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**Formulation of a Strategy, Action Plan and
Programme Proposal on Disaster Risk Management,
Climate Change Adaptation in Fisheries and
Aquaculture in the CARICOM and Wider Caribbean
Region**

Regional Workshop Report

**10 – 12 December 2012
Kingston, Jamaica**



CRFM Technical & Advisory Document Number 2013 / 8

Formulation of a Strategy, Action Plan and Programme Proposal on Disaster Risk Management, Climate Change Adaptation in Fisheries and Aquaculture in the CARICOM and Wider Caribbean Region:

Regional Workshop Report

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Preparation of this document

These Proceedings present the outcome of the CRFM / FAO / WECAFC / CCCCC / CDEMA Regional Workshop on Formulation of a Strategy, Action Plan and Programme Proposal on Disaster Risk Management, Climate Change Adaptation in Fisheries and Aquaculture in the CARICOM and Wider Caribbean Region held in Kingston, Jamaica, from 10 – 12 December 2012. It was organized by the Caribbean Regional Fisheries Mechanism (CRFM) and Food and Agriculture Organization of the United Nations (FAO) in collaboration with the Western Central Atlantic Fishery Commission (WECAFC), Caribbean Community Climate Change Centre (CCCCC), Caribbean Disaster Emergency Management Agency (CDEMA) and University of the West Indies (UWI). The government of Jamaica was host to the workshop. Financial support for the workshop was provided by Sweden through the FAO Multi-donor Mechanism (FMM/GLO/003/MUL) and Japan through the project on “Fisheries management and marine conservation within a changing ecosystem context” (GCP /INT/253/JPN). This document was prepared under supervision of Florence Poulain and Tarub Bahri of the FAO Fisheries and Aquaculture Department. The workshop was facilitated by Patrick McConney, John Charlery and Maria Pena (UWI), Terrence Philips (CRFM) and Florence Poulain, Tarub Bahri and Raymon VanAnrooy (FAO). The workshop background documents were drafted by Patrick McConney, John Charlery and Maria Pena and are reproduced as submitted.

Abstract

The regional workshop on “Formulation of a strategy, action plan and programme proposal on disaster risk management, and climate change adaptation in fisheries and aquaculture in the CARICOM and Wider Caribbean Region” was held in Kingston, Jamaica, 10 – 12 December 2012. The workshop was organized by CRFM and FAO, in collaboration with the government of Jamaica, CDEMA, CCCCC, WECAFC and UWI-CERMES with the support from the Government of Sweden and the Government of Japan. The workshop brought together sixty-five local, national and regional stakeholders involved in fisheries, aquaculture, disaster risk management (DRM) and climate change adaptation (CCA). These Proceedings include the Report of, and the background reports prepared for, the Regional Workshop. Overview presentation topics on fisheries and aquaculture covered: building resilience and reducing vulnerabilities; the regional trend towards climate change adaptation; a regional framework for disaster management; and regional initiatives in advancing disaster risk management and climate change adaptation in fisheries and aquaculture. Discussions largely focused on reviewing and refining three documents prepared for the workshop: an *Assessment study* on the impact of climate change and disasters on the fisheries and aquaculture sector in the CARICOM region; a *Strategy and action plan* for integrating DRM and CCA into fisheries and aquaculture (as well as the reverse); and a *Results-based programme proposal*. The Workshop recommended that the strategy, action plan and programme proposal be finalized and implemented to strengthen regional and national cooperation and develop capacity in addressing climate change impacts and disasters in fisheries and aquaculture.

Acknowledgements

The organization of the Workshop and the outcome of which is presented in these Proceedings would not have been possible without financial support provided by Sweden through the FMM FAO Multi-donor Mechanism (FMM/GLO/003/MUL) and Japan through the project on “Fisheries management and marine conservation within a changing ecosystem context” (GCP /INT/253/JPN).

Special thanks are due to the Ministry of Agriculture and Fisheries, and its staff for the logistics arrangements; in particular Mr Andre Kong for his opening speech at the workshop and the staff of the Fisheries Division for their hospitality and efficient support in all administrative matters. We also acknowledge the interest and participation of Mr Jerome Thomas, FAO Representative for Jamaica, The Bahamas and Belize.

Abbreviations and acronyms

ACP	African, Caribbean and Pacific Group of States
ASSC/TMAC	Agriculture Sub-Sector Committee / Technical Management Advisory Committee
CANARI	Caribbean Natural Resources Institute
CARICOM	Caribbean Community
CBO	Community-Based Organization
CCA	Climate Change Adaptation
CCCFP	Caribbean Community Common Fisheries Policy
CCCCC	Caribbean Community Climate Change Centre
CCRF	Code of Conduct for Responsible Fisheries
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CDEMA	Caribbean Disaster and Emergency Management Agency
CDM	Comprehensive Disaster Management
CEHI	Caribbean Environmental Health Institute
CERMES	Centre for Resource Management and Environmental Studies
CLME	Caribbean Large Marine Ecosystem (Project)
CRFM	Caribbean Regional Fisheries Mechanism
DRM	Disaster Risk Management
EAF	Ecosystem approach to fisheries
EBM	Ecosystem based management
FAO	Food and Agriculture Organization of the UN
FMM	FAO Multi-donor Mechanism
GEF	Global Environment Facility
IP	Implementation Plan
IPCC	Intergovernmental Panel on Climate Change
NGO	Non-governmental Organization
OECS	Organization of Eastern Caribbean States
TNC	The Nature Conservancy
US	United States
UWI	University of the West Indies
WECAFC	Western Central Atlantic Fishery Commission

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REPORT OF THE WORKSHOP

Workshop arrangement and opening session

The CRFM / FAO / WECAFC / CCCCC / CDEMA Regional Workshop on Formulation of a Strategy, Action Plan and Programme Proposal on Disaster Risk Management, Climate Change Adaptation in Fisheries and Aquaculture in the CARICOM and Wider Caribbean Region was held in Kingston, Jamaica, from 10 – 12 December 2012. It was organized by the Caribbean Regional Fisheries Mechanism (CRFM) and Food and Agriculture Organization of the United Nations (FAO) in collaboration with the Western Central Atlantic Fishery Commission (WECAFC), Caribbean Community Climate Change Centre (CCCCC), Caribbean Disaster Emergency Management Agency (CDEMA) and University of the West Indies (UWI). The government of Jamaica was host to the workshop. Financial support for the workshop was provided by Sweden through the FMM FAO Multi-donor Mechanism (FMM/GLO/003/MUL) and Japan through the project on “Fisheries management and marine conservation within a changing ecosystem context” (GCP/INT/253/JPN).

