



Caribbean Natural Resources Institute



Climate change adaptation in the fisheries of Anguilla and Montserrat

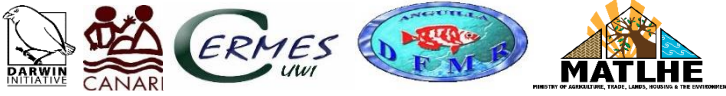
Institutional assessment of climate change adaptation readiness in the Anguilla and Montserrat fisheries sectors



Citation:

Fardin, F., Andrews, M. & Phillips, T. 2018. Summary report: Institutional assessments of climate change adaptation readiness in the Anguilla and Montserrat fisheries sectors. Port of Spain: CANARI.

Acknowledgements:



This assessment report is an output of the **Climate change adaptation in the fisheries of Anguilla and Montserrat** project which is being implemented by the Caribbean Natural Resources Institute (CANARI) in partnership with the Department of Fisheries and Marine Resources - Anguilla, Fisheries and Ocean Resources Unit - Montserrat and the Centre for Resource Management and Environmental Studies of the University of the West Indies (UWI-CERMES). The project is funded by the Government of the United Kingdom through the Darwin Plus: Overseas Territories Environment and Climate Fund under the Darwin Initiative.

Disclaimer:

This publication has been produced by CANARI as an output of the Climate change adaptation in the fisheries of Anguilla and Montserrat project. However, the views expressed herein are those of the authors, and can therefore in no way be taken to reflect the official opinions of Department of Fisheries and Marine Resources of Anguilla, the Ministry of Agriculture, Trade, Lands, Housing and the Environment of Montserrat and the Darwin Plus: Overseas Territories Environment and Climate Fund under the Darwin Initiative.

Table of contents

1	Introduction	1
2	Methodology.....	1
3	Importance and vulnerability of Anguilla’s and Montserrat’s fisheries sectors	2
4	Summary of findings and recommendations from the rapid institutional assessments.....	3
5	Recommendations	4
6	Conclusion.....	5

ANNEX 1: Climate change adaptation of the fisheries sector in Anguilla: Institutional Assessment

ANNEX 2: Climate change adaptation of the fisheries sector in Montserrat: Institutional Assessment

1 Introduction

The two Caribbean overseas territories of the United Kingdom (UKOTs), Anguilla and Montserrat, have fisheries sectors that contribute to livelihoods and national food security. In both UKOTs, the fisheries sectors are vulnerable to the impacts of climate variability and change. Increased sea surface temperatures, more intense storms and rising sea levels are expected to trigger a complex series of biophysical and socioeconomic impacts on fisheries. Mainstreaming climate change adaptation (CCA) in their fisheries sector is therefore crucial. Needs assessments led by the United Kingdom Department for International Development in 2012 (DFID, 2012)¹ have highlighted weak planning and low adaptive capacity for both islands.

The Caribbean Natural Resources Institute (CANARI) in partnership with the Fisheries and Ocean Resources Unit – Montserrat, Department of Fisheries and Marine Resources - Anguilla, and the Centre for Resource Management and Environmental Studies of the University of the West Indies (UWI-CERMES) is implementing a Darwin Plus: Overseas Territories Environment and Climate Fund three-year (2017-2020) project- *Climate change adaptation in the fisheries of Anguilla and Montserrat*. It will contribute to building the capacity of these two OTs to mainstream CCA into fisheries governance and management, using an ecosystem approach to fisheries (EAF). This will deliver enhanced stewardship of the resource and livelihood benefits.

The project aims to assess vulnerabilities and potential adaptation actions for the fisheries sectors by identifying and analysing local and scientific knowledge. One of the key activities under the project is to conduct an assessment of institutional readiness for climate change adaptation in the fisheries sector of Anguilla and Montserrat. This report provides a summary of the findings of the institutional assessments that were conducted for Anguilla and Montserrat, between December 2017 to March 2018, with the detailed reports for each OT included as Annex 1 and 2, respectively.

2 Methodology

A rapid assessment of institutional readiness for climate change adaptation in the fisheries sectors of Anguilla and Montserrat from December- February 2018. The assessment utilised the World Resources Institute's Adaptation: [Rapid Institutional Analysis \(ARIA\) toolkit](#) to assess the quality of five critical functions for institutional readiness: 1) assessment, 2) prioritisation, 3) coordination, 4) information management, and 5) mainstreaming. Each function is defined by a set of indicators which gauge the existence of an institution or process. Each indicator is further defined by a set of qualities which describes key aspects of the institution or process that are likely to lead to better climate change adaptation governance. Qualities are grouped under the following categories: capacity, transparency and participation, accountability and enforcement, and comprehensiveness.

The assessment method included desk reviews and in-country interviews with key stakeholders. Desk reviews were conducted to inform the conduct of in-country interviews as well as to validate in-country interview findings.

¹ Department for International Development (DFID). (2012). Addressing Climate Change by Promoting Low Carbon Climate Resilient Development in the UK Overseas Territories, Needs Assessment: Anguilla.
Department for International Development (DFID). (2012). Addressing Climate Change by Promoting Low Carbon Climate Resilient Development in the UK Overseas Territories, Needs Assessment: Montserrat.

In-country interviews were conducted on February 5th and 6th, 2018 in Montserrat, and February 20th and 21st, 2018 in Anguilla by CANARI. These were done in collaboration with the Fisheries and Ocean Resources Unit (Montserrat) and Department of Fisheries and Marine Resources (Anguilla), with representatives from key agencies responsible for the environment, including coastal and marine management, agriculture, fisheries, disaster management, physical planning, land and surveys as well as fisherfolks and civil society organisations.

3 Importance and vulnerability of Anguilla's and Montserrat's fisheries sectors

Fishing in Montserrat and Anguilla contributes to income, employment and food security.

In Montserrat, fishing is mainly small-scale and harvesting activities occur primarily in the subsistence and commercial capture fisheries. A 2017 National Ecosystem Assessment of Montserrat, commissioned by the Joint Nature Conservation Committee (JNCC)², reported that approximately 75 metric tonnes of fish are landed annually in Montserrat at a value of EC\$1.81 million (approximately US\$ 0.67 million). The economic contribution of fishing to Gross Domestic Product (GDP) has been steadily increasing over the past few years in Montserrat, with estimates for 2010 being 0.26% of GDP and 2014, 0.36% (CRFM, 2014). Approximately 2.5% of Montserrat's labour force, including about 101 fishers operating 37 fishing vessels, are employed in the marine capture fisheries (CRFM, 2014).

With an Exclusive Economic Zone (EEZ) of 85,800 km², fish production in Anguilla was estimated at 438.31 metric tonnes (mt), valued at EC 15614179.14, in 2014 (DFMR, 2018). Like Montserrat, fishing in Anguilla is small scale with most of the vessels being small boats (5 to 15 m). There are 68 licensed vessels and 92 licensed fishers, 4 of which are women, employed in direct production in the marine commercial capture fisheries in Anguilla. Four hundred and ninety-two persons are involved in other fisheries-dependent activities which make a total of 656 persons employed by the fishing sector. This represents approximately 10 per cent of the labour force. The economic contribution of the fisheries sector to Gross Domestic Product for Anguilla in 2014 was 1.96 % (CFRM, 2015).

The two islands are vulnerable to natural disasters including those induced by climate variability and change, and have been impacted by several major storms and other natural disasters in the last decades, which badly affected their fisheries sector, including marine ecosystems and fishing infrastructure. In Montserrat, hurricane Hugo struck in 1989, resulting in eroded shorelines, damaged coral reefs and destruction to the island's fishing fleet. Hugo caused an estimated EC\$5.5 million (approximately US\$2 million) to Montserrat's fisheries sector, including damage to boats, buildings and fish pots. Following Hugo, several other tropical storms and hurricanes (including Hurricanes Luis in 1995, Georges in 1998, Lenny in 1999, Earl in 2010 and Maria in 2017) also occurred, contributing to the damage. The vulnerability of Montserrat's fisheries sector to climate related impacts is further exacerbated by the island's vulnerability to volcanic hazards. In 1995, the Soufriere Hills volcano, located to the south of the island, became active and erupted causing wide-spread destruction. The eruptions caused significant impacts to the island's wetlands and coral reefs. The long-term impacts of the eruption have placed increased pressure on Montserrat's remaining healthy marine ecosystems and subsequently increased the vulnerability of Montserrat's fisheries to climate variability and change.

² The Joint Nature Conservation Committee is the public body that advises the UK Government and devolved administrations on UK-wide and international nature conservation.

<http://jncc.defra.gov.uk/default.aspx?page=1729>

In Anguilla, hurricane Lenny brought torrential rains and immense tidal surges which led to the closure of many hotels for a year-long period (DFID, 2012). More recently, in 2017, hurricane Irma severely impacted the territory, with destruction to critical infrastructure. In the fishing sector, fisherfolk reported that, while some fishing vessels were able to be stored inland for protection, fish traps left in the sea were either destroyed or lost.

In 2012, needs assessments were led by the United Kingdom Department for International Development (DFID, 2012) on the two OTs. These assessments noted that in Anguilla, adequate climate adaptation for fisheries sector is constrained by inadequately skilled human resources and funding, while in Montserrat, the vulnerability of the fisheries sector to climate variability and change is compounded by low institutional capacity for climate change adaptation due to limitations in human and financial capacities (DFID, 2012).

4 Summary of findings and recommendations from the rapid institutional assessments

Below is a summary of key findings and recommendations from the institutional assessments that were conducted for Anguilla and Montserrat. The summary seeks to highlight the similarities and differences in the institutional environment in each island. More detailed reports for each assessment can be found in the individual country reports attached at Annex 1 (Anguilla) and Annex 2 (Montserrat).

- Vulnerability assessments indicate that climate change will have negative impacts on the fisheries sectors of both islands resulting in challenges to their food security and livelihoods. However, there is a recognition of the need to take steps to face the potential effects. In Montserrat, for example, through a consultative process, stakeholders from the public and private sectors and civil society have indicated the need to take actions that would facilitate climate adaptation of the sector. In Anguilla, fisheries stakeholders agreed that there is a need for more development and implementation of climate change adaptation measures.
- Whereas some adaptation actions have been identified and prioritised in various fisheries and fisheries-related planning documents for the fisheries sectors in both islands, implementation of these actions has been limited. Adequate implementation of adaptation actions for the sector identified in Montserrat's Sustainable Development Plan (2008-2020), have been limited by insufficient budgetary allocations. This could be due, in part, to other priorities of the government, including re-building the island's tourism sector and national infrastructure post the 1995 volcanic eruptions of the Soufriere Volcano, and Montserrat's limited access to external funds for climate adaptation actions given its status as an UKOT. In Anguilla, the climate change policy prioritised several sectors in which adaptive measures should be taken to cope with climate change. Although, the fisheries sector was not specifically identified as a priority, potential adaptation actions for other fisheries related sectors were included. Recommended actions to improve the institutional environment for climate adaptation, include development of a policy, legal framework and management plan for the fisheries sector, and easing pressure on the reef fishery by supporting the development of a pelagic fishery and/or aquaculture.
- In terms of coordinating adaptation planning, the situation is different on the two islands. In Montserrat, there are two functioning multi-stakeholder committees (an informal Oceans Governance Committee and the Project Steering Committee for the Blue Halo Montserrat Initiative) with objectives aligned to addressing climate change adaptation in the fisheries

sector, but they do not carry out such a function or have approved mandates to do so. In Anguilla, there is limited coordination among the agencies playing a role in climate change adaptation actions, where the Department of Environment remains the lead agency for dealing with climate change. However, governmental bodies of both islands are involved with inter-governmental agencies in developing plans to deal with climate change.

- Information management is an important function for adaptation to climate change, as access to adaptation-relevant data and information for fisheries stakeholders can help to increase resilience through evidence-based decision-making. Both islands demonstrated a need to strengthen their information management systems to sufficiently inform and support climate adaptation decision-making for their fisheries sectors. In Montserrat, for example, while catch and effort data are collected by the Fisheries and Ocean Resources Unit and stored in an electronic database, there is limited collection of other fisheries relevant data, including socio-economic data on the sector. Data collected by the Unit is also not readily accessible and shared via any information sharing platform, though it can be made available to stakeholders upon request. In Anguilla, basic data on fishing and fisher and vessel registration are collected and stored in a database. Sharing of information (reports, project information and relevant news) is facilitated through different platforms, including websites and social media. However, there is no focus on climate change and adaptation actions, and sharing of related information to relevant stakeholders is not done.
- Mainstreaming of climate change adaptation in fisheries policies would help to improve the integration of adaptation actions. Effective integration of climate change adaptation and disaster risk management in Montserrat’s fisheries sector is limited by the absence of a fisheries policy and a national fisheries management plan into which climate adaptation actions can be mainstreamed. Adaptation efforts for the sector are therefore primarily *ad hoc*. Actions to cope with climate change (guiding principles, policy measures and directives) are mainstreamed in Anguilla’s Climate Change Policy, which is aimed at promoting the development of a climate resilient society. The development and implementation of a sustainable fisheries management policy and a supportive legal framework are among the policy directives set out to increase the OT’s resilience to climate change as well as the preservation of its marine habitats. Also, education of key stakeholders about climate risk to coastal marine resources is another policy measure to be undertaken.

5 Recommendations

Given the above findings from the rapid institutional assessment, the following recommended actions set out in Table 1 are proposed to improve the institutional readiness for climate change adaptation in the fisheries sectors of the two UKOTs.

