DRAFT

National Strategy for Ballast Water Management

for the Republic of Trinidad and Tobago

APRIL 2012

Commodore Garnet Best (ret'd)

MARITIME SERVICES DIVISION TRINIDAD AND TOBAGO

RAC-REMPEITC Caribe

GloBallast Partnerships

GEF

UNDP

IMO INTERNATIONAL MARITIME ORGANIZATION

Preface

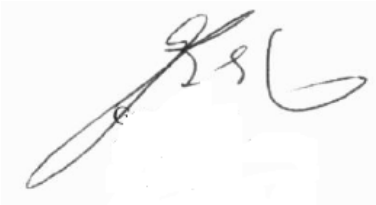
This National Strategy for Ballast Water Management of the Global Environmental Facility /United Nations Development Programme/International Maritime Organisation (GEF/UNDP/IMO) Ballast Water Management Programme of the Republic of Trinidad and Tobago has been prepared by the Consultant Commodore Garnet Best (ret'd).

It encompasses the research and writing of the Consultant having completed due consultation with the National Task Force for the implementation of the Ballast Water Management (BWM) Convention in the Republic of Trinidad and Tobago.

The ideas, commentary and expertise of stakeholders also contributed to the Report and the recommendations it contains. Their willingness to work collaboratively to address all issues has been instrumental to the successful completion of this Project.

The Project also included working along with the National Task Force responsible for the implementation of the BWM Convention and assisting in the coordination, and facilitation of several meetings with stakeholders.

The successful delivery of this Final Report would not have been possible without the cooperation and support of the Director and Deputy Director of the Maritime Services Division (MSD) which has been designated as the lead agency for the BWM Project nationally and regionally and members of the administrative staff of the Research and Development Unit of the MSD



Commodore Garnet Best (ret'd)
Consultant
National Ballast Water Strategy
Ballast Water Management Project
garnetbest@gmail.com
868 683 4401

Foreword

The Global Ballast Water Management Programme is a cooperative initiative of the Global Environment Facility (GEF), the United Nations Development Programme (UNDP) and the International Maritime Organization (IMO) aiming to assist developing countries to reduce the transfer of harmful organisms in ships ballast water. The immediate objectives of the Programme are to assist developing countries to implement the existing IMO voluntary *Guidelines for the control and management of ships ballast water to minimize the transfer of harmful aquatic organisms and pathogens* (IMO Assembly Resolution A.868 (20)), and to prepare for the anticipated introduction of an international legal instrument currently being developed by IMO Member States. This is to be achieved by providing technical assistance, capacity building and institutional strengthening to remove barriers to effective ballast water management arrangements in all IMO member States[1].

International shipping has been identified as one of the key pathways for the movement of species between differing ecosystems. Organisms and pathogens found in ballast water and sediments in ballast tanks have had significant economic and ecological impact on marine biodiversity in many regions. They can also pose a threat to human health from the spread of diseases and species harmful to humans. Unlike some forms of ship sourced environmental harm, the problem arises from an activity inherent to the ship's operation. Currently there are no entirely satisfactory means of preventing the transfer of species in ballast water and open sea ballast water exchange management techniques have raised some concerns about vessel and crew safety, and the limits of its environmental effectiveness[2].

RAC REMPEITC has engaged a local consultant in the Republic of Trinidad and Tobago to carry out two projects:

- To develop a National Ballast Water Management Strategy for Trinidad and Tobago; and

[1] Globallast Programme First Legal Review Report
[2] Ibid

- To conduct a Legal Review in the context of the Ballast Water Management Convention:
    - Review existing, relevant legislative framework;
    - Identify deficiencies and barriers;
    - Suggests steps for implementing the BWM Convention into National Legislation;
    - Suggest the nature of proposed legislation; including determining if new legislation is needed or if amendments to existing legislation are sufficient.

Methodology

The report was formatted and guided by the "Guidelines for Development of a National Ballast Water Management Strategy, GLOBallast Monograph Series No 18" in particular Annex 4.

The consultant also looked at Invasive Alien Species (IAS) strategies in general for Canada and New Zealand and Australia. In addition the draft IAS strategy for the Wider Caribbean Region and the draft strategy for IAS in Trinidad and Tobago were used in formulating this strategy. The national strategies for Ballast Water Management for Turkey and Yemen were reviewed. Further the Draft Wider Caribbean Region Ballast Water Management Strategy also assisted in finalizing this document. A Stakeholder Questionnaire and meetings with various stakeholders was also used to confirm the information presented in this strategy.

The current report is there a result of the cooperative effort of the Maritime Services Division of the Ministry of Transport, the National Task Force appointed by the Cabinet for the implementation of the BWM Convention and the Consultant.

CONTENTS

Preface	i
Foreword	ii
Contents	iv
1. Executive Summary	1
2. Glossary	3
3. Introduction	4
3.1 Background to the issue of IAS	4
3.1.1 Internationally and regionally	5
3.1.2 Nationally	7
3.2 Background to the issue of Ballast Water Management	8
3.2.1 Internationally and regionally	9
3.2.2 Nationally	10
3.3 International, regional, national obligations	10
3.4 Relevance of Ballast Water as a vector of IAS to the country	13
3.4.1 History of shipping industry, economic impact	14
3.4.2 Environmental effects	15
3.4.3 Public health issues	16
3.5 Scope	17

TABLE OF CONTENTS CONTINUE

3.5.1 Geographical scope (national or regional) 17

3.5.2 Technical scope 19

3.5.2.1 Addressing only ballast water as a vector for IAS 20

4 Purpose of the strategy 22

4.1 Why the strategy has been written 22

4.2 Guiding principles 22

5 Objectives 24

5.1 What the strategy is seeking to achieve 24

5.2 What is the desired outcome 25

5.2.1 Institutional targets 25

5.2.2 Environmental targets 25

5.2.3 Social or economic targets 25

6.0 Invasive Alien Species 27

6.1 Results of study on the magnitude of ballast water as an IAS vector 27

6.1.1 Integration of ballast water management into broader IAS management and coastal management process 28

6.2 International obligations 29

6.3 Agency or Department that is responsible 30

6.4 Evaluation and Monitoring of Ports 30

TABLE OF CONTENTS CONTINUE

7.0 Ballast Water Management 31

7.1 Agency or Department that is responsible 32

7.1.1 Division of labour 34

7.1.2 New legislation and the requirements to implement 35

7.2 Ballast Water Management Plan 38

7.2.1 BWM Certificate 38

7.2.2 BWM Plan 38

7.2.3 BWM Record Book 39

7.2.4 Ensuring compliance among ships flying the countries flag 40

7.2.5 Inspection of Ships 40

7.2.6 Enforcement and Penalties 41

8 Implementation Plan 42

8.1 Institutional Arrangements 42

8.1.1 Regional or National responsibilities 42

8.1.2 Lead Agency 43

8.1.3 Advisory groups or Task Force 43

8.1.4 Cross-sectoral collaboration 43

8.2 Information Gathering 43

8.2.1 Risk Assessment, Survey and Monitoring of IAS 44

8.2.2 Research and Development of Ballast Water Management Schemes 44

8.2.3 Monitoring of National Strategy implementation 45

TABLE OF CONTENTS CONTINUES

8.2.4 Evaluation & Review of Strategy 45

8.3 Legislation and Regulation 45

8.3.1 Policy 45

8.3.2 Compliance and Enforcement 46

8.3.3 Cross Jurisdictional Coordination 46

8.3.4 Fostering international links and cooperation 46

8.4 Communication, Awareness Raising and Training 46

8.4.1 National Governmental Agencies 46

8.4.2 Industry 46

8.4.3 International Conventions 47

8.4.4 Public 47

9 Funding 48

9.1 Implementation Funding (Initial 2 – 5 years) 48

9.1.1 Staffing 49

9.1.2 Gathering information, inspections, studies 49

9.1.3 Supporting costs (communication, training, monitoring and evaluating) 49

9.2 Ongoing Funding 50

9.2.1 Staffing 50

9.2.2 Gathering information, inspections, studies (5 years and beyond) 50

9.2.3 Supporting costs (communication, training, monitoring and evaluating) 51

TABLE OF CONTENTS CONTINUES

Annex 1: Communication, awareness raising and training strategy 52

Annex 2: Chart of Implementation Plan: Work plan 54

Annex 3: Guiding principles adapted by the Convention on Biological Diversity 58

.

1.

Executive Summary

The issue of invasive alien species (IAS), including the transfer of harmful aquatic organisms and pathogens (HAOP) in ships' ballast water and sediments, has been identified by the International Maritime Organization (IMO) as one of the greatest threats to global marine bio-diversity and ecosystems (along with land-based sources of pollution, habitat loss and overfishing), and is also a significant threat to coastal economies and even public health[5]. It is estimated that some 3-5 billion tonnes of ballast water is transferred throughout the world each year with an individual ship carrying anything from several hundred kilograms to more than 130,000 tonnes of ballast water, depending on size and purpose of the vessel[6]. It is also estimated that 7,000 species are carried around the world in ballast water every day. Ballast water transfer associated with large ships is thus commonly believed to be the main vector for the spread of IAS today, and the main pathways for spread of IAS are the main shipping routes[7].

The spread of invasive alien species (IAS) is creating complex and far-reaching challenges that threaten both the natural biological riches of the earth and the well-being of its citizens. While the problem is global, the nature and severity of the impact on society, economic life, health, and natural heritage are distributed unevenly across nations and regions.[8]

Trinidad and Tobago is not isolated from the negative effects of marine IAS transported by ballast water. For example the green mussel is widely believed to be transported via ballast water to Trinidad and Tobago and while the magnitude of this impact is not known in Trinidad and Tobago, the effect in other parts of the world has been negative on the environment and on industry.

Recognizing the importance of this issue the International Maritime Organisation (IMO) finalized the International Convention for the Control and Management of Ships Ballast Water

[5] Draft : Regional Strategy to Minimize the Transfer of Harmful Aquatic Organisms and Pathogens in Ships' Ballast Water and Sediments Wider Caribbean Region , 2 April 2012
[6] Tamelander, Riddering et al.. ,Guidelines for development of a National Ballast Water Management Strategy, GLOBallast Monograph Series No 18 section 2.1
[7] Ibid
[8] GISP, Global Strategy on Invasive Species,2001,pg viii

and Sediments herein after referred to as the Convention for signing in 2004. Trinidad and Tobago ratified this convention in January 2012.

This strategy is intended to chart the way forward towards the full implementation of the Convention in Trinidad and Tobago and the following are the broad areas covered by this national strategy and implementation plan;

- Institutional Arrangements,
- Information Gathering,
- Legislation and Regulation
- Communication, Increasing Awareness and Education and Training.

2.

Glossary

Abbreviations	Meaning
AIS	Automatic Identification System
AHB	Africanize Honey Bees
BWM	Ballast Water Management
CABI	Centre for Agriculture and Biosciences International
EEZ	Exclusive Economic Zone
EPAN	Electronic Pre-Arrival Notification of Security
GEF	Global Environmental Fund
GDP	Gross Domestic Product
GISP	Global Invasive Species Program
GLO Ballast	Global Ballast Water Management Program
IAS	Invasive Alien Species
ISPS	International Ship and Port Facility Security Code Security of Ships and of Port Facilities
IMA	Institute Of Marine Affairs
IMO	International Maritime Organisation
IUCN	International Union for Conservation of Nature
MAF	Ministry Of Forestry
MSD	Maritime Services Division
NGO	Non- Governmental Organisation
RAC- REMPEITIC	Regional Activity Center/Regional Marine Pollution Emergency Information and Training Centre
RPM	Red Palm Mite
STCW	Standards of Training and Certification and Watch Keeping for Seafarers
WHO	World Health Organisation
UNEP	United Nations Environmental Programme
UNDP	United Nations Development Programme

Term	Definition
Invasive Alien Species	A species, subspecies or lower taxon, introduced outside its natural past or present distribution; including any part, gametes, seeds, eggs, or propagules of such species that might survive and subsequently reproduce; whose introduction and/or spread threatens ecosystems, habitats or species
Ballast Water Management	Mechanical, chemical, physical, biological processes either singularly or combination to remove or render harmless or to avoid the uptake or discharge of Harmful Aquatic Organisms and pathogens within Ballast Water Sediments

3.

