pushed by interest groups disregarding risk analysis	Moderate	High	

⁴¹ Of course, likelihood of biosecurity service coping with increase in trade and connectivity is directly linked with financial sustainability, particularly the budget dimension

3. Conclusions, recommendations & lessons learned

Project design

The project strategy had strong vertical coherence, with outputs logically connected to the outcomes and these logically linked to the development objective. The results are well formulated and are based in a good analysis of the problems relevant to the development objective that has been consulted and validated by relevant stakeholders.

However, the project wrongly assumed that all institutional players will agree and follow the project's approach to biosecurity and that the process of reforms to the regulatory framework would not suffer major delays. A more careful analysis of assumptions and risks could have made some of this issues evident. However, it must be noted that the project strategy was approved by the government with wide support by all relevant stakeholders and that in the national context, counting with sufficient political support should suffice to facilitate reform processes.

Project implementation

Institutional changes

The political and institutional changes, including the downsizing of the public sector and the split of environment and natural resources responsibilities among two ministries did not substantially alter the premises for the project, but did weakened the institutional structure to a certain degree and introduced new coordination dimensions (and dilemmas) among newly created agencies.

Management arrangements

The project management structures, including its steering committee and the project coordinating unit demonstrated its solidity throughout the project implementation, managing to complete the vast majority of outputs of the project. The PCU in particular demonstrated to have the capacity to address challenges posed by different views or even indifference by some institutional players towards biosecurity.

Monitoring and evaluation

Conclusions

Seven out of nine outcome indicators comply with SMART criteria. All the outcome indicators signpost the completion or achievement of their respective outcome's outputs. While in general outcome indicators should capture dimensions of the development effect intended beyond the delivery of the output, the terminal evaluation considers these indicators to be valid since, as explained in section project design, the logic of the project is strong, i.e. the vertical connection between outputs and outcomes is consistent and coherent, and the assumptions are generally valid.

Achievement of the development objective can be gauged with the indicators of the project's LFA: functional biosecurity service and no negative change of threatened status of endemic species. However, for the first OVI, the assumption must be made that "functional" necessarily implies a sound regulatory framework and sufficient knowledge on IASs. Calculation for the second indicator must take uncertainties related to species evaluations, life-cycles and evaluation dates into consideration. Hence, results thereof may not necessarily indicate a significant change of status nor reflect effects caused or attributed to the project.

One critical outcome indicator on ratio of government to non-government expenditure on IAS control was non-specific, i.e., variation could have been caused by other factors and based in the wrong assumption that the biosecurity service could retain at least part of the income generated by fees and fines.

Monitoring and reporting was generally well conducted and reported with minor shortcomings that included non-critical acceptance of one non-SMART indicator (outcome 1), lack of data on several indicators (ratio of IAS expenditure, threaten status change, awareness on biosecurity) and the double reporting on the repeated objective indicator/ indicator for outcome 2.

The PIR ratings given by the PCU, UNDP country office, and UNDP Regional Technical Advisor in the PIRs were related to the information contained in the reports and adequately justified.

Lesson learned

Project LFA indicators and its monitoring is critical to be able to establish if the project is on track towards its development objective and therefore constitute the primary tool for adaptive management. Hence, at design and inception, it is necessary to rigorously test all indicators against SMART quality standards, particularly specificity, i.e. to establish if any factor other than the project can cause changes of the indicator variable.

Project results

Conclusions on outcome 1

The project is very relevant to the Seychelles, both as an instrument for the implementation of the main environmental policy, as well as an answer to the main threat to the islands' native terrestrial ecosystems. These ecosystems are unique biodiversity hotspots and their preservation contributes to global environmental benefits.

The project decisively contributed to policy and regulatory reforms, developing a biosecurity policy and strategy, based on comprehensive institutional and cost-benefit assessments, as well as the development, discussion and final enactment of the benchmark Biosecurity Act in 2014.