Table 1. Recommended actions to improve the institutional readiness for climate change adaptation in the fisheries sectors in Anguilla and Montserrat

Anguilla	Montserrat
<ul style="list-style-type: none"> • Create an inventory of past and ongoing adaptation actions for the sector to facilitate institutional memory 	<ul style="list-style-type: none"> • Finalise, approve and implement Montserrat’s Climate Change Adaptation Policy and Action Plan, and establish the

<ul style="list-style-type: none"> • Improve institutional collaboration within departments (Departments of Environment, Agriculture, Fisheries, Land and Surveys, Physical Planning, Disaster management) and with the civil society (fisherfolks association, Anguilla National Trust) to assist in building the resilience of the Fisheries sector to climate change. • Establish a “National Climate Change Committee” to improve the coordination of climate change actions, or include the departments which are managing climate change (Environment, Fisheries, Physical Planning, etc.) into the existing National Disaster Management Committee (NDMC), which brings together senior officials such as the Permanent Secretary, Deputy Governor, and private sector and civil society organisations. A Sub-committee on climate change could then be created under the NDMC, which already functions and meets regularly. • Improve the sharing of information between the different institutions which are dealing with climate change • Integrate climate change adaptation into the national fisheries policy and management plan. • Mainstream climate change adaptation into the National Environmental Management Strategy and Action Plan, which includes fisheries and fisheries related actions. 	<p>National Climate Change Council in keeping with its recommendation</p> <ul style="list-style-type: none"> • Identify opportunities for funding priority adaptation actions for the fisheries sector identified in Montserrat Sustainable Development Plan and Climate Change Policy and Action Plan • Create an inventory of past and ongoing adaptation actions for the sector to facilitate institutional memory • Develop, approve and implement a fisheries policy for Montserrat, using a participatory approach • Develop, approve and implement a national ecosystem-based fisheries management plan for Montserrat, using a participatory approach • Integrate climate change adaptation and disaster risk management into a fisheries policy and national fisheries management plan for Montserrat • Integrate climate change adaptation and disaster risk management into the Sustainable Ocean Policy being developed under the Blue Halo Initiative for Montserrat • Formalise the Oceans Governance Committee and include in its mandate the integration of climate adaptation in the fisheries sector, using an ecosystem-based approach. • Improve public access to information on adaptation planning and actions for the fisheries sector. • Assess barriers to the continuous monitoring of marine ecosystems and fisheries and fisheries related livelihoods and develop an action plan to address priority barriers.
--	--

6 Conclusion

The fisheries sectors of Anguilla and Montserrat have already experienced severe adverse impacts from climate change related and other disasters and are expected to be further impacted by climatic events. Low institutional capacity for climate adaptation has been a key challenge in each territory. However,

with adequate capacity building, including targeted technical and financial support, existing opportunities to strengthen the institutional capacity for climate change adaptation in the islands' fisheries sectors can be leveraged. Given their similarities, the countries would also benefit from cooperation through peer learning and support.



Darwin Project Reference No: DPLUS066

Climate change adaptation in the fisheries of Anguilla and Montserrat

Climate change adaptation of the fisheries sector in Anguilla

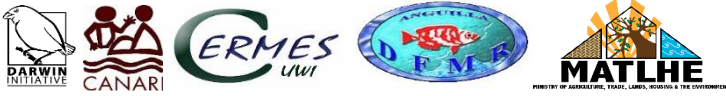
Institutional Assessment



September 2018

This publication should be cited as: Caribbean Natural Resources Institute (CANARI). 2018. Institutional assessment of climate change adaptation readiness of the fisheries sector in Anguilla. Prepared by Fardin, F., and Phillips, T. September 11, 2018. Barataria, Trinidad: CANARI.

Acknowledgements:



This assessment report is an output of the **Climate change adaptation in the fisheries of Anguilla and Montserrat** project which is being implemented by the Caribbean Natural Resources Institute (CANARI) in partnership with the Department of Fisheries and Marine Resources - Anguilla, Fisheries and Ocean Resources Unit – Montserrat, and the Centre for Resource Management and Environmental Studies of the University of the West Indies (UWI-CERMES). The project is funded by the Government of the United Kingdom through the Darwin Plus: Overseas Territories Environment and Climate Fund under the Darwin Initiative.

Disclaimer:

This publication has been produced by CANARI as an output of the Climate change adaptation in the fisheries of Anguilla and Montserrat project. However, the views expressed herein are those of the authors, and can therefore in no way be taken to reflect the official opinions of the Department of Fisheries and Marine Resources and the Darwin Plus: Overseas Territories Environment and Climate Fund under the Darwin Initiative.

Table of contents

Executive Summary.....	v
1 Introduction	1
2 Methodology.....	1
3 Anguilla – geography, governance and economy	2
4 Overview of Anguilla’s fisheries sector	2
4.1 Vulnerability of Anguilla’s fisheries sector to climate variability and change and other natural disasters	2
4.2 Capacity to adapt to climate variability and change.....	3
5 Assessment	5
5.1 Climate change vulnerability assessments for the fisheries sector	5
6 Prioritisation.....	9
7 Coordination	10
7.1 Coordination mechanisms for climate change adaptation in the fisheries sector	10
8 Information management.....	11
9 Mainstreaming.....	12
10 Summary of findings	12
11 Recommendations	13

List of acronyms and abbreviations

CANARI	Caribbean Natural Resources Institute
CARICOM	Caribbean Community
CCA	Climate Change Adaptation
CEP	United Nations Environment, Caribbean Environment Programme
CRFM	Caribbean Regional Fisheries Mechanism
DFID	Department for International Development
DFMR	Department of Fisheries and Marine Resources
EAF	Ecosystem-Approach to Fisheries
EU	European Union
FAC	Fisheries Advisory Committee
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
GEF	Global Environment Facility
NEMS	National Environmental Management Strategy and Action Plan
OECS	Organisation of Eastern Caribbean States
SIDS	Small Islands Developing States
UK	United Kingdom
UKOT	United Kingdom Overseas Territory
UWI-CERMES	Centre for Resource Management and Environmental Studies of the University of the West Indies

Executive Summary

Anguilla's fisheries sector contributes to livelihoods and national food security of the territory. It is also vulnerable to the impacts of climate variability and change. Increased sea surface temperatures, more intense storms and rising sea levels are expected to trigger a complex series of biophysical and socioeconomic impacts on fisheries. Mainstreaming climate change adaptation (CCA) in the fisheries sector is therefore crucial. However, a needs assessment for Anguilla, commissioned by the Department for International Development (DFID, 2012), showed that resilience activities are hampered by weak planning and low adaptive capacity.

The Caribbean Natural Resources Institute (CANARI) in partnership with the Department of Fisheries and Marine Resources – Anguilla, Fisheries and Ocean Resources Unit – Montserrat and the Centre for Resource Management and Environmental Studies of the University of the West Indies (UWI-CERMES) is implementing a Darwin Plus: Overseas Territories Environment and Climate Fund three-year (2017-2020) project- *Climate change adaptation in the fisheries of Anguilla and Montserrat*-. This project will contribute to building the capacity of these United Kingdom Overseas Territories (UKOTs) to mainstream CCA into fisheries governance and management, using an ecosystem approach to fisheries (EAF). It will deliver enhanced stewardship of the resource and livelihood benefits. One of the key activities under the project was to conduct rapid needs assessments of institutional readiness for CCA in the fisheries sectors in both UKOTs. The institutional assessment for Anguilla found that:

- Vulnerability assessments for Anguilla show that climate change has negative biophysical (marine environment) and socio economic (food security, livelihoods) impacts on the fisheries sector. Fisheries stakeholders agreed that there is a need for more development and implementation of CCA measures.
- Anguilla's climate change policy prioritised several sectors in which adaptive measures should be taken to cope with climate change. Although, the fisheries sector was not specifically identified as a priority, potential adaptation actions for other fisheries related sectors were included. Recommended actions to improve the institutional environment for climate adaptation, include development of a policy, legal framework and management plan for the fisheries sector, and easing pressure on the reef fishery by supporting the development of a pelagic fishery and/or aquaculture. The Fisheries Development Plan suggests that stricter guidelines for coastal developments should be developed to reduce the potential, negative impacts of climate change on these critical marine habitats.
- Although different government agencies and non-governmental organisations play a role in taking CCA actions, there is inadequate coordination between these organisations. The Department of Environment remains the lead agency for dealing with climate change. At a regional level, the DFMR of Anguilla is involved with inter-governmental agencies in developing plans to deal with climate change, as it relates to the coastal resources and fisheries.
- Data and information are collected by the DFMR and stored in a database, including fisher and vessel registry. Sharing of data and information is facilitated through different platforms, including websites and social media, where reports, project information and relevant news are provided.
- CCA actions are mainstreamed in Anguilla's Climate Change Policy, with acknowledgement that it should be integrated in the Anguilla Fisheries Development Plan, to increase the island's resilience to climate change as well as the preservation of Anguilla's marine habitats.

The institutional environment could be strengthened through various actions, including the improvement of coordination between the different institutions which deal with climate change impacts, and the creation of a climate change body such as a “National Climate Change Committee”.

1 Introduction

Anguilla's fisheries sector contributes to livelihoods and national food security of the territory. It is also vulnerable to the impacts of climate variability and change. Increased sea surface temperatures, more intense storms and rising sea levels are expected to trigger a complex series of biophysical and socioeconomic impacts on fisheries. Mainstreaming CCA in the fisheries sector is therefore crucial. However, a needs assessment for Anguilla, commissioned by the Department for International Development (DFID, 2012), showed that resilience activities are hampered by weak planning and low adaptive capacity.

The Caribbean Natural Resources Institute (CANARI) in partnership with the Department of Fisheries and Marine Resources – Anguilla, Fisheries and Ocean Resources Unit – Montserrat and the Centre for Resource Management and Environmental Studies of the University of the West Indies (UWI-CERMES) is implementing a Darwin Plus: Overseas Territories Environment and Climate Fund three-year (2017-2020) project, *Climate change adaptation in the fisheries of Anguilla and Montserrat*. The project will contribute to building the capacity of these United Kingdom Overseas Territories (UKOTs) to mainstream CCA into fisheries governance and management, using an ecosystem approach to fisheries (EAF). This will deliver enhanced stewardship of the resource and livelihood benefits.

One of the key activities under the project is to conduct assessments in each UKOT to determine the institutional readiness of their respective fisheries sectors to adapt and reduce vulnerability to climate change. The institutional assessments complement participatory vulnerability assessments, that were also conducted in each UKOT.

This report presents the findings of the institutional assessment conducted for Anguilla, between December 2017 to March 2018.

2 Methodology

A rapid assessment of institutional readiness for CCA in the fisheries sector of Anguilla was conducted from December to February 2018. The assessment method included desk reviews and in-country interviews with key stakeholders. Desk reviews were conducted to inform the conduct of in-country interviews as well as to validate in-country interview findings (refer to Appendix 1 for documents reviewed as part of desk-study).

In-country interviews were conducted on February 20th and 21st, 2018, by CANARI in collaboration with the Department of Fisheries and Marine Resources (DFMR), with representatives from key agencies responsible for the environment, including coastal and marine management, agriculture, fisheries, disaster management, physical planning, land and surveys as well as fisherfolk and civil society organisations (CSOs). A list of stakeholders consulted during the in-country interviews is attached at Appendix 2.

The assessment used the World Resources Institute's Adaptation: Rapid Institutional Analysis (ARIA) toolkit to assess the quality of five critical functions for institutional readiness: 1) assessment, 2) prioritisation, 3) coordination, 4) information management, and 5) mainstreaming. Each function is defined by a set of indicators which gauge the existence of an institution or process. Each indicator is further defined by a set of qualities which describes key aspects of the institution or process that are

likely to lead to better CCA governance. Qualities are grouped under the following categories: capacity, transparency and participation, accountability and enforcement, and comprehensiveness.

3 Anguilla – geography, governance and economy

Anguilla is a British overseas territory, located in the Lesser Antilles in the Caribbean (18 15 N, 63 10 W). The territory consists of one main island, Anguilla, with a land area of 91 km² and several small uninhabited offshore islands and cays. Anguilla is a flat, low-lying island formed of coral and limestone, renowned for its beautiful beaches and coral reefs ecosystems. Its highest point is Crocus Hill at 73 m. The population of Anguilla is about 15,045, with a density of 167.2 persons per square kilometre (United Nations Department of Economic and Social Affairs, 2017).

Anguilla is a self-governing overseas territory of the UK, with a parliamentary democracy (House of Assembly) and a Chief minister as head of the government. The UK is represented by a Governor appointed by the British Crown. The territory is an associate member of the Caribbean Community (CARICOM) as well as the Organisation of Eastern Caribbean States (OECS).

With a GDP of USD 311 million, the economy of Anguilla depends mostly on tourism, offshore banking, fishing and remittances from emigrants (United Nations, 2016). Increased activity in the tourism industry, along with the development of the construction sector, has contributed to this economic growth (Central Intelligence Agency, 2018).

4 Overview of Anguilla’s fisheries sector

With an Exclusive Economic Zone (EEZ) of 85,800 km², fish production in Anguilla was estimated at 438.31 metric tonnes (mt), valued at EC 15614179.14, in 2014 (DFMR, 2018).

According to the 2017 DFMR licensing logs there are 68 licensed vessels and 92 licensed fishers, 4 of which are women, employed in direct production in the marine commercial capture fisheries. Four hundred and ninety-two persons are involved in other fisheries-dependent activities which make a total of 656 persons employed by the fishing sector. This represents approximately 10 per cent of the labour force. The economic contribution of the fisheries sector to Gross Domestic Product for Anguilla in 2014 was 1.96 % (CFRM, 2015).

Fishing remains small scale with most of the vessels being small boats (5 to 15 m) of wood or fibreglass open vessels, with only four trawlers of 14 m on the island. Most fishing activity occurs within the EEZ, and there is no inland freshwater fishing. Fisheries methods mostly include traps, handlines, rod and line, pole and line, spear gun, rigs, scuba, free diving, seine nets and long-lines (CRFM, 2013). There are approximately six landing sites in Anguilla with Island Harbour Bay being the main landing site. Aquaculture is still in the early stages of development.

The main commercial species targeted in Anguilla include Jacks/Scads, Sharks and mixed reef fish such as Hinds, Grunts, Parrotfish and Surgeonfish, Snappers, Tuna, Wahoo, Mahi Mahi, Caribbean Spiny Lobster, Spotted Spiny Lobster and the Queen Conch (DFMR, 2018). Currently the Lobster fishery (Caribbean Spiny Lobster) is the most profitable and demanding fishery (Gumbs et. al, no date).

