

# **CLIMATE CHANGE: IMPACTS ON THE SOCIO-ECONOMIC CONDITIONS OF FISHING PEOPLE IN THE COASTAL REGION OF BANGLADESH**

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### **Thesis declaration**

I certify that the work that has been presented in this thesis under the title “**Climate Change: Impacts on the Socio-Economic Conditions of Fishing People in the Coastal Region of Bangladesh**” is to the best of my ability, knowledge and belief, original, except as acknowledged in the text. I herewith proclaim that I have not submitted this material, either in full or in parts for obtaining a degree to any other institution other than Western Sydney University.

I would also like to certify that the thesis is an original piece of research that has been written by me. Any help or assistance that I have taken during my research work and in the preparation of the thesis has been duly acknowledged.

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### **Dedication**

To my respected parents Jitendra Nath Bhadra and Roma Rani Bhadra, my beloved husband Bikash Kumar Saha and my son Arko Saha who have always kept me in their affection, love and prayers.

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## **Abstract**

Climate change has been one of the most critical concerns in recent decades globally. Climate change is predicted to have a range of direct and indirect impacts on marine and freshwater capture fisheries, with implications for fisheries-dependent economies and coastal fishing communities. Bangladesh is one of the most vulnerable countries to climate change in the world. Being a coastal country where most of its people's living is heavily dependent on fishing, the socio-economic rights of the coastal fishing people are being conspicuously affected by climate change. The coastal environments particularly at risk include low-lying coastal plains, sandy beaches, coastal wetlands and coral reefs. Socio-economic conditions of fish farmers, especially in the coastal region in Bangladesh, have been severely affected because of climate change. The impacts of climate change are increasing, including natural disasters—such as rise in sea level—climate disasters and ecological imbalances that are the primary culprits in the demolition, deterioration or diminishment of the socio-economic rights of the coastal fishing people in Bangladesh.

This research analyses the impacts of climate change on coastal fishing people as well as the significant human rights of coastal fishing people that are affected by climate change. The research examines the causes, impacts on, and the relation between climate change and the socio-economic and environmental rights of the coastal fishing people. This study investigates the existing international laws, declarations, conventions and agreements that are relevant for the mitigation of the impacts of climate change on coastal fishing people. In order to evaluate the current regime, the research also investigates the legal and institutional arrangements for the improvement of the socio-economic and environmental conditions of the coastal people of three other coastal states of the Bay of Bengal (BoB) including India, Sri Lanka and Maldives.

This research critically analyses the existing legal frameworks in relation to climate change and climate-induced impacts on the coastal fishing people of Bangladesh. In light of this, this thesis identifies several social and legal drawbacks that are affecting socio-economic conditions of the coastal fishing communities in Bangladesh. Finally, this research proposes

recommendations for improving the socio-economic conditions of the coastal fishing people of Bangladesh that could be helpful for policy makers to address the issue more effectively.

### **Publications**

Lipika Bhadra and Asraful Alam, 'Disaster Risk Reduction and the Capacity Building Plan: Mitigation of the Impacts of Climatic Disasters in the Coastal Area of Bangladesh' (2019) 5(2) *Journal of Climate Change* 1–7.

Lipika Bhadra, 'Global framework: Addressing the Impact of Climate Change on Coastal Population' (2019) XVIII *Journal of Judicial Administration Training Institute* 41–72.

## **List of Abbreviations**

AASWM	Ari Atoll Solid Waste Management
ADB	Asian Development Bank
ADMC	Asian Disaster Management Centre
ADP	Annual Development Programme
AMCDRR	Asian Ministerial Conference for Disaster Risk Reduction
APFIC	Asia-Pacific Fishery Commission
AR5	Fifth Assessment Report
AUS-AID	Australian Agency for International Development
BCCRF	Bangladesh Climate Change Resilience Fund
BCCSAP	Bangladesh Climate Change Strategy and Action Plan
BCCT	Bangladesh Climate Change Trust
BCCTF	Bangladesh Climate Change Trust Fund
BFDC	Bangladesh Fisheries Development Corporation
BFRI	Bangladesh Fisheries Research Institute
BJMSS	Bangladesh Jatiya Matshyajibi Samabay Samiti
BNEP	Bangladesh National Environment Policy
BoB	Bay of Bengal
BOI	Board of Investment
CB	Closed Beels
CBD	Conservation of Biological Diversity
CBC	Climate and Environment Division
CBMF	Community Based Fisheries Management
CBO	Community Based Organization
CC	Catch Certificate
CCA	Climate Change Adaptation
CCAC	Climate Change Advisory Council
CCAP	Climate Change Action Programme
CCC	Climate Change Cell
CCD	Coast Conservation Department
CCPI	Climate Change Performance Index
CCS	Catch Certificate Scheme
CCTF	Climate Change Trust Fund
CCU	Climate Change Unit
CDM	Clean Development Mechanism
CDMP	Comprehensive Disaster Management Program
CECM	Clean Energy for Climate Mitigation
CEIP	Coastal Embankment Improvement Project
CFC	Chlorofluorocarbon
CGIAR	Consultative Group on International Agricultural Research
CITES	Convention on International Trade in Endangered Species
COP	Conference of the Parties
CRZ	Coastal Regulation Zone
CSCCNE	Coordinated Studies on Climate Change for North East region
CZM	Coastal Zone Management
CZMP	Coastal Zone Management Plan

CZP	Coastal Zone Policy
DAHD&F	Department of Animal Husbandry, Dairying and Fisheries
DFAR	Department of Fisheries and Aquatic Resources
DMA	Disaster Management Act
DMRD	Disaster Management and Relief Division
DNP	Department of National Planning
DoE	Department of Environment
DoF	Department of Fisheries
DRR	Disaster Risk Reduction
EBA	Ecosystem-Based Adaptation
ECCO	Environment and Climate Change Outlook
EIA	Environmental Impact Assessment
EEZ	Exclusive Economic Zone
EU	European Union
EWCE	Extreme Weather and Climate Events
FAO	Food and Agriculture Organisation
FAB	Fisheries Advisory Board
FAR	First Assessment Report
FIP	Fishery Improvement Project
FMA	Fisheries Management Agency
FY	Fiscal/Financial Year
FYP	Five Year Plan
GAP	Good Aquaculture Practices
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GMP	Good Manufacturing Practices
GO	Government organisation
GoB	Government of Bangladesh
GoM	Government of Maldives
HACCP	Hazard Analysis and Critical Control Points
ICCPR	International Covenant on Civil and Political Rights
ICES	International Council for the Exploration of the Sea
ICESCR	International Covenant on Economic, Social and Cultural Rights
IDA	International Development Association
ICM	Integrated Coastal Management
ICZM	Integrated Coastal Zone Management
ILO	International Labour Organisation
IMO	International Maritime Organization
INC	Intergovernmental Negotiating Committee
INCCA	Indian Network for Climate Change Assessment
INDC	Intended Nationally Determined Contributions
INSARAG	International Search and Rescue Advisory Group
IOM	International Organization for Migration
IPCC	Intergovernmental Panel on Climate Change
ITLOS	International Tribunal for the Law of the Sea



IUCN	International Union for Conservation of Nature
LDC	Least Developed Country
LTEO	Long Term Ecological Observatories
MAFW	Ministry of Agriculture and Farmers' Welfare
MCS	Monitoring, Control and Surveillance
MDG	Millennium Development Goal
MDSP	Multipurpose Disaster Shelter Project
MED	Ministry of Economic Development
MEL	Monitoring, Evaluation and Learning
MFAR	Ministry of Fisheries and Aquatic Resources
MFRA	Marine Fishing Regulation Act
MFT	Ministry of Finance and Treasury
MLF	Multilateral Fund
MMD	Web Portal Mera Matsya Dhan
MMT	Million Metric Tons
MNDF	Maldives National Defence Force
MoDMR	Ministry of Disaster Management and Relief
MoEFCC	Ministry of Environment, Forest and Climate Change
MoF	Ministry of Finance
MOFA	Ministry of Fisheries and Agriculture
MOFL	Ministry of Fisheries and Livestock
MoL	Ministry of Land
MoSW	Ministry of Social Welfare
MoWR	Ministry of Water Resource
MPA	Marine Protected Area
MPEDA	Marine Products Export Development Authority Act
NACA	Network of Aquaculture Centres in Asia and the Pacific
NAP	National Adaptation Plan
NAPA	National Adaptation Program of Action
NAPCC	National Action Plan on Climate Change
NASA	National Aeronautics and Space Administration
NBSAP	National Biodiversity Strategy and Action Plan
NCSD	National Council for Sustainable Development
NCAP	National Carbonaceous Aerosols Programme
NCS	National Conservation Strategy
NCSD	National Council for Sustainable Development
NDC	Nationally Determined Contributions
NEMAP	National Environment Management Action Plan
NEP	National Environmental Policy
NFDB	National Fisheries Development Board
NGO	Non-Government Organisation
NHRCB	National Human Rights Commission, Bangladesh
NICCA	National Institute for Climate Change Studies and Actions
NID	National Identity Card
NITI	National Institution for Transforming India
NPC	National Planning Council
NSSS	National Social Security Strategy
OHCHR	Office of the High Commissioner for Human Rights

PACC	The Pacific Adaptation to Climate Change
PL	Post Larva
PMBP	Padma Multi-Purpose Bridge Project
RDB	Rural Development Board
RIMES	Regional Integrated Multi-Hazard Early Warning System
SAARC	South Asian Association for Regional Co-operation
SDG	Sustainable Development Goal
SDMC	SAARC Disaster Management Centre
SEMP	Sustainable Environment Management Program
SIC	Small Island Country
SIFFS	South Indian Federation of Fishermen Societies
SHG	Self-Help Group
SME	Small to Medium Enterprise
SOD	Standing Orders on Disaster
SPCZ	South Pacific Convergence Zone
SPF	Specific Pathogen-Free
SSC	Secondary School Certificate
SSNP	Social Safety Net Program
TCP	Technical Cooperation Program
UNCLOS	United Nations Convention on the Law of the Sea
UDHR	Universal Declaration of Human Rights
UNHCR	United Nations High Commissioner
UN	United Nations
UNDAF	United Nations Development Assistance Framework
UNDP	United Nation Development Programme
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNO	Upazila Nirbahi Officer
UNOHCHR	UN Office of the High Commissioner for Human Rights
URP	Urban Resilience Project
VGD	Vulnerable Group Development
VGf	Vulnerable Group Feeding
VMS	Vessel Monitoring System
WCCM	Wetlands Conservation and Coral Reef Monitoring for Adaptation to Climate Change
WCPEC	Western and Central Pacific Fisheries Commission
WHO	World Health Organization
WMO	World Meteorological Organization
WTO	World Trade Organization

## Glossary of Terms

**Beel:** Typically, beels are formed by inundation of low-lying lands during flooding where some water gets trapped even after flood waters recede from the flood plains. Beels are generally smaller than haors.

**Baor:** Oxbow lake. In greater Comilla, Faridpur, Dhaka and Pabna districts a beel is sometimes referred to as a baor.

**Canal:** An artificial waterway constructed to allow the passage of boats or ships inland or to convey water for irrigation.

**Flood point beel:** Beels may also be caused by filling up of low-lying areas during rains, especially during the monsoon season. The deepest part of the wetlands is known more often as the beel. During monsoons, the beels and floodplains become deeply flooded and turn into a single water reservoir.

**Haors:** In north-eastern Bangladesh there are large water bodies called haors. A haor is a bowl shaped depression which is flooded every year during monsoon. Throughout the rainy season a haor is such a vast stretch of turbulent water that it is thought of as a sea within which villages appear as islands. It remains under water for seven months of the year. During the dry season, water drains out leaving small shallow lakes exposing rich soil extensively cultivated for rice.

**Jalmohal:** Fishery leased out by the government for revenue (a government-owned water bodies).

**Khas land:** Government-owned land in which nobody has property rights. It is land available for allocation according to government priorities.

**Khas Jalmohal:** Government-owned water bodies, leased out by the government for revenue.

**Upazila:** Local government territory in Bangladesh (a sub-district).

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## CHAPTER ONE

### INTRODUCTION

#### I RESEARCH BACKGROUND

Climate change has been an important issue since the industrial development for economic benefits.<sup>1</sup> Climate change is one of the greatest threats to human wellbeing, posing a severe risk to basic human rights, such as the right to life, food, health and an adequate standard of living for individuals and communities across the world.<sup>2</sup> Increasing global temperatures, rising sea levels, climatic disasters and ecological imbalance are the major impacts of climate change.<sup>3</sup> The United Nations High Commissioner for Refugees (UNHCR) confirmed that approximately 36 million people were displaced by natural-hazard-related disasters in 2009, and the number will increase to at least 50 million by 2050.<sup>4</sup> Studies by the International Organization for Migration (IOM) show that about 200 million people worldwide will have been displaced and migrated by 2050.<sup>5</sup> The international community is concerned about the consequences of the migration of climate-distressed people. For example, the International Federation of Red Cross observed that climate change disasters are currently a bigger cause of population displacement than war and persecution.<sup>6</sup> The coastal communities are the worst victims of the impacts of climate change. Climate change is causing a serious disruption to the functioning of coastal communities, with widespread human, material, economic and environmental losses and impacts.<sup>7</sup>

Bangladesh is a coastal state of the Bay of Bengal (BoB) and the coastal community is being significantly affected by the impact of climate change.<sup>8</sup> Bangladesh is one of the countries

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<sup>1</sup> Lee Tien Ming et al, 'Predictors of Public Climate Change Awareness and Risk Perception Around the World' (2015) 5 *Nature Climate Change* 1014.

<sup>2</sup> Ian Gough, 'Climate Change and Sustainable Welfare: An Argument for the Centrality of Human Needs' (2014) CASE/182 *London School of Economics* 1–25.

<sup>3</sup> IPCC, *Chapter-3 Impacts of 1.5°C Global Warming on Natural and Human Systems* <[https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15\\_Chapter3\\_Low\\_Res.pdf](https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Chapter3_Low_Res.pdf)>.

<sup>4</sup> Bayes Ahmed, 'Who Takes Responsibility for the Climate Refugees?' (2017) 10 *International Journal of Climate Change Strategies and Management* 1, 6.

<sup>5</sup> Oli Brown, *Migration and Climate Change* (International Organization for Migration, 2008) 11.

<sup>6</sup> United Nations Environment Programme, *Natural Disasters Contribute to Rise in Population Displacement* (2008) <<http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=538&ArticleID=5842&I=en>>.

<sup>7</sup> UNISDR, *Terminology on Disaster Risk Reduction* <<https://www.unisdr.org/we/inform/publications/7817>>.

<sup>8</sup> Asraful Alam and Lipika Bhadra, 'Disaster Risk Reduction and the Capacity Building Plan: Mitigation of the Impacts of Climatic Disasters in the Coastal Area of Bangladesh' (2019) 5(2) *Journal of Climate Change*, 1.

most vulnerable to climate change in the world.<sup>9</sup> Over the past 25 years, it has suffered several climate hazards and natural disasters, such as flood and temporary displacement within the country.<sup>10</sup> Almost every year, more than one natural disaster occurs in Bangladesh, which harms the life, land and livelihood of the affected people.<sup>11</sup> In 2012, the Global Climate Risk Index ranked Bangladesh as the most vulnerable country to climate change, and in 2015 Bangladesh was ranked the sixth most climate-exposed country.<sup>12</sup> Floods, cyclones and tidal waves are the most common climatic hazards affecting millions of people every year in Bangladesh, and with varied scale.<sup>13</sup> The government of Bangladesh estimated that 20 million people from coastal areas would be displaced and so planned migration must be considered as a vital policy option.<sup>14</sup> Frequent windstorms, increased water salinity, earthquakes, flood and drought are making many coastal people homeless and causing losses of livelihood.<sup>15</sup> The number of landless and small landowners expanded alarmingly, and they are compelled to migrate towards city areas.<sup>16</sup>

Every year, climatic disasters such as cyclones, storms and floods cause significant loss of life and living resources. Nine in ten of the most commonly reported disasters are directly or indirectly related to weather or climate in Bangladesh,<sup>17</sup> where about half of the population lives less than five metres above the mean sea level.<sup>18</sup> It is predicted that Bangladesh will

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<sup>9</sup> Md. Sadequr Rahman, 'Climate Change, Disaster and Gender Vulnerability: A Study on Two Divisions of Bangladesh' (2013), 2 *American Journal of Human Ecology* 2, 72–82.

<sup>10</sup> Mathew Walsham, *Assessing the Evidence: Environment, Climate Change and Migration in Bangladesh* (2010). International Organization for Migration (IOM) Regional Office for South Asia House # 13A, Road # 136, Gulshan – I, Dhaka 1212, Bangladesh  
<[https://www.iom.int/jahia/webdav/site/myjahiasite/shared/shared/mainsite/events/docs/Assessing\\_the\\_Evidence\\_Bangladesh.pdf](https://www.iom.int/jahia/webdav/site/myjahiasite/shared/shared/mainsite/events/docs/Assessing_the_Evidence_Bangladesh.pdf)>.

<sup>11</sup> Mohammad Morad Hossain Khan and Nazmun Nahar, 'Natural Disasters: Socio-Economic Impacts in Bangladesh' (2014), 13 *Banglavisian*, 1, 59, 61.

<sup>12</sup> Naser Ahmed and James S. Diana, 'Coastal to inland: Expansion of prawn farming for adaptation to climate change in Bangladesh' (2015) 2 *Aquaculture Reports* 67; Kreft, S. et al, 'Global Climate Risk Index 2015, Who Suffers Most from Extreme Weather Events?' Weather-related Loss Events in 2013 and 1994–2013. (2014) *Germanwatch*, 6.

<sup>13</sup> Mallick Biswajit et al, 'Living with the Risks of Cyclone Disasters in the South-Western Coastal Region of Bangladesh' (2017) 4 *Environment* 13, 2.

<sup>14</sup> Ministry of Environment, Forest and Climate Change, *Bangladesh Climate Change Strategy and Action Plan (2009)*, (Government of Bangladesh) <<https://moef.gov.bd/>>.

<sup>15</sup> Yi Chang et al, 'Adaptation of Fisheries and Mariculture Management to Extreme Oceanic Environmental Changes and Climate Variability in Taiwan' (2013) 38 *Marine Policy* 476–82.

<sup>16</sup> Md. Habib Torikul and Farjana Sonia, 'Climate Change, Natural Disasters and Vulnerability to Land Displacement in Coastal Region of Bangladesh' (2014) 5(2) *International Journal of Innovation and Applied Studies*, 150–159.

<sup>17</sup> Asian Disaster Reduction Centre, Annual Report (2017)  
<[https://www.adrc.asia/publications/annual/17/2017\\_ADRC\\_Annual\\_Report.pdf](https://www.adrc.asia/publications/annual/17/2017_ADRC_Annual_Report.pdf)>.

<sup>18</sup> Displacement Solutions, 'Climate Displacement in Bangladesh: The Need for Urgent Housing, Land and Property (HLP) Rights Solutions May 2012,'<sup>14</sup>  
<[https://unfccc.int/files/adaptation/groups\\_committees/loss\\_and\\_damage\\_executive\\_committee/application/pdf/ds\\_bangladesh\\_report.pdf](https://unfccc.int/files/adaptation/groups_committees/loss_and_damage_executive_committee/application/pdf/ds_bangladesh_report.pdf)>.

lose 17% of its coastal land by 2050 due to flooding caused by climate change, and this will trigger approximately 20 million climate refugees.<sup>19</sup> Bangladesh is one of most potential hotspots threatened by intense tropical cyclones, rising sea levels and very high temperatures.<sup>20</sup> A severe flood, inundating approximately 60% of Bangladesh's land area, hits the country every four to five years.<sup>21</sup> Currently, an estimated 8.3 million Bangladeshi live in high-risk cyclone zones.<sup>22</sup> This figure is expected to grow to 20.3 million people by 2050 due to a climate-induced intensification of cyclones.<sup>23</sup>

Bangladesh will be among the most affected countries in South Asia due to an expected 2°C rise in the world's average temperatures in the next decades, with rising sea levels, more extreme heat and more intense cyclones threatening food production, livelihoods and infrastructure.<sup>24</sup> The Bangladeshi coastal zone is 711 km long and comprises 19 districts—Bagerhat, Barisal, Barguna, Bhola, Chittagong, Chandpur, Cox's Bazar, Feni, Gopalganj, Jhalkathi, Jessore, Khulna, Lakshmipur, Noakhali, Narail, Pirojpur, Potuakhali, Sariatpur and Sathkhira—and 147 upazilas.<sup>25</sup> Approximately 14.6 million coastal people in Bangladesh are vulnerable because of widespread natural disasters and this figure would grow to 18.5 million by 2050.<sup>26</sup> Coastal flooding, drought, cyclone, salinity, rainfall and sea-level rise are increasing rapidly.<sup>27</sup> The government also estimates that nearly 35 million people from all 19

<sup>19</sup> NRDC, *Bangladesh: A Country Underwater, a Culture on the Move* <<https://www.nrdc.org/onearth/bangladesh-country-underwater-culture-move>>.

<sup>20</sup> World Bank, *Warming Climate to Hit Bangladesh Hard with Sea Level Rise, More Floods and Cyclones*, World Bank Report Says <<http://www.worldbank.org/en/news/press-release/2013/06/19/warming-climate-to-hit-bangladesh-hard-with-sea-level-rise-more-floods-and-cyclones-world-bank-report-says>>.

<sup>21</sup> Displacement Solutions, *Climate Displacement in Bangladesh: The Need for Urgent Housing, Land and Property (HLP) Rights Solutions*, May 2012, <[https://unfccc.int/files/adaptation/groups\\_committees/loss\\_and\\_damage\\_executive\\_committee/application/pdf/ds\\_bangladesh\\_report.pdf](https://unfccc.int/files/adaptation/groups_committees/loss_and_damage_executive_committee/application/pdf/ds_bangladesh_report.pdf)>.

<sup>22</sup> *Journey with Green Climate Fund: Bangladesh's Country Programme for Green Climate Fund* (2018) NDA Secretariat Economic Relations Division, Ministry of Finance, Government of the Peoples' Republic of Bangladesh, p. 8 <[https://erd.portal.gov.bd/sites/default/files/files/erd.portal.gov.bd/page/1a7e22cf\\_6faf\\_488a\\_86ff\\_d57855ea38cc/Bangladesh\\_GCF-CP\\_Draft.pdf](https://erd.portal.gov.bd/sites/default/files/files/erd.portal.gov.bd/page/1a7e22cf_6faf_488a_86ff_d57855ea38cc/Bangladesh_GCF-CP_Draft.pdf)>.

<sup>23</sup> World Health Organization, *Bangladesh "climate-proofs" to protect health* <<https://www.who.int/features/2015/climate-proofing-bangladesh/en/>>.

<sup>24</sup> The World Bank (2013), *Warming Climate to Hit Bangladesh Hard with Sea Level Rise, More Floods and Cyclones*, <<https://www.worldbank.org/en/news/press-release/2013/06/19/warming-climate-to-hit-bangladesh-hard-with-sea-level-rise-more-floods-and-cyclones-world-bank-report-says>>.

<sup>25</sup> MH Minar et al, 'Climate Change and Coastal Zone of Bangladesh: Vulnerability, Resilience and Adaptability' (2013) 13(1) *Middle-East Journal of Scientific Research* 114.

<sup>26</sup> World Bank, *Bangladesh and Maldives Respond to Climate Change Impacts* (7 December 2012) <<https://www.worldbank.org/en/news/press-release/2012/12/07/bangladesh-maldives-respond-to-climate-change-impacts>>.

<sup>27</sup> N Ahmed and J Diana, 'Coastal to Inland: Expansion of Prawn Farming for Adaptation to Climate Change in Bangladesh' (2015) 2 *Aquaculture Reports* 67–76.

districts will be affected severely by future sea-level rises.<sup>28</sup> Among the coastal communities, the fishing people of Bangladesh are very vulnerable and at a high risk of suffering from the impacts of climatic change.<sup>29</sup>

The fishing people are a community that is substantially dependent on, and engaged in, the harvest or processing of fishery resources to meet social and economic needs. They include fishing vessel owners, operators, crew and fish processors.<sup>30</sup> In the coastal areas, the fisheries sector is particularly impacted by climate change, which can undermine the ability of local households to sustain their income-generating activities. Due to their basic socio-economic and environmental conditions, the very survival of the Bangladeshi fishing communities is now threatened by climate change. They are losing their occupations, migrating, starving and generally becoming more vulnerable.<sup>31</sup> In the aftermath of extreme weather events within the coastal areas, displacement and migration are common in Bangladesh.<sup>32</sup>

There are many relevant international instruments for the mitigation of the impacts of climate change on these coastal fishing people. The United Nations (UN) has provided international legal and institutional frameworks for the mitigation of the impacts of climate change. Examples of such treaties include the *United Nations Framework Convention on Climate Change* 1992 (UNFCCC), the *Kyoto Protocol to the United Nations Framework Convention on Climate Change* 1997 (the Kyoto Protocol) and the *Paris Agreement* 2015 (the Paris Agreement). In addition, the UN has established the Intergovernmental Panel on Climate Change (IPCC) for assessing the impacts and recommending actions and plans for mitigating climate change. Assessment reports of the IPCC helps us to understand the impacts of climate change on the coastal communities including the coastal fishing people. Furthermore, the Fisheries and Aquaculture Department of the United Nations' Food and

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<sup>28</sup> Coastal Zone Policy 2005, Ministry of Water Resources Government of the People's Republic of Bangladesh.

<sup>29</sup> Zaheed Hasan and Melissa Nursey-Bray, 'Artisan Fishers' Perception of Climate Change and Disasters in Coastal Bangladesh' (2018) 61 *Journal of Environmental Planning and Management* 7, 1204–23.

<sup>30</sup> OECD, *Glossary of Statistical Terms* <<https://stats.oecd.org/glossary/detail.asp?ID=993>>.

<sup>31</sup> Seara Tarsila et al, 'Perceived Adaptive Capacity and Natural Disasters: A fisheries case study' (2016) 38 *Global Environmental Change* 49–57; Ahmed Istikh et al, 'Climate change, environmental stress and loss of livelihoods can push people towards illegal activities: a case study from coastal Bangladesh' (2019), 11 *Climate and Development* 10, 907–8.

<sup>32</sup> *Journey with Green Climate Fund: Bangladesh's Country Programme for Green Climate Fund* (2018) NDA Secretariat Economic Relations Division, Ministry of Finance, Government of the Peoples' Republic of Bangladesh, 8  
<[https://erd.portal.gov.bd/sites/default/files/files/erd.portal.gov.bd/page/1a7e22cf\\_6faf\\_488a\\_86ff\\_d57855ea38cc/Bangladesh\\_GCF-CP\\_Draft.pdf](https://erd.portal.gov.bd/sites/default/files/files/erd.portal.gov.bd/page/1a7e22cf_6faf_488a_86ff_d57855ea38cc/Bangladesh_GCF-CP_Draft.pdf)>.

Agriculture Organization (FAO) is working for the protection of the rights of coastal community including the fishing people. These international treaties, institutions and state actions for climate-change mitigation play an important role in minimising the impacts of climate change on fishing peoples.

At the regional level, several coastal States of the BoB have developed policies, legislation and plans, and have created institutions, to mitigate the impacts of climate change on the coastal community and the fishing people. For example, India, Sri Lanka and Maldives have adopted laws, policies and strategies for responding to climate-induced impacts on the coastal fishing people and have achieved significant progress.<sup>33</sup>

Dealing with climate change is one of the most important challenges for Bangladesh.<sup>34</sup> Lack of adequate regulations and institutions is a key reason for climate vulnerability of the coastal fishing people. Bangladesh may need to adopt and implement adequate mitigation and adaptation laws, and policies, to ensure the rights of climate-distressed people.<sup>35</sup> In particular, the conspicuous impacts of climate change on the coastal fishing people of Bangladesh justifies an in-depth analysis of the legal and institutional arrangements to improve their socio-economic conditions. It is necessary to examine the current legal and institutional framework concerning climate change to explore any inadequacies in mitigating its impacts and to improve the socio-economic conditions of the coastal fishing people of Bangladesh. This research examines the current legal and institutional frameworks regarding mitigating the impacts of climate change on the socio-economic conditions of the coastal fishing people of the BoB. Based on the international and regional legal and institutional regimes, this study recommends appropriate national policy for the protection of the socio-economic and environmental rights of the coastal fishing people of Bangladesh in particular.

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<sup>33</sup> India, Sri-Lanka and Maldives are selected for analysis as the counties are also the coastal states of the Bay of Bengal and have faced the same problems as Bangladesh to protect the socio-economic and environmental rights of the coastal fishing people; Mahfuz Ahmed and Suphachol Suphachalasai, 'Assessing the Costs of Climate Change and Adaptation in South Asia' (2014) *Asian Development Bank* 3–119.

<sup>34</sup> Mostafa Mahmud Naser, 'Climate Change and Migration: Law and Policy Perspectives in Bangladesh' (2015) 2 *Asian Journal of law and society* 1 35–53.

<sup>35</sup> Nazmul Huque et al, 'Climate Change Impacts in Agricultural Communities in Rural Areas of Coastal Bangladesh: A Tale of Many Stories' (2015) 17 *Sustainability* 8437 60.

## II THESIS STATEMENT

The primary objective of this research is to explore the inadequacies in the current national legal and policy framework relating to improving the socio-economic and environmental conditions of the coastal fishing people of Bangladesh in the context of climate change. The research defines ‘coastal fishing people’ as one of the most climate-change vulnerable coastal communities in Bangladesh. The research analyses the international, regional and national frameworks—both legal and institutional—relating to the impacts of climate change on the coastal fishing people of Bangladesh.

The research examines the international legal and institutional frameworks of the impacts of climate change and calls for international commitment and support for coastal fishing people. Moreover, the research analyses the regional legal and institutional arrangements and facilities to discover the key characteristics of the legal and institutional arrangements of the other coastal states of the Bay of Bengal (BoB) in responding to the international commitments and approaches the impacts of climate change on their coastal fishing people. India, Sri Lanka and Maldives are selected as case studies because of their geographical closeness and the similar climate impacts on their coastal fishing people.

The research uncovers the inadequacies in the national, regional and international legal and institutional frameworks that purport to improve the socio-economic conditions of the coastal fishing people. The research proposes recommendations on how the impacts of climate change on coastal fishing people can be better mitigated to improve the socio-economic conditions of the coastal fishing people in Bangladesh.

## III RESEARCH QUESTIONS

The main research question is: *What are the inadequacies in the current legal and institutional frameworks concerning the impacts of climate change on the socio-economic and environmental conditions of the coastal fishing people of Bangladesh?* In order to respond to this question, the study proposes five sub-questions:

1. What are the current socio-economic conditions of the coastal fishing people of Bangladesh and how are they affected by climate change?

2. What are the existing international legal and institutional frameworks responding to the impacts of climate change on the socio-economic conditions of the coastal fishing people?
3. What are the regional legal and institutional frameworks responding to the impacts of climate change on the socio-economic conditions of the coastal fishing people of the Bay of Bengal (BoB)?
4. What are the current legal and institutional frameworks concerning the impacts of climate change on the socio-economic conditions of the coastal fishing people in Bangladesh?
5. What are the shortcomings of the current legal and institutional frameworks concerning the impacts of climate change on the coastal fishing people of Bangladesh?

#### IV SIGNIFICANCE OF THE RESEARCH

The impacts of climate change vary from country to country. Bangladesh and its fisheries sector are severely vulnerable to global climate change. The coastal areas of Bangladesh are at significant risk of seasonal climatic disasters, which include coastal flooding, drought, cyclone, rainfall pattern change, salinity and sea-level rise.<sup>36</sup> Most of the fishery-dependent people reside in the low-lying coastal areas, which are highly exposed to the impacts of climate change. Approximately 12 million people are dependent directly or indirectly for their livelihood on the fisheries sector.<sup>37</sup> According to the statistics of the Department of Fisheries of Bangladesh, more than 11 per cent of the total population of Bangladesh is engaged either full time or part time in the fisheries sector for their livelihoods.<sup>38</sup> Many climate shocks and stresses impact their livelihoods by reducing the minimum enjoyment of their socio-economic and environmental rights.<sup>39</sup> Research has been carried out on climatic impacts on the socio-economic conditions of coastal fishing people in Bangladesh,<sup>40</sup> but

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<sup>36</sup> Nesar Ahmed et al, 'The Impact of Climate Change on Prawn Postlarvae Fishing in Coastal Bangladesh: Socioeconomic and Ecological Perspectives' (2013) 39 *Marine Policy* 224–33.

<sup>37</sup> Food and Agriculture Organization of the United Nations, *National Aquaculture Sector Overview Bangladesh* file:///Users/ArKo/Downloads/FAO%20National%20Aquaculture%20Sector%20Overview%20(NASO).pdf

<sup>38</sup> Yearbook of Fisheries of Statistics of Bangladesh 2017-18, 'Fisheries Resources Survey System Department of Fisheries Bangladesh Ministry of Fisheries and Livestock Government of the People's Republic of Bangladesh' (2018) 9.

<sup>39</sup> Md. Monirul Islam et al, 'Limits and Barriers to Adaptation to Climate Variability and Change in Bangladeshi Coastal Fishing Communities' (2014) 43 *Marine Policy* 208–216.

<sup>40</sup> Ahmed, above n 39.

there is no in-depth analysis of the current legal and institutional frameworks to mitigate the impacts of climate change on these people.

The government of Bangladesh has adopted several policies, plans and projects for helping the fishing people generally to improve their socio-economic conditions. The National Adaptation Programmes of Action (NAPA) 2005, Bangladesh Climate Change Strategy and Action Plan 2009 and the creation of the Climate Change Unit and the Climate Trust Fund are the major initiatives in response to the impacts of climate change in Bangladesh. However, the government has not achieved positive results in mitigating the impacts of climate change and improving the socio-economic and environmental rights of the coastal fishing people. This research examines the legal and institutional frameworks related to the socio-economic and environmental rights of the coastal fishing people in Bangladesh. It aims to identify the shortcomings in the current legal and institutional arrangements concerning climate change aimed at improving the socio-economic and environmental rights of the coastal fishing people in Bangladesh. This research will suggest necessary legal reforms and institutional changes to develop an effective legal and institutional framework to enhance the socio-economic and environmental conditions of coastal fishing people of Bangladesh affected by climate change.

## **V INTELLECTUAL CONTENTS**

The impacts of climate change have been subject to much research and analysis over the last two decades.<sup>41</sup> However, there is a significant lack of analysis of the impacts of climate change on coastal fishing people with particular reference to their socio-economic and environmental rights. This literature review on the impacts of climate change on the coastal fishing people is presented under five headings: impacts of climate change on the coastal fishing people of Bangladesh; international legal and institutional frameworks relevant for mitigating the impacts of climate change on coastal fishing people; regional legal and institutional frameworks in the coastal states of the Bay of Bengal (BoB) on the impacts of climate change; national legal and institutional frameworks for tackling the impacts of climate change on the coastal fishing people of Bangladesh; and the shortcomings in the current legal and institutional arrangements for addressing the impact of climate change

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<sup>41</sup> Kelly Levin, '6 Ways the Climate Changed Over the Past Decade', *World Resources Institute* (Blog Post, 20 December 2019) <<https://www.wri.org/blog/2019/12/6-ways-climate-changed-over-past-decade>>.



impacts on the coastal fishing people of Bangladesh. The relevant literature is discussed in detail below.

### **A Impacts of Climate Change on the Coastal Fishing People of Bangladesh**

The impact of climate change upon human rights is regarded as a significant issue by the world's leading human rights organisations, such as Amnesty International and Human Rights Watch.<sup>42</sup> The United Nations Human Rights Committee and the special rapporteurs address the relationship between climate change and human rights.<sup>43</sup> It is necessary to protect the environment to ensure an individual's right to life, family and personal dignity. Human rights and the environment are naturally connected.<sup>44</sup> Millions of people have been affected by climatic hazards globally—such as sea-level rises—and thus the legal status of environmentally displaced people is a matter of international law.<sup>45</sup> Predominantly, climate change is causing serious disruption of the economic, social and cultural rights guaranteed by the *International Covenant on Economic, Social and Cultural Rights* (ICESCR) 1966. It has been recognised that climate change is a critical developmental challenge for fields or areas such as poverty, livelihood, food, security and social cohesion.<sup>46</sup>

ICESCR imposes several legal obligations upon States concerning the social, cultural and economic rights of people affected by natural disasters such as tropical cyclones and floods.<sup>47</sup> According to Article 11(1) of ICESCR, the States Parties to the present Covenant recognize the right of everyone to an adequate standard of living for himself and his family, including

adequate food, clothing and housing, and to the continuous improvement of living conditions. The States Parties will take appropriate steps to ensure the realization of this

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<sup>42</sup> Ron Dudai, 'Climate Change and Human Rights Practice: Observations on and around the Report of the Office of the High Commissioner for Human Rights on the Relationship between Climate Change and Human Rights' (2009) 1 *Journal of Human Rights practice* 2, 294–307; United Nations Human Rights, *Human Rights and Climate Change* <<https://www.ohchr.org/EN/Issues/HRAndClimateChange/Pages/HRClimateChangeIndex.aspx>>.

<sup>43</sup> Ibid.

<sup>44</sup> OHCHR, *2008 OHCHR study Climate Change and Human Rights* <[http://www.ohchr.org/Documents/Issues/ClimateChange/Submissions/International\\_Commission\\_of\\_Jurists\\_Dutch\\_Section\\_NJCM\\_ClimateChange\\_HR.pdf](http://www.ohchr.org/Documents/Issues/ClimateChange/Submissions/International_Commission_of_Jurists_Dutch_Section_NJCM_ClimateChange_HR.pdf)>; United Nations General Assembly (A/HRC/19/34), *Report of the United Nations High Commissioner for Human Rights* <[https://www.ohchr.org/Documents/HRBodies/HRCouncil/RegularSession/Session19/A-HRC-19-34\\_en.pdf](https://www.ohchr.org/Documents/HRBodies/HRCouncil/RegularSession/Session19/A-HRC-19-34_en.pdf)>.

<sup>45</sup> Hoinga Nina and RazzaqueJona, 'Unacknowledged and Unwanted? Environmental Refugees' in Search of Legal Status' (2012) 8(1) *Journal of Global Ethics* 19–40.

<sup>46</sup> Food and Agriculture Organization of the United Nations *Climate Change and Food Security: A Framework Document* (2008) <<http://www.fao.org/3/k2595e/k2595e00.pdf>>.

<sup>47</sup> United Nations Human Rights Office of the High Commission, *International Covenant on Economic, Social and Cultural Rights* <<https://www.ohchr.org/en/professionalinterest/pages/cescr.aspx>>.

right, recognizing to this effect the essential importance of international co-operation based on free consent.<sup>48</sup> The obligations under the human rights regime often provide guidelines as to how a State should tackle climate hazards and deal with the resulting migration.<sup>49</sup>

Climate change is causing rising sea levels and natural hazards, which increase the complexity of human development and displacement of the coastal people in the South-Asian region.<sup>50</sup> The ICESCR directs States to adopt measures as may be necessary for the “improvement of all aspects of environmental and industrial hygiene” in order to fully realize the right to health.<sup>51</sup>

Due to climate change, a high population growth rate and unplanned urbanisation, the severity of natural calamities is gradually rising.<sup>52</sup> The United Nations High Commissioner for Refugees (UNHCR) predicts that 200 million people may migrate by 2050, either within their country or across borders.<sup>53</sup> Ratner et al discuss how the human rights of fishing people are being grossly violated in developing countries because of the lack of appropriate policy and adequate regulations. According to the authors, child labour, forced evictions, unsafe working conditions and personal security are specific matters that need to be reformed through acts and policies to protect the human rights of fishing people.<sup>54</sup> The authors suggest that necessary regulatory reforms to tackle the issues in regards to human rights of fishing people will contribute to the improvement of resource management and humanitarian welfare. However, this research does not consider climate change, which is a key cause of the violation of the human rights of fishing people.

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<sup>48</sup> ICESCR Art. 11(1)

<sup>49</sup> Siobhán McInerney-Lankford, ‘Climate Change and Human Rights: An Introduction to Legal Issues’ (2009) 33 *Harvard Environmental Law Review* 431.

<sup>50</sup> Jane McAdam and Marc Limon, ‘Policy Report Human Rights, Climate Change and Cross-Border Displacement: The Role of the International Human Rights Community in Contributing to Effective and Just Solutions’ (2015); UN news, ‘UN Sounds Alarm on Threat to Pacific Nations’ Security Posed by Climate Change’ (6 August 2009) <<http://www.un.org/apps/news/story.asp?NewsID=31694>>.

<sup>51</sup> ICESCR Art. 12(2)(b)

<sup>52</sup> IPCC, *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation: Special Report of the Intergovernmental Panel on Climate Change* (2012) <[https://www.ipcc.ch/site/assets/uploads/2018/03/SREX\\_Full\\_Report-1.pdf](https://www.ipcc.ch/site/assets/uploads/2018/03/SREX_Full_Report-1.pdf)>.

<sup>53</sup> United Nations High Commissioner on Refugees (UNHCR), *Forced Displacement in the Context of Climate Change: Challenges for States under International Law* (19 May 2009) <<http://unfccc.int/resource/docs/2009/smsn/igo/049.pdf>>; UNEP, ‘Environmental Displacement: Human mobility in the Anthropocene’ <[https://wedocs.unep.org/bitstream/handle/20.500.11822/22269/Frontiers\\_2017\\_CH6\\_EN.pdf?sequence=1&isAllowed=y](https://wedocs.unep.org/bitstream/handle/20.500.11822/22269/Frontiers_2017_CH6_EN.pdf?sequence=1&isAllowed=y)>.

<sup>54</sup> Blake D Ratner, Bjorn Asgard and Edward H Allison, ‘Fishing for Justice: Human Rights, Development, and Fisheries Sector Reform’ (2014), *Global Environmental Change* 27, 120–130.

Islam et al also examine the living conditions of fishing people in coastal and low-lying regions of Bangladesh.<sup>55</sup> Due to the widespread impacts of climate change, most fishing communities are now relocating to higher ground. The government could help by providing access to livelihood activities for the relocated people.<sup>56</sup> The authors suggest that the protection of the environment is necessary to support climate-displaced people. Although this research focused on the impacts of climate change on the coastal fishing people of Bangladesh, the research does not examine the inadequacy of current legal and institutional frameworks in mitigating the impacts of climate change on the coastal fishing people.

Bennett and Dearden analyse fisheries management and the impacts of effective conservation of fisheries resources on the socio-economic, cultural and political rights of the coastal communities in Pacific countries.<sup>57</sup> The researchers show that access to, and conservation of, fisheries resources have positive impacts on the local fishing community, such as poverty reduction through employment, better governance and health improvements.<sup>58</sup> The conservation of marine fisheries through marine-protected areas (MPAs) increased fish production and improved the availability of fish.<sup>59</sup> Although this research examines the close relation between the conservation of fishery resources and the socio-economic conditions of the coastal fishing people, it does not examine the impacts of climate change on these people.

Beier et al focus on the indirect consequences of extreme weather and climate events (EWCE) on the health outcomes of individuals in the coastal areas of Bangladesh.<sup>60</sup> Due to the lack of adequate government plans and programs to mitigate the impacts of climatic disasters, the coastal communities face adverse and life-threatening health problems. The authors recommend that basic needs be met and suggest that increasing employment

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<sup>55</sup> Ibid.

<sup>56</sup> Md Monirul Islam et al, 'Migrating to Tackle Climate Variability and Change? Insights from Coastal Fishing Communities in Bangladesh' (2014) 124(14) *Sustainability Research Institute, School of Earth and Environment, University of Leeds, UK* 14, 733-46. <<http://eprints.whiterose.ac.uk/80204/3/repository.pdf>>.

<sup>57</sup> Nathan James Bennett and Phillip Dearden, 'Why local people do not support conservation: Community perceptions of marine protected area livelihood impacts, governance and management in Thailand' (2014), 44 *Marine Policy* 107–16.

<sup>58</sup> Craig Leisher et al, 'Nature's Investment Bank: How Marine Protected Areas Contribute to Poverty Reduction' (2007) *The Nature Conservancy* 1–53 see general

<sup>59</sup> FAO Technical Guidelines for Responsible Fisheries, Fisheries Management: 4 Marine Protected Areas and Fisheries (2011) Food and agriculture organization of the united nations, Rome 14 <<http://www.fao.org/3/a-i2090e.pdf>>; Commonwealth Department of Environment and Heritage, The Benefits of Marine Protected Areas <<https://www.environment.gov.au/system/files/resources/5eaad4f9-e8e0-45d1-b889-83648c7b2ceb/files/benefits-mpas.pdf>>.

<sup>60</sup> Dominik Beier et al, 'Indirect Consequences of Extreme Weather and Climate Events and their Associations with Physical Health in Coastal Bangladesh: A Cross-Sectional Study' (2015), 8 *Global Health Action*.

opportunities should be provided for disaster-affected coastal people through strategic plans and policies. They highlight that more research is needed for identifying health risks and their effects on these coastal peoples. Although the existing studies analyse the impacts of climate change on the coastal communities of Bangladesh, the socio-economic and environmental rights of the coastal fishing people have not specifically been examined. This research fills that gap by defining 'coastal fishing people' and analysing the current socio-economic conditions of the coastal fishing people of Bangladesh.

### **B    *International Legal and Institutional Frameworks Concerning the Impact of Climate Change on the Coastal Fishing People***

The international legal and institutional arrangements regarding the impact of climate change on coastal fishing people is limited. Obia et al analyse the threat to the inhabitants of the coastal barrier lands, marshlands and the coast of Cross River Estuary and its tributaries due to climate change. The paper examines a scenario of the likely effect of a sea-level rise on the coastal fishing communities of Cross River Estuary and proposes a new architectural concept for future rural coastal fishing settlements.<sup>61</sup>

Hobday et al show that many coastal communities rely on living marine resources for their livelihoods and food security. Climate change is an additional stressor beginning to impact coastal systems and communities, but it may also lead to opportunities for some species and the people they sustain. This research is focused on characterising, assessing and predicting the future of coastal-marine food resources to contribute to improving fishing community adaptation in the southern hemisphere. The study also suggests the design and development of adaptation options through the provision and sharing of knowledge across fast-warming marine regions.<sup>62</sup>

Morzaria-Luna et al document that fisheries communities and fish production are highly vulnerable to climate change as well as other anthropogenic threats.<sup>63</sup> The cumulative and interacting effects of these stressors could potentially produce declines in fish production,

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<sup>61</sup> Ajah Ekpeni Obia et al, 'Climate Change and the Effect Of Sea-Level Rise on the Coastal Fishing Communities of Cross River Estuary: The Concept of Floating Sustainable Settlements as Aa Solution' (2015) 6(1) *International Journal of Sustainable Building Technology and Urban Development* 25.

<sup>62</sup> Alistair J Hobday et al, 'Planning Adaptation to Climate Change in Fast-Warming Marine Regions with Seafood-Dependent Coastal Communities' (2016) 26(2) *Reviews in Fish Biology and Fisheries* 249.

<sup>63</sup> HN Morzaria-Luna et al, 'Social Indicators of Vulnerability for Fishing Communities in the Northern Gulf of California, Mexico: Implications for Climate Change' (2014) 45 *Marine Policy* 182.

which would significantly impact artisanal fishing communities. Assessing the relative vulnerability of fishing communities to anthropogenic stressors is an important first step in identifying mitigation and adaptation strategies. This study assessed the vulnerability of 12 coastal communities in the Northern Gulf of California to disruptions in fishing activities from anthropogenic stressors, including climate change.<sup>64</sup> However, the research does not explore the impacts of climate change on the socio-economic conditions of the coastal fishing people.

Savo et al state that fishing people on the coast and at sea are among the first people to be affected by climate changes.<sup>65</sup> In this study, they perform a meta-analysis of observations about, and adaptations to, climate change by coastal fishing people. The study explores how climate change has reduced the resilience of fisheries communities by limiting options for diversification or forcing fishers to abandon their houses or villages within the coastal areas where they lived. Moreover, Van Putten et al conduct case-study-based research to investigate the role of climate and non-climate drivers in shaping fishing and marine tourism within the coastal area. An essential element of climate change research is consideration of the full effect on people, which entails a consideration of socio-ecological effects on resource users.<sup>66</sup>

Although there are many studies on the different aspects of the impacts of climate change on coastal fishing people, there is no research on the current international legal and institutional regimes for the protection of the socio-economic and environmental rights of coastal fishing people, particularly in Bangladesh.

### ***C Legal and Institutional Frameworks of the Coastal States of the Bay of Bengal Regarding the Impact of Climate Change on the Coastal Fishing People***

Hobday et al describe a research approach for a multi-country project, focused on the southern hemisphere, designed to contribute to improving fishing community adaptation efforts by characterising, assessing and predicting the future of coastal-marine food resources, and co-developing adaptation options for the coastal community. Their study

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<sup>64</sup> Ibid.

<sup>65</sup> Valentina Savo et al, 'Impacts of Climate Change for Coastal Fishers and Implications for Fisheries' (2017) 18 *Fish and Fisheries* 5, 877–889.

<sup>66</sup> Ingrid Van Putten, et al, 'Fishing for the Impacts of Climate Change in the Marine Sector: A Case Study' (2014) 6(4) *International Journal of Climate Change Strategies and Management* 421.

focuses on coastal resilience of the seafood-dependent coastal communities to minimise negative outcomes of climate change in the BoB. The study found that the main challenges in adaptation include developing comparative approaches across political institutions, the absence of socio-economic community demographics, a predominant dependency on coastal resources and a lack of resilient capacity.<sup>67</sup>

Brown et al claim that climate change is altering the rate and distribution of primary production in the world's oceans.<sup>68</sup> The simulated effects of change lie in the production of marine food in diverse marine ecosystems across a wide latitudinal range in Australia. The level of seafood production is decreasing because of a breakdown in the ecosystem web. The study shows that the production of marine food is dependent on ocean ecosystems. A change in the marine ecosystem due to climate change impacts fishery catches, fishery values, the biomass of animals of conservation, and it has consequence on the community composition of the fishing people in the BoB.<sup>69</sup>

Bell et al analyse the projected effects of climate change on the distribution of tuna in the tropical Pacific Ocean. The effects arise from increases in sea-surface temperature, changes in the velocity of major currents and decreases in nutrient supply to the photic zone from greater stratification.<sup>70</sup> The study shows how countries in the West may encounter problems securing enough fish for their canneries as tuna are progressively redistributed to the East. Changes in the distribution of tuna will also affect the proportion of national tuna catches required for food security for the coastal community in Pacific countries.<sup>71</sup>

Das et al find that climate change is evident in India as manifested by increased air temperatures, regional variation in the monsoon season, frequent occurrence of droughts and an increase in severe storms in the coastal states of India.<sup>72</sup> The study highlights the impacts of climate change on freshwater fisheries and fishers of the River Ganga, the water bodies in its plains and the deltaic areas of the West Bengal. Moreover, Lauria et al state

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<sup>67</sup> AJ Hobday et al, 'Planning Adaptation to Climate Change in Fast-Warming Marine Regions with Seafood-Dependent Coastal Communities', (2016) 26(2) *Reviews in Fish Biology and Fisheries* 249–264.

<sup>68</sup> CJ Brown et al, 'Effects of Climate-Driven Primary Production Change on Marine Food Webs: Implications for Fisheries and Conservation' (2010), 16 *Global Change Biology* 1194–1212.

<sup>69</sup> Ibid.

<sup>70</sup> Johann D Bell et al, 'Effects of climate Change on Oceanic Fisheries in the Tropical Pacific: Implications for Economic Development and Food Security' (2013) 119(1) *Climatic Change* 199–212.

<sup>71</sup> Ibid.

<sup>72</sup> MK Das et al, 'Impacts and Vulnerability of Inland Fisheries to Climate Change in the Ganga River System in India' (2013), 16 *Aquatic Ecosystem Health & Management* 4, 415–24.

that fisheries play an important part in the economy of India, as both men and women work in fisheries (with a higher proportion of women in the Volta than in the Asian deltas). Economic and integrated modelling using future scenarios suggest that changes in temperature and primary production could reduce fish productivity and fisheries income. The analysis provided in this paper highlights the importance of applying plans for fisheries management at a regional level. Minimising the impacts of climate change while increasing marine ecosystems resilience must be a priority for scientists and governments before these impacts dramatically affect millions of people's lives.<sup>73</sup>

Esham et al document the growing concern in Sri Lanka over the impact of climate change, variability and extreme weather events on food production, food security and livelihoods.<sup>74</sup> The authors link climate change and food security with the impacts on crop production and food availability. This study points to several climate-induced impacts which challenge food security. They include declining agricultural productivity, food loss along supply chains, the low livelihood resilience of the rural poor and a prevalence of high levels of undernourishment and child malnutrition.<sup>75</sup>

De Silva et al examine the impacts of the 2004 tsunami on the livelihood of affected coastal people in Sri Lanka. Drawing on surveys of three villages in three districts in the south of Sri Lanka, this paper describes the livelihood asset-building capacity of the fishing communities.<sup>76</sup> Ranasinghe et al undertook the study to discover how the coastal environment of the eastern and south-eastern coasts of Sri Lanka changed and showed evidence of sea-level variability. The authors collected sediment cores from Kirinda and Panama estuaries, Okanda lagoon and Vakarai beach ridge plain, situated on the eastern and south-eastern coasts of Sri Lanka.<sup>77</sup>

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<sup>73</sup> Valentina Lauria et al, 'Importance of Fisheries for Food Security Across Three Climate Change Vulnerable Deltas' (2018) 640–641 *Science of The Total Environment* 1566–77.

