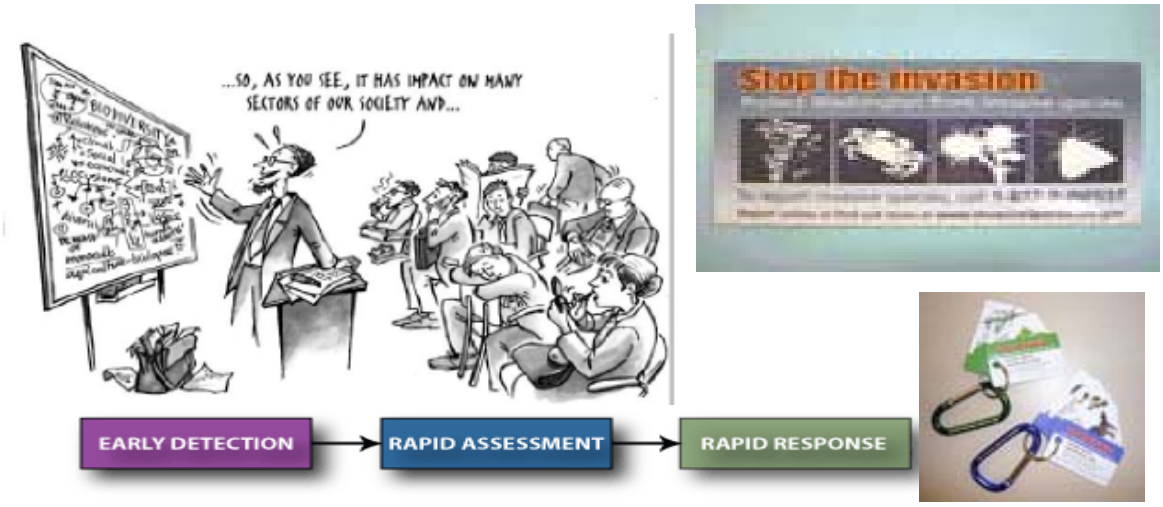
INVASIVE ALIEN SPECIES MANAGEMENT

Communications, Education, Public Awareness Strategy and Actions



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Mitigating the Threats of Invasive Alien Species in the Insular Caribbean

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National Invasive Species Strategy for Saint Lucia

Communications, Education, Public Awareness Strategy and Actions

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ACRONYMS AND ABBREVIATIONS

BCSU	Biodiversity Conservation and Sustainable Use
CBD	Convention on Biological Diversity
CEHI	Caribbean Environmental Health Institute
CITES	Convention on the International Trade in Endangered Species of Wild Fauna and Flora
CPA	Crop Protection Assistants
CPO	Crop Protection Officer
CRFM	Caribbean Regional Fisheries Mechanism
CZMAC	Coastal Zone Management Advisory Committee
CZMU	Coastal Zone Management Unit
FMP	Fisheries Management Plan
GDP	Gross Domestic product
GMO	Genetically Modified Organisms
IAS	Invasive Alien Species
IPPC	International Plant Protection Convention
LMO	Living Modified Organism
MAFF	Ministry of Agriculture, Forestry and Fisheries
MOH	Ministry of Health
MARPOL	Marine Pollution
NEMAC	National Emergency Management Advisory Committee
NEMO	National Emergency Management Organization
NEMS	National Environmental Management Strategy
NEP	National Environmental Policy
NGO	Non- Government Organization
NHM	National Hazard Mitigation
SDES	Sustainable Development and Environmental Section
NISS	National Invasive Species Strategy
OECS	Organization of Eastern Caribbean States
SDU	Sustainable Development Unit
SLASPA	St. Lucia Air and Sea Ports Authority
SLWMU	St. Lucia Waste Management Unit
SMMA	Soufriere Marine Management Area
SPAW	Specially Protected Areas and Wildlife
SRDF	Soufriere Regional Development Foundation
UNCLOS	United Nations Convention on the Law of the Sea
UNEP	United Nations Environmental Programme
WRMA	Water Resources Management Agency
WRMU	Water Resources Management Unit

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INTRODUCTION

1.1 Invasive Alien Species

Invasive Alien Species (IAS) are plants (bacteria and viruses included), and animals (mammals, birds, reptiles, amphibia, insects, sponges) that are introduced in a region where they previously did not naturally occur. In most instances the invading species is non-native but due to favourable environmental conditions, it is able to establish itself and compete successfully with local species. Not all alien species are necessarily invasive. A species needs to be able to not only survive in its new location, but also to thrive, which means, it must be able to reproduce and colonize the new habitat. As species establish themselves in new locations they can alter ecological relationships among native species and can affect ecosystem function, economic value of ecosystems, and human health. Consequently, in order to protect native biological diversity in any country, caution must always be taken to monitor the introduction, establishment and spread of non-native species.

One of the key strategies to safeguard against damages caused by IAS is the empowerment of all stakeholders to act in a responsible manner conducive to the prevention of entry of new invasive species, and the control and management of existing invasive species. The presence of national, regional or international policies and agreements, legal instruments, institutional frameworks and action plans can have only minimum impact if they are not supported by a community that understands and as a result responds positively to regulations pertaining to a proposed invasive species management and control.

1.2 Project Framework

Scope: This scope of this report is national but draws to some extent on instruments that may be regional and or international in application. In this study the term "invasive alien species" will be restricted only to those species whose introduction or spread threatens the environment, the economy or society. Subsequently, the focus will be to halt, eradicate, control and mitigate impacts.

The first half of the report will review the policies, laws and institutional frameworks in place with regards to raising awareness on IAS, and all existing materials in circulation on invasive species, including their management and control. The report also will identify areas, based on current situation of IAS in

St. Lucia, which will enable improved public response to the call for positive action and participation in proposed national strategies and action plans.

Goal: Support the mitigation of threats of invasive alien species in St. Lucia through development of a target driven, people-centred Communications Strategy and Action Plan.

General Objective: Raise national awareness of the issue of IAS such as the potential pathways of introduction, and the actions that can be taken by the St. Lucian public to help prevent the spread of IAS, combat impacts and prevent future introductions into national habitats.

Sub-Objective 1: Conduct a gap and needs analysis with respect to the implementation of IAS policies, regulations and action plans that aim to lead to positive behavior change in the St. Lucian public.

***Sub-Objective 2*:** Based on national capacities, perceived information gaps and current potential threats from IAS, recommend and draft a Communications, Education, Public Awareness (CEPA) Strategy for St. Lucia which will generate an awareness of IAS in at least 70% of the general population and in at least 90% of the public who work in agriculture, trade / customs, health, and fisheries and those living in the vicinity of recent invasions, eradications and or where impact mitigation efforts are ongoing.

Strategy 1: Communication options will be considered be based on 4 strategic interventions

1. Prevention
2. Early Detection and Rapid Response
3. Eradication and Containment
4. Impact Mitigation

***Strategy 2*:** The communications plan will form agency partnerships for collaboration in the development and delivery of key messages to multi-stakeholder groups. The vehicle for delivery of messages will include all popular information media such as radio, television, internet, newspapers, art, science, culture, music, electronic game technology and be delivered through schools, workshops, talk shows, advertisements, PSA, and information videos. The intention is to significantly enhance public understanding of IAS and build and appreciation for the need to manage and control IAS in the country and region. Stakeholders must also be motivated to respond positively to the call for action.

This Strategy focuses on enhancing national leadership and coordination, and establishing partnerships at all stakeholder levels – technical, research,

consumer, producer, managerial, political and finance. The strategy must leapfrog stakeholders to contribute to the IAS management process at their various levels, applying risk analysis, science and technology, legislation and regulations, education and outreach, and international co-operation.

1.3 The Convention on Biological Diversity - Guiding Principles

These guidelines are recommended for use in the Management of IAS. Not all of the principles are relevant to the establishment of the CEPA. Those that will be used to guide the strategy are defined in the following:

Guiding principle 3: An Ecosystems Approach

Principle 3 recommends that measures to deal with invasive alien species should, as appropriate, be based on the ecosystem approach. This approach may be described as a strategy to protect complex and dynamic plant, animal and micro-organism communities and their non-living environment, which together interact as functional units, through integrated management of land, water and living resources (CBD, 2000).

Guiding principle 4: The Role of States

This guiding principle calls for states to recognize that activities within their jurisdiction or under their control, such as intentional and unintentional introductions, may pose risks to other states. Guiding principle 4 stipulates that states should take actions to minimize the spread and impact of invasive alien species. This would include the identification of invasive alien species or species that could become invasive as well as providing information on such species to other states.

Guiding principle 6: Education and Public Awareness

Guiding principle 6 attributes importance to public awareness in the management of invasive alien species. It recommends that states should promote education and public awareness of the causes of invasion and the risks associated with the introduction of alien species. In cases of mitigation measures, such as control or containment programmes, this should be done in a way to involve local communities and appropriate interest groups.

Guiding principle 7: Border Control and Quarantine Measures

This guiding principle recommends that states should implement border controls and quarantine measures to minimize the risks of introduction of alien

species that are or could become invasive. The quarantine measures should be based on risk assessment, and existing appropriate government bodies should be strengthened as necessary to implement the measures.

Guiding principle 8: Exchange of Information

Provisions regarding information exchange on alien species are laid down in principle 8. It recommends the development of information systems in regard to relevant biological information on alien species as well as the dissemination of information. Information on import requirements for alien species should be made available to other states.