Introduction

The movements of biological species have always been part of life on earth. This can occur through natural migration patterns and other factors. Humans, however, have been responsible for extensive artificial movement of large numbers of species for some time, due to their economic and social activities throughout the world[9].

In recent years, technological advancements and increases in world trade have led to even more intentional and unintentional movement of species to habitats where they are not native; sometimes with disastrous results[10].

Ballast water and its sediments carried by ships has been identified as one of the vectors in which Invasive Alien Species (IAS) (including harmful aquatic organisms and pathogens),which are those species whose introduction or spread threatens the environment, the economy, or society including human health[11] are transported unintentionally into new environments across the globe.

Recognizing the disastrous effect ballast water and its sediments could cause, the International Convention for the Control and Management of Ships Ballast Water and Sediments was finalized by the International Maritime Organization for signing in 2004.

Trinidad and Tobago ratified this convention in January 2012 and it is therefore incumbent on the country for a National Strategy to be drafted to guide the implementation of the Convention.

3.1 Background to the issue of IAS

Invasive alien species refers to a species, subspecies or lower taxon, introduced outside its natural past or present distribution, including any part, gametes, seeds, eggs, or propagules of

[9] A Canadian Action Plan to Address the Threat of Aquatic Invasive Species, 2004, pg 5
[10] Ibid pg 5
[11] An Invasive Alien Species strategy for Canada , September 2004, pg1

such species that might survive and subsequently reproduce and whose introduction and/or spread threatens ecosystems, habitats or species[12].

The spread of invasive alien species (IAS) is creating complex and far-reaching challenges that threaten both the natural biological riches of the earth and the well-being of its citizens. While the problem is global, the nature and severity of the impact on society, economic life, health, and natural heritage are distributed unevenly across nations and regions. Thus, some aspects of the problem require solutions tailored to the specific values, needs, and priorities of nations while others call for consolidated action by the larger world community[13].

3.1.1 Internationally and Regionally

Invasive alien species are now recognized as one of the greatest biological threats to our planet's environmental and economic well-being[14]. A nation can therefore be under a biological security threat by the introduction of alien species. Most nations are already grappling with complex and costly invasive species problems. Examples include: zebra mussels (Dreissena polymorpha) affecting fisheries, mollusc diversity, and electric power generation[15]. In Canada and the USA, water hyacinth (Eichornia crassipes) choking African waterways; rats exterminating native birds on Pacific islands; and deadly new disease organisms attacking human, animal, and plant populations in both temperate and tropical countries[16]. Addressing the problem of IAS is urgent because the threat is growing daily, and the economic and environmental impact is severe.

[12] CBD Decision VI/23,
[13] GISP, Global Strategy on Invasive Species ,2001,pg viii
[14] GISP, Global Strategy on Invasive Species ,2001,pg 2
[15] GISP, Global Strategy on Invasive Species ,2001,pg2
[16] GISP,Global Strategy on Invasive Species ,2001, pg 2

Table 1.0: Economic Cost of Invasive Alien Species for Selected Countries	
Country	**Total costs (USD Billion)**
Australia	13
Brazil	15
India	116
South Africa	7
United Kingdom	12
United States	116
Total	314

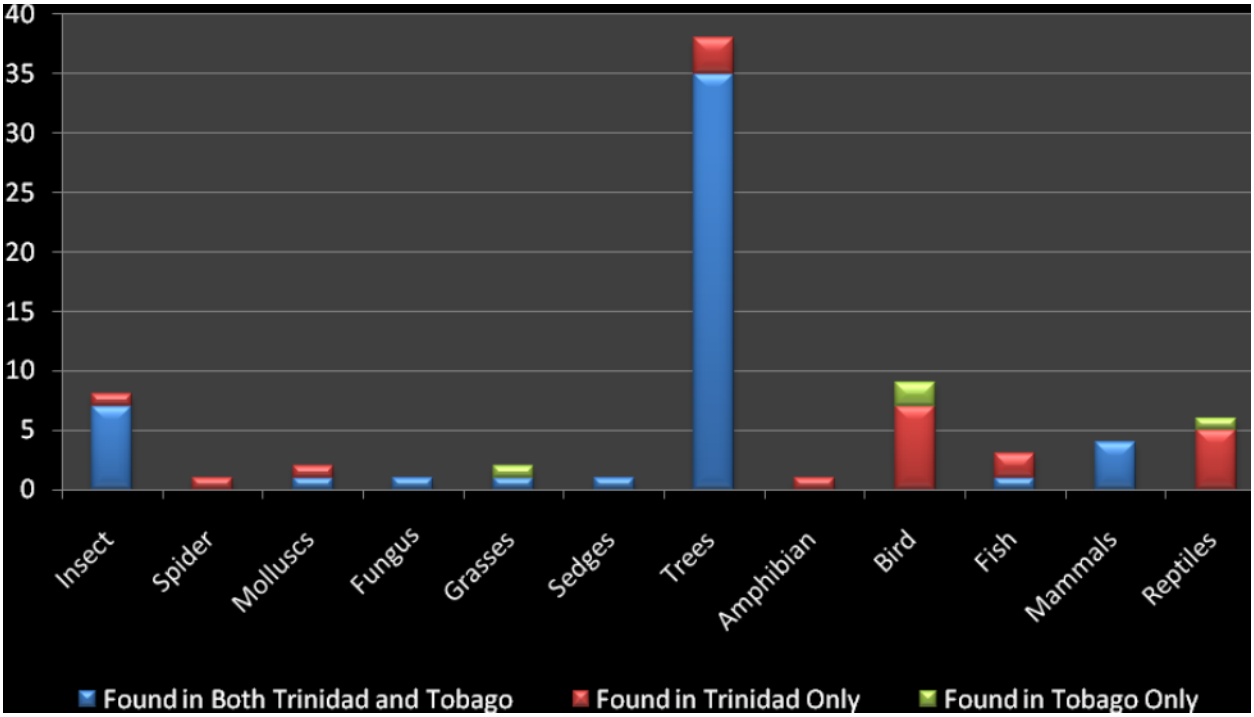
Source: Pimentel et al., 2000

Regionally, the lionfish, a native of the South Pacific and Indian Oceans has now taken root in the Wider Caribbean Region (WCR). Since 2000 there have been numerous reports of the lionfish along the U.S. Atlantic coast from North Carolina to Florida[17]. Lionfish reached Belize in the western Caribbean Sea in December 2008 and by September 2009 was reported in Curacao and Bonaire and in January 2010, the Lionfish had reached neighbouring Venezuela[18]. More important than the danger of their venomous spines is the threat the introduction of these fish poses to our reef fishes and reef systems[19]. Lionfish are voracious, preying mainly on small fish and crustaceans. They also have the potential to reduce the abundance of ecologically important species such as parrotfish and other herbivorous fishes that keep seaweeds and macroalgae from overgrowing corals[20]. They thus can have a negative impact on the fishing and related industries of a country.

[17] R. Kishore ,The Threat of The Lion fish, accessed 14 April 2012 ,http://www.ima.gov.tt/home/what-new/99-threat-of-the-lionfish.html - ,
[18] ibid
[19] ibid
[20] ibid

3.1.2 Nationally

The introduction of IAS into Trinidad and Tobago's environment – whether accidentally or on purpose – has had an effect on local biodiversity. Invasive alien species have been known to increase competition within ecological niches, reduce local biodiversity and have devastating impact on commercially important crops. It is reported that there are seventy six (76) exotic species recorded in Trinidad and Tobago – of which twenty one (21) are found in Trinidad only and four (4) only in Tobago. There have been more invasive trees than any other group (introduced mainly for agricultural and other commercial purposes). Birds, reptiles and insects also show large number of invasive species[21].



Source: Kairo and Ali (2003) and the Global Invasive Species Database (accessed 2010)

Over the last forty (40) years Trinidad and Tobago has witnessed the adverse effects on human health that IAS can cause. The Africanized bees enter Trinidad and Tobago in the late 1979 and resulted in a number of deaths. While the public is more aware of their presence, up to 2008 one

[21] FOURTH NATIONAL REPORT OF TRINIDAD AND TOBAGO TO THE CONVENTION ON BIOLOGICAL DIVERSITY pg 39 ,accessed 14 April 2012, http://www.cbd.int/doc/world/tt/tt-nr-04-en.pdf

man was killed because of their sting[22]. H1N1 virus commonly called swine flu which is another IAS claimed the lives of its first two victims in Trinidad and Tobago in October 2009.[23]

In 2009, the Ministry of Health issued a public notice advising that the African Snail another IAS, which has being primarily located in the Diego Martin area is a threat to over 500 species of plants and is highly destructive to vegetable crops, food crops, fruit trees, forest , flowers and ornamentals . The notice further stated that they pose a health risk as they are vectors of the rat lungworm, which causes eosinophillic meningitis in humans[24].

The Green Mussel which is another IAS found in Trinidad and Tobago was first observed in the Mid-1990 at the port of Point Lisas[25] and while, no assessment has being done of their impact, they have been known to negatively affect the ecosystems in other jurisdictions.

The prevention of new IAS introductions and the control of present IAS in Trinidad and Tobago is therefore of national importance as failure to act could have adverse effects on the development and sustainability of the economy, social fabric and ecosystem of Trinidad and Tobago.

3.2 Background to the issue of Ballast Water Management

Ballast Water Management is the mechanical, physical, chemical, and biological processes either singularly or in combination, to remove, render harmless, or avoid the uptake or discharge of harmful aquatic organisms and pathogens within ballast water[26].

Traditionally, ballasting of ships was conducted using solid materials for example wood and stones. Modern ships have almost completely shifted to ballast water as the primary means to control trim, list, draught, stability and stresses of the ship.

---

[22]Seelal Nalinee, African bees kill man, Trinidad Newsday 11 August 2008 , accessed 14 April 2012, http://www.newsday.co.tt/news/0,84159.html

[23] Maraj Leiselle , Asson Cecily, 2 DIE FROM SWINE FLU" Trinidad Newsday 15 October 2009, accessed 14 April 2012, http://www.newsday.co.tt/news/0,109160.html

[24] Giant African Snail Advisory dated accessed 4 April 2012, http://www.health.gov.tt/news/newsitem.aspx?id=64

[25] Argard John , Kishore Rosemarie et al ..; First record of the Indo- Pacific Green Mussel (Mollusca: Bivalvia) in the Carribbean.

[26] International Convention on the control and Managements of Ships Ballast water and Sediments 2004 article 1

It is estimated that some 3-5 billion tonnes of ballast water is transferred throughout the world each year with an individual ship carrying anything from several hundred kilograms to more than 130,000 tonnes of ballast water, depending on size and purpose of the vessel[27]. It is also estimated that 7,000 species are carried around the world in ballast water every day. Ballast water transfer associated with large ships is thus commonly believed to be the main vector for the spread of IAS today, and the main pathways for spread of IAS are the main shipping routes[28].

3.2.1 Internationally and Regionally

The international Community has recognized the importance of the ballast water issue through their development of and signature to the Convention for the Control and Management of Ballast Water and Sediments 2004. Recognizing the value of this issue some countries already had policies for ballast water management. The United States for example introduced a voluntary ballast water programme since 1998[29]. In New Zealand the original standard for ballast water management was issued by Ministry of Fisheries in May 1998. It was reviewed to include improved procedures and incorporated into the Biosecurity Act 1993. Biosecurity is one of the areas that could be affected by the intentional introduction of species into a new ecosystem.