This act does not only provide the legal framework for risk assessments, inspections, treatments and collection of fees and fines, but, by being aligned with internationally recognized standards, has substantially facilitated the successful WTO membership candidature of the Seychelles.

However, the project could only partially achieve the objective of establishing a cost-recovery mechanism for the biosecurity service. Although the Biosecurity Act does provide the tools necessary for the collection of fees for processing permits and fines for violations, the fees and fines are not necessarily linked with the costs involved in processing permits and conducting inspections, nor with the potential damages caused by violations.

More importantly, even increased revenue from fees and fines will be directed back to the treasury's consolidated fund, without any guarantee of reinvestment in biosecurity activities. Thus, a cost-recovery mechanism that would include these two elements, correspondence between service/damage to fee/ fine, and commitment with investment in biosecurity should be established for financial sustainability.

The project did not develop a concrete awareness strategy that included specific targets and indicators. Awareness measures for the general public and travelers have had minor effects or those effects have not been accounted for. Key institutional stakeholders would need more awareness on the implications of the new policy and regulatory framework supported by the project. However, the project has produced important knowledge products on IAS that are available, together with all relevant project documentation, at the PCU website.

Recommendation

Support must be given to a more needs-based allocation of budgets for biosecurity service functions⁴², involving a better coordination among the agencies and departments involved and

⁴² i.e., for the PAHS and other government agencies involved in IAS control measures, e.g. Customs or DoE

making use of the new budget allocation mechanism, i.e. performance-based budget allocation and mid-term expenditure framework.

Also, fees and fines included in the Biosecurity Act should be reviewed to more accurately reflect the costs incurred by the biosecurity service.

However, the potential economic impacts of violation of the Biosecurity Act may reach enormous proportions, e.g. in the case of introduction of agricultural pests or accidental introduction of rats or parasites to outer islands. Hence, strict enforcement of a system of fines correlated with the damage cost is unrealistic and it could be even counterproductive if e.g. investments or tourist are scared away.

Thus, the possibility of setting aside a fund or a liability insurance for agricultural, trade and tourism operators should be studied.

Lesson learned

Awareness strategies should have clearly defined objectives and target groups, as well as measuring mechanisms, i.e. the indicators and the methods to collect information e.g. surveys, as well as be provided with sufficient budget to cover the costs of monitoring. Failing to do that denies stakeholders the possibility of learning what strategies are most cost-effective for what awareness objectives. Strategic, specific investment in awareness, would likely yield better results than general, diluted messages.

Conclusions on outcome 1

The project's decision to strengthen the Plant and Animal Health Service as biosecurity agency was in conformity with the project design, as well as being recommended by both relevant stakeholders and an institutional assessment conducted by the project at the beginning of its implementation.

However, focus by the project on this service, together with the split of environment and natural resources in two separate ministries, caused perception of the project not supporting "traditional" IAS control measures by a minority of institutional actors.

In spite of such perceptions, project strategy did not prevent the deployment of "traditional" IAS eradication and control measures and in fact decisively supported such activities through a comprehensive effort in knowledge management and direct financial support of field activities.

More importantly, the vast majority of government and non-government actors involved in IAS activities, including eradication and rehabilitation of habitats found the strategy to be logic and sound, as it was indeed confirmed by the majority of stakeholders at several instances during the project implementation and during the terminal evaluation field mission. Non-government actors

in particular, find that the project has provided a better enabling environment for the conduct of eradication and rehabilitation actions.

The project has reactivated the old National Invasive Alien Species Committee as the National Biosecurity Committee (NBC), now mandated by the Biosecurity Act as a key consultative and advisory body, as well as pivotal to provide inter-agency coordination. However, the NBC has yet to become fully operational with the activation of its sub-committees and awareness must be raised among key stakeholders on its role and responsibilities. Threats to the coordination among agencies are difference in levels of awareness of the economic and ecological threat posed by IAS and different perceptions on best ways to address the problem, e.g. prevention or eradication.