Mr. Andre Kong, Chief Executive Officer of the Fisheries Division in the Ministry of Agriculture and Fisheries of Jamaica welcomed participants. He said that climate change adaptation (CCA) and disaster risk management (DRM) were long recognised as significant gaps in fisheries and aquaculture planning and policy in Jamaica and most other countries in the Caribbean. Mr. Kong looked forward to informative interaction and discussion. He was sure that the timely initiative would benefit the region.

Mr. Milton Haughton, Executive Director of the CRFM Secretariat based in Belize, noted the high level of representation from fisherfolk organisations, fisheries authorities, agencies responsible for DRM and diverse bodies involved in CCA in region. He said that variability and changes in climate are compounding factors that fisheries managers and those connected to the sector cannot ignore. Evidence from recent disasters (e.g. in Japan and Indonesia) showed that fishing communities tended to bear the brunt of coastal impacts due to their location and vulnerability. The mystery of the 2011 *Sargassum* seaweed abundance that affected much of the Caribbean illustrated the uncertainty for which we must be prepared, but over which we may have little influence. The workshop should help to strengthen approaches and interventions to ensure a more safe and secure future despite the changing climate.

Mr. Jerome Thomas, FAO Representative for Jamaica, The Bahamas and Belize also welcomed all partner agencies and workshop participants. He said that fishers, fish farmers and the communities that they live in are vulnerable to climate and disasters. This is so because of their location and livelihoods at the interface between land and water, whether on the coast or inland, but also because their social, economic and political reality often includes poverty, marginalisation and overall high levels of vulnerability to shocks and change, especially in developing countries. FAO has a long history of providing support before, during and after disasters. Climate variability and change add to the complexity of this work as the frequency and intensity of weather-related natural disasters are likely to increase in the future. Climate change also has other impacts on fishing and fish farming communities and the resources and environment they depend on. This may have far-reaching effects on livelihood strategies that need to be understood and taken into consideration in fisheries and aquaculture governance and development planning. At the same time, disaster risk management (DRM) and climate change adaptation (CCA) strategies and programmes need to take the characteristics of the sector, its people and environment into consideration to become effective. He

added that the work of the FAO Fisheries and Aquaculture Department in DRM and CCA is aligned to priorities expressed in international, regional and national policies and agreements including UNFCCC, RIO+20, COFI, etc. He wished all a productive workshop, which he then formally declared open.

Introduction of participants

Following the opening, the participants introduced themselves (see Annex 1). Attending the workshop were 40 participants representing 24 Wider Caribbean governments and 25 participants from national, regional and international organizations and agencies that included civil society organizations (CSOs) and non-governmental organizations (NGOs). Mr Andre Kong acted as chair of the workshop. Tarub Bahri, Florence Poulain and Raymon VanAnrooy of FAO, John Charlery and Patrick McConney of UWI and Terrence Phillips of CRFM served as resource persons. The rapporteurs were John Charlery and Maria Pena of UWI and Terrence Phillips of CRFM.

Background and objectives of the workshop

Mr. Milton Haughton of CRFM presented the background and objectives of the workshop. He pointed out that climate change adaptation (CCA) and disaster risk management (DRM) were discussed at the 14th Session of WECAFC, held in Panama in February 2012. Delegates indicated the importance of these matters to fisheries and aquaculture in the Wider Caribbean Region, and the need for broad stakeholder engagement. Not only should CCA and DRM be incorporated into fisheries and aquaculture plans, but fisheries and aquaculture must also be included in CCA and DRM plans. This bi-directional integration must occur at regional, national and local levels.

The overall purpose of this workshop was thus to contribute to strengthening regional and national inter-sectoral cooperation and development of capacity to address climate change impacts and disasters in the fisheries and aquaculture sector. The workshop was convened in order for governmental and non-governmental stakeholders to advise the above-mentioned organizing and collaborating agencies on the content of three draft reports that were produced for the workshop. It was also convened to guide these agencies on the way forward to implement the strategy and action plan and programme proposal in order to benefit the people of the region.

The Workshop Agenda is in Annex 2, and its outputs were to inform finalization of the:

- 1) *Assessment study* on the impact of climate change and disasters on the fisheries and aquaculture sector in the CARICOM region that
 - (a) identifies major gaps in the existing knowledge in order to assess vulnerability in these systems and
 - (b) determines potential measures for reducing vulnerability to disasters and climate change
- 2) *Strategy and action plan* for integrating DRM, CCA and fisheries and aquaculture, with a focus on small-scale fisheries and small-scale aquaculture, that provides policy guidance to enable diverse stakeholders to reduce vulnerability to disasters and climate change within a regional framework of wider sustainable development objectives
- 3) *Results-based programme proposal* with supporting project concept notes that has sufficient buy-in and approval from stakeholders such as to favour successful resource mobilisation and implementation in the way forward.

Overview presentations

Four presentations were given by the organising and collaborating agencies to provide background information on CCA and DRM in fisheries and aquaculture at global and regional levels. These were:

1. Building resilience and reducing vulnerabilities to climate change, disasters and crises in the fisheries and aquaculture sector: A global perspective and FAO roadmap presented by Ms Florence Poulain of FAO
2. The regional trend towards climate change adaptation: Implementation Plan for the Regional Framework for Achieving Development Resilient to Climate Change presented by Mr Keith Nichols of CCCCC
3. A Regional Framework for Disaster Management: Comprehensive Disaster Management Strategy and Programming Framework presented by Mr Ricardo Yearwood of CDEMA
4. Regional initiatives in advancing disaster risk management and climate change adaptation in fisheries and aquaculture presented by Mr Terrence Phillips of CRFM

Building resilience & reducing vulnerabilities to climate change, disasters and crises in the fisheries and aquaculture sector

Ms. Poulain noted that over 500 million people depend – directly or indirectly – on fisheries and aquaculture for their livelihoods. Aquatic foods provide essential nutrition for 4 billion people and at least 50% of animal protein and minerals to 400 million people in the poorest countries. Moreover, fish products are among the most widely-traded foods, with more than 37% by volume of world production traded internationally.