Regionally Bahamas has completed their Invasive Alien Species Strategy. There is also a programme funded by Global Environmental Fund (GEF) and coordinated by the Centre for Agriculture and Biosciences International (CABI) called Mitigating the Threats of Invasive Alien Species in the Insular Caribbean Project. This project's objective is to develop strategies and actions on a regional level in order to mitigate the impact of invasive alien species in the insular Caribbean.[30]

[27] Tamelander, J Riddering L et al .., Guidelines for development of a National Ballast Water Management Strategy, GLOBallast Monograph Series No 18 section 2.1
[28] Tamelander, J Riddering L et al .., Guidelines for development of a National Ballast Water Management Strategy, GLOBallast Monograph Series No 18 section 2.1
[29] Ballast Water Management, dated accessed 14 April 2012, http://www.uscg.mil/hq/cg5/cg522/cg5224/bwm.asp
[30] Mitigating the Threat of Invasive Alien Species on the Insular Caribbean, date accessed 14 April 2012 , http://www.cabi.org/default.aspx?site=170&page=1017&pid=2916

Participating countries in this project are the Bahamas, the Dominican Republic, Jamaica, Saint-Lucia and Trinidad and Tobago[31].

One of the early outcomes of this initiative is the Draft Strategy and Action Plan For Invasive Alien Species in the Caribbean Region 2011-2015 [32].

3.2.2 Nationally

The National Strategy for Invasive species is being drafted and will provide insights into the foundation and the framework for the National Ballast Water Management Strategy.

3.3 International, Regional, National Obligations

The relevant international, regional and national obligations as it relates to Trinidad and Tobago and the implementation of the BWM Convention is summarized in the following tables.

International and Regional

Convention	Purpose
1982 United nations Convention on the law of the Sea(UNCLOS)	**Provides that states shall take all measures necessary to prevent, reduce and control pollution of the marine environment resulting from the use of technologies under their jurisdiction.**
Convention on Biological Diversity	**That states have a responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or area beyond the limits of national jurisdiction.** **Sets out the guiding principles for strategy development.**

[31] Mitigating the Threat of Invasive Alien Species on the Insular Caribbean, date accessed 14 April 2012 http://www.cabi.org/default.aspx?site=170&page=1017&pid=2916

[32] Draft Strategy and Action Plan For Invasive Alien Species in the Caribbean Region 2011-2015.

Convention	Purpose
Cartagena Protocol On Biosafety To The Convention On Biological Diversity	**The objective of this Protocol is to contribute to ensuring an adequate level of protection in the field of the safe transfer, handling and use of living modified organisms resulting from modern biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health, and specifically focusing on transboundary movements.**
The Cartagena Convention	**This Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region is a comprehensive, umbrella agreement for the protection and development of the marine environment. This regional environmental convention provides the legal framework for cooperative regional and national actions in the WCR.**
Protocol Concerning Specially Protected Areas And Wildlife To The Cartagena Convention	**This is one of three supplementary protocols of the Cartagena Convention in which parties to the protocol shall take the necessary measures to protect, preserve and manage in a sustainable way, within areas of the Wider Caribbean Region in which it exercises sovereignty, or sovereign rights or jurisdiction:** **a) areas that require protection to safeguard their special value; and** **b) species of flora and fauna that are endangered or threatened.[33]**
Convention for the Control and Management of Ballast Water and Sediments 2004	**This convention is designed to prevent, minimize and ultimately eliminate the transfer of harmful Aquatic Organisms and Pathogens through the control and management of ships' Ballast water and sediments.**
International Convention for the Prevention of Pollution from Ships, 1973 as amended to 1978 (MARPOL) 73/78	**Designed to minimize pollution of the seas including dumping, oil and exhaust pollution**

[33]Article 3 of the Convention for the protection and development of the marine environment of the Wider Caribbean region.

Convention	Purpose
Convention on the Facilitation of International Maritime Traffic, 1965 (FAL) as amended	**The Convention's main objectives are to prevent unnecessary delays in maritime traffic, to aid co-operation between Governments, and to secure the highest practicable degree of uniformity in formalities and other procedures**
International Convention on the Control of Harmful Anti-fouling Systems on Ships 2001 (NIF) (Anti-Fouling Convention)	**The Anti-fouling Convention is a newly adopted IMO Convention aimed at preventing the introduction of toxic chemicals in the aquatic system, and ultimately the human food chain.**
The Revised Treaty of Chaguaramas 2001	**In addition to economic issues, the Community instrument addressed issues of foreign policy coordination and functional cooperation including issues related to economic integration and trade arrangements.**
The ICES Code of Practice on the Introduction and Transfer of Marine Organisms, 1994	**The ICES Code of Practice sets forth recommended procedures and practices to diminish the risks of detrimental effects from the intentional introduction and transfer of marine (including brackish water) organisms.**
General Agreement on Trade and Tariffs 1994 and related Agreements	**All states party to the World Trade Organization (WTO) and the agreements it administers, need to consider the scope and operation of legislation and procedures, particularly border control measures for ballast water, which may directly or indirectly have a discriminatory impact on international trade.**
1995 Food and Agriculture Organisation (FAO) Code of Conduct for Responsible Fisheries and subsequent Technical Guidelines	**The 1995 FAO Code of Conduct for Responsible Fisheries sets out principles and international standards of behaviour for responsible practices with a view to ensuring the effective conservation, management and development of living aquatic resources, with due respect for the ecosystem and biodiversity.**
Caribbean Memorandum of Understanding for Port State Control	**It is a regional ship inspection program whereby foreign vessels entering a sovereign state's waters are boarded and inspected to ensure compliance with various major international maritime conventions**

National

Act	Purpose
Shipping Act Chap 50:01 Act No. 24 of 1987	An act to make provision for the registration and licensing of ships, matters relating to crews, safety of life at sea and matters incidental thereto.
Quarantine Act Chap 28:05 Act No. 19 of 1944 as amended	An Act relating to Quarantine and similar matters.
Carriage of Goods by Sea Act Chap 50:02	An Act to amend the law with respect to the Carriage of Goods by Sea.
Territorial Sea Act Chap 1:51	An Act to make provision with respect to the Territorial Sea of Trinidad and Tobago
Continental Shelf Act Chap 1:52 Act No. 43 of 1996	An Act to make provision as to the exploration and exploitation of the Continental Shelf; to enable effect to be given to certain provisions of the Conventions on the High Seas done in Geneva on 29th April 1958; and for matters connected with those purposes
Archipelagic and EEZ Act No. 24 of 1986	An Act to declare the Republic of Trinidad and Tobago an archipelagic State, and to define the new areas of marine space appertaining to Trinidad and Tobago in the exclusive economic zone, and in the archipelagic waters, and the nature and extent of the jurisdiction to be exercised by it in each of these areas and to make provision for matters connected therewith in accordance with the United Nations Convention on the Law of the Sea, done in Montego Bay, Jamaica on 10th December 1982.

3.4 Relevance of Ballast Water as a vector of IAS to the country

At the core of Trinidad and Tobago's social and economic development strategy lies a fundamental respect for the environment[34]. Recognizing the importance of balancing social and economic transformation with environmental conservation, the pivotal shift to 'green' policy planning will guarantee environmental security for future generations[35].

Protecting and conserving our natural resources is critical to advancing economic development and improving our quality of life[36]. Trinidad and Tobago must maintain a balance in economic activity that uses its resources as productively as possible to provide the greatest possible socio-

[34] Government of Trinidad and Tobago Medium Term Policy Framework – Ministry of Planning and Economic 2011pg 15, date accessed 14 April 2012, www.pesrga.gov.tt.
[35] Ibid
[36] Ibid

economic benefits[37]. Maintaining the equilibrium between economic activity and the provision of social services requires adherence to a legislative and policy framework that governs the management of renewable and non-renewable environmental resources[38].

Ballast water is a vector of IAS and consequently will have some effect on the environment and as such the economic and social development strategy and the future of Trinidad and Tobago could be significantly affected by the negative impact of these threats that accompany ballast water.

3.4.1 History of shipping industry, economic impact

As a twin island State shipping has always played a pivotal role in Trinidad and Tobago's development. Its original inhabitants arrived by canoes from the South American mainland. Columbus arrived at this part of the world via ships in 1492. When sugar cane and cocoa were the main exports of Trinidad and Tobago, at the turn of the twentieth century they were exported via ships. The first export cargo of crude oil was shipped by tanker from Brighton, La Brea in 1910.[39] Since then the petrochemical industry has become the major driver of the economy of Trinidad and Tobago, accounting for thirty eight point five (38.5%) percent of GDP[40]. Trinidad and Tobago has thirty one (31) ports that are under the ISPS code and shipping accounts for over 90% of the import and export of Trinidad and Tobago. In December 2011 an illustration of the effect that shipping has on the economy was felt by business when they reported four (4) million dollars in losses per day during a strike on the Port of Port of Spain[41].

Along with its highly developed industrial base, Trinidad and Tobago also has a deeply entrenched manufacturing sector and vibrant yachting industry.

---

[37] Ibid

[38] Government of Trinidad and Tobago Medium Term Policy Framework – Ministry of Planning and Economic 2011 pg 16, date accessed 14 April 2012, www.pesrga.gov.tt

[39]THE GEOLOGICAL SOCIETY OF TRINIDAD AND TOBAGO, HISTORICAL FACTS ON THE PETROLEUM INDUSTRY
OF TRINIDAD AND TOBAGO , date accessed 14 April 2012,http://www.gstt.org/history/chronology.htm

[40] Trinidad and Tobago Budget statement 2012

[41] Singh Renuka , $4m A DAY IN LOSSES , Trinidad Express 11 December 2011, date accessed 14 April 2012,http://www.trinidadexpress.com/news/_4m_A_DAY__IN_LOSSES-135417253.html

The yachting product in Trinidad differs greatly from that in Tobago. Trinidad's current industry is based primarily on two activities – repairs and hurricane storage, and over the years the island has emerged as the largest yacht repair centre in the southern Caribbean. The northwestern peninsula, made up of Chaguaramas and the outlying islands, has evolved into the centre of yachting activity for Trinidad[42].

In Tobago, the yachting product is primarily leisure and tourism based, with pleasure craft docking to experience the ambience of the island for a few days or a few hours, and then continuing on their voyage. At present, there are 118 companies including 13 marina/ boatyard facilities with the capacity to store in excess of 900 visiting yachts[43]. Direct employment of some 1,100 – 1,400 persons and revenues of US$25.33 million were recorded in the year 2008[44].

The manufacturing sector accounts for about 4 billion US dollars a year about ten (10%) of the GDP annually.[45] Most of these products are exported via shipping.

Shipping therefore contributes significantly to the economic development of Trinidad and Tobago.

3.4.2 Environmental Effects

Trinidad and Tobago is no stranger to the environmental threat posed by ballast water. The Asian Green Mussel or Perna Viridis is a bivalve mussel native to the Asia-Pacific region where it is widely distributed. It has been spread around the world through ships' ballast waters. It was discovered in Trinidad in the 1970s and by 1993 the mussel population from Trinidad is thought to have been dispersed to Venezuela and other Caribbean islands, Florida and along North American Coasts[46]. Green mussels will foul ships, marinas, buoys and power plant intakes. Young green mussels settled on filters in intake pipes at an electric power plant in Tampa Bay in 1999, clogging the filters and hampering proper operations of the plant. They caused similar

[42] Trinidad and Tobago Yachting Industry , date accessed 14 April 2012, www.tradeind.gov.tt
[43] Ibid
[44] Trinidad and Tobago Yachting Industry , date accessed 14 April 2012, www.tradeind.gov.tt
[45] La ughlin Greig, " Business Strategies For Growth in a Turbulent Economic Environment" Presented at 3RD BIENNIAL INTERNATIONAL CONFERENCE ON BUSINESS, BANKING AND FINANCE May 27- 29th, 2009 , dated accessed 14 April 2012,Sta.uwi.edu/conferences/09/finance/documents/G%20Laughlin.doc presentation
[46]Article Invasive Alien Species are more dangerous than we think, date accessed 14 April 2012, www.ema.co.tt .

problems for a Tampa Bay desalination plant in 2003[47]. Green mussels may clog crab traps and clam culture bags, making the commercial harvest of these native species more difficult. Green mussels compete with other benthic marine species for space. In Tampa Bay, green mussels have displaced some oyster reefs[48].