Guiding principle 9: Cooperation, including Capacity Building

This guiding principle points out that a state's response to minimizing the spread and impact of invasive alien species not only may be applied internally within the country but also may require a bilateral or multilateral approach with other countries. Cooperative efforts may include the development of programmes to share information and the establishment of bilateral or multilateral agreements to regulate trade in certain alien species, as well as cooperation in research and its funding. Capacity-building programmes for states that lack expertise and resources are advocated. Such programmes may involve technology transfer and the development of training programmes.

2. Assessment of St. Lucia's Capacity to Implement a Communication, Education and Public Awareness Campaign to support Management of IAS

It is recommended that any National Invasive Species Strategy (NISS), should encompass 4 programme elements or pillars:

1. Prevention Of Introduction
2. Early Detection And Rapid Response
3. Eradication And Or Containment
4. Impact Mitigation

Under each pillar, some level of communication, education and awareness should exist.

2.1 CEPA Toolkit for Management of Invasive Alien Species

In general, for effective ***Prevention*** the following should exist:

- Information materials on IAS threats and mechanisms to mitigate impacts, developed and available at Ministries of Agriculture, Health, Customs, and Tourism. Information brochures are also provided to travel and airline agencies for placement in travel magazines, and to be distributed to travelers. Brochures also sent to all local air and seaports.
- Summary of import regulations, especially those related to imports of fauna and flora, posted at all air and sea ports and communicated to ports of origin of travelers.
- Information on IAS publicly displayed at all air and sea ports in order to garner support and compliance to rules, from travelers, fishers, importers and the general public.
- Radio and TV bulletins to travelers, in English and Creole. These are developed by the National IAS Focal Team.

- St. Lucia NISS Website which is interactive: IAS management and control games, models which define potential impacts from IAS invasions, information on mitigation and control measures. Section for posting of comments and queries. Information on regulation and monitoring of the import of exotic fish, plants, snails and reptiles for the aquarium and horticultural trades. Indepth risk analyses results for public information.

For effective ***Early Detection and Rapid Response*** the following are proposed:

- A national IAS focal team (NIST) or committee which will implement the CEPA and oversee the implementation of the NISS
- A mechanism for sharing data, and IAS information to nearby states –A Regional Information Exchange System.
- Early response guidelines per sector publicized on radio and television every time new IAS are detected in country.
- Mechanisms to enable the efficient and regular exchange of information between all relevant stakeholders.
- An electronic database for the uploading of information by focal points in the various agencies, (part of the NIST), where this information may be accessed by the public and specific interest groups.
- Information materials for schools and the public on IAS.
- Information materials on local biological diversity, and on invasive species and their impacts, developed as part of an Environmental Science syllabus.
- Posters on local biological diversity in schools, and other public places, to increase student familiarity with local biodiversity.
- IAS issues included in sector reform programmes, sector education programmes, land planning schemes.
- Call-in radio shows in place to guide the public on responsible actions to take with regards to early detection and response.
- Information on common and emerging IAS developed and in circulation via popular media.
- Environmental education programmes in schools, which incorporate the teaching of aquatic species conservation, from primary to tertiary levels.
- Television and radio programs on early detection of IAS of current concern.
- Guidelines including a check list for the public with regards to actions to be taken when IAS are detected.

For effective ***Mitigation of Impacts, Eradication and Containment***, the following, are proposed:

- Local community groups, institutions and individuals to undertake hazard mitigation measures through community consultations, stakeholder workshops.

- Radio and Television programmes developed on IAS and responsible public cooperation in times of crisis.
- Science fairs promoted by the Ministry of Education for primary and secondary and tertiary school on IAS detection, eradication and control.
- Training within tertiary education institutions to advance scientific research related to IAS control and eradication.
- IAS, ecosystem management, applied science, environmental monitoring incorporated in science education syllabus.
- Regional meetings for joint action and monitoring of eradication / control measures.

2.2 Legal and Institutional Frameworks

There are a number of policies, legislative instruments and institutions in St. Lucia under which Communication, Education and Public Awareness actions for Biodiversity Conservation may be undertaken. A review has already shown that there are no policies, laws or international instruments in St. Lucia that make specific reference to IAS and communications on the subject. Therefore in this review, we will focus on policies and other legal and other instruments that enable, support or imply action towards the development of communication, information exchanges, capacity building, and awareness raising on biodiversity conservation. Under this umbrella we envision that a CEPA strategy can be defined.

National Policies

In order to develop a CEPA strategy for IAS, there must first be a very clear demonstration by the Government of St. Lucia of its commitment towards investing resources towards environment and biodiversity issues. The following represent some of the national policies of the Government and the ones considered to best present the frameworks under which a CEPA strategy may be formulated.

Agriculture Policy In pursuit of its agricultural diversification goals, the Government of St Lucia in 2002 identified a number of targets and measures including: a 10 % reduction in the food trade deficit by 2005; increasing the consumption of local production, non-banana agricultural exports; expanding agro industry; and a 20% increased utilization of locally-produced agricultural commodities by the tourism sector. Further, in 2003 the Government of St Lucia further refined its agricultural policy within the Agricultural Policy

Framework proposed for the OECS. The measures reflected a three-pronged strategy:

(i) Enhancing resource competitiveness of the banana industry (ii) Developing a diversified agricultural sector (iii) Catalyzing the socio-economic transformation of the rural communities.

In this regard, a comprehensive list of strategies was formulated to help foster growth and modernization of the agricultural sector. These included:

- Identification and development of alternative sources of income
- generating activities
- Reduction of the dependence on a single crop for foreign exchange earnings
- Exploration and exploitation of niche markets for non-traditional products
- Optimization of employment opportunities in the sector
- Increase in private-sector investment in agricultural sector activities
- Development of a sector with a dynamic and proactive agricultural trade system***
- Improvement of agriculture-related infrastructure***
- Generation, adaptation and transfer of appropriate agricultural technologies
- Development of measures to improve natural resource management***.

Biodiversity Policy In short this focuses on the protection of the island's biological diversity.

According the National Biodiversity Strategy and Action Plan of St. Lucia 2000, the vision for the future of St. Lucia's biological diversity includes the following e*l*ements. Those relevant to IAS are depicted by ***.

- The status of biological resources is known, the people of St. Lucia and visitors to the island are all aware of the value and importance of these resources, and respect for biodiversity is integrated within the nation's culture;***
- Governmental agencies, non-governmental organizations, the private sector and communities are conscious, active and responsible participants in the management of biodiversity, and the concerns for the management of biodiversity are taken into account within policy-making processes at all levels;***
- The integrity of the country's biological diversity is maintained and, whenever possible, restored;***
- Biodiversity contributes optimally, through sustainable uses, to the social, economic and cultural development of the country, and to the physical**,** spiritual, and psychological well-being of all its people;***

- National, regional and international efforts aimed at conserving biological diversity are consistent, mutually-supportive, and effective.***

National Environmental Policy (NEP) and National Environmental Management Strategy (NEMS) National Environment Policy and National Environmental Management Strategy of Saint Lucia (NEPNEMS). This document was produced as part of Saint Lucia's obligation to the St. George's Declaration of Principles for Environmental Sustainability in the OECS. The

National Health Policy The main objective of the National Health Policy of the Ministry of Health (MOH) for June 1993 to July 2003 is to maintain and upgrade the number of human resources present and future. The National Health Policy covers health personnel, revenue collection, technology use, population growth, vulnerable and at-risk groups, substance abuse, workers' health, environmental issues,*** HIV/AIDS, community participation.

National Hazard Mitigation Policy Hazard analysis and experience have confirmed that Saint Lucia is at risk from natural, technological (man-made) and "slow onset" hazards. Additionally, the island is at risk to "*slow on-set"* hazards that include droughts, plagues, and the predicted effects of global climate change.

One of the main existing legislations which specifically support the Saint Lucia Hazard Mitigation Policy is the *Disaster Preparedness and Response Act # 13 of 2000* which relates to the legal, regulatory and administrative framework for the role of NEMO. The Act gives emergency management responsibilities to NEMO, its director, members and subcommittees including the National Hazard Mitigation Council (NHMC) and the National Emergency Management Advisory Council (NEMAC). Other legislative support for hazard mitigation include the *Emergency Powers (Disaster) Act of 1995* of Saint Lucia and the Constitution (Order 1978).

The following guiding principles are listed as being fundamental in underpinning the Hazard
Mitigation Policy:

- Hazard risk management integrated in development planning
- Minimising risks to the environment***
- Fostering stakeholder participation, collaboration and integrity***
- Promotion of public awareness and capacity building***
- Availability of hazard information and data***
- Hazard mitigation is an investment in sustainable development***

Education Policy This was developed in 2008. The goal of this policy is to guide the development and administration of national environmental education in Saint Lucia so that all Saint Lucians are equipped with the knowledge and skills required to contribute meaningfully to the sound environmental management and sustainable development of Saint Lucia. There are a number of priorities described within the policy document. Amongst these are included:

- Place environmental education high on agenda of key and other agencies***
- Integrate environmental education skills into broad skills base of the country***
- Make public agencies more aware of their role in environmental education***
- Make environmental education more accessible to key agencies and the rest of the general public.***

These priorities are important to the foundation of education and sensitization of the public for developing responsible behavior toward importation of non-native species.