Having established this context Ms. Poulain indicated the potential effects and impacts of climate change and the types of disasters that affect the fisheries and aquaculture sector including:

- Natural disasters such as storms, cyclones/hurricanes with associated flooding and tidal surges; tsunamis, earthquakes, droughts, floods and landslides.
- Technological disasters of human origin affecting the sector such as oil and chemical spills, and nuclear / radioactive material.
- Food and nutrition security, post conflict and protracted crises, HIV / AIDS
- Sector specific hazards such as transboundary aquatic animal diseases (TAAD) and pest outbreaks that can have significant impacts on aquaculture production and fisheries.
- Changes in fish species composition, spatial distribution and abundance, potential effects on coral bleaching and calcification and consequences on communities' livelihoods and local and national economies.

Understanding vulnerabilities is a critical first step towards successfully addressing them. The approach taken is to address adaptation to climate change and disaster risk management through broader vulnerability reduction. Ecological, economic and social resilience must incorporate technological innovation, preparedness, information and early warning and planned adaptation. Mitigation also needs to be addressed, not only adaptation. Considerations here include removing and reducing emissions and developing alternative sources of energy.

The work of the FAO Fisheries and Aquaculture Department in DRM and CCA includes building the bridge between science and policy, providing technical support to national planning processes,

developing guidance on how to cope with climate change, assisting the sector in designing and implementing effective adaptation and disaster risk management strategies and plans, and assisting partners to build and develop capacity in DRM (including emergency response) through the development of guidelines, tools and approaches and strengthening partnership collaboration and coordination of climate change and DRM in fisheries and aquaculture through, for instance, the Global Partnership on Climate, Fisheries and Aquaculture (PaCFA). This could be of interest to the Caribbean. In addition to this, the FAO Fisheries and Aquaculture Department continues to provide support to member countries and partners in responding to emergencies affecting the sector. The overall objective is to restore food production and livelihoods by means aligned to the Code of Conduct for Responsible Fisheries (CCRF) and good management practices.

The regional trend towards climate change adaptation

Mr. Keith Nichols of CCCCC reviewed the policy context for addressing climate change in the CARICOM region. The Liliendaal Declaration on Climate Change and Development provides the vision of transformational change for the response to the challenges of a changing climate. CARICOM Heads of Government issued the declaration in July 2009. It makes commitments, endorsements and specific declarations on the actions needed to manage the effects of climate change and development. The Regional Framework is to: “Establish and guide the Caribbean’s direction for the continued building of resilience to the impacts of global climate change by CARICOM States”. Its five Strategic Elements are to:

1. Mainstream climate change adaptation strategies into the sustainable development agendas of CARICOM States.
2. Promote the implementation of specific adaptation measures to address key vulnerabilities in the region.
3. Promote actions to reduce greenhouse gas emissions through fossil fuel reduction and conservation, and switching to renewable and cleaner energy sources.
4. Encourage action to reduce the vulnerability of natural and human systems in CARICOM countries to the impacts of a changing climate.
5. Promote action to derive social, economic, and environmental benefits through the prudent management of standing forest on CARICOM countries.

Taking into account several other regional policies and initiatives, there is an Implementation Plan (IP) for the Regional Framework, for the period 2012 to 2022, which was approved by CARICOM Heads of Government in March 2012. The IP:

- Considers responsibilities and functional co-operation between regional organisations and national governments.
- Seeks to guide the identification and prioritisation of actions by stakeholders under each strategic element and goal area of the Regional Framework through the use of risk management approaches to decision-making
- Recognises that there are existing significant resource and capacity challenges that constrain the region’s sustainable development and growth and adopts the ‘three-ones’ principle (integrated coordination, planning and monitoring) to assist in resource mobilisation
- Proposes a monitoring and evaluation (M&E) framework.

A biannual review of both the Regional Framework and the Implementation Plan is proposed. Institutional arrangements include a Regional Coordinating Committee and a Regional Technical Committee. Mr Nichols explained these and ended by noting that the CDEMA Comprehensive Disaster Management (CDM) Strategy and the CCCCC Regional Framework provide numerous linkages for facilitating further integration in disaster risk management.

A regional framework for disaster management

Mr. Ricardo Yearwood of CDEMA provided an introduction to the Strategy and Programme Framework for 2007 - 2012. It addresses the management of all hazards through all phases of the disaster management cycle by all peoples (public and private sectors, civil society and the general population). CDM involves risk reduction and management, with integration of vulnerability assessments into the development planning process, while taking into account several other regional policies and initiatives. He outlined the benefits, and the purpose which is to “strengthen regional, national and community level capacity for the mitigation, management and coordinated response to natural and anthropological hazards, and the effects of climate change”.

Mr. Yearwood explained that the CDM governance structure comprises a Coordination and Harmonization Council (CDM CHC) and six Sector Sub-Committees for Education, Health, Civil Society, Agriculture, Tourism and Finance. FAO is Sector Lead for agriculture via the Agriculture Sector Sub-Committee (ASSC) which was amalgamated with the Jagdeo Initiative Technical Management Advisory Committee (TMAC) to form the Agriculture Disaster Risk Management Committee (ASSC / TMAC) that includes the CRFM and CCCCC as members. There is a Multi-year Work Programme for mainstreaming CDM within the agriculture sector in the Caribbean. Among the expected results are:

- Enhanced culture of agricultural risk management at the multiple levels
- Risk transfer mechanisms with a focus on agricultural insurance
- Hazard information and DRM incorporated in planning and development
- Agricultural risk management protocols and resource facility developed
- Capacity for damage assessment and rehabilitation/reconstruction plans enhanced
- Measures aimed at the reduction of praedial larceny promoted and supported
- Improved capacities for hurricane disaster mitigation, preparedness and response.

Regional initiatives in advancing disaster risk management and climate change adaptation in fisheries and aquaculture

Mr. Terrence Phillips of the CRFM Secretariat informed participants that in 2008 the economic contribution of fisheries in the Caribbean ranged from 0.01% to 2.5% of GDP, valued at US\$115,000 to US\$77 million. The sector employs approximately 332,000 fishers, boat owners / operators, boat builders, dockworkers and processors. Marine production in 2007 was over 102,000 metric tons, with total exports being approximately 47,800 metric tons with a value of US\$208 million. He noted that the fisheries sector contributes to food security and poverty alleviation by providing important sources of protein and incomes to many persons, especially in rural communities.

