Examination of policies and MEAs commitment by SIDS for sustainable management of the Caribbean Sea

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Abstract

The Caribbean Sea hosts twenty-seven small island developing states (SIDS), some of which utilise their marine resources found in the Caribbean Sea for economic gains. Many of the economic activities such as tourism, shipping and industrial development are currently incompatible with a healthy and sustainable marine environment. Sewage, agricultural effluents and hydrocarbon pollution resulting from these economic activities have led to degradation of this large marine ecosystem. In an effort to address these issues; policies, programmes and multilateral environmental agreements (MEAs) were initiated in order to regionalise the response efforts. These include efforts such the Cartagena Convention, the integrated watershed and coastal area management (IWCAM) initiative and pollution assessment among others. This paper reviews the regional responses by the SIDS and other agencies in dealing with pollution from land and marine-based activities and biodiversity loss via these initiatives.

The findings showed that the region lack the commitment needed as demonstrated by the poor ratification rate of major MEAs, disjointed programmes and strong political influences. These have proven ineffective in curbing degradation in the sea.

Keywords: SIDS; Caribbean Sea; Pollution; Conventions; Sustainability; Integrated management

1. Introduction

The Caribbean Sea is located between 9–22°N and 89–60°W and is the second largest sea in the world [1]. It is semi enclosed by South and Central America and an archipelago of 24 islands. A few other islands are scattered within the sea. Small island developing states (SIDS) in this paper refer to a total of 27 island states, of which some are politically independent states and some are overseas territories (dependent islands) of France, The Netherlands, United Kingdom and USA.

The sea is highly stratified and has a low productivity with long food chains; hence the biological resources are limited, making it vulnerable to quick over exploitation. The limited shelf areas of the SIDS support most of the Caribbean’s marine ecosystems in the form of coral reefs and seagrass beds, which in turn support a variety of marine life. Migratory species and straddling stocks also share the sea. These resources coupled with favourable beaches and climate form significant assets for the Caribbean SIDS via tourism. At present, many of the islands rank this sector as their main economic earner. However, the fragile nature of this sea has become increasing vulnerable to anthropogenic activities emanating from the islands and also from marine activities such as intense shipping. As such, the Caribbean Sea gained prominence through many reports and studies, which highlighted the declining state of the environment and the need for affirmative actions to arrest the growing catalogue of environmental problems [2–5]. Singh [5] identified four major issues affecting the sea, these include pollution from land and marine-based activities, habitat destruction, loss of biodiversity through poor fisheries management and external natural events such as hurricanes. The anthropogenic activities listed above were linked to inadequate management of waste, unmanaged economic activities, poor land use planning and lack of effective integrated management of coastal and marine-based resources [5]. The region’s governments and other international agencies

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recognised and are responding to these issues and causes. Among the responses are programme implementation, establishment of regional institutions and legal agreements including multilateral environmental agreements (MEAs). However, despite these responses, the Caribbean Sea continues to be degraded mainly through pollution. The focus of this paper is to review the regional responses by the SIDS and other agencies in dealing with pollution from land and marine-based activities and biodiversity loss through the major legal instruments (MEAs) and policies.

2. Response to marine degradation

Hydrocarbon pollution is identified as the main pollutant from marine-based activities [2,3,5,6] while agrochemical waste, sewage, sediments, industrial waste and solid waste are the major pollutants emanating from land-based activities in the SIDS [2,5,7]. The responses are discussed below.

2.1. Response to marine sources of pollution

2.1.1. Pollution survey

The threat of oil pollution in the Caribbean prompted a programme of pollution surveys, which took place from 1980 to 1987 for the Wider Caribbean.1 These surveys were conducted under the auspices of The Caribbean Regional Pollution Programme (CARIPOL) and initiated by IOC-UNESCO and UNEP. The analysed samples for the Caribbean Sea showed significant levels of petroleum pollution [6,8–13]. However, monitoring was discontinued due to the exhaustion of funds. To date, no other regional pollution survey has been initiated.

2.1.2. Minimising pollution from ships

The UNEP [2] noted that pollution from ships is one of the major threats to the Caribbean. To respond to the pollution threat caused by vessels movement in the Caribbean Sea, a number of international Conventions and Protocols were adopted. To date there are seven major international agreements, which deal with pollution in the marine environment caused by ships [14]. As shown in Table 1, not all the SIDS are party to these MEAs. The number of ratifications of these agreements is less than 40% for the SIDS. Oil producing islands like the Republic of Trinidad and Tobago is not party to any of these agreements as shown in Table 1.