Fisheries Policy Fisheries policy currently gives priority not only to the protection of the industry but also to the protection of the resource base on which the industry relies. Hence, whilst IAS are not given specific attention within the draft management plan, it is noted (***) that proposed management priorities strongly overlap with those relevant to IAS management in the marine ecosystem. Specific fisheries management objectives as they are relevant to IAS management are to:

- factor traditional knowledge and interests of coastal communities and artisanal fisheries into fisheries management;
- Take into account traditional knowledge and interests of local communities, small-scale
  artisanal fisheries and indigenous people in development and management.
- Ensure effective monitoring and enforcement with respect to fishing and other aquatic resource uses.***
- ensure integrated planning and a collaborative approach in terms of policies for the sector, fisheries and coastal zone management;*** and
- cooperate with other nations in the management of shared, straddling and highly migratory stocks.***

International Conventions, Agreements and Protocols

There are a number of environmental conventions that address the prevention of introduction of IAS. Specific actions are defined which address risk analyses, pathways, border control, regulate international movement of biological organisms, monitoring and protection of vulnerable populations and ecosystems, communications and education towards public awareness to alter activities that are in conflict with IAS control.

St. Lucia is signatory to a number of these Conventions including:

- ✓ CBD, Convention on Biological Diversity;
- ✓ CITES, the Convention on the International Trade in Endangered Species of Wild Fauna and Flora
- ✓ Cartegena Convention, Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region; including the Protocol on Specially Protected Areas and Wildlife, SPAW
- ✓ UNCLOS, Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea Relating to the Conservation and Management of Straddling Stocks and Highly Migratory Fish Stocks; St. Lucia ratified this Convention in 1985.
- ✓ MARPOL Protocol (not yet signed but proposed), or International Convention for the Prevention of Marine Pollution from Ships.

Convention on Biological Diversity Simply put, the goal is the protection of biological diversity.

2010 goal: Achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on Earth.

This Biodiversity Convention, is an international legally binding treaty which strives towards:

1. conservation of biological diversity;
2. sustainable use of its components; and
3. fair and equitable sharing of benefits arising from genetic resources

The convention gives significant attention to mechanisms that ensure sustainable development. It covers management of globally endangered species, biosafety issues, it promotes local community involvement in conservation and information sharing via production of national reports.

The CBD has adopted guidance on prevention, introduction and mitigation of impacts of alien species that threaten ecosystems, habitats or species, which can be accessed on the CBD website (Decision VI 23). The website also provides further information on invasive species and relevant decisions of the Conference of the Parties to the CBD.

The International Plant Protection Convention (IPPC) This is an international plant health agreement, established in 1952, which aims to protect cultivated and wild plants by preventing the introduction and spread of pests. The IPPC allows countries to analyze risks to their national plant resources and to use science-based measures to safeguard their cultivated and wild plants.

By protecting plant resources from pests and diseases, the IPPC helps:

- protect farmers from economically devastating pest and disease outbreaks;
- protect the environment from loss of species diversity;***
- protect ecosystems from loss of viability and function as a result of pest invasions***;
- protect industries and consumers from the costs of pest control or eradication.***

The IPPC also provides information exchange related to import and export requirements, *pest status* and regulated pest lists provided by each member country.

Legal Instruments: National Laws and Regulations

There are several pieces of legislation in St. Lucia that address biodiversity, and or environment conservation. Many Acts have been established to support implementation of international agreements and national policies. The following are a selection of the legal instruments in St. Lucia which provide an enabling environment for investment in a communications programme for IAS.

Biodiversity Conservation and Sustainable Use (BCSU) Bill 2008 This bill represents the national legislative framework towards the implementation of the Convention on Biological Diversity. The bill will also enable the national

action towards the conservation and sustainable use of biological resources and other conservation related matters.

Of all the sections of this legislation, Part III is of most significance to the management and control of IAS. This section provides the framework for the management of biological resources. It is divided into four divisions. This Part of the Bill seeks to give effect to Articles 6-11 of the Convention on Biological Diversity. In Division 1, clauses 14-16 provide for the preparation and implementation of a national biodiversity policy, strategy and plan of action. Under Division 2, by virtue of Clause 17, the Minister has the power to publish a list of species that are endangered, may become endangered or which need to be controlled to meet conservation objectives. Clause 18 provides for the preparation of a recovery plan for each species listed under Clause 17. The Minister by virtue of Clause 19 may also publish a list of activities that are prohibited from being carried out in respect of any species listed under Clause 17. Clauses 20 -22 prohibit a person from taking a listed species, from importing or voluntarily introducing non-indigenous species into native ecosystems or re-introducing indigenous and threatened species into an ecosystem unless that person is the holder of a valid permit issued by the designated officer. Offences and penalties are created in respect of contraventions of Clauses 20-22.

Disaster Management Act No. 30 of 2006 The National Disaster Response Plan shall include procedures for, mitigation of, response to and recovery from emergencies and disasters by public officers, Ministries and Departments of Government, statutory bodies, local government units, and persons or organization volunteer or are required by law to perform functions related to the mitigation of, preparedness for response to and recovery from emergencies and disaster in Saint Lucia.

This piece of legislation can be important in the case of an outbreak of disease as a result of marine and or freshwater borne pathogens, including those associated with aquatic worms, snails, insects.

Under the existing regulations, the National Disaster Response Plan shall include --

- Procedures related to disaster preparedness and response of public officers, Ministries and Departments of Government, statutory bodies, local government units, and persons or organizations who volunteer or are required by law to perform functions related to the mitigation of, preparedness for, response to and recovery from emergencies and disasters in Saint Lucia.
- Procedures for coordinating the national disaster response plan and its implementation Procedures for informing persons in Saint Lucia and

elsewhere of the existence of a threatened disaster alert or the existence of a disaster emergency;

- Procedures for preparing and maintaining inventories of services, systems and supplies for the mitigation of, preparedness for, response to and recovery from emergencies and disasters during a threatened disaster alert or the existence of a disaster emergency;
- Procedures for mobilizing services and systems for the mitigation of, preparedness for, response to and recovery from emergencies and disasters during a threatened disaster alert

The Director of NEMO shall consult the National Emergency Management Advisory Committee in the preparation of the National Disaster Response Plan.

Education Act No. 41 of 1999

Mission Statement:

To provide equity of access, increased opportunity and quality service in the areas of education, human resource development, youth and sports for the continuous development of the people of St Lucia.

Priorities

- Establishing a service orientation to the essential clients served by the Ministry: the school, youth groups, sports persons, public and private sector, NGOs;
- Strengthening the human resource capacity of the Ministry in order to effectively realize its mission;
- Provision of increase access to basic, continuing and higher education, to youth services and sporting opportunities;
- Ensuring quality improvement in educational provision, human resource management, youth and sports programming.

Major Goals/Objectives

(1) Articulate, formulate, implement and administer education Policies geared towards human resource development in Saint Lucia;

(2) Ensure access and deliver quality education to all students from early childhood to adult levels;***

(3) Ensure effective staff management and utilization for efficient operation of the education system;

(4) Develop, review and modify curriculum materials to respond to socio-economic and technological changes in the society;***

(5) Establish and administer minimum standards examinations to evaluate instructional programmes;

(6) Encourage and foster appreciation and pride for our national and cultural values and norms.***

Fisheries Act, No. 10 of 1984 and Fisheries Regulations These are general regulations that apply to Fishing in St. Lucia. It is illegal for someone or a company to put any poison or other pollutant into rivers or the marine waters of Saint Lucia. ***

- Some areas have been declared marine reserves to protect fish nursery and spawning grounds. In order to enter such an area, one needs to get permission from the Dept of Fisheries. In the case of Soufriere, permission can be sought from the Soufriere Marine Management Area Office. ***
- Any person who contravenes or fails to comply with any of these regulations shall be liable to a fine up to five thousand dollars***

Note: All these laws are designed to protect Saint Lucia's marine environment and to ensure that these resources are always available for present and future generations.

Forest Laws: The Wildlife Protection Act of 1983. This Act is under the control of the Forestry Department of the Ministry of Agriculture, Forestry and Fisheries and provides for the protection, conservation and management of wildlife in St. Lucia.

The Wildlife Protection Act No. 9 of 1980: Under this Act it is illegal to:-

- Hunt, capture, buy, sell import/export, or keep captive any wildlife unless authorized by the Forestry and Land Department.
- Attempt to trade in anyway whatsoever eggs, young, or any part belonging to wildlife and protected wildlife.
- Destroy or damage nest of protected wildlife.
- All Forest Officers are Wildlife Protection Officers and, therefore, are empowered to enforce the provisions under the Wildlife Protection Act.

Institutions

This section provides a review of the various agencies considered to be most relevant to the development of a CEPA network to address Border Control, Risk Analysis, Research and Monitoring, and Impact Abatement of IAS in St. Lucia.

Caribbean Environmental Health Institute (CEHI) This institute was set up in 1982, as a project, in response to the need seen by the Region's Ministers of Health to address in an organized manner, the environmental health concerns of the people of the English-speaking Caribbean. In 1989 the Institute became a legal entity (with the deposit of the Instrument of Ratification of the CEHI Agreement by Member Governments).