<sup>74</sup> Mohamed Esham et al, 'Climate Change and Food Security: a Sri Lankan Perspective' (2017) 20(3) *Environment, Development and Sustainability* 1017–36.

<sup>75</sup> Ibid.

<sup>76</sup> DAM De Silva and Masahiro Yamao, 'Effects of the Tsunami on Fisheries and Coastal Livelihood: A Case Study of Tsunami-Ravaged Southern Sri Lanka' (2007) 31 *Disasters* 4 386–404.

<sup>77</sup> IHT Harkes et al, 'Shrimp Aquaculture as a Vehicle for Climate Compatible Development in Sri Lanka: The Case of Puttalam Lagoon' (2015), 61 *Marine Policy* 273–83; PN Ranasinghe et al, 'Mid–Late Holocene Coastal Environmental Changes in South-Eastern Sri Lanka: New Evidence for Sea Level Variations in Southern Bay of Bengal' (2013), 298 *Quaternary International* 20–36.

Harkes et al analyse the possible costs and benefits in applying the concept of Climate Compatible Development (CCD) to shrimp aquaculture in Puttalam, Sri Lanka. CCD facilitates planning in the context of the risks of climate change. It suggests how the sector can support mitigation of greenhouse gas emissions (GHG) and adapt to climate change effects while stimulating development that will also benefit rural societies. Mechanisms that could enable this change include subsidies, insurance and bank loans, which will also facilitate investment by foreign private enterprises and subsequent exports. The study proposes the development of a specific aquaculture policy and plan that would facilitate the CCD process.<sup>78</sup>

Sovacool explores the drivers, benefits and challenges facing climate-change adaptation in the Maldives. His article specifically investigates the climate-change risks and the island-resilience planning in the Maldives. The article questions how Maldives communities perceive coastal adaptation. To answer this question, the article analyses eight primary sectors vulnerable to climate change in the Maldives: human settlements, critical infrastructure, tourism, fisheries, health systems, water, food security and coral reef biodiversity. The research evaluates the island-resilience planning according to the vulnerabilities demonstrated by the coastal people.<sup>79</sup>

Sarkar et al suggest that extreme climate changes may have a profound impact on the wetlands of the coastal area of Bangladesh through several direct or indirect pathways.<sup>80</sup> Attention is urgently required at different levels for the conservation and protection of these resources, along with coping and mitigation strategies to address the impending challenges. However, there is a gap in scientific information specific to the flood plain wetlands of India. The authors discuss the importance of these wetlands, with special reference to the impact of climate change, along with coping and mitigation measures for their protection.<sup>81</sup>

Although there have been many observations made on the vulnerability of the coastal people of India, Sri Lanka and Maldives to climate change, insufficient research has been

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<sup>78</sup> Ibid.

<sup>79</sup> Benjamin K Sovacool, 'Perceptions of Climate Change Risks and Resilient Island Planning in the Maldives' (2012) 17(7) *Mitigation and Adaptation Strategies for Global Change* 731–52.

<sup>80</sup> Uttam Sarkar and Bibha Chetia Borah, 'Flood Plain Wetland Fisheries of India: With Special Reference to Impact of Climate Change' (2017), 26(1) *Wetlands Ecology and Management* 1.

<sup>81</sup> Ibid.



conducted regarding the impacts of climate change on the coastal fishing people of Bangladesh. The study scrutinizes Indian, Sri Lankan and Maldives legal frameworks in order to improve the socio-economic conditions of the coastal fishing people of Bangladesh. The research on which this thesis is based analyses the legal and institutional frameworks concerning the impacts of climate change in India, Sri Lanka and Maldives, exploring the legal and institutional arrangements for the protection of the socio-economic and environmental rights of the coastal fishing people of those countries.

#### **D    *Legal and Institutional Frameworks Concerning the Impact of Climate Change on the Coastal Fishing People of Bangladesh***

De Young et al show how climate change is affecting the world's fisheries, which are already in crisis from over-fishing and poor management.<sup>82</sup> Climate change is increasing the acidification of oceans. This has particularly severe consequences for shellfish and squid, mangroves, tropical coral reefs and cold-water corals. Fisheries- and aquaculture-dependent economies, coastal communities, fishers and fish farmers are expected to experience the effects of climate change in a variety of ways. These include displacement and migration of human populations, effects on coastal communities and infrastructure due to sea-level rise, and increased damages due to changes in the frequency, distribution or intensity of tropical storms.<sup>83</sup>

Ahmed et al find that when there are insufficient strategies for adapting to such environmental stressors as extreme temperature and natural disasters, many people turn to livelihoods banned by the government.<sup>84</sup> Illegal livelihood activities include using fine mesh nets to collect shrimp in the rivers, and logging in the Sundarbans. These people are often the poor and vulnerable, and law enforcement only exacerbates their vulnerability. The authors conclude that the control of illegal activities are seriously threatening the livelihoods of this special category of vulnerable people.<sup>85</sup> The study recommends that policy makers take appropriate steps to ensure the resilience of this vulnerable people.

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<sup>82</sup> Cassandra De Young et al, 'Building Adaptation to Climate Change in Fisheries and Aquaculture' (2011) *FAO Aquaculture Newsletter, Rome* 48, 28–29.

<sup>83</sup> Ibid.

<sup>84</sup> Istiaq Ahmed et al, 'Climate Change, Environmental Stress and Loss of Livelihoods Can Push People Towards Illegal Activities: A Case Study from Coastal Bangladesh' (2019), *Climate and Development* 1–10.

<sup>85</sup> Ibid.

Islam et al suggest that exposure to floods and cyclones, as well as a lack of adaptive capacity in terms of physical, natural and financial capital, contribute to livelihood vulnerability, but in different ways depending on the context of climate vulnerability.<sup>86</sup> The most exposed community is not necessarily the most sensitive or least able to adapt. This is because livelihood vulnerability is a result of combined but unequal influences of bio-physical and socio-economic characteristics of communities and households. But within a fishing community, where households are similarly exposed, higher sensitivity and lower adaptive capacity combine to create higher vulnerability. The study proposes to take multifaceted initiatives to reduce livelihood vulnerability.<sup>87</sup>

Sharifuzzaman et al explain the concept of resilience as viewed by anthropologists, ecologists, systems scientists and engineers, and claim that the boundaries of resilience are subjective and dependent on the impacts of climate change.<sup>88</sup> Consequently, choosing the standards and metrics for assessing resilience based on a single factor is a key challenge for policy makers. The authors identified several challenging factors using a multi-criteria evaluation of 40 basic criteria of human, physical, financial, natural and social assets. The study suggests enhancing the capacity to buy food as an essential livelihood activity for the fishermen on Hatiya Island, Bangladesh.<sup>89</sup>

Ahmed et al show that prawn farming in Bangladesh is severely hampered due to the impacts of climate change.<sup>90</sup> Different climatic variables—including cyclones, salinity, sea-level rise, water temperature, floods, rainfall, and droughts—have had adverse effects on the coastal ecosystem, producing a decline in prawn post larvae and therefore catch. Considering the extreme vulnerability to the effects of climate change, an integrated management approach to prawn farming needs to be introduced to cope with the challenges.<sup>91</sup>

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<sup>86</sup> Md. Monirul Islam et al, 'Vulnerability of Fishery-Based Livelihoods to the Impacts of Climate Variability and Change: Insights from Coastal Bangladesh' (2014) 14(1) *Regional Environmental Change* 281.

<sup>87</sup> Ibid.

<sup>88</sup> SM Sharifuzzaman et al, 'Elements of Fishing Community Resilience to Climate Change in the Coastal Zone of Bangladesh' (2018) 22 *Journal of Coastal Conservation* 1167–76

<sup>89</sup> Ibid.

<sup>90</sup> Ahmed et al, above n 36.

<sup>91</sup> Ibid.

Monirul et al explore the limits and barriers to adapting to climate variability by the coastal community in Bangladesh.<sup>92</sup> These barriers include technologically poor boats, inaccurate weather forecasts, poor radio signals, lack of access to credit, low incomes, underestimation of cyclone occurrence, coercion of fishermen by the boat owners and captains, lack of education, skills or livelihood alternatives, unfavourable credit schemes, lack of enforcement of fishing regulations and maritime laws, and lack of access to fish markets.<sup>93</sup> The study outlines the implications of the adaptation strategies needed to overcome these limits and barriers.

Islam et al examine how climate-induced migration has impacted vulnerability and adaptation of a coastal fishing community in Bangladesh.<sup>94</sup> They used household surveys, interviews and focus-group discussions to compare fishery-dependent households who migrated from Kutubdia Island to the mainland. The study suggests that the resettled households are less exposed to floods, sea-level rise and land erosion. In the case study, migration was a strategy used to respond to climate variability and change.<sup>95</sup> The authors conclude that the migration of fishing people to the mainland has not improved their livelihood but rather made it more vulnerable.

Islam assesses the vulnerability and adaptation to the impacts of climate variability and change in three small-scale coastal fishing communities in Bangladesh.<sup>96</sup> The study assesses the livelihood vulnerability, climate-induced migration and the limits to adaptation. The study shows that the level of livelihood vulnerability not only differs between communities but also between different household groups within a community, depending on their level of adaptive capacity. The vulnerable people are not unable to cope with the impacts of climate change; rather they have the least access to the means necessary for their livelihoods.<sup>97</sup>

The above-mentioned studies explore different aspects with particular reference to the impacts of climate change on the coastal community of Bangladesh. However, there is no

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<sup>92</sup> Islam et al, above n 39.

<sup>93</sup> Ibid.

<sup>94</sup> Islam et al, above n 54.

<sup>95</sup> Ibid

<sup>96</sup> Ibid.

<sup>97</sup> Islam, above n 84.

research examining the current legal and institutional arrangements concerning the impacts of climate change on these people.

**E    *Analysis of the Shortcomings of the Legal and Institutional Arrangements for Resolving the Impact of Climate Change on the Coastal Fishing People in Bangladesh***

Begum et al undertook a critical analysis of what is needed to improve the marine fish-selling system in coastal Bangladesh.<sup>98</sup> They concluded that the establishment of ice factories is essential to meet the needs of quality fish markets and exports. Fish market infrastructure—such as packaging, water supply, drainage, washing, cleaning, sanitation, maintenance and other essential facilities—is inadequate in the coastal areas of Bangladesh. Fish quality control, hygiene, transportation knowledge and techniques can enhance fish prices. Thus, if improvements are made, fishing people will be able to benefit and thus improve their socio-economic conditions.<sup>99</sup>

Hossain et al discuss how the coastal districts of Bangladesh are greatly affected by the rise of the sea level.<sup>100</sup> The Bangladeshi government should pay attention to the fishing communities and help reduce their living and livelihood problems. The government should adopt a comprehensive national policy in order to fulfil the primary needs of the affected coastal peoples. Moreover, the implementation of mangrove forest preservation programs, tree plantation programs as well as other relevant policies of the government should be strictly implemented to safeguard against the adverse effects of climate change.<sup>101</sup>

Nahar et al state that Bangladesh has one of the world's highest death rates from naturally occurring disasters. Since 1970 about half a million people have died due to disaster events, particularly floods and cyclones. After the Indian Ocean tsunami in 2004, a framework was established by the World Health Organization (WHO) to assist disaster-affected people.<sup>102</sup> The authors suggest that the Bangladesh government could undertake a similar sustainable health policy in order to assist the coastal communities who are affected by climate change.

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<sup>98</sup> R Begum et al, 'Potential for Development of Marine Fish Marketing Systems in Chittagong District of Bangladesh' (2014)1(2) *Journal of the Sylhet Agricultural University* 247–52.

<sup>99</sup> Ibid.

<sup>100</sup> MS Hossain et al, 'Climate Change Resilience Assessment Using Livelihood Assets of Coastal Fishing Community in Nijhum Dwip, Bangladesh' (2013) 21(2) *Pertanika Journal of Science & Technology* 397 – 422.

<sup>101</sup> Ibid.

<sup>102</sup> Nazmun Nahar, et al, 'Increasing the Provision of Mental Health Care for Vulnerable, Disaster-Affected People in Bangladesh' (2014) *BMC Public Health* 14,708.

Islam et al examine Community Based Fisheries Management (CBFM) and its effect on the socio-economic condition of the fishing people of Bangladesh.<sup>103</sup> This project aimed to sustain the improvement of the livelihoods of poor fishing communities.<sup>104</sup> The authors did not mention the specific areas where the fishermen need support from the government in the implementation of the project. They suggest that the project was not strategically well designed, and they recommended inter-ministerial coordination for the implementation of CBFM so that the condition of the fisheries community can be improved.<sup>105</sup>

Roy and Hossain note that the Sundarbans is the largest mangrove forest in the world, with a total area of approximately 6,017 m<sup>2</sup>.<sup>106</sup> In 1875, it was declared a Reserve Forest by the colonial government. Mangrove forests play an essential role in reducing the likelihood of natural disasters. Examples of such disasters are the cyclones Aila (2009) and Sidr (2007), which took 3,777 lives in the coastal regions of Bangladesh. Additionally, one million coastal people became homeless and were displaced. This situation would worsen with the disappearance of the Sundarbans. This research highlights the role of the Sundarbans in preventing natural disasters in Bangladesh, as well as discussing much-needed recommendations, such as strict implementation of regulatory regimes for protecting the Sundarbans.<sup>107</sup>

Islam et al show that the fishing sectors of Bangladesh contributed 3.69% of the total GDP in 2013–14.<sup>108</sup> Approximately 12 million workers are directly or indirectly involved in this sector. Employment in the fishery sector has been increasing by 3.5% annually.<sup>109</sup> The fishery sector faces habitat degradation through agricultural development, urbanisation and the development of industries. The breeding ground for fishery resources has been affected

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<sup>103</sup> Gazi Md. Nurul Islam, 'Poverty and Livelihood Impacts of Community Based Fisheries Management in Bangladesh' (2014) 96 *Ocean & Coastal Management* 123–29.

<sup>104</sup> Md. Muzaffar Ahmed, 'Roles of NGOS in Open Water Fisheries Resources Management in Bangladesh: Experiences of CBFM Project' (2004) *IIFET 2004 Japan Proceedings World Fish Center, International Institute of Fisheries Economics and Trade*.

<sup>105</sup> The government of the People's Republic of Bangladesh, 'Seventh Five-Year Plan (FY 2016-2020), Accelerating Growth and Empowering Citizens (General Economic Division, Planning Commission, Ministry of Planning, 2015) 611.

<sup>106</sup> TK Roy and ST Hossain, 'Role of Sundarbans in Protecting Climate Vulnerable Coastal People of Bangladesh' (2015) 1 *Climate Change* 40–44.

<sup>107</sup> Ibid.

<sup>108</sup> M Serajul Islam, Hasneen Jahan and A.K.M Abdullah Al-Amin, 'Fisheries and Aquaculture Sectors in Bangladesh: An Overview of the Present Status, Challenges and Future Potential' (2016) 1(1) *Journal of Fisheries and Aquaculture Research* 002–009.

<sup>109</sup> DoF (2013). Fishery Statistical Yearbook of Bangladesh (2011–12). Fisheries Resources Service System, Department of Fisheries (DoF), Ministry of Fisheries and Livestock, Dhaka, Bangladesh.

by many environmental and human-made factors, including pollution and overfishing. Moreover, substantial industrialisation and urbanisation cause water pollution problems that subsequently affect fisheries resources.

The existing research regarding the impacts of climate change on coastal communities in Bangladesh does not explore the shortcomings of the current relevant legal and institutional frameworks in relation to their socio-economic and environmental rights. The research on which this thesis is based will contribute to filling this gap. This research is unique because it analyses in detail the effectiveness of the environmental and fishing laws, policies and plans in Bangladesh, which has never been done before. The researcher has reviewed much literature relating to the improvement of the livelihood of the fishing people. However, none of this literature was very comprehensive. Most researchers approached the subject from a different point of view and were limited to a particular area rather than the overall scenario. The research fills the gap and examines the current legal and institutional arrangements concerning the impacts of climate change on the coastal fishing people of Bangladesh with a view to improving their socio-economic conditions.

## **VI RESEARCH METHODOLOGY**

### **A Research Method**

This is a policy research\_based on the qualitative research method. Qualitative research is related to analysis of some idea, doctrine or theory and researchers use analytical technique to focus on the subject matter of the research to develop a new concept or redesign the existing idea.<sup>110</sup> It involves more analytical results and interpretations of the research problems. In qualitative research, researchers are more interested in understanding the interpretation of a particular theory or doctrine.<sup>111</sup> Generally, researchers use the available information and analyse these to make critical judgement of the materials. The role of the researcher and their participation in qualitative methodology is more substantial and engaged than the quantitative research method.<sup>112</sup> The researcher's own analysis and open-ended findings are intrinsic to qualitative research. The qualitative research involves

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<sup>110</sup> Terry Hutchinson and Nigel Duncan, 'Defining and describing what we do: Doctrinal legal research'(2012) 17(1) *Deakin Law Review* 85.

<sup>111</sup> Abdullah Al Faruque, *Essentials of Legal Research* (Palal Prokashoni, 2<sup>nd</sup> ed, 2009) 18.

<sup>112</sup> *Ibid.*

analysis and discussion of theories and doctrines whereby the researcher puts or posits their own understanding and analysis as findings of the research.

This research is primarily based on the analysis of international conventions, regional conventions and national legislation related to climate change, socio-economic rights, coastal environment and fishing people. The UNFCCC, Kyoto Protocol, Paris Agreement, UDHR, ICCPR, ICESCR, Fishing Agreement and ILO Convention are the major sources of this research. Relevant legislation, policies and plans of Bangladesh, India, Sri Lanka and Maldives are primary sources of this research. The research analyses the current policies and legislation in Bangladesh regarding climate change, coastal management and fishing people to address the main research question. The secondary sources of this research include books, journals, articles, online resources, statements, presented papers, documents of relevant international and non-governmental organisations. Academic writings, views and opinions of experts in the particular field will also be noted and where relevant quoted in order to address the research questions of the research.

The comparative analysis approach is another basic methodology applied in this research. The method is applied when comparing the legal and institutional regimes for climate change and the socio-economic well beings of the coastal fishing people in India, Sri Lanka, Maldives and Bangladesh. The purpose of the comparative method is to understand the multiplication of laws according to tradition, culture and the legal system, where the researcher can suggest a suitable approach to the legal problems.<sup>113</sup> These countries were selected for analysis as they are also the coastal states of the BoB and have faced the same problems as Bangladesh in trying to protect the socio-economic and environmental rights of coastal fishing peoples. The research analyses the current national policies, laws, strategies, plans and institutions of Bangladesh to explore the shortcomings of the current legal and institutional frameworks for resolving the impacts of climate changes on coastal fishing communities.

Finally, the research uses a reform-oriented method. This method intensively examines the inadequacies in the current legal and institutional arrangements for mitigating the impacts of climate change on the coastal fishing people of Bangladesh. The reform-oriented method is the most appropriate method for policy research that aims to propose necessary changes

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<sup>113</sup> Andrew Knight, Les Ruddock (eds), *Advance Research Methods in the Built Environment* (Blackwell, 2008) 30.

and amendments to current legal and institutional arrangements. This method is used to recommend necessary law reforms and institutional changes in order to improve the socio-economic conditions of Bangladeshi coastal fishing communities.

## **B      *Source of Data***

The international conventions are collected from the United Nations Treaty Series website; while regional policies and legislation was collected from the websites of respective regional organisations and marine governance authorities. National policies and legislation were collected from the websites of the Ministry of Law or other relevant websites of the respective countries. A large portion of the research information and materials was gathered from the Western Sydney University Library, which subscribes to a number of online databases of various e-resources including Hein Online, Lexis Nexis, Westlaw International, Intelliconnect (CCH), Legal Online (Thomson Reuters), AustLII (Australian Legal Information Institute), and Google Scholar where reference books, academic journals, articles, theses, and newspaper reports were accessed. Resources not available at the library were obtained through its document delivery service. Hard copies of relevant books were collected through the Western Sydney University Library request service, and the available online books were purchased where necessary.

## **VII    OVERVIEW OF THE CHAPTERS**

This thesis comprises seven chapters which, together, examine the legal and institutional frameworks for mitigating the impacts of climate change on the socio-economic conditions of the coastal fishing people of Bangladesh.

### *Chapter 1*

This introductory chapter provides a brief background and context of the study. It addresses the research questions, thesis statement and research methodology. The chapter provides an intellectual concept and justifies the significance of this research.

### *Chapter 2*

This chapter provide definitions of the relevant terminology used in this research. It defines ‘coastal fishing people’ and their ‘socio-economic and environmental rights’. Moreover, this chapter examines the impacts of climate change on the socio-economic conditions of the



coastal fishing people of Bangladesh and examines their current situation with respect to socio-economic and environmental rights.

### *Chapter 3*

This chapter analyses the existing international declarations, conventions and agreements relevant to the mitigation of, and adaptation to, the impacts of climate change on coastal fishing people. The chapter also analyses the institutions and bodies relevant to the protection of the socio-economic and environmental rights of coastal fishing people. A human-rights approach is applied to analyse the international legal regimes for their protection.

### *Chapter 4*

This chapter investigates the legal and institutional arrangements for the protection of the socio-economic and environmental rights of the coastal fishing people of three other coastal states on the Bay of Bengal (BoB). It analyses the legal and institutional arrangements of India, Sri Lanka and Maldives concerning the protection of the socio-economic and environmental rights of the coastal fishing people.

### *Chapter 5*

This chapter analyses the policies, constitutional provisions, laws and strategies regarding climate-induced impacts on the coastal fishing people of Bangladesh. It investigates the legal and institutional regime within the broader area of climate change and coastal communities. The chapter analyses the institutions and departments working to mitigate the impacts of climate change in Bangladesh.

### *Chapter 6*

This chapter evaluates the current legal and institutional frameworks for climate change in Bangladesh in order to explore the shortcomings in the protection of the socio-economic and environmental rights of coastal fishing people. It considers the international commitments and obligations under international legal documents and makes a comparative analysis of the current legal and institutional regimes of Bangladesh, India, Sri Lanka and Maldives to explore the shortcomings in protecting the socio-economic rights of the coastal fishing people in Bangladesh.

### *Chapter 7*

As a concluding chapter it summarises the discussions and arguments presented in the research. It also provides recommendations related to law reform and institutional changes

required to improve the socio-economic and environmental rights of the coastal fishing people of Bangladesh.

## CHAPTER TWO

### CONCEPTUAL FRAMEWORKS AND THE CURRENT SOCIO-ECONOMIC CONDITIONS OF THE COASTAL FISHING PEOPLE IN BANGLADESH

#### I INTRODUCTION

This chapter analyses the concepts of climate change, socio-economic rights and environmental rights and considers the current socio-economic conditions of the coastal fishing people of Bangladesh. The objective of the chapter is to explore the impacts of climate change on their socio-economic conditions. The chapter addresses the research question: What is the current socio-economic condition of the coastal fishing people of Bangladesh and how are they affected by climate change? The coastal fishing sector has been contributing a significant share to the national economy of Bangladesh. The coastal areas of Bangladesh are significantly climate sensitive and 80–90% of the coastal people depend on fisheries for their livelihoods.<sup>1</sup> However, they are becoming a marginalised community severely affected by the impacts of climate change.<sup>2</sup> Their lives and livelihoods are impacted by many climate shocks and stresses, such as cyclones, floods and sea-level rise in the Bay of Bengal.<sup>3</sup> Bangladesh has repeatedly been listed among the countries most vulnerable to climate change around the globe.<sup>4</sup> Bangladesh ranked fifth in the Global Climate Risk Index, a ranking of the 170 countries that are most vulnerable to climate change.<sup>5</sup> Increasing trends of climate-induced vulnerabilities and natural disasters are gradually making coastal people's life more difficult.<sup>6</sup> More than 11 per cent of the total population of Bangladesh is engaged with this sector on a full time or part time basis for their

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<sup>1</sup> Mesbahul Alam et al, 'Coastal Livelihood Adaptation in Changing Climate: Bangladesh Experience of NAPA Priority Project Implementation' (2013) in Rajib Shaw, Fuad Mallick and Aminul Islam (Eds) *Climate Change Adaptation Actions in Bangladesh* 253-76.

<sup>2</sup> M.H. Minar et al, 'Climate Change and Coastal Zone of Bangladesh: Vulnerability, Resilience and Adaptability' (2013) 13(1) *Middle-East Journal of Scientific Research* 114-20.

<sup>3</sup> Md. Monirul Islam, 'Limits and Barriers to Adaptation to Climate Variability and Change in Bangladeshi Coastal Fishing Communities' (2014) 43 *Marine Policy* 208–16.

<sup>4</sup> Intergovernmental Panel on Climate Change (IPCC), 2013, 'Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change'.

<sup>5</sup> M Rehan Dastagir, 'Modeling Recent Climate Change Induced Extreme Events in Bangladesh: A Review' (2015) 7 *Weather and Climate Extremes* 49–60.

<sup>6</sup> Md. Shamsuddoha and Rezaul Karim Chowdhury, 'Climate Change Impact and Disaster Vulnerabilities in the Coastal areas of Bangladesh' (2007) COAST Trust and Equity and Justice Working Group and 3rd Publication of EJWG 7.

livelihoods.<sup>7</sup> Climate shocks and stresses are already displacing large numbers of Bangladeshi coastal people who are mostly fishing people..<sup>8</sup> The potential impacts of climate change may undermine many of their socio-economic rights as recognised under international human rights law, such as the right to food, health and housing. These impacts, combined with direct harm to people, property and physical infrastructure, pose a serious threat to the enjoyment and exercise of the socio-economic rights of the coastal fishing people of Bangladesh.<sup>9</sup>

## II CONCEPTUAL ANALYSIS OF THE IMPACTS OF CLIMATE CHANGE

Climate change is one of the greatest threats to human wellbeing.<sup>10</sup> It poses a severe risk to the fundamental rights to life, health, food, and to an adequate standard of living of individuals and communities across the world.<sup>11</sup> The four critical regions—Northwest Africa, India and Bangladesh, the Andean region and China—will all be affected harshly by the impacts of climate change in the near future.<sup>12</sup> Climate change causes gross violations of the most basic human rights. Fishing peoples are usually or frequently deprived of minimum socio-economic rights<sup>13</sup>. In order to understand the relevant impacts of climate change, the concepts of climate change, socio-economic rights, and coastal fishing people will be explained in the next section.

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<sup>7</sup> Yearbook of Fisheries Statistics of Bangladesh 2016–17, vol. 34, December 2017, Fisheries Resources Survey System Department of Fisheries Bangladesh, Ministry of Fisheries and Livestock Government of the People's Republic of Bangladesh

<sup>8</sup> Md. Zakir Hossain and Md. Mahfuzul Haque, 'Climate Change and Rural to Urban Forced Migration in Coastal Regions of Bangladesh: Need for Adaptive Social Protection as a Strategy' (2010) GMSTEC 2010: *International Conference for a Sustainable Greater Mekong Subregion, 26–27 August 2010, Bangkok, Thailand* 1–7.

<sup>9</sup> OHCHR, *Resolutions on 10/4: Human Rights and Climate Change* (25 March 25, 2009) <<https://www.ohchr.org/EN/Issues/HRAndClimateChange/Pages/HRCAction.aspx>>; United Nations general assembly, Resolution adopted by the Human Rights Council 18/22 (Oct. 17, 2011), *Human rights and climate change* <<https://www.ohchr.org/Documents/Issues/ClimateChange/A.HRC.RES.18.22.pdf>>; United Nations general assembly, Resolution adopted by the Human Rights Council 26/27 (June 27, 2014) *Human rights and Climate Change* <[http://hrlibrary.umn.edu/hrcouncil\\_res26-27.pdf](http://hrlibrary.umn.edu/hrcouncil_res26-27.pdf)>.

<sup>10</sup> Ian Gough, 'Climate Change and Sustainable Welfare: An Argument for the Centrality of Human Needs' (2014) Centre for Analysis of Social Exclusion, *Cambridge Journal of Economics* 1–24.

<sup>11</sup> United Nations Environment Programme (UNEP), 'Climate Change and Human Rights' (Columbia Law School, 2015) 1-43

<sup>12</sup> Md. Shahabul Haque and Mohammed Gulzar Hussain, 'Perception of the Regional Political Leaders on Climate Change: A Study in Sylhet District in Bangladesh' (2017) 13(3) *Cross-Cultural Communication* 1–11; M Werz and L Conley, *Climate Change, Migration, and Conflict: Addressing Complex Crisis Scenarios in the 21st Century* (Center for American Progress, Washington DC, 2012) 33.

<sup>13</sup> Andrew M. Song and Adam Soliman, 'Situating human rights in the context of fishing rights—Contributions and contradictions' (2019) 103 *Marine Policy* 10-20

## **A The Coastal Fishing People**

Generally, ‘fishing’ means catching fish by hand gathering, spearing, netting, angling and trapping<sup>14</sup> while ‘fishing people’ means the people who catch fish as a profession or as a means of making a living. According to the FAO Factsheet, a ‘fishery’ is typically defined in terms of the people involved, the species or type of fish, the area of water or seabed, the method of fishing, class of boats and the purpose of the activities, or by a combination of the preceding features.<sup>15</sup> A fishing community is the social or economic group whose members reside in a specific location and have a sense of community.<sup>16</sup> The fishing community, then, is a community that is substantially dependent on, or substantially engaged in, the harvesting or processing of fishery resources to meet social and economic needs.<sup>17</sup> They are fishing vessel owners, operators, crews and fish processors based in such a community.

The definition of a fishing community provides several basic characteristics of fishing people, although it is limited to general fishing. ‘Fishing’ may involve the capture of wild fish or the raising of fish through fish farming or aquaculture, whereas ‘coastal fishing’ is limited to fishing in the sea of a coastal State. The term ‘coastal fishery’ requires an engagement in fishing within a coastal water.<sup>18</sup> A coastal fishery extends to the Exclusive Economic Zones (EEZ), which provide food, nutrition and livelihoods for the coastal people of developing countries.<sup>19</sup>

Bangladesh is located in South Asia. It has a land area of 147,570 km with an extensive coastline and large deltaic floodplains that cover 80% of the country.<sup>20</sup> The coastal zone of Bangladesh consists of 19 coastal districts: Jessore, Narail, Gopalganj, Shariatpur, Chandpur, Satkhira, Khulna, Bagerhat, Pirozpur, Jhalakati, Barguna, Barisal, Patuakhali, Bhola, Lakshmipur,

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<sup>14</sup> ‘Definitions of Fishing’, *Definitions* <<https://www.definitions.net/definition/fishing>>

<sup>15</sup> ‘Outline of fisheries’, *Wikipedia* <[https://en.wikipedia.org/wiki/Outline\\_of\\_fisheries](https://en.wikipedia.org/wiki/Outline_of_fisheries)>.

<sup>16</sup> Pacific Fishery Management Council, *Habitat and communities: Fishing Communities* <<https://www.pcouncil.org/habitat-and-communities/fishing-communities>>.

<sup>17</sup> Definition of ‘Fishing Community’ from *OECD Glossary of Statistical Terms* <<https://stats.oecd.org/glossary/detail.asp?ID=993>>.

<sup>18</sup> WJ Fletcher et al, *National ESD Reporting Framework for Australian Fisheries: The 'How To' Guide for Wild Capture Fisheries* (RDC Project, Canberra 2002) 119–120.

<sup>19</sup> Global Environment Facility, *Coastal Fisheries initiatives* <<https://www.thegef.org/topics/coastal-fisheries-initiative>>.

<sup>20</sup> *Journey with Green Climate Fund: Bangladesh's Country Programme for Green Climate Fund* (2018) NDA Secretariat Economic Relations Division, Ministry of Finance, Government of the People's Republic of Bangladesh 2

Noakhali, Feni, Chittagong and Cox's Bazar.<sup>21</sup> Because of the concave coastal structure, the coastal water is considered one of the most suitable regions for fisheries.<sup>22</sup> However, people living in the coastal areas are especially vulnerable to poverty due to natural disasters and longer-term climatic changes.<sup>23</sup> The fishing people of Bangladesh are a vital working-class, engaged in commercially growing and selling fish to national and international markets.

Although the coastal water, the fishing and its people are inherently connected in Bangladesh, the terms 'coastal fishing' and 'coastal fishing people' are not defined under any legal documents in Bangladesh. There are two types of coastal fishers in Bangladesh: the fishermen who are fully dependent on fishing for their livelihood all year round and the seasonal fishermen. Both the permanent and seasonal fishing people rely on fishing for their livelihood and income. There are also commercial fishing industries which employ local coastal fishers with day-to-day payment. Most of these fishers live in the coastal areas of Chittagong, Cox's Bazar, Feni, Shatkira, Patuakhali and Barisal districts. Fishing people's villages are mostly located in inaccessible coastal areas where there are little modern communication systems, having a deficient developmental activity.<sup>24</sup>

Although the terms 'coastal fishing' and 'coastal fishing people' are not adequately defined or explained in any national legal document, there is much relevant statistical data and information as to the number and location of the coastal fishing people in Bangladesh. Bangladesh has an estimated 1.32 million full-time coastal fishers, mostly artisanal fisher folk, and up to 2 million full-time equivalent people are involved in coastal aquaculture.<sup>25</sup> The number of people overall gaining income and support from coastal fishery and aquaculture

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<sup>21</sup> Hafez Ahmad, Bangladesh Coastal Zone Management Status and Future Trends (2019), 22 *Journal of Coast Zone Management*, 1,466

<sup>22</sup> Md. Mostafa Shamsuzzaman et al, 'Fisheries Resources of Bangladesh: Present Status and Future Direction' (2017) 2 *Aquaculture and Fisheries* 4, 145–56.

<sup>23</sup> International Development Association Project Appraisal Document on a Proposed Credit , People's Republic of Bangladesh for a Sustainable Coastal and Marine Fisheries Project, World Bank (2018) *Environment and Natural Resources Global Practice South Asia Region* 1–58 ,<http://documents.worldbank.org/curated/en/308831538969417996/pdf/Bangladesh-Sustainable-Coastal-and-Marine-Fisheries-PAD-P161568-2-09182018.pdf>.

<sup>24</sup> S Hossain et al, 'Socio-Economic Condition of the Fishermen in Jelepura under Pahartoli of Chittagong District' (2014) 1(1) *J. Sylhet Agricultural University* 65–72.

<sup>25</sup> Mostafa AR Hossain and Mohammad R Hasan, *An Assessment of Impacts from Shrimp Aquaculture in Bangladesh and Prospects for Improvement* (Food and Agriculture Organization of the United Nations Rome, 2017) 3

activity on a full- time and part-time basis is significantly larger, however, and estimated at 14.7 million people,<sup>26</sup> representing approximately 11 per cent of the overall population of Bangladesh.<sup>27</sup> Climate induced impacts on their rights to work will ultimately create a threat to their livelihoods and socio-economic conditions.

In Bangladesh the fisheries can broadly be classified into three categories: inland capture fisheries, inland aquaculture and marine fisheries.<sup>28</sup> The concept of the ‘coastal fishing people’ refers to the natural coastal people who are directly engaged in coastal and marine fishing. The term coastal fishing people does not include commercial fishing industries. Commercial fishing refers to the harvesting of fish, either in whole or in part, for sale, barter or trade.<sup>29</sup> Commercial fishing also refers to a range of activities, using nets, lines, or traps, to capture marine animals for sale. The most obvious benefits from commercial fishing are that it meets the world’s huge demand for seafood, and that it has a tremendous economic impact on world GDP.<sup>30</sup> Although commercial fishing industries are not included in the concept of the coastal fishing people, there is an intrinsic relationship between them. Commercial fishing industries play a significant role in the socio-economic conditions of the coastal fishing people. The occupational health, safety, financial incentives and wellbeing of coastal fishing people are primarily dependant on the commercial fishing industries. Therefore, this research considers the natural coastal fishing people as the beneficiary of the socio-economic and environmental rights whereas the commercial fishing industries (Artificial Persons) are the facilitators who improve the socio-economic conditions of the coastal fishing people.

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<sup>26</sup> DoF. 2017. National Fish Week 2017 Compendium (in Bengali). Department of Fisheries, Ministry of Fisheries and Livestock, Bangladesh. 160.

<sup>27</sup> Md Nurul Amin and Md Rafiqun Nabi, ‘Analysis of Supply Chain of Fish Captured from the Jamuna River in Bangladesh’ (2019), 6 *Res. Agric. Livest. Fish* 1,133–42.

<sup>28</sup> DoF, National Fish week, Compendium (in Bengali), Department of Fisheries, Ministry of Fisheries and Livestock, Government of Bangladesh, Dhaka (2016)

<sup>29</sup> Glossary of Statistical Terms,< <https://stats.oecd.org/glossary/detail.asp?ID=2990>>

<sup>30</sup> Joe Fore, ‘The Pros & Cons of Commercial Fishing’2019< <https://careertrend.com/about-5112430-pros-cons-commercial-fishing.html>>

## **B Understanding Climate Change**

Climate change is a change in the statistical distribution of weather patterns when that change lasts for an extended period.<sup>31</sup> Climate change may refer to a change in average weather conditions, or in the time variation of weather within the context of longer-term average conditions.<sup>32</sup> <sup>33</sup>The Intergovernmental Panel on Climate Change (IPCC) states that climate change refers to any change in climate over time, whether due to natural variability or because of human activity.<sup>34</sup> According to the National Aeronautics and Space Administration (NASA), climate change refers to a broad range of global phenomena created predominantly by burning fossil fuels, which add heat-trapping gases to Earth's atmosphere.<sup>35</sup> These phenomena include the increasing temperature trends known as global warming, but also encompass changes such as sea-level rise; ice-mass loss in Greenland, Antarctica, the Arctic and mountain glaciers worldwide; shifts in flower and plant blooming; and extreme weather events.<sup>36</sup>

According to the United Nations Framework Convention on Climate Change (UNFCCC), climate change refers to a change of climate that is attributed directly or indirectly to human activity, especially one that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.<sup>37</sup> Climate change is a change in the Earth's overall climate, and it could be a change in average annual rainfall and temperature over a long period of time.<sup>38</sup> The rising tendency of climatic vulnerabilities and natural calamities are progressively increasing the vulnerability of seaside people.<sup>39</sup> The key climate change impacts projected to affect nations are variations in air and ocean temperatures, changes in precipitation patterns and the intensification of extreme weather

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<sup>31</sup> International Science Council, *Climate Change* <<https://council.science/topics/climate-change>> ; Insight Medical Publishing, *Climate Change* <<http://www.imedpub.com/scholarly/climate-change-journals-articles-ppts-list.php>>.

<sup>32</sup> 'Climate Change', *Wikipedia* <[https://en.wikipedia.org/wiki/Climate\\_change](https://en.wikipedia.org/wiki/Climate_change)>.

<sup>33</sup> Nasa-What's the Difference Between Weather and Climate? (2005) <[www.nasa.gov](http://www.nasa.gov)>

<sup>34</sup> United Nations Framework Convention on Climate Change, *Fact Sheet: Climate Change Science – The Status of Climate Change Science Today 1* <[https://unfccc.int/files/press/backgrounders/application/pdf/press\\_factsh\\_science.pdf](https://unfccc.int/files/press/backgrounders/application/pdf/press_factsh_science.pdf)>.

<sup>35</sup> National Aeronautics and Space Administration, *What's in a Name? Weather, Global Warming and Climate Change* <<https://climate.nasa.gov/resources/global-warming>>.

<sup>36</sup> Ibid.

<sup>37</sup> United Nations Framework Convention on Climate Change, Article 1 Definition 2 <<https://unfccc.int/resource/ccsites/zimbab/conven/text/art01.htm>>.

<sup>38</sup> National Aeronautics and Space Administration, *What Are Climate and Climate Change?* (2011)

<<https://www.nasa.gov/audience/forstudents/5-8/features/nasa-knows/what-is-climate-change-58.html>>.

<sup>39</sup> Shamsuddoha and Chowdhury, above n 6.



phenomena (such as cyclones and sea-level rises).<sup>40</sup> Climate change is also projected to result in increasing droughts. During the last 50 years, Bangladesh has been impacted by more than 20 droughts.<sup>41</sup> Nearly every year in Bangladesh, cyclones hit the country's coastal regions in the early summer (April–May) or the late rainy season (October–November).<sup>42</sup> Since 1970, the country has experienced thirty-six cyclonic storms resulting in over 450,000 deaths and immeasurable economic losses.<sup>43</sup> Heavy rain accompanying cyclones, and tidal waves due to wind effects, have caused extensive physical destruction, casualties, damage to crops and livestock, and flooding in a total of thirty districts across the south-western coastal district of Bangladesh.<sup>44</sup>

Sea-level rise and glacier melting in the Himalayas are foreseen consequences of global warming. Thus, inundations are likely to affect coastal Bangladesh as two-thirds of the country is less than 5 m above sea level.<sup>45</sup> The sea level could rise 1 m or more during this century.<sup>46</sup> A 1 m sea-level rise would affect the vast majority of coastal Bangladesh, and the Sundarbans mangrove forest would be totally lost.<sup>47</sup> A 1 m sea-level rise would make an additional 15 million people landless. They would then become 'climate refugees'.<sup>48</sup> There will also likely be an increase in the occurrence of the most severe tropical cyclones.<sup>49</sup> Finally, the physical composition of coastal and estuarine ecosystems will be altered by changes in precipitation, increased water temperature and ocean acidification, and this will contribute to a decline in

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<sup>40</sup> *Journey with Green Climate Fund: Bangladesh's Country Programme for Green Climate Fund*, (2018), NDA Secretariat, Economic Relations Division Ministry of Finance Government of the Peoples' Republic of Bangladesh.

<sup>41</sup> Hugh Brammer, 'Floods, cyclones, Drought and Climate Change in Bangladesh: A Reality Check' (2016) 73(6) *International Journal of Environmental Studies* 872–74.

<sup>42</sup> M Rehan Dastagir, 'Modeling Recent Climate Change Induced Extreme Events in Bangladesh: A Review' (2015) 7 *Weather and Climate Extremes* 54.

<sup>43</sup> Bimal Kanti Paul, 'Human Injuries Caused by Bangladesh's Cyclone Sidr: An Empirical Study' (2010), 54 *Natural Hazards* 483–95.

<sup>44</sup> Ministry of Flood and Disaster Management, *Major Natural Disaster in Bangladesh, 2009* <<http://www.dmb.gov.bd/pastdisaster.html>>.

<sup>45</sup> Susmita Dasgupta et al, 'Cyclones in a Changing Climate: The Case of Bangladesh' (2014) 6 *Climate and Development* 2.

<sup>46</sup> Stefan Rahmstorf, 'A Semi-Empirical Approach to Projecting Future Sea-Level Rise' (2007), 315 *Science* 368–70.

<sup>47</sup> Shardul Agrawala et al, *Development and Climate Change in Bangladesh: Focus on Coastal Flooding and the Sundarbans* (OECD 2003) 70.

<sup>48</sup> Displacement solution, *Climate Displacement in Bangladesh: The Need for Urgent Housing, Land and Property (HLP) Rights Solutions* (2012)

<[https://unfccc.int/files/adaptation/groups\\_committees/loss\\_and\\_damage\\_executive\\_committee/application/pdf/ds\\_bangladesh\\_report.pdf](https://unfccc.int/files/adaptation/groups_committees/loss_and_damage_executive_committee/application/pdf/ds_bangladesh_report.pdf)>.

<sup>49</sup> *ibid* 368.

biodiversity and ecosystem productivity along coastlines.<sup>50</sup> The intensity of tropical cyclones, exacerbated by sea-level rise and the degradation of ecosystems that protect from storms and flooding will pose a direct threat to human lives and coastal settlements.

A study by Climate Change Cell (CCC) of Bangladesh's Ministry of Environment, Forest and Climate Change (2016),<sup>51</sup> analysing 30 years of tidal water data (1980–2012), found that the sea-level rise in the coastal zone of Bangladesh has been 6–21 mm per year.<sup>52</sup> Bangladesh could experience sea-level rises of 14 cm, 32 cm and 88 cm by 2030, 2050 and 2100, respectively.<sup>53</sup> According to CCC (2016), the current rate of sea-level rise in the country ranges from 6 mm/yr to 21 mm/yr. Observations of tidal levels at Hiron Point, Char Changa and Cox's Bazar between 1977 and 1998 indicate a rise of 4 mm/yr, 6 mm/yr and 7.8 mm/yr respectively.<sup>54</sup> Therefore, climate change is creating significant impacts on the coastal fishing people of Bangladesh.

### ***C Understanding Socio-Economic Conditions of the Coastal Fishing People of Bangladesh***

The socio-economic conditions of the coastal fishing people can be understood through the concept of human rights. In 1948, the United Nations adopted the Universal Declaration of Human Rights (UDHR).<sup>55</sup> According to the UDHR, human rights are the rights inherent in all human beings, regardless of race, sex, nationality, ethnicity, language, religion or any other status.<sup>56</sup> The UDHR provides a common standard for the protection of people of all nations.<sup>57</sup> Although the UDHR affords all human rights the same status, the rights were subsequently divided into two categories: (a) civil and political rights and (b) economic, social and cultural rights. *The International Covenant on Civil and Political Rights (ICCPR) 1966* covers the civil and

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<sup>50</sup> ibid 368.

<sup>51</sup> Climate Change Cell, 2016, 'Assessment of Sea Level Rise on Bangladesh Coast through Trend Analysis', Department of Environment, Ministry of Environment, Forest and Climate Change, Bangladesh.  
< [http://gobeshona.net/wpBcontent/uploads/2016/08/SLRBReport\\_final\\_JulyB2016.pdf](http://gobeshona.net/wpBcontent/uploads/2016/08/SLRBReport_final_JulyB2016.pdf)>.

<sup>52</sup> Journey with Green Climate Fund: Bangladesh's Country Programme for Green Climate Fund, (2018), NDA Secretariat Economic Relations Division Ministry of Finance Government of the Peoples' Republic of Bangladesh.

<sup>53</sup> Ministry of Environment, Forest and Climate Change, 'National Adaptation Programme of Action (NAPA)' (2005)  
<<http://unfccc.int/resource/docs/napa/ban01.pdf>>.

<sup>54</sup> USAID, *Bangladesh Climate Vulnerability Profile*, 2012 <[https://www.climatelinks.org/sites/default/files/asset/document/bangladesh\\_climate\\_vulnerability\\_profile\\_jan2013.pdf](https://www.climatelinks.org/sites/default/files/asset/document/bangladesh_climate_vulnerability_profile_jan2013.pdf)>.

<sup>55</sup> Since 1948, the Declaration has been translated into more than 370 languages; see  
<[www.ohchr.org/EN/UDHR/Pages/Introduction.aspx](http://www.ohchr.org/EN/UDHR/Pages/Introduction.aspx)>.

<sup>56</sup> United Nations, *Human Rights* <<http://www.un.org/en/sections/issues-depth/human-rights/index.html>>.

<sup>57</sup> United Nations, *Universal Declaration of Human Rights* <<http://www.un.org/en/universal-declaration-human-rights>>.

political rights, while the International Covenant on Economic, Social and Political Rights (ICESCR) 1966 covers the social, economic and cultural rights.<sup>58</sup> The major social and economic conditions are dependent upon the right to food, work, health, education and housing.<sup>59</sup> All States who ratified the ICESCR have a responsibility to ensure that their people can enjoy their social and economic rights and to undertake appropriate legislative, administrative, budgetary, judicial and other measure towards the full realisation of those rights.

Bangladesh has ratified the ICESCR and incorporated socio-economic rights in its constitution. Part II of the constitution sets out the socio-economic rights under the heading of *Fundamental Principles of State Policy*. Article 15 provides that:

It shall be a fundamental responsibility of the State to attain, through planned economic growth, a constant increase of productive forces and a steady improvement in the material and cultural standard of living of the people, with a view to securing to its citizens – (a) the provision of the basic necessities of life, including food, clothing, shelter, education and medical care; (b) the right to work, that is the right to guaranteed employment at a reasonable wage having regard to the quantity and quality of work; (c) the right to reasonable rest, recreation and leisure; and (d) the right to social security, that is to say, to public assistance in cases of undeserved want arising from unemployment, illness or disablement, or suffered by widows or orphans or in old age, or in other such cases.<sup>60</sup>

The right to food is one of the basic necessities of the citizen declared under Article 15 of the Constitution. These rights are an integral part of the core human right to life. All human rights are interrelated and interdependent. The right to food is the major human right which makes other human rights conditional to this right. The right to work and to education are very closely related and dependant on the right to food. The other important socio-economic rights declared under the Constitution are the right to clothing, shelter (housing), education and medical care. The right to clothing is related to the right to an adequate standard of living.

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<sup>58</sup> ICCPR. The right to life is mentioned in Article 6 of the ICCPR. The right to food, housing and water is (implicitly) mentioned in Article 11 of the *International Covenant on Economic, Social and Cultural Rights (ICESCR)*, opened for signature 16 December 1966, 993 UNTS 3 (entered into force 3 January 1976). The right to housing and health are mentioned, respectively, in Articles 11 and 12 of the ICESCR.

<sup>59</sup> International Covenant on Economic, Social and Cultural Rights, Adopted and opened for signature, ratification and accession by General Assembly resolution 2200A (XXI) of 16 December 1966, came into force 3 January 1976, in accordance with article 27 < <https://www.humanrights.gov.au/our-work/commission-general/international-covenant-economic-social-and-cultural-rights-human-rights>>.

<sup>60</sup> The Constitution of the People's Republic of Bangladesh, article 15.

Article 18 of the Constitution provides for the right to health of all citizens of Bangladesh. The Article states:

The State shall regard the raising of the level of nutrition and the improvement of public health as among its primary duties, and in particular shall adopt effective measures to prevent the consumption, except for medical purposes or for such other purposes as may be prescribed by law, of alcoholic and other intoxicating drinks and of drugs which are injurious to health.<sup>61</sup>

The Constitution also provides for the right to a sound environment for all. Article 18(A) states:

The State shall endeavour to protect and improve the environment and to preserve and safeguard the natural resources, biodiversity, wetlands, forests and wildlife for the present and future citizens.<sup>62</sup>

Article 20 of the Constitution provides for the right to work, stating:

(1) Work is a right, a duty and a matter of honour for every citizen who is capable of working, and everyone shall be paid for his work on the basis of the principle “from each according to his abilities, to each according to his work”.

(2) The State shall endeavour to create conditions in which, as a general principle, persons shall not be able to enjoy unearned incomes, and in which human labour in every form, intellectual and physical, shall become a fuller expression of creative endeavour and of the human personality.<sup>63</sup>

Although the major socio-economic rights—including the rights to food, education, housing and health—are incorporated in the constitution of Bangladesh, Article 8(2) states that the principles set out in Part II of the Constitution, although fundamental to the governance of Bangladesh, may not be judicially enforceable. Still, according to the provisions of Part II, all citizens, including coastal fishing people, have a right to the basic necessities of life, such as food, clothing, shelter, education and medical care.

As citizens of Bangladesh, the coastal fishing people have these rights to food, work, health and housing under constitutional guarantee. The government of Bangladesh is under the constitutional commitment to protect these rights. The coastal fishing people are the most deprived of their socio-economic rights among the peoples of Bangladesh.

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<sup>61</sup> The Constitution of the People’s Republic of Bangladesh, article 18.

<sup>62</sup> The Constitution of the People’s Republic of Bangladesh, article 18(A).

<sup>63</sup> The Constitution of the People’s Republic of Bangladesh, article 20.

### III CLIMATE CHANGE AND SOCIO-ECONOMIC CONDITIONS OF THE COASTAL FISHING PEOPLE OF BANGLADESH

The links between climate change and socio-economic rights have been debated for years.<sup>64</sup> Climate change undermines human rights, and this is recognised under international human rights law.<sup>65</sup> The *Paris Agreement*, based on the recommendations of the Office of the United Nations High Commissioner for Human Rights (OHCHR) included the need to consider the impact of climate change on socio-economic rights. During the Bali Conference of 2007, the OHCHR highlighted the connection between climate change and human rights.<sup>66</sup> The OHCHR issued a public statement for the Bali Climate Change Conference COP-13 acknowledging that climate change can adversely affect the fundamental human rights of present and future generations and reminding the COP that governments have both moral and legal obligations to protect and promote fundamental human rights when tackling climate change.<sup>67</sup> In 2008, the OHCHR prepared a report on the link between climate change and human rights.<sup>68</sup> At the request of the OHCHR, between 2008 and 2015 the human rights council adopted five resolutions on climate change and human rights.<sup>69</sup> The preamble to the *Paris Agreement* includes an acknowledgement that climate change is a common concern of humankind and the state parties should, when taking action to address climate change, respect, promote and

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<sup>64</sup> Climate Change and Human Rights, United Nations Environment Programme (UNEP) in cooperation with the Sabin Center for Climate Change Law at Columbia University in the City of New York <<http://web.unep.org/divisions/delc/human-rights-and-environment>>.

<sup>65</sup> Office of the UN High Commissioner for Human Rights, 'The Effects of Climate Change on the Full Enjoyment of Human Rights' (April 30, 2015).

<sup>66</sup> Kyung-wha Kang, Deputy High Commissioner for Human Rights, Office of the U.N. High Commissioner for Human Rights, Address at the Conference of the Parties to the U.N. Framework Convention on Climate Change and its Kyoto Protocol (Dec. 14, 2007), available at <<http://www.unhcr.ch/hurricane/hurricane.nsf/view01/013DCOF4A475EC87C12573B10074796A?>>.

<sup>67</sup> OHCHR, *The Human Rights Impact of Climate Change, UN Joint Press Kit for Bali Climate Change Conference*, 3-14 December 2007 (Nov. 2007).