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1Wider Caribbean refers to the Caribbean Sea and Gulf of Mexico.
3. Response to land-based sources of pollution

3.1. Minimising pollution from land-based activities

One response mechanism to minimising marine degradation was the development of the Protocol concerning Pollution from Land-based Sources and Activities (LBS Protocol). This protocol, sanctioned in 1983 and adopted in 1999 was devised by the region to respond to the growing crisis in the Caribbean [17]. As part of the stipulation, it requires all contracting parties to respond appropriately to prevent, reduce and control pollution of the marine environment of the Caribbean. More importantly, it defined a set of emission guidelines, standards and practices for the prevention, reduction and control of pollution from land-based activities and advocates management approaches such as integrated coastal area management [17].

As a stipulation of the protocol, the ratifying states will be given 10 years from the date of ratification to adhere to standards and requirements within the protocol [17]. However, the commitment from the region has been weak and appallingly low. In 2005, 22 years after its initiation, this protocol has not entered into force and to date Trinidad and Tobago is the only country within the SIDS to ratify the protocol Table 2(B) with the dependent territories signalling their intention to ratify.

To date, coastal zone management plans are still lacking in many islands and no effluent discharge limits are being adhered to. This protocol bears high significance and is important if the region is to minimise the effects of land-based activities on the marine environment. It is evident that habitats such as reefs are already being lost in many islands such as St Lucia, Dominica and Curacao [5]. Overall the LBS protocol has been largely ineffective.

In 1995, the UNEP initiated a Global Plan of Action for the Protection of the Marine Environment from Land-Based Activities (GPA) within the WSSD/Agenda 21 Framework [18]. As part of this initiative, all countries are encouraged to formulate national plans of action (NPAs) for the protection of the marine environment. In countries where similar plans exist policy makers are encouraged to adjust these plans to include marine management. The UNEP/CEP in the Caribbean is currently working with countries in the region to develop these national plans to enable these islands to protect the marine environment [19]. It is the goal of UNEP/CEP that these NPAs will give credence to the LBS Protocol and in some ways land-based pollution can be minimised.

4. Response to habitat destruction

The regional response mechanism to biodiversity loss in the Caribbean is through the Specially Protected Area and Wildlife (SPAW) Protocol. The objective of the protocol is to protect rare and fragile ecosystems and habitats by establishing proper management responses for protected areas [20]. According to UNEP/CEP [20], the SPAW protocol is responsible for the regionalisation of global conventions and initiatives such as the Convention on Biological Diversity (CBD), the Convention on International Trade in Endangered Species (CITES) and the International Coral Reef Initiative [20] and the Ramsar
### Table 2

**SIDS in the Caribbean that ratified the marine related conventions**

<table>
<thead>
<tr>
<th>Country</th>
<th>Agreement</th>
<th>Number of agreements ratified by states</th>
<th>Calculated % of ratified agreements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td><strong>Category</strong></td>
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<tr>
<td>Independent</td>
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<tr>
<td>Antigua &amp; Barbuda</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Barbados</td>
<td>x</td>
<td></td>
<td>x</td>
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<tr>
<td>Cuba</td>
<td>x</td>
<td></td>
<td>x</td>
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<tr>
<td>Dominica</td>
<td>x</td>
<td></td>
<td>x</td>
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<tr>
<td>Dominican Republic</td>
<td>x</td>
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<td>x</td>
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<tr>
<td>Grenada</td>
<td>x</td>
<td></td>
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<td>Haiti</td>
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<tr>
<td>Jamaica</td>
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<td>x</td>
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<tr>
<td>St Kitts &amp; Nevis</td>
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<td></td>
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<tr>
<td>St Vincent &amp; Grenadines</td>
<td>x</td>
<td></td>
<td>x</td>
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<tr>
<td>St. Lucia</td>
<td>x</td>
<td></td>
<td>x</td>
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<tr>
<td>Trinidad &amp; Tobago</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td><strong>Dependent</strong></td>
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<td>USVI</td>
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<td>Puerto Rico</td>
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<td>Bonaire</td>
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<tr>
<td>St Marteen</td>
<td>x</td>
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<tr>
<td>Aruba*</td>
<td>x</td>
<td>x</td>
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<tr>
<td>St Eustatius</td>
<td>x</td>
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<tr>
<td>Curaçao</td>
<td>x</td>
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<tr>
<td>Guadalupe</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Martinique</td>
<td>x</td>
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<tr>
<td>St Martin</td>
<td>x</td>
<td>x</td>
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<tr>
<td>BVI</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Montserrat</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Anguilla</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Cayman Islands</td>
<td>x</td>
<td>x</td>
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</tbody>
</table>