The objectives of CEHI are described below. Those actions that have relevance to IAS control have been noted ***

- Provide technical and advisory services to its members in all areas of environmental management, including water supplies, liquid waste and excreta disposal, solid waste management, water resource management, coastal zone management including beach pollution***, air pollution, occupational health, vector control***, agricultural pollution and pesticide control, disaster prevention and preparedness***, natural resource conservation***, environmental institution development*** and socio-economic aspects of environmental management ***
- Prepare and keep inventories of education and training programmes (especially those in related disciplines), regional experts and other related human resources***
- Promote and collaborate in the planning and programming of symposia, workshops, and on-the job training in member states***
- Conduct courses, seminars, symposia and other workshops at either the institute or other selected regional institutions ***
- Arrange and accept grants for financing scholarships and fellowships to facilitate the training of nationals of member states***
- Act as a regional reference centre for the collection and dissemination of technical and scientific information, and a focal point for various environmental monitoring networks for the collection and dissemination of environmental data, especially health-related, in the Region***
- Promote and coordinate applied research relevant to the environmental problems of the region as identified by member states ***
- Estimate the provision of engineering, public health laboratory and other related environmental services for member states in accordance with their desires***
- Promote uniformity in professional practices, design, standards and technical methods in programmes formulated for the improvement of environmental health and environmental management; ***and

- Promote activities which assist in implementing the environmental health strategy ***

In pursuit of these objectives, CEHI provides a wide range of environmental and environmental health services and products to both the private and public sector.

The member countries of CEHI are Anguilla, Antigua and Barbuda, The Bahamas, Barbados, Belize, British Virgin Islands, Dominica, Grenada, Guyana, Jamaica, Montserrat, St Kitts and Nevis, Saint Lucia, St Vincent and the Grenadines, Trinidad and Tobago and Turks and Caicos.

CEHI is headquartered in Saint Lucia and is headed by an Executive Director.

Ref. http://www.caricom.org/jsp/community/cehi.jsp?menu=community

Coastal Zone Management Unit (CZMU) In January, 2005, the CZM unit was established within the Sustainable Development Section of
the Ministry of Physical, Development Environment and Housing. The role of this unit is to:

- Serve as the Secretariat of the Coastal Zone Management Advisory Committee (CZMAC) responsible for, amongst other things, proposing and formulating coastal zone related policies.
- Provide technical input and advice to relevant planning and management agencies on matters pertaining to coastal development and management.
- Collect, manage and disseminate data and other information on coastal resources, issues and processes.***
- Create and enhance public awareness of coastal zone management issues and programmes.***
- Conduct selected programmes and activities directly relevant to coastal zone management and development***

Management in Saint Lucia: Policy, Guidelines and Selected Projects, 2004).

Ministry of Agriculture: Department of Fisheries The DOF is another important organization in St. Lucia with regards to prevention of entry of marine IAS. In general, the primary role of this organization is to promote self-sufficiency

through increased production of Marine and Aquaculture products, and to develop the fishing industry and implement measures to ensure its sustainability.

Management of fisheries in Saint Lucia has undergone significant changes over the past 15 years. The St. Lucian fisheries fleet now consists of 690 vessels operated by 2,319 fishermen, of whom 40 percent operate on a part-time basis. Less than half of the larger vessels are the traditional wooden craft (canoes), with the open fibreglass *pirogue* now the dominant craft within the industry. In addition, a number of small, locally owned and operated longlining vessels (greater than 12 m in length) have recently entered the fleet. The majority of canoes and pirogues are powered by outboard engines. Most of these are in the range of 40 - 115 hp. Longliners have inboard engines. Engine capacity is increasing to reflect changes in vessel carrying capacity.

Inland fisheries: There are no inland fisheries of commercial importance. A traditional fishery for local freshwater shrimp, commonly called "crayfish" remains closed at present due to resource decline. Location and main landing places Fish landings occur at 17 coastal communities, with the largest proportion of the catch being landed at the town of Vieux Fort, the village of Dennery and the town of Gros-Islet. Some of the key priorities for Fisheries are presented below and those which can support IAS management are demarcated ***

- Modernization of the fisheries infrastructure and fishing vessels;
- The use of improved fishing gear and methods;
- Regulation of fishing gear;
- Protection of marine biodiversity;***
- Regulation of other marine based activities so as to mitigate negative impacts on the fishery sector*** and ensure the overall educational advancement of fishers;***
- Development of appropriate fresh water and marine aquaculture programs***

Ministry of Agriculture: Department of Forestry This is the principle agency responsible for managing forest and wildlife resources on the island of St. Lucia. It does so through legislative authority granted by the following statutes: Forest, Soil, and Water Conservation (1964/1983) / Wildlife Protection Act 1980. The objectives of the department and the basic principles of current policy seeks to advance the areas of Forest Reservation (13% of the island), Natural Resource Management*** Utilization, Environmental Education, Wildlife Conservation***, Co-Management, Research, Recreation, Aesthetics, and Forest Extension. Through systematic management and educational

interventions, St. Lucia has been able to recognize these multi-dimensional values.

Ministry of Agriculture: Plant Protection Unit This unit falls under the Research Division of the Ministry of Agriculture, Forestry and Fisheries. There staff comprise of a senior crop protection officer (CPO), two (2) crop protection officers and four (4) crop protection assistants (CPA). There are also extension officers who operate in the south and south west of the island. There are 7 ports of entry on the island. Of these, the 2 main ones, located near the capital city, Rodney Bay marina and George FL Charles airport are visited twice daily by CPO's. The other ports are visited for inspection of traded goods on request of the Customs officials. The role of the Plant Protection Officers and Assistants is to inspect plants and plant materials that are being imported or exported. Officers also ensure that all materials entering the island have the required import permits and phytosanitary certificates. All materials that do not have the correct documents are detained by the Customs for inspection by the CPA.

Ministry of Agriculture: Veterinary Division This Division is especially important in preventing the entry of pathogens associated with the importation of animals. Diseased animals can be a major pathway for IAS entering the country. In general, the following rule applies as observed on an online notification http://www.miasl.org/petguide.doc

Guidelines for Travelers Arriving by Sea

The entry of animals and animal products via yachts/boats represents one of the high risk areas for the introduction of exotic pests and diseases into St. Lucia. The major ports of entry are the Rodney Bay Marina and Marigot Bay. The Veterinary and Livestock Services Division of the Ministry of Agriculture, Forestry and Fisheries would like to inform yachters of the following guidelines when traveling with pets.***

Only animals for which a Veterinary Import Permit has been granted will be allowed to leave the vessel. Hence prior to arrival in St. Lucia pet owners with the intentions of leaving the vessel with their pets, will need to apply for an Import Permit. Application forms are available at the Division. Animals without permits shall remain on board the vessel for the entire stay of the vessel at the port of entry.

Ministry of Education Based on the National Education Policy and legislation, the Ministry has defined for itself a programme of operation as follows:

The vision: A literate, informed, creative and productive society.
The Mission is presented as: We seek to optimize and sustain economic development and quality of life by creating a functional individual that is accepting of civic responsibility and empowered to compete in a global environment.

Finally, the Ministry proposes to achieve its targets by providing quality education for all and fostering an enriched culture through research, legislation, policies, a comprehensive development plan and support services.

The structure of the Ministry of Education is as follows:

Organizational/ Institutional Capacity and Management

Transformational Leadership, Management, Organizational Structure, Professional Development, Accountability, Efficiency, Effectiveness, Team Work, Client-focused Services, Stakeholder Participation, Public/ Private Sector Partnership.

Economic and Social Development

Workforce Capacity - TVET, Skills Development, Multiple Literacies, Critical Thinking, Attitudes, Citizenship and Values Education, Arts and Culture, Marketing and Valuing Education, Health and Wellness

Rich and Vibrant Arts and Culture

Development, Preservation, Appreciation and Promotion

Science, Technology, Information, Research and Communication

Promotion of Natural Sciences, ICTs, Research and Communication Skills, Management Information Systems, Knowledge Management, Library Services, LRCs and Tele-centers

Ref. http://www.education.gov.lc/

National Emergency Management Advisory Committee There shall be a National Emergency Management Advisory Committee comprising the Prime Minister as ex officio Chairman; a Minister or public officer nominated by the Prime Minister to serve as Chairman in the absence of the Prime Minister from any

meeting; such other members as may be nominated by the Prime Minister to represent --
the police force, Special Service Unit, Fire Service, the Ministry responsible for public health, Ministry responsible for the environment, Ministry responsible for public works, the Ministry responsible for local government, and such other Ministries, Departments of Government and statutory bodies as the Prime Minister thinks fit; such other persons or organizations as the Prime Minister thinks fit who volunteer or are required by law to perform functions related to the mitigation of, preparedness for, response to and recovery from emergencies and disasters in Saint Lucia.

National Emergency Management Organization The role of the National Emergency Management Organisation [NEMO] is to develop, test and implement adequate measures to protect the population of Saint Lucia from the physical, social, environmental and economic effects of both natural and man-made disasters.

Its responsibility is to ensure the efficient functioning of preparedness, prevention, mitigation and response actions.