<sup>68</sup> UN human rights council resolution 7/23 of 2008. See office of the United Nations High Commissioner for Human Rights (OHCHR), Report of the office of the United Nations High Commissioner for Human rights on the Relationship between climate change and human rights (A/HRC/10/61) (15 January 2009) <[https://documents-dds-ny.un.org/doc/UN-DOC/GEN/G09/103/44/PDF/G0910344?>](https://documents-dds-ny.un.org/doc/UN-DOC/GEN/G09/103/44/PDF/G0910344?).

<sup>69</sup> Human Rights Council resolutions 7/23 (2008), 10/4 (2009), 18/22 (2011), 26/27 (2014), and 29/15 (2015).

consider their respective obligations on human rights.<sup>70</sup> The *Paris Agreement* constitutes a step forward for advocacy on climate change and human rights, including socio-economic rights.<sup>71</sup>

Climate change has various societal and economic impacts across the world.<sup>72</sup> The *Fourth Assessment Report* of the IPCC states that climate change is already increasing people's suffering from death, disease and injury from heat waves, floods and droughts.<sup>73</sup> The report warns that many people in developing countries such as Bangladesh are likely to suffer, and their lives may be at risk. According to a report by the Climate Vulnerable Forum and Development and Relief Agency (DARA),<sup>74</sup> climate change is already responsible for approximately 400,000 deaths per year and that number is expected to rise to 700,00 by 2030.<sup>75</sup> In order to uphold the right to life, states must take effective measures to mitigate and adapt to climate change to prevent future loss of life.<sup>76</sup>

The IPCC's Fifth Assessment Report (AR5) provides a detailed picture of how the observed and predicted climatic changes would adversely affect millions of people and the ecosystems, natural resources and physical infrastructure upon which they depend.<sup>77</sup> The rising tendency of climatic vulnerabilities and natural calamities are progressively increasing the vulnerability of seaside people's lives..<sup>78</sup> Further, increasing trends of climate induced vulnerabilities together with natural disasters are gradually making the lives of coastal people, including the fishing people, more challenging.<sup>79</sup>

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<sup>70</sup> Paris Agreement, recital 12.

<sup>71</sup> Human Rights in the Paris Agreement, Mayer Benoit, *Climate law* (2016) 6 109–117.

<sup>72</sup> The U.S. Global Change Research Program, *Global Climate Change Impacts in the United States*, June 2009.

<sup>73</sup> Aurelie Lopez, 'Protection of Environmentally-Displaced Persons in International Law' (2007) 37(2) *Environmental Law* 386.

<sup>74</sup> DARA was established in 2003, as a non-profit organisation. This independent organisation is committed to improving the quality of life for vulnerable populations affected by natural disasters and armed conflict.

<sup>75</sup> DARA and the Climate Vulnerable Forum, *Climate Vulnerability Monitor Second Edition: A Guide to the Cold Calculus of a Hot Planet* (DARA and Climate Vulnerability Monitor, 2012), 17; Understanding Human Rights and Climate Change, Submission of the Office of the High Commissioner for Human Rights to the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change, 14 <<https://www.ohchr.org/Documents/Issues/ClimateChange/COP21.pdf>>.

<sup>76</sup> OHCHR, above n 63.

<sup>77</sup> Inter-Governmental Panel on Climate Change, 'Climate Change 2014: Impacts, Adaptation, and Vulnerability' Contribution of the Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (Cambridge University Press 2014) <[https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-PartA\\_FINAL.pdf](https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-PartA_FINAL.pdf)>.

<sup>78</sup> Shamsuddoha and Chowdhury, above n 6, 27.

<sup>79</sup> Ibid 11.

Climate change poses a threat not only to the lives of individuals but also to their ways of life and livelihoods, and even to the survival of entire peoples.<sup>80</sup> Climate change exacerbates weather-related disasters that already have devastating effects on people and their right to life, particularly in the developing world.<sup>81</sup> The key climate change impacts projected to affect the socio-economic rights of the coastal fishing people are: variations in air and ocean temperatures, changes in precipitation patterns, and the intensification of extreme weather phenomena such as cyclones and sea-level rise.<sup>82</sup> Climate change then presents an uncertain but potentially severe threat to vulnerable coastal fishing people.<sup>83</sup> The coastal fishing people of Bangladesh are subject not only to sea-level rise but also to an increase in cyclones and flooding. It is estimated that 97.1 per cent of coastal areas and over 35 million people of coastal Bangladesh are at risk of exposure to multiple climate change hazards such as tropical cyclones, storm surges, coastal flooding, salinity intrusion associated with global warming and sea-level rises.<sup>84</sup> A metre rise in sea level would submerge almost 20 per cent of the entire country and displace more than 30 million people.<sup>85</sup> The government also warns that nearly 35 million people from 19 districts will be affected severely by sea-level rises in the future.<sup>86</sup>

A number of climatic variables have had adverse effects on coastal ecosystems: cyclones, salinity, sea level rise, rising water temperature, floods, rainfall and drought.<sup>87</sup> The fishing sector is highly vulnerable to natural disasters because of Bangladesh's geographical location, its flat and low-lying landscape, the high population density, poverty, illiteracy and the lack of

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<sup>80</sup> Understanding Human Rights and Climate Change, Submission of the Office of the High Commissioner for Human Rights to the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change. 2–28 <<https://www.ohchr.org/Documents/Issues/ClimateChange/COP21.pdf>>.

<sup>81</sup> Siobhan McInerney-Lankford, Mac Darrow and Lavanya Rajaman, *Human Rights and Climate Change: A Review of the International Legal Dimensions* (World Bank, 2011) 47. <<https://elibrary.worldbank.org/doi/pdf/10.1596/978-0-8213-8720-7>>.

<sup>82</sup> Journey with Green Climate Fund: Bangladesh's Country Programme for Green Climate Fund, (2018), NDA Secretariat Economic Relations Division Ministry of Finance Government of the Peoples' Republic of Bangladesh.

<sup>83</sup> Ibid [Hans-69].

<sup>84</sup> Md Shamsuddoha et al, 'Local Perspective on Loss and Damage in the Context of Extreme Events: Insights from Cyclone-Affected Communities in Coastal Bangladesh' (2013), Center for Participatory Research and Development (CRPD): Dhaka, Bangladesh 6–22.

<sup>85</sup> Robert Glennon, *The Unfolding Tragedy of Climate Change in Bangladesh*, Scientific American 175

<<https://blogs.scientificamerican.com/guest-blog/the-unfolding-tragedy-of-climate-change-in-bangladesh/>>.

<sup>86</sup> Coastal Zone Policy 2005, Ministry of Water Resources, Government of the People's Republic of Bangladesh.

<sup>87</sup> Nesar Ahmed et al, 'The Impact of Climate Change on Prawn Postlarvae Fishing in Coastal Bangladesh: Socioeconomic and Ecological Perspectives' (2013) 39(1) *Marine Policy* 224–33.

institutional support.<sup>88 89</sup> Climate change will definitely bring about new challenges to fisheries-based livelihoods in the coming decades.<sup>90</sup> Fishing communities in Bangladesh are subject not only to sea-level rise, but also flooding and increased typhoons.<sup>91</sup>

Every year, more than one natural disaster occurs in Bangladesh. These disasters adversely affect the lives and livelihoods of the coastal people.<sup>92</sup> The socio-economic rights of these people are disrupted by extreme weather events such as cyclones, heavy downpours, floods, erosion, storm surges, dense fogs and sea turbulence, and also by the slow onset of salinization, drought and ecosystem degradation.<sup>93</sup>

The Bangladesh fisheries sector directly supports the livelihoods of about 7 million fishermen and contributes 4.43% to the Gross Domestic Product (GDP) of Bangladesh and 2.73% to export earnings.<sup>94</sup> The fishing sector in Bangladesh is regarded as the most vulnerable to climate change in the entire world,<sup>95</sup> while small-scale fishing communities are especially at risk. <sup>96</sup> Sea-level rises and an increased frequency of storms will result in changes in coastal profile, loss of harbors and loss of homes.<sup>97</sup>

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<sup>88</sup> M Biswas (2013). 'Climate Change & Its Impacts on Bangladesh' in G Rahman (ed), *Planned Decentralization: Aspired Development, World Town Planning Day 2013* (Bangladesh Institute of Planners, Dhaka, 2013) 86–95.

<sup>89</sup> NCDO, Climate Change & Its Impacts on Bangladesh <<http://www.ncdo.nl/artikel/climate-change-its-impacts-bangladesh>>.

<sup>90</sup> Marie-Caroline Badjeck et al, 'Impacts of Climate Variability and Change On Fishery-Based Livelihoods' (2010), 34 *Marine Policy* 3, 375–83.

<sup>91</sup> Dr. Soheila Khoshnevis Yazdi and Dr. Bharam Shakouri, 'The Effects of Climate Change on Aquaculture' (2010), 1(5) *International Journal of Environmental science and Development*, 379

<sup>92</sup> MA Hossain and MG Miah, 'Environmental Disasters in History: Bangladesh Perspective' (2011) 2(1) *International Journal Social Development Information Systems (IJSDIS)* 1, 31–7.

<sup>93</sup> OXFAM international Research Report (2010), 'Climate Change Adaptation: Enabling People Living In Poverty to Adapt' "p-10 (i.e., Gorky in April 29, 1991; Sidr in November 15, 2007; Aila in May 25, 2009; Mohasen in May 16, 2013; Komen in July 31, 2015).

<sup>94</sup> Department of Fisheries, *National Fisheries Week 2012* (Department of Fisheries, Government of Bangladesh, 2012); Md Monirul Islam et al, 'Economic Incentives for Sustainable Hilsa Fishing in Bangladesh: An Analysis of the Legal and Institutional Framework' (2016) 68 *Marine Policy* 9.

<sup>95</sup> Edward H Allison et al. 'Vulnerability of National Economies to the Impacts of Climate Change on Fisheries' (2009) 10 *Fish and Fisheries* 2, 173–96.

<sup>96</sup> Md. Monirul Islam et al, 'Vulnerability of Fishery-Based Livelihoods to the Impacts of Climate Variability and Change: Insights from Coastal Bangladesh' (2014) 14 *Regional Environmental Change*, 281–94.

<sup>97</sup> Climate Change and Fisheries and Livestock in Bangladesh: Information Brief, Ministry of Environment and Forests Government of the People's Republic of Bangladesh Financial Support: DFID and DANIDA, IUCN <<https://www.iucn.org/sites/dev/files/import/downloads/frsheries.pdf>>



Small-scale fishers and small-scale aquaculture are particularly vulnerable to climate change in Bangladesh.<sup>98</sup> A recent report submitted to the Asian Development Bank (ADB) estimated that without further action, climate change would cause total economic losses of on average 9.4% of the total GDP of Bangladesh, which could climb to 23%.<sup>99</sup> In Bangladesh, mass relocation generally occurs during and after tropical cyclones.<sup>100</sup>

Climate change has both direct and indirect impacts on fish stocks, which ultimately impacts the coastal fishing people. Direct effects act on physiology and behaviour and alter growth, development, reproductive capacity, mortality and distribution. Indirect effects alter the productivity, structure and composition of the ecosystems on which fish depend for food and shelter.<sup>101</sup> Climate change has also created unemployment among the people of coastal communities.<sup>102</sup> Increasing trends of climate-induced vulnerabilities and natural disasters are gradually depriving coastal people of their socio-economic rights.<sup>103</sup>

Temperature has a profound effect on reproduction in fish.<sup>104</sup> Fish physiology—including growth, reproduction and specific activities—is directly influenced by changes in temperature. With rising environmental temperatures, specific physiological activities of fish also increase. This then increases the demand for dissolved oxygen.<sup>105</sup> Increasing temperature and decreasing levels of dissolved oxygen might adversely affect the pond fish culture in Bangladesh.<sup>106</sup> Erratic and irregular rainfall, as well as temperature changes, will affect the readiness, maturity and development of fishes in breeding season. Higher water temperatures may cause changes in

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<sup>98</sup> Edward H Allison et al, 'Climate Change, Small-Scale Fisheries and Smallholder Aquaculture' (2009), 1 *Fisheries, Sustainability and Development* 69-81.

<sup>99</sup> Mahfuz Ahmed and Suphachalasai Suphachol, 'Assessing the Costs of Climate Change and Adaptation in South Asia' (2014) *Asian Development Bank*, 1-129

<sup>100</sup> Christopher McCrudden, 'Legal Research and the Social Sciences vol-II' (2017) *Law Quarterly Review* 632.

<sup>101</sup> KM Brander, 'Global Fish Production and Climate Change' (2007) 104(50) *Proceedings of the National Academy of Sciences of the United States of America* 19709–19714; Soheila khoshnevis Yazdi and Bahram Shakouri, 'The Effects of Climate Change on Aquaculture' (2010). 1(5) *International Journal of Environmental Science and Development* 378.

<sup>102</sup> Mahbuba Nasreen, Khondoker Mokaddem Hossain and Md. Abul Kalam Azad, 'Climate Change and Livelihood in Bangladesh: Experiences of People Living in Coastal Regions' Centre on Integrated Rural Development for Asia and the Pacific (CIRDAP), 2016

<sup>103</sup> Shamsuddoha and Chowdhury, above n 6, 18.

<sup>104</sup> Ned W Pankhurst and Philip L Munday, Effects of Climate Change on Fish Reproduction and Early Life History Stages (2011), 62 *Marine and Freshwater Research* 1015–26 <<http://www.publish.csiro.au/mf/pdf/MF10269>>.

<sup>105</sup> Philipp Neubauer and Ken H Andersen, 'Thermal Performance of Fish is Explained by an Interplay between Physiology, Behaviour and Ecology' (2019), 7 *Conservation Psychology* 1

<sup>106</sup> Muhammad Tanvir Hossain Chowdhury et al, 'Climate Change and Its Impact on Fisheries Resources in Bangladesh' (Conference Paper, International Conference on Environmental Aspects of Bangladesh, 2010) ,95–97.

the physiology and sex ratios of fished species, as well as altering the timing of spawning, migrations, and peak abundance. Such changes will lead to changes in the levels of productivity across both marine and freshwater systems.<sup>107</sup>

Climate change has a direct impact on the natural functioning of the marine ecosystem by increasing ocean acidification. Ocean acidification hampers the natural functioning of marine ecosystems and disrupts the productivity of marine fisheries.<sup>108</sup> For countries most vulnerable to climate-induced effects on marine fisheries, more than two-thirds depend on marine fisheries as a main source of fish supply.<sup>109</sup> The impacts of climate change have been quite severe on the marine environment and on biological diversity due to the increase in temperature. This increased temperature has raised the water temperature resulting in ocean deoxygenation. When dissolved oxygen levels fall to about 2 milligrams per litre – compared to a normal range of roughly 5 to 10 mg/L – many aquatic organisms become severely stressed.<sup>110</sup> This has resulted in a decrease in catchable fish, as their environment has been significantly impacted by climate change.<sup>111</sup>

Climate change also causes changes in run-off reaching coastal and marine systems which alters the availability and quality of coastal water, with implications for productivity and ecosystem function of coastal and estuarine environments.<sup>112</sup> Climate change causes species' range shifts and habitat phase shifts, as well as habitat transformation. It creates environmental pressures in coastal areas on the structure, functionality, and health of marine ecosystems and the

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<sup>107</sup> FAO, 'Impacts of Climate Change on Fisheries and Aquaculture: Synthesis of Current Knowledge, Adaptation and Mitigation Options', FAO Fisheries and Aquaculture Technical Paper 627, Food and Agriculture Organization of the United Nations Rome, 2018 <<http://www.fao.org/3/CA0356EN/ca0356en.pdf>>.

<sup>108</sup> CO2 and Ocean Acidification: Causes, Impacts, Solutions, < <https://www.ucsusa.org/resources/co2-and-ocean-acidification>>

<sup>109</sup> Qi Ding, Xinjun Chen, Ray Hilborn and Yong Chen, 'Vulnerability to impacts of climate change on marine fisheries and food security' (2017), Science direct, Vol 83, P55-61,

<<https://www.sciencedirect.com/science/article/pii/S0308597X17300040>>

<sup>110</sup> How is climate change affecting fishes? There are clues inside their ears, The conversation, <<https://theconversation.com/how-is-climate-change-affecting-fishes-there-are-clues-inside-their-ears-110249#:~:text=When%20dissolved%20oxygen%20levels%20fall,low%20oxygen%20threshold%20%E2%80%9Chypoxia.%E2%80%9D>>

<sup>111</sup> Limburg, K n.d., *How is climate change affecting fishes? There are clues inside their ears*, The Conversation, viewed 12 July 2020, <<https://theconversation.com/how-is-climate-change-affecting-fishes-there-are-clues-inside-their-ears-110249#:~:text=When%20dissolved%20oxygen%20levels%20fall>>.

<sup>112</sup> <https://www.dpi.nsw.gov.au/content/research/topics/climate-change/fishing-and-aquaculture#:~:text=Climate%20changes%20over%20land%20will,of%20coastal%20and%20estuarine%20environments>.

socioeconomic sectors on that the coastal community depends. For instance, the tropicalization of temperate marine ecosystems through poleward range shifts of tropical fish grazers has been shown to increase the grazing rate on temperate macroalgae (seaweeds and marine algae), such as those in Japan and the Mediterranean, with similar trophic impacts expected to affect ecosystem structure in temperate reefs.<sup>113</sup>

Climate change impacts marine biodiversity by shifting temperatures and other ocean conditions through changes in organismal physiology and phenology, as well as population dynamics and distributions.<sup>114</sup> The impacts of ocean–atmospheric changes have been projected to lead to altered patterns of species richness, changes in community structure and ecosystem functions and consequential changes in marine services.<sup>115</sup>

Finally, the physical composition of coastal and estuarine ecosystems will be altered by changes in precipitation and river flow, increased water temperatures and ocean acidification. This will contribute to a decline in biodiversity and ecosystem productivity along coastlines.<sup>116</sup> The intensity of tropical cyclones, exacerbated by sea-level rises and the degradation of ecosystems that protect from storms and flooding, will pose a direct threat to human lives and coastal settlements, thus making the coastal fishing people more vulnerable. Therefore, there is a cause and effect relationship between climate change and the socio-economic conditions of the Bangladeshi coastal fishing people.

#### **IV CURRENT SITUATION OF SOCIO-ECONOMIC CONDITIONS OF THE COASTAL FISHING PEOPLE OF BANGLADESH**

The Bangladesh government has claimed that the country is the ‘most climate vulnerable country in the world’.<sup>117</sup> This vulnerability—combined with a weak economy, an uncontrolled

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<sup>113</sup> Vergés, A., Steinberg, P. D., Hay, M. E., Poore, A. G. B., Campbell, A. H., Ballesteros, E., et al. (2014a). The tropicalization of temperate marine ecosystems: climate-mediated changes in herbivory and community phase shifts. *Proc. R. Soc. B Biol. Sci.* 281:20140846. doi: 10.1098/rspb.2014.0846

<sup>114</sup> Colette C. C. Wabnitz, Vicky W. Y. Lam, Gabriel Reygondeau, Lydia C. L. Teh, Dalal AlAbdulrazzak, Myriam Khalfallah, Daniel Pauly, Maria L. Deng Palomares, Dirk Zeller, William W. L. Cheung, ‘Climate change impacts on marine biodiversity, fisheries and society in the Arabian Gulf’ (2018) *PLOS ONE* 13(5),p1-26| <https://doi.org/10.1371/journal.pone.0194537>

<sup>115</sup> Sumaila UR, Cheung WWL, Lam VWY, Pauly D, Herrick S. Climate change impacts on the biophysics and economics of world fisheries. *Nat Clim Change*. 2011; 1(9):449–56. PubMed PMID: WOS:000298740300016.

<sup>116</sup> *ibid* 368.

<sup>117</sup> MOFDM 2010. National Plan for Disaster Management 2010-2015. Dhaka: Disaster Management Bureau, Ministry of Food and Disaster Management, Bangladesh.

population and destroyed resources—impact negatively on the individual's rights to housing, life and profession. Bangladesh is a low-lying deltaic country that is widely recognised as highly vulnerable to climate-related disasters and coastal flooding.<sup>118</sup> Most of the fishery-dependent people reside in the low-lying coastal areas, which are highly exposed to climate change impacts. Coastal areas are significantly climate sensitive and approximately 80–90% of coastal people depend on fisheries and agriculture for their livelihoods.<sup>119</sup> Coastal fishers in Bangladesh face increased frequency and severity of hurricanes, coupled with the greater penetration of saline water into coastal land due to the thermal expansion of the warming oceans.<sup>120</sup>

The coastal fishing people live in hazardous landscapes and they fish in turbulent coastal waters.<sup>121</sup> This, together with frequent natural disasters, creates insurmountable pressures on the lives and livelihoods of fishers. Coastal communities will have higher exposure to sea-level rises and cyclones, while communities in semi-arid areas may be most exposed to drought.<sup>122</sup> Drought and siltation are reducing the wintering habitat for fish, resulting in less recruitment into grazing fields to grow open water fisheries.<sup>123</sup> A severe depletion of fisheries is resulting in lowered numbers of fish species and less fish production. Bangladesh is gradually losing its precious aquatic flora and fauna, with many aquatic species becoming rare or even extinct.<sup>124</sup>

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<sup>118</sup> Winston H Yu, et al, 'Climate Change Risks and Food Security in Bangladesh' (2010) *Earthscan* 2-131; Clark L Gray and Valerie Mueller, 109(16) 'Natural Disasters and Population Mobility in Bangladesh' (2012), 6000–6005, <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3341015/pdf/pnas.201115944.pdf>>.

<sup>119</sup> Mesbahul Alam et al, 'Coastal Livelihood Adaptation in Changing Climate: Bangladesh Experience of NAPA Priority Project Implementation' (2013) *Climate Change Adaptation Actions in Bangladesh, Disaster Risk Reduction* 253–276.

<sup>120</sup> AS Unnikrishnan et al, 'Sea Level Changes Along the Indian Coast: Observations and Projections' (2006) 90 *Current Science* 10, 362–368.

<sup>121</sup> Mohammad Mahmudul Islam, 'Living on the Margin: The Poverty–Vulnerability Nexus in the Small-Scale Fisheries of Bangladesh' in S Jentoft & A Eide (eds), *Poverty Mosaics: Realities and Prospects in Small-Scale Fisheries* (Springer, 2015) 71–92.

<sup>122</sup> Haweya Ismail, 'Climate Change, Food and Water Security in Bangladesh' <<http://www.futuredirections.org.au/wp-content/uploads/2016/03/SAP-Final-Draft-Climate-Change-Food-and-Water-Security-in-Bangladesh.pdf>>.

<sup>123</sup> Mostafa Ali Reza Hossain, 'An Overview of Fisheries Sector of Bangladesh' (2014) 1(1) *Research in Agriculture, Livestock and Fisheries* 115

<sup>124</sup> Amitav Ghosh and Aaron Savio Lobo, Bay of Bengal: Depleted Fish Stocks and Huge Dead Zone Signal Tipping Point', *The Guardian* <<https://www.theguardian.com/environment/2017/jan/31/bay-bengal-depleted-fish-stocks-pollution-climate-change-migration>>.

People of Bangladesh are facing numerous impacts of climate change and the pressures these changes are causing is increasing.<sup>125</sup> Coastal communities will also be adversely affected by the more gradual degradation of coastal and estuarine ecosystems.<sup>126</sup> The detail of the current socio-economic conditions of the coastal fishing people are described in the sections that follow.

### **A    *Right to Food of the Coastal Fishing People***

At present, the world food security problem is bigger than it has ever been, with more than 800 million people chronically hungry and millions more at risk.<sup>127</sup> Climate change is affecting the right to food of the coastal fishing people of Bangladesh in many ways. It affects the food chain and the capability to access food. The world's fisheries provide more than 2.6 billion people with at least 20% of their average annual per capita protein intake.<sup>128</sup> World fishers are already being affected by rising global temperatures.<sup>129</sup> Changes in rainfall lead to drought or flooding, while warmer or cooler temperatures lead to changes in the length of the fishing season.<sup>130</sup> Climate change could significantly interrupt the productivity of fish, which could have serious consequences for food availability.<sup>131</sup> Extreme weather events are likely to become more frequent and will increase the risks and uncertainties inherent in the global food system.<sup>132</sup>

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<sup>125</sup> MA Awal et al, 'Adapting Social Safety Net Programs to Climate Change Shocks: Issues and Options for Bangladesh', Department of Crop Botany, Bangladesh Agricultural University (2013) <[http://fpmu.gov.bd/nfpcsp/sites/default/files/ToR%2011\\_Final%20Technical%20Report\\_0.pdf](http://fpmu.gov.bd/nfpcsp/sites/default/files/ToR%2011_Final%20Technical%20Report_0.pdf)>.

<sup>126</sup> Sowmen Rahman and Mohammed Aatur Rahman, 'Climate Extremes and Challenges to Infrastructure Development in Coastal Cities in Bangladesh' (2015) 7 *Weather and Climate Extremes* 97

<sup>127</sup> Food and Agricultural Organization, 'The State of Food Insecurity in the World: The Multiple Dimensions of Food Security' (2013) <<http://www.fao.org/3/a-i3434e.pdf>>; John Cheeseman, 'Chapter-7 Food Security in the Face of Salinity, Drought, Climate Change, and Population Growth' (2016), *Academic Press, Elsevier Inc.* 111.

<sup>128</sup> FAO, *The State of World Fisheries and Aquaculture 2006* (FAO, 2007).

<sup>129</sup> Ibid 72.

<sup>130</sup> PJ Gregory et al, 'Climate change and food security' (2005) 360(1463) *Philosophical Transactions of the Royal Society B* 2139–2148.

<sup>131</sup> Tim Wheeler and Joachim von Braun, 'Climate Change Impacts on Global Food Security' (2013), 341 *Science* 508–513.

<sup>132</sup> Prabhu Pingali et al, 'Transforming Food Systems for a Rising India' (Palgrave Macmillan, 2019) 1–241.

The coastal belt of Bangladesh (comprising 15 of the 19 coastal districts) is considered among the poorest regions of the country, with a below-national average GDP per capita.<sup>133</sup> The number of people at risk of flooding by coastal storm surges is projected to increase from the current 75 million to 200 million. This is in a scenario of mid-range climate change in which the sea level rises by 40 cm by the 2080s.<sup>134</sup>

Salinity is an important determinant of the distribution of fish.<sup>135</sup> Extremes of, and rapid changes in, salinity can stress many fish species.<sup>136</sup> Increased salinity and the resulting changes in water quality are likely to instigate changes in fish species composition, reproductive cycle, feeding, breeding, longitudinal migration and distribution in coastal areas.<sup>137</sup> There will be clear changes in the seasonal abundance of individual fish. This would in turn require a change in fish culture practices in the affected areas. Moreover, the progressive increase in salinity—especially towards the extremely high end—is accompanied by the mortalities of other estuarine-spawning fish species within the coastal water of Bangladesh.<sup>138</sup> Increasing salinity in coastal freshwater and brackish water river systems will negatively impact the current composition of fish species and ecosystems. Salinity intrusion is also expected to have severe impacts on coastal water fish species.<sup>139</sup> Fishing people are losing their occupations and becoming poorer. This has also created a state of unemployment among the coastal communities.<sup>140</sup>

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<sup>133</sup> Nahid Sultana, 'Adaptation to Climate Change Impacts and Coastal Zone Management in Bangladesh' (2015) A thesis in fulfilment of the requirements for the degree of Doctor of Philosophy, School of Biological, Earth and Environmental Science Faculty of Science, UNSW, Australia 32

<sup>134</sup> Intergovernmental Panel on Climate Change, *Climate Change 2001: Impacts, Adaptation, and Vulnerability* (Cambridge University Press, 2001).

<sup>135</sup> M Elliott et al, 'The Guild Approach to Categorizing Estuarine Fish Assemblages: A Global Review' (2007) 8 *Fish and Fisheries* 241–268

<sup>136</sup> M Bronwyn et al, 'Potential Effects of Climate Change on Australian Estuaries and Fish Utilising Estuaries: A Review' (2011) 62 *Marine and Freshwater Research* 1115–1131 <<https://www.publish.csiro.au/mf/pdf/MF11047>>.

<sup>137</sup> Susmita Dasgupta et al, 'Impact of Climate Change and Aquatic Salinization on Fish Habitats of Poor Communities in Southwest Coastal Bangladesh and Bangladesh Sundarbans', (World Bank Group 2016).

<sup>138</sup> GC Young and IC Potter, 'Influence of Exceptionally High Salinities Marked Variations in Freshwater Discharge and Opening Of Estuary Mouth on the Characteristics of the Ichthyofauna of a Normally Closed Estuary' (2002) 55(2) *Estuarine, Coastal and Shelf Science* 223–246

<sup>139</sup> Journey with Green Climate Fund: Bangladesh's Country Programme for Green Climate Fund, (2018), NDA Secretariat Economic Relations Division Ministry of Finance Government of the Peoples' Republic of Bangladesh.

<sup>140</sup> Nasreen, Hossain and Azad, above n 98.

The right to food of the coastal fishing people is being threatened by climate change. Temperature has a profound effect on reproduction in fish.<sup>141</sup> Erratic and irregular rainfall as well as temperature changes affect the readiness, maturity and gonad development of fishes in breeding season. These lead to changes in the timing and levels of productivity across marine and freshwater systems and reduced production of fisheries resources.<sup>142</sup>

Extreme weather events such as cyclones and floods further intensify the reduction in the growth of fishery resources.<sup>143</sup> In the coastal area of Bangladesh, cyclone intensity has increased from April to May and from September to November.<sup>144</sup> Most of these months coincide with the fishing seasons, reducing fishing days and therefore reducing the fishermen's income.<sup>145</sup> Cyclones also damage important aquaculture installations. Further, sea-level rise and increased rainfall will expand the size of waterlogged areas, especially in the coastal polders. This reduces shrimp culture areas, resulting in loss of production and income of farmers. It is established that climate change will bring about significant new challenges to fisheries-based livelihoods in the coming decades.<sup>146</sup>

Change in temperature also affects coastal aquaculture by increasing the risk of disease, which may cause economic losses in coastal areas. Suitable areas for major culture species will be reduced. If the world temperature exceeds an average of more than 32°C, it is hypothesised that the death rate of fish fingerlings would increase.<sup>147</sup> The organic culture area is reduced due to a reduction in the natural productivity of water. Increase of disaster events damages aquaculture firms more frequently. Extreme weather events are predicted to become more

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<sup>141</sup> Ned W Pankhurst and Philip L Munday, 'Effects of Climate Change on Fish Reproduction and Early Life History Stages' (2011) 62 *Marine and Freshwater Research* 1015–1026 <<http://www.publish.csiro.au/mf/pdf/MF10269>>.

<sup>142</sup> FAO, 'Impacts of Climate Change on Fisheries and Aquaculture: Synthesis of Current Knowledge, Adaptation and Mitigation Options', FAO Fisheries and Aquaculture Technical Paper 627, Food and Agriculture Organization of the United Nations Rome, 2018 <<http://www.fao.org/3/CA0356EN/ca0356en.pdf>>.

<sup>143</sup> L Westlund et al, 'Disaster Response and Risk Management in the Fisheries Sector' (Rome: Food and Agriculture Organization of the United Nations, 2007).

<sup>144</sup> Met Office, 2011, 'Climate: Observations, projections and impacts – Bangladesh' (Met Office Hadley Centre and Department of Energy and Climate Change of the United Kingdom, 2011).

<sup>145</sup> AU Ahmed and S Neelormi, 'Livelihoods of Coastal Fishermen in Peril: In Search of Early Evidence of Climate Change Induced Adverse Effects in Bangladesh,' (Centre for Global Change, 2008).

<sup>146</sup> Marie-Caroline Badjeck et al, Impacts of Climate Variability and Change on Fishery-Based Livelihoods (2010) 34 *Marine Policy* 375–383.

<sup>147</sup> M Biswas, M (2013). 'Climate Change & Its Impacts on Bangladesh' in G Rahman, G (ed), *Planned Decentralization: Aspired Development, World Town Planning Day 2013* (Bangladesh Institute of Planners, 2013) 86–95.

severe and more frequent in the future,<sup>148</sup> favouring pathogen outbreaks following seasonal periods associated with changes in temperature and precipitation.<sup>149</sup> Additionally, increases in temperature are expected to lead to the introduction of pathogens to new regions by producing environmental conditions that favour pathogen growth and transmission.<sup>150</sup> In addition, when the sea level rises, the migratory routes of fish species change, in particular, the migratory routes of tuna and catadromous Hilsa shad and Bagda chingri.<sup>151</sup> Changes to the migratory routes also necessitate a change in the location of the fishing grounds. Furthermore, increased production of pelagic fish due to sea upwelling also disrupts the food chain.

This changing environment caused by climate change will lead to the need for new food safety risk assessments to consider specific and emerging food safety hazards. Coping with climate-driven changes will require greater attention to monitoring key environmental parameters. The major environmental challenges for food safety are water and air temperature, pH and salinity. These challenges enable the prediction of imminent problems related to food safety, such as the incidence of toxins, pathogens and contaminants in bivalve molluscs and fish species that are susceptible to such threats.<sup>152</sup>

## **B    *Right to Housing of the Coastal Fishing People of Bangladesh***

The right to housing (shelter) is one of the key social rights—a basic necessity—recognised in the constitution of Bangladesh. Sea-level rise creates a major threat to the right to housing of the coastal fishing people in Bangladesh. It is a low-lying deltaic country that is widely recognised as highly vulnerable to climate-related disasters, particularly coastal flooding and

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<sup>148</sup> IPCC (2007) Climate Change 2007: Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2007. Climate Change 2007: Impacts, Adaptation and Vulnerability (eds M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. vander Linden & C.E. Hanson), pp. 976. Cambridge University Press, Cambridge, UK.

<sup>149</sup> S Altizer et al, 'Seasonality and the Dynamics of Infectious Diseases' (2006) 9 *Ecology Letters* 467–484.

<sup>150</sup> CD Harvell, C.D et al, 'Climate Warming and Disease Risks for Terrestrial and Marine Biota' (2002) 296 *Science* 2158–2162.

<sup>151</sup> Rumana Yasmin and Mehady Islam, 'Sustainability of Fisheries and Aquaculture in Context of Emerging Climate Change Issues' (2017) 5(4) *International Journal of Fisheries and Aquatic Studies* 179.

<sup>152</sup> Manuel Barange et al, *Impacts of Climate Change on Fisheries and Aquaculture Synthesis Of Current Knowledge, Adaptation And Mitigation Option* (FAO Technical Paper, 2018).



cyclones.<sup>153</sup> In Bangladesh, the average annual rainfall increased by 5.52 mm (approximate) between 1958 and 2007.<sup>154</sup> Bangladesh has a 710 km-long coastline,<sup>155</sup> which is vulnerable due to sea-level rise, a rise that is predicted to be between 15.9 and 17.2 mm every year.<sup>156</sup>

The government of Bangladesh estimated that 20 million people from coastal areas will be displaced within the next 10 years.<sup>157</sup> The government also worries that nearly 35 million people from 19 districts will be affected severely by sea level rises in future.<sup>158</sup> Bangladesh is extremely vulnerable to the effects of climate change due to its geographical location and features<sup>159</sup>. Most of the fishery-dependent people reside in the low-lying coastal areas which are particularly exposed to climate change impacts.

In Bangladesh, one-third of the coastal area is partially elevated plain-land, which regularly floods temporarily with increasing population this flood plain is increasingly becoming occupied by new homes and townships.<sup>160</sup> About 50 million people—nearly one-third of the total population of Bangladesh—live in the coastal area.<sup>161</sup> The coastal people's livelihoods are severely affected by climate induced disasters.<sup>162</sup> Fishing villages are mostly located in inaccessible coastal areas where there are no modern communication systems.<sup>163</sup> The fishing and farming villages are located within 10 kilometres of their local administrative office where there are facilities such as hospitals. There are 12 districts in the coastal area that are

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<sup>153</sup> W Yu, M Alam and A Hassan, 'Climate Change Risks and Food Security in Bangladesh' (2010) *Earthscan*; Clark L Gray and Valerie Mueller, 'Natural Disasters and Population Mobility in Bangladesh' (2012) 109(16) 6000–6005 <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3341015/pdf/pnas.201115944.pdf>>

<sup>154</sup> Ahmed Naser and Diana S James, Coastal to Inland: Expansion of prawn for Adaptation to Climate Change in Bangladesh (2015) 2 *Aquaculture Reports* 67–76.

<sup>155</sup> DoF, *National Fish Week Compendium* (Department of Fisheries, Ministry of Fisheries and Livestock, Bangladesh, 2014) (in Bengali).

<sup>156</sup> MM Sarwar and WL Filho, 'Climate Change and Coastal Agriculture in Bangladesh: A Success Review' (2016), *Climate change Adaptation, Resilience and Hazards, Climate Change Management* 162.

<sup>157</sup> Ministry of environment and Forest, Government of Bangladesh, *Bangladesh Climate Change Strategy and Action Plan* (2009).

<sup>158</sup> *Coastal Zone Policy 2005*, Ministry of Water Resources Government of the People's Republic of Bangladesh.

<sup>159</sup> 'Bangladesh Climate Vulnerability Profile', Climate links (2013) <<https://www.climatelinks.org/resources/bangladesh-climate-vulnerability-profile>>.

<sup>160</sup> Mohammed Ataur Rahmana and Sowmen Rahman, 'Natural and Traditional Defense Mechanisms to Reduce Climate Risks in Coastal Zones of Bangladesh' (2015) 7 *Weather and Climate Extremes* 84–95.

<sup>161</sup> Ibid.

<sup>162</sup> Md Nurul Amin et al, 'Climate Resilient Livelihood Activity in the South Central Coastal Region of Bangladesh' (2018) 6(1), *Journal of Science Technology & Environment Informatics* 421-430 | Amin et al. (2018)

<sup>163</sup> S Hossain et al, Socio-economic Condition of the Fishermen in Jelepura under Pahartoli of Chittagong District (2014) *Journal Sylhet Agriculture Hossain et al. (2014)*

vulnerable to the rising sea level.<sup>164</sup> Millions of coastal people, including fishing people, could be without shelter in the coming years,<sup>165</sup> and Sundarbans, one of the largest mangrove forests, might be under water.<sup>166</sup>

Apart from the sea-level rise, climatic disasters are a primary threat to the right to housing of the coastal fishing people in Bangladesh. Every year, more than one natural disaster occurs in Bangladesh, and many coastal fishing people are rendered homeless.<sup>167</sup> The government of Bangladesh estimated that 20 million people from coastal areas will be displaced in the near future.<sup>168</sup> Since 1970, the country has experienced thirty-six cyclonic storms resulting in over 450,000 deaths and immeasurable economic losses.<sup>169</sup> Cyclone Sidr hit the south-west coast of Bangladesh on 15 November 2007, affecting 2.3 million households and causing damage and losses estimated at around US\$ 1.7 billion.<sup>170</sup> Cyclone Aila struck the southern coast of Bangladesh on 25 May 2009, affecting nearly 5 million people and causing infrastructure damage of over US\$60 million.<sup>171 172</sup> The worst two affected districts are Satkhira and Khulna followed by Bagerhat, Pirojpur, Barisal, Patuakhali, Bhola, Laksmipur, Noakhali, Feni, Chittagong and Cox's Bazar.<sup>173</sup> Cyclone Mahasen on 16 May 2013 affected eight coastal districts including Chittagong, Bhola, Barguna, Pirojpur, Noakhali, Patuakhali, Satkhira and Laxmipur. In these 8 districts, 386, 221 people and 251 unions of 42 upazilas were affected by the cyclone.<sup>174</sup> As a

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<sup>164</sup> MH Minar, M Hossain, M Belal and MD Shamsuddin, 'Climate Change and Coastal Zone of Bangladesh: Vulnerability, Resilience and Adaptability' (2013) 13(1) *Middle East Journal of Scientific Research* 114–120.

<sup>165</sup> 'Climate Displacement in Bangladesh', *Environmental Justice Foundation* <<https://ejfoundation.org/reports/climate-displacement-in-bangladesh>>.

<sup>166</sup> Md. Sanaul Haque Mondal, 'Risk Factors Associated with Destruction of Sundarbans Mangrove Forest, Bangladesh: A Review from Climate Change Perspective' (2018) 9(3) *International Journal of Conservation Science* 513–522.

<sup>167</sup> Md. Habib Torikul and Sonia Farjana, 'Climate Change, Natural Disaster and Vulnerability to Land Displacement in Coastal Region of Bangladesh' (2014), 5(2) *International Journal of Innovation and Applied Studies* 150–159.

<sup>168</sup> Ministry of environment, Forest and climate change, Government of Bangladesh, *Bangladesh Climate Change Strategy and Action Plan* (2009), p17.

<sup>169</sup> UNDP, 2010. Cyclone Aila Joint UN Multisector Assessment and Response Framework, Bureau of Crisis Prevention and Recovery, United Nations Development Program (UNDP), New York.

<sup>170</sup> Cyclone Sidr in Bangladesh: Damage, Loss and Needs Assessment for Disaster Recovery and reconstruction (2008) <[https://reliefweb.int/sites/reliefweb.int/files/resources/F2FDFF067EF49C8DC12574DC00455142-Full\\_Report.pdf](https://reliefweb.int/sites/reliefweb.int/files/resources/F2FDFF067EF49C8DC12574DC00455142-Full_Report.pdf)>.

<sup>171</sup> Climate Risk and Adaptation Country Profile, GFDRR, World Bank, 2011

<sup>172</sup> Bangladesh: Strategic Program for Climate Resilience (SPCR), Prepared for the Pilot Program for Climate Resilience (PPCR), (2010) p16-17

<sup>173</sup> Kushal Roy et al, 'Cyclone Aila 25 May 2009 Initial Assessment Report with focus on Khulna District' (2009) *Technical report in association with Unnayan Onneshan, Humanity Watch and Nijera Kori* p5

<sup>174</sup> 'Bangladesh Disaster Report 2013', *Relief web*, (2014) <<https://reliefweb.int/report/bangladesh/disaster-report-2013>>.

result, 14,828 houses were fully damaged and 44,182 partly damaged.<sup>175</sup> In addition, five tornados were reported in 2013.<sup>176</sup> In 2016, government authorities confirmed that over 1 million people affected by Tropical Storm Roanu had been evacuated.<sup>177</sup> Roanu, which made landfall in Bangladesh on 21 May 2016, caused at least 20 fatalities and damaged more than 80,000 houses across 15 districts. Chittagong, Noakhali, Lakshmipur and Chandpur were the districts worst hit.<sup>178</sup> As the coastal fishing people live very close to the coastline, they are the most likely to lose their homestead and houses.

### **C Right to Health of the Coastal Fishing People of Bangladesh**

The Intergovernmental Panel on Climate Change (IPCC) and the third US National Climate Assessment state definitively that climate change harms health.<sup>179</sup> According to the World Health Organization (WHO), climate change is expected to cause approximately 250,000 additional deaths each year between 2030 and 2050: 38,000 due to heat exposure in elderly people, 48,000 due to diarrhoea, 60,000 due to malaria and 95,000 due to childhood undernutrition.<sup>180</sup> Many serious human diseases—especially cardiovascular and respiratory ailments—are linked to climate fluctuations. Such fluctuations also alter the transmission of infectious diseases and can cause malnutrition from crop failures.<sup>181</sup>

Climatic variations and extreme weather events have profound impacts on infectious diseases. Infectious agents such as bacteria and viruses and their associated vector organisms—for example, mosquitoes, ticks and sand flies—are devoid of thermostatic mechanisms and thus

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<sup>175</sup> *Disaster Report 2013* Department of Disaster Management, Ministry of Disaster Management and Relief, Government of the People's Republic of Bangladesh, chapter-3, 24.

<sup>176</sup> *Disaster Report 2013* Department of Disaster Management, Ministry of Disaster Management and Relief, Government of the People's Republic of Bangladesh, chapter-4, 35.

<sup>177</sup> Asian Disaster Reduction Centre (ADRC), *Disaster Information* (03 March 2020) <[https://www.adrc.asia/view\\_disaster\\_en.php?NationCode=50&Lang=en&Key=2102](https://www.adrc.asia/view_disaster_en.php?NationCode=50&Lang=en&Key=2102)>.

<sup>178</sup> Asia and the Pacific: Weekly Regional Humanitarian Snapshot (17–23 May 2016) <[https://reliefweb.int/sites/reliefweb.int/files/resources/ROAP\\_Snapshot\\_160523\\_0.pdf](https://reliefweb.int/sites/reliefweb.int/files/resources/ROAP_Snapshot_160523_0.pdf)>.

<sup>179</sup> Climate Change Impacts in the United States. The Third National Climate Assessment. Washington, DC: US Global Change Research Program <<http://nca2014.globalchange.gov>>.

<sup>180</sup> 'Climate change and health', WHO, (1<sup>st</sup> February 2019) <<https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health>>.

<sup>181</sup> Jonathan A Patz et al, 'Impact of regional climate change on human health'(2005), 438 *Nature*, 310–17.

reproduction and survival rates are strongly affected by fluctuations in temperature.<sup>182</sup> Climate change is leading to changes in the temperature, oxygen availability, the salinity of fresh water and extreme weather events, each of which can adversely affect health safety and biosecurity. The growth rates of pathogenic bacteria in the marine environment increase with higher water temperatures, while changes in seasonality and other environmental conditions can influence the incidence of parasites and some food-borne viruses.<sup>183</sup> Changes in the environment can also modify the dynamics of aquatic species that host foodborne parasites.

## V CONCLUSION

Bangladesh has a large coastal area in the Bay of Bengal. The number of coastal communities, in particular the fishing people, is a significant part of the total population of Bangladesh. The constitution of Bangladesh guarantees several socio-economic rights for all citizens. The coastal fishing people have these rights under their constitutional guarantee. These socio-economic rights, however, are largely violated in the case of the coastal fishing people. These people mainly rely on fishing for their lives and livelihoods. The current socio-economic conditions of these people are under threat due to the impacts of climate change. Climate change is decreasing the availability of food and reducing the livelihoods of the coastal fishing people in Bangladesh. Extremes and rapid changes in salinity because of climate change also stresses many fish species. Erratic and irregular rainfall affects the readiness, maturity and gonad development of fishes. Extreme weather events further reduce the growth of the fishing resources. Most importantly, climate change affects coastal aquaculture. As there is less production of food, the food chain of the coastal fishing people is affected and marginalized. Moreover, environmental change because of climate change leads to a new food safety risk. Moreover, the right to housing of the coastal fishing people is severely violated by climate induced impacts. Sea-level rises and tropical cyclones cause significant climate displacement

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<sup>182</sup> DJ Gubler et al, 'Climate Variability and Change in the United States: Potential Impacts on Vector- and Rodent-Borne Diseases', (2001), 109 *Environmental Health Perspective* 223–33.

<sup>183</sup> Thimas Bintsis, 'Foodborne pathogens' (2017) 3(3) *AIMS Microbiology* 529–63.

and loss of houses and homesteads. Clearly climate change is having huge impacts on the right to health and a safe environment for the coastal fishing people.

The vulnerability and marginalisation of these people is a violation of their constitutionally and internationally guaranteed basic rights. The government of Bangladesh has a constitutional commitment to protect the socio-economic rights and to improve the socio-economic condition of the coastal people. The government has adopted several legal and institutional regimes for the protection of their socio-economic rights. Questions remain about the adequacy of the current regime, and its compliance with its international obligations. While this chapter has discussed the current situation of the socio-economic conditions of the coastal fishing people on Bangladesh, the next chapter will examine the national and international legal frameworks for the protection of their socio-economic rights.

## CHAPTER THREE

### GLOBAL LEGAL AND INSTITUTIONAL FRAMEWORKS FOR RESOLVING THE IMPACTS OF CLIMATE CHANGE ON THE COASTAL FISHING PEOPLE

#### I INTRODUCTION

This chapter analyses the international legal and institutional arrangements addressing the impact of climate change on the coastal fishing people of Bangladesh. The phenomenon of climate change is now one of the biggest challenges facing humankind. Its reach extends to the socio-economic conditions of vulnerable people and this is expected to continue in future decades.<sup>1</sup> The international community has consolidated a body of legal rules and principles organised around the central problem of mitigating and adapting to climate change.<sup>2</sup> Climate change law has become a regulating mechanism for both international and local levels of governance, and encompasses the activities of a wide range of actors.<sup>3</sup> During the last five decades, many conventions and agreements were adopted which directly focused on ways to reduce the impact of climate change on coastal areas. In 1992, the Earth Summit produced the *United Nations Framework Convention on Climate Change* (UNFCCC) as a first step in addressing climate change.<sup>4</sup> The 1997 *Kyoto Protocol* was the first agreement to legally bind the state parties to emission reduction targets. As the *Kyoto Protocol* was initially limited to developed countries, the international community adopted the *Paris Agreement* in 2015. These legal documents address the issue of the impact of climate change within a general framework. There are several international legal instruments that can also be applied to mitigate the impact of climate change on coastal fishing people. Apart from the legal instruments, there are several institutions—including the Intergovernmental Panel on Climate Change (IPCC)—that play an important role in mitigating the impacts of climate change on these people. The objective of this chapter is to establish the defined legal and institutional frameworks for the improvement of the socio-economic rights of the coastal fishing people.

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<sup>1</sup> I Magawata and JK Ipinjolu, 'Climate Change: Mitigation and Adaptation Strategies in Aquaculture in Nigeria' (2014) 9 *Journal of Fisheries and Aquatic Science* 257–261.

<sup>2</sup> Peel, Jacqueline, 'Climate Change Law: The Emergence of a New Legal Discipline' (2012) 32 *Melbourne Univ. Law Review*, 13.

<sup>3</sup> Ibid.

<sup>4</sup> United Nations, *Climate Change*, <<https://www.un.org/en/sections/issues-depth/climate-change/>> .

## II GLOBAL LEGAL FRAMEWORKS FOR ADDRESSING THE IMPACTS OF CLIMATE CHANGE ON THE COASTAL FISHING PEOPLE

Climate change is a global issue, one requiring all countries to work together.<sup>5</sup> International law has been equipped with instruments and tools that assist states and organisations around the world to minimise the effects of global warming. The international legal instruments are analysed below to discover the global legal frameworks for resolving the impacts of climate change on coastal fishing people.

### A *United Nations Framework Convention on Climate Change (1992)*

The UNFCCC is an international environmental treaty adopted on 9 May 1992 at the Earth Summit in Rio de Janeiro.<sup>6</sup> The IPCC played a decisive role in the creation of the UNFCCC, the key international treaty to reduce global warming and address the consequences of climate change. The IPCC published its First Assessment Report (FAR) in 1990, which underlined the importance of climate change as a challenge with global consequences and thus requiring international cooperation. On 2 December 1990, the United Nations General Assembly passed Resolution 45/212, entitled 'Protection of global climate for the present and future generations of mankind'.<sup>7</sup> The resolution established an Intergovernmental Negotiating Committee (INC) for drafting a Framework Convention on Climate Change as a single intergovernmental negotiating process under the auspices of the General Assembly.<sup>8</sup> This INC negotiated from February 1991 to May 1992, finalised its draft for the Framework Convention on Climate Change and opened it for signature at the Earth Summit in Rio de Janeiro from 3 to 14 June 1992.<sup>9</sup> The UNFCCC came into force in March 1994, with the required 50 states having ratified the convention in the first eighteen months.<sup>10</sup>

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<sup>5</sup> Department of the Prime Minister and Cabinet, *Setting Australia's Post-2020 Target for Reducing Greenhouse Gas Emissions: Final Report of the UNFCCC Taskforce* (Commonwealth of Australia, 2015) chapters 1 & 2.

<sup>6</sup> 'United Nations Framework Convention on Climate Change 1992', *Wikipedia* <[https://en.wikipedia.org/wiki/United\\_Nations\\_Framework\\_Convention\\_on\\_Climate\\_Change](https://en.wikipedia.org/wiki/United_Nations_Framework_Convention_on_Climate_Change)> accessed on 01-09-2019>.

<sup>7</sup> *Ibid.*

<sup>8</sup> *Legal activities of the United Nations and related intergovernmental organizations*, Chapter III. General review of the legal activities of the United Nations and related intergovernmental organizations, (United Nations Judicial Year Book 1990) Part Two.

<sup>9</sup> Intergovernmental and Legal Affairs, *United Nations Framework Convention on Climate Change: Handbook* (Climate Change Secretariat, 2006) 18.

<sup>10</sup> Jana von Stein, 'The International Law and Politics of Climate Change Ratification of the United Nations Framework Convention and the Kyoto Protocol' (2008) 52(2) *Journal of Conflict Resolution* 243–268.

The UNFCCC can be considered the clearest example of international commitment to protecting the environment under the umbrella of the United Nations through which the most relevant pieces of current international climate change legislation have been signed. In 1995, the first Conference of the Parties (COP 1) to the UNFCCC was held in Berlin. Parties agreed that the legal arrangements under the UNFCCC were inadequate to meet the objectives of the Convention.<sup>11</sup> They noted that current global emissions of greenhouse gases have mostly originated in developed countries, that per capita emissions in developing countries were still relatively low and that the share of global emissions originating in developing countries would grow to meet their social and developmental needs.<sup>12</sup> The states also acknowledged that the global nature of climate change calls for the widest possible cooperation by all countries and their participation in an effective and appropriate international response, in accordance with their common but differentiated responsibilities and respective capabilities and their social and economic conditions.<sup>13</sup> Moreover, the parties recognised that the states should enact effective environmental legislation to prevent social cost in the developing countries.<sup>14</sup>

The UNFCCC particularly notes the possible adverse effects of sea-level rises on islands and coastal areas, particularly low-lying coastal areas.<sup>15</sup> The state parties recognise that steps required to understand and address climate change will be the most environmentally, socially and economically effective if they are based on relevant scientific, technical and economic considerations and are continually re-evaluated in the light of new findings in these areas.<sup>16</sup> The states believe that various actions to address climate change can be justified economically in their own right and can also help in solving other environmental problems.<sup>17</sup> Moreover, the parties recognise that low-lying and other small island countries, and countries with low-lying coastal areas, are particularly vulnerable to the adverse effects of climate change.<sup>18</sup>

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<sup>11</sup> Environmental and Energy Study Institute, *Timeline of Major UN Climate Negotiations*.  
<<https://www.eesi.org/policy/international>>.