3.4.3 Public health issues

One example of the possible public health issues that can arise as result of ballast water is the case of cholera in Peru in 1991.

In January 1991, the Ministry of Health in Lima, Peru, started receiving reports of an illness later identified as cholera[49]. Over the course of the next several years, the epidemic spread to all but one Latin American country, infecting at least 100,000 and killing approximately 10,000 individuals[50]. Evidence indicates that ballast water from ships moving between Asia and South America was the most likely source of the outbreak - the first in the Western hemisphere in over a century[51]. Ultimately, the cholera outbreak cost Peru $ 770 million, primarily as a result of trade embargoes on food and decreased tourism[52].

[47]Invasive Species of Florida's Coastal Waters: The Asian Green Mussel (Perna viridis) , date accessed 14 April 2012, http://nsgl.gso.uri.edu/flsgp/flsgpg09001.pdf

[48]Invasive Species of Florida's Coastal Waters: The Asian Green Mussel (Perna viridis) , date accessed 14 April 2012, http://nsgl.gso.uri.edu/flsgp/flsgpg09001.pdf http://nsgl.gso.uri.edu/flsgp/flsgpg09001.pdf

[49] Bostrom Suzanne , HALTING THE HITCHHIKERS: CHALLENGES AND OPPORTUNITIES FOR CONTROLLING BALLAST WATER DISCHARGES AND AQUATIC INVASIVE SPECIES Summer , dated accessed 14 April 2012, https://litigation-sentials.lexisnexis.com/webcd/app?action=DocumentDisplay&crawlid=1&doctype=cite&docid=39+Envtl.+L.+867&srctype=smi&srcid=3B15&key=189a5261e50025c1465d9a8149dc1c95

[50] Bostrom Suzanne , HALTING THE HITCHHIKERS: CHALLENGES AND OPPORTUNITIES FOR CONTROLLING BALLAST WATER DISCHARGES AND AQUATIC INVASIVE SPECIES Summer , dated accessed 14 April 2012, https://litigation-sentials.lexisnexis.com/webcd/app?action=DocumentDisplay&crawlid=1&doctype=cite&docid=39+Envtl.+L.+867&srctype=smi&srcid=3B15&key=189a5261e50025c1465d9a8149dc1c95

[51]Bostrom Suzanne , HALTING THE HITCHHIKERS: CHALLENGES AND OPPORTUNITIES FOR CONTROLLING BALLAST WATER DISCHARGES AND AQUATIC INVASIVE SPECIES Summer , dated accessed 14 April 2012, https://litigation-sentials.lexisnexis.com/webcd/app?action=DocumentDisplay&crawlid=1&doctype=cite&docid=39+Envtl.+L.+867&srctype=smi&srcid=3B15&key=189a5261e50025c1465d9a8149dc1c95

[52] Bostrom Suzanne , HALTING THE HITCHHIKERS: CHALLENGES AND OPPORTUNITIES FOR CONTROLLING BALLAST WATER DISCHARGES AND AQUATIC INVASIVE SPECIES Summer , dated accessed 14 April 2012, https://litigation-sentials.lexisnexis.com/webcd/app?action=DocumentDisplay&crawlid=1&doctype=cite&docid=39+Envtl.+L.+867&srctype=smi&srcid=3B15&key=189a5261e50025c1465d9a8149dc1c95

3.5 Scope

This strategy applies to terrestrial, freshwater/aquatic and marine environments under the jurisdiction of the Government of the Republic of Trinidad and Tobago, it also provides guidance for activities carried out in areas beyond national jurisdiction[53] and seeks to implement the ideals of the International Convention for the Control and Managements of Ballast Water and Sediments 2004.

The strategy covers a wide range of sectors including academia and technical experts both public and private including the Institute of Marine Affairs, Ministry of Agriculture and Ministry Transportation, Environmental Management Authority , the maritime industry and the public whose inputs are required for it to be successfully implemented. This strategy specifically recognizes the roles and responsibilities of all levels of government in regulating and managing IAS.

3.5.1 Geographical scope (national or regional)

The Geographical scope of this strategy straddles the national, regional and international landscape.

Nationally

Primarily this strategy focusses on the waters under the jurisdiction of Trinidad and Tobago; Internal Waters, Territorial Waters and the Exclusive Economic Zones (EEZ). Trinidad and Tobago has reached delimitation agreements with Venezuela with respect to maritime boundaries in the East and the south of Trinidad. Similarly, delimitation maritime agreements with Grenada was reached in 2012. The delimitation line for a maritime agreement in the north of Trinidad and Tobago with St Vincent is still to be negotiated.

[53] Hosein Faraad, Draft An invasive species Strategy for Trinidad and Tobago, 2011, pg 13

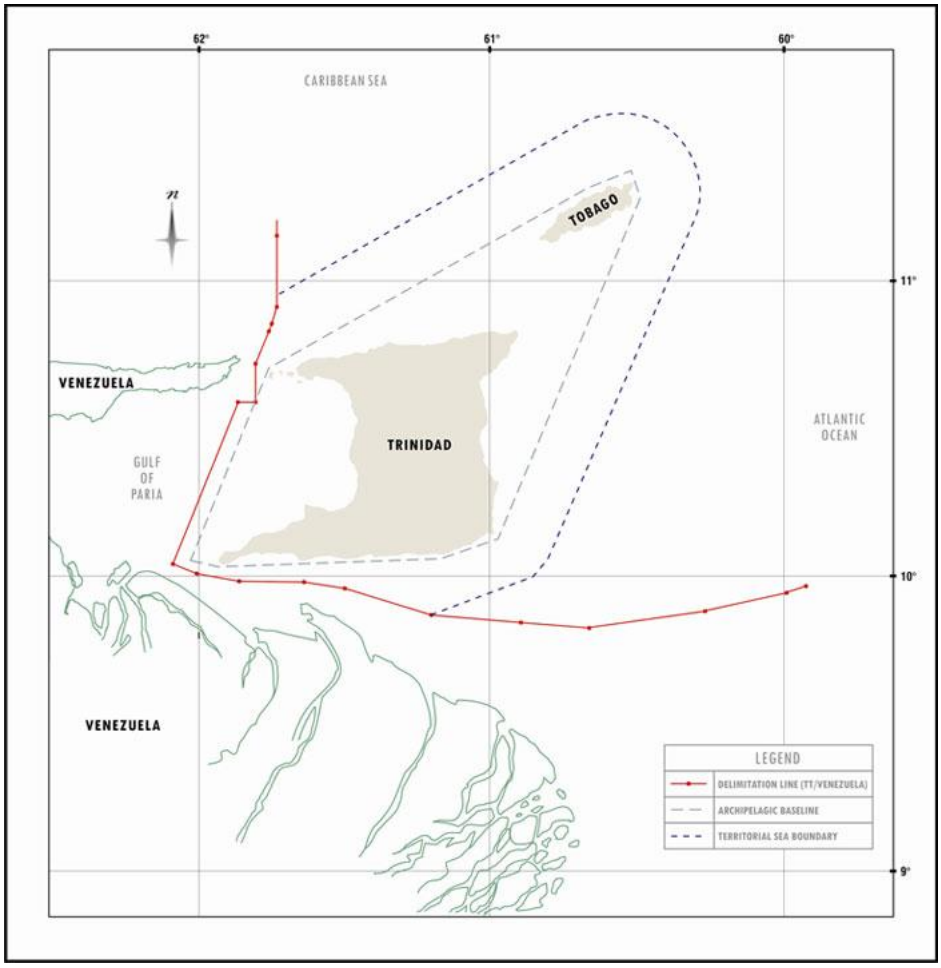
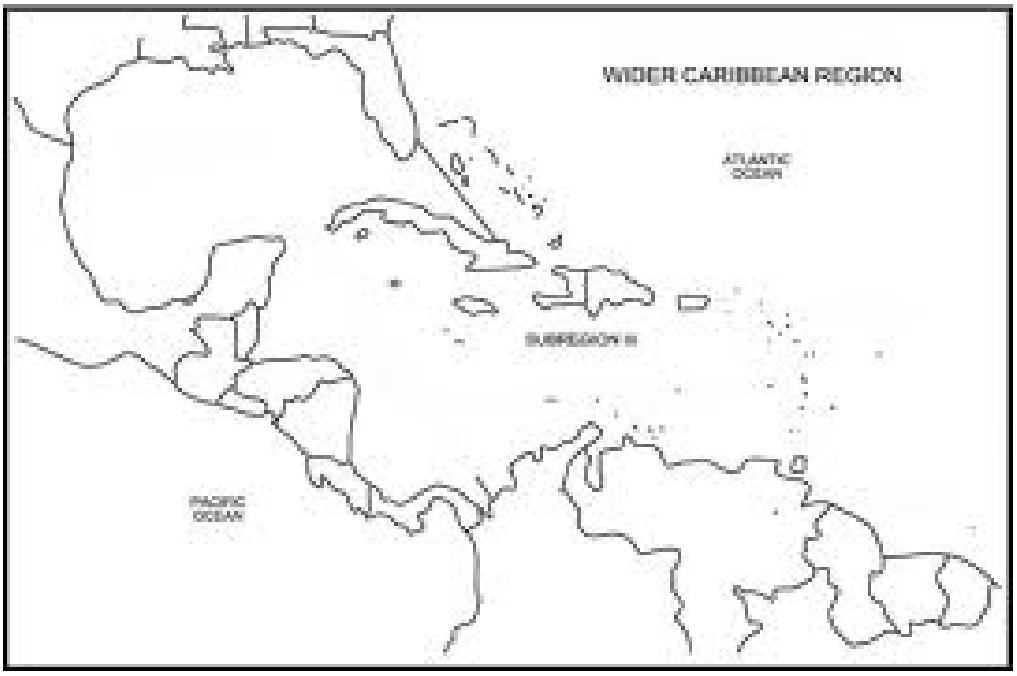


Illustration of the delimitation line with Trinidad and Tobago and Venezuela

(Source: http://www.sidctt.com/content.aspx?id=16)

Regionally

This plan covers the Wider Caribbean Region, defined by the Cartagena Convention. This is defined as the marine environment of the Gulf of Mexico, the Caribbean Sea and the areas of the Atlantic Ocean adjacent thereto, south of 30 degrees north latitude and within 200 nautical miles of the Atlantic coasts of the territories and states pertaining to the following countries: Antigua and Barbuda, the Bahamas, Barbados, Belize, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, France, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, the Kingdom of the Netherlands, Nicaragua, Panama, Saint Kitts & Nevis, Saint Lucia, Saint Vincent & the Grenadines, Suriname, Trinidad & Tobago, United Kingdom, United States of America and Venezuela. In addition, this plan also covers El Salvador.



Source http://www.cep.unep.org/pubs/Draft%20Report/chapter%201.html

Internationally

Trinidad and Tobago as a responsible State actor has a duty to ensure that Trinidad and Tobago flagged ships and all ships that trade within its jurisdiction abide by the spirit of the convention for the Control and Management of Ship's Ballast Water and Sediments as shipping is an international activity.

3.5.2 Technical Scope

When developing an IAS strategy is it imperative that policy makers understand the key components that make up a strategy. It is important to note that one component without the other is likely to be ineffective, thus a strategy will be unsuccessful if one component is absent. In

other words, all components that make up a strategy are interrelated[54]. The following components must be taken into consideration with respect to this IAS Strategy.