Sea Ports: Marinas Sea ports can be important pathways for the entry of IAS. Understanding some of the rules and regulations in place at the St. Lucia Marinas is important to developing an image of the effectiveness of the sites in the control of the introduction of invasive species to the State. The following rules were obtained off the internet for the Rodney Bay Marina. Those of specific relevance to IAS are noted as follows: ***

Soufriere Marine Management Area The Soufriere Marine Management Area (SMMA) was established in 1994 following an 18-month long process of participatory planning, which resulted in the creation of an institutional and technical framework for the management of the area's coastal resources and the conflicts provoked by the diverse use of these resources. The final agreement on the SMMA was the creation of a marine management area comprising 11 km of coastline and the adjacent marine area, to include marine reserves, fishing priority areas, multiple use areas, recreational areas and yacht moorings.

2.3 Assessment of IAS Awareness in Saint Lucia

The following represent a summary of results of an Invasive Alien Species (IAS) Awareness Baseline Survey, for Saint Lucia, conducted in 2010. There is also reference to earlier studies conducted on public knowledge and familiarity with biodiversity related issues. The information is presented here as this will also be used to guide the analysis of gaps and needs analysis.

Summary of Results

- Biodiversity awareness and understanding is limited even among those who have previously been exposed to the term.
- In assessing threats to biodiversity, invasive Alien Species (IAS) ranked 18th, amongst those surveyed with only 0.6% of respondents perceiving IAS as a top threat, 0% perceived it as a second terrestrial threat and 0.4% put IAS in 3rd place.
- Previous surveys reported 98% of St. Lucians thought forests are very important. Another study reported 70% of St. Lucians considered wildlife conservation as a national priority. Both surveys indicated awareness and concern about species becoming scarce or disappearing.
- The top three perceived threats to marine biodiversity were garbage, pollutions and oil spills.
- In an OECS-wide survey, IAS (across ecosystems) ranked 20th, with 27% of households in St. Lucia rating IAS an important threat to the environment.
- St. Lucians are even more familiar with plants than with animals. The most frequently mentioned plant perceived as native was the mango tree (*Mangifera indica*), a crop introduced from the Indian sub-continent several centuries ago. The national tree, calabash (*Crescentia cujete*), reached place two. The third place was taken by another crop introduced from Asia: banana, which is of Malayan origin. Many persons ranked tilapia and the mongoose as native species. Both species are part of the "world's 100 worst IAS", and neither are native to St. Lucia.
- Seagrass enjoyed a surprising 10th place. Both native and alien invasive species exist in St. Lucia.
- IAS as a marine threat ranked 21st. None of the respondents regarded IAS as top or second most important threat to marine biodiversity; 0.6% saw it in third place.
- Perceived freshwater threats were dominated by chemicals, garbage and pollution. IAS were not mentioned as a freshwater threat.
- Only 34% of respondents had ever heard the term "invasive alien species" (IAS), while 66% had not. There was no difference between persons from different geographic locations. At greater resolution, geographic differences

became apparent. In Gros Islet, familiarity with the term IAS was highest at 50%, in Dennery, with 12%, it was lowest.

- Gender and age group had no significant influence on persons perception of IAS but job level did, with increased awareness occurring in line with management skills and education level.
- Biodiversity, technical/clerical staff (48%) were most likely to have heard of IAS, followed by academics/management (46%). The self- and unemployed were least likely to have heard of IAS (both 17%), being only marginally surpassed by students (18%) on this occasion, who remained below the retired (20%).
- A third of the population (33%) could explain what IAS meant with reasonably accuracy. A similar number (34%) said they could not.
- Sixteen percent of the population had a partial idea what IAS were. Generally people recognized that IAS were exotic species; their effect, however, was little known.
- With 71% of correct explanations, knowledge was highest in the Soufriere area, but low in both Vieux Fort (20%) and the rest of the country (31%).
- Across the country, 62% of respondents believe IAS impact biodiversity in St. Lucia, while 35% believe they do not.
- When those respondents who did believe in the negative impact of IAS on St. Lucian biodiversity were asked to name examples of IAS that affect or threaten St. Lucian biodiversity, a total of 62 taxa were named. The most recognized were the giant African snail (GAS), the pink Hibiscus mealybug (PHMB), diseases, alien iguanas, termites, feral pigs, Black Sigatoka, crayfish, wax apple, and German cockroaches (Figure 13). The lionfish, which is not yet present, ranked 18th and was one of only two named IAS that are still absent from St. Lucia. The other one was Moko disease of banana, ranked 30th. It was noted that the IAS mentioned were those that (also) impact agriculture.
- Persons listed "Escape from captivity" as the14th most common cause of IAS introductions.
- There is considerable interest in capture of local species and the importation of exotic wildlife as pets, especially among the younger generation in the north of the island.
- St. Lucians were very open to the option of destroying (killing) IAS that had entered the national territory.
- Prevention in form of entry quarantine was also very desirable. Furthermore, respondents desire awareness-raising activities and relevant legislation to be enacted and implemented by authorities, including the introduction of penalties.
- Many persons interviewed thought that IAS could be put into captivity.
- Television, radio and internet were the most important information sources for environmental issues in St. Lucia. Individuals' choice depended on age, job level and location, but not on gender.

- There was significant baseline awareness of the importance of St. Lucia's off-shore islands for the survival of certain plant and animal species among respondents in the Vieux Fort area. However, the exact effect of ridding the off-shore islands of rats and mongooses and subsequently keeping them predator-free was less well understood.
- The risk that these predators may return to off-shore islands previously cleared of them is widely appreciated, as is the fact that humans (deliberate and accidental) are the most likely vector.
- Cultivated species that have been introduced several generations ago are incorrectly viewed as indigenous to St. Lucia. In particular, few were aware of the Asian origin of mango and banana. More worryingly, the highly invasive water hyacinth ranked second in importance as native aquatic organisms in the public opinion. Also the alien iguana was frequently flagged as native.
- While most St. Lucians are familiar with iguanas, there is considerable confusion about their distribution. Few people distinguish the native and the alien iguana and awareness of two geographically separate populations is believed to be very low, even in the Soufriere area, where awareness of the alien iguana was markedly above the national average.
- Observations of those familiar with the alien iguana in the Soufriere area clearly indicate that initial escapes must have happened more than a decade ago. That subset of the population was also well aware of the fact that these iguanas had been brought into the country as pets and subsequently escaped captivity.
- Across the country, IAS ranked 18th as a perceived threat to terrestrial biodiversity and 21st as a marine threat; they did not feature at all in perceptions of freshwater threats.
- As expected, baseline awareness of the origin or current distribution of the Pacific lionfish was low. However, there was widespread concern about the potential threat posed by lionfish to St. Lucian native fish and biodiversity in general, as well as to human health.
- People were recognised as the main vector for terrestrial IAS, via both deliberate and accidental introductions. Sea and air currents were held responsible for most introductions of aquatic IAS.

Recommendations

1. As a foundation to the public education campaign, the concept of biodiversity should be reinforced. In particular the Vieux Fort area should be targeted. The widespread misconception of exotic cultivated species being native also needs addressing. Water hyacinth would make

a worthwhile plant example, while the alien iguana, tilapia and mongoose would be suitable animal cases.

2. The public education campaign should target television, radio and internet as priority media. Television programmes should have as wide a target audience as possible. Web pages should be designed to appeal to young professional adults in particular, while radio should adopt a more traditional style to appeal to a more mature public. In the Soufriere area, the local LIVE 95 and Soufriere Community Radio Station should be made use of for pilot-specific information.
3. While the importance of deliberate (and accidental) human-mediated introductions is widely appreciated for terrestrial IAS, human involvement in the introduction and spread of aquatic alien species will require further clarification.
4. The proven risks of taking invasive alien animals into captivity need to be related to the public. In particular, the history of iguana escapes in Soufriere should be exploited: this example enjoys high credibility and can serve to illustrate this lesson nation-wide.
5. The importance of predator-free off-shore islands should be included in an island-wide public education campaign. Baseline knowledge seems sufficient to combine this with an introduction to the concept of meta-populations during the first year of awareness-raising as well as the provision of concrete, practical guidelines as to how best to avoid carrying rats or mongooses to off-shore islands, e.g. accidentally as stowaways.
6. The difference between the native and alien iguanas, including their geographically separate distributions, needs to be communicated with clarity. In this context, it cannot be assumed that the meaning of the term “alien” is understood without an explanation.
7. The iguana education programme in particular should strive for objectivity to avoid fostering the widespread but poorly rationalized fear of iguanas.

8.

2.4 Results from Analysis of Policies, International Agreements, Laws and Institutions

Enabling Conditions

This summary is based on an assessment of the policies, laws, and institutions presented above; interviews with staff of Government and non government agencies, visits to relevant sites such as air and sea ports, agriculture and aquaculture stations, fish landing sites, tourism centres, secondary and tertiary education facilities.

- Within St. Lucia a number of policy, legislative, regulatory and institutional instruments and frameworks exist that direct support communications, education and public awareness on biodiversity conservation, environmental education, environmental health awareness and national hazard mitigation.
- There are also opportunities under several legal instruments to address information exchanges with the public, pertinent to biodiversity conservation and IAS management, on waste water and solid waste management, import control, and disaster management.
- Under the Education, Health, Plant Propagation, Fisheries and Forest Management, Freshwater Management, Coastal Zone Conservation and Natural Disaster Mitigation policies, regulations, laws and institutions, there are mandates which facilitate the stakeholder awareness and education.
- Under the Biodiversity Convention, there is a clear mandate to inform and educate with the intention to build capacity to conserve natural resources. Access to funding is also possible under this instrument.
- The Ministry of Education through its environmental policy and institutional framework is well positioned to support capacity building at primary, secondary and tertiary levels.
- The CEHI is set up to train experts in management of water related conservation through workshops and expert consultations. CEHI may also serve as a reference centre for the collection and dissemination of technical and scientific information, and can lead in the formation of technical networks for environmental conservation.
- The Ministry of Agriculture has several Departments under which informational materials may be developed which can directly support public awareness on IAS. The Ministry may also produce documents that inform the public on legislation and regulations that are necessary to ensure management of IAS. Such documents include Acts and Regulations on Fisheries Management, Forest Conservation, Plant Protection, and Import of domesticated animals and wildlife.