<sup>12</sup> Preamble, United Nations Framework Convention on Climate Change (UNFCCC) 1992.

<sup>13</sup> Ibid.

<sup>14</sup> Ibid.

<sup>15</sup> Ibid.

<sup>16</sup> Ibid.

<sup>17</sup> Ibid.

<sup>18</sup> Ibid.



The states affirm that responses to climate change should be coordinated with social and economic development, in an integrated manner, with a view to avoiding adverse impacts on the latter, taking into full account the legitimate priority needs of developing countries for the achievement of sustained economic growth and the eradication of poverty.<sup>19</sup> Article 2 of the UNFCCC provides the objectives of the Convention to ensure food production is not threatened and that there is sustainable economic development. Article 2 states that:

The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.<sup>20</sup>

Article 3 of the UNFCCC provides the guiding principles relevant for preventing the adverse impacts on climate-change vulnerable people. The article provides that the parties should take precautionary measures to anticipate, prevent or minimise the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, a lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost.<sup>21</sup> Moreover, this principle suggests that to achieve this, such policies and measures should take into account different socio-economic contexts, be comprehensive, cover all relevant sources, sinks and reservoirs of greenhouse gases and adaptation, and comprise all economic sectors. Efforts to address climate change may be carried out cooperatively by interested parties.<sup>22</sup>

Another guiding principle is the integration of climatic impacts into national development programs. The parties should promote sustainable development. Policies and measures to protect the climate system against human-induced change should be appropriate for the specific conditions of each party and should be integrated with national development

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<sup>19</sup> Ibid.

<sup>20</sup> art 2, UNFCCC 1992

<sup>21</sup> Ibid art 3(3).

<sup>22</sup> Ibid.

programs, taking into account that economic development is essential for the adoption of measures to address climate change.<sup>23</sup>

The commitments of the parties to the UNFCCC to consider social, economic and environmental policies were aimed at minimising the adverse impacts of climate change. Article 4 orders that the states shall take climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions, and employ appropriate methods. These could include impact assessments, formulated and determined nationally, with a view to minimising adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or adapt to climate change.<sup>24</sup> The UNFCCC also provides for the promotion and cooperation in scientific, technological, technical, socio-economic and other research, systematic observation and development of data archives related to the climate system and intended to further the understanding and to reduce or eliminate the remaining uncertainties regarding the causes, effects, magnitude and timing of climate change and the economic and social consequences of various response strategies.<sup>25</sup> Moreover, the UNFCCC provides that in the implementation of the commitments, the parties shall give full consideration to which actions are necessary under the convention, including actions related to funding, insurance and the transfer of technology, to meet the specific needs and concerns of developing country parties arising from the adverse effects of climate change and/or the impact of the implementation of response measures, especially on small island countries, countries with low-lying coastal areas and countries with areas prone to natural disasters.<sup>26</sup>

The UNFCCC does not contain the term ‘fishing people’ and provides no explicit provision for the coastal fishing people. However, the objective and state commitment under the UNFCCC is to mitigate the impacts of climate change on all people, which includes the coastal fishing people. The Convention recognized that climate change may impact many socio-economic rights. Moreover, the Convention motivated the state parties to adopt necessary national

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<sup>23</sup> Ibid art 3(4).

<sup>24</sup> Ibid art 4(f).

<sup>25</sup> Ibid art 4(g).

<sup>26</sup> Ibid art 4 (8).

climate plans and policies in order to prevent these impacts on climate vulnerable people. There is no doubt that the coastal fishing people are the most climate vulnerable people.

## **B    *Kyoto Protocol to the United Nations Framework Convention on Climate Change (1997)***

The *Kyoto Protocol* represents a modest first step toward a concrete response to climate change.<sup>27</sup> The Protocol, developed under the UNFCCC, encourages 192 parties to reduce their greenhouse gas emissions, with many developed nations having binding emissions reduction targets.<sup>28</sup> The *Kyoto Protocol* was adopted in Kyoto, Japan, on 11 December 1997 and came into force on 16 February 2005.<sup>29</sup> The Protocol's first commitment period started in 2008 and ended in 2012. The second commitment period began on 1 January 2013 and should end in 2020.<sup>30</sup> The *Kyoto Protocol* was replaced by the 2015 *Paris Agreement*.<sup>31</sup>

The objective of the *Kyoto Protocol* was to fight global warming by reducing the presence of greenhouse-gas causing emissions in the atmosphere to a level that would prevent dangerous anthropogenic interference with the climate system.<sup>32</sup> Under Kyoto, industrialised nations pledged to cut their yearly emissions of six greenhouse gases by varying amounts, averaging 5.2%, by 2012.<sup>33</sup> The Protocol can be considered a leading international instrument, as the 184 signatory countries took into account the consequences of global warming and committed to reduce the effects of climate change (particularly, on coastal people). Article 2 of the Protocol provides that the parties shall strive to implement policies and measures in such a way as to minimise adverse effects, including the adverse effects of climate change, effects on international trade, and social, environmental and economic impacts on other parties, especially developing country parties.<sup>34</sup> Moreover, the Protocol provides that each party

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<sup>27</sup> Andrew E Dessler and Edward A Parson, *The Science and Politics of Global Climate Change: A Guide to the Debate* (Cambridge University Press, 2nd rev ed, 2010).

<sup>28</sup> Kate Loynes, *Climate Change—The International Approach*, <[https://www.aph.gov.au/About\\_Parliament/Parliamentary\\_Departments/Parliamentary\\_Library/pubs/BriefingBook45p/InternationalApproach](https://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/BriefingBook45p/InternationalApproach)>.

<sup>29</sup> 'What is the Kyoto Protocol?', United Nations Climate Change, <[https://unfccc.int/kyoto\\_protocol](https://unfccc.int/kyoto_protocol)>.

<sup>30</sup> 'Climate Change', United Nations, <<https://www.un.org/en/sections/issues-depth/climate-change/>>.

<sup>31</sup> Loynes, above n 28.

<sup>32</sup> *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, (United Nations 1998) art. 2.

<sup>33</sup> 'What is the Kyoto protocol and has it made any difference?', *The Guardian*, (11 March 2011) <<https://www.theguardian.com/environment/2011/mar/11/kyoto-protocol>>.

<sup>34</sup> *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, (United Nations 1998) art 2 (3).

included in Annex I shall strive to implement the commitments in such a way as to minimise adverse social, environmental and economic impacts on developing country parties.<sup>35</sup>

The Protocol also suggests that for formulating cost-effective national and, where appropriate, regional programs to improve the quality of local emission factors, activity data and models should reflect the socio-economic conditions of each party. This provision intends that state parties prepare, and periodically update, national inventories of anthropogenic emissions by sources, and removals by sinks, of all greenhouse gases not controlled by the Montreal Protocol.<sup>36</sup> Moreover, the *Kyoto Protocol* empowers the Conference of the Parties to the Protocol to assess the overall effects of the measures taken by member states, in particular the environmental, economic and social effects as well as their cumulative impacts and the extent to which progress towards the objective of the UNFCCC is being achieved.<sup>37</sup>

The *Kyoto Protocol* does not explicitly address the impact of climate change on coastal fishing people. However, the mandatory commitment for reducing emission does facilitate mitigation of the impacts of climate change, and the coastal fishing people—being climate-change victims—should be beneficiaries. Moreover, national or regional programs that consider the socio-economic conditions of the state party also provide an opportunity to consider the socio-economic condition of the coastal fishing people.

### **C    *Paris Agreement 2015***

During the 21st Conference of the parties to the UNFCCC in Paris COP21 in December 2015, 195 countries adopted a landmark agreement that introduced the universal, legally-binding climate deal (known as the *Paris Agreement*).<sup>38</sup> The parties agreed to combat climate change and to strengthen the actions and investments required for ensuring a sustainable future with low carbon emissions.<sup>39</sup> The overarching goal of the *Paris Agreement* is to hold ‘the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts

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<sup>35</sup> Ibid art 2(14).

<sup>36</sup> Ibid art 10 (a).

<sup>37</sup> Ibid art 7 (e).

<sup>38</sup> ICF International, *Analysis of Intended Nationally Determined Contributions* (INDCs) (USAID Resources to Advance LEDS Implementation program, June 2016).

<sup>39</sup> Joeri Rogelj et al, ‘Paris Agreement Climate Proposals Need A Boost to Keep Warming Well Below 2°C’ (2016) *Nature* doi:10.1038/nature18307.

to limit the temperature increase to 1.5 °C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change'.<sup>40</sup> Parties are expected to prepare and submit new, more ambitious, nationally determined contributions (NDCs) every five years and are encouraged to develop long-term low emission, climate resilient strategies.<sup>41</sup> The *Paris Agreement* brings all nations together for a common cause: to undertake ambitious efforts in the fight against climate change and in adapting to its effects, offering support to developing countries in reaching their goals.<sup>42</sup> In preparation for this agreement, countries submitted national plans that spell out their intentions for addressing climate change after 2020.<sup>43</sup>

The *Paris Agreement* recognises the specific needs and special circumstances of developing country parties, especially those that are particularly vulnerable to the adverse effects of climate change.<sup>44</sup> It also recognises the fundamental priority of safeguarding food security and ending hunger, and the particular vulnerabilities of food production systems to the adverse impacts of climate change.<sup>45</sup> The Agreement also acknowledges that climate change is a common concern of humankind, so parties should, when taking action to address climate change, respect, promote and consider their respective obligations on human rights. These rights include the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations, and the right to development, as well as gender equality, empowerment of women and intergenerational equity.<sup>46</sup>

The *Paris Agreement* recognises the importance of support for developing countries for their climate vulnerable people. Article 7 states that:

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<sup>40</sup> art 2, 1(a), Paris Agreement to the United Nations Framework Convention on Climate Change, 2015.

<sup>41</sup> ICF International, Analysis of Intended Nationally Determined Contributions (INDCs) (USAID Resources to Advance LEDS Implementation program, June 2016).

<sup>42</sup> 'What is the Paris Agreement?', *United Nations Climate Change*, <<https://unfccc.int/process-and-meetings/the-paris-agreement/what-is-the-paris-agreement>>.

<sup>43</sup> Joeri Rogelj et al, 'Paris Agreement Climate Proposals Need A Boost to Keep Warming Well Below 2°C' (2016) *Nature* doi:10.1038/nature18307.

<sup>44</sup> Preamble, Paris Agreement 2015.

<sup>45</sup> Ibid.

<sup>46</sup> Ibid.

Parties recognize the importance of support for and international cooperation on adaptation efforts and the importance of taking into account the needs of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change.<sup>47</sup>

The Agreement provides that each party shall, as appropriate, engage in adaptation planning processes and the implementation of actions, including the development of relevant plans and policies for implementing adaptation. The Agreement asks for undertakings, efforts and processes to formulate and implement national adaptation plans. The Agreement provides for the assessment of climate change impacts and vulnerability with a view to formulating nationally determined prioritised actions. It provides for consideration of vulnerable people, places and ecosystems when adopting any plan and policy. The Agreement also provides for monitoring, evaluating and learning from adaptation plans, policies, programs and actions for building the resilience of socioeconomic and ecological systems, including through economic diversification and sustainable management of natural resources.<sup>48</sup>

Parties to the *Paris Agreement* recognise the importance of averting, minimising and addressing loss and damage associated with the adverse effects of climate change, including extreme weather events and slow onset events, and the role of sustainable development in reducing the risk of loss and damage.<sup>49</sup> Article 11 of the Agreement provides for enhancing capacity building to mitigate the impacts of climate change. It also states that the parties should enhance the capacity and ability of developing country parties, in particular countries with the least capacity, such as the least developed countries, and those that are particularly vulnerable to the adverse effects of climate change, such as small island developing states, to take effective climate change action, including, inter alia, to implement adaptation and mitigation actions. They should also facilitate technology development, dissemination and deployment, access to climate finance, to relevant aspects of education, training and public awareness, and the transparent, timely and accurate communication of information.<sup>50</sup>

The *Paris Agreement* also does not provide any explicit provisions for mitigating the impacts of climate change on the coastal fishing people. However, it requires the international community

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<sup>47</sup> Ibid art 7 (6).

<sup>48</sup> Ibid art 7(9).

<sup>49</sup> Ibid art 8.

<sup>50</sup> Ibid art 8.

to take action for protecting human rights, the right to health, the rights of indigenous peoples, local communities, migrants and people in vulnerable situations because of climate change. The coastal fishing people meet these criteria and thus should be categorised as the most severe victims of climate change. Moreover, the Agreement focuses on effective adaptation or mitigation strategy for small island countries to prevent conspicuous impacts of climate change. Most of the coastal people of small-island countries are fishers who are very vulnerable because of climate change.

#### **D Declaration of the United Nations Conference on the Human Environment 1972**

The Declaration of the United Nations Conference on the Human Environment (the Stockholm Declaration) of 1972 sets out the general responsibility to protect and improve the environment for present and future generations. The Declaration highlights the duty to safeguard the natural resources and natural ecosystems through carefully designed management plans and to maintain, restore and improve the capacity of the earth to produce vital renewable resources.<sup>51</sup>

The Rio Declaration on Environment and Development, 1992 reiterates the principles of the Stockholm Declaration pertaining to safeguarding the environment and the ecosystems. The Stockholm Declaration includes the application of the precautionary principle that has been incorporated in several subsequent international and regional fisheries management instruments. The application of the precautionary principle requires that a lack of scientific knowledge must not be used as an excuse not to take management decisions. Environmental impact assessment (EIA) is also presented as a tool for environmental management in this Declaration. Moreover, Agenda 21, which was adopted at the UN Conference on Environment and Development held in Rio de Janeiro in 1992, is a non-binding plan of action of the United Nations regarding sustainable development. Chapter 17 of Agenda 21 deals with the protection of the oceans and coastal areas including the protection, rational use and development of their living resources including fisheries.<sup>52</sup>

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<sup>51</sup> Abdullah Al Arif, 'An Introduction to International Fisheries Law Research', (2018) 40 *Hauser Global Law School Program, New York University School of Law* 10012–1099 <[https://www.nyulawglobal.org/globalex/International\\_Fisheries\\_Law.html](https://www.nyulawglobal.org/globalex/International_Fisheries_Law.html)>.

<sup>52</sup> Ibid.

The Declaration had a major impact on the development of the Convention on the Conservation of Biological Diversity (CBD) 1992. The primary objectives of the CBD are conservation of biological diversity, sustainable use of the components of biological diversity and fair and equitable sharing of the benefits arising out of the utilisation of genetic resources.<sup>53</sup> Protection of environment and conservation of biodiversity resources are at the heart of this Convention.<sup>54</sup> The Declaration pursued the development of the Millennium Development Goals (MDGs), 2000. These pertain to poverty, education, gender equality and environmental sustainability, and were formulated by world leaders at the United Nations Millennium Summit in 2000 and set to be achieved by 2015.<sup>55</sup> Goal 7 deals with ensuring environmental sustainability, with four more-specific targets to be achieved.<sup>56</sup> Two of the four targets involve integrating the principles of sustainable development into country policies and programs and reducing biodiversity loss, both relevant to marine resource management.<sup>57</sup>

The Declaration also contributed to the creation of Sustainable Development Goals (SDGs), 2015. Building on the success of the Millennium Development Goals (MDGs) and aiming to go further, 17 SDGs were adopted by world leaders in 2015, to be achieved by 2030. Goal 14 is dedicated to conservation and the sustainable use of the oceans, and the proper management of the living and non-living resources present in the oceans. Like the MDGs, the SDGs are not legally binding, so governments are expected to take ownership and establish national frameworks for the achievement of these goals.<sup>58</sup>

Although the Declaration does not expressly provide for the protection of the socio-economic rights of coastal fishing people, it had a critical impact on developing principles for the conservation of environment and biodiversity. Conservation of the marine environment, biodiversity and fishery resources ultimately protects the socio-economic and environmental rights of coastal fishing people. The Declaration provided a basis for effective management of

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<sup>53</sup> *Convention on Biological Diversity 1992*, Preamble.

<sup>54</sup> Ibid art1.

<sup>55</sup> World Health Organization, *Millennium Development Goals (MDGs)*, <[https://www.who.int/topics/millennium\\_development\\_goals/about/en/](https://www.who.int/topics/millennium_development_goals/about/en/)>.

<sup>56</sup> FAO, *Sustainable Development Goals, Millennium Development Goal 7: Ensure Environmental Sustainability*, <<http://www.fao.org/sustainable-development-goals/mdg/goal-7/en/>>.

<sup>57</sup> Sustainable Development Goals, *Transforming our world: the 2030 Agenda for Sustainable Development*, <<https://sustainabledevelopment.un.org/post2015/transformingourworld>>

<sup>58</sup> Arif, above n 51.



fisheries and other resources through both binding and non-binding provisions of international legal regimes.

### **E    *International Fisheries Law***

International fisheries law, a subfield of the law of the sea, is an emerging area of public international law. It seeks to regulate fisheries management in areas within and beyond national jurisdictions.<sup>59</sup> International fisheries law also takes into account international treaties and industry norms in order to analyse fisheries management regulations.<sup>60</sup> Fisheries law includes the study of aquaculture laws and regulations. Some international fisheries law has been adopted by most member states of the United Nations, while some has been adopted regionally (that is, in particular countries). This body of law touches upon many areas of international law, including international environmental and marine law, sustainable development law and international trade law.<sup>61</sup>

The United Nations has been playing an instrumental role in facilitating the adoption of several international instruments on fisheries management and conservation, either directly or through its specialised agency, the Food and Agricultural Organization (FAO). Apart from its role in developing international fisheries policy, FAO provides legal advisory services to governments in the formulation or revision of national fisheries legislation and technical assistance on aquaculture- related issues. It also provides support service to regional or sub-regional fisheries organisations with a view to strengthening regional fisheries bodies through improving their legal framework.

In 1995, the UN Fish Stocks Agreement was adopted at the UN Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks with a view to implementing the provisions of the Law of the Sea Convention, relating to conservation and management of straddling and highly migratory fish stocks.<sup>62</sup> This Agreement, which came into force in 2001, establishes a

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<sup>59</sup> Ibid.

<sup>60</sup> Kevern L. Cochrane, *A Fishery Manager's Guidebook: Management Measures and their Application*, (Fisheries Technical Paper) 424, <<ftp://ftp.fao.org/docrep/fao/004/y3427e/y3427e00.pdf>>.

<sup>61</sup> Arif, above n 51.

<sup>62</sup> The United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish

management regime based on the precautionary principle and the best available scientific information. Moreover, the FAO Code of Conduct for Responsible Fisheries was adopted in 1995.<sup>63</sup> The Code was unanimously adopted by over 170 member Governments of the FAO Conference in 1995. The Code consists of a collection of principles, goals and elements pertaining to conservation, management and development of living aquatic resources, with due respect for the ecosystem and biodiversity.<sup>64</sup> Although the Code presents a global consensus on a wide range of fisheries and aquaculture issues, the application of the Code is voluntary. However, some of its provisions have already been in force through the 1982 Law of the Sea Convention.<sup>65</sup>

In addition, the Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem was adopted in 2001. It stressed the need to incorporate ecosystem considerations into fisheries management in order to achieve long-term food security. The Declaration recognises the complex inter-relationship between fisheries and other components of the marine ecosystems and highlighted that the inclusion of ecosystem considerations in fisheries management would ensure effective conservation and sustainable use of the ecosystem and its resources.<sup>66</sup>

The international fisheries regime does not have any explicit provisions for protecting the socio-economic rights of the coastal fishing people. However, the international fisheries laws provide provisions for conservation and management of the fishery resources, which ultimately benefit the coastal fishing people. The fisheries programmes under FAO has facilitated many regional legal arrangements for the conservation of the fisheries resources, which has ultimately enhanced access to work, food and livelihood for the coastal people. Moreover, the UN Fish Stocks Agreement has been playing a significant role in achieving sustainable conservation of the migratory fish that can benefit the coastal fishing people. Furthermore, the Reykjavik Declaration may play an important role in designing national strategies for sustainable and responsible coastal fisheries.

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Stocks (in force as from 11 December 2001) Overview', *Oceans And Law Of The Sea United Nations*, <[https://www.un.org/Depts/los/convention\\_agreements/convention\\_overview\\_fish\\_stocks.htm](https://www.un.org/Depts/los/convention_agreements/convention_overview_fish_stocks.htm)>.

<sup>63</sup> FAO, *Code of Conduct for Responsible Fisheries*, <<http://www.fao.org/3/v9878e/v9878e00.htm>> accessed on 27-10-2019.

<sup>64</sup> Ibid para 2.

<sup>65</sup> Ibid.

<sup>66</sup> Ibid.

## **F      *International Law of Human Rights and Labour Rights***

It is estimated that nearly 58.3 million people work in the capture fisheries and aquaculture sector, contributing some \$135 billion in export revenues each year.<sup>67</sup> Despite progress at the national and international levels to promote sustainability in fisheries—and to combat problems of poverty, threats to livelihood and shelter—human rights and labour protection often remain inadequately considered or unenforced. Despite its massive contribution to the economy, the sector is beset by human rights concerns, partly because of climate vulnerability. The very industry that offers so many opportunities to coastal communities also contributes to the victimisation of some of society's most vulnerable people.<sup>68</sup> Small-scale fishers are threatened by climate change.<sup>69</sup> The rights to food, housing, health and employment of coastal fishing people, guaranteed by the International Covenant on Economic, Social and Cultural Rights (ICESCR), are threatened by climate change. In some parts of the world, coastal fishing people are even excluded from exercising their right to fish as a source of income.<sup>70</sup> However, these are not the only issues facing coastal fishing people, and as climate change-induced issues such as coastal erosion and sea-level rises become more apparent, so their very homes and their right to housing, will come under threat. The Universal Declaration of Human Rights (UDHR) recognises the right of all people to a national and international society wherein their rights and freedoms are fully realised and in which every individual has a duty to the community. Similarly, ICESCR states that all parties should take steps—individually and through

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<sup>67</sup> José Graziano da Silva, *The violation of human rights within the fishing sector and Illegal, Unreported and Unregulated (IUU) fishing* (FAO, 21 November 2016) <<http://www.fao.org/about/who-we-are/director-gen/faodg-statements/detail/en/c/454123/>>.

<sup>68</sup> Ibid.

<sup>69</sup> International Collective in Support of Fish workers (ICSF), *Arrest and detention of fishers* <<https://arrests-fishers.icsf.net/en/page/762-Background.html>>.

<sup>70</sup> Nireka Weeratunge, Katherine Snyder and Choo Poh Sze, 'Gleaner, Fisher, Trader, Processor: Understanding Gendered Employment in Fisheries and Aquaculture' (2010) 11 *Fish and Fisheries* 405–420.

international assistance and co-operation, especially economic and technical—to achieve the full realisation of rights recognised in the present Covenant.<sup>71</sup>

In 2008, the Human Rights Council addressed the impact of climate change on human rights through its Special Procedures Mechanism. Through resolution 7/23 of 2008, the Council stated that climate change poses an immediate and far-reaching threat to people and communities around the world, requesting that the Office of the United Nations High Commissioner for Human Rights (OHCHR) prepare a study on the interactions between climate change and human rights.<sup>72</sup> Through Resolution 10/4 (March 2009) the Council stated that climate change-related impacts have a range of implications, both direct and indirect, on the effective enjoyment of human rights, and that these impacts on human rights will be felt most acutely by those segments of the population who are already in a vulnerable situation. Resolution 18/22 (September 2011) stated that human rights obligations could be instrumental in informing and strengthening climate-change related policy, with the promotion of coherence, legitimacy and sustainability in obtained results. They requested that a seminar should look into the negative impacts of global warming on the enjoyment of human rights.<sup>73</sup>

In July 2014, through Resolution 26/27, the Council recognises the need for all nations to promote international cooperation in order to address the negative consequences of climate change on the defence and promotion of human rights, including the right to development. The Council called for cooperation, capacity improvement, financial support for initiatives, and other forms of international cooperation in order to address the specific needs of developing countries when fighting and adapting to climate change. Through Resolution 29/15 (July 2015), the Council stressed the importance of continuing to fight against the negative impacts of climate change, requesting a panel discussion as well as a report on the effect of climate change on the universal right to health. Other resolutions on which the Council has addressed

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<sup>71</sup> Office of the United Nations High Commissioner for Human Rights, *International Covenant on Economic Social and Cultural Rights* Adopted and opened for signature, ratification and accession by General Assembly resolution 2200A (XXI) of 16 December 1966 entry into force 3 January 1976, in accordance with article 27 of the Convention.

<sup>72</sup> Office of the United Nations High Commissioner for Human Rights, Annual Report of The United Nations High Commissioner for Human Rights; Reports of The Office Of The High Commissioner and the Secretary-General; Report on the relationship between climate change and human rights, A/HRC/10/61 Human Rights Council, 10<sup>th</sup> sess, agenda item 2. <<https://documents-dds-ny.un.org/doc/UNDOC/GEN/G09/103/44/PDF/G0910344.pdf?OpenElement>>.

<sup>73</sup> Ibid agenda item 3.

the impact of climate change on the fulfilment of human rights are resolutions 16/11, 19/10, 25/21 and 28/11.<sup>74</sup>

The international declarations, conventions and regulations of human rights provide the general rules for all humankind. However, the focus on the vulnerable people who are grossly deprived of these rights call for special consideration for the coastal fishing people who are vulnerable because of the climate induced impacts.

Apart from human rights, the labour rights of coastal fishing people are violated because of the impacts of climate change. Coastal fishing people are often exposed to malnutrition, bacterial infections and occupational hazards.<sup>75</sup> According to the International Labour Organization (ILO), the use of dangerous machinery in the capture and processing of fish has resulted in fatalities and injuries in the fishing sector greater than the national averages for all workers.<sup>76</sup> Taking this into account, the ILO incorporated fundamental working rights for coastal fishing people in a number of conventions, including the Forced Labour Convention 1930,<sup>77</sup> the Freedom of Association and Protection of the Right to Organise Convention 1948,<sup>78</sup> the Right to Organise and Collective Bargaining Convention 1949,<sup>79</sup> the Equal Remuneration Convention 1951,<sup>80</sup> the Abolition of Forced Labour Convention 1957<sup>81</sup> and the Discrimination (Employment and Occupation) Convention 1958.<sup>82</sup> The ILO also incorporated provisions for the protection of these workers in the Occupational Safety and Health Convention 1981,<sup>83</sup> and the Occupational

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<sup>74</sup> *Human Rights Council, Resolution on Climate Change and Human Rights*, A/HRC/RES/29/15 Human Rights Council 29<sup>th</sup> sess, agenda item 3, (30 June 2015).

<sup>75</sup> Oscar Godoy, *El Salvador: Trabajo Infantil en la Pesca: Una Evaluación Rápida* (ILO, 2002)

<[http://www.ilo.org/public/libdoc/ilo/2002/102B09\\_107\\_span.pdf](http://www.ilo.org/public/libdoc/ilo/2002/102B09_107_span.pdf)>.

<sup>76</sup> ILO, *Labour Standards on Fishers* <<http://www.ilo.org/global/standards/subjects-covered-by-international-labour-standards/fishers/lang--en/index.htm>>.

<sup>77</sup> *Convention Concerning Forced or Compulsory Labour*, opened for signature 28 June 1930 ILO C29 (entered into force 01 May 1932).

<sup>78</sup> *Convention concerning Freedom of Association and Protection of the Right to Organise*, opened for signature 9 July 1948 ILO C087 (entered into force 04 July 1950).

<sup>79</sup> *Convention concerning the Application of the Principles of the Right to Organise and to Bargain Collectively*, opened for signature 1 July 1949 ILO C098 (entered into force 18 July 1951).

<sup>80</sup> *Equal Remuneration Convention* opened for signature 29 June 1951 ILO C100 (No. 100) (entered into force 23 May 1953).

<sup>81</sup> *Convention concerning the Abolition of Forced Labour*, opened for signature 25 June 1957 ILO C105 (entered into force 17 January 1959).

<sup>82</sup> *Convention concerning Discrimination in Respect of Employment and Occupation*, opened for signature 25 June 1958, ILO C111 (entered into force 15 June 1960).

<sup>83</sup> *Convention concerning Occupational Safety and Health and the Working Environment*, opened for signature 22 June 1981 ILO C155 (entered into force 11 August 1983).

Health Services Convention 1985.<sup>84</sup> Also, for the protection of the extended members of the fishing community who do not necessarily go out to sea in the exercise of their functions, the ILO incorporated a provision in the Social Security (Minimum Standards) Convention 1952.<sup>85</sup>

Furthermore, in 1998 the ILO adopted the Declaration on Fundamental Principles and Rights to respect and promote the right to freedom of association and the right to collective bargaining, to eliminate forced labour and to abolish child labour and discrimination by employers.<sup>86</sup> This declaration explicitly states that the abovementioned rights are universal, that is, they apply to all people regardless of their state of origin or the level of economic development in their home nations. The declaration mentions, specifically, individuals with special needs, the unemployed and migrant workers. It also makes it clear that on its own, economic development is not enough to eradicate poverty and to ensure equality and social progress. Member states who are yet to ratify the core conventions are asked, every year, for reports on the status of the relevant rights and principles in their territory, making a note of obstacles that have impeded ratification, and of areas in which they may need assistance. These reports are reviewed by the Committee of Independent Expert Advisers, who in turn submit their results to the ILO's Governing Body.<sup>87</sup>

The ILO has also revised certain conventions with the aim of maximising the benefits they provide for the world's fishers. Some of these conventions are the Minimum Age (Fishermen) Convention 1959,<sup>88</sup> the Medical Examination (Fishermen) Convention 1959,<sup>89</sup> the Fishermen's

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<sup>84</sup> *Convention concerning Occupational Health Services*, opened for signature 25 June 1985 ILO C161 (entered into force 17 February 1988).

<sup>85</sup> *Convention concerning Minimum Standards of Social Security*, opened for signature 28 June 1952 ILO C102 (entered into force 27 April 1955).

<sup>86</sup> ILO, *ILO Declaration on Fundamental Principles and Rights at Work*, <[http://blue.lim.ilo.org/cariblex/pdfs/ILO\\_Declaration\\_Work.pdf](http://blue.lim.ilo.org/cariblex/pdfs/ILO_Declaration_Work.pdf)>.

<sup>87</sup> Ibid.

<sup>88</sup> *Convention concerning the Minimum Age for Admission to Employment as Fishermen*, opened for signature 19 June 1959 ILO C112 (entered into force 07 November 1961).

<sup>89</sup> *Convention concerning the Medical Examination of Fishermen*, opened for signature 19 June 1959 ILO C113 (entered into force 07 November 1961).

Articles of Agreement Convention 1959<sup>90</sup> and the Accommodation of Crews (Fishermen) Convention, 1966 (No. 126).<sup>91</sup>

With the objective of responding to the specific needs of workers in the sector, the ILO has created a set of standards aimed at protecting fishery workers. Since the adoption of fishing standards in 1959, fishing vessels have been excluded from the Maritime Labour Convention, 2006, in consideration of the importance of the fishing industry to the world economy and to the development of international fisheries law. The ILO adopted the Work in Fishing Convention 2007,<sup>92</sup> and the Work in Fishing Recommendation 2007,<sup>93</sup> during its 97th session, both of which were intended as comprehensive guides for addressing the living and working conditions of people employed in the fishing sector.<sup>94</sup> The Convention governs terms and conditions of employment on fishing vessels. It provides that member states should put in place measures for vocational training, occupational safety and health, and the regulation of terms and conditions of work.<sup>95</sup>

The coastal fishing people are mostly contractual or day labour work for local fishing industries. The provisions for the socio-economic wellbeing of labour under the ILO conventions and guidelines certainly provide protection of their occupational health, safety and security. Moreover, the specific conventions relating to the fishing provide standards of the facilities for the fishing people and controls the terms and conditions of work.

## **G United Nations Convention on the Law of the Sea (UNCLOS)**

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<sup>90</sup> *Convention concerning Fishermen's Articles of Agreement*, opened for signature 19 June 1959 ILO C114 (entered into force 07 November 1961).

<sup>91</sup> *Accommodation of Crews (Fishermen) Convention, 1966* (No. 126) Convention concerning Accommodation on Board Fishing Vessels, opened for signature 21 June 1966 ILO C126 (entered into force 06 November 1968).

<sup>92</sup> *Convention concerning work in the fishing sector*, opened for signature 14 June 2007, ILO C188 (entered into force 16 November 2017).

<sup>93</sup> ILO, Recommendation concerning the work in the fishing sector, opened for signature 14 June 2007, R199.

<sup>94</sup> ILO, *International Labour Standards on Fishers* <<http://www.ilo.org/global/standards/subjects-covered-by-international-labour-standards/fishers/lang--en/index.htm>>.

<sup>95</sup> ILO, *Work in Fishing Recommendation, 2007*, (No. 199) <<https://www.wiego.org/resources/work-fishing-recommendation-2007-no-199>>.

The United Nations Convention for the Law of the Sea (UNCLOS) came into operation and became effective on the 16<sup>th</sup> November 1982. UNCLOS is the international legal document for conservation of marine living resources. UNCLOS does not make any explicit provision for the protection of the socio-economic rights of the coastal fishing people. However, the Convention does make explicit provision for the protection of the marine environment, which facilitates protection of the coastal fishing people from environmental damage. Moreover, UNCLOS makes provision for the conservation of marine living resources including fisheries that will facilitate the development of the socio-economic conditions of coastal fishing people.

Part V of UNCLOS provides specific provisions for the conservation of marine living resources. Section 56 of UNCLOS grants sovereign rights for the purpose of exploring and exploiting both living and non-living resources subject to conserving and managing the natural resources. Moreover, Article 61 provides State obligations for the conservation of the living resources within the Exclusive Economic Zone of the coastal State.<sup>96</sup> The coastal State shall determine the allowable catch of the living resources in its exclusive economic zone to prevent over exploitation. Article 61 specifically provides that:

The coastal State, taking into account the best scientific evidence available to it, shall ensure through proper conservation and management measures that the maintenance of the living resources in the exclusive economic zone is not endangered by over-exploitation. As appropriate, the coastal State and competent international organizations, whether subregional, regional or global, shall cooperate to this end.<sup>97</sup>

This Article also obliges coastal States to take such measures that shall also be designed to maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield, as qualified by relevant environmental and economic factors, including the economic needs of coastal fishing communities and the special requirements of developing States.<sup>98</sup> Within the EEZ, in taking conservation measures, the coastal State shall consider the effects on species associated with or dependent upon harvested species with a view to

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<sup>96</sup> Article 61, UNCLOS 1982

<sup>97</sup> Article 61(2), UNCLOS 1982

<sup>98</sup> Article 61(3), UNCLOS 1982



maintaining or restoring populations of such associated or dependent species above levels at which their reproduction may become seriously threatened.<sup>99</sup>

Article 62 provides that the coastal State shall promote optimum utilization of the living resources in the exclusive economic zone without prejudice to the State's obligation for the conservation of the marine living resources.<sup>100</sup> If the stock of marine living resources are within the maritime boundary of more than one coastal State, these States shall take the measures necessary to coordinate and ensure the conservation and development of such stocks.<sup>101</sup> Therefore, the coastal State has an obligation under UNCLOS to ensure conservation and optimal utilization of the marine living resources including fisheries with the due consideration of the socio-economic conditions of the fishers who are dependent on marine fisheries.

### **III GLOBAL INSTITUTIONAL FRAMEWORKS FOR RESOLVING THE IMPACTS OF CLIMATE CHANGE**

In addition to international legal regimes, international institutions have played an important role in mitigating the impacts of climate change. Following the shocking impact of World War II, the international community adopted the Charter of the United Nations to ensure peace and tranquillity in the post-war world. The United Nations, in turn, adopted different legal instruments, from its birth, to adapt to environmental challenges. In the last 70 years, the United Nations has continued its endeavour to adopt international legal instruments to bind states within a legal framework to combat the effect of global warming and climate change. The United Nations has not only been successful in creating a legal framework for the fight against climate change, but also in establishing special agencies to deal with the effects of climate change.

#### **A *Intergovernmental Panel on Climate Change (IPCC)***

In 1979, during the first World Climate Conference, it was claimed that continued expansion of man's activities on earth may cause significant extended regional and even global changes of

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<sup>99</sup> Article 61(4), The United Nations Convention for the Law of the Sea (UNCLOS), Part V

<sup>100</sup> Article 62, UNCLOS

<sup>101</sup> Art 63 UNCLOS 1982

climate.<sup>102</sup> In 1988, the General Assembly of the United Nations adopted resolution 43/53, which recognised climate change as a common concern for all of humankind.<sup>103</sup> In the same year, the Intergovernmental Panel on Climate Change (IPCC) was set up by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) with the aim of providing an objective source of scientific information regarding climate change and environmental security.

In 1988, the IPCC was organised into three working groups with different tasks: Working Group I would examine the scientific aspects of climate change, Working Group II would research the impacts and vulnerabilities brought about by climate change, as well as potential adaptation strategies, and Working Group III would explore mitigation strategies to fight the effects of climate change.<sup>104</sup> The IPCC has been working very closely with state parties to assess the impacts of climate change. It has produced five assessment reports: in 1990, 1995, 2001, 2007 and 2014. The fifth assessment report provided a comprehensive assessment of sea-level rise and its causes over the past few decades.

The IPCC is responsible for assessing the possible impacts of climate change based on scientific data and information. Although the IPCC does not directly deal with the protection of the socio-economic rights of coastal fishing people, its concern with the impacts of sea-level rise underscores the vulnerability of coastal fishing people.

## **B Food and Agriculture Organization**

The Food and Agriculture Organization (FAO) is a special body of the United Nations in charge of leading the fight against hunger. FAO's goal is to achieve food security globally. With 194 member states, FAO carries out several projects and research in over 130 countries.<sup>105</sup>

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<sup>102</sup> Intergovernmental Panel on Climate Change (IPCC), *Second Assessment Report: Climate Change 1995*, (Cambridge University Press, 1995).

<sup>103</sup> Farhana Yamin and Joanna Depledge, *The International Climate Change Regime: A Guide To Rules, Institution And Procedures* (Cambridge University Press, 2008) 22.

<sup>104</sup> IPCC, *Report of the First Session of the WMO/UNEP Intergovernmental Panel on Climate Change* (IPCC), (World Meteorological Organization, 1988) <<https://www.ipcc.ch/meetings/session01/first-final-report.pdf>>.

<sup>105</sup> Food and Agriculture Organization of the United Nations, *Structure and finance*, <<http://www.fao.org/about/who-we-are/en/>>

According to FAO, the impact of climate change on Earth is already noticeable, especially on the world's oceans, something which will severely affect the hundreds of millions of people who depend on fishing for their livelihood.<sup>106</sup>

FAO deals with many of the issues that coastal fishing peoples worldwide will continue to face because of climate change. In order to achieve its mission, FAO has created numerous special departments, each focusing on different aspects of FAO's mission. Some of these departments are discussed below. FAO has a Department of Climate, Biodiversity, Land and Water. This department supports countries in achieving food security and sustainability, aiming to create a world in which food and agriculture can weather the impacts of climate change. It advocates for large-scale climate finance to support changes in the agricultural sector as the key to creating a more sustainable future. This department focuses on addressing natural resources issues relating to fisheries and aquaculture, utilising a holistic multi-sector approach, and providing technical support to the operational field.

FAO has the Climate and Environment Division (CED) to assist member countries in the developing policies, plans and responses to the challenges of climate change. This includes the promotion of adaptation and climate resilience measures, as well as climate change mitigation strategies in the agricultural sector. It guarantees FAO's internal coordination and quality enhancement of climate change work across the organisation and its strategic Programs. The division also serves as the focal point for managing the Green Climate Fund (GCF) and Global Environment Facility (GEF) portfolios at FAO, as well as providing a multidisciplinary and global approach to bioenergy. The division promotes, coordinates and takes the lead in developing concepts and methods for the sustainable management of natural resources in the context of climate change.<sup>107</sup> It also supports the implementation of policies and commitments under the Sustainable Development Agenda, the Rio Conventions and the *Paris Agreement*, with an

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<sup>106</sup> UN News, *Climate change will have a significant impact on the fishing industry* (10<sup>th</sup> July 2008) <<https://news.un.org/en/story/2008/07/265842-climate-change-will-have-major-impact-fishing-industry-says-un-agency>>.

<sup>107</sup> Food and Agriculture Organization of the United Nations, *FAO's work on Climate Change* <<http://www.fao.org/climate-change/en/>>.

emphasis on the sustainable management of land, soils, energy, water, biodiversity and genetic resources.<sup>108</sup> The CED also provides member states with planning assistance.

The FAO also has a Fisheries and Aquaculture Department. This department emphasises the need to reconcile social and economic development with environmental performance in developing fisheries and aquaculture policies. The department leads efforts to promote and support the implementation of the Code of Conduct for Responsible Fisheries and its related instruments, in addition to providing scientific advice, strategic planning and training materials.<sup>109</sup> The Fisheries and Aquaculture Department has a mission to support development of the fisheries sector in a regulated and environmentally sensitive manner, to contribute to the improvement of well-being and living conditions of poor and disadvantaged communities in developing countries, and to assist in the achievement of several of the Millennium Development Goals, especially those related to poverty reduction, food security, environmental protection and biodiversity.

The Fisheries and Aquaculture Department envisions a world in which the responsible and sustainable use of fisheries and living marine resources makes a noticeable contribution to wellbeing, food security and the reduction of poverty.<sup>110</sup> Its mission is to reinforce global governance, management and technical capabilities and consensus-building in the sustainable development of the sector and the resources it utilises. It aims to make a lasting impact on the achievement of the Millennium Development Goals and the targets established by the World Summit on Sustainable Development and the World Food Summit.<sup>111</sup> The department publishes publicly accessible statistical data and information on the status of fisheries and aquaculture around the globe. It also publishes articles, technical papers, guidelines and plans of actions to help policymakers frame better policies.<sup>112</sup>

FAO also includes the International Council for the Exploration of the Sea (ICES). The ICES seek to increase scientific knowledge of the marine environment and its living resources, and to use

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<sup>108</sup> FAO, *Mandate of FAO*, FAO <<http://www.fao.org/about/who-we-are/departments/climate-biodiversity-land-water/en/>>.

<sup>109</sup> FAO, *Functions and structure*, <[www.fao.org/fishery-aquaculture/en/](http://www.fao.org/fishery-aquaculture/en/)>.

<sup>110</sup> Fisheries and Aquaculture Department, *About Us*, FAO <<http://www.fao.org/fishery/about/en>>.

<sup>111</sup> Ibid.

<sup>112</sup> Fisheries and Aquaculture Department, *Activities – Introduction*, FAO, <<http://www.fao.org/fishery/activities/en>>; Arif, above n 51.

this knowledge to ensure that the best available science is accessible for decision-makers to make informed choices on the sustainable use of the marine environment and ecosystems. The essential document on the wellbeing of fishing peoples is to be found, however, on FAO Conference Resolution 15/93, paragraph 3, which constitutes the Code of Conduct for Responsible Fisheries.<sup>113</sup> These guidelines can be applied to fisheries at many different levels, from individual fisheries and coastal management units to a global level. They aim to encourage consistent usage of indicators within and between countries. Governments may also adapt the guidelines to the specific requirements of their national fisheries.<sup>114</sup>

The Asia-Pacific Fishery Commission (APFIC) also falls under the auspices of FAO. The APFIC covers fisheries, aquaculture and related aquatic resource issues in the Asia-Pacific region.<sup>115</sup> This commission was created with the objective of promoting full and proper utilisation of living marine assets through the development and administration of fishing and aquaculture operations as well as the posterior processing and marketing in line with the interests of the parties.<sup>116</sup> The establishment of the General Fisheries Commission for the Mediterranean, 1949, having taking into consideration the vulnerability of the fish stock relevant to the treaty, ended up acting or eventually served as a forum for discussing the adoption, by signatory states, of multiple international legal instruments for the regulation of fisheries.<sup>117</sup>

FAO has been playing a key role in coordinating global actions for preventing food scarcity and eradicating poverty. The coastal fishing people live below the poverty line and face extreme scarcity of food. Therefore, the right to both work and food for the coastal fishing people are two serious concerns of FAO. It significantly contributed by developing different plans and programmes for sustainable management and conservation of the marine fisheries resources which helped to protect the rights to work and food of the coastal fishing people. The most

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<sup>113</sup> FAO, *Technical Guidelines for Responsible Fisheries 4*,  
<[https://www.icriforum.org/sites/default/files/i2090e\\_0.pdf](https://www.icriforum.org/sites/default/files/i2090e_0.pdf)>.

<sup>114</sup> FAO, *Indicators for Sustainable Development of Marine Capture Fisheries*, *FAO Technical Guidelines for Responsible Fisheries* (1999)8, 68 <<http://www.fao.org/3/a-x3307e.html>>.

<sup>115</sup> Asia-Pacific Fishery Commission, *About the Asia-Pacific Fishery Commission*  
<<http://www.fao.org/apfic/background/about-asia-pacific-fishery-commission/en/>>.

<sup>116</sup> APFC Agreement as amended by the Commission at its Seventeenth, Twenty-Fourth and Twenty-Fifth Sessions in 1976, 1993 and 1996 and approved by the FAO Council at its Seventy-Second, Hundred and Seventh and Hundred and Twelfth Sessions in 1977, 1994 and 1997.

<sup>117</sup> Agreement for the establishment of the General Fisheries Commission for the Mediterranean, opened for signature 24 September 1949 (entered into force 20 February 1952).

important contribution of FAO is the development of the Code of Conduct for Responsible Fisheries. This Code has provided a common standard for responsible fisheries including the consideration of environment, social and economic factors of the coastal fishing people in its development plan and policy.

#### **IV PROTECTION OF THE SOCIO-ECONOMIC AND ENVIRONMENTAL RIGHTS OF COASTAL FISHING PEOPLE**

Although there are many international legal instruments and institutions attempting to minimise the adverse impacts of climate change, none are explicitly concerned with the protection of the socio-economic and environmental rights of coastal fishing people. However, coastal fishing people can be reasonably defined and included within the category of 'climate vulnerable people/community'. The international legal documents concerning climate change, environmental, fisheries and human rights provide for the protection of the socio-economic and environmental rights of coastal fishing people as a special category of *community*. Several international institutions are working towards the protection of the socio-economic and environmental rights of these people, although currently these socio-economic and environmental rights are not well protected.

The international legal framework provides for an adaptation and mitigation approach to lessen the impacts of climate change. The IPCC's Fifth Assessment Report shifted the focus of their adaptation policies to a broader perspective that took into account the social and economic aspects of the development of vulnerability and people's ability to respond to it. Some of these factors were age, health, social standing, ethnicity and institutional framework. Previously, the Fourth Assessment Report had suggested strengthening the connection between adaptation and disaster risk management, and emphasised the findings of IPCC's *Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation* (SREX).<sup>118</sup> Guaranteeing the safety of services and ecosystems requires further research on adaptation needs and on the gap between what will happen as a result of climate change and the most desirable outcome for human populations. Although needs are often viewed through a risk-based approach with a focus on impact moderation, there is a necessity to deal with the

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<sup>118</sup> Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation: A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change (Cambridge University Press, 2012).

underlying drivers of human vulnerability, considering factors such as information, capacity, financial, institutional and technological needs.<sup>119</sup> While technological adaptation measures have traditionally been the most widely implemented adaptation policies, there needs to be a shift in the focus of these policies to include eco-system based, institutional and social considerations in their national plans and policies.

In the face of uncertainty about the impact that climate change will have on human society, the IPCC is currently focused on developing appropriate adaptation responses based on no-regret, low-regret and win-win strategies.<sup>120</sup> The IPCC also considers that public institutions (both on the national and local scale), private sector organisations, NGOs and civil society can be of great importance or assistance to the communities and families in the implementation of relevant measures. Particularly in developing nations, private individuals and small-to-medium enterprises (SMEs) can play a vital role in implementing adaptation measures through their motivation to protect and enhance their production systems. Furthermore, future adaptation measures should take into account the implementation and evaluation of policies in place rather than merely looking into impacts, vulnerability and adaptation planning (as has been the case for most measures implemented). A bottom-up flow of information is essential for the effective implementation of adaption measures at the local level. Proof of this is the recorded higher effectiveness of adaption measures implemented through assessments that offer information related to particular policies and measures, facilitating in this manner the decision-making process involved in their implementation.<sup>121</sup>

The measurement of adaptation that tracks implementation and outcomes obtained, as well as their proximity to initial expectations, have proven extremely useful in policy learning and improvement. However, there needs to be a consensus on the metrics to be used, as different groups—such as public institutions, communities and individuals—tend to value needs and outcomes differently. The IPCC's 5<sup>th</sup> Assessment Report claimed that poorly planned adaptation strategies, which fail to address the full range of interactions arising as a result of the policies,

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<sup>119</sup> Ministry of Environment and Forest Government of the People's Republic of Bangladesh, *National Adaptation Programme of Action (NAPA) Final Report* (UNFCCC, 2005) <<https://unfccc.int/resource/docs/napa/ban01.pdf>>.

<sup>120</sup> IR Noble et al, 'Adaptation Needs and Options' in CB Field et al (eds), *Climate Change 2014: Impacts, Adaptation, and Vulnerability* (Cambridge University Press, 2014) 833–868.

<sup>121</sup> Ibid.

will tend to increase rather than reduce vulnerability. Therefore, in order to effectively tackle vulnerabilities in target groups, the policies implemented should focus on well-planned long-term outcomes.<sup>122</sup>

The experiences gained from implementing adaptation measures, as well as their failures, means or implies or indicates that the approach may not be applicable for all countries, including Bangladesh. However, the adaptation approach may still be invaluable in highlighting the importance of adaptation as a coping strategy against the negative impacts of climate change.<sup>123</sup> There is a need for the creation of an identification framework that points out gaps in current knowledge, the success or failure of implemented policies, and the limits and risks to coastal fishing people. The relevant international institutions may be able to provide long-term assistance.

The international legal instruments do recognise the climate-induced violations of human rights in coastal fishing communities. These legal instruments ask for reinforcing documentation capacities, an increased awareness towards violations, and a response to specific incidents, utilising a human rights approach to address underlying issues in communities while promoting human rights as a driver in fisheries reform.<sup>124</sup> However, when talking specifically about grievances in fishing communities, cases of forced evictions and human rights violations such as child labour were often not appropriately addressed by domestic courts. There is a need then for improvements in access to justice. It should also be noted that the capabilities of civil society advocacy groups can be of great help in achieving results within the justice system. A good example of this is the Bangladesh Environmental Lawyers Association, whose efforts have been instrumental in improving living conditions in fishing communities, in recognising the legal rights of women and in improving landless household management in fishing communities.<sup>125</sup>

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<sup>122</sup> Ibid.

<sup>123</sup> IR Noble et al, 'Adaptation Needs and Options' in CB Field et al (eds), *Climate Change 2014: Impacts, Adaptation, and Vulnerability* (Cambridge University Press, 2014) 833–868.; KE Mills et al, 'Fisheries Management in a Changing Climate: Lessons From The 2012 Ocean Heat Wave in the Northwest Atlantic' (2013) 26 *Oceanography* 191–195.

<sup>124</sup> Blake D Ratner, Björn Åsgård and Edward H. Allison, 'Fishing for Justice: Human Rights, Development, and Fisheries Sector Reform' (2014) 27 *Global Environmental Change* 120–130.

<sup>125</sup> J Thompson and JM Scott, 'Environmental Entrepreneurship: The Sustainability Challenge', (Conference Paper, Institute of Small Business and Entrepreneurship Conference, November 2010) <<http://www.isbe.org.uk/conferenceProceedings>>.



It is important to note the existence of underlying, systemic grievances in fishing communities. The reduced access of women and children to the decision-making processes is making it essential for adaptation strategies to cover issues beyond the elimination of poverty and the safeguarding of resources.<sup>126</sup> The promotion of awareness around the interconnected issues of gender equality and climate change will promote an increase in the adaptation capabilities of disadvantaged groups. There is a series of measures that should be introduced to effectively tackle these issues, in particular, the incorporation of vulnerable groups in decision-making in the fight against climate change. The targeting of a vulnerable group requires thorough measures aimed at reducing their vulnerability. This entails the use of technologies, accessibility to those technologies, the introduction of adaptation measures that build on traditional and indigenous knowledge, and the integration of equality indicators in climate change programs in order to pinpoint specific vulnerabilities in fishing communities.<sup>127</sup>

The international legal framework for human rights provides that all states in the world must respect, protect, promote and fulfil the human rights of all people, which includes coastal fishing people.<sup>128</sup> This affirmation includes the obligation of all states to prevent foreseeable damages, including those that occur as a result of global warming. Human rights treaties, including ICESCR, state that national human rights obligations must go hand in hand with regional and international cooperation. Implementation of UN resolutions regarding human rights and climate change may play a significant role in the protection of the socio-economic and environmental rights of coastal fishing people. The significance of these resolutions comes from the recognition by the Human Rights Council that the impact of climate change on the enjoyment of human rights represents a global issue in need of an equally global response, accentuating the significance of human rights concerns in the context of climate change.<sup>129</sup>

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<sup>126</sup> FAO, *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security* (FAO, 2012).