Anguilla’s fisheries and tourism sectors are closely linked. For example, Anguilla’s lobster fishery is well developed with a high demand coming from the local tourism industry. Locally harvested lobsters are also exported to the neighbouring islands of St. Martin/St.Maarten for export to other Caribbean islands

and the European Union. More than an estimated 60% of fish products sold on island are local, and there is no importation of Caribbean Spiny Lobsters (DFMR, 2018).

Another major advancement that the hospitality industry afforded the fishing industry was an incentive to fish for large pelagics (e.g. Tuna, Wahoo, Blue Marlin and Mahi Mahi) (DFMR, 2018). However, unlike the lobster fishery, the local fishing industry is unable to fulfill the restaurant needs for pelagic fish; as a result many of them are imported (DFMR, 2018).

4.1 Vulnerability of Anguilla's fisheries sector to climate variability and change and other natural disasters

Anguilla's fisheries sector is vulnerable to climate change hazards, including tropical storms and hurricanes passing through or near to the island during the hurricane season. Between 1995 and 2010 Anguilla was hit by eight such events. These events have caused much damage to coastal resources due to strong winds, wave action and torrential rain. In 1999, Hurricane Lenny impacted the island with torrential rains and major tidal surges. Inland areas were flooded to depths of up to 15 feet, including the capital, The Valley. Many hotels were closed for a year which affected tourism-dependent livelihoods (DFID, 2012). More recently, Hurricane Irma impacted Anguilla in 2017 including destruction to critical infrastructure. The DFMR reported that all of the landing port facilities such as the wharfs were damaged and as of April 2018, have not yet been repaired (DFMR, 2018). In the fishing sector, fisherfolk reported significant loss or damage to fishing vessels and fish traps.

Anguilla's fisheries sector is largely dependent on the tourism industry (contributing to 56% of GDP in 2010, DFID, 2012), as hotels and restaurants are the primary market outlets for the island's fisheries. Instability of these local markets, resulting from the impacts of bad weather during the hurricane season (usually from June to November), may increase the vulnerability of fisheries-dependent livelihoods.

A Vulnerability and Capacity Assessment of the Tourism Sector to Climate Change highlighted the vulnerability of major coastal settlements to sea level rise and inland flooding and concluded "it is quite evident that Anguilla's coastal and natural resources, as well as its people are likely to be at risks from sea level rise or flooding associated with climate change" (CCCCC, 2011). Most of the important hotel developments in Anguilla are located on the coast (Cap Juluca, Altamer, Four Seasons, Cuisinart, etc.), on relatively low-lying sand bars, which could face increasing erosion from storms, wave action and inundation. Erosion of reefs and sand-dunes is already considered one of the major threats facing Anguilla and could modify the salt pond and mangrove systems which play a critical role in mitigating flood risk. The flat shape of the island is also an important factor to consider, as longer-term sea level rise would be a critical threat to all systems.

4.2 Capacity to adapt to climate variability and change

Effective CCA in Anguilla's fisheries sector is constrained by inadequately skilled human resources and funding (DFID, 2012). However, strategies and actions that would contribute to institutional strengthening of the fisheries sector, including increasing the staffing of the Department of Fisheries and Marine Resources, have been identified in Anguilla's National Environmental Management Strategy and Action Plan (NEMS). Additional relevant strategies and actions outlined in the NEMS are included in Table 4.1.

Table 4.1. SGD Principles and related strategies and activities – National Environmental Management Strategy and Action Plan

Principle	Strategy	Activities
Principle 2: Integrate Social, Economic and Environmental Considerations into National Development Policies, Plans and Programmes.	Strategy 5: Adopt measures to restore environmentally degraded areas and to ensure the sustainable use of natural resources in a manner which recognises the intricate linkages between ecological systems in small island states, and between these systems and human activity, and which reflect the principles of island systems management.	Formulate criteria for and identification of environmentally degraded areas. Preparation of Special Area Plans or Local Area Plans to restore these areas, with assigned responsibilities, costs, and schedule.
Principle 3: Improve on Legal and Institutional Frameworks	Strategy 6: Clarify and rationalise, as appropriate, the roles of national, regional and international environmental agencies, networks and institutions to maximise efficiency and accountability in managing the environment and natural resources, and to reduce duplication and maximize cost effectiveness.	Define an effective institutional structure/mechanism with responsibilities and inter-relationships for coordinating environmental management in Anguilla.
	Strategy 7: Where necessary, create or strengthen existing national agencies with responsibility for environmental management to achieve, and be accountable for, effective management of the environment and natural resources.	Increase the staffing of the Physical Planning Department and Department of Fisheries and Marine Resources.
Principle 7: Foster Broad-based Environmental Education, Training and Awareness	Strategy 23: Present environmental information in a manner that is clear and understandable to everyone, and without the imposition of any undue financial burden on either the person requesting the information or the government.	Continue production of newsletters, booklets, signs, flyers, posters, jingles, brochures, school and community presentations, radio programmes, etc.

Principle 11: Ensure the Sustainable Use of Natural Resources	Strategy 32: Manage terrestrial, marine and atmospheric resources, organisms and ecosystems in an appropriate manner to obtain the optimum sustainable productivity, while maintaining the integrity of natural and ecological processes and inter-relationships between such systems and processes.	Develop and implement management plans for marine and terrestrial protected areas in association with the Department of Environment and the Anguilla National Trust
	Strategy 34: Work together, in collaboration with Civil Society, to promote and facilitate improved national capability for the management of natural resources.	Provide short-term in-house training for Civil Society Organisations to enhance their capacity to participate in the implementation of natural resources management projects.
Principle 15: Promote Cooperation in Science and Technology	Strategy 44: Promote scientific and technical cooperation in the field of environmental conservation and the sustainable use of natural resources.	Continue networking with professionals in regional and international agencies to improve local knowledge base and access to technical resources.

Findings from the rapid institutional assessment

5 Assessment

The assessment function has two indicators which seek to determine whether:

- i. there is an assessment of climate change vulnerability and impacts for the fisheries sector to help decision-makers identify adaptation needs, priorities and options;
- ii. there is an inventory of existing and past adaptation efforts for the fisheries sector to facilitate institutional memory of past and ongoing programmes, projects and lessons learned.

5.1 Climate change vulnerability assessments for the fisheries sector

A comprehensive assessment of climate change vulnerability in Anguilla’s fisheries sector has not yet been undertaken. However, a few multi-sectoral country-level documents (listed in Table 5.1) highlight climate vulnerability aspects to climate change related to the fisheries sector.

Regional level assessments of the impact of climate change on fisheries in the Caribbean Community (CARICOM) and small island developing states (SIDS) in the wider Caribbean region, including Anguilla, have also been undertaken; though these tend to look more broadly at the region being investigated rather than provide specific biophysical and socio-economic impacts at the country level. Table 5.1 provides a list of country and regional-level assessments that highlight impacts of climate change on the fisheries of Anguilla.

Table 5.1: List of country-level and regional assessments that highlight impacts of climate change on the fisheries of Anguilla.

Title of report	Year published	Assessment done by...	Type of organisation
Country level-assessments			
Addressing Climate Change by Promoting Low Carbon Climate Resilient Development in the UK Overseas Territories Needs Assessment: Anguilla	2012	Department for International Development (<i>assessment undertaken by Imc Worldwide on behalf of DFID</i>)	Government agency
Transforming to a Climate-Resilient, Energy Efficient and Low Carbon Economy: Anguilla's Climate Change Policy.	2012	Department of Environment – Government of Anguilla	Government agency
CARIBSAVE Climate Change Risk Profile for Anguilla	2012	The CARIBSAVE Partnership	Non-profit organisation
Future for Reefs for Anguilla Anguilla National Consultation Meeting	2013	Newcastle University and Government of Anguilla	Academic Institution as a part of the FORCE research team and Government Agencies
The Future of Reefs in a Changing Environment, Sandy Ground Community Initial Report	2013	Newcastle University	Academic Institution as a part of the FORCE research team and Government Agencies
The Future of Reefs in a Changing Environment, Island Harbour Community Initial Report	2013	Newcastle University and Government of Anguilla	Academic Institution as a part of the FORCE research team and Government Agencies
The Future of Reefs in a Changing Environment, West End Community Initial Report	2013	Newcastle University and Government of Anguilla	Academic Institution as a part of the FORCE research team and Government Agencies
Regional-level assessments			
Climate change adaptation and disaster risk management in fisheries and aquaculture in the CARICOM and	2015	CERMES in collaboration with CRFM and FAO	Academic institution and inter-governmental organisations

Title of report	Year published	Assessment done by...	Type of organisation
wider Caribbean region: Volume 1 – assessment report			
Policy Development and implementation of the Ecosystems Approach to Fisheries, CCA, and Disaster Risk Management in Small-scale Fisheries in Caribbean	2013	CRFM	Inter-governmental organisation
Climate change vulnerability in fisheries and aquaculture: A synthesis of six regional studies	2015	Food and Agriculture Organization of the United Nations (FAO)	Inter-governmental organisation
Vulnerability of the fisheries sector to climate change impacts in Small Island Developing States and the Wider Caribbean	2015	Centre for Resource Management and Environmental Studies (CERMES) of the University of the West Indies (UWI)	Academic institution
Ecosystem based approaches for CCA in Caribbean Small Island Developing States	2013	Caribbean Community Climate Change Centre (<i>assessment undertaken by Global Change and Vulnerability Unit, Switzerland and Coral Reef Ecology Group, Germany</i>)	Inter-governmental organisation
The Economics of Climate Change in the Caribbean	2011	United Nations Conference on Trade and Development (UNCTAD)	Inter-governmental organisation

Anguilla's draft Climate Change Policy (2012), which is not yet approved by the Government of Anguilla, highlights a variety of biophysical and vulnerability impacts. See Table 5.2 for a summary of impacts discussed in the policy related to the fisheries sector. The policy is the main national document that sets out guiding principles, goals, objectives and directives for CCA. Therefore, the policy has been analysed for comprehensiveness, transparency and participation in Table 5.3.

Table 5.2: Biophysical, socio-economic and health's impacts due to climate change related to the fisheries sector assessed in the Anguilla's Climate Change Policy

Biophysical	Socio-Economic	Health
<ul style="list-style-type: none"> Destruction of coral reefs because of bleaching from higher sea surface temperatures 	Loss of revenue due to climate change impacts on Anguilla's productive	Water borne diseases from eating fish and engaging in recreational activities in a

<ul style="list-style-type: none"> • Decrease in nearshore fish stocks, due to loss of important nourishing systems like sea grass beds, mangroves and coral reefs • Decrease in deep water fish stocks because of changes in sea temperature • A scarcity of food crops and fish due to the adverse effects on sectors such as agriculture and fisheries. • Loss of mangroves and wetlands in areas where coastal topography, mangrove systems, and coastal infrastructure do not allow sedimentation to keep pace with rising sea levels. 	sector (Tourism, Fishing, Agriculture)	contaminated and warmer sea
---	--	-----------------------------

Table 5.3: Analysis of the Anguilla’s Climate Change Policy for comprehensiveness, transparency and participation

Qualities of the indicator	Description of quality	Status of quality [Yes, No, Limited, Not Applicable (N/A)]
Comprehensiveness	The assessment includes both socioeconomic, health and biophysical aspects of vulnerability and impacts	Yes –A description of the factors assessed are provided in Table 5.2.
Transparency & Participation	Assessment methodology is made transparent	<p>Yes- The Climate Change Policy is the product of national consultations conducted from 2008 to 2010, funded by the United Kingdom Department for International Development (DFID), and managed by the Caribbean Community Climate Change Centre (CCCCC).</p> <p>During the interviews by CANARI in February 2018, some stakeholders confirmed that they were consulted in the development of the policy</p>
Transparency & Participation	Broad set of stakeholders were engaged in the assessment	Limited- Whereas national consultations have been held, there would appear to be no documentation of the different stakeholders and organisations who took part in the consultations within the policy document.

6 Prioritisation

6.1 *Process for prioritising adaptation activities in the fisheries sector*

The prioritisation function has two indicators which seek to determine whether:

- i. there is a process for prioritising adaptation activities in the fisheries sector;
- ii. there is a budgetary process to channel finance to adaptation institutions or initiatives for the fisheries sector.

Formal adaptation priorities, specifically for the fisheries sector in Anguilla have not been developed yet. However, adaptive measures related to the fisheries sector have been identified in several national planning documents. For example, priority issues related to CCA in the fisheries sector are identified in the Anguilla's draft Climate Change Policy under the following policy directives:

- Coastal and Marine Resources
- Tourism Sector
- Terrestrial Resources and Biodiversity
- Agriculture and Food Security
- Human Health, Wellbeing, Quality of Life and Economic Growth
- Finance and Insurance Sector
- Water Resources
- Energy Security
- Vulnerable Communities and Critical Infrastructure
- Private Sector

Within these different policy directives, a range of potential adaptation measures across the fisheries sector can be summarised as follows:

Policy:

- development and implementation of a sustainable fisheries policy and a supportive legal framework.

Planning:

- development of a fisheries and marine resources management plan, associating livelihoods and conservation concern.
- support of the Department of Fisheries and Marine Resources, Department of Environment, Department of Physical Planning to jointly develop and implement a coastal zone management plan.

Technical support to fisherfolks:

- supporting the development of new fishery away from reef fishing towards pelagic or aquaculture.

Other externally led studies have also suggested adaptation priorities within the fisheries sector. For example, the CARIBSAVE Climate Change Risk Atlas (CCCRA) for Anguilla suggested that assessments on

the potential impacts on fishing, fish processing, trade and fisheries technical support services related to artisanal fisheries should be carried out, as well as the establishment of marine protected areas (MPAs).

Anguilla's draft Climate Change Policy notes that it was developed through national consultations, conducted from 2008 to 2010, however more detailed information on the process for stakeholder engagement (e.g. consultative methods utilised, stakeholder lists, etc.) are not provided in the policy. During the interviews by CANARI in February 2018, some stakeholders confirmed that they were consulted in the development of the policy.

6.2 Budgetary processes for financing climate adaptation actions

Budgets in Anguilla are funded through capital revenue. Additionally, the DFMR generates income from moorings, licenses and permits, however this revenue is not sufficient to cover the operation of the Department.