- The Ministry of Health is also positioned to inform the public of events that may threaten human health and train staff and the public on means to combat the threat, mitigate impacts and aid in eradication and recovery efforts.
- The National Emergency Management Organization (NEMO) is mandated to undertake actions where necessary to inform the public of pending emergencies and procedures to help mitigate impacts from events that threaten people and places. NEMO thus can play a role in the development of information materials on IAS especially those which have already been identified as having capacities to cause epidemics, loss of capacity for the country to sustain itself – impacts on crops, farm lands, aquaculture systems, nursery grounds, foraging sites, recreation sites that support the economy via tourism - and other national emergencies.

Gaps and Weaknesses

This summary is based on an assessment of the policies, laws, and institutions presented above; interviews with staff of Government and non government agencies, visits to relevant sites such as air and sea ports, agriculture and aquaculture stations, fish landing sites, tourism centres, secondary and tertiary education facilities.

1. Based on the wide variety of institutions mandated to implement environment and biodiversity conservation, there should be some coordination amongst these organizations to institute national and regional communications on IAS and education programmes specific to IAS Management and Control. There is no such coordinating team or committee.
2. Despite the wide and varied opportunities for IAS communications in the country, actual presence of information materials and programmes that enhance public knowledge on IAS and capacities to contribute to national initiatives for biodiversity conservation, are severely lacking.
3. There is some information on environmental conservation in circulation. Most of these materials include brochures and posters on fisheries management and legislation, climate change and impacts, forest resource management and coastal zone. Information on past IAS events such as the Pink Mealy Bug and spread of Dengue as a result of the *Aedes aegypti* mosquito exists but are not in active circulation.
4. Several international conventions and agreements open doors for communications on IAS but these opportunities are not being exploited. Limited, short-term initiatives have been undertaken in compliance with

the terms of conventions such as CBD and CITES, Biosafety, but none of these address IAS specifically.

5. Several Government and Non-Government institutions have staff with skills and knowledge on management of biodiversity and associated issues such as IAS, but there is no coordination amongst the agencies to efficiently exploit these human resources.
6. Several laws and regulations exist that can help in the control of IAS exist but these are not well publicized. Public compliance with several regulations therefore is therefore not as good as it could be. There is also insufficient explanation of some of the regulations that restrict entry of species into the country. Ignorance of laws and the reasons behind their formulation can often hamper their effectiveness. It is necessary that the public understands the issues surrounding IAS and thus the need to support actions that combat the entry and spread of non-native species. Regulations and laws that conserve biodiversity and or halt decline of habitats and ecosystems must be communicated to the public as a first step to encourage compliance.
7. IAS control is not specifically addressed in school curricula although elements of environmental, health and natural sciences are taught.
8. Recent surveys show that the public is poorly informed on alien and non-alien species. Few persons are aware that some species found in the country are introduced and may, under the right conditions, threaten biodiversity and ecological processes.
9. The economic costs of IAS mitigation are not communicated to the public, and so there is insufficient understanding about the linkages between IAS and loss of agricultural (crops, livestock & fisheries) income, increase in health care expenses, and increases in incidents of human and animal illness.
10. Health Centres do not communicate adequately the cause of IAS related illnesses in order to increase public efforts to halt entry and spread of IAS.
11. No special mechanisms defined for communication to the press on IAS.
12. Media not fully educated on IAS and its impacts.
13. No IAS Hazard Management Plan defined and communicated to the public.

2.5 CEPA Organizational Functions and Gaps

Assessment of functions

Org., Law & Policy	Desired / Anticipated role of Organizations, supported by National Polices, International and Regional Agreements				Gaps and Needs
	Prevention	Early detection and response	Eradication and control	Impact Mitigation	
BCSU Bill 2008	Enables implementation of the CBD. Gives authority to biodiversity conservation organizations and the CBD focal point to inform, educate and train the public on issues that threaten biodiversity in the country so that the informed and organized public may be able to play a role in conservation. Under this bill local authorities should be coordinated and so that specific conservation targets are defined and CEPA responsibilities assigned.				Most organizations do not address even 50% of issues defined under the CBD.
CBD	Directly mandates member states to inform and educate public on all threats to biodiversity. Also instructs member states to train public on means to avoid entry and spread of IAS.				Limited materials produced and in circulation.
CEHI	Information sharing on waterborne IAS.	Run workshops to train on water quality monitoring and analyses.			Expand training to local communities.
Coastal Zone Unit	Create and enhance public awareness of the coastal zone. In doing this, information materials on what may adversely impact on CZ resources must be introduced. Training on the methods of identification of IAS and their impacts by fishermen and divers, beach developers, land owners and beach goers.				No information materials observed / found.
Fish-eries Dept., Law	Inform public on regulations pertaining to invasion of alien fish and other marine organisms. Information of	Train divers and fishermen in monitoring of reefs, sea grasses and other	Increase capacity of the public to aid in eradication and manage-ment of invasive	Train fishers, divers and other sea users on how to assist in supporting species	Fishermen training programmes limited to use of fisheries gear. No detailed list of invasive fish species and

Org., Law & Policy	Desired / Anticipated role of Organizations, supported by National Polices, International and Regional Agreements				Gaps and Needs
	Prevention	Early detection and response	Eradication and control	Impact Mitigation	
	CITES, import of fish and marine plants.	marine habitats.	marine species that impact on fisheries resources. Exchange data regionally.	(fish stocks) & ecosystem (reefs, sea water quality) recovery efforts.	high risk fish species available to the public. Limited information on early detection of ecosystem decline.
Forestry	Information on invasive forest species and protocols for import.	Train farmers and land owners on early detection and response protocols.	Develop information on eradication of invasive wildlife like the iguana, green monkey, some weeds and impact mitigation. Share information with Forest Offices in the region.		Little or no training programmes in place for landowners on invasive species and their detection.
Marinas	Place bulletins at marinas informing yacht persons of rules about disposal of ships' wastes, cleaning of boat hulls, permits for pets which train on shore.				No notices present at marinas.
MOH	Health notifications to travelers and importers	Public bulletins guiding public how	Public notices on addressing outbreaks	Training and educate public,	Information on high, low or no-risk species not in

Org., Law & Policy	Desired / Anticipated role of Organizations, supported by National Polices, International and Regional Agreements				Gaps and Needs
	Prevention	Early detection and response	Eradication and control	Impact Mitigation	
	of high risk products	to recognize health risks and how to report possible detections	of disease. Providing informa-tion on IAS and their behavior and threats	especially key stakeholde rs on mitigation of impacts, to aid in the recovery effort.	circulation. Preventative stakeholder consultations to boost capacity prior to an epidemic, absent.
MOE, Laws and EE policy	Secondary and tertiary level science and environment syllabus. Introduce concepts of biodiversity conservation, ecosystem impacts, species competition for food and space. Relationships between habitats, climate and species survival.				No specific mention of IAS
NEMO	Assess readiness of agencies to avoid Introductions: training and education of Customs, Ports Police, Vet and Plant protection Officers.	Ensure that schools, and staff of response organizations are informed and educated to address rapid response, eradication, control and impact mitigation. Develop and circulate emergency plans for IAS epidemics or other forms of outbreak.			Little to no public information or programmes on IAS except when in response to immediate threats.
NEMS, NEP	Support information exchanges and capacity building of public. Key agency in the development of a NIST.				Insufficient information materials on IAS produced and in circulation.
Plant Protect-ion	Develop and circulate list of species prohibited	Provide guidelines for reporting	Train farmers in applying actions to	Train farmers, nursery managers,	Most farmers and plant growers have no

Org., Law & Policy	Desired / Anticipated role of Organizations, supported by National Polices, International and Regional Agreements				Gaps and Needs
	Prevention	Early detection and response	Eradication and control	Impact Mitigation	
	and approved for import. Posters at air and sea ports are best.	invasions, and response actions.	halt, eradicate and control IAS.	public to apply impact mitigation actions.	information on potential invasive plants and methods of eradication.
Vet. Division	Inform public on species not to be imported and why.	Inform animal owners on early detection indicators, and provide focal point for outbreaks.	Keep public informed on progress of invasion and impact. Also on how to eradicate IAS.	Encourage through radio and TV public feedback on mitigation.	Vet Division does not consistently communicate to public except in time of crisis when invasion has already occurred.
SMMA	Support Fisheries and SLASPA, and Marinas in informing travelers of regulations to entry of plants and animals	Train divers and fishermen to support early detection and mitigation. Develop information materials on marine biodiversity for schools and the public. Participate in research to build capacity in local biologist to control, eradicate IAS and mitigate their impacts.			Some information materials and capacity building undertaken, but much more can be done.