<sup>127</sup> Canadian International Development Agency (CIDA), *Gender Equality and Climate Change: Why Consider Gender Equality When Taking Action on Climate Change?* OECD <<https://www.oecd.org/dac/gender-development/44896501.pdf>>.

<sup>128</sup> Benoit Mayer, 'The International Legal Challenges of Climate-Induced Migration: Proposal for an International Legal Framework' (2011) 22(3) *Colorado Journal of International Environmental Law. & Policy*, 357–416.

<sup>129</sup> Office of the High Commissioner for Human Rights, 'Understanding Human Rights and Climate Change', Submission to the 21<sup>st</sup> Conference of the Parties to the United Nations Framework Convention on Climate Change, 30 November 2015 <<https://www.ohchr.org/Documents/Issues/ClimateChange/COP21.pdf>>.

The resulting document of the 2012 United Nations Conference on Sustainable Development, titled *The Future We Want*, reaffirmed the significance of human rights consideration in the achievement of sustainable development. Previously, the UN High Commissioner for Human Rights had reminded states of their obligation to balance their advances in the green economy with their human rights obligations through an open letter to all UN missions in both New York and Geneva.<sup>130</sup> Also, OHCHR has produced several reports on the impact that climate change has on human rights.<sup>131</sup>

Many individual mandate holders of the OHCHR have been active in the study and promotion of the interconnectivity between climate change and human rights. The Special Rapporteur on human rights and the environment has been very involved in this endeavour, publishing, in 2014, a climate change mapping report that collected previous statements by human rights bodies concerning climate change-based threats to human rights, a report which closely intertwined human rights obligations and climate change.<sup>132</sup> In addition, there have been multiple joint advocacies promoted by special procedures mandate holders. An example is the open letter of 17 October 2014 addressed to parties of the UNFCCC and signed by 28 Special Procedures mandate holders.<sup>133</sup> The letter urged the UNFCCC to ‘adopt urgent and ambitious mitigation and adaptation measures to prevent further harm’ and advocated for the inclusion of a commitment that ‘the Parties shall, in all climate change-related actions, respect, protect, promote and fulfil human rights for all’<sup>134</sup> in the 2015 climate agreement. As was highlighted at

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<sup>130</sup> Letter from the High Commissioner for Human Rights of the United Nations to all Permanent Missions in New York and Geneva, 30 March 2012 <<http://www.ohchr.org/Documents/Issues/Development/OpenLetterHC.pdf>>.

<sup>131</sup> Office of the High Commissioner for Human Rights, Analytical study on the relationship between climate change and human rights; Summary Report of the Panel discussion on the relationship between climate change and human rights held at the eleventh session of the HRC (June 2009) following resolution 10/4, UN Doc A/HRC/10/61 (6 May 2016); Office of the High Commissioner for Human Rights, Report of the 2010 Social Forum on the adverse effects of climate change on the full enjoyment of human rights, UN Doc A/HRC/16/62 (4 January 2011); Office of the High Commissioner for Human Rights, Report of the United Nations High Commissioner for Human Rights on the outcome of the seminar addressing the adverse impacts of climate change on the full enjoyment of human rights, UN Doc A/HRC/20/7 (10 April 2012); Office of the High Commissioner for Human Rights, Summary report of the Office of the United Nations High Commissioner for Human Rights on the outcome of the full-day discussion on specific themes relating to human rights and climate change, UN Doc A/HRC/29/19 (1 May 2015).

<sup>132</sup> Mapping Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment: Focus report on human rights and climate change (June 2014) <<http://www.ohchr.org/Documents/Issues/Environment/MappingReport/ClimateChangemapping15- August.docx>>.

<sup>133</sup> OHCHR, Joint statement by UN Special Procedures on the occasion of World Environment Day: Climate Change and Human Rights (5 June 2015), <<https://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=16049&LangID=E>>.

<sup>134</sup> *A New Climate Change Agreement Must Include Human Rights Protections For All*, Open Letter from Special Procedures mandate-holders of the Human Rights Council to the State Parties to the UN Framework Convention on Climate Change on the

the posterior panel discussion by John Knox, who is still the Special Rapporteur on human rights and the environment, the letter defined climate change as one of the most significant challenges to humanity and stated that its effects would be disproportionate upon disadvantaged or marginalised social groups. Therefore, it asked for the incorporation of human rights obligations into posterior climate change agreements.

The joint statement of the OHCHR noted the extreme danger to the enjoyment of human rights that would result from even a two-degree Celsius increase in global temperature.<sup>135</sup> Once again, the Special Rapporteurs urged states to come to an agreement that effectively included the obligations that international human rights law places on states.<sup>136</sup> Finally, a report entitled *The Effects of Climate Change on the Full Enjoyment of Human Rights*, prepared by several Special Rapporteurs of the Climate Vulnerable Forum—an ensemble of 20 states that are especially vulnerable to the adverse effects of climate change—warned that a temperature increase of just 1.5 degrees Celsius would gravely threaten human rights, challenging the current consensus on a 2-degree goal. The relationship between climate change and human rights is well documented, but there needs to be a stronger global push for the inclusion of human rights obligations in climate change agreements.

The integration of climate change and human rights issues into the international fisheries law and environmental law has strengthened the legal protection of coastal fishing people globally. They are now considered one of the communities most vulnerable to the impacts of climate change. The promotion and protection of coastal fishing people under international fisheries law and environmental law will help to raise the issue of the gross violation of their socio-economic and environmental rights.<sup>137</sup> In addition, advocacy of human rights issues in fishing

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occasion of the meeting of the Ad Hoc Working Group on the Durban Platform for Enhanced Action in Bonn, 28 March 2014 <[https://www.ohchr.org/Documents/HRBodies/SP/SP\\_To\\_UNFCCC.pdf](https://www.ohchr.org/Documents/HRBodies/SP/SP_To_UNFCCC.pdf)>.

<sup>135</sup> OHCHR, Joint statement by UN Special Procedures on the occasion of World Environment Day: Climate Change and Human Rights (5 June 2015), <<https://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=16049&LangID=E>>.

<sup>136</sup> OHCHR, Climate Change, <<https://www.ohchr.org/EN/Issues/Environment/SREnvironment/Pages/ClimateChange.aspx>>

<sup>137</sup> N Weeratunge et al, 'Gleaner, Fisher, Trader, Processor: Understanding Gendered Employment in Fisheries and Aquaculture' (2010) 11 *Fish and Fisheries* 405

communities can constitute a driver for modernising fishing communities in developing countries.<sup>138</sup>

International institutions such as the IPCC and FAO are significantly working for the protection of coastal fishing people from the impacts of climate change. The institutions have attempted to build adaptive capabilities in the communities. The monitoring mechanisms have sharpened the assessment of the success or failure of initiatives for mitigating the impacts of climate change on coastal people.<sup>139</sup> The international institutions have been contributing to develop climate strategies, taking collective action, recognizing and responding to climate action actively, enhancing their capability to decide and implement international legal regimes for climate change. The institutions have facilitated the essential mechanisms to ensure the wellbeing of fishing communities and the ultimate success of adaptation strategies in the state parties.<sup>140</sup> These factors can be tremendously useful to the success of climate change strategies for coastal fishing people worldwide including Bangladesh.

## V CONCLUSION

Although the international legal regimes do not provide any explicit provisions for protecting the socio-economic rights of coastal fishing people and improving their conditions. However, they have provided ideas for improving the socio-economic of coastal fishing people. Similarly, the international institutions working to address the impacts of climate change do not have specific concerns for coastal fishing people. Nevertheless, the contribution of the international legal regimes and institutions have an implied impact on the protection of the socio-economic rights and the wellbeing of coastal fishing people. The international legal regimes have made significant developments regarding climate change in the international policy-making arena, although the issues faced by fishing communities are still not receiving sufficient attention.

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<sup>138</sup> BD Ratner, 'Common-pool Resources, Livelihoods, and Resilience: Critical Challenges for Governance in Cambodia' (International Food Policy Research Institute, 2011) IFPRI Discussion Paper Series number 1149.

<sup>139</sup> Adaptive capacity refers to the conditions that allow people to foresee dangers and change to minimise impacts, recover, and take advantage of new opportunities. Recent evidence points to adaptive capacity as more than the possession of having necessary resources at hand, also taking into account the willingness and capacity to convert them into action.

<sup>140</sup> M Pelling and C High, 'Understanding adaptation: What Can Social Capital Offer Assessments of Adaptive Capacity?' (2005) 15 *Global Environmental Change*, 308–319.

Active dialogue and negotiation, on both the national and international scale, will be essential to address the concerns of fishing populations regarding climate change.

The main achievement of the international legal regimes for the protection of the socio-economic rights of the coastal fishing people lies on the recognition of the cause and impact relations between the socio-economic rights and impacts of climate change. The development of the legal regimes is facilitating and pushing the State and non-State actors to think and plan for the protection of the climate vulnerable coastal fishing people. The IPCC has achieved significant progress in assessing the impacts of climate change on the coastal people. Also, the FAO has been contributing to sustainable management and conservation of the fisheries resources by coordinating and assisting the coastal States.

Currently, the international legal and institutional frameworks are not capable of facing the challenges posed by the impacts of climate change on coastal fishing people. Therefore, the global community should prioritise the protection of the socio-economic conditions of fishing populations, with the financial and technological cooperation of all countries. If the coastal states are unable to guarantee the rights of fishing populations within their territory, they should seek negotiations with other states via long-term or short-term agreements that will allow them to tackle the otherwise insurmountable obstacles they face.

Approaches which focus on implementing international legal commitments, as well as on holistic legal frameworks, are essential to the effectiveness of initiatives aimed at fulfilling the rights of fishing populations. To this end, the coastal states should aim to improve and develop their current body of law in order to effectively enforce the enjoyment of human rights in fishing populations, as well as their wellbeing. The support of international organisations will be essential in achieving this objective.

Despite the absence of any explicit provisions for the socio-economic rights of the coastal fishing people under the international legal and institutional arrangements, they have established a cause and effect relationship between climate change and human rights. A question arises as to how and to what extent this recognition has influenced protection of the socio-economic conditions of the coastal fishing people in the coastal States of the Bay of Bengal. With this objective, the next chapter will discuss and analyse the legal and institutional

arrangements in three coastal States: India, Sri Lanka and the Maldives, to explore protection of the socio-economic rights of the coastal fishing people of these countries.

## CHAPTER FOUR

### REGIONAL LEGAL AND INSTITUTIONAL FRAMEWORKS RESPONDING TO THE IMPACTS OF CLIMATE CHANGE ON THE COASTAL FISHING PEOPLE OF THE BAY OF BENGAL

#### I INTRODUCTION

The previous chapter examined international legal and institutional frameworks concerning the impacts of climate change on the socio-economic rights of the coastal fishing people. This chapter examines the legal and institutional arrangements for the protection of socio-economic and environmental rights of the coastal fishing people of India, Sri Lanka and Maldives, and the coastal states of the Bay of Bengal (BoB) region. The BoB has been identified as one of the world's forty-nine large marine ecosystems. About a quarter of the world's population resides in the littoral countries of the BoB, with approximately 400 million living in the Bay's catchment area, many at or below the poverty level.<sup>1</sup> The major impacts of climate change on the coastal fishing people of the region are fishing pressure, loss of habitat, pollution, disturbance and introduced species.<sup>2</sup> These impact not only their earnings but also every facet of their daily life. The primary impact of climate change comes from frequent cyclonic events, inland and coastal flooding, low flows of water and droughts, salinity intrusion, changes of the riverbed level due to sedimentation and changes in morphological processes.<sup>3</sup> The coastal states of the Bay (such as Sri Lanka, India and the Maldives) have enacted laws, rules and regulations—and have taken legal, administrative and technical initiatives—to save fishers and the fishing industry from the impact of climate change. This chapter reviews these laws, policies and regulations and their effect on the wellbeing of coastal fishing people. The chapter also discusses the institutional arrangements of the coastal states for the protection of the socio-economic and environmental rights of the coastal fishing people. The objective of this chapter is to explore the key characteristics of the legal and institutional frameworks for the protection

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<sup>1</sup> National Report of Sri Lanka on the Formulation of a Transboundary Diagnostic Analysis and Strategic Action Plan for the Bay of Bengal Large Marine Ecosystem Programme <[https://www.boblme.org/documentRepository/Nat\\_Sri\\_Lanka.pdf](https://www.boblme.org/documentRepository/Nat_Sri_Lanka.pdf)>.

<sup>2</sup> Iris Monnereau and Hazel Oxenford, 'Impacts of Climate Change on Fisheries in the Coastal and Marine Environments of Caribbean Small Island Developing States (SIDS)' (2017) *Science Review* 132–133. <[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/605077/10.\\_Fisheries\\_combined.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/605077/10._Fisheries_combined.pdf)>; Rumana Yasmin and Mehady Islam, 'Sustainability of Fisheries and Aquaculture in Context of Emerging Climate Change Issues' (2017) 5(4) *International Journal of Fisheries and Aquatic Studies* 176–187.

<sup>3</sup> IUCN, *Climate Change and Fisheries & Livestock in Bangladesh* <<https://www.iucn.org/sites/dev/files/import/downloads/frsheries.pdf>>.

of the socio-economic and environmental rights of the coastal fishing people in the coastal states.

## **II REGIONAL LEGAL AND INSTITUTIONAL FRAMEWORKS FOR CLIMATE-INDUCED IMPACTS ON COASTAL FISHING PEOPLE OF THE BAY OF BENGAL**

Global marine fisheries are underperforming economically because of overfishing, pollution and habitat degradation.<sup>4</sup> Observations, experiments and simulation models demonstrate that climate change would result in modification in fundamental productivity, shifts in distribution and changes in the potential yield of exploited aquatic species, resulting in impacts on the economies of fisheries worldwide.<sup>5</sup> Moreover, the region around the Bay of Bengal (BoB)—including Bangladesh, India and Sri Lanka—suffered two recent significant cyclones: Aila in 2007 and Sidr in 2009. These cyclones took thousands of lives and displaced millions of people.<sup>6</sup> To date, global and regional climate vulnerability assessments have chiefly focused on agricultural production; fisheries have not been systematically evaluated.<sup>7</sup> The lives of the fishermen and the fishing industry itself are directly affected by environmental change.<sup>8</sup> This includes direct and indirect climate-induced impacts on the coastal people, such as disruption to precipitation and the availability of freshwater, excessive salinity of the water, detrimental changes in oceanography, frequent floods, river erosion, the polluting impact of fishery industries and the consequent displacement and migration of human populations.<sup>9</sup> India, Sri Lanka and Maldives have responded to these impacts through legal and institutional arrangements for protecting the socio-economic and environmental rights of their coastal fishing people. These arrangements are discussed in the following sections.

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<sup>4</sup> Q Ashton Acton, *Advances in Climate Change and Global Warming Research and Application: 2012 Edition* (Scholarly Editions, 2012)

<sup>5</sup> U Rashid Sumaila et al, 'Climate Change Impacts on the Biophysics and Economics of World Fisheries' (2011) 1 *Nature Climate Change Journal* 449-456.

<sup>6</sup> Gulsan Ara Parvin et al, 'Evacuation Scenarios of Cyclone Aila in Bangladesh: Investigating the Factors Influencing Evacuation Decision and Destination' (2019) 2 *Progress in Disaster Science* 100032; Russell Kabir et al, 'Climate Change Impact: The Experience of the Coastal Areas of Bangladesh Affected by Cyclones Sidr and Aila' (2016) *Journal of Environmental and Public Health* 9 <<http://dx.doi.org/10.1155/2016/9654753>>.

<sup>7</sup> See Fischer et al. 2005; Parry et al. 2005; Schmidhuber and Tubiello 2007; Tubiello et al. 2007.

<sup>8</sup> Edward H Allison et al, 'Vulnerability of National Economies to the Impacts of Climate Change on Fisheries' (2009) 10, *Fish and Fisheries* 173–196.

<sup>9</sup> T Daw et al, 'Climate Change and Capture Fisheries: Potential Impacts, Adaptation and Mitigation', in K. Cochrane et al (eds) *Climate Change Implications for Fisheries and Aquaculture: An Overview of Current Scientific Knowledge*, (FAO Fisheries and Aquaculture Technical Paper No. 530. Rome, FAO, 2009) 107–150.



## **A    *Legal and Institutional Frameworks to Address Climate-Induced Impacts on Coastal Fishing People of India***

India is the largest country in South Asia and the seventh largest country in the world by area.<sup>10</sup> Climate change presents many risks to such a geographically diverse country, such as increased exposure to floods, drought, cyclones, rises in sea temperature and sea level, and ocean acidification.<sup>11</sup> The total coastline of India measures 7,517 km, incorporating nine coastal states and the four Union Territories. Almost the entire coast of India falls within the tropics.<sup>12</sup> With sea-level rises and around 84 coastal districts affected by tropical cyclones, identifying coastal vulnerability in India should be given high priority in the 12th Five Year Plan.<sup>13</sup> Fish and fishery products are some of the most traded food commodities worldwide with more than half of all fish exports by value originating in developing countries.<sup>14</sup>

In India, nearly 250 million people live within 50 km of the coastline, and more than seven million coastal families of fishers and farmers directly depend on the coastal zone.<sup>15</sup> India has some of the most comprehensive and representative fisheries globally. It has both marine and inland fisheries, as well as warm- and cold-water fisheries, and they contribute significantly to the socio-economic growth of the country.<sup>16</sup> India ranks seventh in the world in both fish production and fish exports. In 2016, the global value of fish and exports of fishery products reached USD 129.1 billion.<sup>17</sup> India is the second-largest fish-producing country in the world, producing 11.41 million metric tons in 2016–17 (a figure expected to exceed 12.50 million

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<sup>10</sup> H. Plecher, *India - Statistics & Facts* (2019) <<https://www.statista.com/topics/754/india/>>.

<sup>11</sup> N Watts et al, 'The Lancet Countdown on Health and Climate Change: from 25 Years of Inaction to a Global Transformation for Public Health' (2009) 391 (10120) *The Lancet* 14, doi: [https://doi.org/10.1016/S0140-6736\(17\)32464-9](https://doi.org/10.1016/S0140-6736(17)32464-9)

<sup>12</sup> 'Largest States by Coastline in India' *GKTODAY* <<https://www.gktoday.in/gk/largest-states-by-coastline-in-india/>>.

<sup>13</sup> Shyam S Salim et al, 'Climate Change and Need for Proactive Policy Initiatives in Indian Marine Fisheries Sector' (2017) <<https://core.ac.uk/download/pdf/79425868.pdf>>.

<sup>14</sup> Food and Agriculture Organization, *The State of World Fisheries and Aquaculture Contributing to Food Security and Nutrition for all* (2016) <<http://www.fao.org/3/a-i5555e.pdf>>.

<sup>15</sup> Earth Journalism Network, *India has lost an entire city's worth of shoreline to coastal erosion* <<https://earthjournalism.net/stories/india-has-lost-an-entire-citys-worth-of-shoreline-to-coastal-erosion>>.

<sup>16</sup> National Fisheries Development Board, *Blue Revolution – Integrated Development and Management of Fisheries*, (E-Bulletin, India 2018)1(1 & 2) <<http://nfdb.gov.in/PDF/Bulletin/E-Bulletin>>.

<sup>17</sup> K Radhakrishnan et al, 'Growth and Performance of Indian Fish and Fishery Products Exports' (2018) 55, *Fishery Technology* 143

metric tons in 2017–18).<sup>18</sup> However, the coastal population including the coastal fishing people is vulnerable to climate change and reduced fish catch remains a major challenge to the livelihoods of those who rely on fishing.<sup>19</sup> Considering the impact of climate change on the coastal fisheries sector, and as a part of its involvement in a web of universal environmental laws, India has enacted several relevant laws and regulations, which are discussed in the sections that follow.

## **1 National Policies Related to Fisheries and Coastal Fishing People in India**

The policies related to the coastal fishing people of India are the *Comprehensive Marine Fisheries Policy 2004*, the *National Policy on Marine Fisheries 2017* (NPMF), the *Draft National Mariculture Policy 2019* and *The National Environmental Policy 2006*. The *Comprehensive Marine Fisheries Policy 2004* advocates for the protection, consideration and encouragement of subsistence level fishermen. It also advocates for technology transfer to communities and for infrastructure support to the industrial sector.<sup>20</sup> The policy underscores the need for a departure from the open-access approach to territorial waters and puts in place stringent management regimes. Promoting exploitation in the deep sea and oceanic waters would be another approach for reducing fishing pressure in the traditional fishing areas.<sup>21</sup>

In April 2017, the Government of India adopted the *National Policy on Marine Fisheries 2017* (NPMF) which provides guidance for promoting the 'Blue Growth Initiative'. This initiative focuses on ushering in a 'Blue Revolution' (Neeli Kranti) by using the sustainable utilisation of fisheries wealth derived from the marine and other aquatic resources of the country to improve the lives and livelihoods of fishermen and their families.<sup>22</sup> The *National Policy on Marine Fisheries, 2017* emphasises the importance of the coastal marine ecosystems that provide a range of ecosystem services, including habitat for many fish species and marine mammals, and

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<sup>18</sup> Shri Singh, *Press Information Bureau Note* (Government of India Ministry of Agriculture & Farmers Welfare, 21-November-2017) <http://pib.nic.in/newsite/PrintRelease.aspx?relid=173699>; E-Bulletin National Fisheries Development Board, *Blue Revolution – Integrated Development and Management of Fisheries*(2018) Volume 1, Issue 1 & 2.

<sup>19</sup> VK Sajesh et al, 'Trend and Pattern of Expenditure on Fisheries Extension in India: Implications for Policy' (2018) 54(2) *Indian Journal of Extension Education* 32–40.

<sup>20</sup> 3.1 of the *Comprehensive Marine Fisheries Policy 2004*

<sup>21</sup> DK Sinha, *Provisions Contained in Marine Fishing Policy, 2004* <<http://www.yourarticlelibrary.com/law/acts/provisions-contained-in-marine-fishing-policy-2004/42311>>.

<sup>22</sup> National Policy on Marine Fisheries 2017, India.

<<http://vikaspedia.in/agriculture/policies-and-schemes/fisheries-related/national-policy-on-marine-fisheries-2017>>.

which will be protected from anthropogenic impacts.<sup>23</sup> The overarching goal of the policy is to ensure the health and ecological integrity of the marine resources of India's Exclusive Economic Zone (EEZ) through sustainable harvests for the benefit of present and future generations of the nation.<sup>24</sup> The policy for sustainable management and conservation of the marine fisheries resources help the coastal fishing people with access to work and food. Moreover, there is a draft *National Mariculture Policy 2019* which aims to ensure sustainable farmed seafood production for the benefit of food and nutritional security of India and to provide additional livelihood and entrepreneurial opportunities to the coastal communities including the coastal fishing people for better living.<sup>25</sup>

The 2006 *National Environmental Policy* of the Government of India highlights the importance of mangroves, coral reefs, estuaries and coastal forests.<sup>26</sup> It outlines essential elements in India's response to climate change. The central principle of this policy is to identify severe vulnerabilities to climate change. In particular, it aims to measure the impact of climate change on water resources, forests, coastal areas, as well as the agriculture and health sectors. Additionally, the *National Environment Policy* assesses the need for adaptation to climate change, encouraging Indian industry to participate in the Clean Development Mechanism (CDM).<sup>27</sup> The Environmental policy guides the Indian government to take effective plan and action to prevent climate vulnerability of victims where the coastal fishing people can be the main beneficiary.

In addition, India has adopted the National Action Plan on Climate Change (NAPCC). This is coordinated by the Ministry of Environment and Forests and implemented through nodal ministries in specific sectors and areas. The NAPCC outlines existing and future policies and programs for addressing climate mitigation and adaptation. The plan identifies eight core 'national missions': National Solar Mission, National Mission for Enhanced Energy Efficiency,

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<sup>23</sup> R Ramesh et al, 'Legislation and policy options for conservation and management of seagrass ecosystems in India' (2018) 159 *Ocean & Coastal Management* 46–50 <<https://doi.org/10.1016/j.ocecoaman.2017.12.025>>.

<sup>24</sup> *National Policy on Marine Fisheries 2017* (Ministry of Agriculture and Farmers Welfare of India, Department of Animal Husbandry, Dairying and Fisheries, India).

<sup>25</sup> Preamble of *National Mariculture Policy 2019(NMP 2019)-Revised Draft*, India <<http://nfdb.gov.in/PDF/Revised%20draft%20-%20NMP-2019.pdf>>

<sup>26</sup> *National Environment Policy 2006* (India).

<sup>27</sup> Ibid.

National Mission on Sustainable Habitat, National Water Mission, National Mission for Sustaining the Himalayan Ecosystem, National Mission for a 'Green India', National Mission for Sustainable Agriculture and the National Mission on Strategic Knowledge for Climate Change.<sup>28</sup>

India has adopted its Twelfth Five-Year Plan. This plan aims for holistic development that will raise the social and economic conditions of fishers and fish farmers and ensure their welfare. It will improve overall governance and management of the fisheries sector in the country through institutional strengthening and human resource development.<sup>29</sup>

In 2016, India's government created an umbrella scheme titled 'Blue Revolution: Integrated Development and Management of Fisheries'.<sup>30</sup> The program, designed for the fisheries sector, will seek to improve the training and capacity-building of fishers and fish-farmers, encourage species diversification and proper fish health management, strengthen the country's scientific research and encourage the science community to provide advice to the private sector. Another, separate focus of the Blue Revolution program, has been to move traditional in-shore fishers into deep-sea fishing.<sup>31</sup> As a result of the 'Blue Revolution', India's fish production has increased by 19 per cent over the last three years.<sup>32</sup> The Blue Revolution scheme has been providing support for better management of the fisheries resources for all including the coastal fishing people.

India has adopted welfare programs for its coastal fishing people. These programs can be broadly divided into two categories: protective and promotional. The former is concerned with the short-run task of preventing a decline in standards of living, and the latter with enhancing the long-term general living standards by improving the necessary capability of the people. There are three essential programs for the welfare of traditional fishers: (i) Group Accident

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<sup>28</sup> *National Action Plan on Climate change*, India

<[http://www.indiawaterportal.org/sites/indiawaterportal.org/files/National%20Action%20Plan%20on%20Climate%20Change%20\(NAPCC\)\\_Prime%20Ministers%20Council%20on%20Climate%20Change\\_Government%20of%20India\\_%202008.pdf](http://www.indiawaterportal.org/sites/indiawaterportal.org/files/National%20Action%20Plan%20on%20Climate%20Change%20(NAPCC)_Prime%20Ministers%20Council%20on%20Climate%20Change_Government%20of%20India_%202008.pdf)>.

<sup>29</sup> Planning Commission, *Report of the Working Group on DEVELOPMENT AND MANAGEMENT OF FISHERIES AND AQUACULTURE for the XII Five Year Plan: 2012–17* (India 2011)107.

<sup>30</sup> Department of Animal Husbandry, Dairying and Fisheries, *About Department* <<http://dahd.nic.in/about-us/divisions/fisheries>>.

<sup>31</sup> Jagdish Kumar, 'India's Blue Revolution Focuses Government, Private Sector on Upping Fish Production' *Seafood Source*, (Web Page, 15<sup>th</sup> Jan 2018), <<https://www.seafoodsource.com/news/supply-trade/indias-blue-revolution-focuses-government-private-sector-on-upping-fish-production>>.

<sup>32</sup> Ibid.

Insurance Scheme for Active Fishermen, (ii) Development of Model Fishermen Village and (iii) Fishermen Insurance, which provides Rs 50,000 in case of death or permanent disability and Rs 25,000 in case of partial disability. About 1.22 million fishermen were insured during 2000–01 under this scheme. The coastal fishing people have been accessing this opportunity which enhances their socio-economic protection.

Under the Development of Model Fishermen Villages program, essential amenities such as housing, drinking water and community hall are provided to fishers. Concomitantly, both the protective and promotional social security schemes were increasing gradually.<sup>33</sup> During the past four years (2014–15 to 2017–18), 59,131 beneficiaries were trained in various aspects of fisheries by various fisheries institutions through short-duration and long-duration training programs, with a budget outlay of Rs 12.55 crores.<sup>34</sup> Further, in 2018–19 budget, the Indian Government announced the creation of a separate Fisheries and Aquaculture Infrastructure Development Fund with a budget of Rs 8,000 crores.<sup>35</sup>

In addition to the national policies, there is a fisheries policy for West Bengal, a coastal area of India. The 2015 *West Bengal Fisheries Policy* has been adopted by micro, small, medium and large fishery enterprises in the whole of West Bengal for the substantive development of the fisheries sector. Through various innovative initiatives and the promotion of a conducive investment climate, the policy is designed to give the sector a global competitive edge.<sup>36</sup>

The policy for the sustainable utilization of marine fisheries through the conservation of coastal ecosystems under the *National Policy on Marine Fisheries 2017* is a key characteristic of the national policy framework for the improvement of the socio-economic and environmental conditions of the coastal fishing people in India. This Policy was accelerated to include the Indian government's Blue Revolution programme, which has largely benefited the coastal fishing people. Almost 50 per cent of the coastal fishers who were sessional fishers have

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<sup>33</sup> Bindhu Varghese, 'Environmental Impacts of Coastal Aquaculture with Particular Reference to the Treatment Protocol' in NR Menon et al (eds) *Proc. International Workshop on Aquaculture and Environment*, (The Centre for Integrated Management of Coastal Zones and Cochin University of Science and Technology, 2001) 114-120.

<sup>34</sup> National Fisheries Development Board, *Blue Revolution -An Overview* <<http://nfdb.gov.in/PDF/Blue%20Revolution%20-%20An%20Overview.pdf>>

<sup>35</sup> National Fisheries Development Board, *Blue Revolution – An overview* <<http://nfdb.gov.in/PDF/Blue%20Revolution%20-%20An%20Overview.pdf>>.

<sup>36</sup> Preamble of The *West Bengal Fisheries Policy*, 2015

become fully employed throughout the year after the Blue Revolution programme.<sup>37</sup> The Environmental Policy has contributed to the protection of the coastal environment through a government project for the protection of mangroves, coral reefs and coastal forests in India.<sup>38</sup> The National Action Plan for Climate Change (NAPCC) successfully identified the priority areas for national actions to mitigate the impacts of climate change, focusing on the coastal people of India.<sup>39</sup> Moreover, the welfare programmes for the socio-economic wellbeing of these coastal fishing people increased their necessary capability to harvest more fisheries from coastal waters throughout the year.<sup>40</sup>

## **2      *National Legislation Relating to Fisheries and Coastal Fishing People in India***

The need for fisheries legislation in India was emphasised as far back as in 1873, especially in order to conserve fishery resources.<sup>41</sup> According to the Indian constitution, the power to enact laws is split between India's central government and the Indian states. The state legislatures of India have the power to make laws and regulations with respect to such matters as water and land fisheries, the preservation, protection and improvement of stock, and the prevention of animal disease.<sup>42</sup> In order to understand the impact of climate change on the fisheries sector in India, it is necessary to understand the current mechanism of fisheries and environmental management, and the relevant laws and regulations.

*The Indian Fisheries Act, 1897* is the primary relevant law. It was enacted at the time of British India and its primary object was to protect the water and the fishes in this water.<sup>43</sup> The Act provided for penalties for the destruction of fisheries. Various state governments have issued

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<sup>37</sup> Kumar, Dhande et al, 'Socio-Economic Status of Fishers of Coastal India' (2017) 6 *International Journal of Current Microbiology and Applied Sciences* 2271.

<sup>38</sup> India's coastal, marine ecosystems facing destruction, says environmental organisation<  
<https://www.deccanherald.com/science-and-environment/indias-coastal-marine-ecosystems-facing-destruction-says-environmental-organisation-846792.html>>

<sup>39</sup> Harshal T. Pandve, 'India's National Action Plan on Climate Change' (2009), *Indian Journal of occupational & Environmental Medicine*, Vol 13(1), p17-19

<sup>40</sup> Kumar, Dhande et al, 'Socio-Economic Status of Fishers of Coastal India' (2017) 6 *International Journal of Current Microbiology and Applied Sciences* 2268.

<sup>41</sup> Subhendu Datta, 'Inland Fisheries Legislation in India' (2014), Central Institute of Fisheries Education and Indian Council of Agricultural Research,

<sup>42</sup> 'Fishing in India', *Wikipedia*, <[https://en.wikipedia.org/wiki/Fishing\\_in\\_India](https://en.wikipedia.org/wiki/Fishing_in_India)>.

<sup>43</sup> Gazette of India, 1893, Pt. V, 101; Report of the Select Committee See Gazette of India, 1897, Pt. V, p. 15.

regulations based on the *Indian Fisheries Act, 1897*, each related to the protection of marine fisheries. The regulations are listed below.

- (i) *The Indian Fisheries Act, No. IV of 1987, Government of India*
- (ii) *The Indian Fisheries Act, as adopted and applied by the State of Saurashtra, 1897*
- (iii) *The Mysore Game and Fish Preservation Act 2 of 1901, Government of Mysore*
- (iv) *The Game and Fish Protection Regulation Act 12 of 1914, Government of Travancore (1914) (modified 1921)*
- (v) *Cochin Fisheries Act 3 of 1917 (modified 1921), Government of Cochin*
- (vi) *Andaman and Nicobar Islands Fisheries Regulation 1 of 1938*
- (vii) *The United Provinces Fisheries Act 45 of 1948*
- (viii) *Government of Travancore-Cochin Fisheries Act 34 of 1950*
- (ix) *The Maharashtra Fisheries Act 1960 (modified 1962), Government of Maharashtra*
- (x) *The Indian Fisheries (Pondicherry Amendment) Act 18 of 1965*
- (xi) *The Indian Wildlife Act 1972*
- (xii) *The Territorial Waters, Continental Shelf, Exclusive Economic Zone and Other Maritime Zones Act, 1976*
- (xiii) *The Marine Products Export Development Authority Act, 1972*
- (xiv) *The Maritime Zones of India (Regulation of fishing by foreign vessels) Act, 1981*
- (xv) *The Kerala Marine Fishing Regulation Act and Rules 1980 (Act 10 of 1981)*
- (xvi) *The Goa Marine Fishing Regulation Act, 1980*
- (xvii) *The Maharashtra Marine Fishing Regulation Act 1981, Government of Maharashtra*
- (xviii) *The Orissa Marine Fishing Regulation Act 1981*
- (xix) *The Orissa Development Authority Act, 1982 (Orissa Act 14 of 1982)*
- (xx) *The Orissa Marine Fishing Regulation Rules, 1983*
- (xxi) *The Tamil Nadu Marine Fishing Regulation Rules 1983*
- (xxii) *The Karnataka Marine Fish Jog Regulation Act, 1986*
- (xxiii) *The Andhra Pradesh Marine Fishing Regulation Act, 1994*
- (xxiv) *The Gujarat Fisheries Act, 2003*
- (xxv) *Andaman and Nicobar Marine Fishing Regulation Act, 2003*

(xxvi) *Lakshadweep Marine Fishing Regulation—Rules, 2004*

Although there has been no specific legislation for the coastal fishing people, the Indian Fisheries Act provides the general provisions for the protection of the fishing people including the coastal fishing people.

As per the Constitution of India, the inland and coastal marine fisheries (up to 12 nautical miles) are under the control of the state governments. The area beyond 12 nautical miles and up to the end of the EEZ is within the jurisdiction of the Central Government. The Central Government provides overall policies and financial assistance to the state governments for implementing many fisheries schemes and programs. Each coastal state (or province) has enacted its own *Marine Fishing Regulation Act* (MFRA) based on a model Bill prepared by the Government of India. The MFRA has the powers to regulate, restrict or prohibit fishing in specified areas by either the class of fishing vessel, the number of vessels or the type of fish caught and regulated, and to restrict or prohibit gear used for fishing.<sup>44</sup>

Apart from the fishing law, there are basically two laws related to environmental protection in India: The *Environment (Protection) Act 1986* and the *Biological Diversity Act 2002*. The *Environment (Protection) Act 1986* was enacted in the wake of the Bhopal tragedy. It is an umbrella act providing the framework for local, state and federal agencies to work together to protect the environment and prevent hazards to humans and other living beings and to improve the environment.<sup>45</sup> This law empowers the Central Government to take necessary measures to protect and improve the environment and it also gives authority to the Central Government to take all necessary steps to prevent environmental pollution. The *Biological Diversity Act 2002* aims for the preservation of biological diversity in India and provides a mechanism for the equitable sharing of benefits arising out of the use of traditional biological resources and knowledge.<sup>46</sup> This obligation of the government is to take action to mitigate the impacts of climate change and environmental damage for all, in particular, the coastal fishing people who are among the worst victims of climate change and environmental damage.

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<sup>44</sup> Ramesh et al, above n 23.

<sup>45</sup> Preamble, *Environment Protection Act 1986*, India.

<sup>46</sup> *The Biological Diversity Act 2002*, Act no. 18 of 2003 (India).



*The Environmental Impact Assessment Notification (1994)* states that a new project, or the expansion or modernisation of any existing industry or project, is subject to the submission of an Environmental Impact Assessment Report to the Ministry of Environment and Forests. Specific provisions are made with respect to mining; pit-head thermal power stations; hydro-power, major irrigation projects and/or their combination including flood control; ports and harbours; and prospecting and exploration of major minerals.<sup>47</sup> After an eighteen-month long process, the *Coastal Regulation Zone (CRZ) Notification 2011* was formally published. This replaces the *CRZ Notification, 1991*. This notification reconciles three objectives: protection of livelihoods of traditional fishing communities, preservation of coastal ecology and promotion of economic activity that is located in coastal regions. The *CRZ Notification, 2011* demonstrates that the Ministry of Environment and Forests is conscious of the need to ensure a demonstrably better balance between the equally urgent imperatives of faster economic growth and deeper environmental conservation.<sup>48</sup> The deeper environmental conservation helps the coastal fishing people to have access to sustainable economic activity.

Apart from these national policies, national legislation also played an important role in the protection of the socio-economic rights of the coastal fishing people in India. The Indian Fisheries Act of 1897 makes necessary provisions for the conservation of coastal fisheries by prohibiting the use of any destructive means of fishing.<sup>49</sup> Moreover, the Fisheries Act provides legislative power to the State government to adopt necessary laws and regulations for the conservation of the fisheries resources within that State.<sup>50</sup> In addition to the Fisheries Act, the Environment (Protection) Act of 1986 has provisions for the protection of the coastal and marine environment. Although the Environment Act does not make any explicit provision for the protection of the coastal fishing people from environmental damage, the Act is indirectly

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<sup>47</sup> Environmental Impact Assessment Notification 1994 <<https://www.ecolex.org/details/legislation/environmental-impact-assessment-notification-1994-lex-faoc004656/>>.

<sup>48</sup> Coastal Regulation Zone (CRZ) Notification 2011 <<http://www.indiaenvironmentportal.org.in/content/321917/coastal-regulation-zone-crz-notification-2011/>>.

<sup>49</sup> Section 4, The Indian Fisheries Act, 1897 (Act No. 4 of 1897)

<sup>50</sup> Section 5, The Indian Fisheries Act, 1897 (Act No. 4 of 1897)

relevant for implementation through the right to safe environment mentioned in the preamble of the Act.<sup>51</sup>

### **3 Institutional Framework Relating to Fisheries and Coastal Fishing People in India**

India is exposed on all fronts to the impacts of climate change due to its unique geographical features: a long coastline of 7,500 km (5,423 km in peninsular India and 2,094 km in the Andaman, Nicobar and Lakshadweep Islands), Himalayan mountain ranges and vast desert stretches.<sup>52</sup> Climate change will affect poor people more harshly, those who typically are slum dwellers, squatters, migrants, and people living in informal settlements situated in vulnerable areas. Following is a list of essential programs implemented at the national level to neutralise the effect of climate change in the country.<sup>53</sup>

#### **(a) Prime Minister's Council on Climate Change**

The Prime Minister's office set up a high-level advisory group on climate change issues which includes government representatives and non-government members. The Council coordinates national action plans for the assessment, adaptation and mitigation of climate change. It also advises the Government on proactive measures that can be taken by India to deal with the challenge of climate change. It will also facilitate inter-ministerial coordination and guide policy in relevant areas.<sup>54</sup>

#### **(b) National Institute for Climate Change Studies and Actions**

The Government of India has set up a National Institute for Climate Change Studies and Actions (NICCA) under the Climate Change Action Programme (CCAP) of the Ministry of Environment, Forests and Climate Change. Its objective is to support all scientific, technical and analytical studies relating to climate change policy and implementation strategies. The institute has an outlay of Rs. 25 crores for the 12th Five Year Plan out of an allocated budget of Rs. 290 crores

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<sup>51</sup> Preamble, The Environment (Protection) Act 1986 (Act No.29 of 1986)

<sup>52</sup> R.Dhiman,J.Tirodkar and A.B.Inamdar, 'Integrated Sustainable Coastal Development Initiatives along Maharashtra Coast, Using ICM Guideline'(2016) Sahyadri: Western Ghats Biodiversity Information System, Sahyadri E-news: Issue LXIII, 256

<sup>53</sup> Salim et al, above n 13.

<sup>54</sup> IAS Preparation, *Ecology and Environment*, <[www.iaspreparationonline.com/category/gs-3-general-studies-iii-2/ecology-and-environment/](http://www.iaspreparationonline.com/category/gs-3-general-studies-iii-2/ecology-and-environment/)>.

for CCAP.<sup>55</sup> The Ministry plans various science initiatives as part of the CCAP. These include the National Carbonaceous Aerosols Programme (NCAP), Long Term Ecological Observatories (LTEO) and Coordinated Studies on Climate Change for North East Region (CSCCNE). The NCAP is a significant program involving multi-institutional and multi-agency study as well as the Action Programme (CCAP).<sup>56</sup>

**(c) *Indian Network for Climate Change Assessment (INCCA)***

In 2009, the Ministry of Environment and Forests (MoEF) announced the launch of the Indian Network for Climate Change Assessment (INCCA)<sup>57</sup>. In recognition of the need for more accurate, reliable and comprehensive understanding of the implications of climate change, the Indian Network for Climate Change Assessment (INCCA), comprising 127 research institutions, was tasked with researching the science of Climate Change and its impacts on different sectors of the economy across various regions of India.<sup>58</sup>

**(d) *National Fisheries Development Board***

The National Fisheries Development Board (NFDB) was established in 2006 as an autonomous organisation under the administrative control of the Department of Animal Husbandry, Dairying and Fisheries in the Ministry of Agriculture and Farmers Welfare. Its goal is to enhance fish production and productivity in the country and to coordinate fishery development in an integrated and holistic manner. The National Fisheries Development Board has a mission to expand fishery and aquaculture production.<sup>59</sup> The primary objective of the NFDB is to enhance fish production and productivity, and to strengthen infrastructure facilities for the overall development of the fisheries sector. A secondary objective is to realise the untapped potential

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<sup>55</sup> Ministry of Earth Science, 'Global Warming', (Press Release, 26 November 2014) <<http://pib.nic.in/newsite/PrintRelease.aspx?relid=111906>>.

<sup>56</sup> Salim et al, above n 13.

<sup>57</sup> Subodh K Sharma and Rita Chauhan, 'Climate Change Research Initiative: Indian Network for Climate Change Assessment' (2011) 101 *Current science*.

<sup>58</sup> Salim et al, above n 13.

<sup>59</sup> Surathkal Gunakar et al, 'Chapter-14 Protections for Small-Scale Fisheries in India: A Study of India's Monsoon Fishing Ban' (2017) *Ocean and Coastal Management*, 291-311

of the fisheries sector and accelerate its growth by the application of modern technology backed by research and development.<sup>60</sup>

The NFDB not only ensures nutritional security among the population but also significantly contributes to agricultural exports, providing gainful employment and livelihood support to more than 14 million people engaged in fisheries activities.<sup>61</sup> In the 12 years of its existence, the NFDB has conducted numerous developmental activities that have brought positive changes in production, productivity and post-harvest operations in the fisheries sector.<sup>62</sup>

The NFDB launched the web portal Mera Matsya Dhan (MMD) with a view to realising the full potential of Indian fisheries through the coordination of agencies and public–private partnerships. The Board hopes to tap the full potential in fisheries and aquaculture and improve nutritional security (as well as the livelihoods and empowerment of women). The MMD web portal can be used to submit online proposals for financial assistance by individuals, fishermen societies, fisherwomen SHGs, NGOs and others from anywhere in the country. NFDB officials are being deputed across the country to train local fisheries officers in using the MMD web portal.<sup>63</sup>

#### **(e) Fisheries Management Authority**

The Department of Animal Husbandry, Dairying and Fisheries (DAHD&F) in the Ministry of Agriculture and Farmers' Welfare has played a prominent socio-economic role in India<sup>64</sup>. The Mercantile Marine Department (MMD) under the Directorate General of Shipping (Ministry of Shipping) is responsible for the registration of fishing vessels of all categories. Licences for fishing are provided by the respective Departments of Fisheries (DoF) of the coastal states and union territories. Fisheries management in India can be divided into two categories: fisheries in the EEZ (12–200 nm from shore), which is the responsibility of the central government, and fisheries in territorial waters (0–12 nm from shore) which is the responsibility of state

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<sup>60</sup> National Fisheries Development Board, *Blue Revolution- an overview* (2017) <<http://nfdb.gov.in/PDF/Blue%20Revolution%20-%20An%20Overview.pdf>>.

<sup>61</sup> Ibid.

<sup>62</sup> National Fisheries Development Board E-Bulletin, (2018) 1(1&2) <[http://nfdb.gov.in/PDF/Bulletin/E-Bulletin\\_April-May\\_2018.pdf](http://nfdb.gov.in/PDF/Bulletin/E-Bulletin_April-May_2018.pdf)>.

<sup>63</sup> NFDB E-Bulletin (2018) 1(1&2) <[http://nfdb.gov.in/PDF/Bulletin/E-Bulletin\\_April-May\\_2018.pdf](http://nfdb.gov.in/PDF/Bulletin/E-Bulletin_April-May_2018.pdf)>.

<sup>64</sup> Department of Animal Husbandry, Dairying and Fisheries, *Annual Report 2017-18* (Ministry of Agriculture and farmers welfare, Government of India).

governments<sup>65</sup>. The Department of Animal Husbandry, Dairying and Fisheries (DAHD&F) undertakes the management of fisheries for the central government with several ministries assuming various responsibilities. The institutional framework of fisheries management in India is set out in the following table.<sup>66</sup>

Duty or action	Responsible body
<ul style="list-style-type: none"> <li>• Deep sea fishing</li> <li>• Survey &amp; assessment of fisheries resources</li> <li>• Research</li> <li>• Training &amp; extension</li> <li>• Fisheries development</li> </ul>	Ministry of Agriculture/DAHDF Indian Council of Agricultural Research Fisheries Survey of India, National Fisheries Development Board, Ministry of Earth Sciences (MoES)
<ul style="list-style-type: none"> <li>• Protection of endangered species (Wildlife Protection) Act, 1972)</li> </ul>	MoEF
<ul style="list-style-type: none"> <li>• Fish processing</li> <li>• Processing units</li> <li>• Exports</li> </ul>	Ministry of Food Processing Industries/ Ministry of Commerce & Industry (MoCI) MPEDA and NFDB
<ul style="list-style-type: none"> <li>• Seafood exports</li> <li>• Quality control</li> </ul>	MoCI-MPEDA Export Inspection Council
<ul style="list-style-type: none"> <li>• Law of the Sea Negotiations</li> </ul> Ministry of External Affairs	Ministry of External Affairs
<ul style="list-style-type: none"> <li>• Potential fishing zones</li> <li>• Monitoring ocean pollution</li> </ul>	Ministry of Earth Sciences (MoES)
<ul style="list-style-type: none"> <li>• Fishing vessel industry</li> <li>• Major fishing ports</li> <li>• Minor fishing ports</li> </ul>	Ministry of Shipping, Road Transport and Highways, Ministry of Agriculture, State Governments
<ul style="list-style-type: none"> <li>• Fisheries in Territorial Waters</li> </ul>	State Governments
<ul style="list-style-type: none"> <li>• Protection of marine biodiversity</li> <li>• Protection of coastal habitats</li> <li>• The focal point for Ramsar, CITES, CMS &amp; CBD Conventions</li> </ul>	Ministry of Environment and Forests (MoEF) Ministry of Earth Sciences MoES

<sup>65</sup> World Bank, *Marine Fisheries: Issues, Opportunities and Transitions for Sustainable Development*, Report No. 54259 (India, 2010)24

<<http://documents.worldbank.org/curated/en/513221468040751464/pdf/542590ESW0whit0ries0Report00PUBLIC0.pdf>>.

<sup>66</sup> Bay of Bengal Large Marine Ecosystem (BOBLME), *Review of impacts of Illegal, Unreported and Unregulated fishing on developing countries in Asia*, Final report, November 2015.

<ul style="list-style-type: none"> <li>• Infrastructure</li> </ul>	Ministry of Agriculture, MoCI, MPEDA
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Source: India's 12th Five Year Plan on the Development and Management of Fisheries and Aquaculture

**(f) Coastal Aquaculture Authority**

The *Coastal Aquaculture Authority Act, 2005* (24 of 2005) provides for the establishment of the Coastal Aquaculture Authority to regulate activities connected with coastal aquaculture. The act mandates the Central Government to take all such measures deemed necessary to ensure that coastal aquaculture does not cause any detriment to the coastal environment and that the concept of responsible coastal aquaculture as described in the guidelines is followed to protect the livelihood of various sections or groups of people living in the coastal areas.<sup>67</sup>

**(g) National Institution for Transforming India**

The National Institution for Transforming India (NITI) is a policy think tank established with the aim to achieve sustainable development goals and to enhance cooperative federalism by fostering the involvement of state governments in the economic policy-making process using a bottom-up approach<sup>68</sup>. From 1947 to 2017, the Indian economy was premised on the concept of planning. This was carried through the Five-Year Plans, developed, executed, and monitored by the Planning Commission (1951–2014) and the NITI Aayog (2015–2017).<sup>69</sup>

**(h) Marine Products Export Development Authority**

The *Marine Products Export Development Authority Act, 1972* (No. 13 of 1972) was established for the development of the marine products industry.<sup>70</sup> The role envisaged for the MPEDA under the act is comprehensive, covering fisheries of all kinds, increasing exports, specifying standards, processing, marketing, extension and training in various aspects of the fishing

<sup>67</sup> Coastal Aquaculture Authority, Ministry of Fisheries Animal and Husbandry and Dairying, Government of India.

<sup>68</sup> 'NITI Aayog', *Wikipedia* [https://en.wikipedia.org/wiki/NITI\\_Aayog](https://en.wikipedia.org/wiki/NITI_Aayog).

<sup>69</sup> 'Five Year Plans of India', *Wikipedia* [https://en.wikipedia.org/wiki/Five-Year\\_Plans\\_of\\_India](https://en.wikipedia.org/wiki/Five-Year_Plans_of_India).

<sup>70</sup> *The Marine Products Export Development Authority Act 1972*, <<http://legislative.gov.in/sites/default/files/A1972-13.pdf>>.

industry.<sup>71</sup> The government of India has established various high-level advisory groups in order to combat climate change, including government and non-government officials. The government has also provided a generous budget to aid people severely affected by climate change. Many other important bodies such as the Coastal Agriculture Committee, the Marine Products Export Development Authority as well as the National Institution for Transforming India were formed. Their purpose was to emphasize change and development in fields such as marine industries, export, preservation, and management, and also to change the infrastructure of several governmental bodies. It also plays a key role in reducing the effects of pollution and is used to brainstorm new ways for coastal fishing people to transition into a more environmentally friendly livelihood.

### **B    *Legal and Institutional Frameworks to Address Climate-Induced Impacts on Coastal Fishing People in Sri Lanka***

Sri Lanka has a coastline of 1,720 km in length. It provides a biologically rich and diverse coastal environment with unique ecosystems. This coastal area contains most essential ecosystems, such as lagoons, estuaries, mangroves, salt marshes, sand dunes, beaches, coastal marshy wetlands and various water bodies.<sup>72</sup> The coastal area is densely populated, with more than 65 per cent of the total country's population.<sup>73</sup> The fishery sector is important as a source of food, employment and income as well as foreign exchange.<sup>74</sup> The contribution of the fisheries sector to the GDP of Sri Lanka has increased from 1.6% in 2009 to 1.8% in 2014.<sup>75</sup> Marine and inland fisheries production demonstrated significant growth in 2013 as well.<sup>76</sup>

Sri Lanka has been a signatory to several regional and international treaties and conventions that directly and indirectly support wetland conservation and wise use. The Sri Lankan constitutional directives have also resulted in the formulation and implementation of several

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<sup>71</sup> The Marine Products Export Development Authority, <[https://en.wikipedia.org/wiki/Marine\\_Products\\_Export\\_Development\\_Authority](https://en.wikipedia.org/wiki/Marine_Products_Export_Development_Authority)>.

<sup>72</sup> K.W.G Rekha Nianthi and Rajib Shaw, 'Climate Change and Its Impact on Coastal Economy of Sri Lanka' in R Krishnamurthy et al. (eds) *The Global Challenge (Research Publishing 2006)* 1

<sup>73</sup> Ibid 2.