The decision for funding prioritisation comes directly from the main ministries and is supported by its respective departments through their Permanent Secretaries. A committee pools together the various projects to prioritise them and the Ministry of Finance then makes the final decision.

During the interviews it was reported that Anguilla has limited access to global funding facilities for CCA, in part, because of its status as a UK Overseas Territory. Moreover, there is limited place for adaptation initiatives in the annual budget of the DFMR and budget allocations are not sufficient to enable adaptation activities to proceed according to plans.

DFID recommended the incorporation of climate change risks into the national budgeting process and the completion a cost benefit analysis of costs of inaction versus costs of action to be annually presented in the budget (DFID, 2012).

7 Coordination

The coordination function has one indicator which seeks to determine whether adaptation efforts for the fisheries sector are being coordinated at the national level.

7.1 Coordination mechanisms for climate change adaptation in the fisheries sector

The Department of Fisheries and Marine Resources of Anguilla aims at sustainably managing and regulating the use of Anguilla's fisheries and marine resources, to ensure maximum economic and recreational benefit of the population of Anguilla.

According to the Fisheries Protection Act (2010), a Fisheries Advisory Committee (FAC) shall be set up to advise the Governor or the Minister (as the case may be) on the exercise of their respective functions under the Act and these Regulations and as to the management and development of fisheries.

The FAC should include:

- the Chief Fisheries Officer (who shall be chair)
- five other members appointed by the Governor by notice published in the Gazette, named for 3 years. These members will be from different institutions and should assist in coordination for climate change actions if they were to be developed.

One of the outcomes of the ECCAC project of the CCCCC was the establishment of National Climate Change Committees in each of the Caribbean UKOTs. However, there is currently no committee dealing

with climate change issues in Anguilla. The establishment of this type of institutional body would have allowed and improved the coordination of activities regarding climate change and potentially dedicated to the fisheries sector.

Different government agencies and NGOs play a role in managing the effects of climate change:

- the Department of Environment (DoE);
- the Department of Fisheries and Marine Resources (DFMR);
- the Physical Planning Department (PPD);
- the Department of Disaster Management and;
- the Anguilla National Trust.

The lead department on climate change remains the DoE (DFID, 2012). During the interviews, the identified activities related to climate change were noted as usually being developed and implemented by the DoE. Other departments are also involved, including Public Works, the water and energy utility companies (GoA Water Authority and Anglec).

At the country-level, inadequate coordination was identified for climate change actions generally and for the fisheries sector specifically. At a regional scale however, Anguilla's fisheries sector is represented on inter-governmental bodies where strategies to deal with climate variability impacts such as natural disasters or new environmental issues including for the fisheries sector, are being developed. These organisations include:

- Organisation of Eastern Caribbean States (OECS)
- CARICOM
- Caribbean Regional Fisheries Mechanism (CRFM)
- Caribbean Environment Programme (CEP)
- Association of the Overseas Countries and Territories of the European Union

For example, the CRFM and UNEP-CEP developed strategies for lionfish control and for the management of sargassum. The CRFM is currently developing a Draft Protocol to Integrate Climate Change Adaptation and Disaster Risk Management in Fisheries and Aquaculture into the CARICOM Common Fisheries Policy.

8 Information management

The information management function has two indicators which seek to determine whether

- i. actors in the fisheries sector have access to adaptation-relevant information;
- ii. there is a platform for the exchange of climate information that includes the fisheries sector.

Effective climate adaptation planning for the fisheries sector should be evidence-based and include qualitative and quantitative information from a range of sources. Data and information in the following areas would facilitate effective adaptation planning for the sector:

- Bio-physical factors (including changes in sea-surface temperature, sea-level and fish abundance and distribution, ecosystem (coral reefs, seagrass beds, mangroves etc.) health and functioning)
- Socio-economic factors (employment, income, social capital)

- Institutional capacity
- Infrastructural capacity
- Damage and losses due to weather and climate-related disasters.

Data and information are collected by the DFMR and stored in databases, including fisher and vessel registry. Until 2014, Anguilla was the only CRFM Member States whose fish catch and effort data were not electronically shared with the regional organisation.

The DFMR is sharing information (such as reports) online through a dedicated page on the website of the Government of Anguilla. They are also active on social media, with a Facebook page updated with information about current projects and relevant news.

Information is also shared with the population for upcoming arrivals of Sargassum seaweed on the shores of the island, and therefore alert fishermen, in case the amount of Sargassum is important, for them to avoid being at risk on the sea with their vessels.

Outreach and information dissemination have been identified as one of the Strategy (Strategy 23 in Table 4.1) to be implemented in the National Environmental Management Strategy and Action Plan, and these should also be improved for the fisheries sector.

9 Mainstreaming

The mainstreaming function has two indicators which seek to determine whether:

- there are processes or procedures for integrating climate change risk and adaptation into projects or sectoral planning;
- the institution(s) tasked with prioritisation and coordination have identified barriers for adaptation at the priority area level.

The existence of a Climate Change Policy is a good indicator to the importance of mainstreaming of climate change into the country policy. However, as noted above, only a draft policy exists for Anguilla.

The Anguilla Fisheries Development Plan (2015), which operationalises the national fisheries policy, does seek to mainstream climate change and disaster considerations to an extent. Its general objective is the diversification of Anguilla's economy through a sustainable use of the fisheries resources and the creation of a management plan for existing and potential fisheries. This objective aims to increase resilience to climate change as well as the preservation of Anguilla's marine habitats. The Fisheries Development Plan includes key steps that need to be taken, such as the reduction of fishing on coral reefs, and the development of guidelines for coastal developments to reduce the potential, negative impacts of climate change on these critical marine habitats.

10 Summary of findings

Vulnerability assessments for Anguilla show that climate change currently has negative biophysical (marine environment) and socio economic (food security, livelihoods) impacts on the fisheries sector. Fisheries stakeholders agreed that there is a need for more development and implementation of adaptive measures regarding climate change.

Anguilla's draft Climate Change Policy has prioritised several sectors where adaptive measures should be taken to cope with climate change. Although, the fisheries sector was not specifically identified as a

priority, potential adaptation from other fisheries related sectors were included. Recommended actions to improve the institutional environment for climate adaptation include development of a policy, legal framework and management plan for the fisheries sector, supporting the development of appropriate fishery techniques away from reef fishing towards pelagic or aquaculture.

Although, different government agencies and CSOs play a role in managing the effects of climate change, there is inadequate coordination between these organisations. The Department of Environment is the lead agency for dealing with climate change. At a regional level, the DFMR of Anguilla is involved with inter-governmental agencies in developing plans to deal with climate change.

Data and information are collected by the DFMR and stored in a database, including fisher and vessel registry. Sharing of data and information are facilitated through different platforms including websites and social media where reports, project information and relevant news are updated.

CCA actions are mainstreamed in Anguilla's draft Climate Change Policy, with acknowledgement that it should be integrated in the Anguilla Fisheries Development Plan, to increase resilience to climate change as well as the preservation of Anguilla's marine habitats.

11 Recommendations

Given the above findings from the rapid institutional assessment, the following actions are recommended to improve the institutional readiness for CCA in Anguilla's fisheries sector:

- Create an inventory of past and ongoing adaptation actions for the sector to facilitate institutional memory
- Strengthen institutions and partnerships for improved collaboration amongst departments (e.g. Departments of Environment, Agriculture, Fisheries, Land & Surveys, Physical Planning, Disaster management) and with CSOs (e.g. Anguilla Fisherfolk association, Anguilla National Trust). This would enable a more integrated, cross-sectoral approach to building the resilience of the fisheries sector to climate change.
- Create a climate change body such as a National Climate Change Committee to improve the coordination of climate change actions or include the departments which are managing climate change (Environment, Fisheries, Physical Planning, etc.) into the existing National Disaster Management Committee (NDMC) that brings together senior officials such as the Permanent Secretary, Deputy Governor, private sector and CSOs. A working group on climate change could then be created under the NDMC which already functions and meets regularly.
- Improve the sharing of information between the different institutions which are dealing with climate change.
- Integrate CCA measures into the national fisheries management plan and fisheries policy.
- Mainstream CCA into the National Environmental Management Strategy and Action Plan.

APPENDIX 1

Documents reviewed for desk-study:

Caribbean Natural Resources Institute (CANARI). 2018. *Report on the assessment of vulnerability to climate change in the Anguilla and Montserrat fisheries sector: Anguilla country report*. Prepared by Granderson, A., Ramkissoon, C., Jehu, A. and Phillips, T. August 30, 2018. Barataria, Trinidad: CANARI.

CRFM (2015). CRFM Statistic and Information Report - 2014. 78 pp. Belize., St Vincent and the Grenadines

CRFM (2013). Climate Change Adaptation and Disaster Risk. Management in Fisheries and Aquaculture in the CARICOM Region. Volume 2 – Regional Strategy and Action Plan. CRFM Technical & Advisory Document, No. 2013 / 8. 29 p.

Department for International Development (DFID). (2012). *Addressing Climate Change by Promoting Low Carbon Climate Resilient Development in the UK Overseas Territories, Needs Assessment: Anguilla*.

Department of Environment – Government of Anguilla. (2005). *National Environmental Management Strategy and Action Plan (NEMS)*. Anguilla

Department of Environment – Government of Anguilla (2012). *Transforming to a Climate-Resilient, Energy Efficient and Low Carbon Economy: Anguilla's Climate Change Policy*. Anguilla

Department of Fisheries and Marine Resources (DFMR) – Government of Anguilla. (2000). *REVISED STATUTES OF ANGUILLA CHAPTER F40: Fisheries Protection Act, R.S.A. c. F40*

Department of Fisheries and Marine Resources (DFMR) – Government of Anguilla. (2010). *REVISED STATUTES OF ANGUILLA CHAPTER F40: Fisheries Protection Regulation R.R.A. F40-1*

Department of Fisheries and Marine Resources (DFMR) – Government of Anguilla. (2015). *ANGUILLA FISHERIES DEVELOPMENT PLAN 2015- 2025*

Department of Fisheries and Marine Resources (DFMR)- Government of Anguilla (2018). Caribbean Regional Fisheries Mechanism National Report for Anguilla 2017

Ramdeen, R., Zyllich, K., & Zeller, D. (2014). *Reconstruction of total marine fisheries catches for Anguilla (1950-2010)*. Sea Around Us, Fisheries Centre, University of British Columbia, Canada

Simpson, M. C., Clarke, J. F., Scott, D. J., New, M., Karmalkar, A., Day, O. J., Taylor, M., Gossling, S., Wilson, M., Chadee, D., Stager, H., Waithe, R., Stewart, A., Georges, J., Hutchinson, N., Fields, N., Sim, R., Ruddy, M., Matthews, L., and Charles, S. (2012). *CARIBSAVE Climate Change Risk Atlas (CCCRA) - Anguilla*. DFID, AusAID and The CARIBSAVE Partnership, Barbados, West Indies

Ministry of Infrastructure, Communications, Utilities, and Housing (MICUH) - Government of Anguilla (2012). *Anguilla Renewable Energy Integration Project Final Report*. Anguilla

United Nations. (2016). *World Statistics Pocketbook*. New York, NY 10017, United States of America

United Nations Department of Economic and Social Affairs (UNDESA) (2017). *World Population Prospects: The 2017 Revision*. Population Division, UNDESA.

Website consulted:

Central Intelligence Agency, 2018. The World Factbook 2018. Retrieved March 2018 from:
<https://www.cia.gov/library/publications/the-world-factbook/index.html>.

CRFM. (2013). Anguilla: Quick Facts. Retrieved March 2018 from:
http://www.crfm.int/index.php?option=com_k2&view=item&id=43:anguilla&Itemid=286&highlight=WyJhbmd1aWxsYSJd

Department of Environment of Anguilla: <http://www.gov.ai/doe/>

Facebook page of DFMR: <https://www.facebook.com/Department-of-Fisheries-Marine-Resources-Anguilla-1432746530324893/>

Government of Anguilla: <http://www.gov.ai/department.php?id=3&dept=14>

APPENDIX 2

List of stakeholders interviewed during in-country institutional assessment

Name	Organisation	Position
William K. Vanterpool	Department of Agriculture	Director
Trenton Roch	Department of Agriculture	Horticultural officer
Dwight Carty	Department of Agriculture	Livestock officer
Clarissa Lloyd	Anguilla National Trust	Terrestrial and wetlands conservation officer
Farah Mukhida	Anguilla National Trust	Executive Director
Devon Carter	Anguilla National Trust	Research officer
Gilda Gumbs-Samuel	Anguilla Hotel & Tourism Association	Executive Director
Vincent Proctor	Department of Physical Planning	Principal planning officer
Sylvia Erni	Department of Physical Planning	Senior Planner
Stafford John	Department of Physical Planning	Senior Planner
Kerriol Lewis	Department of Lands & Survey	LIS Technician
Kristy Richardson	Department of Lands & Survey	Registrar of lands
Alma Gumbs	Department of Lands & Survey	Assistant registrar of lands
Leslie Jasen Hodge	Department of Lands & Survey	Director
Sherman Williams	Anguilla Air & Sea Ports Authority	CEO
Rawle Hazell	Maritime Affairs	Director of Construction & Housing
Hermia Henderson	Maritime Affairs	Clerical officer
Dallen Connor	Department of Environment	Coordinator
Carencia Rouse	Department of Environment	Coordinator
Sharmer Fleming	Department of Environment	Coordinator
C. Andre Samuel	Department of Environment	Director
Damian Barker	Department of Disaster Management	Deputy director

Alwyn Richardson	Department of Disaster Management	Programme officer
Susan Hodge	Department of Disaster Management	Programme officer, COPE
Aristo Richardson	Anguilla Fisherfolks Association	President
Randall Richardson	Department of Fisheries	Research officer
Tocumba Duncan	Department of Fisheries	Assistant fisheries officer
Chavez E. Edwards	Department of Fisheries	Fisheries officer
Orlando Salisbury	Department of Fisheries	Fisheries officer
Rhon A. Connor	Department of Fisheries	Acting director
Carlos Sosso	Department of Fisheries	Fisheries officer
Remon Johnson	Department of Fisheries	Fisheries officer



Darwin Reference No: DPLUS066 ref 4021

Climate change adaptation in the fisheries of Anguilla and Montserrat

Climate change adaptation of the fisheries sector in Montserrat

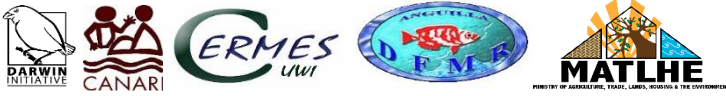
Institutional Assessment



September 2018

This publication should be cited as: Caribbean Natural Resources Institute (CANARI). 2018. Institutional assessment of climate change adaptation readiness of the fisheries sector in Montserrat. Prepared by Andrews, M., and Phillips, T. September 11, 2018. Barataria, Trinidad: CANARI.

