Hurricane Preparedness and Post-disaster Needs of the Fisheries Sector in the Eastern Caribbean under the CC4FISH Project

Preparación para Huracanes y Necesidades Posteriores al Desastre del Sector Pesquero en el Caribe Oriental bajo el Proyecto CC4FISH

Préparation contre les Ouragans et des Besoins Post Catastrophe du Secteur de la Pêche dans l'Est des Caraïbes du Projet CC4FISH

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EXTENDED ABSTRACT

Introduction

Globally, the fisheries sector of Small Island Developing States (SIDS) has been identified as particularly vulnerable to climate change impacts (Monnereau et al. 2017). Negative impacts from climate change that are already obvious in this region include coral bleaching, increasing frequency of high intensity storms and hurricanes, increased sea level, and sargassum influxes that are disrupting fishing operations, fish landings and fisher livelihoods (Oxenford and Monnereau 2018). Most SIDS are located in the tropics and subtropics where changes in weather patterns due to climate change are expected to be most pronounced.

The Western Central Atlantic region has been affected by unusual extreme weather events over the last few decades (Magrin et al. 2014). It has been shown that more tropical storms in the Atlantic are developing into dangerous category 4 and 5 hurricanes (Murakami, Mizuta and Shindo,\ 2012). Climate change with continued increases in Sea Surface Temperature change is projected to further enhance hurricane intensity, although the current understanding of tropical cyclone generation and frequency is still limited.

Changes in the intensity of storms and hurricanes threaten immediate and potentially catastrophic impacts to the fisheries sector through disruption of fishing activity, damage to fishing vessels, gear, and coastal infrastructure, impacting the safety of fishers at sea, and jeopardizing the wellbeing of fishers and fishing communities. In 2017, North Atlantic hurricanes brought devastation to vulnerable Caribbean fisheries, in particular to the islands of Dominica and Barbuda. These threats present a significant development challenge to many Caribbean SIDS because of the important contribution of fisheries to multiple aspects of coastal communities' wellbeing, including food security, coastal economies, and social and cultural identities.

Hurricanes also pose a significant toll on critical marine communities in the Caribbean including mangroves, coral reefs, and seagrass beds. Hurricanes can cause extensive physical damage to coral reefs, reducing areas to rubble and reducing live coral cover by 17%, on average, in the year following a hurricane in the Caribbean region. Shallow corals reefs are most affected, as this is where the wave action is greatest but this is also where most fishing often takes place thus affecting food security and livelihood of coastal communities.

The fisheries sector will be further impacted by the impacts of sea level rise combined with increased intensity of storms and hurricanes on the fisheries facilities and infrastructure (e.g. the disruption, destruction and relocation of landing sites due to coastal erosion and flood damage). Limited access to sufficient safe harbour space and hauling sites was a key factor resulting in multimillion dollar in damages and losses to the fisheries sector (mostly boats and engines) in Dominica with the recent passage of Hurricane Maria in 2017 (40% of vessels and gears were lost).

The challenges of climate impacts are recognized by regional research and development institutions, including the UN Food and Agricultural Organisation (FAO), which leads the Climate Change Adaptation of the Eastern Caribbean Fisheries Sector Project (CC4FISH). CC4FISH seeks to increase resilience and reduce vulnerability to climate change impacts in the Eastern Caribbean fisheries sector (Antigua and Barbuda, Dominica, Grenada, Saint Lucia, and St. Vincent and the Grenadines) through the introduction of fisheries adaptation measures and capacity building for fisherfolk.

The magnitude of future impacts, and the ability of marine ecosystems and fisheries to adapt, depends on the rates of change of climatic stimuli and their effects, the response of the marine systems to climate change, and other factors such as: socio-economic adaptive capacity (e.g. governance); market developments; and other ecological drivers (e.g. pollution and habitat degradation).

Factors that can influence the success of adaptation include raising awareness of climate change impacts on the fisheries sector and coastal communities, as well as awareness on possible adaptation measures for the fisheries sector. Better communication and information sharing on these issues can, and in some cases already has, fostered innovative

solutions and development opportunities within the sector. Other factors affecting success include capacity building activities through training and education which empower local stakeholders and facilitate collective self-governing action (e.g. by fisherfolk organisations). Mainstreaming climate change adaptation (CCA) and disaster risk management (DRM) into new or improved fisheries legislation, policies and plans is also important.

A select number of adaptation measures which are already taking place or currently being developed in the Eastern Caribbean region under CC4FISH tailored towards increased resilience in the face of storms and hurricanes are summarised here. These activities include anticipatory and reactive measures as well as private and public initiatives, and are grouped here under three broad categories.

Mitigation and Preparedness

i) Carry out vulnerability and capacity assessments of coastal communities to inform and guide appropriate adaptation measures
ii) Developing Safe Harbour and Disaster Risk Management Plans to improve storm and hurricane preparedness and decrease damages and losses
iii) Provision of safety-at-sea equipment, e.g. VHF radio's and building of repeater systems to improve safety at sea of small scale fishers and improve early warning systems
iv) Training in Post Disaster Damage & Needs assessments to ensure appropriate capture of damages and losses of the fisheries sector and support 'Building back better' recovery plans
v) Development of innovative context-appropriate mobile applications and implement ICT training designed to improve early warning and safety of small-scale fishers with regard to approaching storms and hurricanes inter alia, as well as improving responses to crisis (e.g. training in methods of recording of damage and losses post-disaster).
vi) Development of ICT trainings and learning materials for fishers on (e.g. engine repair, safety at sea, asset recording, damage and loss recording and businesses)
vii) Improved safety-at-sea training and design of safer fishing vessels to decrease risk for fisherfolk

Activities to Support Improved Responses After Extreme Weather Events

i) Development of insurance schemes for fisherfolk (including an app) to improve access to insurance for vessels, life and gear,
ii) Post-Disaster Damage and Needs Assessment to adequately assess the damages and losses to the fisheries sector across the whole value chain and tailor the relief efforts to what is most needed,
iii) Development of a network of Damage and Needs assessment practioners ready to be dispatched in times of need throughout the Caribbean region, and
iv) Support with fishing gear and equipment as well as equipment destined for the harvest sector.

Policy Level

i) Mainstreaming climate change through incorporation into fisheries and coastal development policies, plans and legislation to improve the effectiveness of reducing climate change impacts on the fishery sector. Existing and newly developed fisheries plans and policies need to take a conservative, precautionary approach to managing marine resources and that they are responsive to the uncertainties of climate change and future food security needs.
ii) Under CC4FISH CRFM also developed the "Protocol to integrate CCA and DRM into the Caribbean Community Common Fisheries Policy" which was endorsed at the CRFM Ministerial-council on October 11th 2018.

KEYWORDS: Climate change, hurricanes, fisheries, CC4FISH

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