The CRFM was inaugurated in March 2003 with headquarters in Belize and an Eastern Caribbean Office in St. Vincent and the Grenadines. The CRFM mission is: to promote and facilitate the responsible utilization of the region’s fisheries and other aquatic resources for the economic and

social benefits of the current and future population of the region. Current programme areas include the development and promotion of risk reduction programmes for fishers, and strengthening of fishers' organizations and improved community participation.

In terms of the strengthening of fishers' organisations, one such initiative involved the CRFM partnering with the CTA, UWI - CERMES, fisheries authorities and fisherfolk organisations to promote and support the development of the CNFO which now represents national fisherfolk organisations at the Caribbean Fisheries Forum. The next phase of this project is 'Implementing the Caribbean Community Common Fisheries Policy: positioning and engaging fisherfolk organisations'. The purpose is to facilitate the continuous engagement of fisherfolk organisations with policy processes and decision-makers for the implementation of key regional fisheries policies. One aspect of this phase involves obtaining policy commitment for the mainstreaming of EAF, CCA and DRM in SSF governance and management. Another initiative in collaboration with the ACP Fish II Programme and CANARI involved building fisherfolk capacity in EAF, CCA and DRM.

In relation to DRR / DRM and CCA, it was pointed out that the CRFM recognized CDEMA and the CCCCC as the respective leads in these areas and as such worked in partnership with them. The CRFM as part of the CDEMA ASSC / TMAC has participated in activities such as the Caribbean Agriculture Symposium: disaster risk management; FAO Regional Writeshop to prepare Disaster Risk Management Plans for Hurricanes, Droughts and Floods in the Agriculture Sector (including Fisheries). It has also participated in the CDEMA/ Austrian Development Agency (ADA): Mainstreaming Climate Change into DRM for the Caribbean Region (CCDM) Project, 2012 CIMH Caribbean Regional Climate Outlook Forum (CARICOF) and the CCCCC Workshop Delivering Transformational Change 2011 - 2021: Implementing the CARICOM Regional Framework for Achieving Development Resilient to Climate Change (the Regional Framework). The CRFM is currently involved as a partner in the delivery of the IDB Caribbean Regional Strategic Program for Climate Resilience (SPCR).

It was pointed out that the project which led to the present workshop was conceptualized by the FAO, WECAFC, CDEMA and the CRFM at an informal meeting in Barbados, in 2011, following the 2010 FAO / OSPESCA / INCOPECA Strategy Meeting on Reducing Vulnerability of Fishing and Fish Farming Communities to Natural Disasters and Climate Change, in Costa Rica.

Discussion

There was provision for discussion after each presentation and to wrap up the session. There was discussion about the need for more affordable research in order to better understand the dynamics of climate and disasters. Some participants emphasized the need for more regular monitoring in order to learn and adapt. Technological innovation and early warning systems (EWS) for both social and ecological impacts are required in the region. EWS such as for coral bleaching, earthquakes and tsunamis are already receiving attention, but more attention should be paid to potential impacts that more directly threaten food security such as drought and prolonged rough seas. Participants were concerned about how ecological phenomena such as *Sargassum* seaweed abundance and spreading of the alien invasive lionfish (*Pterois* spp.) may be linked to climate change.

Presentations of draft reports

The overview presentations were followed by three more on the draft reports prepared for the workshop by the Centre for Resource Management and Environmental Studies (CERMES) consultancy team of Patrick McConney, John Charlery and Maria Pena.

Draft Assessment Study

Mr. Charlery started with key observations from the Intergovernmental Panel on Climate Change (IPCC) fourth assessment report (AR4). The IPCC stated that warming of the climate system is “unequivocal”, with consequent increases of both drought and heavy precipitation events and sea level rise along with hurricane activity. He shared model predictions for the region. Good generic understanding exists of the potential impacts of climate change and climate variability on many key fisheries-related factors that influence both fish stocks and the human components of fisheries. Many climate-induced changes are likely to be exacerbated by other well-documented anthropogenic stresses, including overfishing.

Mr. McConney continued by noting how well the overview presentations had set the scene for fully understanding the assessment study. Therefore he only briefly reviewed some of the key concepts and concerns such as the DRM cycle, vulnerability, adaptive capacity, livelihoods, value chains, EAF, social-ecological systems and stakeholder engagement. Noting the importance of both direct and indirect pathways, he summarised information on exposure, sensitivity and impacts on the social-ecological systems of Caribbean marine fisheries, inland fisheries, marine aquaculture, and freshwater and brackish water aquaculture.

He addressed adaptive capacity and the means of reducing vulnerability with frequent reference to the country consultations undertaken in Belize, Grenada, Guyana and Jamaica as part of the consultancy. Mr. McConney ended with examples from the report of the practical measures that could be taken at regional, national and local levels to deal with CCA and DRM in the fisheries and aquaculture sector. These measures in the context of a similarly multi-level strategy and action plan could form the basis of specific programme proposals.

Draft Strategy and Action Plan

Mr. McConney presented a conceptual model for delivering transformational change based on resilience and networking that was consistent with the IP. Showing how the guiding policies of the CCCCC, CDEMA and CRFM framed the draft strategy and action plan, he suggested an integrated vision such as “regional society and economy that is resilient to a changing climate and enhanced through comprehensive disaster management and sustainable use of aquatic resources”. He noted that the Caribbean Community Common Fisheries Policy (CCCFP) provided a new opportunity for mainstreaming CCA and DRM.

Mr McConney observed that the strategy elements and goals of the Regional Framework that formed the basis for the IP were sufficient for crafting the strategy and action plan focused on fisheries and aquaculture. This involved expanding existing provisions and integrating new provisions in an iterative and participatory approach that would:

- Recognise the relevant current content of the IP; expand on it and integrate actions

- Develop actions from the existing strategic elements (top down) but also fit in actions based on ‘fieldwork’ measures (bottom up)
- Use the programme proposals to develop schedules and budgets for strategic action.