1. Building Management Capacity.
2. Building Research Capacity.
3. Promotion of Information Sharing.
4. Strengthening of Legislation.
5. Risk Analysis/Assessment.
6. Public Awareness

3.5.2.1 Addressing Ballast Water as a Vector for IAS

Marine IAS has many pathways as highlighted in the table below. This strategy focuses primarily on ballast water as a vector of IAS and no other IAS sources. This strategy also treats marine IAS introduced via ballast water not as a pest but as vessel source pollution.

[54] Hosein Faraad, Draft An invasive species Strategy for Trinidad and Tobago, 2011, pg 13

Pathways of Invasion[55]

Alien Species	Intentional Introductions	Unintentional Introductions
Marine IAS	**Production/Propagation** a) Developed Ecosystems • Live food fish • Aquarium & aqua garden trade • Aquaculture b) Natural Ecosystems • Live bait fish • Authorized stocking • Unauthorized stocking • o Aquatic weed control	**Consumption/Processing** • Fish products (fish, shellfish, fish eggs, etc.) **Transportation** • Commercial shipping (ballast water management, hull fouling) • Recreation/tourism – boating, float planes • Garbage **Range Expansion** • Canals, dams & diversions • o Natural trans-boundary spread

[55] An invasive Alien Species Strategy for Canada September, 2004

4.

Purpose of the strategy

This strategy is primarily designed to implement the solutions and international best practices that have been summarized and agreed to by IMO Member States as to the methods tused to treat with the threat of harmful aquatic invasive alien species transported in ballast water. It encourages the principle of the use of the public, private partnership among others.. It aims to engage not only nature conservation agencies, but all sectorial agencies with responsibility for activities relevant to marine IAS prevention and Ballast Water Management. The strategy recognizes the stakeholders involved in the movement and use of ballast water and the contribution that competent non-governmental organizations (NGOs) can make to prevention, detection and mitigation.

4.1 Why the strategy has been written

This strategy has been written because this issue of marine IAS crosses so many government and non-governmental organizations that great benefits can be derived from the synergies created to cooperate, collaborate and educate on this issue. There is a need for specificity as it relates to marine IAS as opposed to IAS in general.

The purpose is to minimize the risks of IAS by seeking to avoid adverse economic, environmental and public health impact, whilst not unduly impeding trade; and taking a practical approach to ballast water management.

4.2 Guiding principles

The Guiding Principles adapted by the Convention on Biological Diversity apply[56] to this strategy (See Annex 6) , as well as principle 16 of the Rio Declaration on Environment and Development 1992[57].

[56] COP 6 Decision VI/123 , date accessed 14 April 2012,http://www.cbd.int/decision/cop/?id=7197
[57] RIO Declaration on Environment and Development, dated accessed 14 April 2012, http://www.unep.org/Documents.Multilingual/Default.asp?documentid=78&articleid=1163

Guiding principles adapted by the Convention on Biological Diversity are listed below

Guiding principle 1: Precautionary approach

Guiding principle 2: Three-stage hierarchical approach

Guiding principle 3: Ecosystem approach

Guiding principle 4: The role of States

Guiding principle 5: Research and monitoring

Guiding principle 6: Education and public awareness

Guiding principle 7: Border control and quarantine measures

Guiding principle 8: Exchange of information

Guiding principle 9: Cooperation, including capacity-building

Guiding principle 10: Intentional introduction

Guiding principle 11: Unintentional introductions

Guiding principle 12: Mitigation of impacts

Guiding principle 13: Eradication

Guiding principle 14: Containment

Guiding principle 15: Control

Principle 16 of the Rio Declaration on Environment and Development 1992

National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public's interest and without distorting international trade and investment.

5.

Objectives

The Strategy promotes the development and implementation of coordinated measures and cooperative efforts throughout Trinidad and Tobago, the region, and internationally to minimize adverse impacts of invasive alien species (IAS) via ballast water on Trinidad and Tobago's biodiversity, economy, human health and wellbeing.

Specific objectives are to:

1. Establish a Ballast Water Management System with respect to the International Ballast Water Management Convention under pinned by the required legislation.
2. Establish capacity building activities for all stakeholders in the area of management of ballast water.
3. Increase public awareness and information about IAS issues in general and marine IAS specifically and ways to mitigate these threats.
4. Establish capacity in risk/ assessment of the marine environment under the jurisdiction of Trinidad and Tobago.
5. Establish a National Task Force to ensure the implementation of the national Ballast Water Management Strategy Plan
6. Prevent the introduction of new IAS.
7. Reduce the impact of existing IAS.
8. Foster international links and cooperation.
9. Restore species, natural habitats and ecosystems that have been affected by biological invasions, where feasible.

5.1 What the strategy is seeking to achieve

The strategy seeks to minimize /prevent the introduction of marine IAS via ballast water into the ecosystem with the strategic intent of preservation and conservation of the environment. At the end of the day all stakeholders would be aware of their roles and responsibilities and the agreed standards to be adhered to and enforced.

5.2 What is the desired outcome?

The desired outcome is that marine IAS does not negatively affect the environment, economic and social systems of Trinidad and Tobago and the world at large.

5.2.1 Institutional targets

- Coordination across stakeholders for the adoption of BWM plans;
- The introduction of legislation, which would facilitate Trinidad and Tobago's commitment under the International Ballast Water Management Convention;
- Requisite Port State control training with respect to Ballast Water Management;
- Requisite manpower/staffing; and
- Strong and continuing presence of BWM and control capacity in the Trinidad and Tobago.

5.2.2 Environmental targets

- That no IAS is introduced via Ballast Water;
- That baseline surveys are conducted for all ports in Trinidad and Tobago;
- That a marine taxonomy is completed for Trinidad and Tobago; and
- Prevention of loss of coastal biodiversity and degradation of coastal environments;

5.2.3 Social or Economic targets

- That shipping is not unduly affected by marine IAS;
- That fishing is not negatively affected by marine IAS;
- That the offshore industry is not negatively affected by marine IAS;
- That tourism and the other industries are not negatively affected by marine IAS;

- That the general public is made aware of the issues related to marine IAS;
- Protection of other infrastructure that may be affected by marine IAS; and
- Increased engagement of all related industry in the ballast water issue.

6.

Invasive Alien Species

6.1 Study on the Magnitude of Ballast Water as an IAS vector

No study of the magnitude of ballast water as an IAS vector has been done in Trinidad and Tobago although some work on ballast water as an IAS issue has begun. One of the action items of this strategy is to address this issue.

The United Nations has sponsored a programme on Mitigating the Threat of Invasive Alien Species in the Insular Caribbean. . This programme is coordinated locally by CABI with the assistance of the Ministry of Agriculture Land and Food Affairs..

One of the sponsored projects will address IAS problems Perna viridis (Green Mussel);

Green Mussel (Perna Virdis)

relating to its prevention, management and eradication in Trinidad and Tobago[58]. As discussed earlier, ballast water is believed to be the source of this IAS threat in Trinidad. The Institute of Marine Affairs is undertaking this research which entails an economic assessment and ecological spread and location assessment of the Perna Viridis. This project is scheduled to be completed in June 2012.

6.1.1 Integration of ballast water management into broader IAS management and coastal management process.

The challenge with the integration of the ballast water into a broader IAS and coastal management process is that Trinidad and Tobago currently has no final policy document with respect to IAS and Coastal Management. However, there is merit in Trinidad and Tobago in adopting a whole ecosystem approach which would entail a strategic shift to formalizing a policy on integrated Coastal Management.

The National Strategy for Ballast Water Management recognizes the completed works and work in progress of the following documents;

i. Draft - An Invasive Alien Species Strategy For Trinidad and Tobago by Mr. Faraad Hosein, May 2011

ii. Draft Strategy and Action Plan for Invasive Alien species in the Caribbean Region 2011 – 2015

iii. Global Strategy in Invasive Species 2001 IUCN on behalf of the Global Invasive Species Programme

iv. Draft : Regional Strategy to Minimize the Transfer of Harmful Aquatic Organisms and Pathogens in Ships' Ballast Water and Sediments Wider Caribbean Region , 2 April 2012

v. The International Convention for the Control and Management Ship's Ballast Water and Sediments 2004

[58] Trinidad and Tobago Project Profile: "Mitigating the Threat of Invasive Alien Species in the Insular Caribbean" date accessed 14 April 2012, www.ciasnet.org

There is however a National Clearing House for Biodiversity Website. This is a good starting point for the integration of these policies.

6.2 International obligations

Trinidad and Tobago ratified the Convention on Biodiversity on the 1 August 1996. This convention seeks in accordance with its relevant provisions, to conserve biological diversity, to sustainably use its components and to fairly and equitablely share the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies. Article 3 states that the parties to this convention agree to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction.

6.3 Agency or Department that is responsible

There is no formal agency or department that is the focal point for Marine IAS. Neither is there any focal point for IAS in general in Trinidad and Tobago. The Programme "Mitigating the Threats of Invasive Alien Species in the Insular Caribbean Project" which is funded by GEF (Global Environmental Fund) and coordinated by CABI (Centre for Agriculture and Biosciences International) is currently facilitating the drafting of a National Strategy for IAS in Trinidad and Tobago and a Regional Strategy for IAS. The Ministry of Food Production is the national coordinator for the Government of Trinidad and Tobago for the National Strategy for IAS in the country.

6.4 Evaluation and Monitoring of Ports

The monitoring of ports would be the responsibility of the following organisations:

- Ministry of Transport, Maritime Services Division;
- Ministry of Health, Port Health Department;
- Trinidad and Tobago Coast Guard;
- The Environmental Management Authority

The evaluation of Ports could be conducted by the following:

- The Institute of Marine Affairs;
- The Environmental Management Authority ;
- The Ministry of Food Production, Land and Marine Affairs (Fisheries Division); and
- The University of the West Indies St Augustine Campus.

7.

Ballast Water Management

Cabinet by minute No 356 February 10, 2011 established a National Task Force for the implementation of the International Maritime Organisation (IMO) – Global Environment Facility-United Nations Development Programe Global Ships Ballast Water Management Project also known as The GloBallast Parthnership Project. The GEF/UNDP/IMO Global Ballast Water Management Programme (GloBallast) is assisting developing countries to reduce the transfer of harmful aquatic organisms and pathogens in ships' ballast water, implement the IMO ballast water Guidelines and prepare for the new IMO ballast water Convention.

The terms of reference are set out below

- To develop the national work plan for the implementation of a ballast water management Strategy at the port and country level;
- To provide free access to information required for the implementation of the ballast water management strategy;
- To authorize, facilitate and assist, subject to adequate prior notification and formal clearance, site visits by technical experts to support the implementation of the strategy;
- To provide for in country application of the IMO Convention and associated guidelines by shipping companies and port authorities;
- To provide in country coordination between different government agencies, industry sectors and other groups with interest in the ballast water issue (environment, transport , fisheries);
- To provide a forum for inter-ministerial and cross-sectoral communication and consultation on the ballast water issue; and
- To communicate the strategy at a regional level in an effort to find synergies, opportunities for regional cooperation and harmonization of national strategies and a common regulatory framework.

The Task force comprises representatives of the under mentioned Ministries and or organizations

- ✓ The Ministry of Transportation (Maritime Services Division) – Chair
- ✓ The Ministry of Food Production, Land and Marine affairs (Fisheries Division)
- ✓ The Ministry of Health (Health Quarantine and Port Health)
- ✓ The Ministry of National Security (Trinidad and Tobago Coast Guard)
- ✓ The Tobago House of Assembly
- ✓ The Institute of Marine Affairs
- ✓ The Port Authority of Trinidad and Tobago
- ✓ The Environmental Management Authority
- ✓ Point Lisas Industrial Port Development Corporation Limited
- ✓ The Shipping Association of Trinidad and Tobago
- ✓ The University of The West Indies

7.1 Responsible Agency and Department

The Ministry of Transport, Maritime Services Division is the lead agency for Ballast Water Management in Trinidad and Tobago.

The Maritime Services Division is responsible for cost effective maritime administration for Trinidad and Tobago ensuring the safety and security of shipping and the prevention of vessel source pollution. Its responsibilities also include facilitating the growth of the national maritime sector through the necessary regulatory, administrative, advisory and developmental framework[59].