Acknowledgements:



This assessment report is an output of the **Climate change adaptation in the fisheries of Anguilla and Montserrat** project (2017-2020) which is being implemented by the Caribbean Natural Resources Institute (CANARI) in partnership with the Department of Fisheries and Marine Resources - Anguilla, Fisheries and Ocean Resources Unit - Montserrat and the Centre for Resource Management and Environmental Studies of the University of the West Indies. (UWI-CERMES). The project is funded by the Government of the United Kingdom from the Darwin Plus: Overseas Territories Environment and Climate Fund under the Darwin Initiative.

Disclaimer:

This publication has been produced by CANARI as an output of the *Climate change adaptation in the fisheries of Anguilla and Montserrat* project. However, the views expressed herein are those of the authors, and can therefore in no way be taken to reflect the official opinions of the Ministry of Agriculture, Trade, Lands, Housing and the Environment and the Darwin Plus: Overseas Territories Environment and Climate Fund under the Darwin Initiative.

Table of Contents

Executive Summary.....	v
1 Introduction	1
2 Methodology.....	1
3 Montserrat – geography, governance and economy	2
4 Overview of Montserrat’s fisheries sector	2
4.1 Vulnerability of Montserrat’s fisheries sector to climate variability and change and other natural disasters.....	3
4.2 Capacity to adapt to climate variability and change.....	4
5 Assessment	6
5.1 Climate change vulnerability assessments for the fisheries sector	6
5.2 Inventory of adaptation efforts	9
6 Prioritisation.....	9
6.1 Process for prioritising adaptation activities in the fisheries sector	9
6.2 Budgetary processes for financing climate adaptation actions.....	11
7 Coordination	13
7.1 Stakeholder roles in managing the effects of climate change on Montserrat’s fisheries sector.....	13
7.2 Coordination mechanisms for climate change adaptation in the fisheries sector	15
8 Information management.....	17
9 Mainstreaming.....	19
10 Summary of findings	19
11 Recommendations	20

List of acronyms and abbreviations

CANARI	Caribbean Natural Resources Institute
CARICOM	Caribbean Community
CCA	Climate Change Adaptation
CEP	United Nations Environment, Caribbean Environment Programme
CIMH	Caribbean Institute for Meteorology and Hydrology
CRFM	Caribbean Regional Fisheries Mechanism
DFID	Department for International Development
EAF	Ecosystem-Approach to Fisheries
EU	European Union
FAC	Fisheries Advisory Committee
FAD	Fish Aggregating Device
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
GEF	Global Environment Facility
JNCC	Joint Nature Conservation Committee
MATLHE	Ministry of Agriculture, Trade, Lands, Housing and the Environment (Montserrat)
OECS	Organisation of Eastern Caribbean States
SIDS	Small Island Developing States
UK	United Kingdom
UKOT	United Kingdom Overseas Territory
UNCTAD	United Nations Conference on Trade and Development
UNFCCC	United Nations Framework Convention on Climate Change
UWI-CERMES	Centre for Resource Management and Environmental Studies of the University of the West Indies

Executive Summary

The fisheries sector in Montserrat contributes to livelihoods and national food security. Like many other Caribbean islands, the fisheries sector in Montserrat is vulnerable to the impacts of climate variability and change. Mainstreaming climate change adaptation (CCA) in the fisheries sector is therefore crucial. However, resilience activities in Montserrat are hampered by weak planning and low adaptive capacity.

The Caribbean Natural Resources Institute (CANARI) in partnership with the Fisheries and Ocean Resources Unit – Montserrat, Department of Fisheries and Marine Resources - Anguilla, and the Centre for Resource Management and Environmental Studies of the University of the West Indies (UWI-CERMES) is implementing a Darwin Plus: Overseas Territories Environment and Climate Fund three-year (2017-2020) project- *Climate change adaptation in the fisheries of Anguilla and Montserrat*- that will contribute to building the capacity of these United Kingdom Overseas Territories (UKOTs) to mainstream CCA into fisheries governance and management, using an ecosystem approach to fisheries (EAF). This will deliver enhanced stewardship of the resource and livelihood benefits. One of the key activities under the project was to conduct rapid needs assessments of institutional readiness for climate change adaptation in the fisheries sectors in both UKOTs. The institutional assessment for Montserrat found that:

- Vulnerability assessments for Montserrat indicate that climate change will have negative impacts on Montserrat's fisheries sector resulting in challenges to food security and livelihoods. Through a consultative process, stakeholders from the public, private and civil society sectors have indicated the need to take actions that would facilitate climate adaptation of the sector.
- Adaptation actions related to the fisheries sector have been identified in Montserrat's Sustainable Development Plan (2008-2020), but adequate implementation of these actions has been limited by insufficient budgetary allocations. This could be due in part to other priorities of the government, including re-building the tourism sector and national infrastructure post the 1995 volcanic eruptions of the Soufriere Volcano, and Montserrat's limited access to external funds for climate adaptation actions given its status as an UKOT.
- In terms of coordinating adaptation planning, there are two functioning multi-stakeholder committees whose objectives are sufficiently aligned to advise on climate change adaptation in the fisheries sector -an informal Oceans Governance Committee and the project Steering Committee for the Blue Halo Montserrat Initiative. However, neither of these committees currently serve such a function or have approved mandates to do so.
- Data and information to facilitate adaptation planning for the sector is also limited and not collected on a continuous basis. Access to data and information by stakeholders is constrained by the absence of an existing platform for stakeholders to access and exchange climate information that includes the fisheries sector or inventory of adaptation actions for the sector to facilitate assessment of impacts and lessons learned from past and ongoing projects, programmes and activities.
- Though acknowledged as a need in Montserrat's draft Climate Change Policy and Action plan, effective integration of climate change adaptation and disaster risk reduction in Montserrat's fisheries sector is limited by the absence of a fisheries policy and a National Fisheries Management Plan into which climate adaptation actions can be mainstreamed. Adaptation efforts for the sector are therefore primarily *ad hoc*.

The institutional environment can be strengthened by a number of key actions, including finalising and implementing Montserrat's Draft Climate Change Adaptation Policy and Action Plan; developing and integrating climate change adaptation and disaster risk management into a national fisheries policy and national fisheries management plan, using an ecosystem based approach; formalising the Oceans Governance Committee and entrusting the committee with the functions for climate adaptation planning for the fisheries sector.

1 Introduction

The fisheries sector in Montserrat contributes to livelihoods and national food security. Like many other Caribbean islands, the fisheries sector in Montserrat is vulnerable to the impacts of climate variability and change. Increased sea surface temperatures, more intense storms and rising sea levels are expected to trigger a complex series of biophysical and socioeconomic impacts on fisheries. Mainstreaming climate change adaptation (CCA) in the fisheries sector is therefore crucial. However, a needs assessment for Montserrat, commissioned by the Department for International Development (DFID, 2012), showed that resilience activities are hampered by weak planning and low adaptive capacity.

The Caribbean Natural Resources Institute (CANARI) in partnership with the Fisheries and Ocean Resources Unit – Montserrat, Department of Fisheries and Marine Resources - Anguilla, and the Centre for Resource Management and Environmental Studies of the University of the West Indies (UWI-CERMES) is implementing a Darwin Plus: Overseas Territories Environment and Climate Fund three-year (2017-2020) project- *Climate change adaptation in the fisheries of Anguilla and Montserrat*- that will contribute to building the capacity of these United Kingdom Overseas Territories (UKOTs) to mainstream CCA into fisheries governance and management, using an ecosystem approach to fisheries (EAF). This will deliver enhanced stewardship of the resource and livelihood benefits.

One of the key activities under the project is to conduct assessments in each UKOT to determine the institutional readiness of their respective fisheries sectors to adapt to and reduce vulnerability to climate change. The institutional assessments complement participatory vulnerability assessments, that were also conducted in each UKOT.

This report presents the main findings and recommendations of the institutional assessment that was conducted for Montserrat, during the period December – February 2018.

2 Methodology

A rapid assessment of institutional readiness for CCA in the fisheries sector of Montserrat was conducted from December- February 2018. The assessment method included desk reviews and in-country interviews with key stakeholders. Desk reviews were conducted to inform the conduct of in-country interviews as well as to validate in-country interview findings (refer to Appendix 1 for documents reviewed as part of desk-study).

In-country interviews were conducted on February 5th and 6th, 2018 by CANARI in collaboration with the Fisheries and Ocean Resources Unit, with representatives from key agencies responsible for the environment, agriculture, fisheries, coastal and marine management and finance, as well as fisherfolk and their organisations. A list of stakeholders consulted during the in-country interviews is attached at Appendix 2.

The assessment used the World Resources Institute’s Adaptation: [Rapid Institutional Analysis \(ARIA\) toolkit](#) to assess the quality of five critical functions for institutional readiness: 1) assessment, 2) prioritisation, 3) coordination, 4) information management, and 5) mainstreaming. Each function is defined by a set of indicators which gauge the existence of an institution or process. Each indicator is further defined by a set of qualities which describes key aspects of the institution or process that are likely to lead to better CCA governance. Qualities are grouped under the following categories: capacity, transparency and participation, accountability and enforcement, and comprehensiveness.

3 Montserrat – geography, governance and economy

Montserrat is a small mountainous volcanic island in the Lesser Antilles of the Eastern Caribbean with a population of 5,197. The island is located about 43 km southwest of Antigua and 50 km northwest of Guadeloupe. Montserrat includes 102 km² of land area and 40 km of coastline with a narrow coastal shelf. The island is formed from three volcanoes—Soufriere Hills, Centre Hills, and Silver Hill, the first of which is active. The terrain of Montserrat is generally steep, and the ocean depth increases quickly from the shoreline.

Montserrat is an internally self-governing overseas territory of the United Kingdom (UK). It has an elected legislature, and a Chief Minister with an appointed Executive Council of four ministers. The Chief Minister, Executive Council and four additional parliamentary representatives comprise the Legislative Council. A resident Governor represents the British crown.

Prior to the eruption of the Soufriere Hills volcano, which began in 1995 and resulted in long-term negative impacts on the country's population, environment and economy, tourism was the most significant contributor to Montserrat's economy. The island, however, is now significantly dependent on foreign aid from the UK government to cover its capital and recurrent budgets.

4 Overview of Montserrat's fisheries sector

The fisheries sector in Montserrat contributes to income, employment and food security. Fishing is generally small-scale and harvesting activities occur mainly in the subsistence and commercial capture fisheries. A 2017 National Ecosystem Assessment of Montserrat, commissioned by the Joint Nature Conservation Committee (JNCC)¹, reported that approximately 75 metric tonnes of fish are landed annually in Montserrat at a value of EC\$1.81 million (approximately US\$ 0.67 million) (A. Ponteen, *pers. comm*, September 25, 2018). The economic contribution of fishing to Gross Domestic Product (GDP) has been steadily increasing over the past few years in Montserrat, with estimates for 2010 being 0.26% of GDP and 2014, 0.36% (CRFM, 2014)². Approximately 2.5% of Montserrat's labour force, including about 101 fishers operating 37 fishing vessels, are employed in the marine capture fisheries (CRFM, 2014).

About 90% of the fishing activity in Montserrat occurs in the nearshore. Effort is focused on catch of shallow shelf and reef fish and coastal pelagics, with limited effort in deeper waters (Waitt Institute, 2015)³. Of the fish landed, 48% are reef fish, 46% are pelagic species and the remaining 6% are demersal species (Montserrat Fisheries Data, 1994-2012). Needlefish, known locally as garfish, is the most commonly landed species. Fish landing sites on the island include Isle's Bay, Bunkum Bay and Little Bay, the latter being the main landing site.

In developing the Montserrat National Climate Change Issues Paper (2010), stakeholders from the public, private and civil society sectors identified the fisheries sector as one of the key sectors of

¹ The Joint Nature Conservation Committee is the public body that advises the UK Government and devolved administrations on UK-wide and international nature conservation.
<http://jncc.defra.gov.uk/default.aspx?page=1729>

² CRFM 2014- Statistics and Information Report
http://www.crfm.int/images/documents/miscellaneous/Final_CRFM_Statistics_Information_Report_2014_2.pdf

³ WAITT, 2015 -Sustainable Fisheries and Coastal Zoning in Montserrat Legal and Institutional Assessment of Authorities & Approaches <http://waittinstitute.org/wp-content/uploads/2016/08/Sustainable-Fisheries-Coastal-Zoning-Montserrat-Legal-Framework.pdf>

economic, environmental, social and cultural importance that would be impacted by climate variability and change and that would subsequently benefit from the implementation of adaptation actions to ensure sustainable livelihoods, improved food security and protection of marine resources.

4.1 *Vulnerability of Montserrat's fisheries sector to climate variability and change and other natural disasters*

Montserrat's fisheries are vulnerable to a variety of natural disasters including those induced by climate variability and change. The island's fisheries have already been impacted by several major natural disasters which have caused damage to its marine ecosystems and fishing infrastructure. In 1989, for example, Hurricane Hugo struck Montserrat resulting in eroded shorelines, damaged coral reefs and destruction to the island's fishing fleet⁴. Hugo caused an estimated EC\$5.5 million (approximately US\$2 million) to Montserrat's fisheries sector, including damage to boats, buildings and fish pots⁵. Following Hugo, several other tropical storms and hurricanes (including Hurricanes Luis in 1995, Georges in 1998, Lenny in 1999, Earl in 2010 and Maria in 2017) also occurred, contributing to the damage.