<sup>74</sup> Sharma Chandrika, *Coastal Area Management in South Asia: A Comparative Perspective*, (South Asia Workshop on Fisheries and Coastal Area Management 26 September–1 October 1996) <[aquaticcommons.org/277/1/Cam\\_background.pdf](http://aquaticcommons.org/277/1/Cam_background.pdf)>.

<sup>75</sup> Ministry of Fisheries and Aquatic Resources Development, *Fisheries statistics* (Maldives) <[www.fisheries.gov.lk](http://www.fisheries.gov.lk)>.

<sup>76</sup> Tharindu Nimantha Bandara Herath and Kumudu Radampola, 'Fisheries Education in Sri Lanka: Current Status, Constraints and Future Outlook' (2017) 5(3) *Journal of Fisheries* 535–540

policies.<sup>77</sup> Sri Lanka is a member of the World Trade Organization (WTO), the South Asian Association for Regional Cooperation (SAARC) and the Network of Aquaculture Centres in Asia and the Pacific (NACA). It is also a party to the Convention on Biological Diversity (CBD), the Biosafety Protocol and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).<sup>78</sup> Sri Lanka has enacted various acts, rules and regulations—and introduced a national framework—relating to the rights and interests of fishing people (especially with regards to reducing the impact of climate change). Sri Lankan legal frameworks addressing climate-induced impacts on coastal fishing people are discussed in the following sections.

### **1 *National Policies Relating to Fisheries and Coastal Fishing People in Sri Lanka***

Sri Lanka has a *National Climate Change Policy*, adopted in 2011. This policy was developed to provide high-level guidance and direction on climate change response for all stakeholders, with a policy focus on environmentally-friendly economic development.<sup>79</sup> The National Climate Change Adaptation Plan of Sri Lanka 2015–2024 is in the process of being developed with all relevant stakeholders by the Climate Change Secretariat. *Ten Year Development Policy Framework of the Fisheries and Aquatic Resources Sector 2007–2016* is another significant document, prepared within the overall policy framework of the *Mahinda Chinthanaya*. It articulated fisheries and aquaculture sector development objectives to improve the nutritional status and food security of the people by increasing the national fish production, minimising post-harvest losses and improving the quality and safety of fish products to acceptable standards. In addition, policy framework aimed to increase employment opportunities in fisheries and related industries, conserve the coastal and aquatic environment, increase foreign

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<sup>77</sup> Sevvandi Jayakody et al, 'Report Gap Assessment on Mainstreaming the Conservation and Sustainable Use of Wetlands and their Resources into National Planning Processes in Sri Lanka ((018) <[http://www.ramsar.org/sites/default/files/documents/library/mainstreaming\\_wetlands\\_into\\_national\\_planning\\_sri\\_lanka.pdf](http://www.ramsar.org/sites/default/files/documents/library/mainstreaming_wetlands_into_national_planning_sri_lanka.pdf)>.

<sup>78</sup> FAO, Fisheries and aquaculture department, National Aquaculture Legislation Overview Sri Lanka <[http://www.fao.org/fishery/legalframework/nalo\\_sri-lanka/en](http://www.fao.org/fishery/legalframework/nalo_sri-lanka/en)>.

<sup>79</sup> Ministry of Environment and Renewable Energy, Democratic Socialist Republic of Sri Lanka, *The National Climate Change Policy of Sri Lanka* (2011).



exchange earnings from fish products and improve the socio-economic status of the fisher community.<sup>80</sup>

The Coastal Zone Management Plan (CZMP) is another important national plan in Sri Lanka for coastal resources management, adopted by the Coast Conservation Department (CCD) for management of the Coastal Zone. The CZMP was prepared in 1990 as mandated by the *Coast Conservation Act No 57 of 1981*. It has since been updated twice: in 1997 and 2004. The amended Sri Lanka Coastal Zone Management Plan – the Cabinet of Ministers approved 2004 on 20<sup>th</sup> July 2005 and the plan is implemented with effect from the date of Gazette notification.<sup>81</sup> The policies to be adopted, and the strategies and actions required for effective management of the coastal zone, are based on the recognition that (a) CCD is only one of many institutions to have jurisdiction over the management of coastal resources, (b) proposed management measures have to be socially and politically acceptable and (c) planning has to be based on a realistic assessment of the actual conditions.<sup>82</sup>

Sri-Lanka has adopted the National Biodiversity Strategy and Action Plan (NBSAP). The NBSAP is intended to protect bioregions that are considered a high priority for conservation, such as wetlands. According to the Department of Wildlife Conservation, most protected areas have been declared to protect the catchment of significant reservoirs and riverine ecosystems.<sup>83</sup> In Sri Lanka, one of the most essential non-sectorial policies is the *National Environment Policy and Strategy* of the Ministry of Environment and Natural Resources (2003) which assigned considerable significance to fisheries, aquaculture and coastal area management. Sri Lanka has undertaken to develop a national fisheries management plan, incorporating the management plans of different sectors into one overall plan.<sup>84</sup>

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<sup>80</sup> Claude Fernando, *National Report on Current Fisheries and Aquaculture Policies Relevant to the Regional Fisheries Livelihood Programme (RFLP) Outputs* (2010) <<http://www.fao.org/3/a-ar476e.pdf>>.

<sup>81</sup> Ministry of Fisheries and Aquatic Resources, Sri Lanka, *Sri Lanka Coastal Zone Management Plan 2004, No.1429/11* (January 24, 2006).

<sup>82</sup> *Sri Lanka Coastal Zone Management Plan 2014*, <<https://www.scribd.com/document/232140886/Sri-Lanka-Coastal-Zone-Management-Plan-2014>>.

<sup>83</sup> Sevvandi Jayakody, *Report Gap Assessment on Mainstreaming the Conservation and Sustainable Use of Wetlands and their Resources into National Planning Processes in Sri Lanka* (2018) <[https://www.ramsar.org/sites/default/files/documents/library/mainstreaming\\_wetlands\\_into\\_national\\_planning\\_sri\\_lanka.pdf](https://www.ramsar.org/sites/default/files/documents/library/mainstreaming_wetlands_into_national_planning_sri_lanka.pdf)>.

<sup>84</sup> BOBLMEP, *National Report Sri Lanka 87*, <[https://www.booblme.org/documentRepository/Nat\\_Sri\\_Lanka.pdf](https://www.booblme.org/documentRepository/Nat_Sri_Lanka.pdf)>.

In Sri Lanka, Coastal and Marine Area Management promises to restrict, regulate and where necessary prohibit activities in the coastal zone to minimise or eliminate the adverse impacts in relation to coastal erosion. It identifies coastal erosion trends and regulates activities that are a threat to coastal biodiversity.<sup>85</sup> It also encourages cooperation between countries in the region for conserving the marine and coastal environment.<sup>86</sup>

Sri Lanka has developed the Action Plan for the Haritha Lanka (Green Sri Lanka) Programme. A National Council for Sustainable Development (NCSD) was established by the government under the Haritha Lanka Programme to function as a national platform to launch and promote the process of achieving sustainable development. The secretariat facilities for the NCSD will be provided by the Ministry of Environment and Natural Resources.<sup>87</sup> The Haritha Lanka Programme has identified climate change, land degradation, loss of forest cover and pollution as areas to be addressed, either by mitigation or adaptation. While the climate change mission in Haritha Lanka has given more weight to strategies and actions targeting mitigation (such as reducing GHG emissions), it provides adaptation actions in areas of infrastructure vulnerability, land-use zoning and rainwater harvesting.<sup>88</sup>

The 2003 *National Environment Policy* aims to promote the sound management of Sri Lanka's environment, balancing the need for social and economic development and environment integrity. It also aims to manage the environment by linking the activities, interests and perspectives of stakeholders as well as to ensure environmental accountability.

## **2 Legislation Relating to Fisheries and Coastal Fishing People in Sri Lanka**

The 1996 *Fisheries Aquatic Resources Act* is the principal legal instrument relating to the fisheries sector under which several regulations have been framed for the management of

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<sup>85</sup> Ministry of Environment and Natural Resources, *National Environment Policy and Strategies*, 11

<<http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/laws/4818.pdf>>

<sup>86</sup> Ministry of Environment and Natural Resources, *National Environmental Policy and Strategies* (2003) <<https://www.serendibleisure.com/wp-content/uploads/2019/06/National-Environmental-Policy-2003.pdf>>.

<sup>87</sup> National Council for Sustainable Development, *National Action Plan for Haritha Lanka Programme*, (Presidential Secretariat, 2009) <[http://mmde.gov.lk/web/pdf/Harita\\_Lanka\\_Book\\_small.pdf](http://mmde.gov.lk/web/pdf/Harita_Lanka_Book_small.pdf)>.

<sup>88</sup> Sevvandi Jayakody, *Report Gap Assessment on Mainstreaming the Conservation and Sustainable Use of Wetlands and their Resources into National Planning Processes in Sri Lanka* (2018) <[https://www.ramsar.org/sites/default/files/documents/library/mainstreaming\\_wetlands\\_into\\_national\\_planning\\_sri\\_lanka.pdf](https://www.ramsar.org/sites/default/files/documents/library/mainstreaming_wetlands_into_national_planning_sri_lanka.pdf)>.

fisheries and aquaculture.<sup>89</sup> This Act addresses the management, regulation, conservation and development of fisheries and aquatic resources in Sri Lanka. As Sri Lanka has ratified several international conventions and agreements, it has an international obligation to formulate laws within its territory. Under these agreements, a few conservation and management measures have been adopted, including measures to combat illegal, unreported and unregulated fishing (IUU fishing) in high seas.<sup>90</sup> As a part of this international commitment, the Sri Lankan Parliament in 1996 enacted this Act in order to address the new fisheries management control and subsequently, this Act was amended in 2013 and 2015.<sup>91</sup> Regulation empowering authority by the minister under section 61 of the *Fisheries Act* allows for the introduction of regulations on the following aspects to strengthen the legal provisions related to 'Responsible Fishing'.<sup>92</sup> Primarily this act set up an administrative organogram headed by the Director General, who is responsible for its administration and for putting the act into effect.

Provision for licensing to fish in the high sea was introduced in Part Two of this Act in 2013. The Act strictly prohibits fishing in Sri Lankan waters without a license, and an authorised officer was appointed for granting licences and subsequent inspection.<sup>93</sup> Through this amendment in 2013, a new provision was introduced for licensing of the fishing boats in High Sea in the Sri Lanka's water territory and fixed specific criteria and a procedural and substantial requirement for fishing administration in High Sea in water territory in Sri Lanka.<sup>94</sup> Part 4 of the Act contains a provision for the protection of fishes.<sup>95</sup> Moreover, Part VI focuses on aquaculture.<sup>96</sup> Part X grants the Minister of Fisheries and Aquatic Resources general power to make regulations

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<sup>89</sup> Claude Fernando, *National Report on Current Fisheries and Aquaculture Policies Relevant to the Regional Fisheries Livelihood Programme (RFLP) Outputs* (2010) <<http://www.fao.org/3/a-ar476e.pdf>>.

<sup>90</sup> Meanwhile in 2008, EU issued a Regulation (EC Regulation 1005/2008) requiring all countries exporting fishery products to EU to implement the conservation and management measures prescribed under the international agreements, particularly by the Indian Ocean Tuna Commission (IOTC) from January 2010.

<sup>91</sup> Parliament approved amendment Act No. 35 of 2013 on November 2013 which is to incorporate international obligations, and 2nd amendment was incorporated to provide for enhanced sanctions (fines) in February 2015.

<sup>92</sup> Section 61 *Fisheries Aquatic Resources Act 1996*(No.2 of 1996)

<sup>93</sup> s 6 of *The Fisheries and Aquatic Resources Act No 2 of 1996*. Inserted through amendment of this Act in Parliament in 2013.

<sup>94</sup> s 14A of *The Fisheries and Aquatic Resources Act No 2 of 1996* by amendment, 2013.

<sup>95</sup> ch 4 (s 27–35) of *The Fisheries and Aquatic Resources Act No 2 of 1996*.

<sup>96</sup> ch 5 (s 38–45) of *The Fisheries and Aquatic Resources Act No 2 of 1996*.

regarding all matters stated in the Act, including the management and regulation of aquaculture.<sup>97</sup>

According to the *Fisheries and Aquatic Resources Act 1996*, portions of state land and Sri Lankan waters will be leased for aquaculture as the Minister deems necessary.<sup>98</sup> The control, regulation, and development (including pollution, conservation and utilisation) of Sri Lanka's water resources are regulated by the *Water Resources Board Act 1964*.<sup>99</sup> The act, however, does not specifically refer to water for aquaculture purposes. The need for an improved legal and institutional framework for water resources management has recently culminated in the preparation of a draft *Water Resources Act*, and the draft act establishes a National Water Resources Authority which will deal with applications for water entitlements, water allocation, groundwater issues, conservation of water resources and water resources planning.<sup>100</sup>

According to the *Lobster Fisheries Management Regulation 2000*, catching undersized lobsters and gravid female lobsters with soft shells is banned. In addition, lobster fishing is banned in February, September and October when breeding takes place. Under the *Local Fishing Boats (Life Jackets) Regulation, 2008*, all boat owners must ensure that life jackets are carried on boats and that arrangements are made for their use when required. The Sri Lankan government has also started issuing life jackets to the operators of small boats as an instructional and promotional measure.<sup>101</sup> Another important safety measure was introduced with the *Fishing Boat Safety (Design, Construction and Equipment) Regulations 2009* which apply primarily to the construction of large new fishing boats. However, more work needs to be done to ensure its effective implementation (including drafting and disseminating a manual that is understandable by fishers).

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<sup>97</sup> ch 10 (s 58–57) of *The Fisheries and Aquatic Resources Act No 2 of 1996*.

<sup>98</sup> s 31 of *Fisheries and Aquatic Resources Act, 1996*.

<sup>99</sup> *Water resources Board Act, 1964* as amended in 1998.

<sup>100</sup> referred in the website of Food and Agricultural Organisation of United Nations, <[http://www.fao.org/fishery/legalframework/nalo\\_sri-lanka/en](http://www.fao.org/fishery/legalframework/nalo_sri-lanka/en)>.

<sup>101</sup> Claude Fernando, *National Report on Current Fisheries and Aquaculture Policies Relevant to the Regional Fisheries Livelihood Programme (RFLP) Outputs* (2010) <<http://www.fao.org/3/a-ar476e.pdf>>.

Live *Fish Export and Import Regulations 1998* specify which species of fish cannot be exported live, which species of fish can be exported live with a licence issued by the Director of Fisheries and Aquatic Resources, and which species of fish cannot be imported live.<sup>102</sup> *Inland Fisheries Management Regulations, 1996* apply to all parts of the inland waters of Sri Lanka. They order that no person shall use or operate any type of fishing gear other than a rod and line for the purposes of taking fish in any part of the inland waters except under authority of a licence issued by the Director of Fisheries and Aquatic Resources.<sup>103</sup> Under the *Aquaculture Management Regulations 1996*, no person shall set up or operate an aquaculture enterprise without a licence issued by the Director of Fisheries and Aquatic Resources or other delegated officer.<sup>104</sup>

According to *Fishing Operations Regulations of 1996*, no person shall catch, land, transport, sell, buy, receive or have in their possession any marine mammals or turtles. Push net fishing, harpooning of marine mammals, moxi net fishing and trammel net fishing on coral reefs or rocks are prohibited.<sup>105</sup> Under the *Fish Processing Establishments Regulations 1998*, no person shall operate a fish processing establishment without a licence issued by the Director of Fisheries and Aquatic Resources. Licences shall be valid for one year and may be revoked earlier by the Director if the licensee has violated the terms of the licence.<sup>106</sup> *Fish Catch Data Collection Regulations 2014*, under the *Fisheries and Aquatic Resources Act, No. 2 of 1996*, decrees that any person who uses a mechanised fishing boat must register under the *Registration of Fishing Boats Regulations 1980*.<sup>107</sup>

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<sup>102</sup> Export and Import of Live Fish Regulations, 1998, <<https://www.ecolex.org/details/legislation/export-and-import-of-live-fish-regulations-1998-lex-faoc019672/>> accessed on 16-09-2019; Fernando Claude, National Report on Current Fisheries and Aquaculture Policies Relevant to the Regional Fisheries Livelihood Programme (RFLP) Outputs (2010), <http://www.fao.org/3/ar476e.pdf>

<sup>103</sup> Ecolex, *Inland Fisheries Management Regulations of 1996*

<<https://www.ecolex.org/details/legislation/inland-fisheries-management-regulations-of-1996-lex-faoc007960/>>.

<sup>104</sup> Ecolex, *Aquaculture Management Regulations of 1996*, <<https://www.ecolex.org/details/legislation/aquaculture-management-regulations-of-1996-lex-faoc007961/?q=sri+lanka+Aquaculture+Management+Regulations+%2C+1996>>.

<sup>105</sup> *Fishing Operations Regulations of 1996*, <<https://www.ecolex.org/details/legislation/fishing-operations-regulations-of-1996-lex-faoc007962/?q=sri+lanka+Fishing+Operations+Regulations+of+1996>>.

<sup>106</sup> Ecolex, *Fish Processing Establishments Regulations, 1998*, <<https://www.ecolex.org/details/legislation/fish-processing-establishments-regulations-1998-lex-faoc019674/?q=sri+lanka+Fish+Processing+Establishments+Regulations%2C+1998>>.

<sup>107</sup> Ecolex, *Fish Catch Data Collection Regulations, 2014*, <<https://www.ecolex.org/details/legislation/fish-catch-data-collection-regulations-2014-lex-faoc161908/?q=sri+lanka+Fish+Catch+Data+Collection+Regulations%2C+2014>>.

In addition, the Sri Lankan government has enacted several acts to improve the wellbeing of fishing people and to protect the environment. These include *The Fauna and Flora Protection (Amendments) Act of 1949*, which specifies protected fish species and provides for the establishment of natural reserves, nature reserves and sanctuaries within which no person shall take fish or other aquatic animals without a permit issued by the Director of the Department of Wildlife. The *Fishermen's Pension and Social Security Benefit Scheme Act 1990* provides periodic pensions to fishers in old age, provides insurance against physical disability and a gratuity in the event of the death of a fisher.<sup>108</sup> *Fisheries (Regulation of Foreign Fishing Boats) (Amendment) Act 2018* is an act to control fishing and related activities by foreign boats in Sri Lanka waters.<sup>109</sup>

The *Coast Conservation Act 1981* contains extensive legislation regarding coastal zone management and can play a significant role in mitigating climate-induced impacts on fishers. The act prohibits any person from engaging in a 'development activity' (including aquaculture) within the coastal zone unless a permit has been issued by the Director of Coast Conservation.<sup>110</sup> No permit will be issued unless it is consistent with the Coastal Zone Management Plan and has no adverse effect on the stability, productivity and environmental quality of the coastal zone. The Director may require the applicant to submit an Environmental Impact Assessment.<sup>111</sup>

The *National Environmental Act* makes provision for the protection, management and enhancement of the environment, especially for the prevention and control of pollution. The act establishes the Central Environmental Authority for its administration.<sup>112</sup> Part IV of the act requires certain projects to undergo an Initial Environmental Examination before they can be approved.<sup>113</sup>

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<sup>108</sup> The Democratic Socialist Republic of Sri Lanka, General Economic Data (2006), FAO  
<<http://www.fao.org/fi/oldsite/FCP/en/LKA/profile.htm>>.

<sup>109</sup> *Fisheries (Regulation of Foreign Fishing Boats) (Amendment) Act, No. 1 OF 2018*, Published as a Supplement to Part II of the Gazette of the Democratic Socialist Republic of Sri Lanka of February 09, 2018.

<sup>110</sup> Section 5 of *Coastal Conservation Act, 1981* and section 5 of this Act was inserted through the Amendment of this Act in 1988.

<sup>111</sup> s16 of *Coastal Conservation Act 1981*.

<sup>112</sup> ss2 and 3, *National Environmental Act 1980*.

<sup>113</sup> Ibid ss 15 and 16.

The *Marine Pollution Prevention Act 1981* provides for the prevention, reduction and control of pollution in Sri Lankan waters. This act establishes the Marine Pollution Prevention Authority to administer the act. The owner or the operator of a ship, offshore installation or pipeline is liable for any damage caused by the discharge, escape or dumping of any oil or other pollutant into Sri Lanka waters, onto the foreshore or anywhere which affects certain interests (including fishery interests).<sup>114</sup>

### **3 Institutional Frameworks for Fisheries and Coastal Fishing People in Sri Lanka**

The Ministry of Fisheries and Aquatic Resources Development is the central government ministry of Sri Lanka responsible for fisheries. The ministry is responsible for formulating and implementing national policy on fisheries and aquatic resource development.<sup>115</sup> The Ministry of Fisheries and Aquatic Resources (MFAR) and its constituent department, the Department of Fisheries and Aquatic Resources (DFAR), are the nodal agencies for the development of fisheries in Sri Lanka. The mandate of DFAR is the management, development and conservation of the fisheries and aquatic resources of Sri Lanka.

The Department of Fisheries oversees the development of the fisheries industry of Sri Lanka and assists the fisher community to raise their socio-economic conditions. DFAR is divided into six main divisions: Fisheries Management; Fisheries Industries; Monitoring, Control and Surveillance; Fishery Product Quality Control Division; Finance; and the Administration Division. The infrastructure of DFAR includes a head office located in Colombo, 15 District Assistant Directors' Offices along the coastal districts, and 148 Fisheries Inspectorate Divisions under the District Offices, which cover all fishing villages.<sup>116</sup>

The *National Aquaculture Development Authority of Sri Lanka Act (1998)* established the National Aquaculture Development Authority which has general policy responsibility for the development of the aquaculture sector in Sri Lanka.<sup>117</sup> The *Fisheries and Aquatic Resources Act* establishes control over the establishment and operation of an aquaculture enterprise. It

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<sup>114</sup> Para 1-2, *Marine Pollution Prevention Act (no 59) 1981*.

<sup>115</sup> Ministry of Fisheries and Aquatic Resources Development Sri Lanka official Website.

<sup>116</sup> John Peirce et al, *Review of Impacts of Illegal, Unreported and Unregulated Fishing on Developing countries in Asia*, (Report BOBLME-2015-Governance-15, November 2015).

<sup>117</sup> s 2, *National Aquaculture Development Authority of Sri Lanka Act, No. 53 of 1998*.

regulates the application, form, duration, renewal and cancellation of an aquaculture license (which is subject to such terms and conditions as may be required for the protection of the environment).<sup>118</sup> The license procedure and the requirements for establishing and operating an aquaculture enterprise are prescribed in the *Aquaculture Management Regulations (1996)*.<sup>119</sup> The Regulations indicate the authorising authority for each of four categories of aquaculture enterprises and specifies the procedures and requirements for granting a license in each category.<sup>120</sup>

The Fisheries and Aquatic Resources Advisory Council is chaired by Secretary of the Ministry of Fisheries. Its function is to form a nexus among all the other related departments, such as the National Institute of Fisheries and Nautical Engineering (established under the *National Institute of Fisheries and Nautical Engineering Act, 1998*), the National Aquatic Resource Research and Development Agency, and state industrial corporations.<sup>121</sup>

Sri Lanka's activities in regard to remedying the impacts of climate change and assisting fishing people, different acts, rules, regulation and legal frameworks, have been taken to maintain a safer and more eco-friendly approach to fishing and fisheries industries. The national legal framework, and the *Ten-Year Development Policy Framework of the Fisheries and Aquatic Resources Sector 2007–2016*, are two of the most important legislations the country has adopted. Along with national policies and laws, Sri Lanka as a country has ratified a number of international laws, which have helped establish the infrastructure for protecting its people from climate change. The *Fishermen's Pension and Social Security Benefit Scheme Act 1990*, *Fisheries (Regulation of Foreign Fishing Boats) (Amendment) Act 2018* are some examples of the laws enacted for the prosperity of the fishing community. Also, many institutional frameworks have been established to benefit the commercial side of the fishing industry by adopting many climate-friendly approaches as well as placing certain restrictions upon people to safeguard the marine ecosystem.

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<sup>118</sup> Ibid s 2.

<sup>119</sup> Aquaculture Management Regulations made under Section 64 of the *Fisheries and Coastal Resources Act*.

<sup>120</sup> *Aquaculture (Licence Application) Regulations, 1998* came into operation on June 1998.

<sup>121</sup> s 2, *The Fisheries and Aquatic Resources Act No 2 of 1996*.



### **C    *Legal and Institutional Frameworks to Address Climate-Induced Impacts on Coastal Fishing People in the Maldives***

The Maldives is an island country in the Indian Ocean. It has a total land size of 298 km<sup>2</sup> (115 square miles) which makes it the smallest country in Asia.<sup>122</sup> The islands are mostly level and extremely low-lying, with elevations rarely exceeding 1.8 m (6 ft) above sea level.<sup>123</sup> Fisheries are the second most important economic sector, tuna being the number one commodity of the country.<sup>124</sup> The Maldives is comprised of 1,192 coral islands that form a double chain of 26 atolls running in a north–south direction and spanning roughly 35,000 square miles.<sup>125</sup> While the fishermen fish, the women fisherfolk produce dried and salted fish, generally for export to Sri Lanka. The fish-harvesting sector is mainly controlled by individual fishermen. Fishermen build their own boats (using various financing options). Fishers are paid on the spot when they sell fish to fish collector vessels, which operate throughout the country. They are free to sell their fish to any collector vessel.<sup>126</sup>

As an island nation, the Maldives faces unique challenges in the years ahead, especially the social and economic challenges relating to climate change.<sup>127</sup> The government is concerned with the sustainability of fishing activities and has adopted stringent measures to protect the fisheries sector. Since so much of their livelihood depends on fish stocks, Maldivians have developed many institutions and strict fishing regulations that the local authorities widely enforce.<sup>128</sup>

#### **1 *National Policies Relating to Fisheries and Coastal Fishing People in Maldives***

With its third National Environment Action Plan (2009–2013) NEAP3, the Government of the Maldives set out an agenda for environmental protection and management. This plan set out to achieve measurable environmental results that would benefit the people of the Maldives<sup>129</sup>.

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<sup>122</sup> 'Geography of the Maldives', *Wikipedia* [https://en.wikipedia.org/wiki/Geography\\_of\\_the\\_Maldives](https://en.wikipedia.org/wiki/Geography_of_the_Maldives).

<sup>123</sup> Nations Encyclopaedia, *Maldives*, <<https://www.nationsencyclopedia.com/Asia-and-Oceania/Maldives.html>>.

<sup>124</sup> John F May, 'Maldives' Population Dynamics: Policy Prospects for Human Growth and Opportunity', (2016) *UNFPA* 7.

<sup>125</sup> 'Where are the Maldives?', *The Maldives Experts*, <<https://www.themaldivesexpert.com/3606/where-are-the-maldives/>>.

<sup>126</sup> FAO, *Fishery and Aquaculture Country Profiles*, (The Republic of Maldives, May 2019).

<sup>127</sup> May, above n 117.

<sup>128</sup> 'Beginner's Guide to Fishing in the Maldives', *Fishing Booker*, <<https://fishingbooker.com/blog/fishing-in-the-maldives/>>.

<sup>129</sup> Ministry of Housing, Transport and Environment, *Third National Environment Action Plan*, Government of the Maldives, 4

Prosperous, liveable and sustainable places are an integral component of the development vision of the nation. Protection of the natural environment while ensuring the resilience of both people and property is a key mission of the Government. The six expected strategic results of NEAP3 were: resilient islands, rich ecosystems, healthy communities, safe water, environmental stewardship and a carbon-neutral nation. NEAP3 provided the basis for environmental planning, budgeting, performance measurement, and accountability. Every year, annual performance targets and indicators were presented to the parliament. Performances against these goals and targets were reported in the subsequent Annual Report on environmental protection.<sup>130</sup>

The Maldives Enhance Climate Resiliencies and Water Security in the Maldives (Maldives GCC) project constructed an integrated water supply and distribution system on Hinnavaru Island, providing reliable access to safe drinking water for the island's residents. The integrated water supply and distribution system is part of USAID's strategy to enhance water security and build the national and local capacity of government utilities. USAID provided technical assistance and capacity-building to help regulators make informed decisions about water-resource management and to develop the knowledge, skills, and attitudes that island residents need to become good stewards of their island environment. The system is fully operational and is being sustainably operated and maintained by the national Maldivian water utility.<sup>131</sup>

The Reefs Generate Environmental and Economic Resiliency for Atoll Ecosystems project (Project REGENERATE) strengthens the management of coral reef ecosystems to mitigate the adverse effects of climate change in the Maldives. The four objectives of Project REGENERATE are to (1) improve access to science and technology for decision-making and establish policy frameworks for increasing coastal resilience; (2) increase stakeholder capacity to measure, monitor and adapt to climate stresses through education, training and outreach; (3) strengthen governance in support of decentralised management for more resilient reef ecosystems; and

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<sup>130</sup> Ministry of Housing, Transport and Environment, *Third National Environment Action Plan*, Government of the Maldives,<sup>4</sup>

<sup>131</sup> 'Environment and Global Climate Change', *USAID*,  
<<https://www.usaid.gov/maldives/environment-and-global-climate-change>>.

(4) establish sustainable financing mechanisms to support climate-resilient marine management.<sup>132</sup>

The Sustainable Fisheries Resources Development Project for the Maldives aims to improve management of fisheries at regional and national levels, including support to establish mariculture in targeted atolls in the Maldives. This project has three components: to enhance Marine Fisheries Management, it seeks the government's capacity to implement more effective monitoring of the fisheries sector and the internal control system of key marine fisheries value chains; to support Mariculture and Diversification of Fisheries; and to utilize project Management, Monitoring and Evaluation. In addition, it would provide equipment, technical assistance, training, and incremental operating costs to strengthen its overall administrative capacity.<sup>133</sup>

The National Adaptation Programme of Action 2006 (NAPA) gives priority to increasing the adaptive capacities and climate resilience of communities. NAPA emphasises wetland conservation through priority actions, such as flood control, aquifer recharge and the protection of natural water catchment areas. It recognises the importance of coral reefs through coastal protection services, by banning coral mining and by protecting reefs from developmental impacts<sup>134</sup>. The Government of the Maldives received support from the World Bank-managed Climate Change Trust Fund (CCTF) to deal with adaptation and mitigation of climate change.<sup>135</sup> A multi-donor Maldives CCTF was established in December 2009 with the aim of building a climate resilient economy and society in the Maldives through adaptation to and mitigation of climate change, as well as a low-carbon development path.<sup>136</sup>

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<sup>132</sup> International Union for Conservation of Nature (IUCN) and USAID, *Project R E G E N E R A T E: Enhancing Resilience of social-ecological coral reef systems in the Maldives*, <[https://www.iucn.org/sites/dev/files/content/documents/project\\_regenerate\\_phase\\_2\\_factsheet\\_v2.pdf](https://www.iucn.org/sites/dev/files/content/documents/project_regenerate_phase_2_factsheet_v2.pdf)>.

<sup>133</sup> *Sustainable Fisheries Resources Development Project* (Fourth South West Indian Ocean Fisheries Governance and Shared Growth Project), <<http://projects.worldbank.org/P157801?lang=en>> accessed on 12-02-2019.

<sup>134</sup> Ministry of Environment, Energy and Water, *National Adaptation Plan of Action*, (Republic of Maldives, 2006) <<http://unfccc.int/resource/docs/napa/mdv01.pdf>>.

<sup>135</sup> Maldives - Climate Change Trust Fund : resettlement plan : Maldives - Climate Change Trust Fund : social assessment and management framework (English), <<http://documents.worldbank.org/curated/en/964101468338367790/Maldives-Climate-Change-Trust-Fund-social-assessment-and-management-framework>>

<sup>136</sup> *Climate Change Trust Fund : social assessment and management framework* (Maldives, 2014) <<http://documents.worldbank.org/curated/en/964101468338367790/pdf/RP17180SAR0RP000Box385392B00PUBLIC0.pdf>>.

Since the early 1970s, the Food and Agriculture Organisation (FAO) has aided the Government of the Maldives through national and regional programs to address the needs and priorities of the country. Direct support from FAO in the form of targeted Technical Cooperation Program (TCP) projects over this period has totalled USD9.5 million. Additionally, the Maldives has been the recipient of support from numerous regional TCP projects<sup>137</sup>. The European Union (EU) and the Australian Agency for International Development (AUSAID) contributed EUR 6.5 million and AUD 1.0 million respectively to the Maldives Climate Change Trust Fund, which the World Bank administered until March 31, 2015. The funds were used to prepare a comprehensive climate change program, including energy efficiency initiatives. This program will implement three projects: Clean Energy for Climate Mitigation (CECM), Wetlands Conservation and Coral Reef Monitoring for Adaptation to Climate Change (WCCM) and Ari Atoll Solid Waste Management Pilot (AASWM).<sup>138</sup>

Several projects are currently operating in the country. Most of these have been directed at the rehabilitation of tsunami-affected areas, especially in the fishing communities. The Japanese government has contributed to developing a regional program for participatory and integrated agriculture, fisheries and forestry development for the long-term rehabilitation of tsunami-affected areas. The International Fund for Agricultural Development also aids the Post-Tsunami Agriculture and Fisheries Rehabilitation Program. The bulk of foreign support in the past has been directed towards the development of the post-harvest sectors. The FAO-supported Bay of Bengal Program is assisting the government in the exploratory fishing for tuna and reef fish and is supporting the establishment of a fisheries management system. The World Bank is assisting in the development of a pilot Vessel Monitoring System (VMS) system<sup>139</sup>. The Maldives have a highly vulnerable and fragile environment and so was among the first to adopt the *Kyoto Protocol* under UNFCCC. The UN agencies engaged in development activities in the Maldives have adopted the United Nations Development Assistance Framework (UNDAF) which was designed to better coordinate development activities in the country.

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<sup>137</sup> FAO, *Maldives Country Programming Framework 2013-2017*, <<http://www.fao.org/3/a-bp579e.pdf>>.

<sup>138</sup> World Bank, *The Maldives: A Development Success Story* (2013), <<http://www.worldbank.org/en/results/2013/04/10/maldives-development-success-story>>.

<sup>139</sup> FAO, *Fishery and Aquaculture*, Country Profiles the Republic of Maldives.

## **2 National Legislation Relating to Fisheries and Coastal Fishing People in the Maldives**

The *Fisheries Act 1987* is a fundamental law in the Maldives. Under the powers of the act, the Ministry of Fisheries and Agriculture (MOFA) has, in conjunction with the *Environment Protection and Conservation Act* and the *Maritime Zones of the Maldives Act*, established a fisheries management and development framework for the Maldives. The framework has resulted in the *General Fisheries Regulations* which provide rules governing the marine fisheries in Maldives. For example, any person desiring to fish, process or export fish products must obtain the approval of the Ministry before commencing any such business. The Regulations also impose restrictions on reef fishing and on the use of gear and ban fishing for sharks for a ten-year period. *Regulations for Issuing the Licence to Fish in the Exclusive Economic Zone of the Republic of Maldives* prescribe licences for fishing in the sea beyond 75 miles from the archipelago baselines. The Minister of Agriculture and Fisheries sets the total weight of catch permitted each year. Fishing licences under these Regulations are issued by the Ministry of Trade and Industries.

The *Maritime Zones of the Maldives Act* makes provision in respect of the internal waters, territorial sea and contiguous zone, and the exclusive economic zone of the Maldives.<sup>140</sup> In addition to matters provided in this act, the Maldives enjoys all the rights that other states enjoy under international law with regards to maritime zones.<sup>141</sup>

The Government of Maldives enacted the *Environment Protection and Preservation Act 1993* partly with the aim of protecting the interests of the fisheries and fishers. This act specifically identifies environmental vulnerability as a threat to this sector.<sup>142</sup> According to this Act, the protection and preservation of the country's land and water resources, flora and fauna as well as its beaches, reefs, lagoons and all natural habitats are essential for the sustainable development of the country.<sup>143</sup> Moreover, the act imposed a duty on government authorities to

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<sup>140</sup> s 1 of *Maritime Zones of Maldives Act No. 6/96*,

<[http://www.vertic.org/media/National%20Legislation/Maldives/MV\\_Maritime\\_Zones\\_Act.pdf](http://www.vertic.org/media/National%20Legislation/Maldives/MV_Maritime_Zones_Act.pdf)>.

<sup>141</sup> s 16 of *Maritime Zones of Maldives Act No. 6/96*,

<[http://www.vertic.org/media/National%20Legislation/Maldives/MV\\_Maritime\\_Zones\\_Act.pdf](http://www.vertic.org/media/National%20Legislation/Maldives/MV_Maritime_Zones_Act.pdf)>.

<sup>142</sup> UNESCO, *Database of National Cultural Heritage Laws Updated*

<[http://www.unesco.org/culture/natlaws/media/pdf/maldives/maldives\\_act\\_11\\_08\\_1998\\_engl\\_orof.pdf](http://www.unesco.org/culture/natlaws/media/pdf/maldives/maldives_act_11_08_1998_engl_orof.pdf)>.

<sup>143</sup> s 1, *Environment Protection and Preservation Act, 1993* (Maldives).

give guidance on environmental protection. Such authorities provide the necessary guidelines and advice on environmental protection, with regards to the prevailing conditions and needs of the country.<sup>144</sup>

In addition, this act imposed responsibility on the Ministry of Planning, Human Resources and Environment for formulating policies, rules and regulations regarding the environment in areas that do not already have a designated government authority carrying out such functions.<sup>145</sup> This responsibility extends to identifying protected areas and nature reserves, and to drawing up rules and regulations necessary for their protection and preservation.<sup>146</sup> Further, the act imposed a barrier to the disposal of any waste, oil and poisonous substances if such disposal would harm the environment or human health.<sup>147</sup> Permission must also be sought to move such wastes anywhere through the territory of the Maldives.<sup>148</sup>

### **3 *Institutional Frameworks Relating to Fisheries and Coastal Fishing People in the Maldives***

The President's office plays a vital role in the institutional framework that generates and implements policies for the fisheries sector. It provides policy direction based on the recommendations of the Fisheries Advisory Board (FAB), general policy statements and formulated laws including Presidential Decrees and Regulations of relevant ministries.<sup>149</sup> In the Maldives, the FAB is an entirely government-based panel, with no private sector participation. The role of the FAB is to advise the Minister of Fisheries and Agriculture on issues relating to fisheries policy and management. Decisions taken by the FAB are referred to the President's office for confirmation. The President's office can change the composition of the Fisheries Advisory Board on the advice of the Minister of Fisheries and Agriculture.<sup>150</sup>

In addition, the FAB provides a mechanism for high-level consultation among the various ministries and agencies involved in fisheries development to ensure a coordinated approach to

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<sup>144</sup> Ibid s 2.

<sup>145</sup> Ibid s 3.

<sup>146</sup> Ibid s 5.

<sup>147</sup> Ibid s7 (c).

<sup>148</sup> Ibid s 8.

<sup>149</sup> FAO, *Information on Fisheries Management in the Republic of Maldives*, <<http://www.fao.org/fi/oldsite/FCP/en/mdv/BODY.HTM>>.

<sup>150</sup> FAO, *Management of Shark Fisheries in the Maldives*, <<http://www.fao.org/docrep/003/X2097E/X2097E17.htm>>.

decision-making. It is chaired by the Minister of Fisheries and Agriculture and is mandated to guide the President on matters requiring major policy decisions. The Fisheries Management Agency (FMA) is responsible for monitoring and data collection. The policy is coordinated by the Ministry of Fishery and Agriculture (MOFA). Local monitoring and data collection are carried out by island collection offices, although this system was being phased out as of 2013 in favour of direct monitoring by FMA staff.<sup>151</sup> The main functions of FMA are to monitor and enforce fishing activities, formulate fisheries-related rules and regulations, and license fishing vessels, fish-processing facilities and aquaculture facilities. This includes the registration of fishing vessels and the granting of permits for passage through the EEZ, as well as conducting mariculture training and collecting and analysing fisheries statistics. It is also responsible for issuing Catch Certificates on behalf of the government, granting research permits, issuing permits for sand and coral mining, monitoring commercially and ecologically important fish stocks, and conducting applied research to supplement fisheries management and coral-reef monitoring.<sup>152</sup>

The Ministry of Fisheries and Agriculture (MoFA) is the lead agency tasked with fisheries management and development. The mandates of the MoFA are to formulate and enforce laws, regulations, strategies and policies required for the sustainable development of fisheries and marine resources, including those relating to Maldivian faros reefs and lagoons. MoFA is also responsible for resource monitoring, conducting multi-disciplinary research, collecting and maintaining samples of the marine and terrestrial biodiversity of the nation, and formulating and implementing regulations on scientific exploration and research into the Maldivian waters, seas, seabed, subsoil and soil.<sup>153</sup> This Ministry's goal to ensure development and sustainable management of marine and agricultural resources of the country. Its vision is to be the lead institution in facilitating the development of the fisheries and agriculture sectors while conserving the natural resources by catalysing, supporting and accelerating the sustainable

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<sup>151</sup> M Shiham Adam & Adam Ziyad, *A Socio-Economic Assessment of the Tuna Fisheries in the Maldives*, (International Pole and Line Foundation, Technical Report No. 5),

<<http://ipnlf.org/perch/resources/socio-economic-assessment-of-the-tuna-fisheries-in-the-maldives.pdf>>.

<sup>152</sup> Ministry of Fisheries and Agriculture of the Maldives, *About Ministry*

<<http://www.fishagri.gov.mv/index.php/en/ministry/117-fisheries/fisheries-management>>.

<sup>153</sup> FAO, *Fishery and Aquaculture Country Profiles*, The Republic of Maldives.

management of these two sectors in order to secure a better socio-economic standard and future for the Maldivian people.<sup>154</sup>

The Ministry of Fisheries and Agriculture is specially empowered to formulate fisheries regulations and to administer the fisheries sector.<sup>155</sup> The Ministry of Fisheries and Agriculture is also entrusted with overseeing all fisheries activities in the country and with exploring all possible methods for the development of fisheries.<sup>156</sup> To this end, the Ministry also collects, compiles and analyses statistical and other necessary information.<sup>157</sup> In addition, for the conservation of any species of the living marine resource, the Ministry of Fisheries and Agriculture reserves the right to prohibit, for a specified period, fish capturing or the taking of such species and/or the right to establish special sanctuaries from where such species may not be fished, captured or taken.<sup>158</sup>

The Marine Research Centre (under MoFA) is responsible for exploratory tuna fishing, investigating reef fish resources, cataloguing fishing gear, establishing a tuna database and analysing statistics and socio-economic surveys. With assistance from several bilateral and multilateral donors, research activities are focused on the assessment of tuna stocks, reef fish and other marine resources, and on the sustainable management of these resources.

The Ministry of Defence and National Security has the right to stop any vessel suspected of contravening the provision of *the Fisheries Act 1987* and to check such vessels. It can also arrest any person or persons suspected of committing an offence under this law.<sup>159</sup> Any vessel or article apprehended under the provisions of Article II of this law shall be under the care of the Ministry of Defence and National Security until the completion of legal proceedings, and the Ministry has the right to sell the vessel or article by auction.<sup>160</sup>

In addition, there are various other institutions involved, either directly or indirectly, in the fisheries sector. The Ministry of Economic Development (MED) is responsible for licensing all

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<sup>154</sup> Ministry of Fisheries and agriculture of Maldives, *Mission and Vision*, <<http://www.fishagri.gov.mv/index.php/en/ministry/mission-vision>>.

<sup>155</sup> s 3(a), *The Fisheries Act 1987* (Maldives).

<sup>156</sup> *Ibid* s 3(a), (b).

<sup>157</sup> *Ibid* s 4(a).

<sup>158</sup> *Ibid* s 10.

<sup>159</sup> *Ibid* s 12.

<sup>160</sup> *Ibid* s 13.



commercial fishing vessels, including foreign fishing vessels, and for determining the number of licences to be issued, negotiations with potential licensees and for other matters dealings with licenses. The Ministry also issues export permits for the local tuna and reef fish trade. The Ministry of Home Affairs is also responsible for collecting fisheries-related data and for ensuring compliance with the regulations and fisheries laws at island and atoll levels. The Ministry of Housing, Transport and Environment is responsible for the registration of fishing vessels and for safety checks and training of officers and crew. The Environment Division of the Environmental Protection Agency is responsible for enforcing the *Environment Protection and Preservation Act of Maldives* (4/93) and for establishing marine-protected areas and reserved-diving sites.<sup>161</sup> Maldives Customs Service is responsible for monitoring the export fish trade and transshipments by foreign fishing vessels. The Ministry of Health is responsible for food safety inspections and for meeting export-quality standards. The Maldives National Defence Force (MNDF) is in charge of surveillance, monitoring and enforcement. The purpose is to ensure the observance of agreed measures for both locals and foreigners. An additional function is to collect information on fishing agreements, decide on national policies and advise on strategic and tactical decisions about enforcement.<sup>162</sup>

The Climate Change Advisory Council (CCAC) is chaired by the President of the Maldives. The CCAC was created in April 2009. It was also supported by a group of international climate and energy experts before moving to the Ministry of Housing and Environment. In May 2011, the Department of National Planning (DNP) was moved to the Ministry of Finance and Treasury (MFT), and the National Planning Council (NPC) was put on hold and placed under reform. The CCAC continues to exist, and the new government is yet to take or make a decision on its future. The NPC and CCAC are therefore the main bodies that theoretically oversee the approval of projects related to climate change in the country.<sup>163</sup>

The Maldives is a small island nation situated in the heart of the Indian Ocean. Making both people and property resilient is a key mission of the Government and, as mentioned earlier, the

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<sup>161</sup> FAO, *Fishery and Aquaculture Country Profiles, The Republic of Maldives*, 2009  
<<http://www.fao.org/fishery/facp/MDV/en>>.

<sup>162</sup> Ibid.

<sup>163</sup> R K Mall and Santosh Kumar, *Integration of Disaster Risk Reduction and Climate Change Adaptation in SAARC Region* (2016)  
<<https://www.researchgate.net/publication/299430726>>.

six expected strategic results of NEAP3, (also known as the national environmental action plan 2013), were: resilient islands, rich ecosystems, healthy communities, safe water, environmental stewardship and a carbon-neutral nation. The government has enacted various action plans including the National Adaptation Programme of Action 2006 (NAPA), which gives priority to increasing the adaptive capacities and climate resilience of communities, whilst also emphasizing the need to protect wetlands. Furthermore, the main goal of the Maldives government is to strengthen its fishing people economically and to empower merits such as management and sustainability of resources to ensure better quality of life and socio-economic conditions. The government has endorsed the ministry of defence in regard to keeping people at bay in order to protect the biodiversity of the ecosystem. It also plays an eminent role in regard to reducing overfishing near seashores of the country.

### **III SHORTCOMINGS IN THE LEGAL AND INSTITUTIONAL FRAMEWORKS FOR CLIMATE-INDUCED IMPACTS ON COASTAL FISHING PEOPLE IN INDIA, SRI LANKA AND THE MALDIVES**

Almost every state in this region has the legal framework and institutions to handle fisheries management and to protect the coastal environment, which ultimately serves the interest of fishers. Climate change, however, does not yet feature prominently in the environmental or economic policy agenda of developing countries.<sup>164</sup> While different countries have varying concerns and needs, there seems to be some similarities in the problems encountered by the fisheries sector in all Bay of Bengal countries. Common concerns and problems include an inadequate and uneven exploitation and management of offshore and high seas resources, as well as depleted and stressed coastal fishery resources, primarily due to overfishing but also due to environmental degradation of coastal waters caused by land-based and, occasionally, ship-based pollution. In addition, the BoB countries share a lack of reliable and timely information to assess the potential of resources, and an inadequate capability to analyse, interpret, disseminate and utilise the information. They also suffer from social conflicts due to multiple uses and overexploitation of coastal resources—on land and in the water—and the degradation of coastal environments. These social conflicts largely result from rapid

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<sup>164</sup> KWG Rekha Nianthi and Rajib Shaw, *Climate Change and Its Impact on Coastal Economy of Sri Lanka* (31 July 2018), [https://www.researchgate.net/publication/267419810\\_Climate\\_Change\\_and\\_Its\\_Impact\\_on\\_Coastal\\_Economy\\_of\\_Sri\\_Lanka](https://www.researchgate.net/publication/267419810_Climate_Change_and_Its_Impact_on_Coastal_Economy_of_Sri_Lanka)

development, intensification and dependence on a few species in coastal aquaculture.<sup>165</sup> These shortcomings can be divided into two parts: (a) shortcomings in laws and policies and (b) socio-economic factors. These are examined in turn in the following sections.

### **A Excluding the Context of Coastal Fisheries in National Environmental Policy**

The impact on the coastal fisheries in this region cannot be ignored when observing the harsh realities facing this region. Given the vulnerability of the fisheries sectors, some environmental laws, policies and regulations have been enacted to improve these sectors in the coastal states of this South-East Asian region.<sup>166</sup> However, in most of the environmental policies of the states in this region, the impact of environmental changes on fisheries is overlooked. For example, India's *National Environmental Policy 2006* acknowledges the inadequacies of the regulatory regimes for environmental conservation. This resulted in the degradation of the environment and long delays along with high transactions costs in development projects.<sup>167</sup> In the same way, the policy also recommends revisiting the policy and legislative framework in order to address the vulnerability of all the sectors that are connected through environmental degradation.<sup>168</sup> However, nowhere in this policy is the impact on fisheries sectors and their future actions discussed. The policies of these states should, ideally, specifically mention the impact of environmental changes on fisheries sectors and what actions are required in the future.

### **B Lack of Framework for Legal Action**

This discussion will be incomplete if we do not consider the lack of implementation of the laws in the fisheries section. It is true that after the International Convention on the Law of Sea in 1982, many states did enact laws regarding the environment. We can also examine the

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<sup>165</sup> Mohd Shaupi b et al, *Towards Sustainability: Needs and Concerns of Aquatic Resources and Fisheries in the Bay of Bengal Region and Project Ideas to Facilitate Their Sustainable Management*, A report submitted to the JOFC Committee for the Development and Management of Fisheries in the Bay of Bengal (BOBC), A subgroup established by the Bay of Bengal Programme (BOBP) in cooperation with the IOFC Committee for the Development and Management of Fisheries in the Bay of Bengal (1996), <<http://www.fao.org/tempref/docrep/fao/007/ad898e/ad898e00.pdf>>.

<sup>166</sup> *Environment Protection Act 1986*; *Water (Prevention and Control of Pollution) Act 1974*; *Water Cess Act 1977*; *Air (Prevention and Control of Pollution) Act 1981* (Sri Lanka).

<sup>167</sup> Policy 5.1, *National Environmental Policy 2006* (India), <<http://envfor.nic.in/sites/default/files/introduction-nep2006e.pdf>>.

<sup>168</sup> Policy 5.1.1, *National Environmental Policy 2006*, (India).

regulatory framework of coastal fisheries management in many South-East Asian states like Sri Lanka, the Maldives and India. In many cases, laws do exist regarding the catching of fish and maintaining biodiversity (though in some cases they proved onerous). However, it is difficult to discover any implementation of these laws in coastal regions.

An example of legal shortcomings can be seen in the *National Environment Policy of India 2006* which states:

The present approach to dealing with environmentally unacceptable behaviour in India has been largely based on criminal processes and sanctions. Although criminal sanctions, if successful, may create a deterrent impact they are rarely fruitful for many reasons. On the other hand, giving unfettered powers to enforcement authorities may lead to rent-seeking. Civil law, on the other hand, offers flexibility, and its sanctions can be more effectively tailored to situations. The evidentiary burdens of civil proceedings are less daunting than those of criminal law. It also allows for preventive policing through orders and injunctions. Accordingly, a judicious mix of civil and criminal processes and sanctions will be employed in the legal regime for enforcement, through a review of the existing legislation. Civil liability law, civil sanctions, and processes would govern most situations of non-compliance. Criminal processes and sanctions would be available for serious, and potentially provable, infringements of environmental law, and their initiation would be vested in responsible authorities. Recourse may also be had to the relevant provisions in the Indian Penal Code, and the Criminal Procedure Code. Both civil and criminal penalties would be graded according to the severity of the infraction.<sup>169</sup>

The focus should be more on implementing the laws, and a proper action plan should be taken so that the liability of the infringer of the laws is adequately insured.

### **C    *Slow Response to Need of the Coastal Fishing People***

In 2015, the Prime Minister of India, Narendra Modi, inaugurated a two-day conference of the State Environment and Forest Ministry. This was considered a final step in consultations and in taking states on board before bringing amendments to the existing green laws. It was expected that the state environment ministers and officials would brainstorm proposed changes to the six environment laws, apart from reflecting upon the simplification of existing processes and ensuring strict compliance with green norms.<sup>170</sup> In 2017, the Ministry of Environment, Forests,

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<sup>169</sup> Policy 5.1.2, *National Environmental Policy 2006* (India).

<sup>170</sup> DNA, 'PM Modi to Inaugurate Two-Day Conference to Finalise Changes in Environment Laws'

and Climate Change prepared an amendment to the *Environment Protection Act, 1986* to impose fines of up to Rs 1 crore on polluters, without needing to go through the lengthy judicial process prescribed by the law at present.<sup>171</sup> This lengthy bureaucratic procedure takes a long time to amend laws that are in urgent need of change, which indirectly permits the on-going environmental vulnerability of masses of people, especially the fishermen of the coastal areas.

#### **D    *Employment, Safety Nets and the Social and Cultural Role of Fisheries***

The fisheries and aquaculture sectors are sources of employment, even in landlocked countries. In many small islands in developing states such as the Philippines, Indonesia and Solomon Islands, the fisheries sector is an integral part of the cultural identity, so that climate change, coupled with resource over-exploitation, can lead to a loss of the strong cultural affinity with the coast and the marine environment.<sup>172</sup> The South Asian region contains long coastlines, and many people in these regions are directly reliant on fishing. The adverse effect of climate change on all these coastal people is clear to see.