**RD** = Year of ratification, **LBS** = land-based sources of pollution, **SPAW** = specially protected area and wildlife, **CITES** = convention on international trade and wildlife, **CBD** = convention on biological diversity, **UNFCCC** = United national framework convention on climate change. Compiled using information from UNEP/CEP, [20,31,32], United Nations, (1995), CITES, [21], CDB, [22], UNFCCC, (2005).

*This also include those agreements on Table 1. MARPOL is regarded as six agreements.

*These are protocols of the Cartagena convention which deals with the protection, management and development of the marine area of the wider Caribbean.

*Aruba is not a fully dependent island of the Kingdom of Netherlands, it has partial independence since 1992.
are found throughout the sea (Fig. 2). There are also islands in the Caribbean Sea. The MPAs vary in size and number, with 104 legally designated MPAs in the region, of which 94 were established according to the Fisheries Regulation 1989. In addition, many have made effort at a national level to legislate the establishment of MPAs for example Dominica which did not ratify CITES [21,22] as is shown in Table 2 (E and F).

In general both member and non-member countries of the region have ratified the SPAW protocol, in particular the dependent islands shown in Table 2(D). The CITES and CDB conventions have been ratified by all the independent islands except Haiti which did not ratify CITES. Many of these protocols and conventions have been responding to biodiversity protection in the region by designating marine protected areas (MPAs) within their jurisdictions. In addition, many have made effort at a national level to legislate the establishment of MPAs for example Dominica (Fisheries Regulation 1989). According to Singh [5], there are 104 legally designated MPAs in the region, of which 94 are found in the Caribbean Sea. The MPAs vary in size and are found throughout the sea (Fig. 2). This large number of MPAs in the region has evidently shown that the policy makers in the region have recognised the importance of MPAs as a way of responding to biodiversity loss. They are viewed as an approach, which will conserve marine biodiversity and maintain productivity of marine environment. However, although these protected areas have been demarcated, only a small percentage has any satisfactory management plans. According to the Organisation of American States, over 70% have not achieved meaningful management [23,24] and found that there are a total of 45 MPAs in the SIDS with active management. Among them, four are ranked as having high-level management in place and a high proportion (nineteen) are ranked as having low level of management.

In some islands MPAs are effective in arresting the decline of certain species, for example in St Lucia [25,26], while in other cases the MPAs were ineffective, for example in Curacao [27]. Overall, the extent to which MPAs in the Caribbean have assisted in biodiversity conservation is unknown. Having these designated biodiversity sanctuaries in the absence of effective management systems do not assist the cause and neither do they serve their intended purpose.

5. Economic sectoral response

The region’s large tourism sector also places pressure on the marine environment caused by the large-scale coastal development, which characterise this sector. In an effort to minimise the pressure on the marine environment from tourism such as sewage, the hospitality sector has responded by streamlining their operations according to sustainable practices. This is accomplished through the Green Globe certification programme for hotels. Green Globe certification requires that certain key performance targets be met. These include effective waste disposal and energy conservation [28]. In 2007, there was a recorded 57 GG21 certified properties in the SIDS with an additional twelve working towards certification. This distribution by islands is shown in Fig. 3. Jamaica has the highest number (26) of Green Globe certified properties followed by Barbados (8). According to the Caribbean Alliance for Sustainable Tourism [29], the Caribbean region leads the world in the number of certified properties. According to Singh [5], there are in excess of nine hundred (900) hotels in the SIDS. Therefore, statistically, only 6.4% of all the hotels in the SIDS are operating to prescribe sustainable practices.

The total number of hotels (>900) does not account for apartments, villas and guesthouses. Although the number of apartments and guesthouses accommodation is unknown for all the islands, many islands have more of these alternative accommodations when compared to hotels. For example, data provided by Grenada Hotel Association [30], showed that Grenada has twenty-one hotels and thirty-nine alternative accommodations. Similar situation is likely to exist in the other islands.

In terms of regional management, there are other programmes and institutional mechanisms that were initiated to address the overall management of the marine environment. These are reviewed below in the context of the Caribbean Sea and the SIDS.