Recommendation

The PCU should continue to promote biosecurity issues post project through its communication strategy to address the lack of awareness among key biosecurity stakeholders on the Biosecurity Act and particularly on the roles and responsibilities of the National Biosecurity Committee, as well as to open all communication channels available at high political levels to forge understandings among government agencies, to promote participation in the NBC and the forging of concrete and formal memoranda of understanding to address biosecurity threats in all their dimensions. This recommendation should not be equated to criticism of past and current PCU actions to the same end, but merely stating the critical need to use all means available to consolidate key achievements of the project.

Conclusions on outcome 2

The project strongly contributed to increase capacities of the biosecurity agency through coaching, training, developing of manuals and provision of equipment. Hence, the Plant and Animal Health Service and Customs Services is currently better able to inspect incoming passengers and cargo. However, the biosecurity service has not yet sufficient capacity in terms of human and financial resources to conduct all necessary inspections as mandated by the Biosecurity Act, e.g., lack of biosecurity premises and scarcity of staff with specific know-how needed for specialized risk-analysis.

Other biosecurity gaps still present are shortcomings in inspection of passengers on route to Praslin and inter-island transport.

Recommendation

Funding further training and studies for staff from the biosecurity agency, as the project strategy intended, can not only be an important factor in bringing in critically needed skills and know how, but can also serve to motivate and increase visibility and prestige of the biosecurity agency. Hence, efforts should be made to seek funding for this purpose

Conclusions on outcome 3

The project has contributed to increase current knowledge on IAS status, trends and management by documenting a baseline, as well as management methods. Also, the project funded research projects that yielded important results, such as better understanding of IAS ecology and determine the presence/ absence of pests in the country. Knowledge gaps still prevail in terms of documenting costs and cost-effectiveness of IAS management strategies.

The project did not succeed in establishing a functional knowledge system, including a database and a learning community, in spite of the acquisition of the necessary hardware to set it up and the otherwise technical support provided by the project. This setback was related to staff capacities at the Seychelles Agricultural Agency, a fact that not likely to change under the current budgets.

Knowledge on IAS is being shared in the Seychelles, albeit not in the systematic manner intended in the project strategy: dissemination of lessons learned has occurred in a rather personal-basis, ad hoc fashion.

Recommendation

The project has produced a richness of knowledge on IAS and has set the technical basis for the development of an active database on IAS, as well as the necessary structures (committee) to enable an active learning community.

Although the project has made all its knowledge products available through the PCU website, more efforts should be made to disseminate the results, with the involvement and active engagement of key government agencies, particularly the SAA and the Department of Environment.

Key results in this endeavor would be: 1. finalizing the installation of the IAS database, 2. promoting the activation of the National Invasive Alien Species Subcommittee (of the NBC) and 3. incorporating the project's research results in the communication actions of the SAA, DOE, PCU and other government and non-government actors.

Conclusions on project objective

A barrier analysis conducted by this terminal evaluation reveals that over 50% of the barriers identified by the project design have been successfully addressed. Gaps are still present in terms of coordination, awareness, resources and treatments.

A calculation of the Red Line Index (RLI) for two periods before and during project implementation reveals a decrease in the threatened status of native terrestrial species threatened by IAS. However, this analysis cannot establish if the decrease is significant, since the terminal evaluation could not

quantify the uncertainties related to the scarcity of assessments prior to 2008 and accuracy of threats analysis and estimation of population parameters. Moreover, to attribute any improvement in the RLI to changes brought about by the project consecutive measures should be made after at least five years, i.e. 2019. Such analysis should not attribute any changes in the RLI to this project without accounting for other initiatives on IAS and other threats to biodiversity, anthropogenic or not.

Efficiency

Conclusion

The project needed two years, 2008 and 2009 to effectively take off. This delay was mostly related to the efforts to set-up the program coordination unit for the quantitatively and qualitatively new GEF-funded project portfolio and constraints in terms of recruitment. Other factors contributing to the extension of the project implementation timeframe from five to seven years were constraints in recruitment for consultants, project managers and PCU coordinators.