Recommendations for Action

… based on Analysis of Policies, International Agreements, Laws and Institutions, and results of the Awareness Survey 2010

- Establish a network (NIST) comprised of organizations that can coordinate CEPA activities in support of IAS Management in St. Lucia.

- Define roles and responsibilities of team members, taking into account resources, mandates, and skills.
- Commence radio, television, newspaper programmes to introduce the issue of IAS and its impacts. Utilize local, regional and international well known case studies.
- Specific organizations must increase A&E programmes related to controls of imports, management of waste from foreign vessels, monitoring of pests associated with imported crops, monitoring of migrations of species, impacts on habitats, changes in environment that will enable changes in ecological balances.
- Identification of an IAS focal point per key organization to serve as part of a coordinating body and clearing house of information on IAS.
- Utilize popular artists, community leaders, charismatic speakers to champion the cause of IAS management.
- Encourage the Ministry of Culture to support cultural programmes (shows, plays, music, calypso) that include issues of IAS.
- Build school science, nature, economic, culture, home economic curricula around IAS principles.
- Secure funds to enable regular capacity building events in rural and urban areas to increase public capacity to contribute to IAS mitigation.
- Organize community workshops targeting persons from specific locations in order to help specific communities addressed localized threats (insect infestation in dogs in Vieux-fort, for example).
- Organize thematic (fisher-, farmer-, tourism), workshops to facilitate participation of specific stakeholders.
- Organize national workshops to enable all St. Lucians to play a role in the development and implementation of a National Invasive Species Strategy and Action Plan.

3 Development of a Communications, Education and Public Awareness Strategy for IAS Management in Saint Lucia

3.1 Project Framework

***Goal*:** Support the mitigation of threats of invasive alien species in St. Lucia through development of a target driven, people-centred Communications Strategy and Action Plan.

This communications strategy and plan will raise national awareness of the issue of IAS such as the potential pathways of introduction, and the actions that can be taken by the St. Lucian public to help prevent the spread of IAS, combat impacts and prevent future introductions across national and regional habitats.

Strategic Plan

The strategy must enhance

- national capacities to minimize IAS threats whilst maximizing opportunities and resources
- national leadership and coordination,
- partnerships at all stakeholder levels – technical, research, consumer, producer, managerial, political and finance
- clarify and strengthen stakeholder roles and responsibilities.

3.2 Developing the Strategy

Based on the assessment of capacities described in Part 1 of this report, the CEPA strategy for St. Lucia will be based on 3 guiding pillars:

1. Setting the stage such that all relevant agencies, Government Organizations, NGOs, CBOs, regional and international bodies may coordinate and maximize their contribution to public awareness of IAS and contribution to the IAS national strategy through the integration of IAS management measures, where possible, into their workplans.

2. Raising awareness and understanding of IAS issues in all St. Lucians through joint national endeavours, utilizing popular, traditional and non-traditional means, in order to enable contribution by the entire public to the implementation of the NISS and thus the conservation of local biological diversity from IAS.
3. Utilizing the well elaborated national instruments which address environmental, education, health, local economies, imports /trade and tourism issues, magnify efforts and results, building on assets, and avoiding overlaps and duplication. Responsibility for the CEPA will therefore lie with not one but multiple bodies and prorammes.

National IAS issues to be addressed include but are not limited to:

- Entry of plants and animals into the country with inadequate risk assessment.
- Inadequate capacity to monitor high risk areas and biological functions for early detection of IAS or their impacts.
- Insufficient capitalization of existing research, media, human and institutional resources and frameworks.
- Inadequate harmonization of work plans and programmes amongst conservation organizations.
- General lack of information to the public on IAS issues.
- Failure to adequately publicize IAS cases and use them as examples to the public of the need for compliance to national laws and regulations pertaining to plant and animal import restrictions.
- General lack of awareness, understanding of biodiversity issues by the public.
- Little to no training of key stakeholders (biodiversity users – farmers, fishermen, foresters, craftsmen) to build capacities to support biodiversity, environmental conservation, sustainable development programmes.
- General failure to include stakeholders in information exchange, decision making, formulation of government policies.
- No higher level training of community workers to enhance capacity for participatory management.

The CEPA Strategy and accompanying Action Plan will help achieve the targets outlined in the following tables by responding to some key questions:

1. Identify the national IAS issues and Agenda for the NISS	
How will the above stakeholders be kept briefed?	Via hard copy correspondence, email, radio, television and newspaper.

Define press communication strategies.	There should be an IAS Focal point at one key newspaper, radio station and television station. Media invited to apply to be part of the NISS communications network.
How will networking with interest groups, scientific institutions, NGOs and key individuals be accomplished?	National networks established in rural and urban areas to address specific components of IAS management. Networks will be provided with budgets to enable regular meetings, reporting, research, training, access to electronic and other media and information, coordination with national focal points.
Define the information needed for IAS in general and in developing the NISS and how it will be obtained?	List of high risk, no-risk, unknown risk species. List of IAS currently in country and under control. List of IAS in country and in need of eradication. List of research, early detection, eradication and control technologies and capacities in country, within region, further afield. Technologies may not be locally available but accessible with funding.

2. Formulating the NISS Plan	
How will the various stakeholders and general public be informed on the project work and the development of the NISS	Radio, television, newspaper, reports sent by email and mail. Stakeholder consultations and village meetings with accompanying bulletins circulated to offices, health centres, government buildings, police stations, may be the only options in rural areas.
Define strategies to gain maximum participation for generating ideas and knowledge and incorporating these into the plan.	Radio talk shows, PSAs on radio and television, "call in" shows, rewards for public / consumer participation, posters which link IAS issues with public health, crop protection, water quality, fisheries and quality of marine ecosystems, use of questionnaires. Internet websites to enable public feedback by email.
How will the various policy options for the NISS be explored with key stakeholders.	Stakeholder consultations, Ministerial meetings, technical meetings and workshops, internet, establishment of a website for stakeholder online dialogue.
How will the effectiveness of the CEPA be measured.	Indicators: Level of compliance with air and seaport regulations; public response to IAS instructions, questionnaires, school evaluations,

	Public surveys by trained assessors, number of persons who contribute to requests for information.

3. Getting the NISS implemented	
How will stakeholders be mobilized to ensure the plan is implemented?	Utilize radio, television, community bulletins, as much as possible
What and how will key partnerships be forged to ensure the NISS implementation?	National IAS disaster planning committee must be established with sub-committees based on the sector at risk (crops/ fisheries/ marine/ freshwater/ terrestrial/ livestock/ human health/ wildlife/ domesticated animals/ non-agricultural plants/ trade)
Define the inter-sectoral dialogue that will take place (health, agriculture, trade, education and media)	How to reduce introductions? How to ensure that culprits pay for damages and costs as a result of introduction of IAS? Who addresses general IAS information? Who coordinates joint actions? Fund raising? Who manages communications at regional and international levels? Who defines relevant research?
What information materials will be produced and how will they be distributed	List of IAS species and risks posed; case study reports; posters which assist in IAS identification; booklet to aid in risk analyses – criteria to establish levels of risk; protocols for addressing early detection reports, international warnings of upcoming threats.
Define PR campaigns to be undertaken: identify the key messages; main target audience and how it will be delivered.	*Stop Spread of IAS. This leads to loss of biological diversity, threats to human health and wealth! – IAS is all our business.* Develop jingles and utilize popular artists to deliver the messages and appeal to young persons who are often hardest to reach and convince. Similar messages can be placed on t-shirts, pencils, pens, caps. Larger items can be sold at low prices to be accessible by all. Sponsorship can be obtained from agencies that stand to benefit from IAS controls.
Define Education programmes to be undertaken: how will the	Meetings with Ministry of Education staff for secondary and tertiary levels. Development of curricula which link IAS issues with biodiversity

issue of IAS be incorporated into the training programmes of the education system at all levels; the NGO groups and organizations; and the various sectors such as agriculture; trade; tourism; health; education	conservation, environmental education, climate change impacts, health and social wellbeing. Promote IAS projects in science fairs. IAS issues also to be integrated into trainings at teacher colleges, agricultural schools, training of ports police and customs officers. Ensure that IAS is effectively addressed in the CXC Secondary and tertiary science and environment curricula.
Define Capacity building programmes for the public; private and NGO sectors	Train Police, Customs, health care practitioners, dive operators, veterinary officers. Communities at risk: fishermen, farmers, livestock owners. Evening meetings, programmes on radio and television in English and creole. General campaigns must be implemented with more focused programmes at periods of high alert.

4. Management and Control of IAS	
Define public information programmes for IAS	Poster on IS, Radio and television PSAs, Children story books with IAS themes; Booklets on case studies from local, regional sources, research protocols and techniques for early detection at high risk sites.
How will changes to existing policy instruments be communicated	Radio and television, maybe stakeholder meetings or memos to relevant Ministries, NGOs and CBOs. An IAS website for St. Lucia with a link to regional and international websites and data bases. Government Gazette.
How will changes in opinions; attitudes and behaviours towards IAS be documented.	Radio call-in programmes, talk shows, community meetings and organized debates. Through school and other stakeholder consultations, questionnaires on the local website.