The report annexed a draft strategy and action plan that contained existing components of the IP along with new recommendations prepared by the consultants based on their examination of the literature and their consultations with the public and private sectors as well as civil society in several countries. Examples were presented under each of the strategic elements of the Regional Framework and IP. They included actions related to poverty, gender, the Hyogo Framework of Action, crisis prevention and management, rebuilding and rehabilitation, the capacity of the CRFM, policy development, hazard identification and analysis, education and training, partnerships to mobilize resources, network and institutional analysis, local knowledge, economic valuation, investment funding, livelihoods analysis and diversification. Improving the use of livelihoods approaches was considered to be critical, especially for community level adaptation.

Draft Programme Proposals

Mr. McConney presented the results-based programme proposals by first reminding participants of the logical framework principles and structure used to fill the gap between the current situation and desired impacts with the most appropriate action. He revealed a simple visualisation scheme for mapping the level of integration of specific proposals to illustrate their scope. Limitations to the draft programme proposals were acknowledged. He said that prior to implementation, countries needed to negotiate their participation taking into account stakeholder capacity to engage and benefit without unnecessary duplication or burden. Country consultations had made it clear that core constraints lay mainly in governance. The level of involvement and content of proposals would change with the number and capacities of participants. He briefly addressed resource mobilisation, stating that it depended on developing relationships and would require the CRFM to operate more like a network than a highly centralised organization. All of the proposals were intended to incorporate adaptive management in their execution.

The proposals were presented using the logframes in the draft report and participants were encouraged to be creative and innovative in suggesting improvements and even additional proposals that should be formulated. At different levels proposals included:

Regional

- Develop a protocol that specifically addresses integrating CCA and DRM into the CCCFP and national fisheries and aquaculture policies
- Disseminate CDEMA CCA2DRR tools (e.g. G tool) and supporting material to stakeholders, select preferred tools and create learning networks to develop active communities of practice within CRFM
- Increase the content related to climate and disasters in fisheries and aquaculture related university courses and research
- Determine data sharing required between fisheries stock assessment and climate models; and initiate data exchanges
- Develop post harvest processing and marketing capacity to use unfamiliar, altered season or more abundant species

National

- Mainstream CCA and DRM into national ecosystem-based, livelihood-centred management plans for fisheries and aquaculture
- Undertake gender analyses in fisheries and aquaculture to demonstrate usefulness in policy, planning and management
- Intensify boat registration and licensing, vessel monitoring, safety at sea training and such preparatory measures

Local

- Strengthen CCA and DRM linkages especially at local level in order to encourage synergistic interventions, messages
- Document what coping strategies are or have been used for climate variability and disasters to inform interventions
- Develop and implement education/awareness specifically for fisherfolk and fish farmers on climate and disasters.

Climate Change Adaptation in the Eastern Caribbean Fisheries Sector - Project Proposal

Mr. Raymon VanAnrooy (FAO /WECAFC) gave a brief presentation on the status of the Project Proposal on Climate Change Adaptation in the Eastern Caribbean Fisheries Sector that FAO aimed to submit to the Global Environment Facility (GEF) in January 2013 for assistance under the Special Climate Change Fund (SCCF). He outlined the process of the proposal formulation, which started with an analysis of regional priority issues and strategies carried out by The CaribSave Partnership. The regional analysis was followed by the formulation of a 1st draft Project Identification Form, which was discussed at a side-event of the 14th session of the Western Central Atlantic Fishery Commission (WECAFC) and was held in Panama City on 9 February 2012. The partners in the project formulation process, including amongst others CRFM, FAO / WECAFC, CNFO, CaribSave, UWI / CERMES and the Eastern Caribbean States, agreed on the main outcomes, objectives and expected results from the project and in the period March – December 2012 the PIF was finalized. The PIF obtained support from the participating countries (St. Vincent and the Grenadines, Grenada, Dominica, St. Lucia, Trinidad and Tobago, Antigua and Barbuda, and St. Kitts and Nevis) through the submission of formal endorsement letters by the GEF national focal points to FAO. Agreement was also reached on the development of a request for a Project Preparation Grant (PPG). It was argued that this project, once endorsed, would contribute largely to the implementation of the regional strategy and would form an integrated component of the action plan. The workshop participants were invited to submit further comments on the PIF before January 2013 and generate awareness in their respective countries about the project and its objectives. Some non-eastern Caribbean states (e.g. Dominican Republic, Cuba, Haiti, Jamaica and the Caribbean Netherlands) expressed interest in participating in the project and FAO would seek guidance from the GEF Secretariat on whether an increase of scope would be possible.

Discussion

The discussion to wrap up the session started with clarification of model predictions and the likely responses in fisheries systems. Participants considered whether large-scale fisheries and aquaculture were likely to be more resilient than small-scale fisheries. Information was exchanged on the recent impacts of hazards such as heavy rainfall. Opportunities for insurance of fisheries and aquaculture

were discussed both at the enterprise level and through the Caribbean Catastrophe Risk Insurance Facility (CCRIF).

There was a need to prioritise actions that countries wished urgently to proceed with since these must be set into the programmes of regional agencies. It was suggested that a protocol to the CCCFP to address CCA and DRM would be useful for regional policy. There was also discussion on the livelihoods approach to fisheries and the Hyogo Framework of Action that reinforced the call for organisations to communicate more on areas of responsibility and activities. Some participants suggested that, in addition to adaptation, more attention should be paid to mitigation since this should benefit everyone. Energy policies and green economy initiatives were recommended.

Participants and the organising agencies agreed that the draft reports provided sound foundations for achieving the aims of the workshop. The strategy and action plan provided a feasible way forward. The next step would be to examine these outputs more closely and determine areas for improvement.

Working groups

The second day of the workshop comprised mainly working group sessions. Participants self-organised themselves into three working groups each with the task of reviewing the three draft reports prepared for the workshop. The three groups examined the reports from the perspectives of stakeholders at the regional, national and local levels of governance with each group focusing on one level only. Group guidance notes and reporting slide templates were provided. Technical resource persons were assigned to each group. In order to focus thinking from the perspective of resource user stakeholders each group conducted a brief livelihoods scenario exercise. Except for the latter, the working groups' outputs, and the discussion of them collectively on the third day, are summarised below.

Regional

This group comprised 16 persons with Mr Ricardo Yearwood (CDEMA) as leader, Ms. Natalie Boodram (CEHI) as recorder and Lester Gittens (Bahamas) as reporter.