The Division's functions and responsibilities can be summarized as the following[60]:

[59]Maritime Services Division, dated accessed 14 April 2012
http://www.mowt.gov.tt/general/subcategory.aspx?categoryID=3&subcategoryID=7
[60]Maritime Services Division , date accessed 14 April 2012
http://www.mowt.gov.tt/general/subcategory.aspx?categoryID=3&subcategoryID=7

- Flag State activities relating to:
  - ✓ Registration and licensing of Trinidad and Tobago ships;
  - ✓ Survey, inspection and certification of national seafarers;
  - ✓ Registration, examination and certification of national sea fearers; and
  - ✓ Lead Agency for the implementation of the International Convention for the Control and Managements of Ships' Ballast Water and Sediments.
- Port State Control Activities

  The inspection of foreign registered vessels calling at or visiting ports in Trinidad and Tobago to ensure compliance with national and international safety, and pollution prevention standards;

- The control of vessels operating in the waters of Trinidad and Tobago;
- The establishment and maintenance of navigational aids (lights, buoys, beacons and lighthouses) to aid navigation;
- The issuing of notices to mariners of danger with respect to safe navigation;
- The detention of unsafe and unseaworthy ships;
- The investigation of shipping activities accidents/casualities;
- Approval and monitoring of maritime training institutions conducting STCW (Standards of Training, Certification, and Watchkeeping for Seafarers) courses; and
- Issuance of Harbour Master Certificates (Clearances) to vessels departing Trinidad and Tobago waters.

7.1.1 Division of Labour

Key Stakeholders (Division of Labour)

Stake Holder	Responsibility
The Ministry of Food Production, Land and Marine Affairs (Fisheries Division)	Ensuring that known species, do not accidentally enter into the environment. Reporting any new discoveries of marine life in the Trinidad and Tobago Environment. Advising the fisher folk about the significance of IAS and the need to report any new species.
The Ministry of Health (Health Quarantine and Port Health)	Ensuring that the national strategy is adhered to by Ports Providing technical advice to the National Task Force Implementation of the International Health Regulations
The Ministry of National Security (Trinidad and Tobago Coast Guard)	Ensuring that Ballast Water is not discharged in restricted Areas.
The Tobago House of Assembly	Implementing the issues related to the National Ballast Water Strategy in Tobago within its purview.
The Institute of Marine Affairs	Overseeing a thorough baseline survey of all ports around Trinidad and Tobago Monitoring continuously the baseline of Ports around Trinidad and Tobago Maintaining and updating the Taxonomy with respect to the marine environment of Trinidad and Tobago Providing technical advice to the National Task Force

Stake Holder	Responsibility
The Port Authority of Trinidad and Tobago	Implementing the national ballast water strategy Advising the MSD of any breaches of the ports Ballast water plans Providing the MSD with ships Ballast data
The Environmental Management Authority	Providing technical advice to the National Task Force, as the lead regulatory government agency for the environment,
Point Lisas Industrial Port Development Corporation Limited	Implementing the national ballast water strategy in its port Advising the MSD of any breaches of the ports ballast water plans Providing the MSD with ships Ballast data
The Shipping Association of Trinidad and Tobago	Ensuring that all its members are aware of the National Ballast Water Management Strategy and its implementation requirements for ships and ports To assist in the collection of Ballast water Data
Fisher Folk	Reporting of any breaches to the National Task Force for the Strategy on Ballast Water Management

7.1.2 New legislation and the requirements to implement

In Trinidad and Tobago implementing legislation has to be viewed in the context of institutional and legislative framework upgrade. The following options are recommended as a way forward:

Option1.

(a) Draft new regulations to replace the existing vessel source pollution prevention legislation;

(b) Draft amendments to the existing vessel source pollution prevention legislation;

(c) Revise amendments to draft vessel source pollution legislation.

Option 2.

Take administrative action without legislation.

Option 3.

Adopt comprehensive environmental biodiversity protection legislation.

Under Option 1

(a) A Final Draft Model Ballast Water Management Act is drafted and can be readily adapted.

(b) The existing vessel source pollution prevention legislation is inadequate and relates to the vessel source pollution from oil only.

(c) The draft vessel source pollution legislation has been under consideration in the form of Shipping (Marine Pollution) Bill since 2004. This Bill could be reviewed and updated to include all outstanding relevant IMO Conventions on the subject of vessel source pollution including the BWM Convention. .

Under option 2, administrative action can be taken without legislation. Trinidad and Tobago may choose not to embark on any formal legislative action until the BWM Convention enters into force. It may still implement many aspects of the Guidelines by carrying out port baseline surveys and requesting ships, on a voluntary basis, to submit ballast water reports and samples.

In addition, Maritime Training Institutions in the region and country can be encouraged to include ballast water management issues in their curricula. Trinidad and Tobago as a Flag State and Classification Societies can also work with industry associations to encourage ships to develop and implement ballast water management plans. The fact that a number of economically significant countries have developed laws requiring ballast water management will mandate this

industry response in any event. As a country that is party to a regional marine protection agreement, legislative activity can be focused on developing a regional response to the problem, perhaps through a "first port of call" documentation and inspection process.

Notices to Mariners out of the Office of the Harbour Master can be developed requesting ships undertake ballast water management and otherwise comply with the Guidelines. The advantage of this approach is that it puts in place some of the necessary data collection and administrative structures and develops greater local expertise and research capacity. This will make implementation of the Convention much easier. The disadvantage is that it is likely that the necessary studies, research and monitoring will not be done, without a legislative imperative and the associated budget. Failure to respond proactively may conflict with State obligations to protect the marine biodiversity and human health, create risks to the environment of the State and its trading partners and cause harm to other coastal water users. Failure to take action may also impact negatively on the competitiveness of products or ships travelling with ballast water from Trinidad and Tobago in that they may be subject to greater scrutiny or even be prohibited from entering ports or discharging ballast in some countries.

Under Option 3, Trinidad and Tobago may also choose to adopt legislation that addresses the issue comprehensively within the larger framework of biodiversity or environmental protection under biodiversity/security/or other border control-quarantine legislation. Such an approach has some advantages in that it may generate new administrative arrangements and will allow for comprehensive implementation of rules pertaining to both the unintentional import and export of harmful aquatic organisms and pathogens. Such legislation would, therefore, constitute either one chapter within a comprehensive invasive species legislative framework or a regulation under such a law. The disadvantage of this approach is that it needs a high level of inter-agency cooperation in order to ensure an efficient and coherent ship-port interface. It may also result in some uncertainty as to how to align this process with existing ship entry approvals.

Depending on the administrative structure chosen for this option it may also require significant resources and training of personnel. Some difficulty, largely for reasons of agency expertise, may also be encountered in the implementation of flag State responsibilities if the international convention survey/certificate requirements are adopted. The law or regulations adopted under this approach would need to be designed to ensure that they are not in conflict with the State’s

other international trade and shipping related obligations and any future obligations that it may enter into.

7.2 Ballast Water Management Plan

The Ballast water management plan will be adopted as in the Convention for the Control and Management of Ships Ballast Water and Sediments section B of the annex.. In addition ships should seek further guidance from section 9 of Resolution A.868 (20) adopted on 27 November 1997 by The IMO entitled _ "Guidelines for the Control and Management of Ships' Ballast Water to minimize the transfer of Harmful Aquatic Organisms and Pathogens" in their plans. Further, it is recommended that Port facilities should have a standard operating procedure (SOP) or plan to militate against any unintentional introduction.

7.2.1 Ballast Water Management Certificate

The Ballast Water Management certificates will be issued by the Director of Maritime Services in furtherance of Article 7 for surveys and certification of ships and in accordance with Section E of the Annex to the Convention for the Control and Management of Ships' Ballast Water and Sediments .

7.2.2 Ballast Water Management Plan

The Ballast Water Management Plan will consist of plans for ships.

The plans for ships will be in accordance with section B of the Annex to the Convention for the Control and management of Ships Ballast water and Sediments Section B provides the requirements for the following with respect to the Ballast Water Management Plan for vessels.

- Ballast water management for ships
- Sediment Management for ships
- Ballast water exchange for ships
- Ballast water record book
- Duties of Officer and Crew

In addition ships should seek further guidance from section 9 of the Resolution A.868 (20) adopted on 27 November 1997 "Guidelines for the Control and Management of Ships Ballast Water to minimize the transfer of Harmful Aquatic Organisms and Pathogens" in their plans. This resolution gives further advise on the following ship operational procedures

- Precautionary practices
- Ballast water management options

Further, all ports which berth vessels to which the Convention applies may develop a Ballast Water Management Plan that consist of contingency arrangements to deal with the introduction of unwanted species.[61]. This port plan or standard operating procedure should eventually be part of the National Response Plan which includes:

- Protocols for necessary inter-agency and inter-country communication (i.e fisheries, quarantine issues) laboratory testing;
- Training for inspectors or others involved in rapid risk assessment;
- Sediment disposal options;
- ,Port surveys; and
- Data collection to identify organisms in the water that may be hazardous to others if taken up in ships' ballast water.[62]

7.2.3 Ballast Water Management Record Book

The Ballast Water Management record book will be issued by the Director of Maritime services in accordance with section B of the annex regulation B-2 and ships will be required to comply with the requirements of this part of the Convention for the Control and Management of Ships Ballast Water and Sediments.

7.2.4 Ensuring Compliance Amongst Ships Flying the Trinidad and Tobago Flag

Article 7 of the Convention provides for the flag state's responsibility with respect to survey and certification. This part would be fully complied with by Trinidad and Tobago ships. Further,

[61] Mc Connell L Moira, GloBallast Legislative Review final report , 2002, pg 106
[62] Mc Connell l Moira, GloBallast Legislative Review final report , 2002, pg 106

Article 14 of the Convention provides for the flag state to communicate its ballast water policies which are to be implemented in Trinidad and Tobago.

7.2.5 Inspection of Ships

Article 9 of the Convention provides for the inspection of Trinidad and Tobago ships. Article 9 of the Convention states, inter alia, that ships "may be inspected by Port State Control officers who can verify that the ship has a valid certificate; inspect the Ballast Water Record Book; and or sample the ballast water" Further, section D of the convention sets out the standards for ballast water management.

Regulation B- 3 Ballast Water Management

	Construction Date	**Ballast Water Capacity**	**Standard Applied**	**Applicable Date**
Existing Ships	Before 2009	$1500m^3 \leq Cap \leq 5000m^3$	Ballast Water Exchange Standard (D1) or Ballast water performance Standard (D2)	Until 2014
		$Cap < 1,1500m^3$ Or $Cap > 5,000m^3$	Ballast Water Exchange Standard (D1) or Ballast water performance Standard (D2)	Until 2016
			Ballast water performance Standard (D2)	On or after 2016
New Ships	On Or After 2009	$Cap < 5,000m^3$	Ballast water performance Standard (D2)	On or after 2009
	On Or after 2009 but before 2012	$Cap \geq 5,000m^3$	Ballast Water Exchange Standard (D1) or Ballast water performance Standard (D2)	Until 2016
			Ballast water performance Standard (D2)	On or After 2016
	On or after 2012	$Cap \geq 5,000m^3$	Ballast water performance Standard (D2)	On or after 2012

It must be noted that as of 2016, D2 standard is required and as such by that time the enforcement officers must have completed their training in sampling and testing in the field.

7.2.6 Enforcement and Penalties

The enforcement will be conducted by the following:

Port State Control Officers;

Environmental Management Authority;

Ministry of Health; and

Trinidad and Tobago Coast Guard.

The polluter pays principle would be applied to violations. Further in determining the severity of penalties Article 8 of the Convention, which states, inter alia, that "the sanctions provided for by the laws of a Party pursuant to this Article shall be adequate in severity to discourage further violations", must be borne in mind before final determination.

8.