In 1995, the Soufriere Hills volcano, located to the south of the island, became active and erupted causing wide-spread destruction. The eruptions caused significant impacts to the island's wetlands and coral reefs. Volcanic activity also destroyed the fisheries facilities at Plymouth (previously the main fish landing site on the island) and at Isles Bay. Following the eruptions, an exclusion zone was established across the southern half of the island and near shore environment.

Montserrat's Economic Growth Strategy and Delivery Plan (2017) noted that there was an 80% decline in the output from Montserrat's fisheries sector following the eruptions. The long-term impacts of the eruption have also placed increased pressure on Montserrat's remaining healthy marine ecosystems and subsequently increased the vulnerability of Montserrat's fisheries to climate variability and change. For example, the loss of local fishing grounds in the south due to volcanic activity intensified the use of the north reef system which has led to overfishing and some damage to the remaining reefs. Also, due to the destruction to the main landing site at Plymouth, caused by the eruptions, and its subsequent relocation to low-lying Carr's Bay/Little Bay area, fishing vessels have become more vulnerable to wave action from high tides and storm surges. Increased erosion in the Carr's Bay/Little Bay area caused by high tides and storm surges have resulted in the loss of beach area for hauling boats.

In developing Montserrat's Agricultural Strategy and Marketing Plan (2016-2021), fisheries stakeholders noted the need for the following actions related to CCA and disaster mitigation:

- assistance to remove fishing crafts from the water if storms and hurricanes threaten Montserrat;
- safe harbour for fishing vessels;
- replacement of equipment damaged through natural disasters;
- protection for the marine environment; and
- incentives for production (subsidies) including aquaculture.

The recommended actions in the Agricultural Strategy and Marketing Plan were further supported by the climate adaptation priorities identified by stakeholders during the participatory vulnerability assessment for Montserrat undertaken as part of the *Climate change adaptation in the fisheries of*

⁴ Montserrat National Environmental Action Plan ,May 1994

<http://documents.worldbank.org/curated/en/555311468757013926/text/multi-page.txt>

⁵ Caribbean Disaster News, January 1990 <http://www.islandvulnerability.org/docs/PCDPPP1989CDN19.pdf>

Anguilla and Montserrat project. Recommended actions to enable fisherfolk and the fisheries sector to adapt to climate change based on the findings of the participatory vulnerability assessment included to:

- **Promote participatory fisheries data collection and monitoring** by directly engaging fisherfolk in collecting data and monitoring changes in the coastal and marine environment.
- Put measures in place to **reduce other existing stressors affecting fisheries**. In particular, implement pro-active plans to:
 - address coastal and marine pollution from land-based sources (e.g. garbage originating from ghauts flowing into the sea)
 - address alien invasive species (e.g. lionfish)
- **Promote public awareness and education on climate change** relevant to the fisheries sector.
- **Deploy artificial reefs and Fish Aggregating Devices (FADs)** as measures to adapt and offset habitat changes expected under climate scenarios for the Caribbean.
- Explore **measures to climate proof and protect fisheries assets** e.g. fish landing site in Little Bay from rough seas, or to address possible sea level rise impacts and coastline changes due to erosion or accretion.
- **Adopt a more holistic and integrated approach to fisheries management**, such as integrated coastal zone management (ICZM) or EAF, which recognises land-sea connections and relationships critical for fisheries in a small island context, and that can help address the limitations and difficulties associated with narrow sectoral approaches.

4.2 Capacity to adapt to climate variability and change

The vulnerability of Montserrat's fisheries sector to climate variability and change is compounded by low institutional capacity for CCA. Needs assessments conducted by DFID in 2012 highlighted limitations in human and financial capacities, that are impeding effective adaptation of the fisheries sector to climate variability and change. This was also an important finding highlighted in the report of the participatory vulnerability assessment conducted under the *Climate change adaptation in the fisheries of Anguilla and Montserrat* project, which noted the need for institutional strengthening of the fisheries sector in a few key areas including:

- revising the Fisheries Act of 2002 and Fisheries Regulations of 2009 as they provide limited authority for effective enforcement and implementation to ensure sustainable utilisation of fisheries and conservation of coastal and marine resources;
- developing and implementing a National Fisheries Management Plan;
- improving research and monitoring of fish stocks; and
- conducting sector specific vulnerability assessments.

The need for strengthened institutional capacity across all sectors to adapt to climate variability and change and mitigate disasters at the national level is recognised under Strategic Goal 3 "Environmental Management and Disaster Mitigation" of Montserrat's Sustainable Development Plan (2008-2020), which highlights the following strategic outcomes:

- Development of efficient and effective governance structures for environmental management and disaster mitigation, with the required policies, legislation and regulations developed and enforced
- Integration of environmental issues and disaster risk management principles into economic, social and physical planning, and decision making

- Strengthened capacity of the organisations with the responsibility for educating the general public, and implementing and enforcing environmental management and disaster mitigation policies, legislation and plans
- Improved disaster mitigation and response capability by building the capacity of emergency response agencies, other state agencies and facilities, as well as capacity at the community level

The need for strengthened institutional capacity at the fisheries sectoral level, including improved participation of fisherfolk in governance at the national level and improved data management to facilitate decision-making, is also highlighted under Goals 3.1-3.4 of Montserrat’s Agricultural Strategy and Marketing Plan (2016-2021). The goals and the relevant associated objectives are listed in Table 4.1.

Table 4.1: Goals and relevant associated objectives in Montserrat’s Agricultural Strategy and Marketing Plan (2016-2021) that identify the need for strengthened institutional capacity at the fisheries sectoral level

Goal	Objectives
Goal 3.1 Expand and modernize infrastructure projects and capacity building programmes for the management of fisheries and ocean resources	3.1.3 Continually coordinate administrative arrangements for fishers to participate in decision-making in relevant local, regional and international fora. 3.1.4 Improve collaboration with local, regional and international organisations to support the management and governance of ocean resources.
Goal 3.2 Strengthen the Fisheries Unit’s capacity to execute its mandate and deliver services	3.2.1 Provide opportunities for targeted professional development for fisheries staff. 3.2.2 Provide priority tools and equipment critically needed to support ocean resources and fisheries management. 3.2.3 Upgrade the current fisheries and ocean resources data management system.
Goal 3.3 Modernise the legal framework for the management and protection of the Fisheries and Ocean Resources sub-sector	3.3.1 Revise and update fisheries and ocean resources, legislation and regulations in accordance with regional and international standards and obligations. 3.3.2 Monitor local changes in the ocean environment attributed to climate change.
Goal 3.4 Collaborate with stakeholders and strategic partners to promote increased consumption of local fish and other marine products	3.4.1 Provide technical support to fishers for strengthening the fisheries association and cooperatives.

Findings from the rapid institutional assessment

5 Assessment

The assessment function has two indicators which seek to determine whether:

- i. there is an assessment of climate change vulnerability and impacts for the fisheries sector to help decision-makers identify adaptation needs, priorities and options;
- ii. there is an inventory of existing and past adaptation efforts for the fisheries sector to facilitate institutional memory of past and ongoing programmes, projects and lessons learned.

5.1 Climate change vulnerability assessments for the fisheries sector

Country-level assessments that highlight the vulnerability of Montserrat's fisheries sector to climate variability have been undertaken. Regional level assessments of the impact of climate change on fisheries in the Caribbean Community (CARICOM) and small island developing states (SIDS) in the Wider Caribbean region, which include Montserrat, have also been conducted though these tend to look more broadly at the region being investigated rather than provide specific biophysical and socio-economic impacts at the country level. Table 5.1 provides a list of country and regional-level assessments that highlight impacts of climate change on the fisheries of Montserrat.

Of the assessments listed in Table 5.1, the Montserrat National Climate Change Issues Paper (2010) would appear to be most significant in terms of guiding decision making for national CCA since it was specifically prepared to inform the development of a CCA policy and action plan for Montserrat (Montserrat's climate change policy and action plan was in draft up until the time this report was being prepared). The Issues Paper was therefore selected to be analysed for comprehensiveness, transparency and participation, refer to Table 5.2.

Table 5.1: List of country-level and regional assessments that highlight impacts of climate change on the fisheries of Montserrat.

Title of report	Year published	Assessment done by...	Type of organisation
Country level-assessments			
Addressing Climate Change by Promoting Low Carbon Climate Resilient Development in the UK Overseas Territories Needs Assessment: Montserrat	2012	Department for International Development (<i>assessment undertaken by iMC Worldwide on behalf of Department for International Development</i>)	Government agency
Montserrat National Climate Change Issues Paper Towards the Formulation of a National Climate Change (Adaptation) Policy and Action Plan	2010	Department of Environment Ministry of Agriculture, Land, Housing and the Environment	Government agency
Integrated Vulnerability Assessment of Montserrat	2003	The Government of Montserrat (<i>assessment undertaken by Smith Warner International on behalf of the</i>	Government agency

Title of report	Year published	Assessment done by...	Type of organisation
		<i>Government of Montserrat)</i>	
Vulnerability and Capacity ⁶ Assessment for Little Bay Development and Environs for Montserrat	-	-	-
Regional-level assessments			
Climate change adaptation and disaster risk management in fisheries and aquaculture in the CARICOM and wider Caribbean region: Volume 1 – assessment report	2015	Centre for Resource Management of the University of the West Indies (UWI-CERMES) in collaboration with the Caribbean Regional Fisheries Mechanism (CRFM) and Food and Agriculture Organization of the United Nations (FAO)	Academic institution
Climate change vulnerability in fisheries and aquaculture: A synthesis of six regional studies	2015	Food and Agriculture Organization of the United Nations (FAO)	Inter-governmental organisation
Vulnerability of the fisheries sector to climate change impacts in Small Island Developing States and the Wider Caribbean	2015	Centre for Resource Management and Environmental Studies (CERMES) of the University of the West Indies (UWI)	Academic institution
Ecosystem based approaches for CCA in Caribbean Small Island Developing States	2013	Caribbean Community Climate Change Centre (<i>assessment undertaken by Global Change and Vulnerability Unit, Switzerland and Coral Reef Ecology Group, Germany</i>)	Inter-governmental organisation
The Economics of Climate Change in the Caribbean in the Caribbean	2011	United Nations Conference on Trade and Development (UNCTAD)	Inter-governmental organisation

Table 5.2: Analysis of the Montserrat National Climate Change Issues Paper for comprehensiveness, transparency and participation

Qualities of the indicator	Description of quality	Status of quality [Yes, No, Limited, Not Applicable (N/A)]
----------------------------	------------------------	--

⁶ Information on the author and date of publication to be confirmed.

Comprehensiveness	The assessment includes both socioeconomic and biophysical aspects of vulnerability and impacts	Yes – The assessment explores the potential impacts of climate change on key environmental and socio-economic factors related to the fisheries sector in Montserrat including: beach and shoreline stability; coastal and marine ecosystems; food and nutrition; infrastructure and human health. A description of the factors assessed are provided in Table 5.3.
Transparency & Participation	Assessment methodology is made transparent	Limited - A description of the method used to inform the preparation of the Issues Paper is not provided. The author notes however, that stakeholders were consulted in its preparation. It would also appear, based on the documents listed in the reference section of the report, that a variety of previously undertaken vulnerability assessments and ecological and socio-economic studies informed the preparation of the Issues Paper. The Issues Paper is accessible to stakeholders online though not via any Government of Montserrat Ministry websites.
Transparency & Participation	Broad set of stakeholders were engaged in assessment development	Limited - The Issues Paper notes that a broad set of stakeholders from the private, public and civil society sectors were consulted in its development, however specific information identifying who the stakeholders were (e.g. names, organisations) is not documented in the report.

Table 5.3: Biophysical and socio-economic impacts of climate change for Montserrat’s fisheries sector assessed in the Montserrat National Climate Change Issues Paper

Biophysical impacts	Socio-economic impacts
<ul style="list-style-type: none"> • Higher sea temperatures • Sea-level rise • Increased storm intensity • Coral bleaching, leading to coral decline and death • Migration of ocean pelagics to temperate latitudes to escape the warm Caribbean Sea • Proliferation of algal blooms leading to increased occurrence of <i>ciguatera</i> • Inundation of coastal wetlands and beach erosion • Damage to coral reefs and seagrass beds • Loss of habitat for fish, turtles and conch • Loss of mangroves leading to lower fish stocks and contamination from land-based pollutants 	<ul style="list-style-type: none"> • Smaller catches landed per effort • Decline in demand for fish products due to fish poisoning from ciguatera as a result of a proliferation of algal blooms • Loss of protection for beached boats during storms • Disruption of beach-seine fishing methods • Severe fish poisoning as a result of proliferation of algal bloom leading to increased occurrence of ciguatera

- | | |
|---|--|
| <ul style="list-style-type: none"> • Loss of fish breeding and harvesting grounds leading to lower fish stocks | |
|---|--|

5.2 Inventory of adaptation efforts

An inventory of climate adaptation efforts by the public, private and civil society sectors in Montserrat does not exist at the national or fisheries sectoral levels. Regarding public sector efforts, information on programmes, projects and activities often lie with different ministries and departments, and even in these instances seldom in a centralised location for easy identification. The absence of an inventory is a significant gap in decision support for CCA planning, as it precludes (or at least makes difficult) effective institutional memory to assess impacts and lessons learned from past and ongoing programmes, projects and activities.

6 Prioritisation

The prioritisation function has two indicators which seek to determine whether:

- i. there is a process for prioritising adaptation activities in the fisheries sector;
- ii. there is a budgetary process to channel finance to adaptation institutions or initiatives for the fisheries sector.

6.1 Process for prioritising adaptation activities in the fisheries sector

Priority issues/areas for CCA were identified in the Montserrat National Climate Change Issues Paper (which was used to inform the development of a draft CCA strategy and action plan). The fisheries sector was one of the priority areas identified.