#### **E    *Costs of Adaptation***

To maintain the flow of benefits to society and the economy from fisheries, governments will need to increase their investments in developing a coherent 'climate proof' sectorial policy and legislation, management and development. The associated costs of the required policy options will accrue because of the strong links between climate change policy and fisheries trade policy that would be supportive of enhanced trade and competitiveness.<sup>173</sup>

#### **F    *Impacts on Ecosystems and Fishers***

Changes in oceans, lakes and rivers impacting on ecosystems and fish populations include alterations to heat content and temperature; salinity, density and stratification; ocean

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<<https://www.dnaindia.com/india/report-pm-modi-to-inaugurate-two-day-conference-to-finalise-changes-in-environment-laws-2075052>>.

<sup>171</sup> Nitin Sethi and Kumar Sambhav Shrivastava, 'Amendment to Environment law Ready: Polluters Could Pay Up to Rs 1 Crore Without Judicial Review', *Scroll.in*, <<https://scroll.in/article/845100/amendment-to-environment-law-ready-polluters-to-pay-up-to-rs-1-crore-without-judicial-review>>.

<sup>172</sup> Graeme Macfadyen and Edward Allison, *Climate Change, Fisheries, Trade and Competitiveness: Understanding Impacts and Formulating Responses for the Commonwealth Small States* (Commonwealth Secretariat, November 2009).

<sup>173</sup> Ibid.

circulation and coastal upwelling; sea, lake and river levels; sedimentation brought about by climate-induced changes to land use; ocean acidification; and low-frequency climate variability patterns. These physical changes have the potential to negatively affect the physiological, spawning and recruitment processes of fish, primary production, secondary production, distribution of fish, the abundance of fish, phenology species invasions and diseases and other food webs. Many of the potential pathways of impact linked to global warming—through physical and chemical changes in oceans and fresh waters, to effects on aquatic ecosystems—have been identified in the scientific literature.<sup>174</sup>

## IV CONCLUSION

This chapter has established that the current laws, policies and institutional frameworks in India, Sri Lanka and the Maldives are insufficient to manage the fishing sector. The government of India has established a well governance structure at both the central and state levels, the Monitoring, Control and Surveillance (MCS) regime for the management of the fishery resources management which ultimately benefits the coastal fishing people. Moreover, the wellbeing schemes for the fishing community are praiseworthy. However, the entire fisheries sector has so far not been covered with a sound policy framework, as was done for the agriculture sector in the past. The registration and inspection requirements of commercial fishing vessels are not as strong as they should be and are still overlooked. Despite a well-established governance structure at both the central and state levels, the Monitoring, Control and Surveillance (MCS) regime in the marine fisheries sector is weak. A comprehensive policy on the fisheries sector can be a guiding factor for all the states and union territories and help them in shaping their policies and programs. India has been unable to build a vibrant fishery sector because of the misplaced priorities of economic development that ignore the backbone of this sector, namely, the small-scale coastal fishermen. The *National Policy on Marine Fisheries* is tentative and fails to address the real problems of traditional fishing communities. Fisheries development has not been uniforming in all the states of the Indian union. Also, the

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<sup>174</sup> Ibid

Indian coast guard does not have a clear mandate to monitor and supervise the fishing vessels operating in coastal waters. Further, there is no legislation to regulate fishing by wholly owned Indian fishing vessels in the Exclusive Economic Zone (EEZ). The National Fisheries Development Board was set up, but responsibilities are still not clearly defined between this and the Department of Animal Husbandry, Dairying and Fisheries.

Sri Lanka's fisheries and aquaculture policies have generally been consistent over the years. The existence of legal provisions could support a fisheries management regime and Sri Lanka has implemented seven fisheries development plans. These plans almost succeeded in achieving their objectives. However, they suffered from unreliable statistics, the absence of catch and effort monitoring systems, and institutional deficiencies in both design and implementation stages. The Sri Lankan fisheries sector suffers from a lack of formal regulatory and socio-economic structures to assess the long-term impacts of fishing on ecosystems and the communities dependent on them. Their licensing system only appears to apply to those fishing vessels in the government-controlled area and thus has gaps for almost half of the country. The provinces issue licenses for smaller vessels but with little verification. The commercial, joint venture/Board of Investment (BOI) vessels, and the larger multi-day vessels are licensed by the Department of Fisheries using a manual system, all of which is likely to be weakly controlled. Currently, there is no observer scheme—such as surveillance, rescue operations or monitoring of illegal fishing—for marine fisheries in Sri Lanka.

In the Maldives, in recent years, the infrastructure of harbours, electricity, roads, transport, and development in the Maldives have significantly improved the fishing facilities and the livelihoods of the fishing community, including the coastal fishing people. However, the constraints on the fisheries sector include lack of capacity by the regulatory body—the Ministry of Fisheries and Agriculture—to coordinate and enable the sustainable development of the sector. There is a weakness in the legal framework, and no clear fisheries management plans cover each or all of the fisheries management units. Because of the lack of fisheries management systems (defined in plans), most of the fisheries, especially those offshore, operate under free and open-access conditions. While investment from the private sector in fisheries, particularly in processing facilities for export trade purposes, has increased recently,

the total number of enterprises is small, and overall, 'fish business' expertise, particularly at the international level, is limited. In most countries, safety at sea is not seen as an integral part of fisheries management; there is a need for fisheries managers to understand the relationship between safety for fishers and fisheries management.

While this chapter analyses the current legal and institutional arrangements for addressing the climate-induced impacts on the coastal fishing people of India, Sri-Lanka and Maldives, the next chapter examines the legal and institutional frameworks addressing the socio-economic and environmental rights of the coastal fishing people in Bangladesh.



## CHAPTER FIVE

### CURRENT LEGAL AND INSTITUTIONAL ARRANGEMENTS ADDRESSING CLIMATE-INDUCED IMPACTS ON COASTAL FISHING PEOPLE OF BANGLADESH

#### I INTRODUCTION

The previous chapter investigated the legal and institutional arrangements of three regional coastal states in addressing the climate-induced impacts on the socio-economic conditions of coastal fishing people. This chapter analyses the current legal and institutional arrangements of Bangladesh to address the impacts of climate change on the coastal fishing people. The coastal people, especially those living within deltaic areas, encounter major climatic concerns which affect their livelihoods.<sup>1</sup> Fish and fisheries have been an essential part of the livelihoods of the coastal people of Bangladesh from time immemorial.<sup>2</sup> Fisheries play an important role in the economy of Bangladesh in terms of nutrition, employment and income generation.<sup>3</sup> However, the growth rate of this sector over the last 10 years has remained steady, with an average 5.26%.<sup>4</sup> The government of Bangladesh has set as its utmost priority the protection, conservation and biodiversity of marine and coastal fisheries. There are different regulatory management procedures for different types of fisheries in Bangladesh. The government has put forward several strategies, plans, policies and acts to address climate change and the welfare issues of fishing people. There are several ministries and institutions responsible for addressing climate-change issue. This chapter examines those policies, laws, regulations and institutions that guarantee to protect the socio-economic rights of the coastal fishing people in Bangladesh. The aim of this chapter is to review the current legal and policy frameworks that are concerned with reducing the climate induced impacts on the coastal fishing people of Bangladesh. It also investigates the effectiveness and limitations of present government initiatives and

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<sup>1</sup> M Anwar Hossen et al, 'Governance Challenges in Addressing Climatic Concerns in Coastal Asia and Africa' (2019), 11 *Sustainability* 2148,

<sup>2</sup> Department of Fisheries, *National Fish Week Compendium. Department of Fisheries, Ministry of Fisheries and Livestock*, Dhaka, Bangladesh, 160 < <http://www.fisheries.gov.bd/>>.

<sup>3</sup> See Md Gias Uddin et al, 'Assessment of Livelihood Status of Fish Retailers at Galachipa Fish Market in Patuakhali, Bangladesh' (2019) 17 *International Journal of Fisheries and Aquatic Studies* 5, 130–135.

<sup>4</sup> Department of Fisheries Bangladesh, *Yearbook of Fisheries Statistics of Bangladesh 2017-18*, 1 <[http://fisheries.portal.gov.bd/sites/default/files/files/fisheries.portal.gov.bd/page/4cfbb3cc\\_c0c4\\_4f25\\_be21\\_b91f84bdc45c/Fisheries%20Statistical%20Yearbook%202017-18.pdf](http://fisheries.portal.gov.bd/sites/default/files/files/fisheries.portal.gov.bd/page/4cfbb3cc_c0c4_4f25_be21_b91f84bdc45c/Fisheries%20Statistical%20Yearbook%202017-18.pdf)>.

arrangements in addressing the challenges of climate change and in improving the socio-economic conditions of the coastal fishing people of Bangladesh.

## **II    LEGAL AND INSTITUTIONAL FRAMEWORKS ADDRESSING CLIMATE INDUCED-IMPACTS ON COASTAL FISHING PEOPLE OF BANGLADESH**

The coastal population of Bangladesh has doubled since the 1980s, to more than 16 million (approximately 10% of the total population). Most are experiencing poverty and are vulnerable to rapid climate change.<sup>5</sup> The severe effect of climate change on the fisheries sectors of Bangladesh is already noticeable and policy makers are taking action. In order to understand the socio-legal conditions of the coastal fishing people of Bangladesh, the next section analyses the legal and institutional arrangements relating to marine and coastal fishing. The marine and coastal fisheries comprise two distinct subsections: large-scale commercial (commonly referred to as industrial) fisheries, and artisanal and subsistence fisheries.<sup>6</sup> The legal and institutional frameworks for addressing climate-induced impacts are discussed below.

### **A    *Legal Frameworks to Address or for addressing Climate-Induced Impacts on Coastal Fishing People of Bangladesh***

The legislation regarding fishing and fishing people was inherited from the British regime and Pakistani rule. In 1793, the British rulers gave large tracks of land to the landlords who were supposed to collect tax from the assigned estates.<sup>7</sup> Under the *Permanent Settlement Regulation*, proclaimed by the then Governor General of India,<sup>8</sup> Zaminders (landlords) in Bengal (part of which is now Bangladesh) had obtained ownership of fisheries which were termed 'jalmahals'. Zaminders used to keep the jalmahals under their direct control and supervision.<sup>9</sup> Fishing in these jalmahals used to be managed by the Zaminders through a system of leasing for a certain period, which was usually one Bengali year.<sup>10</sup> With the commencement of the *State*

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<sup>5</sup> JA Fernandes et al, 'Projecting Marine Fish Production and Catch Potential in Bangladesh in the 21st Century Under Long-Term Environmental Change and Management Scenarios' (2016) 15 *ICES Journal Marine Science* 1–13.

<sup>6</sup> Md Mostafa Shamsuzzaman et al, 'Legal Status of Bangladesh Fisheries: Issues and Responses' (2016) 45 *Indian Journal of Geo Marine Sciences* 11, 1474–1480.

<sup>7</sup> Md. Mostafa Shamsuzzaman et al, 'Review of Fisheries Legal framework of Bangladesh: Towards Policy Implications' (2016) 46 *Indian Journal of Geo Marine Sciences* 01,16–22.

<sup>8</sup> *Bengal Permanent Settlement Regulation, 1793*, Regulation No. 1 of 1793.

<sup>9</sup> Md.M. Shamsuzzaman et al. 'Fisheries Resources of Bangladesh: Present Status and Future Direction' (2017) 2 *Aquaculture and Fisheries*, 4,145–156.

<sup>10</sup> MY Ali, *Third Fisheries Project Report on Lease Holder Study* (1992) Bangladesh Centre for Advanced Studies, Dhaka, I.

*Acquisition and Tenancy Act 1951*, the Zamindari system was abolished and all jalmahals were vested in the then East Pakistan Government. After the independence of Bangladesh in 1971, a provision was made for the Ministry of Land (MoL), as the authorised government agency, to lease out all jalmahals to the highest bidders<sup>11</sup>. In 1980, the Bangladesh government was transferred from the Ministry of Land (MoL) to the Ministry of Fisheries and Livestock (MoFL) to manage jalmohals. Since 1949, there has been no new legislation regulating marine and coastal fishing in Bangladesh. In the absence of such legislation, the constitutional provisions are the fundamental guarantor of the socio-economic rights of all citizens, including the coastal fishing people. According to Article 18(1) of the Constitution of the People's Republic of Bangladesh, one of the primary duties of the state is to improve the level of nutrition and health of its citizens.<sup>12</sup> Later on, national policies, laws, regulations and plans were adopted for the protection of the socio-economic rights of the fishing people, including the coastal fishing people in Bangladesh.

## **1 National Policies related to Fisheries and Coastal Fishing People in Bangladesh**

The Government of Bangladesh adopted several policies in which the issues of fisheries and fishing people were addressed. Important national policies include *The New Fishery Management Policy (NFMP) 1986*, the *National Fisheries Policy (NFP) 1998*, *Government Jalmohal Management Policy 2005*, *Government Jalmohal Management Policy 2009*, *Coastal Zone Policy 2005*, *National Shrimp Policy 2014*, *The Deceased Fisherman's Family or Permanently Disabled Fishermen's Incentives Policy 2018*, and *Bangladesh National Environment Policy 1992*, which are discussed in the following sections.

### **(a) National Fisheries Policy 1998**

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<sup>11</sup> Salim Muhammad et al, 'Wetland Resource Management in Bangladesh: Implications for Marginalization and Vulnerability of Local Harvesters' (2010) 9 *Environmental Hazards*, 54–73.

<sup>12</sup> art 18(1), The Constitution of the People's Republic of Bangladesh.

In 1986, the Bangladesh government decided to introduce a new *Fishery Management Policy* (NFMP), that would free fishermen from the strong dependency on and exploitation by the middlemen leaseholders and financiers, and to redirect the major benefits of the fisheries to the genuine fishers. The main idea of the NFMP was to gradually abolish the system of leasing fisheries by open auction.<sup>13</sup> The *National Fisheries Policy 1998* was adopted for the protection and development of fish species. The policy was framed with a view to improving the management of fisheries<sup>14</sup> The prime objectives of this policy are to increase production of fishery resources through optimum use of existing resources, and poverty alleviation through self-employment and the improvement of the socioeconomic conditions of the fishers.<sup>15</sup> This policy focused on the procurement, preservation and management of fishery resources of the open-water bodies, fish culture and management policy in closed-water bodies, coastal fisheries and aquaculture policy, marine fisheries resource development, exploitation and management policy.<sup>16</sup>

The *National Fisheries Policy 1998* encouraged optimum utilisation of coastal and marine resources to meet the demand for animal protein, to promote economic growth and to earn foreign currency through export of fish and fishery products. The policy also aimed to protect natural water bodies and marine biodiversity. It provides for the prohibition of coastal fishing in coastal marine areas below the 40 m depth line.<sup>17</sup> According to the 1998 *Fisheries Policy*, it will take necessary measures to conserve biodiversity in the coastal region and to culture fish and shrimp along with rice crops, either in rotational or concurrent phases.<sup>18</sup> The policy also prohibits the catching of certain species of shrimp from the breeding grounds and coastal areas to protect the shrimp population.<sup>19</sup> The policy recommends an insurance system for the people

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<sup>13</sup> Mahfuzuddin Ahmed et al, 'Redirecting Benefits to Genuine Fishermen: Bangladesh's New Fisheries Management policy', (Conference Paper, Conference of the International Association for the Study of Common Property, 17–20 September 1992 Washington, DC, USA) 3.

<sup>14</sup> *National Fisheries Policy 1998* (Bangladesh)

<sup>15</sup> Ibid policy 3.

<sup>16</sup> Ibid policy 5.

<sup>17</sup> Md. Mostafa Shamsuzzaman et al, 'Towards Sustainable Development of Coastal Fisheries Resources in Bangladesh: An Analysis of the Legal and Institutional Framework'(2017) 17 *Turkish Journal of Fisheries and Aquatic Sciences*, 834, DOI: 10.4194/1303-2712-v17\_4\_19.

<sup>18</sup> Policy 8.2, *National Fisheries Policy 1998* (Bangladesh).

<sup>19</sup> Policy 8.22, *National Fisheries Policy 1998* (Bangladesh).

involved with fishing and shrimp culture.<sup>20</sup> It also provides training for the fishers, fish farmers, businessmen and other interested persons on resource conservation, development, management culture, exploitation and marketing.<sup>21</sup> Further, the policy recommends the establishment of cooperative societies, such as fish farmers' development associations.<sup>22</sup> Although the policy provides for several wellbeing measures for the fishing people, none of them has been implemented in Bangladesh.

The *National Fisheries Policy 1998* encouraged the establishment of the Ministry of Fisheries and Livestock to control all development, conservation, distribution and management of fishery resources. Ministries and/or departments were strengthened to develop a meaningful national plan for fisheries development, evaluation and coordination.<sup>23</sup> The fisheries sector was given priority for institutional loans. Supervised credit was initiated, and a Fisheries Bank established for easy micro-credit for fishing people. The Department has the authority to issue, cancel or renew licenses for fishing vessels and for the proper management of marine fisheries resources. All fishing vessels need to supply certain technical information to the Department of Fisheries.<sup>24</sup>

#### **(b) *Coastal Zone Policy 2005***

The *Coastal Zone Policy 2005* is the key output of the Integrated Coastal Zone Management Plan (ICZMP) project. The *Coastal Zone Policy 2005* provides general guidance on the management and development of the coastal zone of Bangladesh.<sup>25</sup> The policy aims to enable coastal people to pursue their livelihoods under secured conditions in a sustainable manner and without impairing the integrity of the natural environment.<sup>26</sup> Measures are taken to reduce poverty through enhancing economic growth in the coastal zone.<sup>27</sup> Such measures protect against erosion and provide rehabilitation to the victims of erosion.<sup>28</sup> Safety measures will be enhanced by combining cyclone shelters, multi-purpose embankments and a disaster warning

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<sup>20</sup> Policy 8.23, *National Fisheries Policy 1998* (Bangladesh).

<sup>21</sup> Policy 10.6, *National Fisheries Policy 1998* (Bangladesh).

<sup>22</sup> Policy 10.7, *National Fisheries Policy 1998* (Bangladesh).

<sup>23</sup> Policy 10.9, *National Fisheries Policy 1998* (Bangladesh).

<sup>24</sup> Ibid policy 11.1.

<sup>25</sup> *Coastal Zone Policy 2005*, Ministry of Water Resources Government of the People's Republic of Bangladesh.

<sup>26</sup> Ibid policy 4.

<sup>27</sup> Ibid policy 4.1.

<sup>28</sup> Ibid policy 4.3(d).

system. It includes special measures for children, women, the disabled and the old.<sup>29</sup> Comprehensive policies, as dealt with in the *National Fish Policy* in relation to exploitation, conservation and management of marine fisheries resources, are followed.<sup>30</sup> Fishers' rights are established on open-water bodies for sustainable fisheries management.<sup>31</sup> Environmentally adopted and socially responsible shrimp farming is encouraged. All opportunities and potentials for aquaculture are utilized in the coastal zone by facilitating both crab and pearl cultures,, and the growing of sea grass is also encouraged.<sup>32</sup> Coastal Development Strategy (CDS) focuses on the implementation of the coastal zone policy which was approved at the second meeting of the Inter-Ministerial Steering Committee on ICZMP held on 13 February 2006.

**(c) Government Jalmohal Management Policy 2005**

The objective of *Government Jalmohal Management Policy 2005* was to share management responsibility with a number of government agencies. Jalmohals up to 20 acres were transferred to the Ministry of Youth and Sports (MOYS), and a limited number of jalmohals were transferred to the Department of Fisheries (DoF) and the Ministry of Environment and Forest (MOEF)<sup>33</sup> for implementing certain development projects. However, the benefits of those projects go to political agents rather than the poor fishing people.<sup>34</sup> Later on, in 2009, the *Government Jalmohal Management Policy 2009* was introduced to ensure the leasing of jalmohals to fishermen's cooperative societies (FCSs). Under this policy the government returned 20-acre-size jalmohals from the Ministry of Youth and Sports (MOYS)<sup>35</sup> to the Ministry of Land (MoL). Two committees were established to provide benefits to genuine fishers<sup>36</sup>.

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<sup>29</sup> Ibid policy 4.3(e).

<sup>30</sup> Ibid policy 4.3.3(a).

<sup>31</sup> Ibid policy 4.4.3.

<sup>32</sup> Ibid policy 4.4.4(b).

<sup>33</sup> Ministry of Environment and Forest (MOEF) of Bangladesh, at present, Ministry of Environment, Forest and Climate Change (MOEFCC) of Bangladesh.

<sup>34</sup> Salim Muhammad et al, 'Wetland Resource Management in Bangladesh: Implications for Marginalization and Vulnerability of Local Harvesters' (2010) 9 *Environmental Hazards*, 54–73.

<sup>35</sup> Policy 4 of *Government Jalmohal Management Policy 2009* (Bangladesh).

<sup>36</sup> Ibid policy 5.

These committees were the District Jalmohal (Wetland) Management Committee<sup>37</sup> and the Upazila Jalmohal (Wetland) Management Committee<sup>38</sup>.

**(d)      *National Shrimp Policy 2014***

Most of the fishing people of the southern coastal part of Bangladesh are engaged in shrimp culture. However, there was no national shrimp policy until 2014. The *National Shrimp Policy 2014* was formulated with certain restrictive measures, such as preventing the entrance of saline water, protecting mangrove forests and fixing the limit of shrimp farm. The objectives of the policy are to help the shrimp industry flourish, increase employment opportunities, alleviate poverty, increase export earnings and meet the nutritional demands of the people.<sup>39</sup> The policy also ensures the promotion of alternative livelihoods for the post larval shrimp collectors to stop wild post larval collection.<sup>40</sup> This referred to the introduction of a Shrimp Seed Certification System to ensure the supply of specific pathogen-free (SPF) post larval shrimp.<sup>41</sup> It provides that the enclosure (Gher) cannot be bigger than 30 acres and it must follow the land zoning system of the government so that it may not hamper the arable lands.<sup>42</sup> If setting up an enclosure adversely affects a mangrove forest, the authorities can impose a ban on it.<sup>43</sup>

**(e)      *The Deceased Fisherman's Family or Permanently Disabled Fishermen's Incentives Policy 2018***

The *Deceased Fisherman's Family or Permanently Disabled Fishermen's Incentives Policy 2018* was introduced to provide financial support to the families of fishermen killed in natural disasters, such as cyclones and storm surges, or in attacks by robbers, tigers, crocodiles and

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<sup>37</sup> Ibid policy 5(6).

<sup>38</sup> Ibid policy 6.

<sup>39</sup> Policy 2, *National Shrimp Policy 2014* (Bangladesh).

<sup>40</sup> Ibid policy 5.1.3.

<sup>41</sup> Ibid policy 5.1.2.

<sup>42</sup> Ibid policy 5.8.8.

<sup>43</sup> Ibid policy 5.3.5.

snakes during fishing.<sup>44</sup> The Fishermen Registration and Identity Card Project was launched and the government provided incentives and facilities to the families of the dead fishers from FY 2012–2013 to FY 2016–17.<sup>45</sup> The families of dead fishermen registered with the Department of Fisheries—and thus having identity cards issued by the government—receive compensation of Tk 100,000.<sup>46</sup> Financial assistance of up to Tk 50,000 is given to fishermen who become permanently disabled while fishing.<sup>47</sup>

**(f) *Bangladesh National Environment Policy 1992***

*Bangladesh National Environment Policy* (NEP) was approved in May 1992 with the aim of providing protection and sustainable management of the environment.<sup>48</sup> The policy aims to maintain the ecological balance and overall development through protection and improvement of the environment. In that time the policy was connected with fifteen sectors. In 2018, the draft of new *Environment Policy* was adopted by the Cabinet of Bangladesh which prioritised even more areas than to *Bangladesh National Environment Policy 1992*.<sup>49</sup>

The *National Environmental Policy 1992* was the first Bangladeshi initiative to open the door for new legal enactments to help cope with environmental challenges. The *Environment Policy 2018* covers important aspects not included in the 1992 environment policy, such as control of air pollution, ecosystem conservation and biosafety, hill ecosystems, ecotourism, mineral resources, human resource management, climate change preparedness and adaptation, disaster management, management of chemical substances, electronic waste management and general pollution control (noise, vibration, radiation, thermal, lighting and e-pollution).<sup>50</sup>

Under the National Environmental Policy, states were to ensure a proper and healthy environment for the preservation and increase in production of fisheries and livestock.<sup>51</sup> It is to

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<sup>44</sup> The *Deceased Fisherman's Family or Permanently Disabled Fishermen's Incentives Policy 2018*, Ministry of Fisheries and livestock, Bangladesh.

<sup>45</sup> Ibid preamble.

<sup>46</sup> Ibid policy 8.2.

<sup>47</sup> Ibid policy 8.3.

<sup>48</sup> *Bangladesh National Environment Policy 1992* (Bangladesh).

<sup>49</sup> Fifteen sectors of priorities are: agriculture, industry, health, energy, water development, flood control and irrigation, land, forest, wildlife and biodiversity, fisheries and livestock, food, coastal and marine environment, communication and transportation, population, education and public awareness.

<sup>50</sup> Policy 3.1-3.23, *Environment policy 2018* (Bangladesh).

<sup>51</sup> Ibid policy 3.12.1.



be hoped that these initiatives will not adversely affect the mangrove forests in Bangladesh.<sup>52</sup> Water development projects, flood control projects and irrigation projects—which affect the fisheries sector—should be re-evaluated.<sup>53</sup> The lease of water bodies under high threat of environmental pollution should be banned and ‘co-share-based societal management’—that is, a cooperative-based leasing system of water bodies—should be introduced.<sup>54</sup> The quality of water should be protected and guaranteed.<sup>55</sup> The shelter of fishes in the water bodies should be ensured.<sup>56</sup> The state should have to take proper initiatives to preserve those fisheries species whose numbers are decreasing rapidly.<sup>57</sup> The Bangladesh government should take the initiative to preserve the production of fisheries along the Bay of Bengal and prevent sea pollution.<sup>58</sup> Moreover, the government should have to give priority to the poor, vulnerable fishing people.<sup>59</sup> A proper database of the species of fishes of this locality should be constructed.<sup>60</sup>

Historically, the coastal fishing people were not reflected in the relevant national policies. However, there is a gradual move to either directly or indirectly include the issue of the protection of the socio-economic rights of the coastal fishing people of Bangladesh. The Coastal Zone Policy 2005 is an important initiative for integrated coastal zone management and sustainable coastal development. The national policies related to fisheries provide general guidelines for all fishing communities where the context of climate induced impacts and climate vulnerability of the coastal fishing people are not incorporated. However, the policies concerning the environment have many provisions that may facilitate conservation of the coastal environment and benefit the coastal fishing people.

## **2 Legislation Relating to Fisheries and Coastal Fishing People in Bangladesh**

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<sup>52</sup> Ibid policy 3.12.3.

<sup>53</sup> Ibid policy 3.12.4.

<sup>54</sup> Ibid policy 3.12.7.

<sup>55</sup> Ibid policy 3.12.8.

<sup>56</sup> Ibid policy 3.12.9.

<sup>57</sup> Ibid policy 3.12.10.

<sup>58</sup> Ibid 3.12.11.

<sup>59</sup> Ibid policy 3.12.12.

<sup>60</sup> Ibid policy 3.12.13.

Bangladesh Government has enacted several laws for protecting the socio-economic rights and wellbeing of fishing people. Their rights are regulated by both inland and marine laws. The laws and regulations relevant to their socio-economic rights are discussed below.

**(a) *East Bengal Protection and Conservation of Fish Act 1950***

The *East Bengal Protection and Conservation of Fish Act 1950* plays a significant role in fisheries management. This act covers all types of aquatic species—including fish, prawn and shrimp—at all stages in their life cycle and in all types of water bodies. This act defines certain offences—such as the attempt to destroy fishes by poisoning the water or the depletion of fisheries by pollution<sup>61</sup>—and provides penal provisions and judicial management whose main purpose is to protect the national fisheries in Bangladesh. This act gives rule-making power to the government, allowing it to upgrade its effectiveness for the protection and preservation of fisheries.<sup>62</sup> Sections 2, 3, 5 and 7 of the *East Bengal Protection and Conservation of Fish Act 1950* were amended in the *Protection and Conservation of Fish (Amendment) Act 1995*.<sup>63</sup>

**(b) *The Territorial Waters and Maritime Zones Act 1974***

The *Territorial Waters and Maritime Zones Act 1974* states that the Government of Bangladesh (GoB) may declare any zone of the high seas adjacent to its territorial waters to be an economic zone of Bangladesh.<sup>64</sup> The Bangladesh government adopted the *Territorial Waters and Maritime Zones Rules, 1977* for implementing the *Territorial Waters and Maritime Zones Act, 1974*. The government of Bangladesh aims to enact the *Bangladesh Maritime Zones Act 2018*, which is still under consideration. This Act provides for the declaration of maritime zones for the purpose of exploring and exploiting living and non-living resources, provides for the suppression of piracy, armed robbery, theft, and makes provision for punishment and for specified breaches.<sup>65</sup>

**(c) *The Marine Fisheries Ordinance 1983***

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<sup>61</sup> s 3(3)(c), *East Bengal Protection and Conservation of Fish Act 1950* (Bangladesh).

<sup>62</sup> Ibid s 3.

<sup>63</sup> *The Protection and Conservation of Fish Act 1950*, (Bangladesh).

<sup>64</sup> s5 (1), *Territorial Waters and Maritime Zones Act 1974* (Bangladesh).

<sup>65</sup> Preamble, *Bangladesh Maritime Zones Act, 2018* (draft), Maritime Affairs Unit Ministry of Foreign Affairs Government of the People's Republic of Bangladesh.

The *Marine Fisheries Ordinance 1983* makes provisions for the management, conservation and development of marine fisheries of Bangladesh. Under the provisions of the ordinance, the marine fisheries wing of the Department of Fisheries is authorised to deal with matters relating to marine fisheries exploitation, licensing and monitoring of fishing vessels, and also with enforcing the rules of the ordinance.<sup>66</sup> The *Marine Fisheries Rules 1983* are made under the *Marine Fisheries Ordinance, 1983*.<sup>67</sup> This ordinance provides that the government may exempt any non-mechanised and limited-horsepower local fishing vessel from the general provisions governing licences.<sup>68</sup> The government may also determine a specific zone in which only the aforementioned vessels may engage in fishing operations.<sup>69</sup>

The ordinance provides general provisions governing licences, which are not transferable except with the written permission of the Director, and the holder of a licence has the duty to provide information regarding catch. To be issued licences, local fishing vessels must be registered and have been inspected.<sup>70</sup> Fishing operations conducted by foreign fishing vessels are subject to prior authorisation and decisions made by the Director or a fisheries officer can be appealed.<sup>71</sup> Prohibited fishing methods are set out in Part VII and include the use of explosives and the use of fishing nets with particular mesh sizes. For conservation and management purposes, the government may declare any area of the Bangladesh fisheries waters, and any adjacent or surrounding land, to be a marine reserve.<sup>72</sup> Parts IX and X deal with powers of authorised officers, and offences and legal procedures, respectively. Lastly, Part XI sets out the matters upon which the Government is authorized to make rules.

The government adopted the *Protection and Conservation Fish Rules 1985*. The objectives of the Rules are the protection and conservation of fishing resources. The installation of fixed nets, cages, traps, etc. are prohibited as a means for controlling harmful fishing activities. It has also been made illegal to dredge and extract sand and gravel, and to discharge waste or any

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<sup>66</sup> The Marine Fisheries Ordinance 1983, Ordinance No XXXV.

<sup>67</sup> Ibid preamble.

<sup>68</sup> Ibid s 3.

<sup>69</sup> Ibid s 3(2).

<sup>70</sup> Ibid part IV.

<sup>71</sup> Ibid part V and Part VI.

<sup>72</sup> Ibid part VIII.

other polluting matter that disturbs, alters or destroys natural habitats of fish in marine reserves.<sup>73</sup>

**(d)     *The Bangladesh Environmental Conservation Act 1995***

The *Bangladesh Environmental Conservation Act, 1995* is the primary law relating to the protection of the environment in Bangladesh. The main goals of this act were to ‘provide for conservation of the environment, improvement of the environmental standards, and control and mitigation of environmental pollution’.<sup>74</sup> This act vests quasi-judicial power in the Department of Environment (DoE) headed by the Director General,<sup>75</sup> which can enforce laws for the protection and preservation of the environment. After the enactment of the *Environment Court Act, 2010*, a special environmental court system was introduced into the legal system of Bangladesh. The Act aimed to establish one or more environment courts and was enacted to resolve disputes and establish justice over environmental and social damage caused by any development activities. This act allows government to take necessary legal action against any parties who create environmental hazards or cause damage to environmentally sensitive areas as well as to human society. The *Environmental Conservation Act* provides safeguards against any environmental pollution that may affect the coastal fishing people. Moreover, these victimised people can seek a remedy for the violation of their environmental rights in an environmental court.

**(e)     *The Climate Change Trust Act 2010***

The *Climate Change Trust Act 2010* establishes the Climate Change Trust to redress the adverse impact of climate change on Bangladesh.<sup>76</sup> The primary aim of the trust is to plan for the adjustment of people in affected or at-risk areas. The trust aims to reduce the impacts of climate change and improve the lives and livelihoods of people at risk (through adaptation and

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<sup>73</sup> *The Protection and Conservation Fish Rules 1985* (Bangladesh).

<sup>74</sup> Preamble, *Bangladesh Environment Conservation Act 1995*.

<sup>75</sup> *Ibid* s 3.

<sup>76</sup> Preamble, *The Climate Change Trust Act 2010*, Act no LVII of 2010, (Bangladesh).

mitigation). The measures adopted may include technology development and transfer, capacity building and fund raising.<sup>77</sup>

The relevant legislation either directly or indirectly contains provisions for coastal fishing and fishing people. Although the *East Bengal Protection and Conservation of Fish Act 1950* provides no explicit provisions for the socio-economic rights of the coastal fishing people, the Act makes provision for the management of all fisheries resources. Also, the *Territorial Waters and Maritime Zones Act 1974* makes provision for the exploration and exploitation of the marine fisheries resources. The Act regulates fishing within the coastal water of Bangladesh. However, the main legislation for regulating marine fisheries is *the Marine Fisheries Ordinance 1983*. This Act contains limited provisions for the wellbeing of the coastal fishing people. In addition, *the Bangladesh Environmental Conservation Act 1995* and *the Climate Change Trust Act 2010* have provisions regarding the mitigation of the impacts of environmental damage and climate change. The Environment Act provides for the conservation of the coastal environment. Besides this, the Climate Trust Act offers provisions for assisting in the mitigation of climate induced impacts on climate vulnerable people. These legal protections can benefit the coastal fishing people and help improve their social and economic conditions.

### **3 Plans, Strategies and Programs Relating to Fisheries and Coastal Fishing People in Bangladesh**

The coastal belt of Bangladesh is considered among the poorest regions of the country (in 15 out of the 19 coastal districts) with GDP per capita below the national average.<sup>78</sup> The Bangladesh Government has adopted a number of programs, strategies and development plans to combat environmental hazards and to ensure a pollution-free eco-friendly environment. The development goals and aspirations of the government are outlined and harmonised in a range of short-, medium- and long-term development plans and strategies (discussed in the following sections).

#### **(a) Vision 2021**

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<sup>77</sup> Ibid s 5.

<sup>78</sup> Ministry of Finance, *Journey with Green Climate Fund: Bangladesh's Country Programme for Green Climate Fund* (Government of the Peoples' Republic of Bangladesh, 2018) 4.

The Bangladesh Government has initiated a long-term development plan called *Vision 2021*. The goal of Vision 2021 is to elevate Bangladesh from the Least Developed Country category to the Middle-Income Country category by 2021. It is described in *Perspective Plan of Bangladesh (2010–2021): Making Vision 2021 a Reality*.<sup>79</sup> This is the steppingstone and guideline for all sectorial and yearly development plans. It provides a road map for accelerated growth and proposes broad approaches for eradicating poverty, inequality and human deprivation.

Specific strategies and the task of implementation will be articulated through the two five-year plans: Sixth Five Year Plan (2011–2015) and the Seventh Five Year Plan (2016–2020) of Bangladesh,<sup>80</sup> which are the key plans for steering the country's development. The government intends to incorporate into these plans' environmental issues, such as mitigation of the risks arising from global warming and climate change, environmental pollution control, and water and natural resource management.

Vision 2021 covers the protection of fish hatcheries in coastal areas. The landless and marginal farmers affected by shrimp culture will be accommodated in a strategy involving small-holder aquaculture, with greater attention to hazards from cyclone surges and tidal bores.<sup>81</sup> Vision 2021 states the need for including disaster risk reduction strategies in all development plans.<sup>82</sup> In conformity with the targets of Vision-2021, the Department of Fisheries (DoF) has envisioned some important programs and targets, such as initiating good practices in environment-friendly fish and shrimp farming to promote exports, biological management; establishing easy access of fishers to open-water capture fisheries; and creating employment opportunities. It is expected that all these programs will help reduce present poverty from 6.5 crores to 2.2 crores by 2021.<sup>83</sup>

The goal of the plan is to meet the increasing demand of fishers through efficient management of water bodies. The plan proposes increasing the processes of closed-water fisheries

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<sup>79</sup> Preamble, the Perspective Plan (2010–2021), Perspective Plan of Bangladesh 2010–2021, (General Economics Division Planning Commission Government of the People's Republic of Bangladesh, April 2012) 1.

<sup>80</sup> Ibid.

<sup>81</sup> Ibid para 7.3.1, 49.

<sup>82</sup> Ibid para 4.3, 30.

<sup>83</sup> Department of Fisheries, *Annual Report 2017* (Ministry of fisheries and livestock, Bangladesh) 79.

production, increasing fresh water, (rather than brackish), and encouraging golda production in coastal areas. The plan also provides for the potential use of cage culture in flood plains, involving individual ownership. It emphasises the need to disseminate relevant technical knowledge among the educated youth. Furthermore, the plan suggests the creation of fishermen cooperatives.<sup>84</sup>

The target of Vision 2021 and the associated *Perspective Plan of Bangladesh (2010–2021)* was intended to be achieved through the implementation of the aforementioned five-year plans: the Sixth Five Year Plan (2011–2015) and the Seventh Five Year Plan (2016–2020).<sup>85</sup> Bangladesh launched its Seventh Five Year Plan (FYP) 2016–2020 in October 2015. It was then updated to make a specific recommendation to consider disaster risks in sectoral investments and plans. This 7th FYP focuses on accelerating growth and empowering citizens, and does not deviate significantly from the 6th FYP, which similarly proposed ambitious social, economic and environmental targets. The 7th FYP also incorporates the key elements of the *National Sustainable Development Strategy* that was developed to address the challenge of mainstreaming the SDGs across sectors.<sup>86</sup>

The main objectives relating to climate change, environment and disaster management under the 7th FYP are to enhance, preserve and conserve natural resources, and to ensure appropriate environment management systems for sustainable development. The government will undertake research and development to facilitate the introduction of innovative modern technology. The 7<sup>th</sup> FYP also aims to reduce potential economic losses due to climate change (particularly from floods, drought and salinity) and to conserve Sundarbans mangrove forest without any further deforestation and forest degradation.<sup>87</sup> Moreover, in the 7<sup>th</sup> five year plan

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<sup>84</sup> Ibid para 7.3.3, 50.

<sup>85</sup> General economic Division (GED), *The Seventh Five Year Plan 2017–2020* (Bangladesh Planning Commission, Government of the People's Republic of Bangladesh, December 2015)10.

<sup>86</sup> *Strengthening Finance for the 7th Five Year plan and SDGs in Bangladesh: Findings From an Independent Development Finance Assessment* (Final Report, Economic Relations Division, Ministry of Finance, Asia Pacific Development Effectiveness Facility) 10.

<sup>87</sup> Para 4.4.2, I, (General economic Division, Bangladesh Planning Commission, Government of the People's Republic of Bangladesh, December 2015) 289.

(2016-2020) an integrated coastal and ocean governance framework for Bangladesh has been proposed by the planning commission of Bangladesh<sup>88</sup>.

By 2020, the 7<sup>th</sup> FYP aims to increase aquaculture by 45%, fisheries production by 20%, hilsa production by 20% and marine fisheries production by 18%. The plan aims to raise the per capita protein intake to 60 g from domestically produced fish and fisheries product by 2020. It also aims to raise export earnings to US\$ 1.25 billion by 2020 from frozen shrimp, fish and value-added fish products. Moreover, the plan aims to rejuvenate at least 75% of endangered fish species in sanctuary areas by 2020 while also creating 25% more employment opportunities for unemployed youths. Another key target is to raise the income of fishers and fish farmers by 20% by 2020. Besides this, the plan aims to raise the participation of women in aquaculture production in fish and shrimp processing industries.<sup>89</sup>

Bangladesh has completed almost all the preparatory work for implementing its SDGs, including aligning its global development agenda with the 7th Five Year Plan.<sup>90</sup> According to the instruction of General Economic Division (GED) of Bangladesh, the Ministry of Fisheries and Livestock (MOFL) have identified some targets. One notable target is equal access to land and other productive resources for fisher families.<sup>91</sup> The government will protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers and lakes by 2020.<sup>92</sup> The Ministry of Fisheries and Livestock will build the resilience of the poor and those in vulnerable situations, and reduce their exposure to extreme climate-related events and other economic, social and environmental shocks and disasters.<sup>93</sup>

## **(b) Blue Economy Vision**

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<sup>88</sup> Hafez Ahmad, 'Bangladesh Coastal Zone Management Status and Future Trends' (2019), 22 *Journal of coastal management*, 1, 4.

<sup>89</sup> Department of Fisheries, *Annual Report 2017* (Ministry of fisheries and livestock, Bangladesh) 8.

<sup>90</sup> At the 70th UN General Assembly on 25 September 2015, UN Member States formally adopted the all-encompassing Sustainable Development Goals (SDGs)—widely referred as Agenda 2030 for Sustainable Development—to combat poverty in all its forms, inequality and reducing climate change adverse impacts. The SDGs are universal, and their implementation is the shared responsibility of all countries and to be addressed at all level's development. The Agenda 2030 calls for country-led systematic follow-up and review of the implementation of the SDGs. Among the 17 goals of the SDGs, goal 14 is 'Conserve and sustainably use the oceans, seas and marine resources for sustainable development'.

<sup>91</sup> Target 2.3, Sustainable Development Goals (Ministry of Fisheries and livestock, Bangladesh) 17.

<sup>92</sup> Ibid target 6.6, 30.

<sup>93</sup> Ibid target 1.5, 8.



*Blue economy* is a newly popular global concept and is currently widely used in Bangladesh<sup>94</sup>. The idea of a blue economy sparked interest in the country after the resolution of the maritime boundary dispute with neighbouring Myanmar and India.<sup>95</sup> The blue economy conceptualises oceans and seas as ‘development spaces’ where spatial planning integrates conservation, sustainable use of living resources, oil and mineral wealth extraction, bio-prospecting, sustainable energy production and marine transport. The blue economy approach is founded upon the assessment and incorporation of the real value of the natural (blue) capital into all aspects of economic activity: conceptualisation, planning, infrastructure development, trade, travel, renewable resource exploitation, energy production and energy consumption.<sup>96</sup> The blue economy offers an enormous range of opportunities to resolve issues of climate change in coastal areas, by addressing shipping and port facilities, fisheries and aquaculture development and much more. Bangladesh received an entitlement of 118,813 km<sup>2</sup> in the Bay of Bengal (BoB) after settling maritime boundary disputes with neighbouring Myanmar (in 2012) and India (in 2014).<sup>97</sup> This award allowed Bangladesh to establish sovereign rights over the living and non-living resources of BoB territorial waters of 12 nm, an Exclusive Economic Zone (EEZ) within 200 nm and a continental shelf extending up to 354 nm from the Chittagong coast.<sup>98</sup> It is obviously a vast area, and commercial and economic interests—together with environmental stakes—warrant proper protection and security.<sup>99</sup> There will be population migration to the southern part of Bangladesh due to blue economic zone development. It will create employment opportunities and other income-generating activities, help develop social services and security services as well as improving the overall standard of life for coastal peoples.<sup>100</sup>

### **(c) National Fisheries Strategy 2006**

<sup>94</sup> Md. Monjur Hasan et al, ‘The Prospects of Blue Economy to Promote Bangladesh into a Middle-Income Country’ (2018) 8 *Open Journal of Marine Science* 355–369.

<sup>95</sup> *Bangladesh v India* (2014) The Hague, Netherlands, The Bay of Bay of Bengal Maritime Boundary Arbitration between the People’s Republic of Bangladesh and Republic of India in the Permanent Court of Arbitration.

<sup>96</sup> Daud Hassan and Asrafal Alam, ‘Institutional Arrangements for the Blue Economy: Marine Spatial Planning a Way Forward’ (2019) 6(2) *Journal of Ocean and Coastal Economics*, 3.

<sup>97</sup> Press statement of the Honourable Foreign Minister on the verdict of the Permanent Court of Arbitration (Ministry of Foreign Affairs, Bangladesh, July 8 2014). <[http://www.mofa.gov.bd/PressRelease/PR\\_Details.php?TxtUserId=&PRid=854](http://www.mofa.gov.bd/PressRelease/PR_Details.php?TxtUserId=&PRid=854)>.

<sup>98</sup> *Proceedings of International Workshop on Blue Economy*, (Ministry of Foreign Affairs, Bangladesh, September 1–2, 2014) 88.

<sup>99</sup> Bhuiyan et al, ‘Marine Boundary Confirmation of Bangladesh: Potentials of Sea Resources and Challenges Ahead’ (2015) 43 *The Cost and Management* 18–24.

<sup>100</sup> Hasan et al, above n 94.

The *National Fisheries Strategy 2006* was formulated to propose ways in which the fisheries policies—in particular the *National Fisheries Policy*—could be implemented, and support offered to guide the sector.<sup>101</sup> It recognises the need for more support by enhancing capacity-building for the capture fisheries, both marine and inland, to reverse the current decline and to prevent further biodiversity and wetland losses. It also recognises the increased support needed for promoting aquaculture, and for improving the regulatory framework to facilitate continued expansion.

The key objectives of this strategy are to enhance fisheries resources and production, improve poverty alleviation, increase economic growth, maintain ecological balance and conserve biodiversity.<sup>102</sup> The strategy is the compilation of eight sub-strategies that have been formulated to give specific direction to particular areas. These have all been prepared using a participatory approach, with inputs from the Department of Fisheries, the private sector, research bodies (BFRI and universities), governmental agencies working in similar fields, NGOs, and fish farmers and fishers.

#### **(d) *Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009***

The *Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009* is a significant instrument for Bangladesh. The Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009 demonstrates the country's commitment to addressing the adverse effects of climate change. It is a key document that reflects national priorities in providing adaptation and mitigation measures. At the COP-13 meeting in Bali in 2007, all countries agreed to lowering emission for protecting and preserving the climate. As a result, the government developed the BCCSAP in 2008. The present BCCSAP (issued in 2009) is a revised version, with changed development priorities.<sup>103</sup> It includes sections on climate change, poverty eradication, increased well-being of all vulnerable groups in society, water resource management, and

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<sup>101</sup> Department of Fisheries, *Background of National Fisheries Strategy 2006*, (Ministry of Fisheries and Livestock, Bangladesh) 2.

<sup>102</sup> Ibid policy 2.1,3.

<sup>103</sup> *Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009* (Ministry of Environment, forest and Climate Change, Bangladesh).

management of the displacement of people and their livelihoods. The Ministry of Environment and Forests prepared the BCCSAP to promote and coordinate activities, giving prominence to adaptation, mitigation, capacity building, technology transfer and fund raising.<sup>104</sup> It sets out 44 programs and includes six 'thematic areas' dealing with the adverse impacts of climate change and support for low-carbon economic growth.<sup>105</sup>

**(e) *National Adaptation Programme of Action (NAPA) 2009***

The updated *National Adaptation Programme of Action, 2009* identified 38 adaptation measures of which 16 have been further developed for implementation by different ministries and departments. The Ministry of Environment and Forests will facilitate implementation of the adaptation measures (and will pursue raising international funds to help with the implementation). The updated NAPA has incorporated the findings of a number of studies. It highlights the impacts, vulnerabilities and adaptation assessments carried out over the previous few years. It has retained the format of the National Adaptation Programme of Action (NAPA)-2005 that was developed by the Ministry of Environment, Forests and Climate Change (MOEFCC). The NAPA is a response to the decision of the Seventh Session of the Conference of the Parties (COP-7) of the *United Nations Framework Convention on Climate Change* (UNFCCC) that Bangladesh develop a national action plan to respond to climate change.<sup>106</sup>

**(f) *Bangladesh Climate Change Trust Act 2010***

The Bangladesh Climate Change Trust (BCCT) was established on 13 October 2010 through the passage of the *Climate Change Trust Act, 2010*. The BCCT is a government trust that funds action to tackle the problems caused by climate change.<sup>107</sup> The BCCT provides secretarial support to the Trustee Board on Climate Change and the Technical Committee.<sup>108</sup> In 2010, the *Climate Change Trust (BCCT) Act* was formulated and consequently the government set up the

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<sup>104</sup> *National Adaptation Programme of Action 2009 (NAPA)*, Ministry of Environment Forests and Climate Change, Government of the People's Republic of Bangladesh <<https://www.preventionweb.net/english/policies/v.php?id=60148>>.

<sup>105</sup> The Climate Change Strategy and action Plan 2009, Ministry of Environment Forests and Climate Change, Government of the People's Republic of Bangladesh 32

<sup>106</sup> National Adaptation Program of Action 2009 (NAPA).

<sup>107</sup> Bangladesh Climate Change Trust (BCCT) is established under the Ministry of environment, Forest and Climate Change, Bangladesh <<http://www.bcct.gov.bd/site/page/e6fb75e8-f5e5-4bed-8adc-e6183e69353a/>>.

<sup>108</sup> Ministry of environment, Forest and Climate Change, *Functions of Bangladesh Climate Change Trust (BCCT)* <<http://www.bcct.gov.bd/site/page/e6fb75e8-f5e5-4bed-8adc-e6183e69353a/>>.

Climate Change Trust Fund (CCTF) for implementing the urgent and immediate recommendations of the act.<sup>109</sup> The Climate Change Trust Fund (CCTF) of Bangladesh is the first ever national climate fund established by a Least Developed Country (LDC)<sup>110</sup> and is an example to other countries for institutionalising national climate finance. An independent trustee board, chaired by the Minister of Environment, Forests and Climate Change, heads the governance and management of the BCCTF. A thirteen-member Technical Committee headed by the Secretary, Ministry of Environment, Forests and Climate Change is responsible for selecting and reviewing project proposals. There are two sub-committees under the Technical Committee. These sub-committees are made up of experts and are responsible for examining the projects which are extremely technical in nature. The Bangladesh Climate Change Trust is responsible for ensuring the efficient implementation of activities funded by the BCCTF.

**(g) *Bangladesh Climate Change Resilience Fund (BCCRF)***

The Bangladesh Climate Change Resilience Fund (BCCRF) is an innovative partnership between the Government of Bangladesh, Development Partners and the World Bank to address the impacts of climate change.<sup>111</sup> The fund was established in May 2010 with financial support from Denmark, European Union, Sweden and United Kingdom. Switzerland, Australia and United States subsequently joined the fund. The principal aim of the trust fund is to facilitate adaptation strategy. The Ministry of Environment, Forest and Climate Change has undertaken a number of programs to increase mass awareness about the need to protect the ozone layer from depletion. The objective of the BCCRF is to support the implementation of Bangladesh's Climate Change Strategy and Action Plan (BCCSAP).<sup>112</sup>

**(h) *Community-Based Fisheries Management***

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<sup>109</sup> Remeen Firoz, 'An analysis of BCCSAP Projects implemented in Bangladesh', *Dhaka Tribune* (16 February 2018) <<https://www.dhakatribune.com/tribune-supplements/tribune-climate/2018/02/16/analysis-bccsap-projects-implemented-bangladesh>>.

<sup>110</sup> International Centre for Climate Change and Development, *Introduction to the Bangladesh Climate Change Trust Fund* <<http://www.icccd.net/introduction-to-the-bangladesh-climate-change-trust-fund-2/>>.

<sup>111</sup> The government of Bangladesh established Bangladesh Climate Change Resilience Fund (BCCRF) for supporting climate affected people. See <<https://www.adaptation-undp.org/partners/bangladesh-climate-change-resilience-fund-bccrf>>.

<sup>112</sup> The World Bank, *Bangladesh Climate Change Resilience Fund* <<https://www.worldbank.org/en/news/feature/2012/05/22/bangladesh-climate-change-resilience-fund-bccrf>>.