Recommendation

As recruitments constraints are nothing new in SIDS context, contingency plans to avoid halts in project delivery could be developed by e.g. designating deputy project managers, pre-identification of experts, and signature of memoranda of understanding with implementing partners. However, it must be noted that the PCU and the UNDP in fact did implement all the measures mentioned above, including aide memoires with both the Department of Environment and the Seychelles Agricultural Agency and by at least partially covering vacant positions with remaining staff. Nonetheless, the terminal evaluation advocates for a more systematic, documented approach.

Conclusion

Administration and disbursement of the project by the PCU and the UNDP was conducted in a timely and agile manner, only constraint by factors beyond the control of both institutions. There were not any major shortcomings related to either disbursement or procurement processes. However, financial reporting was not consistent with the accounts registered in the project original budget. This likely accounts for the divergences encountered between planned and actual expenditure.

Common management structures for the complete GEF-funded project portfolio have resulted in management cost less of the GEF-set benchmark of 10%. However, actual management expenses amounted to 16%, of the project grant or 5% above the planned ration of 11% due to the 2 year's extension of the implementation timeframe.

The terminal evaluation could account for a five-fold increase in the committed level of co-finances.

However, as the project did not conduct regular monitoring of co-finance commitments, gathering information on co-finance from agencies and institutions that committed with the project 7 years prior to the evaluation is tedious and prone to raise misunderstandings.

Sustainability

Conclusion on financial and institutional sustainability

Although the project has funded the development of a financial strategy for the biosecurity service and support for it is provided in policy instruments such as the National Agricultural Investment Programme and the National Biodiversity Strategy and Action Plan, there are significant risks of more budget cuts affecting the Plant and Animal Health Service.

Failure to provide budgets according with the responsibilities acquired by this agency as designated biosecurity agency would not only compromise the sustainability of the project investments in capacity, but the whole enforcement of the new regulatory framework.

Although externally funded project are likely to continue support for IAS management efforts in the Seychelles, this tend to focus on eradication and rehabilitation actions, rather than in strengthening the biosecurity service.

Differences in understanding of the most effective approach to prevent entry and manage IAS, together with the lack of formal cooperation agreements among stakeholders could compromise the impact of the National Biosecurity Committee that represents a key legacy of the project. Realization of this risk would equate to a return of a pre-project business-as-usual situation.

Recommendation

The awareness actions pointed out earlier should be specifically directed to high level political decision-makers to raise understanding on the critical need to enforce the Biosecurity Act, including a fully operational, formalized National Biosecurity Committee with all its subcommittees. This is particularly urgent in the face of increases both in trade, connectivity and investment that can divert political attention from funding proper precautionary approaches and prevention measures.

Conclusion on environmental sustainability

The impacts of climate change on the entry and spread of IAS in the Seychelles are poorly understood and more research in the topic should be needed to assess this threat.

There is the risk that two particular subset of potentially invasive species find loopholes in the biosecurity system brought about with project support: native species that can become invasive e.g. *Acanthaster planci* in coral reefs or *Merremia paltata* in terrestrial ecosystems and purportedly beneficial organism e.g. for biological control or to boost productivity. The former should be included in management protocols for the ecosystems they affect and the second should be subjected to the same risk analysis as any other good and/ or commodity without by-passing it for the sake “of the economy”.

Recommendation

Include species with high risks of “invasiveness” such as *Acanthaster planci* in the list of regulated IAS to be included as one of the administrative provisions of the Biosecurity Act. This will likely prompt relevant government agencies to provide the necessary support to include monitoring and treatment of these species in management protocols

4. Annexes

Annex 1a, Evaluation matrix, Annex 1b M&E table, Annex 1c rating table

Annex 2, list of interviews

Annex 3, list of documentation consulted

Annex 4, red list Seychelles

Annex 5, co-finance table

Annex 6, Code of Conduct agreement form