The Issues Paper notes that the process for prioritisation involved broad-based consultations with representatives from the private, public and civil society sectors who identified and ranked the main climate change issues/areas related to the following key environmental components and economic sectors: beach and shoreline stability; coastal and marine ecosystems; hydrological characteristics and water resources; food and nutrition; agriculture and fisheries; settlements and infrastructure; tourism; human health; forestry and biodiversity; the financial sector and energy security.

Issues/areas were ranked according to national significance, severity of threat/impact, and urgency of need to respond. The priority issues/areas identified were:

- | | |
|----------------|-------------------------------|
| • Fisheries | • Coastal zone |
| • Agriculture | • Infrastructure |
| • Biodiversity | • Reefs and other marine life |
| • Tourism | • Human settlements |
| • Beaches | • Water/Hydrology |

Specific adaptation actions/options related to the fisheries sector (listed below) were also identified in the Issues Paper but not prioritised by stakeholders.

- | | |
|--|--|
| • Establish sea defenses including soft and hard engineering | • Adopt an integrated approach to land development |
| • Control land-based pollution | • Revise port legislation regarding discharge of waste in coastal waters |
| • Resume and expand long-term beach monitoring programmes | |

- Revise and enforce existing laws related to the protection of marine biodiversity
- Establish marine protected areas/zoning

Strategic priorities for the fisheries sector related to CCA are also set out in Montserrat’s Sustainable Development Plan (2008-2020). These include the following:

- Provide fisheries infrastructure including storage facilities for fisherfolk, and safe harbour for fishing boats
- Provide incentives to fisherfolk to encourage sustainable fishing and self-sufficiency in fish supplies at affordable prices
- Provide incentives to fisherfolk to adopt new fishing technologies; encourage sustainable deep-sea fishing
- Construct jetty, breakwater, fishing fleet safe harbour and small craft marina as well as landside developments to facilitate port expansion
- Identify, promote and assist in implementing appropriate fisheries technologies and systems to enable increased production of targeted import-substitution products

Montserrat’s Sustainable Development Plan clearly sets out the consultative process that was used in its development, including the stakeholders involved and the processes for participatory visioning, prioritisation of strategic objectives and sub-objectives, consensus building and strategic review. Stakeholders from the public, private and civil society sectors including fisherfolk and representatives of fisherfolk organisations in Montserrat were involved in the development process.

The prioritisation processes in developing Montserrat’s National Climate Change Issues Paper and Sustainable Development Plan were analysed for transparency and participation, refer to Table 6.1.

Table 6.1: Analysis of the process of development for Montserrat’s National Climate Change Issues Paper and Sustainable Development Plan for transparency and participation

Qualities of the indicator	Description of quality	Status of quality [Yes, No, Limited, Not Applicable (N/A)]
Transparency & Participation	Process for prioritising adaptation activities is transparent and publicly available.	Yes- The process for prioritising the Fisheries sector as an economic sector of importance for climate adaptation is set out in the Montserrat National Climate Change Issues Paper. However, a process for identifying and prioritising adaptation actions for the sector is not provided. The Issues Paper is available online at a number of websites including the Caribbean Community Climate Change Centre’s website. The process and results of the exercise to identify strategic priorities for the fisheries sector related to CCA are set out in Montserrat’s Sustainable Development Plan 2008-2020. The Plan is available online.
Transparency & Participation	Broad set of stakeholders were engaged in prioritisation	Yes- The Montserrat National Climate Change Issues Paper states that the prioritisation exercise was undertaken during a broad-based consultation

	<p>process– including vulnerable and marginalised groups– to ensure that priorities are informed by a broad range of perspectives.</p>	<p>involving representatives from the private, public and civil society sectors. However, a list of stakeholders or more detailed description was not provided.</p> <p>Montserrat’s Sustainable Development Plan 2008-2020 clearly sets out the consultative process that was used in its development, including a detailed list of the stakeholders involved. The Plan states that fishermen, through representatives of fishermen’s associations were involved in the development of the plan through their participation in town hall meetings and other stakeholder consultations.</p>
--	--	--

6.2 *Budgetary processes for financing climate adaptation actions*

Budgets in Montserrat are funded either through recurrent or capital revenue. Recurrent funding is used to cover salaries, wages, and operational expenses of the ministries and departments across government, while capital funding is used to fund projects, which may include climate adaptation actions. The Government of Montserrat is heavily reliant on support from DFID, which provides 61% of Montserrat’s recurrent budget and almost 56% of its capital budget (when combining recurrent and capital, the total budget allocation for the fiscal year 2017-18 is EC\$159.52 million). The European Union and other donor partners also provide capital funding. However, the EU has specifications on the types of capital projects that can be funded using EU funds, while DFID allows the government of Montserrat to set its own capital expenditure priorities.

To get funding for the year, government ministries are required to submit annual work plans and budgets (recurrent and capital) to Cabinet for funding consideration and approval. For capital projects, the Government of Montserrat uses a multiple-criteria (criteria were not available for review) decision-making process to prioritise which projects will receive capital funding. Which capital projects go to Cabinet for consideration, is determined at the Ministerial level. Table 6.2 sets out a list of climate adaptation actions relevant to the fisheries sector that were identified in Montserrat’s Sustainable Development Plan and highlights which actions have received budgetary allocations. The national budgetary process was analysed for comprehensiveness, transparency, participation and capacity, refer to Table 6.3.

Montserrat’s access to regional and global funding facilities for climate adaptation actions is limited by its status as a UK Overseas Territory. For example, though Montserrat is a CARICOM member state, it was unable to benefit from United Nations Framework Convention on Climate Change (UNFCCC) funds, primarily filtered through the Global Environment Facility (GEF) -a facility to which Montserrat has no access, which enabled independent islands in the Caribbean to start the long-term process of planning and adapting to climate change. Nonetheless, there are facilities set up by the UK government which specifically provide funding for UKOTs, these include e.g. Darwin Initiative and Best 2.0 Programme.

Table 6.2: Climate adaptation actions identified in Montserrat’s Sustainable Development Plan that have and have not received budgetary allocations

Climate adaptation actions identified in Montserrat’s Sustainable Development Plan	Initiative received budgetary allocation (from government or another source)?	Budgetary allocations are sufficient to enable adaptation activities to proceed according to plans? (Yes/No)
1. Enhance institutional support and training for Comprehensive Disaster Management at the regional, national and community levels	Yes	No
2. Incorporate disaster risk management into key sectors of the national economy	Yes	No
3. Enhance community resilience to mitigate and respond to the adverse effects of climate change and disasters	Yes	No
4. Improve the early warning system	Yes	No
5. Provide fisheries infrastructure, including storage facilities for fishermen, and safe harbour for fishing boats	No	No
6. Provide incentives to fisherfolk to encourage sustainable fishing and self-sufficiency in fish supplies at affordable prices	Yes	No
7. Provide incentives to fisherfolk to adopt new fishing technologies; encourage sustainable deep-sea fishing	Yes	No
8. Construct jetty, breakwater, fishing fleet safe harbour and small craft marina as well as landside developments to facilitate port expansion	Yes	Yes
9. Identify, promote and assist in implementing appropriate fisheries technologies and systems to enable increased production of targeted import-substitution products	Yes	No

Table 6.3: Analysis of Montserrat’s budgetary process for comprehensiveness, transparency, participation and capacity

Qualities of the indicator	Description of quality	Status of quality [Yes, No, Limited, Not Applicable (N/A)]
Comprehensiveness	The agency(ies) most closely tied to the priority area reflect adaptation	Yes

	initiatives in their annual budgets.	
Transparency & Participation	Budgetary information for adaptation activities for the fisheries sector is available and accessible.	Yes – Budgetary reports can be found on the official website of the Ministry of Finance
Capacity	Budgetary allocations are sufficient to enable adaptation activities to proceed according to plans	No

7 Coordination

The coordination function has one indicator which seeks to determine whether adaptation efforts for the fisheries sector are being coordinated at the national level.

7.1 Stakeholder roles in managing the effects of climate change on Montserrat’s fisheries sector

Different government agencies and non-governmental organisations play roles in managing the effects of climate change on Montserrat’s fisheries sector (refer to Table 7.1 for a list of some stakeholders and their roles)⁷ with the Ministry of Agriculture, Trade, Lands, Housing and the Environment (MATLHE), through the Department of Agriculture (specifically the Fisheries and Ocean Governance Unit) being responsible for the sustainable governance, management, conservation and utilisation of ocean resources.

Table 7.1 Some of the stakeholders, directly or indirectly, involved in managing the effects of climate change on Montserrat’s fisheries sector

Government agencies		
Government Ministry	Agency Responsible	Responsibilities
Ministry of Agriculture, Trade, Lands, Housing and the Environment (MATLHE)	Physical Planning Unit (directed by Planning and Development Authority (PDA))	<ul style="list-style-type: none"> • Development control island wide • Enforcement of building code and electrical standards
	PDA	<ul style="list-style-type: none"> • Planning and development island wide
	Department of Agriculture (Fisheries and Ocean Governance Unit)	<ul style="list-style-type: none"> • Protection/management of coral reefs, seagrasses and mangroves • Support to regulate sport fishing, dive establishments and water sports • Conservation and management of ocean resources as it relates to Marine Protected Areas (MPAs),

⁷ Adapted from Montserrat’s National Climate Change Issues Paper, 2011

		Marine Management Areas (MMAs)
	Department of Environment	<ul style="list-style-type: none"> • Direction and implementation of environmental policy • Biodiversity conservation and research • Protected areas (terrestrial and marine) management • Multilateral Environmental Agreements • Provision of advice on environmental matters • Climate change adaptation • Provision of support, coordination and facilitation to organisations and agencies across the private, public and civil society sectors • Sustainable forestry and watershed management • Invasive species management • Public education and outreach • Collection and management of environmental data
Ministry of Communications, Works, Energy and Labour	Port Authority	<ul style="list-style-type: none"> • Establishment of infrastructure in the marine environment • Management of port facilities • Harbour master and receiver of wrecks
	Public Works Department	Regulation/design/construction of civil works
Governor's Office	Royal Montserrat Police Force (Marine Division)	<ul style="list-style-type: none"> • Enforcement /marine surveillance • Enforcement of environmental and coastal laws and regulations
	Attorney General's Chambers	Legal support
	Disaster Management Coordination Agency	<ul style="list-style-type: none"> • Disaster prevention and management • Oil spill management
Ministry of Economic Development and Trade	Montserrat Development Corporation	Financing infrastructure projects and business enterprises

Non-governmental organisations	
Agency	Responsibility
Montserrat National Trust	<ul style="list-style-type: none"> • Conserve and/or rehabilitate the natural and cultural heritage • Public awareness and outreach • Fund-raising in support of programmes • Provision of advice
Montserrat Fishermen's Cooperative	<ul style="list-style-type: none"> • Represent concerns of membership • Procure equipment for members • Oversee fisheries activities of members • Access project funding

7.2 *Coordination mechanisms for climate change adaptation in the fisheries sector*

Coordination of efforts for climate adaptation of Montserrat's fisheries sector is weak as there is currently no functioning multi-stakeholder mechanism to facilitate this.

At the fisheries sectoral level, Montserrat's Fisheries Act (revised 2013) calls for the establishment of a multi-stakeholder advisory committee, called the National Fisheries Advisory Committee (FAC).

Members of the FAC, according to the Act, are to include the following stakeholders:

- a representative of the Montserrat Chamber of Commerce;
- a representative of the Montserrat Tourism Board;
- a representative of the Montserrat National Trust;
- two representatives of fishers appointed from among persons nominated by organisations recognized by the Minister as promoting the interests of fishers; and
- the Chief Fisheries Officer or his nominee.

The functions of the FAC, as outlined in the Act include:

- to advise the Minister on matters of policy in relation to the development and management of the fishery resources of Montserrat as a viable and sustainable industry;
- to consider the National Fisheries (Management) Plan and make recommendations to the Minister for its revision;
- to consider and review guidelines—for the setting up of fish processing establishments; and for the conservation of living marine resources; and make appropriate recommendations to the Minister;
- to advise the Minister on any matter that may from time to time be referred for the consideration of the Committee.

Given its constitution, role and functions the FAC could be a key mechanism for the coordination of climate adaptation planning and decision-making among the public, private and civil society sectors in Montserrat's fisheries sector, however at the time of this study the FAC had not been established.

Coordination of CCA actions in Montserrat's fisheries sector could also be facilitated through the approval and subsequent formalisation of the National Oceans Governance Committee (NOGC). A provision in the Eastern Caribbean Regional Ocean Policy (a regional policy which was approved by all Heads of the OECS Commission), includes the establishment of NOGCs in all Eastern Caribbean countries. A Cabinet Paper has been submitted to the government of Montserrat for the establishment

of a NOGC. The proposed functions and constitution of the NOGC are outlined in Table 7.2. Given its broad scope and intersectoral composition the NOGC would be best positioned to play a coordinating role for climate adaptation for the fisheries sector.

The existing multi-stakeholder Steering Committee for the Blue Halo Initiative, a project which is being implemented by the Waitt Institute in partnership with the Government of Montserrat to develop and implement solutions for sustainable ocean management, may also be seen as an opportunity to facilitate intersectoral coordination for adaptation planning for Montserrat’s fisheries sector. One of the expected outputs of the Blue Halo Initiative is the development of a Sustainable Ocean Policy for Montserrat, which, depending on stakeholder priorities, could include building climate adaptation for the fisheries sector.

Another opportunity for improved coordination for CCA planning at the national level, and possible sectoral level, exists with the approval and implementation of Montserrat’s Draft Climate Change Policy and Action Plan, which calls for the establishment of a National Climate Change Council to function as an oversight body responsible for facilitating the implementation of a National Climate Change Policy.