Assessment study

The regional group made the following major comments on the assessment report:

- Coordination and communication among organisations and arrangements is critical
- More research is needed to address climate change impacts and mitigation in the Caribbean
- Support from CCRIF requires further exploration, especially for DRM initiatives
- It should be noted that the CLME Strategic Action Plan (SAP) requires endorsement by countries. In this context, proposals for CRFM and other regional institutional strengthening, as well as greater reference to DRM, can be made under climate mainstreaming in the SAP
- CRFM requires strengthening to be able to carry out additional CCA and DRM activities
- Links also need to be established with national environmental strategies
- Funding of stakeholder engagement in such strategies needs to be addressed more fully
- Highlight existing tools, new tools and best practices in CCA and DRM
- OSPESCA, the Dominican Republic and Cuba (non-CARICOM countries and organizations) need better coverage in the assessment if the scope is Wider Caribbean

- More reference needs to be made to the recently signed CRFM / OSPESCA MOU
- Adapt existing tools for use at the community level such as the benchmarking tool developed by OECS which assesses readiness of communities to mitigate disasters
- If valuation of ecosystems is not being adequately addressed at the national level then maybe it should be at the regional level.

Strategy and action plan

The following comments were made on the strategy and action plan by the regional group:

- DRM involves issues not due to climate change which should be included, such as technological hazards
- Availability of goods and services which may be impacted by disasters but need continuity in supply for a functioning economy (e.g. food) needs to be addressed
- Actions in the current draft need to be focused more on solving current fisheries issues
- Need to make sure there is a link between the effects/impacts and adaptation measures identified in the assessment and the actions outlined in the strategy and action plan
- In strategic element 3, include promotion and use of alternative energy sources (e.g. biofuels) as well as more fuel efficient engines
- The action plan should take advantage of best practices in non-CARICOM countries
- A possible regional approval process can be through WECAFC but it may be best to start with the CRFM and OSPESCA countries.

Programme proposals

Regional level proposals were commented on in detail, with a few highlights shared below:

- Non-CARICOM countries in the Caribbean should participate in the programmes to be developed
- Need to clearly define “protocol” in the context of the CCCFP
- Cost of production of products in all proposals should include dissemination costs
- The Community B-Tool should be linked with the CDEMA G-Tool in activities
- The meaning of the term “community” should be clarified for each level
- Indicator suites should meet the criteria of being both necessary and sufficient
- A stronger proposal is needed on livelihoods research and information acquisition
- Need to monitor environmental parameters for resilience / environmental change
- Need to make sure there is a link between the effects / impacts and adaptation measures identified in the assessment, the actions outlined in the strategy and action plan and the proposals.

National

This group comprised 23 persons with Mr Frederick Ming (Bermuda) as leader, Mr Billy Darroux (Montserrat) as recorder and Capt. Steven Russell (Bahamas) as reporter.

Assessment study

The national group made the following major comments on the assessment report:

- Monitoring and evaluation are critical, as is the need to identify appropriate indicators
- Document best practices for CCA and DRM in the fisheries and aquaculture sectors
- Learning by doing and adapting at all levels are important for success
- Identify existing technical resources in fisheries and aquaculture as a starting point
- A communication strategy, sensitive to the various governance levels and which should include a consultation process in its design, is needed
- Data collection and information management and sharing are needed at national level
- Countries must have comprehensive education policies to sensitize and empower communities, with special emphasis on youth
- National level research agendas for CCA and DRM in fisheries and aquaculture are needed to complement regional level research
- Capacity building at the national level will be essential.

Strategy and action plan

The following comments were made on the strategy and action plan by the national group, referring mainly to the measures in the assessment report that should be incorporated:

- Insurance for small-scale fishers must be improved
- Creating greater awareness of the Hyogo Framework for Action outside the DRM community is essential
- Education must be specifically addressed in relation to fisheries and aquaculture stakeholders
- In evaluating the risks associated with aquaculture development, action should be aimed at ecosystem-based aquaculture which would include CCA and DRM
- National legislation and policies should encompass all hazards (strategy to include technological and geological hazards)
- Improving facilities for vessel and equipment lift out and storage needs emphasis
- Identify appropriate action to address risks associated with aquaculture assets
- Consider how tools such as the CARIBSAVE Risk Atlas may be applied to fisheries and aquaculture
- Damage and loss analysis data must be made more accessible.

Programme proposals

National level proposals were commented on in detail, with a few highlights shared below:

- The budgets are too small, and implementation periods too short, for some proposals
- Other Caribbean countries may need to be included in overall budgetary calculation
- Need regional promotion for fisheries management plan (FMP) development
- Both national and community plans should be gender aware and linked
- Some of the national proposals are too large and need to be broken down into their components with each part being a project.

Local

This group comprised 13 persons with Dr. Sandra Grant (ACP Fish II) as leader, and Ms. Beverly Wade (Belize) as both recorder and reporter.

Assessment study

The local group made the following major comments on the assessment report:

- A definition for the term “aquaculture” should be included in the glossary
- Incentives are needed to promote responsible fishing that would create / result in greater resiliency to climate change and disasters
- Adaptation includes broadening fisherfolk community education programmes to include disaster and climate change issues
- Some information on Dominica appears outdated in the country summary annex.

Strategy and action plan

The following comments were made on the strategy and action plan by the local group:

- Early Warning Systems need to inform research and hazard monitoring systems
- ‘Stoplight’ colour coding associated with priority rankings should be reversed
- Develop education and training to apply to the entire DRM cycle
- Income insurance should be guided by specific climate parameters
- Collaboration and partnerships with different agencies are needed to ensure that the fisheries authorities can respond accordingly to the CCA and DRM needs
- Utilize existing databases and protocols for the collection of data relevant to rapid disaster assessments
- Need for greater coordination among the national disaster management agencies that are the direct links to donors and the mobilization of resources for recovery activities.

Programme proposals

Local level proposals were commented on in detail, with a few highlights shared below:

- CCA and DRM process is two-way, requiring the fisheries communities and fisheries authorities to both be incorporated into all activities
- It is advisable to collaborate with diverse partners (e.g. civil society, private sector)
- Better fisheries databases are required to supply information for damage assessment and recovery activities
- Proposals must enable communities (and fisherfolk organizations) to collect, monitor and analyse data required for rapid damage assessments and recovery activities
- Establish and maintain baseline database in communities to reflect the condition and location of various livelihood assets
- Capacity building of fisheries authorities is required to coordinate the collection of required data.