6. Institutional response to marine management of the Caribbean Sea

The Caribbean Environmental Programme (CEP) was initiated in 1976 by the United Nations Environment

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Footnotes:

1. Green Globe Certification is a global benchmarking, certification and improvement system for sustainable travel and tourism. It is based on Agenda 21 and endorsed at the Rio Summit.

2. Includes some mainland countries of Central America
Programme at the request of the Governments of the Wider Caribbean Region [31]. UNEP/CEP provides support for the countries within the Wider Caribbean region. Its main functions include:

- Providing assistance to all countries in the region and recognising the special situation of the smaller islands.
- Coordination of international assistance activities in the region.
- Strengthen existing national and sub regional institutions.
- Technical co-operation in the use of the region’s human, financial and natural resources.

UNEP/CEP operates in part from the Caribbean Trust Fund (CTF), which is funded through voluntarily contribution by its members (Governments in the Wider Caribbean). How much of the pledged contribution are paid into the fund each year is not known. However, available information for 2004 have shown that France was the largest donor followed by USA and Venezuela, respectively [32]. France and USA donate on behalf of
their respective dependencies. Pledge amounts are shown in Fig. 4.

7. Existing programmes for the Caribbean Sea

Currently there are a number of existing programmes for the Caribbean. Some are for the Wider Caribbean, which are the Caribbean Sea and Gulf of Mexico and others are for the Caribbean Sea. The programmes that include the Caribbean Sea are discussed below.

7.1. Integrated watershed and coastal area management

At a regional level, NOAA, UNEP and selected islands in the Caribbean have jointly undertaken the Integrated Watershed and Coastal Area Management (IWCAM) project to respond to issues of terrestrial and marine degradation in the region. The objective of the project is to strengthen the capacity of the participating SIDS countries (Antigua and Barbuda, Barbados, Cuba, Dominican Republic, Dominica, Grenada, Haiti, Jamaica, St Kitts, St Lucia, St Vincent and the Grenadines and Trinidad and Tobago) to implement an integrated approach to the management of watersheds and coastal areas. It is expected that this project will enhance the capacity of the countries to plan and manage their aquatic resources and ecosystems on a sustainable basis [33]. This project was implemented in 2006 and seeks to deal with both the causes and effects of environmental issues in the region.

7.2. White water to blue water partnership initiative

In 2002, an international alliance of governments (regional, USA, UK and Canada among others), international organizations, financial institutions, non-governmental organizations (NGOs), universities and corporations formed the White Water to Blue Water (WW2BW) partnership. The aim of this initiative is to integrate the management of watersheds, coasts and the oceans/seas [34]. It seeks to promote regional cooperation and strengthen the developing countries capacity to address land-based sources of marine pollution (e.g. sewage and industrial discharges, agricultural runoff, etc.). It also aims at promoting sustainable fisheries, agriculture and forestry practices and address the challenges associated with tourism and degradation of coastal areas [34]. This project was officially launched in 2004.

This initiative began with the Wider Caribbean (Caribbean Sea and Gulf of Mexico) but it is expected that the outcomes in the Caribbean will serve as a blueprint for future efforts in Africa and the South Pacific [34]. There are four thematic areas of this initiative, which are integrated watershed management, Marine Ecosystem-Based Management, sustainable tourism and environmentally sound marine transportation. The WW2BW initiative is seeking to bring together the existing programmes in the region under a single programme in order to avoid duplications. All the SIDS in the Caribbean Sea are involved in this initiative except Cuba. Therefore, impacts on the Caribbean Sea that emanates from Cuba are not addressed within this initiative.

7.3. The Caribbean Sea as a special area

In 2002, governments in the region devised the Caribbean Sea Initiative, which was an attempt to declare the sea a ‘Special Area’ in the context of sustainable development in the UN system. The aim of this initiative was to seek a constituted international legal instrument to address all the major uses and impacts on the Caribbean Sea. This was done within the overarching objective of sustainable development within the BPOA [35]. In 2002, the Caribbean Sea initiative was presented to the UN General Assembly for approval, however the UN Assembly did not approve this because of lack of facilities especially in the leading maritime states [35]. A compromise resolution deal was negotiated, calling for Integrated Management of the Caribbean Sea. In 2006, the UN passed a resolution to recognise the Caribbean Sea as a special area, hence with an active management plan, there is a potential that many of the issues of pollution can be addressed.