Implementation Plan

The implementation of the National Strategy for Ballast Water management for the Republic of Trinidad and Tobago is best organized in broad categories. These categories are

- Institutional Arrangements;
- Information Gathering;
- Legislation and Regulation; and
- Communication, Increasing Awareness and Education and Training.

8.1 Institutional Arrangements

IAS issues are extremely complex and involve a wide variety of stakeholders, including all levels of government (and several departments within each level), many industry sectors, and numerous NGOs. Institutional arrangements are therefore critical in providing leadership and assisting in focusing the task.

Institutional arrangements actions include the following.

8.1.1 Regional or National responsibilities

- Participating in and contributing to the development of a Wider Caribbean Regional Strategy for Ballast water management; Participating in the Regional Task Force effort to support implementation of regional strategy; and
- Disseminating protocols and tools for standardization of technical and training approaches that could be used to conduct national and regional activities.

8.1.2 Lead Agency

- Implementing capacity building activities for Port State Control Officers;
- Implementing capacity building for local maritime industry (including yachting) and Stakeholders;
- Purchasing of required equipment for inspections;
- Developing the certification procedures for Ballast Water management ;
- Developing the certification procedures for Treatment Facilities;
- Implementing a voluntary programme with ships flying the country's flag until mandatory compliance via law is enacted; and
- Developing a communication pathway that bridges industry, ship and shore to the Maritime Services Division.

8.1.3 Advisory groups or Task Force

- Developing a National response plan for Marine IAS accidental insurgents into the environment; and
- Engaging educational institutions to develop programmes for Industry and Port State Control Officers with respect to the Convention.

8.1.4 Cross-Sectoral collaboration

- National Task Force to forge links with National teams for Biodiversity and IAS; and
- Link the Local Globallast website to the Trinidad and Tobago Biodiversity clearing house site.

8.2 Information Gathering

At present knowledge on marine IAS and its effects on the environment, the economy and the society of Trinidad and Tobago is lacking. The implementation of the International Convention on the Control and Management of Ballast Water and Sediments implies that Trinidad and Tobago would need to collect, analyze, and review information on Ballast Water and it effects

within its jurisdiction. An integral part of this process involves using existing risk assessment tools and models and developing new ones as needed[63]. Further, science-based research supports resource decision-making, including the development of policy, legislation, and programmes and also develops best practices in controlling the spread of invasive species[64].

Information gathering actions include the following:

8.2.1 Risk Assessment, Survey and Monitoring of IAS

- Undertaking Assessment;
- Carrying out risk assessment to identify especially vulnerable ports and to optimize compliance monitoring and enforcement;
- Developing a national roster of technical experts to contribute to technical discussions and studies included taxonomic experts;
- Conducting biological baseline surveys in ports including training for port baseline biological surveys;
- Developing a national information system to include an advance assessment system for Marine IAS using information from all sources including automatic identification system (AIS) and EPANs and the collection of Ballast water information from visiting ships via reporting forms for ballast water (IMO Template);
- Developing a programme of monitoring Ports for changes in baseline;
- Developing a system to visit Yachting yards to ensure that there are no violations in the spirit of the Convention; and
- Requesting arriving ships to submit reporting forms (IMO) Template.

8.2.2 Research and Development of Ballast Water Management Schemes

- Conducting and supporting research and development measures considering the unique local situation.

[63] A Canadian Action Plan to Address the Threat of Aquatic Invasive Species, 2004, pg 19
[64] Ibid pg 20

8.2.3 Monitoring of National Strategy implementation

- National Secretariat to be recommended and supervised by the National Task Force to Monitor the implementation of the National Strategy; and
- Development of a Globallast/Trinidad and Tobago website to establish the national level information clearing house mechanism.

8.2.4 Evaluation & Review of Strategy

- Yearly review of National Strategy and Plan by National Task Force; and
- Independent review at the end of five years.

8.3 Legislation and Regulation

Effective legislative frameworks take into account the varying needs and priorities of different jurisdictions and sectors[65]. Although the overall mandates for addressing most IAS issues fall under one or more existing pieces of legislation, there is a need for better integration and specificity for action[66].

Legislation and Regulation action include the following:

8.3.1 Policy

- The Chief Parliamentary Counsel to finalize legislation for the implementation of the BWM Convention taking into account all the relevant international, regional and national obligations, roles and responsibilities of stakeholders having adequately consulted;
- Include as an interim measure voluntary compliance of ships in local waters;
- Include mandatory training for port workers and seafarers in their sensitization programme and relevant curricula for education and training, respectively.

[65] A Canadian Action Plan to Address the Threat of Aquatic Invasive Species, 2004,pg 18
[66] A Canadian Action Plan to Address the Threat of Aquatic Invasive Species, 2004,pg 18

8.3.2 Compliance and Enforcement

- Identify all the agencies including international agencies that play a role in enforcement.

8.3.3 Cross Jurisdictional Coordination

- Establishment of Bilateral agreements with Venezuela, Grenada, St Vincent and the Grenadines and Barbados with respect to cross jurisdictional issues.

8.3.4 Fostering international links and cooperation

- Cultivating and maintaining international relationships, including sharing information, expertise and best practices, as well as strengthening and harmonizing agreements.

8.4 Communication, Increasing Awareness, Education and Training

Education and awareness campaigns can increase levels of compliance with regulations designed to prevent the spread of IAS.

Communication, Increase Awareness and Education and Training actions required are as follows:

8.4.1 National Governmental Agencies

- Have symposia / presentations for all government ministries at different levels on the Marine IAS to increase capacity building and public awareness.

8.4.2 Industry

- Use training and certification programmes to increase awareness in the industry.

8.4.3 International Conventions

- All stakeholders must be aware of the general spirit and intent of the related International Conventions for the successful implementation of the BWM Convention through a sensitization process.

8.4.4 Public

- Develop a national communication and outreach to include the BBC documentary about Marine IAS, brochures, and schools' presentations.

9.

FUNDING

Failure of this project has the ability to affect the sustainable development of Trinidad and Tobago in all sectors. Thus every effort must be made to find the necessary funding to achieve the goals of the Convention. The approach should be one that calls for industry, Government and research organizations cooperating to fund areas of mutual benefit. Creative mechanisms would need to be considered especially if there are budgetary constraints and therefore the ultimate goal of funding is to become recurrent expenditure for the organization concerned.

9.1 Implementation Funding (Initial 2 – 5 years)

The funding sources available to implement the first two (2) to five (5) years of this plan are

Government

- Development Program;
- Green Fund; and
- Recurrent Expenditure

Non-Government

- Grants for Non -Governmental Agencies

Regional

- CARICOM; AND
- Organisation of American States;

International

- UN
  - UNDP
  - GEF
  - IMO
- Other International Donors

9.1.1 Staffing

The human resource to carryout out all the functions required by the lead and supporting agencies is recommended to be funded from there relevant Developmental Budgets.

9.1.2 Gathering information, inspections, studies

Basic population assessments and baseline data against which one could measure changes that affect biodiversity are largely non-existent[67]. Where information does exist, there is often limited access to it[68]. Little value is put on research locally, and this is reflected in its funding[69].

This area while highly technical is essential to decision making and thus all sources identified above should be accessed to achieve this goal.

9.1.3 Supporting costs (communication, training, monitoring and evaluating)

The communication, Training, Monitoring and Evaluation, funding is recommended to use a variety of source. Firstly the use of the DP budget of the Organization. In addition International sources of funding should be sort.

[67] EMA, Biodiversity Strategy and Action Plan for Trinidad and Tobago
[68] EMA, Biodiversity Strategy and Action Plan for Trinidad and Tobago
[69] EMA, Biodiversity Strategy and Action Plan for Trinidad and Tobago.

9.2 Ongoing Funding

All sources of funding should be developed in pursuit of the implementation of the convention on a sustainable basis. It is hoped that as the project continues that most of the cost would become part of the organizations' recurrent budget. When this occurs, it is a measure as to the importance placed on the Convention and its ideals.

9.2.1 Staffing

Establishment of permanent posts in the lead and supporting agencies is one way to ensure a sustained implementation of this Convention. The funding for this implementation is recommended to come from the organizations' recurrent budget.

9.2.2 Gathering information, inspections, studies (5 years and beyond)

Association between research and the lead agency would need to be strengthened, in order to achieve the objectives of the Convention in the national interest. It is therefore essential that permanent posts be developed both at the lead and supporting agencies so that this effort would be sustained in the long term.

Sources of funding for gathering information, inspections, and studies should be continued to be sought from all sources, as this area will continue to be the basis on which all decisions are made.

9.2.3 Supporting costs (communication, training, monitoring and evaluating)

The future aim is that Ballast water and its deleterious effects would become known in every household as a result of the continued communication programmes.

This funding is suggested to become part of the recurrent expenditure of the organizations concerned. In addition funding should be sought from all sources for training in the relevant field.

ANNEX 1
To National Strategy for Ballast Water Management
Dated 17 April 2012

Communication, increase awareness, and education and training strategy

1. The goal of this Strategy of communication, increase awareness education and training is to increase levels of compliance with Convention regulations with respect to Marine IAS transported via Ballast Water and its sediments.

2. Further Marine IAS via Ballast Water and its sediments is one of the many vectors of IAS, therefore every effort is to made to form symbiotic relations with like programmes carried out by other organizations to avoid duplication

3. The National Task Force should form a subcommittee for communications that would be responsible for:

- Designing an awareness, education and training programme;
- Promoting the ideals of the Convention nationally;
- Developing relationships with other agencies to form synergies in their communication programmes;
- Ensuring that the websites developed for the convention are updated with current information;
- Seeking out the latest training programmes and providing the information to the national stakeholders;
- Using all available medium to promote the Convention;
- Engaging educational institutions to develop programmes for Industry and Port State Control Officers with respect to the Convention;

- Developing a system that the public could provide feedback and report any breaches of the Convention.

4. This committee should meet at least once a month and/or as required to achieve the objectives of this strategy.

5. The following table highlights the target groups, the level of communication required and the suggested medium for this communication strategy.

Target Groups	Communication Required	Medium
Government	Awareness	o Symposia o Visits to Government Departments
Schools	Awareness	o Work through Ministry of Education to form synergy with current programmes. o Essay writing competitions
Industry	Awareness ,Training , Education	o MSD to develop a mobile Training Team to visit industry and give a presentation. o Educational institution to Provide Training courses.
Lead Agency	Awareness, Training and Education	o MSD to develop a mobile Training Team to visit industry a give presentation o Educational institution to Provide Training courses.
Virtual	Awareness	o Via Internet
Public	Awareness	o Television/Radio o Social media. o Hosting competitions

ANNEX 2
To National Strategy for Ballast Water Management
14 April 2014

ACTION PLAN 2012 - 2016

INSTITUTIONAL ARRANGEMENTS

	Description	Possible Funding	2012	2013	2014	2015	2016
Regional and National responsibilities	Participate in and contribute to the development of a wider Caribbean Regional Strategy for Ballast water management.						
	Participate in Regional Task Force to support implementation of regional strategy						
	To disseminate protocols and tools for standardization of technical and training approaches that could be used to conduct national and regional activities						
Lead Agency	Implement capacity building activities for Port State Control Officers						
	Implement Capacity building for local maritime industry (including yachting) and Stakeholders						
	Purchase of Required equipment for inspections						
	Develop the certification procedures for Ballast Water management						
	Develop the certification procedures for Treatment Facilities						
	Implement a voluntary mandatory program with ships flying countries flag until mandatory compliance via law is completed.						
	Develop a communication pathway that bridges Industry, ship and shore to the Maritime Services Division.						
Advisory Groups and Task Force	Develop a National response plan for Marine IAS accidental insurgents into the environment						
	To engage educational institutions to develop programs for Industry and Port State Control Officers with respect to the Convention						
Cross-sectorial Collaboration	National Task Force to forge links with National teams for Biodiversity and IAS.						
	Link the Local Globallast website to the Trinidad and Tobago Biodiversity Clearing house site						