3.3 Proposed CEPA Strategy for Saint Lucia

Strategic Interventions, Actions, Target Groups and Indicators

Communications, Education and Public Awareness Actions	*Target Group*	*Desired Response or Indicators*
Strategic Intervention: Prevention ⟶ Halt intentional and unintentional entry of IAS		
Increase public knowledge on IAS and social, economic and environmental threats. Species which are high risk, low risk and unknown for invasion and biodiversity threat. Importation requirements for animal and plant products, including veterinary permits, plant phytosanitary certificates, etc. Species banned for importation. Certain products may not be imported into the country. Regulations pertaining to wildlife in-transit. ***Train and increase capacities of*** Customs and ports police to regulate imports of potential IAS. Plant and animal inspection officers from the Ministry of Agriculture. ***Publicize*** well known cases of IAS and their impacts. Use popular media to get the "stories" across to as large a sector of society as possible. Case studies may be the best tools to raise the alert and get travelers and importers to appreciate the need for risk analysis prior to import of new species.	Pet Stores, Wildlife Importers, Travelers, Tourists, Wildlife Inspection Officers, Customs agents Schools, fisheries, forestry, veterinary officers.	Improved compliance with national laws and regulations. Public better informed on IAS and appreciation for trade regulations, and health inspections at air and sea ports, increased. Enforcement and inspections of traded organic materials improved at air and sea ports.

Communications, Education and Public Awareness	Target Group	Desired Response / Indicators
Intervention point: Early Detection and Rapid Response ⟶ Increase public capacity and interest to detect and report potential IAS invasions, and comply with rapid response instructions.		
Increase public knowledge on IAS and social, economic and environmental threats. Existing IAS, and potential high risk, low risk and "Unknown threat" IAS. Location and contact information of IAS Focal Point(s). The IAS Disaster Management Plan ***Train, educate and develop skills*** Enable communities to better implement IAS management mechanisms effectively. Communities may be farmers, fishermen, schools, coastal dwellers, households. Via the inclusion of IAS issues, biodiversity conservation, biology, ecosystem management and protection, impact of environment on industry and national economies in school curricula, from primary to tertiary. Promote school programmes that increase student understanding of the linkages between biodiversity conservation, agriculture, economic development, human health. Provision of guidelines on reporting of IAS detections. Stakeholder consultations on IAS. Use case studies of high visibility, events occurring close to home or in-country. ***Communicate*** on IAS events having significant	Farmers, Fishermen, Foresters, Public, Health practitioners; Health clinics, Libraries, Schools, Hospitals, Ministry of Agriculture offices and stations, Plant Protection stations.TV and radio stations.	Increased no. of early detection reports. Improved public reaction to rapid response directives. National agencies better informed of their role(s) in a National IAS Disaster Plan. Human resources better able to contribute to conservation efforts and reduction in IAS threats. Increased capacity of public and specialists to identify IAS and respond

social, economic or environmental impact to validate investment in rapid response mechanisms.		promptly to the threats.
Communications, Education and Public Awareness	*Target Group*	*Desired Response / Indicators*
Strategic Intervention: Eradication and or control → Increase capacity of St. Lucians to support eradication activities and halt the spread of IAS.		
Increase public knowledge on IAS impacts (Social, health, environment, tourism, agriculture, fisheries) Communicate on IAS Disaster Management Plan ***Train*** Stakeholders on eradication procedures and monitoring indicators of success. Field technicians in Monitoring and Control Procedures Youth and young professional through IAS education in schools' science programmes (primarily) at secondary and tertiary levels, via science fairs, school-based assessment science projects, essays, social science programmes.	Farmers, Fishermen, Foresters, General Public, Students, Policy makers, Police, Biologists, Doctors.	Stakeholders better understand IAS and their impacts and encouraged to comply with national directives for eradication. Greater public involvement and support for eradication programmes. Students better informed and encouraged to act responsibly.
Communications, Education and Public Awareness	*Target Group*	*Desired Response / Indicators*
Strategic Intervention: Impact Mitigation → Maximize capacity of St. Lucia to minimize adverse impacts of IAS on sensitive ecosystems, species, agriculture, health, tourism and environment.		
Train Local communities to conduct monitoring of impacts where possible. Stakeholders via workshops to monitor their environment and report IAS and impacts. ***Communications*** To the public on	Farmers, Fishermen, Foresters, General Public, Students, Policy	Improved public understanding for support for mitigation activities.

opportunities and procedures for stakeholder participation in impact monitoring. Amongst NGO, Government agencies, biodiversity related focal points (CZM, CC, CBD, Biosafety, CITES, Ramsar, IPPC) to enable improved coordination for implementing the impact mitigation actions. Via the production of reading materials to increase access to information and build capacity amongst all stakeholders. ***Establish*** information clearing house to enable all organizations (national and regional) to share and access IAS information.	makers, Police, Biologists, Scientists, Doctors. Government Ministries.	National Disaster Plan understood and responsible agencies better prepared to implement plan.

Communications Tools

These will include but will not be limited to:

- Posters on existing IAS, high risk species and threats posed by them
- Posters on recent IAS outbreaks and impacts (agriculture, health and economic)
- School curricula upgraded to include IAS education and elaboration of recent events
- Information brochures on entry restrictions of certain plants and animals
- Special information on threats of aquaria releases and sent to all pet stores
- Video clips and PSA and ensure distribution to rural and urban communites, sports clusb, school libraries, bars and restaurants, banks, hospitals, health centres, airline and travel agencies, Government Departments where the public congregates.
- Training of health workers to better address disease causing IAS
- Billboards at air and sea ports alerting travelers of the threats of IAS and National Regulations pertaining to introduction of “high” and “unknown risk” species
- Use of culture and art, and popular artists to spread word of IAS
- Training of media workers and identification of focal points
- PSAs, brochures and booklets which introduce and explain what IAS are
- Information packages that target multiple stakeholders and interest groups and show the links with biodiversity conservation, human health and local economies

- Portrayal of IAS issues via plays and musicals
- National IAS websites to cater to youth, young professional, business and profession persons.
- Establishment of IAS databases, including case study reports, image libraries of local, regional andinternational IAS, including images of invasive plants and animals, and impacts from invasive bacteria and viruses.
- Workshops to train stakeholders to detect, halt the spread, respond to and eradicate or control IAS. Such stakeholders include farmers, media workers, fishermen, teachers, doctors, nurses, veterinarians, agriculturists, aquaculture farmers, fisheries and forestry officers, biologists.
- Radio and television programmes on popular IAS events.
- Newspaper articles.

3.4 Conclusion

Key Elements of the CEPA Strategy

- Propose IAS focal points in the Min. Education, Min. of Agriculture, Tourism, Customs, Min. of Health, SLASPA, Min. of Trade. Develop IAS response teams to ensure adequate communication exists amongst national and regional agencies.Enhance understanding of IAS amongst decision-makers through the use of brochures, technical reports, booklets, powerpoint presentations, video clips, to ensure that adequate Government support (finance, institutional) is given to implementing agencies mandated to manage IAS.
- Target all sectors of society, recognizing the role that each group of stakeholders can and must play in minimizing threats of IAS to national biodiversity.
- Utilize English and Creole languages and produce Communication that will be accessible by all persons.
- Access funds to ensure that books, posters, pamphlets may be distributed at no cost to the target audience.
- Include more specific education on IAS at secondary and tertiary school.
- Use posters and books to disseminate information on IAs, impacts and options for eradication and or control.
- Build capacity in key players through workshops and production and distribution of training manuals.
- Include IAS awareness in the programmes of agencies implementing CBD, Biosafety protocols, Ramsar Conventions, CITES, IPPC.
- Ensure that all communications on IAS cover agriculture, education, health, trade, tourism, private sector enterprises.

➢ Train and inform local media, and recommend fc
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CEPA Strategy: Raise awareness of IAS in 70 – 90% of the St. Lucian public, and provoke positive change and results.

INSTRUMENTS: Laws, Regulations, Policies, Environmental Conventions

COORDINATION OF AGENCIES

Formation of CEPA network with focal points in each agency: Ministry of Agriculture; Ministry of Education, Ministry of Health, Planning, Customs, Community Development, CEHI, SLASPA, NEMO

CHANGE AGENT

SKILLS AND CAPACITIES

Books, workshops, community meetings, formal and informal training programmes; development of community groups to manage IAS in their locations, teacher training programmes, training of agriculture extension officers

CHANGE OF BEHAVIOUR

Public **increase contribution** to IAS management and reduced threats to biological diversity

AWARENESS TOOLS

Newspaper articles, television and radio programmes, workshops and training, books, pamphlets, posters, talk shows, school science programmes, community

CHANGE OF CAPACITY

Public **capacity** to monitor, eradicate and mitigate impacts of IAS, improved

INFORMATION OUTPUT

Language in English and Creole

Definition and examples of IAS in St. Luc

Role of IAS in biodiversity decline, environmental damage

IAS pathways and methods of control

Potential social, cultural impacts of IAS

Capacity / role of the State to halt the introduction and spread

National laws and regulations to control entry, spread, eradication, impacts of IAS

Opportunities for St. Lucians to stop spread of IAS

IAS impacts on land and aquatic ecosystems

Potential health and economic impacts of IAS

CHANGE OF AWARENESS AND UNDERSTANDING

Public **informed** on IAS and understand need for management and control of IAS

TARGET GROUPS

Travelers, Importers of plants and animals, farmers, fishermen, villagers, aquaculture farmers, fish retailers, pet store owners, students, policy makers, politicians, scientist,