8. Discussion

The analyses provided in this paper regarding the responses in the region to threats of marine degradation seem to suggest that marine management is still heavily influenced by political alignment and colonial alliances. Most of the programmes are sustained by extra regional funding and past colonial authorities. This political bias impedes the full integration of Caribbean states, a component that is vital to pursue integrated marine management. The analysis also shows that majority of the response programmes and management efforts involve only a core set of islands (mainly CARICOM members) in the region. Cuba is not part of many of these programmes despite contributing to many of the issues in the Caribbean Sea such as pollution. This exclusion of Cuba is mainly because of pressure from its political adversaries.

In addition, the dependent islands of France, the United States of America, United Kingdom and the Netherlands, operate in a league of their own even though these states use the geographical region and resources—the Caribbean Sea. These dependent states do not participate or are not integrated into many of the programmes. This lack of participation, which is vital to managing the marine environment, results in compromised and ineffective management.

The region wide initiatives such as the IWCAM is aiming to conduct holistic management of the watershed and coastal area but has so far aligned itself to mainly CARICOM member islands. If efforts are not made to incorporate the other islands, this project may become just “another” project and the Caribbean Sea will be its
casualty. Marine management of the Caribbean Sea cannot be addressed without integrated cooperation from all the islands and this cooperation must overcome political, linguistic and cultural differences.

The UNEP/CEP has been less effective in integrating these countries into effective marine management. Many programmes are still being executed along political entities like CARICOM. In many cases, programmes relied mainly on external funding. These funds are often granted with given clauses such as which countries should benefit. For example, Cuba is mostly excluded from benefiting from programmes, which are funded by donor countries. The political agenda of these donor countries and the alliances of the islands have resulted in a web of disconnected programmes and environmental management disparities. If common agenda is sought, these efforts will be able to deal with the environmental problems more effectively and invariably address the region’s vulnerability.

The analysis shows that legal obligation is a major concern in the region. If commitment to marine management is measured by treaty obligations, this region is in a serious predicament. The analysis shows that many islands have not ratified many of the necessary MEAs, which can reduce pollution and aid effective marine management. There are cases where islands are signatory to the protocols but the time lag between signature, ratification and implementation are long, for example the LBS Protocol (Table 1). This problem exists for the dependent islands as well. Many of the “parent” countries (USA, UK, France, and The Netherlands) have not required their dependent islands to become obligated to many of these treaties. Therefore, it seems to suggest that the commitment is absent. In many cases, for example oil related protocols (Table 1), many of the parent countries, despite being party to the treaties, have not sign their respective dependent territories to these treaties. Overall, there is a wide disparity of ratification rate in the region’s SIDS (Table 2).

Inadequate funding for marine management is a major hurdle in the region as shown by the paltry amounts being donated to the CTF by governments. Besides GEF funding, the majority of the monetary resources that enter the Caribbean for environmental management and conservation are donated in the form of grants, mostly from the USA (USAID), UK (DFID), EU (LOME 1 V) and Canada (CIDA). These funds have facilitated a number of projects to assist in many management initiatives. However, most of these funds are for short termed projects with limited commitment. In most cases, for the region to have a sustainable solution to the marine issues, these projects require consistent funding and long term commitment in order to alleviate the degradation of the marine environment. Generally, many of these programmes begin with an initial core group of countries with the intention of incorporating others but many of the programmes end without achieving the latter. The voluntary contribution method of the CTF has demonstrated the low level of commitment from governments within the region to deal with the environmental problems in this shared marine space. Inadequate financial resources have hindered the capability and potential of the UNEP/CEP in adequately addressing environmental management at a regional level.

Overall, it is evident that there are active programmes in the Caribbean, which are attempting to address the problems highlighted in this paper. However, most of these programmes have stopped short of a holistic marine management of the Caribbean Sea.

9. Conclusion

Collectively, there are many responses regarding management of the marine environment. However, these responses are still dictated by political bureaucracy and alliances, which stemmed from lack of cooperation and high dependence on extra regional funding. Thus, ecosystem management of the marine environment is not being seriously considered and is often compromised. The quest for sustainability continues to elude the Caribbean region and the SIDS continue to be regarded as special cases.

Based on the analysis, the effective management of the Caribbean Sea requires firm political commitment and a clearly defined ecosystem strategy. The recent declaration by the UN in 2006 in recognising the sea as a special area in the context of sustainable development provides a renewed opportunity for the region including the SIDS and the Central and South American countries and the international community to make a concerted effort to manage the sea in an integrated way where the environment is given priority. This will require a strong commitment from all parties with no political agenda or self-interest.

References

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