ANNEX 2
To National Strategy for Ballast Water Management
14 April 2014

INFORMATION GATHERING

Project Area	Project	Possible funding	2012	2013	2014	2015	2016
Risk Assessment, survey and monitoring of IAS	Undertake adequate Assessment						
	Carry out risk assessment to identify especially vulnerable ports and to optimize compliance monitoring and enforcement						
	Develop a national roster of technical experts to contribute to technical discussions and studies including taxonomic experts.						
	Conduct biological baseline surveys in ports including training for port baseline biological surveys						
	Develop a national information system to include an advance assessment system for Marine IAS using information from all sources including AIS and EPANs and the collection of Ballast water information from visiting ship via reporting forms for ballast water (IMO Template)						
	To develop a programme of monitoring Ports for changes in baseline.						
	Develop a system to visit Yachting yards to ensure that there are no violations with respect to the Convention.						
	Request arriving ships to submit reporting forms (IMO) Template						
Research and Development of Ballast Water Management Schemes	Conduct and support research and development measures considering the unique local situation.						
Monitoring of National Strategy implementation	National Secretariat to be recommended and Commissioned and supervised by the a National Task Force to Monitor strategy implementation						
	Develop a Glo ballast Trinidad and Tobago website to establish the national level information clearing house mechanism						
Evaluation and Review of Strategy	Yearly review of National /Strategy and Plan by National Task Force						
	Independent review at the end of five years						

ANNEX 2
To National Strategy for Ballast Water Management
14 April 2014

LEGISLATION AND REGULATION

Project Area	Project	Possible funding	2012	2013	2014	2015	2016
Policy	CPC to finalize legislation for implementing the Convention.						
	Draft notice for voluntary compliance of ships in local waters						
	Include as an interim measure Draft notice for voluntary compliance of ships in local waters;						
	Include mandatory training for port workers and seafarers in their sensitization programme and relevant curricula for education and training, respectively						
Compliance and enforcement	Identify all the agencies including international agencies that play role in enforcement.						
Cross Jurisdictional Coordination	Establishment of Bilateral agreements with Venezuela, Grenada St Vincent and Barbados with respect to cross jurisdictional issues						
Fostering International links and cooperation	Cultivating and maintaining international relationships, including sharing information, expertise and best practices, as well as strengthening and harmonizing agreements.						

ANNEX 2
To National Strategy for Ballast Water Management
14 April 2014

COMMUNICATION AWARNESS AND TRAINING

Project Area	Project	Possible funding	2012	2013	2014	2015	2016
National Government Agencies	Have symposia / presentations for all government ministries at different levels on the Marine AIS to increase capacity building and public awareness						
Industry	Use training and certification programmes to increase awareness in the industry						
International Conventions	All stakeholders must be aware of the general spirit and intent of the related International Conventions for the successful implementation of the BWM Convention through a sensitization process.						
Public	Develop a national communication and outreach to include the BBC documentary about Marine IAS, brochures, and schools presentations.						

ANNEX 3
To National Ballast Water Management Strategy
Dated 14 April 2012

Guiding Principles for the Prevention, Introduction and Mitigation of Impacts of Alien Species

1. All of these Principles below are relevant to implementing the IMO Guidelines. The work of the Legislative Review is specifically relevant to Guiding Principle 1, the precautionary approach; Guiding Principle 2, Three-stage hierarchical approach, first level of response, prevention; Guiding Principle 4, State responsibility, Guiding Principle 5, border control to prevent entry and Guiding Principle 11, development of legislation to prevent unintentional introductions.

A. General

Introduction

These guiding principles provide all Governments and organizations with guidance for developing effective strategies to minimize the spread and impact of invasive alien species. While each country faces unique challenges and will need to develop context-specific solutions, the Guiding Principles provide governments with clear direction and a set of goals to aim toward. The extent to which these Guiding Principles can be implemented ultimately depends on available resources. Their purpose is to assist governments to combat invasive alien species as an integral component of conservation and economic development. Because these principles are non-binding, they can be more readily amended and expanded through the Convention on Biological Diversity's processes as we learn more about this problem and its effective solutions.

Also, while applying these Guiding Principles, due consideration must be given to the fact that ecosystems are dynamic over time and so the natural distribution of species might vary without involvement of a human agent.

Guiding principle 1: Precautionary Approach

2. Given the unpredictability of the impacts on biological diversity of alien species, efforts to identify and prevent unintentional introductions as well as decisions concerning intentional introductions should be based on the precautionary approach. Lack of scientific certainty about the environmental, social and economic risk posed by a potentially invasive alien species or by a potential pathway should not be used as a reason for not taking preventative action against the introduction of potentially invasive alien species. Likewise, lack of certainty about the long-term implication of an invasion should not be used as a reason for postponing eradication, containment or control measures.

Guiding principle 2: Three-stage hierarchical approach

3. Prevention is generally far more cost effective and environmentally desirable than measures taken following introduction of an alien invasive species. Priority should be given to prevention of entry of alien invasive species (both between and within States). If entry has already taken place, actions should be undertaken to prevent the establishment and spread of alien species. The preferred response would be eradication at the earliest possible stage (principle 13). In the event that eradication is not feasible or is not cost-effective, containment (principle 14) and long-term control measures (principle 15) should be considered. Any examination of benefits and costs (both environmental and economic) should be done on a long-term basis.

Guiding principle 3: Ecosystem approach

4. All measures to deal with alien invasive species should be based on the ecosystem approach, in line with the relevant provisions of the Convention and the decisions of the Conference of the Parties.

Guiding principle 4: State responsibility

5. States should recognize the risk that they may pose to other States as a potential source of alien invasive species, and should take appropriate actions to minimise that risk. In accordance with Article 3 of the Convention on Biological Diversity, and principle 2 of the 1992 Rio Declaration on Environment and Development, States have the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of

other States or of areas beyond the limits of national jurisdiction. In the context of alien invasive species, activities that could be a risk for another State include:

(a) The intentional or unintentional transfer of an alien invasive species to another State (even if it is harmless in the State of origin); and

(b) The intentional or unintentional introduction of an alien species into their own State if there is a risk of that species subsequently spreading (with or without a human vector) into another State and becoming invasive.

Guiding principle 5: Research and monitoring

6. In order to develop an adequate knowledge base to address the problem, States should undertake appropriate research on and monitoring of alien invasive species. This should document the history of invasions (origin, pathways and time-period), characteristics of the alien invasive species, ecology of the invasion, and the associated ecological and economic impacts and how they change over time. Monitoring is the key to early detection of new alien species. It requires targeted and general surveys, which can benefit from the involvement of local communities.

Guiding principle 6: Education and public awareness

7. States should facilitate education and public awareness of the risks associated with the introduction of alien species. When mitigation measures are required, education and public-awareness-oriented programmes should be set in motion so as to inform local communities and appropriate sector groups on how to support such measures.

B. Prevention

Guiding principle 7: Border control and quarantine measures

8 States should implement border control and quarantine measures to ensure that:

(a) Intentional introductions are subject to appropriate authorization (principle 10);

(b) Unintentional or unauthorized introductions of alien species are minimised.

9. These measures should be based on an assessment of the risks posed by alien species and their potential pathways of entry. Existing appropriate governmental agencies or authorities should be strengthened and broadened as necessary, and staff should be properly trained to implement these measures. Early detection systems and regional coordination may be useful.

Guiding principle 8: Exchange of information

10. States should support the development of database(s), such as that currently under development by the Global Invasive Species Programme, for compilation and dissemination of information on alien species that threaten ecosystems, habitats or species, to be used in the context of any prevention, introduction and mitigation activities. This information should include incident lists, information on taxonomy and ecology of invasive species and on control methods, whenever available. The wide dissemination of this information, as well as national, regional and international guidelines, procedures and recommendations such as those being compiled by the Global Invasive Species Programme should also be facilitated through, inter alia, the clearing-house mechanism.

Guiding principle 9: Cooperation, including capacity-building

11. Depending on the situation, a State's response might be purely internal (within the country), or may require a cooperative effort between two or more countries, such as:

(a) Where a State of origin is aware that a species being exported has the potential to be invasive in the receiving State, the exporting State should provide information, as available, on the potential invasiveness of the species to the importing State. Particular attention should be paid where exporting Parties have similar environments;

(b) Agreements between countries, on a bilateral or multilateral basis, should be developed and used to regulate trade in certain alien species, with a focus on particularly damaging invasive species;

(c) States should support capacity-building programmes for States that lack the expertise and resources, including financial, to assess the risks of introducing alien species. Such capacity-building may involve technology transfer and the development of training programmes.

C. Introduction of species

Guiding principle 10: Intentional introduction

12. No intentional introduction should take place without proper authorization from the relevant national authority or agency. A risk assessment, including environmental impact assessment, should be carried out as part of the evaluation process before coming to a decision on whether or not to authorize a proposed introduction. States should authorize the introduction of only those alien species that, based on this prior assessment, are unlikely to cause unacceptable harm to ecosystems, habitats or species, both within that State and in neighbouring States. The burden of proof that a proposed introduction is unlikely to cause such harm should be with the proposer of the introduction. Further, the anticipated benefits of such an introduction should strongly outweigh any actual and potential adverse effects and related costs. Authorization of an introduction may, where appropriate, be accompanied by conditions (e.g., preparation of a mitigation plan, monitoring procedures, or containment requirements). The precautionary approach should be applied throughout all the above-mentioned measures.

Guiding principle 11: Unintentional introductions

13. All States should have in place provisions to address unintentional introductions (or intentional introductions that have established and become invasive). These include statutory and regulatory measures, institutions and agencies with appropriate responsibilities and with the operational resources required for rapid and effective action.

14. Common pathways leading to unintentional introductions need to be identified and appropriate provisions to minimise such introductions should be in place. Sectoral activities, such as fisheries, agriculture, forestry, horticulture, shipping (including the discharge of ballast waters), ground and air transportation, construction projects, landscaping, ornamental aquaculture, tourism and game-farming, are often pathways for unintentional introductions. Legislation requiring environmental impact assessment of such activities should also require an assessment of the risks associated with unintentional introductions of alien invasive species.

D. Mitigation of impacts

Guiding principle 12: Mitigation of impacts

15. Once the establishment of an alien invasive species has been detected, States should take steps such as eradication, containment and control, to mitigate the adverse effects. Techniques used for eradication, containment or control should be cost-effective, safe to the environment, humans and agriculture, as well as socially, culturally and ethically acceptable. Mitigation measures should take place in the earliest possible stage of invasion, on the basis of the precautionary approach. Hence, early detection of new introductions of potentially invasive or invasive species is important, and needs to be combined with the capacity to take rapid follow-up action.

Guiding principle 13: Eradication

16. Where it is feasible and cost-effective, eradication should be given priority over other measures to deal with established alien invasive species. The best opportunity for eradicating alien invasive species is in the early stages of invasion, when populations are small and localised; hence, early detection systems focused on high-risk entry points can be critically useful. Community support, built through comprehensive consultation, should be an integral part of eradication projects.

Guiding principle 14: Containment

17. When eradication is not appropriate, limitation of spread (containment) is an appropriate strategy only where the range of the invasive species is limited and containment within defined boundaries is possible. Regular monitoring outside the control boundaries is essential, with quick action to eradicate any new outbreaks.

Guiding principle 15: Control

18. Control measures should focus on reducing the damage caused rather than on merely reducing the numbers of the alien invasive species. Effective control will often rely on a range of integrated techniques. Most control measures will need to be regularly applied, resulting in a recurrent operating budget and the need for a long-term commitment to achieve and maintain results. In some instances, biological control may give long-term suppression of an alien invasive species without recurrent costs, but should always be implemented in line with existing national regulations, international codes and principle 10 above.

SOURCE: FINAL REPORT OF INITIAL LEGISLATIVE REVIEW 2002 PAGE 95 - ORIGINALLY FROM AGENDA 21