Discussion

Participants opted to discuss matters in a cross-cutting manner rather than by each governance level. In addition to general comments, organisations were asked to suggest what expertise they could contribute to the regional capacity development and networking, as well as stating their expectations.

General comments

- Attitudes towards risk-taking and the consequences for policy and planning must be better understood, with policies subjected to cost/benefit analysis, to ensure that public funds are not used to unnecessarily support high personal risks.
- More research on appropriate incentives to influence personal and community-level risk-taking attitudes and behaviour is necessary to inform policy.
- Evacuation plans and procedures, for both mandatory and voluntary evacuation, are needed. This is being addressed in Saint Lucia.
- In some cases the forced or voluntary relocation of entire communities may be necessary, and hence the legal-institutional and ethical basis for such movement must be clear.
- More attention needs to be paid to technological innovations such as in fish trap construction in order to reduce losses, damage and ghost fishing. Dominica has experience it can share.
- Capacity must be built to improve advocacy, lobbying and negotiation in international circles.
- Individual, household and community plans need to be strengthened as part of DRM, but these plans would be more effective if early warning systems were well in place and trusted.
- Inadequate insurance for fisheries and aquaculture enterprises is a persistent problem requiring renewed effort to tackle and solve at both national and regional levels.
- Although insurance may remain problematic, better information on fisheries and aquaculture assets can be obtained through regular registration and licensing computerised systems.

Comments by organisations

- OSPECSA countries, the Dominican Republic and Cuba should be included in the initiative. They have information and experience to share, and interests similar to the CARICOM states.
- TNC has experience in economic valuation demonstrated by reports which may be of interest.
- CEHI is interested in ensuring connections are made to ecosystem resilience, watersheds and marine pollution, especially if technological hazards are also to be taken into account.
- Opportunities exist for countries to craft the CLME SAP to better cover CCA and DRM needs.
- Fisheries policies being produced under the ACP Fish II project can address CCA and DRM.
- The OECS Secretariat wishes to see more CCA and DRM aquatic content in formal education.
- CCCCC reiterated that the Regional Framework and IP are designed to address regional needs.
- CARISEC noted that effective networking and communication would reduce duplication and wastage of scarce resources and capacity as well as improve efforts for resource mobilisation.
- CDEMA remains a full partner in the process from design to outcome as its core function.
- UWI offers expertise in climate modelling and many facets of regional capacity development.

Process for endorsement and the way forward

Mr. Milton Haughton of CRFM indicated that, mindful of several key agencies and potential partner organizations being unable to attend the workshop, there would be continued communication to share information on this initiative as it progresses. The consultants and organizing agencies would address the completion of the reports based on the input of workshop participants. Final reports would be tabled at the Caribbean Fisheries Forum in late April 2013 and, if endorsed, go to the Ministerial

Council in May 2013. CCCCC and CDEMA would also shepherd the final outputs through their respective endorsement processes. Consistent with the discussions that took place on resource mobilisation, all opportunities for integrating the strategy, action plan and programme proposals into existing or planned initiatives in the region would be taken advantage of as well as new relationships sought with various agencies.

Summary of main considerations, decisions and recommendations

The process leading to the present workshop started in 2009 with a global workshop¹ in Rome the purpose of which was to develop an assistance programme for fisheries and aquaculture. Reducing vulnerability to disasters and climate change was identified as a priority area by workshop participants, which included experts from this region. Further consultations were undertaken with partners at regional and national levels to identify actions and the way forward. The process aims at building resilience and reducing vulnerability of fisherfolk, fish farmers and their communities to disasters and the impacts of climate change and climate variability.

Workshop participants reviewed and agreed with refinement to the three following draft reports on disaster risk management and climate change adaptation in fisheries and aquaculture: (i) a draft assessment study; (ii) a draft strategy and action plan; and (iii) a draft programme proposal for funding for the region.

Workshop participants stressed the need for mainstreaming disaster risk management, climate change adaptation in fisheries and aquaculture, and highlighted major points at local, national and regional levels for consideration. They stressed the need for community level attention and encouraged livelihoods approaches towards climate change adaptation and disaster risk management. They also emphasized the need for improved cooperation between all sections of society, including government, civil society and the private sector.

Workshop participants underscored the need to assess and value the region's coastal and marine ecosystems' functions, goods and services in a clear and consistent manner, and the value of conducting cost-benefit analyses to determine the most appropriate policies, plans and programmes. In addition, they emphasized the need at all levels (regional, national and local) for innovative insurance schemes for small scale fishers and fish farmers; early warning systems; rapid damage impact assessments and the provision of rapid emergency relief assistance and support where this is needed. They further emphasized the need for gender mainstreaming and special attention to the plight of vulnerable youths in the region, as well as the need for developing capacity, promoting learning by doing and adaptive management approaches, and building resilience through the application of the ecosystem approach to fisheries (EAF) and ecosystem approach to aquaculture (EAA), which will all facilitate the ability to quickly recover and rebuild with improvements in the aftermath of a disaster event.

At the regional level, they stressed the importance of agencies coordination and collaboration, research on region specific climate change impacts including increasing the knowledge base, and improving linkages between CARICOM and non-CARICOM states and organizations. Strengthening CRFM (human and financial capacity) to cooperate with CCCCC and CDEMA in relation to fisheries,

¹ Inception workshop of the FAO extra-budgetary programme on fisheries and aquaculture for poverty alleviation and food security

aquaculture, CCA and DRM was highlighted along with strengthening partnerships with non-governmental organizations and the private sector at all levels.

Participants also discussed and suggested a way forward to endorse and implement the strategy and action plan and programme proposal in order to benefit the people of the region.