Table 7.2 The proposed functions and constitution of the NOGC

Mechanism	Function	Members
National Oceans Governance Committee	<p>National Ocean Governance Committee (NOGC), shall coordinate future governance, management and sustainable utilisation of its ocean space which is estimated at 7,782 Square kilometres</p> <p>1. The main tasks of the Committee and its members will be to:</p> <p>(a) represent the respective agency’s interests at meetings of the Committee;</p> <p>(b) provide a high-level forum for resolving conflicting policy issues that may arise from time to time between different agencies;</p> <p>(c) coordinate, monitor and evaluate the implementation of the National Ocean Policy and Action Plan/national ocean policies, strategies and action plans, taking into consideration other cross-cutting strategies, planning instruments and programmes that set out how implementation of the actions will be realised;</p> <p>(d) contribute to the coordination, implementation and monitoring of Government-approved cross-cutting actions, measures and policies related to ocean affairs;</p> <p>(e) As appropriate, prepare or contribute to the preparation of policy briefs; and coordinate the development of key</p>	<ul style="list-style-type: none"> ○ Chief Fisheries and Ocean Governance Officer – MATLHE ○ Attorney Generals Chambers ○ Director External Affairs ○ Physical Planning Unit – GIS Manager ○ Department of Environment ○ President, Montserrat Fishers and Boaters Association ○ Royal Montserrat Police Service ○ Airport Manager – John A. Osborne Airport ○ Comptroller of Customs - MCRS ○ Montserrat Port Authority ○ Disaster Management Coordination Agency ○ Montserrat National Trust ○ Lands and Survey Department ○ Maritime Administration ○ Montserrat Statistics Department

	<p>investment themes in order to promote favourable conditions for the attraction of private investment to ocean related activities, in coordination with the competent bodies;</p> <p>(f) establish a process to identify and integrate local communities and local industries in the development of policies and management strategies for ocean resources;</p> <p>(g) stimulate the participation of public and private institutions, governmental and non-governmental organisations, and civil society in the implementation and management of the National Ocean Policy and Action Plan/national ocean policies, strategies and action plans;</p> <p>(h) provide a platform for discussion on the best modalities in establishing the knowledge-based structure for ocean governance related data/research;</p> <p>(i) support and promote public awareness of oceans and ocean issues and engagement in stewardship initiatives; and</p> <p>(j) coordinate the delimitation of international maritime boundaries with neighbouring States</p>	
--	--	--

Given the scope of the impacts of climate variability and change, regional coordination to facilitate exchange of information, synergies and cooperation is necessary to effectively address adaptation at the national level. Coordination on fisheries management at the regional level, including on climate adaptation and related matters for the fisheries sector, is facilitated through Montserrat’s membership in the following inter-governmental bodies:

- Organisation of Eastern Caribbean States (OECS)
- CARICOM
- Caribbean Community Climate Change Centre (CCCCC)
- Caribbean Regional Fisheries Mechanism (CRFM)
- Caribbean Environment Programme (CEP)
- Association of the Overseas Countries and Territories of the European Union
- Joint Nature Conservation Committee (JNCC)

The CRFM is currently in the process of reviewing and validating a Draft Protocol to Integrate CCA and Disaster Risk Management in Fisheries and Aquaculture into the CARICOM Common Fisheries Policy.

8 Information management

The information management function has two indicators which seek to determine whether

- i. actors in the fisheries sector have access to adaptation-relevant information;

- ii. there is a platform for the exchange of climate information that includes the fisheries sector.

Effective climate adaptation planning for the fisheries sector should be evidence-based and include qualitative and quantitative information from a range of sources. Data and information in the following areas would facilitate effective adaptation planning for the sector:

- Biophysical factors [including changes in sea surface temperature, sea level and fish abundance and distribution, ecosystem (coral reefs, seagrass beds, mangroves etc.) health and functioning]
- Socio-economic factors [employment, income, social capital]
- Institutional capacity
- Infrastructural capacity
- Damage and losses due to weather and climate-related disasters

In Montserrat, data and information on all the above areas are not currently collected on a continuous basis. Catch and effort data are collected by the Fisheries and Ocean Resources Unit and stored in an electronic database, though other aspects related to the fisheries, such as socio-economic data is not collected. Data is converted to information as needed. Montserrat's Meteorological Services Office collects climate related data such as rainfall, temperature and wind, but this is not converted to information to be used for climate adaptation planning at the national level. Rather, data collected by the Meteorological Services Office, is sent to the Caribbean Institute for Meteorology and Hydrology (CIMH) to generate regional forecasts and trends. The Montserrat Disaster Management Coordination Agency provides local marine weather forecast information for Montserrat on its website. The Fisheries and Ocean Resources Unit and Meteorological Services Office make data available to stakeholders upon request.

In 2015, the Environmental Law Institute on behalf of the Waitt Institute undertook an evaluation of Montserrat's laws and institutions to support the design and implementation of a comprehensive ocean zoning and management system in the country as part of the Blue Halo Initiative, though it is uncertain to what extent this information is being used for decision-making. Studies on the status of marine ecosystems have also been undertaken by different organisations, including a scientific assessments of Montserrat's marine resources and fisheries. Both assessment reports are available online on Blue Halo Montserrat's project website. Monitoring of Montserrat's marine ecosystems is not done under a continuous programme.

There is no existing platform for stakeholders to access and exchange climate information that includes the fisheries sector. Montserrat's Sustainable Development Plan notes the following about public information and communication:

"Inadequate public information and communication – There is noticeable fragmentation across the government of Montserrat regarding management of the public communication and information function. Policy coordination and implementation with respect to public communication and information is also disjointed. Additionally, the key government agencies with responsibility in this area, lack strategic and operational focus, resulting in many missed opportunities in the area of public communication and information. Therefore, there is a critical need for a carefully defined and executed public information and communication strategy."

The plan highlights the need for the following actions that would contribute to improved information management at the national level:

- Introduce a Public Information Act

- Strengthen and implement a comprehensive public information and communication strategy
- Improve access by the public to information from government agencies

9 Mainstreaming

The mainstreaming function has two indicators which seek to determine whether:

- there are processes or procedures for integrating climate change risk and adaptation into projects or sectoral planning;
- the institution(s) tasked with prioritisation and coordination have identified barriers for adaptation at the priority area level.

Montserrat's Draft Climate Change Policy and Action Plan notes the need to mainstream climate change considerations into national planning and specifically highlights the need to integrate environmental management and disaster risk reduction and management strategies into agricultural and fisheries development to enhance resilience of the sectors and improve food security. Montserrat's Sustainable Development Plan also supports the need to incorporate disaster risk management into policies, laws, decision making, building codes, development planning and operations of key sectors of the national economy.

Effective integration of CCA and disaster risk management in Montserrat's fisheries sector is, however, limited by the fact that the fisheries sector does not have a fisheries policy or a National Fisheries Management Plan into which climate adaptation actions can be mainstreamed. Adaptation efforts for the sector are therefore primarily *ad hoc*.

10 Summary of findings

Vulnerability assessments for Montserrat indicate that climate change will have negative impacts on the fisheries sector resulting in challenges to food security and livelihoods. Through a consultative process, stakeholders from the public, private and civil society sectors have indicated the need to take actions that would facilitate climate adaptation of the sector.

Adaptation actions related to the fisheries sector have been identified in Montserrat's Sustainable Development Plan (2008-2020), but adequate implementation of these actions has been limited by insufficient budgetary allocations. This could be due in part to other priorities of the government, including re-building the tourism sector and national infrastructure post the 1995 volcanic eruptions of the Soufriere Volcano, and Montserrat's limited access to external funds for climate adaptation actions given its political status as an UKOT.

In terms of coordinating adaptation planning, there are two functioning multi-stakeholder committees whose objectives are sufficiently aligned to advise on CCA in the fisheries sector -an informal Oceans Governance Committee, and the project Steering Committee for the Blue Halo Montserrat Initiative. However, neither of these committees currently serve such a function or have approved mandates to do so.

Data and information to facilitate adaptation planning for the sector is limited and not collected on a continuous basis. Access to data and information by stakeholders is constrained by the absence of an existing platform for stakeholders to access and exchange climate information, that includes the fisheries sector or inventory of adaption actions for the sector to facilitate assessment of impacts and lessons learned from past and ongoing projects, programmes and activities.

Though acknowledged as a need in Monserrat's draft Climate Change Policy and Action plan, effective integration of CCA and disaster risk management in Montserrat's fisheries sector is limited by the

absence of a fisheries policy and a National Fisheries Management Plan into which climate adaptation actions can be mainstreamed. Adaptation efforts for the sector are therefore primarily *ad hoc*.

11 Recommendations

Given the above findings from the rapid institutional assessment the following actions are recommended to improve the institutional readiness for CCA in Montserrat's fisheries sector:

- Finalise and implement Montserrat's Climate Change Adaptation Policy and Action Plan, and establish the National Climate Change Council as per its recommendation
- Identify opportunities for funding priority adaptation actions for the fisheries sector identified in Montserrat Sustainable Development Plan and Climate Change Policy and Action Plan
- Create an inventory of past and ongoing adaptation actions for the sector to facilitate institutional memory
- Develop and approve a fisheries policy for Montserrat, using a participatory approach
- Develop and approve a national ecosystem-based fisheries management plan for Montserrat, using a participatory approach
- Integrate CCA and disaster risk management into fisheries policy and national fisheries management plan for Montserrat
- Integrate CCA and disaster risk management into the Sustainable Ocean Policy and related regulations being developed under the Blue Halo Initiative for Montserrat
- Formalise the Oceans Governance Committee, and include in its mandate the integration of climate adaptation in planning for the fisheries sector, using an ecosystem-based approach
- Improve public access to information on adaptation planning and actions for the fisheries sector
- Assess barriers for the continuous monitoring of marine ecosystems and fisheries and fisheries related livelihoods and develop an action plan to address priority barriers.

APPENDIX 1

Documents reviewed for desk-study:

A. Ponteen, 2018. *Current fisheries statistics*. [Email] (personal Communication, 25 September, 2018)

Caribbean Centre for Development Administration, n.d. *Agricultural Strategy and Marketing Plan (ASMP) for Montserrat 2016- 2021*. Montserrat

Caribbean Natural Resources Institute (CANARI). 2018. *Report on the assessment of vulnerability to climate change in the Anguilla and Montserrat fisheries sector*. Prepared by Granderson, A., Ramkissoon, C., Jehu, A. and Phillips, T. August 30, 2018. Barataria, Trinidad: CANARI

Caribbean Regional Fisheries Mechanism (CRFM), 2014. *Caribbean Regional Fisheries Mechanism Statistics and Information Report-2014*. Belize: CRFM Secretariat

Dallison, T. & Ferguson, A. (2017). *Coral Cay Conservation Marine Progress Report, Montserrat 2013 – 2016*. Coral Cay Conservation

Department for International Development (DFID), 2012. *Addressing Climate Change by Promoting Low Carbon Climate Resilient Development in the UK Overseas Territories: Needs Assessment, Montserrat*. IMC Worldwide

Department of Environment, n.d. *National Climate Change (adaptation) Policy and Action Plan Public Education and Outreach Strategy (PEO) Montserrat*. Montserrat: Department of Environment

Environmental Law Institute, 2015. *Sustainable Fisheries and Coastal Zoning in Montserrat Legal and Institutional Assessment of Authorities and Approaches*. Waitt Institute

Fisheries Act 2013. (c.9.01), Montserrat

Government of Montserrat, 2017. *Montserrat's Economic Growth Strategy and Delivery Plan (Draft)*. Montserrat: Government of Montserrat

Gray, G. A. L., 2010. *Montserrat National Climate Change Issue Paper*. Montserrat: Ministry of Agriculture, Land, Housing and the Environment

Memorandum of Understanding Between the Government of Montserrat and the Waitt Institute to Undertake the Blue Halo Initiative Process (2015)

Ministry of Agriculture, Trade, Land, Housing and the Environment, n.d. *National Climate Change Policy and Action Plan for Montserrat (Draft)*. Montserrat: Ministry of Agriculture, Trade, Land, Housing and the Environment

Ministry of Economic Development and Trade, 2010. *Montserrat Sustainable Development Plan 2008-2020*. Montserrat: Ministry of Economic Development and Trade

n.a., n.d. *Vulnerability and Capacity Assessment for Little Bay Development and Environ for Montserrat*

n.a., n.d. *Position Paper- The Caribbean Overseas Territory Declaration on Climate Change*

APPENDIX 2

Stakeholders interviewed during in-country institutional assessment from February 5-6, 2018

Name	Position	Organisation
Melissa O'Garro	Director of Agriculture	Ministry of Agriculture, Trade, Lands, Housing and the Environment
Alwyn Ponteen	Chief Fisheries and Ocean Governance Officer	Fisheries and Ocean Governance Unit, Ministry of Agriculture, Trade, Lands, Housing and the Environment
Shelley Isles-Hillocks	Registrar of Lands	Lands and Survey
Ernestine Corbett	Director of Environment	Department of Environment, Ministry of Agriculture, Trade, Lands, Housing and the Environment
Clement Meade	Director (ag)	Physical Planning Unit, Ministry of Agriculture, Trade, Lands, Housing and the Environment
Keisha Holder-Lopez	Chief Surveyor	Physical Planning Unit, Ministry of Agriculture, Trade, Lands, Housing and the Environment
Thiffanie Williams	Environment Officer	Department of Environment, Ministry of Agriculture, Trade, Lands, Housing and the Environment
Lavern Ryan	Geographic Information System Manager	Ministry of Agriculture, Trade, Lands, Housing and the Environment
Stephen Mendes	Environmental Technician	Department of Environment, Ministry of Agriculture, Trade, Lands, Housing and the Environment
Anderson Kirnon	Air Traffic Controller - Supervisor	John A. Osborne Airport
Zhuan Sweeney	Air Traffic Controller - Supervisor	John A. Osborne Airport
Joseph Irish	Airport Manager	John A. Osborne Airport
Steve Ryan	Operations Manager	John A. Osborne Airport
Lyandra Lee	Data collector	Fisheries and Ocean Governance Unit
Javiere Adams	Data collector	Fisheries and Ocean Governance Unit
Sheldon Carty	President	Montserrat Boaters' and Fishers'

		Association
Norman Cassell	Community informant	Namcas Enterprises
Annesta Fergus	Press, Public Affairs, Projects and Policy Officer	Governor's Office
Roderick Stewart	Director	Montserrat Volcano Observatory
Kenya Lee	Senior Economist	Ministry of Finance