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ANNEX 2 – AGENDA

Day 1 – Monday, 10 December 2012	
0830 - 0900	Registration of participants, and distribution of documents
0900 - 0915	Brief welcome Election of a chairperson and introduction of participants <i>A chair will be selected. The Chair will invite each participant to introduce him/her-self and agency.</i>
0915 - 0925	Review of Agenda and meeting arrangements <i>The Chairperson will review the agenda and request that it be adopted by the Meeting. The Chairperson will also confirm general meeting arrangements.</i>
0925 - 0930	Workshop objectives – CRFM
0930 - 1015	Presentations: <ul style="list-style-type: none"> • Global overview of FAO work on disasters and climate change in fisheries and aquaculture – FAO • Implementing the CARICOM Regional Framework for Achieving Development Resilient to Climate Change - CCCCC
1015 - 1030	Discussion
1030 - 1100	COFFEE BREAK
1100 - 1130	<ul style="list-style-type: none"> • Implementing the Comprehensive Disaster Management Strategy - CDEMA • Regional initiatives in advancing disaster risk management and climate change adaptation in fisheries and aquaculture - CRFM <i>These presentations will provide an overview of the mandates, strategies and plans of the FAO, CCCCC, CDEMA and CRFM as they relate to climate change adaptation and disaster risk management and fisheries and aquaculture.</i>
1130 - 1145	Discussion
1145 - 1215	Presentation: Draft Assessment Study on Climate Change Adaptation, Disaster Risk Management and Fisheries and Aquaculture in the CARICOM Region and Country Summaries - UWI – CERMES <i>The presentation will provide an overview of the Draft Assessment Study and Country Summaries.</i>
1215 - 1245	Discussion <i>Participants will discuss the Draft Assessment Study and Country Summaries, focusing on the identification of the main matters, priorities and gaps to be addressed at the workshop and beyond.</i>
1245- 1345	LUNCH
1345 - 1430	Presentation: Draft Strategy and Action Plan on Climate Change Adaptation, Disaster Risk Management and Fisheries and Aquaculture, with a focus on Small Scale Fisheries and Small Scale Aquaculture, in the CARICOM Region – UWI-CERMES <i>The presentation will provide an overview of the Draft Strategy and Action Plan.</i>
1430 - 1500	Discussion <i>Participants will discuss the Draft Strategy and Action Plan, focusing on the identification of the main matters, priorities and gaps to be addressed at the workshop and beyond.</i>
1500 - 1530	COFFEE BREAK
1530 - 1615	Presentation: Draft Programme Proposal on Climate Change Adaptation, Disaster Risk Management and Fisheries and Aquaculture, with a focus on Small Scale Fisheries and Small Scale Aquaculture, in the CARICOM Region – UWI-CERMES <i>The presentation will provide an overview of the Draft Programme Proposal, including the Project Profiles, dealing with Climate Change Adaptation, Disaster Risk Management and Fisheries and Aquaculture.</i>

Day 1 – Monday, 10 December 2012	
1615 - 1645	Discussion <i>Participants will discuss the Draft Programme Proposal, focusing on the identification of the main matters, priorities and gaps to be addressed at the workshop and beyond.</i>
1645 - 1700	Presentation: Status of GEF Project Proposal on Adaptation to Climate Change in the Eastern Caribbean Fisheries Sector - FAO <i>The presentation will provide a brief update on the development of the GEF Project Proposal on Adaptation to Climate Change in the Eastern Caribbean Fisheries Sector.</i>
1700 -1715	Discussion & Close

Day 2 – Tuesday, 11 December 2012	
0900-0915	Presentation: Summary of the previous day's proceedings, highlighting matters to be addressed in the Draft Assessment Study, Draft Strategy and Action Plan and Draft Programme Proposal. <i>The presentation will provide a summary of the previous day's proceedings, highlighting matters to be addressed in the drafts of the Assessment Study, Strategy and Action Plan and Programme Proposal.</i>
0915 - 1000	Discussion <i>Participants will reflect in plenary on the first day's proceedings and review the main matters, priorities and critical gaps to be addressed in the draft reports. They will set up small working groups of 7-9 people to address specific topics identified during the plenary discussions on the drafts of the Assessment Study, Strategy and Action Plan and Programme Proposal.</i>
1000 - 1030	COFFEE BREAK
1030 - 1230	Deliberations in small groups assisted by resource persons <i>The working groups will further address the matters, priorities and critical gaps identified within the drafts of the Assessment Study, Strategy and Action Plan and Programme Proposal and provide editorial comments and recommendations for the finalization of the reports.</i>
1230- 1330	LUNCH
1330 - 1500	Deliberations in small groups assisted by resource persons <i>The working groups will further address the matters, priorities and critical gaps identified within the drafts of the Assessment Study, Strategy and Action Plan and Programme Proposal and provide editorial comments and recommendations for the finalization of the reports.</i>
1500 - 1530	COFFEE BREAK
1530 - 1700	Presentation and plenary discussion of working group reports <i>The working groups will present their reports. These presentations will be followed by discussions in plenary.</i>
1700	Close

Day 3 – Wednesday, 12 December 2012	
0900 - 0915	Presentation: Summary of the previous day's proceedings, highlighting matters still to be addressed in the drafts of the Assessment Study, Strategy and Action Plan and Programme Proposal. <i>Reflections on the second day and identification of any remaining matters to be addressed.</i>
0915 - 1000	Resumption of small groups to address any matters brought up upon reflection <i>Participants will reflect in plenary on the second day's proceedings and review the main matters still to be addressed within the working groups. Then, the small groups will resume to address any matters brought up by plenary discussion.</i>
1000 - 1030	COFFEE BREAK

Day 3 – Wednesday, 12 December 2012	
1030 – 1130	Continuation of small groups to address any matters brought up upon reflection and to finalise their presentations for the plenary. <i>Review of the process for the endorsement of the Assessment Study, Strategy and Action Plan and Programme Proposal by the CRFM and partner agencies as well as the way forward in terms of resource mobilisation and implementation of the Programme Proposal.</i>
1130-1225	<p>Presentations and discussion:</p> <ul style="list-style-type: none"> • Final interactive presentations by the working groups on the main matters identified for attention within the drafts of the Assessment Study, Strategy and Action Plan and Programme Proposal. • Process for the endorsement of the Assessment Study, Strategy and Action Plan and Programme Proposal by the CRFM and partner agencies as well as the way forward in terms of resource mobilisation and implementation of the Programme Proposal. • Summary of main considerations, decisions and recommendations to be included in the workshop report and for other further action. <p><i>These presentations will cover the final outputs from the working groups in relation to refining and finalising the drafts of Assessment Study, Strategy and Action Plan and Programme Proposal; the process for endorsement and moving forward; and the summary of the main considerations, decisions and recommendations.</i></p>
1225 - 1230	Close of the workshop
1230 -1330	LUNCH
1330 - 1500	FAO, CRFM, CCCCC, CDEMA and UWI-CERMES will conduct post-evaluation, debriefing and planning session for the way forward.
1500	Close of Lead Agencies discussions.