Bangladesh has achieved recognition for its inclusive fisheries management through local community engagement. Community-based management of resources is a time-driven and successful activity initiated by the Department of Fisheries (DoF). Bangladesh is emerging as a country learning positive lessons from the community-based management of open water. The Consultative Group on International Agricultural Research (CGIAR) awarded the 2004 CGIAR Science Award to the Community-Based Fisheries Management Project (CBFM-2) of Department of Fisheries (DoF) for its outstanding and innovative performance in the field of community-based fisheries management. Currently, 6 out of 21 development projects are under implementation include community-based fisheries management, and more than 200,000 people are enjoying the benefits. The involvement of community-based organisations (CBOs) and village-level sub-committees in the decision-making process has been recognised as the first and fundamental step in creating sustainable co-management of fisheries resources. Initial work on networking by CBOs has begun at a regional level. Emphasis has been given to work with CBOs on a strategy for inland capture fisheries.<sup>113</sup>

**(i) *Master Plan of Department of Fisheries***

The Government of Bangladesh is developing a Master Plan for Fisheries to implement policies and strategies for the country's fisheries. The Master Plan is intended to be used in line with the Government's Vision 2021, the Seventh Five Year Plan, the Agenda 2030 of the United Nations and the Sustainable Development Goals. The Master Plan is designed to make Bangladesh a middle-income country by 2021 and a developed country by 2041. The Master Plan will be a strategic document that will be regularly reviewed, revised and updated as new development plans take place. The knowledge gathered from these reviews can be implemented as new innovations and improvements are developed. The revision of the plan will be coordinated with the annual work planning by the Department of Fisheries. The plan is the compilation of five thematic areas which have been developed to give particular direction to their specific areas. These have all been prepared using a participatory approach, with inputs

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<sup>113</sup> Department of Fisheries, *Annual Report 2017* (Ministry of fisheries and livestock, Bangladesh) 24.

from the key stakeholders (such as other government departments, the private sector, research organisations, NGOs and fish farmers).<sup>114</sup>

**(j) *Action Plan Implementation of National Social Security Strategy (NSSS) (2016-2021)***

The Constitution of Bangladesh provides for the state to bear the fundamental responsibility for ensuring that the right to social security for all Bangladeshis is met.<sup>115</sup> This provision, together with economic capacity and overall developmental commitment of the government, has paved the way for formulating a social security strategy, namely, the National Social Security Strategy (NSSS) of Bangladesh. The Cabinet approved the strategy on 1st of June 2015. The strategy aims to address the risks and vulnerability of the poor in the country with a view to reducing their poverty and marginalisation. The mission of the NSSS is to ‘Reform the National Social Security System by ensuring more efficient and effective use of resources, strengthened delivery systems and progress towards a more inclusive form of Social Security that effectively tackles lifecycle risks, prioritizing the poorest and most vulnerable members of society’.<sup>116</sup> The action plan for reforming governance incorporates an agenda for strengthening systems of objective targeting based on analysing poverty scores, forming an integrated Management Information System (MIS), paying government benefits digitally, and monitoring and evaluating results. The NSSS incorporates a broader outline of main actions to be accomplished by different ministries.<sup>117</sup> The action plans are grouped in three levels—the national, cluster and ministry levels—and there are measurable indicators that will be used to track the progress of each plan.<sup>118</sup>

**(k) *National Aquaculture Development Strategy and Action Plan of Bangladesh (2013–2020)***

The National Aquaculture Development Strategy and Action Plan of Bangladesh 2013–2020 sets out a road map for sustained action to develop the aquaculture sector. The plan was developed in recognition of the huge potential of the sector to supply high-protein food and generate

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<sup>114</sup> Ibid, 54.

<sup>115</sup> art 15(D), The Constitution of the People’s Republic of Bangladesh.

<sup>116</sup> Para 1.2, Action Plan Implementation of National Social Security Strategy (NSSS) of Bangladesh (2016-2021), (Cabinet Division and General Economics Division of Planning Commission Government of the People’s Republic of Bangladesh) 3-4.

<sup>117</sup> Ibid para 1.3, 4.

<sup>118</sup> Ibid para 1.5,5.

employment, income and foreign exchange for the country. The Department of Fisheries is the lead agency in the implementation of the plan. The plan aims to achieve 16 results, which include diversifying production systems, exploring untapped resources (such as coastal waters and floodplains), conserving resources on which aquaculture depends, strengthening institutions, building capacity and improving organisation in fish-farming communities. The plan has four strategic objectives, grouped under the three pillars of sustainability, namely, social, economic and environmental, and a fourth element, development, which involves governance and institutional capacity, and which enables the achievement of the other three objectives, social and economic development, ecological health, and strong institutions.<sup>119</sup>

### **(I) National Plan for Disaster Management (2016–2020)**

Bangladesh is one of the most disaster-prone countries in the world.<sup>120</sup> It has a long history of natural disasters. Between 1980 and 2008, it experienced 219 natural disasters.<sup>121</sup> The current National Plan for Disaster Management (NPDM 2016–2020) is a successor of the previous NPDM 2010–2015, which was the first policy document dealing with disaster management. The purpose of NPDM 2016–2020 is to guide the implementation of the *Disaster Management Act 2012*, allowing different ministries of the Bangladesh government and other agencies. Implementation of NPDM 2016–2020 is linked to the frameworks of national policies and legislations including ministries and departments. NPDM 2016–2020 focuses on understanding disaster risk, strengthening disaster risk governance, reducing disaster risk, enhancing effective disaster preparedness and facilitating a ‘Build Back Better’ approach to recovery, rehabilitation and reconstruction.<sup>122</sup> NPDM 2016–2020 differs in framework from its predecessor because of its alignment with recent global agreements, such as SFDRR, the Climate Change Agreement and the Sustainable Development Goals (SDGs). Considering all the changes occurring in the

<sup>119</sup> National Aquaculture Development Strategy and Action Plan of Bangladesh 2013–2020, (Ministry of Fisheries and Livestock, Government of the People’s Republic of Bangladesh and Food and Agriculture Organization of the United Nations, 2014) 1–9.

<sup>120</sup> ASM Marjan Nur, ‘Reducing Disaster Risks and Strengthening Resilience of Displaced People’, (*The Financial Express*, 2019) <[http://dspace.bracu.ac.bd/xmlui/bitstream/handle/10361/12417/The%20Financial%20Express\\_05.07.2019.pdf?sequence=1](http://dspace.bracu.ac.bd/xmlui/bitstream/handle/10361/12417/The%20Financial%20Express_05.07.2019.pdf?sequence=1)>

<sup>121</sup> Asian Disaster Reduction Center, *Information on Disaster Risk Reduction Of the Member Countries, Bangladesh* <<https://www.adrc.asia/nationinformation.php?NationCode=50&Lang=en&Mode=country>>. Among these disasters, cyclones were most devastating. Ministry of Disaster Management and Relief has been playing a vital role in disaster-risk reduction and preparedness and post-disaster rehabilitation management. See also the cyclones of 1970, 1991, cyclone Sidr in 2007, cyclone Aila in 2009 and the floods of 1988, 1998, 2004 and 2007.

<sup>122</sup> *National Plan for Disaster Management (2016–2020)* (Ministry of Disaster Management and Relief, Government of the People’s Republic of Bangladesh).

interim, and recognising the need for continual development, the Government of Bangladesh took stock of the progress made by NPDM 2010–2015 and incorporated the lessons learnt in the plan for 2016–2020. NPDM 2016-2020 is periodically reviewed and updated.<sup>123</sup>

**(m) *Bio-diversity Conservation Plan***

In an attempt to conserve valuable living species, the National Work Plan 2020 has been prepared. One of the goals of the plan is to implement a national bio-safety framework. Various programs under the plan are being implemented at Cox’s Bazar, St. Martin’s Island and Hakaluki haor to ensure the conservation, management and sustainable use of biodiversity in coastal and wetland areas. Some of the projects and programs undertaken by Department of Environment (DoE) are as follows:

- A project to integrate the National Biodiversity Strategy and Action Plan with the Strategic Action Plan 2011-2020
- A community-based adaptation in ecologically critical areas through the Biodiversity Conservation and Social Protection project (undertaken with assistance from the Climate Trust Fund) to address the impact of climate change on the coastal and wetland biodiversity and ecosystems and to ensure sustainable management of biological resources.

The Bangladesh Environment and Climate Change Outlook (ECCO) report, which introduced ecosystem-based adaptation (EBA), was launched in August 2014. Bangabandhu Sheikh Mujib Safari Park, Gazipur, near Dhaka, and Sheikh Russel Aviary Park, Rangunia, Chittagong, were established as part of the conservation of biodiversity and the natural environment of forests. Felling trees from natural forests, including old trees in plantations, has been halted in order to conserve biodiversity. Harvesting of trees from natural forests of government *khas* land is also being controlled. A Wildlife Crime Control Unit involving police, customs, coast guard and the Forest Department has been established to control the illegal killing and trafficking of wildlife. To protect the remaining forests for future generation, and to conserve biodiversity, local communities were involved in reinforcing the management initiatives in 19 protected areas. As

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<sup>123</sup> Ibid para 1.1.3.



a part of this process, co-management activity has been strengthened and the social forestry program has been expanded to other forest areas.

**(n) *Bangladesh Delta Plan 2100***

In Bangladesh, tidal surges, salinity, flooding, river erosion and cyclones poses a continual challenge to food security and livelihood for the coastal population.<sup>124</sup> To combat climate change and natural hazard challenges, the government of Bangladesh has formulated the long term Bangladesh Delta Plan 2100 (BDP 2100) which is an integrated and holistic plan to ensure water and food security, economic growth, environmental sustainability and to build resilience to climate change. The Bangladesh Delta Plan 2100 proposes three higher level goals and six specific goals. The plan seeks to integrate the medium long-term plans to achieve upper middle-income status for the coastal people by 2030. This plan will be a road map to address numerous weather and climate change related risk around the sea, major rivers or in water scares areas.

**(o) *Coastal Embankment Improvement Project: Phase 1***

The Coastal Embankment Improvement Project (CEIP) was approved by the World Bank Board on 26 June 2013 and came into effect on 24 November 2013. This project has helped Bangladesh to mitigate some of the larger impacts from cyclones and flooding by facilitating emergency services in coastal regions. The project supports the rehabilitation and upgrading of protection polders to protect the areas from tidal flooding and frequent storm surges and includes improvements in agricultural production and improvements to reduce saline water intrusion in selected polders. Further, the project aims to enhance the Government of Bangladesh's capacity to respond more efficiently and effectively to natural disasters. The project aims to rehabilitate 17 polders in six coastal districts, which will provide direct protection to the 760,000 people living within the polder boundaries. It will also enhance the resilience of the coastal areas to cyclones, tidal and floods and salinity intrusion. This in turn will

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<sup>124</sup> Bangladesh Delta Plan 2100 (2018) General Economic Division (GED), Planning Commission, Ministry of Planning, Bangladesh 4-14

enhance people's livelihoods through increased agricultural production during normal weather and reduced loss of life, assets, crops and livestock in the event of a disaster. The estimated project completion date is 31 December 2020.<sup>125</sup>

**(p) *The Multipurpose Disaster Shelter Project (MDSP)***

The Multipurpose Disaster Shelter Project (MDSP) is a World Bank-led disaster risk mitigation infrastructure project to strengthen emergency preparedness and to reduce the vulnerability of selected coastal populations of Bangladesh to climate change and natural disasters. The project is financing 556 new shelters for vulnerable populations and livestock in cyclone-prone areas. The project also aims to facilitate the recovery of livelihoods and infrastructure from damage caused by disasters and other natural calamities, and to build long-term preparedness through strengthened disaster risk management. The project has also been financing the construction and/or re-construction of 550 km of roads and 500 km<sup>2</sup> of bridges and culverts. Better roads will help people quickly reach the nearest shelter during disasters. The project is expected to benefit nearly 14 million people living in the nine coastal districts of Bangladesh.<sup>126</sup>

**(q) *The Urban Resilience Project (URP)***

The Urban Resilience Project (URP) was initiated to strengthen the capacity of the Government of Bangladesh's agencies to respond to emergency events and to strengthen systems to reduce the vulnerability of future building construction to disasters in Dhaka and Sylhet. The project seeks to create an enabling environment for coordinated, local disaster risk management based on three core pillars of disaster resilience in an urban setting: (i) effectively respond to urban disasters, (ii) reinforce existing infrastructure and (iii) ensure resilient reconstruction. Project activities also include an assessment of the vulnerability of critical facilities in Dhaka, Sylhet and other cities, which is needed for informed longer-term investments to reduce risk in the built environment. In addition, the project will support institutional infrastructure and capacity

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<sup>125</sup> 'Coastal Embankment Improvement Project-Phase-1 (CEIP-1)', *World Bank* <<https://projects.worldbank.org/en/projects-operations/project-detail/P128276>>.

<sup>126</sup> The Multipurpose Disaster Shelter Project (MDSP) <<https://oldweb.lged.gov.bd/PdFieldVisitView.aspx?projectID=309>>.

building to reduce long-term disaster vulnerability in Dhaka, through improved construction, urban planning and development.<sup>127</sup>

Besides these sectoral policies, the Bangladesh government has initiated multidimensional activities for enhancing fish production. The Ministry of Environment is implementing river pollution control activities with the collaboration of related agencies. These agencies are trying to help improve the health facilities—such as medication, nutrition and vaccination—of coastal fishing peoples. They offer free treatment to the most disadvantaged fishing people and their families, identifying original fishers and providing them with identity cards,<sup>128</sup> and giving them management authority of this khas jal mahal for short-term and long-term basis.<sup>129</sup>

The Bangladesh government has initiated insurance schemes, social safety nets such as VGD (vulnerable group development) and VGF (vulnerable gap funding) and provides substitute livelihood aids during the fish-catching restriction period. The administration of Bangladesh distributes khas land to the landless and homeless people to rehabilitate them after a natural disaster.<sup>130</sup> The Ministry of Water Resources formulates policies, rules, regulations, plans and strategies relating to water resources development and management. Under this ministry, the Bangladesh Water Development Board implements projects for flood protection, drainage and irrigation, riverbank erosion, delta development and land reclamation and river dredging. It also constructs barrages, regulators, sluices, irrigation canals, cross-dams, rubber dams, flood protection embankments and coastal embankments, and excavates and re-excavates canals.

Some of these programs include capacity-building training in cottage industries and providing salinity-tolerant seed. The government tackles the disaster of climate change by proposing and implementing various mitigation and adaptation programs. However, the initiatives are not sufficient to overcome the challenges of coastal people.<sup>131</sup> It is difficult to coordinate climate

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<sup>127</sup> Project Coordination and Monitoring Unit, Urban Resilience Project (URP) (Programming Division, Ministry of Planning, Government of the People's Republic of Bangladesh) < <https://urp.gov.bd/>>.

<sup>128</sup> Ministry of Land, Annual report, 2014–2015 (Government of the People's Republic of Bangladesh) chap 3, p 41.

<sup>129</sup> Ministry of Land, *Circular no. 514 dated 11-8-15* (Government of the People's Republic of Bangladesh).

<sup>130</sup> Ministry of Land, *Annual Report, 2014–2015* (Government of the People's Republic of Bangladesh) chapter 3, p-41.

<sup>131</sup> Joydeb Garai, 'Chapter 11 The Impacts of Climate Change on the Livelihoods of Coastal People in Bangladesh: A Sociological Study', (2014) *International Perspectives on Climate Change: Latin America and Beyond*, 151–163.

change issues with development planning, disaster risk reduction and the establishment of institutional arrangements for international finance for climate change.

Various plans, strategies, programmes and schemes have contributed in the improvement of the socio-economic conditions of the coastal fishing communities of Bangladesh. The government is working to achieve the objective of increasing production of the fisheries resources under the 7<sup>th</sup> FYP under Vision 2021. Moreover, both the governmental and non-governmental organizations and departments are working to achieve a sustainable blue economy under the Blue Economy Vision.

The government's *National Fisheries Strategy 2006* has enhanced the capacity-building for the capture marine fisheries that ultimately benefits the coastal fishing people. This Strategy is being implemented by *Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009*. One of the most important goals of the Strategy is to achieve poverty eradication, increasing the well-being of all vulnerable groups in society including the coastal fishing people. The government is also working to facilitate implementation of the climate adaptation measure under the National Adaptation Programme of Action (NAPA) 2009. Furthermore, Bangladesh Climate Change Trust is examining the development projects to ascertain whether they are obtaining the projects' benefits. This monitoring system will help explore the climate induced impacts on the socio-economic rights of the coastal fishing people of Bangladesh. The Trust is also assisting with financial incentives from the Bangladesh Climate Change Resilience Fund (BCCRF).

The coastal communities, including the coastal fishing people, have benefited from the Community-Based Fisheries Management development projects. Moreover, the Action Plan Implementation of *National Social Security Strategy (NSSS) (2016-2021)* has been addressing the risk and vulnerability of the poor people including the fishing community in the country. Furthermore, *National Aquaculture Development Strategy and Action Plan of Bangladesh (2013–2020)* has developed capacity building for coastal aquaculture. The National Plan for Disaster Management (2016–2020) has also been providing different supports for the safety and wellbeing of the coastal community including the coastal fishing people. In addition, the

Department of Fisheries is working to develop a master plan for the development of marine fisheries.

The Ozone Layer Protection Plan and the Bio-diversity Conservation Plan have contributed to the mitigation of the impacts of climate change on all, including the fishing people. The Bangladesh Delta Plan 2100 has been combating climate change and addressing the natural hazard challenges for the coastal community of Bangladesh. The Coastal Embankment Improvement Project: Phase 1 has supported the rehabilitation and upgrading of protection of the coastal community from flooding. Moreover, the Multipurpose Disaster Shelter Project (MDSP) and the Urban Resilience Project (URP) are facilitating plans for sustainable coastal development. Finally, the social insurance schemes such as VGD (vulnerable group development) and VGF (vulnerable gap funding) have been providing support and livelihood aids during the fish-catching restriction period.

## ***B Institutional Framework for Addressing Fisheries and Coastal Fishing People in Bangladesh***

The Bangladesh Government established the Ministry of Fisheries and Livestock (MoFL) in 1985. The MoFL has played a vital role in the overall development of the socio-economic conditions of the vulnerable people of Bangladesh.<sup>132</sup> It has been involved in the preparation of schemes and the coordination of national policies in relation to fisheries, in the prevention and control of fish diseases, in the management and development of government fisheries and in the conservation of fish and other aquatic organisms of economic importance. The ministry has been involved in all matters relating to marine fisheries, such as permission, the licensing and monitoring of fishing vessels, fishing and fisheries beyond territorial waters (including deep sea fishing), fish quality testing and supporting the utilisation of coastal land for brackish water shrimp culture.

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<sup>132</sup> Ministry of Livestock and fisheries ,Bangladesh (chapter 10)  
<[https://mof.portal.gov.bd/sites/default/files/files/mof.portal.gov.bd/page/5e31763f\\_f5b2\\_4ecb\\_bf9a\\_edc8609d2f3f/G-1\\_09\\_44\\_Fisheries\\_English.pdf](https://mof.portal.gov.bd/sites/default/files/files/mof.portal.gov.bd/page/5e31763f_f5b2_4ecb_bf9a_edc8609d2f3f/G-1_09_44_Fisheries_English.pdf)>.

The MoFL has been working to improve the productivity of this sector by providing financial and infrastructure development facilities to meet the demand for animal protein of the growing population by increasing the production of fish, meat, milk and eggs. The ministry is responsible for formulating, updating and implementing acts, rules and policies relating to the development of fisheries. It is also responsible for the proper development and management of fisheries and livestock, research activities and human resources development, conducting survey on fisheries, management, conservation, acquisition and development of in-land, coastal and marine fisheries.<sup>133</sup>

## **1 Department of Fisheries (DoF)**

After the independence of Bangladesh in 1971, the Central Fisheries Department of the then East Pakistan (now Bangladesh) merged with the Department of Fisheries (DoF) of Bangladesh.<sup>134</sup> Later, in 1984, the Central Marine Fisheries Department merged with the Department of Fisheries as a wing of Marine Fisheries.<sup>135</sup> The Department of Fisheries is overseen by the Ministry of Fisheries and Livestock. The functions of the Department of Fisheries (DoF) are management, project implementation, training and human resource development, enforcement of laws and regulations, conservation, quality control, registration and certification, fishing licenses, fisheries awareness building and motivation, support to policy formulation, and administration. The DoF is responsible for fish inspection and quality control stations, marine fisheries stations, fisheries training centres, farms and hatcheries.<sup>136</sup> The department's mandate includes assisting the Ministry of Fisheries and Livestock to formulate relevant policies and acts.

## **2 Bangladesh Fisheries Development Corporation (BFDC)**

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<sup>133</sup> Ministry of Fisheries And Livestock, *Functions of the Ministry* <<https://mofl.gov.bd/site/page/c3827475-8058-4204-b846-8cba1e418438/History-and-Activities>>.

<sup>134</sup> 'About Department of Fisheries' *Department of Fisheries*, <<http://fisheries.gov.bd/site/page/43ce3767-3981-4248-99bd-d321b6e3a7e5/>>.

<sup>135</sup> Ibid.

<sup>136</sup> Ibid.

The Bangladesh Fisheries Development Corporation (BFDC) is a national corporation that constructs fish harbors. It also runs cold storage and auction houses, and fish processing centres and transportation centres in Bangladesh. The corporation was established in 1973.<sup>137</sup> It owns a large portion of the sea-going fishing boats and ships in Bangladesh. It plays a vital role in marketing, surveying and investigating fishery production, in training, and in sales of fish from government-owned water bodies.<sup>138</sup> The corporation undertakes to establish fishing industries, organisations for the export of fish and fisheries products, and operations for the preservation, processing, distribution and marketing of fish and fishery products. It is also responsible for encouraging the creation of fishermen's co-operative societies.<sup>139</sup>

### **3 Bangladesh Fisheries Research Institute (BFRI)**

The Bangladesh Fisheries Research Institute (BFRI) is an autonomous government research institution under the Ministry of Fisheries and Livestock.<sup>140</sup> The BFRI was founded in 1984 and started operating in 1986. The headquarters are located in Mymensingh district and the institution manages four specialised research stations: Riverine Station, Freshwater Station, Brackish Water Station and Marine Fisheries and Technological Station. The objectives of this institute are to carry out basic and adaptive research for the development and optimum utilisation of all living aquatic resources and to coordinate fisheries research activities in Bangladesh. The institute advises the government in all matters relating to research and management with respect to living aquatic resources. Another important objective of this institute is to transfer relevant technologies to users through training of extension workers, planners, fish farmers and other relevant persons.<sup>141</sup> Many other ministries—such as the Ministry of Local Government, Rural Development and Co-operatives, Ministry of Land, Ministries of Finance, Ministry of Planning and Ministry of Foreign Affairs—have direct

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<sup>137</sup> Bangladesh Fisheries Development Corporation (BFDC), *Perspective of Establishment* <<http://www.bfdc.gov.bd/site/page/211e3ef7-a76f-4e0e-8773-ae85d2d1bce1>>.

<sup>138</sup> Ibid.

<sup>139</sup> Functions of BFDC, <<http://www.bfdc.gov.bd/site/page/af7142e1-11ba-47b2-8bd5-5a9528abb53d>>.

<sup>140</sup> Bangladesh Fisheries Research Institute (BFRI), introduction of BFRI, <<http://www.fri.gov.bd/site/page/b1b7355e-85a3-44a4-8e6e-9b720a3a63f4>>.

<sup>141</sup> Bangladesh Fisheries Research Institute (BFRI), Aims & Objectives, <<http://www.fri.gov.bd/site/page/b1b7355e-85a3-44a4-8e6e-9b720a3a63f4>>.

involvement in improving the fishing communities' socio-economic conditions. This is set out in the following table.

Ministry	Institution	Activities
Ministry of Fisheries and Livestock (MoFL)	Department of Fisheries (DoF)	Administration, management, development, extension and training
	Bangladesh Fisheries Development Corporation (BFDC)	Training, production and marketing
	Bangladesh Fisheries Research Institute (BFRI)	Research and training
Local Government, Rural Development and Co-operatives	Rural Development Board	Fisheries components of integrated rural development
	Directorate of Co-operatives	Registration and supervision of fishermen co-operatives
	Bangladesh Jatiya Matshyajibi Samabay Samiti (BJMSS)	Development of fishermen co-operation of ice plants and import of gear
	Bangladesh Samabay Bank Ltd.	Financing fishermen's co-operatives
	Upazila Administration	Management of water bodies less than 20 ha.
Land	Land Administration and Land Reform Division	Leasing of public water bodies
Finance	External Resource Division	Administration of external aid on fisheries
	Commercial Banks	Credits or loans for fish culture
Planning	Fisheries Section	Planning and overall co-operation of all development activities on fisheries
Foreign Affairs	–	Exclusive Economic Zone (EEZ) negotiation

(Source: Ministry of Fisheries and Livestock, 1995)

The above table shows that the ministry of fisheries and livestock (MOFL) has three main institutions which are: the department of fisheries (DOF), the Bangladesh fisheries development corporation (BFDC) and the Bangladesh fisheries research institute (BFRI). Each institution has expertise in different fields, so the DOF's main aim is in regard to administration, management,



development, extension and training, while the BFDC's main goals are to provide training, production and marketing strategies. The BFRI, on the other hand, concerns itself with implementing research and training.

The local government, rural development and co-operatives ministry have many institutions working collectively. The main aims of the ministry are to make policies, rules and legislation regarding fisheries components in integrated rural development, establishing registration processes and supervising fishermen co-operatives. Their role is also to financially aid the fishing community as well as to manage water bodies less than 20 Ha.

The Land Ministry is tasked with the duty of leasing land and public water bodies to the public and the fishing community. The Finance Ministry has the duty of providing external aid to fisheries as well as assembling loaning opportunities for the fishing people to use at any time. The Planning Ministry plays a vital role in the planning and overall co-operation of all development activities on fisheries. Finally, the Foreign Affairs Ministry directs matters and negotiations regarding exclusive economic zones across the country.

### **III ANALYSIS OF THE CURRENT LEGAL AND INSTITUTIONAL FRAMEWORKS**

In Bangladesh, there are twelve regulations executed for developing, regulating and managing fishery resources. The implementation of these laws often met limited success, due to a number of shortcomings in the legislation. These shortcomings are the lack of clear policy guidelines and strategy, the inadequacy of the existing regulatory framework, the non-enforcement of legislation, jurisdictional conflicts, the absence of regular law reviews or updating mechanism, and the formulation of competing by-laws, rules and orders. The gaps and loopholes of the current legal and institutional arrangements addressing the socio-economic rights of coastal fishing people are illustrated in the following sections.

#### **A *Lack of a Comprehensive National Fisheries Policy***

The existing marine fisheries policies and related documents offer no long-term outlook for the quantification, judicious exploitation, restoration or protection of the coastal fishing people. There is no explicit policy for the protecting the socio-economic rights of the coastal fishing

people, and thus they remain below consideration in national plans and development. The current plans do not incorporate all the necessary elements. They do not offer sustainability based on long-term perspectives or a wider national marine development policy and planning framework.<sup>142</sup>

The *National Fisheries Policy 1998* (NFP) has several objectives. These include enhancing fisheries production, creating self-employment and improving the socio-economic conditions of the fishers and alleviating poverty. The NFP also aims at fulfilling the demand for protein, earning foreign currency by exporting fish and fisheries products to achieve economic growth, maintaining ecological balance, conserving biodiversity, and ensuring recreational facilities. It also provides policy directions for procurement, preservation and management of fisheries resources of the open-water bodies, for fish culture and management in closed freshwater bodies, for culture of shrimps in coastal regions, and for exploitation, conservation and management of marine fisheries resources.

The policy also provides guidance on the establishment of hygienic fish landing centres, transportation, marketing, processing, quality control, export of fish, fisheries education, extension, research, organisational facilities, fisheries credit and fisheries co-operatives. The policy needs to shed light on how the impacts of climate change—such as sea-level and temperature rises, variation in precipitation and salinity intrusion—affects important fish species and their breeding, and what adaptation strategies might be helpful. The monitoring of the impacts of climate change, response measures, institutional strengthening and coordination, and disaster risk reduction all need to be addressed further.

## **B    *Absence of National Policy to Address Climate-Induced Impacts on Coastal Fishing People***

Until now, all responses to climate change have been carried out in the absence of an umbrella climate change policy. As a result, sectors which need climate adaptation are setting their own goals. However, climate change cuts across many sectors. Clearly, the cross-sectorial nature of climate change necessitates an umbrella policy.<sup>143</sup> In the last part of 2018, the Cabinet of

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<sup>142</sup> Shamsuzzaman et al, above n 7.

<sup>143</sup> Rejaur Rahman, 'Climate Change Policy is Crucial for Bangladesh', *bdnews24.com* (26 December 2017) <<https://opinion.bdnews24.com/2017/12/26/climate-change-policy-is-crucial-for-bangladesh/>>.

Bangladesh adopted a somewhat ambitious draft climate policy, which is yet to be passed by Parliament. Although widely appreciated, if the policy cannot be enforced in the fisheries sector because of infrastructural difficulties, then it cannot be truly effective for the community.<sup>144</sup>

Along with the entire climate focused policy and strategies, in the last 30 years Bangladesh has enacted some laws, rules and regulations, which rarely focus on the climate induced impact on coastal fishing people. Since the formulation of NAPA, 2005 and BCCSAP, 2009, Bangladesh has adopted many projects which focus on the livelihood and socio-economic condition of coastal fishing people. For example, Coastal Embankment improvement and Afforestation Project, led by the World Bank through CIF and the International Development Association (2013-2020); Coastal Embankments Improvement and Afforestation project led by the World Bank (2013-2020); Urban Flooding of the Greater Dhaka Area in a Changing Climate: Vulnerability, Adaptation and Potential Costs project, also led by the World Bank are mentionable which have been taken for to withstand daily, seasonal, and erratic climate induced disasters, including floods and cyclonic storms.<sup>145</sup>

The Bangladesh Climate Change Strategy and Action Plan (BCCSAP) is an ambitious proposal. Several researchers want to revisit this plan, focusing on developing good monitoring, evaluation and learning (MEL) systems. They are aware that anthropogenic activity is creating a warming world that is already causing loss and damage, and understand that international diplomacy needs to go beyond merely sending a delegation to the annual conference of parties of the *United Nations Framework Convention on Climate Change* (UNFCCC).<sup>146</sup> The BCCSAP should also be revisited in light of the importance of the environmental impact on the fisheries sector in Bangladesh.

Some targets are already set in the Intended Nationally Determined Contributions (INDC) which the government produced in 2015 and submitted to UNFCCC, even though BCCSAP sets some priorities which are not directly applicable for the coastal fishing people. Considering the future

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<sup>144</sup> see the climate change policy 2018, Bangladesh.

<sup>145</sup> Alicia Natalia Zamudio and Jo-Ellen Parry, 'Review of Current and Planned Adaptation Action in Bangladesh CARIIA Working Paper no. 6.' (2016) *Collaboration Adaptation Research Initiative in Africa and Asia*, 28, 50, 59

<sup>146</sup> Saleemul Huq, 'Updating Bangladesh's Climate Change Strategy And Action Plan Newspaper', *The Daily Star* (11 April 2018) <<https://www.thedailystar.net/opinion/politics-climate-change/updating-bangladeshs-climate-change-strategy-and-action-plan-1560916>>.

risks to the country of climate change, two priority sectors appear to be agriculture and forestry and therefore, policy directives are needed regarding how we reduce the vulnerability of the poor to climate change and simultaneously sustain our progress towards poverty alleviation.<sup>147</sup> In the same way, the mass fisheries sector in Bangladesh—which is directly affected by environmental pollution—should be under the umbrella of the environmental policy so that their vulnerability can be reduced.

### **C    *Absence of Effective Environmental Protection of the Coastal Fishing People***

Bangladesh is deemed a ‘least developing country’, struggling with environmental challenges and, as a result, a large number of people directly involved in the fisheries sector are adversely affected. Several researchers propose that the adverse effect of climate change on the fisheries sector could be reduced through increasing fishers’ access to educational, physical, financial and livelihood opportunities.<sup>148</sup> In environmental jurisprudence, the ‘Green Court’ is a key concept for or in environmental administration. The Environmental Court was established in 2000 by the *Environmental Court Act, 2000* and in 2010, a new ‘Green Court’ was established by the new *Environmental Court Act, 2010*.<sup>149</sup> Through this act, the Environmental Court and Environmental Appellate Court were established, but these courts did not meet the hopes and do not play a key role in environmental management. There are many reasons behind this in a jurisprudential sense. The act cannot be said to be complete law as the victim cannot directly file any allegation to the court. Section 26 of the act empowers the Government of Bangladesh to frame rules for this act, which are still absent. Moreover, the Department of Environment can file cases before this court. However, the access of mass people to file cases is not explicit. The crucial question is whether the Department of Environment is strong enough to fight those powerful people causing environmental pollution.

Another issue is that the Department of Environment has to be a strong legal institution to produce evidence before the court and to prove their cases. The Environmental Court should be strengthened again, and reform should be made in such a way that the court will not wait

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<sup>147</sup> Rahman, above n 143.

<sup>148</sup> BG Akunga, ‘Influence of Climate Variability on Coastal Small-Scale Fishing Communities in Kenya’, (School of Environmental Studies, Kenyatta University, 2015).

<sup>149</sup> *Environmental Court Act, 2010*, (Bangladesh), Act no 56 of 2010.

for the parties to produce evidence but will discover evidence of environmental pollution by their own efforts. It is true that in an adversarial legal system, a court will act as an umpire. However, the Environmental Court should be treated separately, as its main object should be to prevent environmental pollution and the organogram should be framed perfectly, so that rather than umpire, it can play an active role to judiciously prevent environmental pollution in coastal areas of Bangladesh.

In Bangladesh there is a mobile court, led by an Executive Magistrate, to prevent fishermen from catching Hilsha fish in a particular season. Last year, mobile courts sentenced 47 fishermen to terms of imprisonment, and seized around 308 kilograms of hilsa, in Faridpur and Chandpur under the *Protection and Conservation of Fish Act, 1950* for defying a 22-day ban on netting the fish till 28 October.<sup>150</sup> In October 2013, six fishermen were shot and the upazila nirbahi officer (UNO) and a policeman received injuries from bricks thrown during a clash between a mobile court and a group of fishermen on Bishkhali River at Majer Char in Barguna Sadar upazila.<sup>151</sup> This demonstrates that ultimately the enforcement of law goes against poor root-level fishermen, who are basically day labour. But ultimately the owners of fishing boats and nets are out of sight. As a result, the main victim here is the poor root-level fisherman. This disproportionate use of law actually does not ensure environmental justice and cannot bring any effective solution. So, for effective enforcement of environmental management through the application of law, it must be used against the powerful section of the society who receive the most benefit from environmental violence. The absence of a proper environmental education system is another loophole of the current arrangement. Without proper environmental education, awareness and caution cannot be built up among the masses, even though for the conservation of biodiversity, an all-out effort is necessary involving different levels of stakeholders engaged in its use, study, research, and protection. To this end, various steps need to be taken, such as education, information dissemination, action programs, preventive measures, and policy decisions. A multi-sectorial policy is required, as the conservation of biodiversity involves various stakeholders and the national policy planning

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<sup>150</sup> '47 fishermen jailed, 2 fined for netting hilsa', *The Daily Star* (17 October, 2018)

<<https://www.thedailystar.net/country/news/47-fishermen-jailed-2-fined-netting-hilsa-1647769>>.

<sup>151</sup> Ibid.

authorities should recognise its necessity and ensure multi-sectorial coordination. Awareness about the need for conservation of biodiversity among all sections of society should be encouraged.<sup>152</sup> However, in order to cope with this new environmental regime, in September 2018, the Cabinet of Bangladesh Government passed a new environmental policy, which specifically focused on the impact of environmental changes in the fisheries sector.<sup>153</sup>

#### **D    *Absence of Effective Regulatory Mechanism for the Conservation of Coastal Fisheries***

The IPCC has reported that climate change and its impacts can result in the outbreak of new diseases and pests that will affect fisheries. Degradation of productive land, including quality and physical loss, are key concerns for fisheries and livestock production.<sup>154</sup> So it can be seen as a major challenge for Bangladesh to maintain the stable production of fisheries. It is true that Bangladesh is a densely populated country, which has more than 170 million people. So, it is a major challenge to supply nutrition to all the population. As fish production is going to be reduced due to environmental changes, it would be major challenge for Bangladesh to keep production stable. Moreover, Bangladesh is a country which earns remittance by exporting shrimps. As its production is reduced due to salinity, it also faces significant economic impacts. Thus, economic consequences cannot be overlooked.

#### **E    *Inadequate Arrangements for Migration and Rehabilitation of Coastal Fishing People***

‘Climate change migration’ is a well-known concept in the environmental world, and the funding gap in the migration of affected people is considered a major worldwide challenge. This funding gap is the lack of a dedicated source of international funding to help offset the costs that developing countries may incur in dealing with climate change migration. To remedy this gap, there are proposals for a new international fund financed by developed countries to assist developing countries with the costs of climate migration. Legal academics tend to emphasise the rights gap in discussing climate change migration, but the funding gap is arguably an equal

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<sup>152</sup> *ibid* section 152

<sup>153</sup> Chap 3.12 of *Draft Environmental policy, 2018*, approved by Cabinet of Bangladesh Government, but has not been enforced.

<sup>154</sup> Bangladesh Department of Finance, *Bangladesh Economic Review 2009* (Bangladesh Bureau of Statistics).

and possibly greater motivator behind the recent proposals for a new binding multilateral instrument.<sup>155</sup>

The Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009 is a key document that reflects national priorities in terms of adaptation and mitigation. Unfortunately, there is no allocated budget for the fishermen who are directly facing environmental vulnerability. Allocation of budget for them is important for two reasons. Firstly, they are a vulnerable group facing the significant dangers of salinity, erosion and other environmental pollution. Secondly, when the law is enforced to ban fishing suddenly or for a specific period, these fishermen face economic difficulty. Therefore, they should be considered as key stakeholders in this budget.

#### **F    *Insufficient Local Initiative to Broaden Marine Policy***

Though there are various diverse policies concerning the marine and marine-related sectors, two policies are more relevant than the others. These are the *Marine Fisheries Ordinance 1983*,<sup>156</sup> and the *National Fisheries Policy 1998*.<sup>157</sup> It could be argued that the sector is well ahead of others on policy matters as other sectors were without policies during those periods. Since their inception, a number of initiatives have been taken to amend the documents, but these were mainly cosmetic. No serious approaches in recent years have been taken to broaden participation in policy development for the conservation and protection of natural resources. So far, local initiatives are not very visible, although the recent International Tribunal Law of the Sea (ITLOS) verdict created much enthusiasm in printed and electronic media, which needs to be used to broaden marine policy.<sup>158</sup>

#### **G    *Gap of an Appropriate Integrated Coastal Management***

Coastal areas in a delta are its vital living landmass. They constantly interact with the sea and ocean and define the configuration of the coastline and shape coastal zones. Therefore, coastal zone management is important, and integrated coastal management (ICM) is necessary and vital for physical and biological resources conservation, biodiversity protection and renewable

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<sup>155</sup> Katrina Miriam Wyman, 'Responses to Climate Migration' (2013) 37 *Harvard Environmental Law Review* 167.

<sup>156</sup> *The Marine Fisheries Ordinance 1983* (Bangladesh) <<http://bdlaws.minlaw.gov.bd/>>.

<sup>157</sup> *National Fisheries Policy 1998*, Bangladesh, 1, <<http://www.fisheries.gov.bd/site/view/policies/Policy>>.

<sup>158</sup> Press statement of the Honorable Foreign Minister on the verdict of the Permanent Court of Arbitration (2014), Ministry of Foreign Affairs, Bangladesh

resource exploitation. In the fisheries and marine fisheries policies, ICM as a concept has been incorporated into all policies, sectoral and individual interests. ICM is an appropriate platform to involve all stakeholders in a participatory way. It should involve all governing authorities and should address on sustainability issues, including socio-cultural, economic, geographical and environmental. ICM should help to implement a code of conduct for responsible fisheries. The sustainable development of livelihoods based on coastal and marine resources is a central premise of the Coastal Zone Management (CZM) policy.<sup>159</sup>

### **H    *Poor of Implementation of Marine Fisheries Regulations***

*The Marine Fisheries Ordinance, 1983* has a lacuna in demarcating the coastal marine area from an 18.29 m depth line to the limits of the territorial sea, where destructive fishing practices are very common. The *Protection and Conservation of Fish Act, 1950* is the act currently in place for regulating inland fishing practices, but it may have questionable application to the area. In spite of possessing an institutional setup for the sustainable use of coastal fishery resources, a conflict of jurisdiction and the overlapping of functions of authority has led to confusing situations regarding the appropriate departments.<sup>160</sup>

A major part of fisheries policy implementation is the effective monitoring of policy status and assessing the effectiveness of fisheries and marine fisheries policy management and mitigation approaches, ensuring that the desired decrease of marine fisheries stresses and improved fish and fisheries quality has occurred. So far, it appears that fisheries and related policies lack proper clauses for ensuring adequate evaluation and monitoring of their effects.<sup>161</sup>

### **I    *Institutional Inadequacy in Management and Development of Coastal Fishing***

Although the Bangladesh Fisheries Development Corporation (BFDC) is involved in the processing, transportation and marketing of fish and fish produce, its role is now decreasing (as that the private sector is quickly expanding and has substantially taken over the role). The challenge will be for the public sector to provide regulatory oversight and quality assurance. It needs to play a more facilitative role in providing appropriate extension and technology

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<sup>159</sup> Shamsuzzaman et al, above n 7.

<sup>160</sup> Shamsuzzaman et al, above n 17.

<sup>161</sup> Shamsuzzaman et al, above n 7.



dissemination services, so that the private sector can continue to innovate and invest in the supply chain. In the past, the product quality control measures were limited to export, particularly of shrimp. Even then, it was not possible to fully comply with the Hazard Analysis and Critical Control Point (HACCP) standard. Due to these problems, shrimp exports, particularly to the EU countries, were hampered and temporarily closed several times.<sup>162</sup>

#### IV CONCLUSION

The constitution of Bangladesh acknowledges that the basic needs such as food, clothes, shelter and education of every citizen should be ensured by the state. Despite this, those in the fishing community are often not able to meet their basic human needs, and their living standard is deteriorating. The rising trend of climatic vulnerabilities and natural calamities is progressively making them more vulnerable. There are several policies, legislation, plans, programmes, strategies and actions that are either directly or indirectly relevant to the socio-economic rights of the coastal fishing people of Bangladesh. The national policies concerning fisheries, coastal zone management and environment, do provide guidelines and goals to prevent impacts on the socio-economic rights of the coastal people. The policies cover the issues of fisheries conservation, ecosystem management and biodiversity protection. The relevant legislation provides the regulating mechanism for marine fisheries management, conservation of fisheries resources, prevention of coastal pollution and assistance for the wellbeing of the fishing communities. Furthermore, the current plans, strategies and programmes provide social and economic supports for the vulnerable people where the coastal fishing people are also the beneficiary.

In recent years, the Bangladesh Government has taken some steps towards the conservation and management of fish stocks, both to optimise total production and ensure the livelihoods of fishers. However, there are several gaps and challenges in the current legal and institutional

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<sup>162</sup> General Economic Division (GED), The Seventh Five Year Plan (2016–2020), (Bangladesh Planning Commission, Government People's Republic of Bangladesh, 2015), 288.

arrangements for dealing with the climate induced impacts on the socio-economic conditions of the coastal fishing people of Bangladesh. There is no individual Act specifically dealing with coastal fisheries and fishing people; rather, coastal fisheries are governed by general national fishery laws, rules and policies. The national laws provide guidelines for the conservation, management and development of marine fisheries resources. In Bangladesh, there are some limitations on the proper implementation of laws, such as lack of clear policy guidelines and strategy, inadequacy of existing regulatory framework, non-enforcement of legislation, jurisdictional conflicts, the absence of regular law review and updating mechanisms, and the formulation of competing by-laws, rules and orders.

The correct use of laws and regulations is critical for the proper exploitation and conservation of the capture fisheries resources. Chapter Four of this research shows that India has achieved significant progress in adopting specific provisions for the socio-economic wellbeing of its coastal fishing people. However, the legal and institutional initiatives to mitigate the climate induced impacts on the coastal fishing people are at rudimentary stage to protect the socio-economic rights of the coastal fishing people. In this case, Sri Lanka has achieved admirable progress in addressing the climate induced impacts on its coastal fishing people. Apart from India and Sri Lanka, the Maldives has also been working for the socio-economic development of its coastal fishing people by minimizing climate induced impacts.

The current legal and institutional arrangements of Bangladesh concerning climate change and the socio-economic rights of the coastal fishing people are at the rudimentary stage compared to India, Sri Lanka and the Maldives. If appropriate measures are not taken, the coastal fishing people of Bangladesh will be more vulnerable because of climate induced impacts. The next chapter will evaluate the current legal and institutional framework addressing climate change and the socio-economic rights of the coastal fishing people, in order to discover any gaps and challenges for the protection of their rights.

## CHAPTER SIX

### EVALUATION OF LEGAL AND INSTITUTIONAL FRAMEWORKS FOR CLIMATE CHANGE IN BANGLADESH

#### I INTRODUCTION

The previous chapter investigated the existing legal and institutional arrangements addressing climate-induced impacts on the socio-economic rights of the coastal fishing people of Bangladesh. This chapter evaluates the current legal and institutional frameworks compared to international obligations and commitments. This chapter also makes a comparative analysis of the legal and institutional arrangements for climate change and protection of the socioeconomic conditions of the coastal fishing people of Bangladesh, India, Sri Lanka and the Maldives. The chapter addresses the following question: What are the shortcomings in the current legal and institutional frameworks concerning the impacts of climate change on the coastal fishing people of Bangladesh? The chapter also highlights the legal structure that can ultimately play a significant role in the welfare of the coastal fish farmers and uphold the rights of coastal fishing people. The other three regional countries—India, Sri Lanka and the Maldives—have achieved effective progress in the protection of the socio-economic rights of their coastal fishing peoples. Despite the international obligations and commitments, the coastal fishing people of Bangladesh are still severely deprived of their minimum socio-economic rights. The implementation of the current legal and institutional arrangements has had limited success due to a number of shortcomings. The comparison here proposed will shed light on these shortcomings. This will assist in the analysis of, and recommendations for, appropriate law and institutional reforms in Bangladesh.

#### II BANGLADESH ADDRESSING THE INTERNATIONAL OBLIGATIONS AND COMMITMENTS FOR SOCIO-ECONOMIC RIGHTS AND CLIMATE CHANGE

The impact of climate change is now a global issue recognised throughout the world. To combat this, the United Nations established the *United Nations Framework Convention on Climate Change* (UNFCCC) in 1992. In addition, the United Nations established the Intergovernmental Panel on Climate Change (IPCC) to work on mitigating the impacts of climate change. As the

UNFCCC is a framework convention, the *Kyoto Protocol* 1997 imposes obligations on the developed countries to reduce emissions.<sup>1</sup> Bangladesh is a signatory to the UNFCCC and works closely with the IPCC to mitigate the impacts of climate change. Bangladesh is not a state party to the protocol, although the protocol has a persuasive value for Bangladesh as it encourages all countries to work together to reduce greenhouse gas emissions.

The *Paris Agreement* was adopted by 195 countries with the aim of reducing the temperature by 2° Celsius globally. The members of the *Paris Agreement* are committed to help developing countries enhance their capacity to tackle climate change. Bangladesh is a state party to the *Paris Agreement*. Bangladesh had proposed their plan ahead of the inauguration of the *Paris Agreement* in 2015. This gives Bangladesh an opportunity to use its support as a developing country to mitigate the impacts of climate change.<sup>2</sup>

Climate change is clearly leading to adverse impacts in Bangladesh and the inhabitants of coastal areas are strongly affected. The coastal fishing people are conspicuous victims of these impacts. They are suffering severely from deep poverty and financial crisis because of climate-induced impacts.<sup>3</sup> Climate-induced disasters—such as floods, cyclones, tornados, cold waves, arsenic contamination in ground water, waterlogging and salinity intrusion—are gradually intensifying and comprise significant risks for the coastal fishing people in Bangladesh. Climate change has affected the livelihood of coastal people in many ways, including a scarcity of pure drinking water, malnutrition, extreme poverty, health problems, and damage to crops, fisheries, poultry farms and vegetable gardens.<sup>4</sup>

To meet the international obligations and to address these climate induced impacts, the Bangladesh government formulated a National Adaptation Programme of Action (NAPA) in 2005. Later, in 2009, the Bangladesh Climate Change Strategy and Action Plan (BCCAP) was formulated providing detailed guidelines and incorporating the views and thinking of the Cabinet Review Committee. After the formulation of NAPA, 2005 and BCCAP, 2009,

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<sup>1</sup> See Subsection II, Chapter three.

<sup>2</sup> Ibid.

<sup>3</sup> Ibid.

<sup>4</sup> Nazmul Huq et al, 'Climate Change Impacts in Agricultural Communities in Rural Areas of Coastal Bangladesh: A Tale of Many Stories' (2015) 7 Sustainability 8438-8439

Bangladesh adopted many projects which focus on the livelihood and socio-economic condition of coastal fishing people. For example, some projects were undertaken to improve the supply of fresh water (as climate change is adversely affecting the salinity of water).<sup>5</sup>

According to the commitment under the *Paris Agreement*, some targets are already set in the Intended Nationally Determined Contributions (INDC) which the Bangladesh government produced in 2015 and submitted to the UNFCCC. The Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009 demonstrates the country's commitment to addressing climate change through adaptation and mitigation. Two priority sectors appear to be agriculture and forestry, where coastal fishery and fishing people are not within the national strategies for INDC.<sup>6</sup> Considering the importance of climate impact on the fisheries sector, Bangladesh needs to revisit its strategy documents. If Bangladesh cannot include the fisheries sector in its strategies, a large number of people who are seriously affected by this environmental pollution will be significantly worse off. If Bangladesh cannot encompass these masses from the fisheries sector, the BCCSAP will not be effective.

In 2010, the *Bangladesh Climate Change Trust (BCCT) Act* was formulated and consequently the government set up the Climate Change Trust Fund (CCTF) for implementing urgent and immediate actions set out in the act.<sup>7</sup> The BCCTF funds programs and projects from the national budget to help communities recover from, and become resilient to, climate-change impacts.<sup>8</sup> Unfortunately, there was no budget allocation for the fishermen who are directly facing environmental vulnerability. Allocating budget for them is important for two reasons. Firstly, they are a very vulnerable group of people facing the most danger from salinity, erosion and other environmental pollution. Secondly, when law is enforced to ban fishing for a set time, these people face more economic difficulty.<sup>9</sup>

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<sup>5</sup> See subsection II (A)(2), Chapter Five.

<sup>6</sup> Rejaur Rahman, 'Climate Change Policy is Crucial for Bangladesh', *bdnews24.com* (26 December 2017) <<https://opinion.bdnews24.com/2017/12/26/climate-change-policy-is-crucial-for-bangladesh/>>.

<sup>7</sup> Remeen Firoz, 'Analysis of BCCSAP Projects implemented in Bangladesh', *Dhaka Tribune* (16 February, 2018) <<https://www.dhakatribune.com/tribune-supplements/tribune-climate/2018/02/16/analysis-bccsap-projects-implemented-bangladesh>>.

<sup>8</sup> Md Kamruzzaman, 'Introduction to the Bangladesh Climate Change Trust Fund', (International Centre for Climate Change and Development, June 13, 2015) <[www.icccad.net/introduction-to-the-bangladesh-climate-change-trust-fund-2/](http://www.icccad.net/introduction-to-the-bangladesh-climate-change-trust-fund-2/)>.

<sup>9</sup> See subsection II (A)(2), Chapter Five.

Despite numerous climate-focused policies and strategies, the various laws, rules and regulations enacted in Bangladesh in the last 30 years rarely focus on the climate-induced impact on coastal fishing people. Until now, all activities in the climate change field have been carried out in the absence of an umbrella policy in Bangladesh. As a result, those sectors which need climate adaptation are setting goals and acting solely from own their sectorial perspective. However, climate change cuts across many sectors and the cross-sectorial nature of climate change necessitates an umbrella policy.<sup>10</sup>

In the last part of 2018, the Cabinet of Bangladesh adopted a draft climate policy, which is still not enforceable, and the adoption of this policy is sometimes difficult to fulfil. This new climate change policy does not make sense if it cannot also be enforced in the fisheries sector because of infrastructural difficulties.<sup>11</sup> For example, the Policies adopted in 1995 had specific provisions regarding the prevention of environmental pollution, however, the outcome is not hopeful because of a lack of proper implementation. So, it is clear that that the lack of effective, feasible environmental and climate change policy is a major challenge in Bangladesh.

The primary impacts of climate change will include frequent cyclonic events, inland and coastal flooding, low flows of water, droughts, salinity intrusion, changes to riverbed levels due to sedimentation, and changes in morphological processes.<sup>12</sup> Therefore it will be a major challenge for Bangladesh to maintain stable fishery production in its coastal waters. This challenge is acute, given that fish production will be reduced by adverse environmental changes. Moreover, Bangladesh earns remittance by exporting shrimps. As shrimp production is reduced—due largely to excessive salinity—the economic impact cannot be overlooked. The current policies and strategies relating to environment and climate change in Bangladesh do not have any explicit provisions addressing fish production within the coastal waters.<sup>13</sup>

Bangladesh also has commitments under several agreements relating to the socio-economic rights of its coastal fishing people. Food and Agriculture Organisation (FAO) provides legal advisory services to governments regarding the formulation or revision of national fisheries

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<sup>10</sup> Rahman, above n 6.

<sup>11</sup> See the provisions of *Climate Change Policy 2018*.

<sup>12</sup> Bangladesh Department of Finance, *Bangladesh Economic Review 2009* (Bangladesh Bureau of Statistics).

<sup>13</sup> See Conclusion of Chapter Six.

legislation. The United Nations adopted the UN fish stock agreement in 1995 regarding straddling fish stocks and highly migratory fish stocks which has its origins in the United Nations Convention on the Law of the sea<sup>14</sup>. Moreover, the United Nations adopted the FAO code of conduct for Responsible Fisheries in 1995 with the aim of collecting principles, goals and elements pertaining to conservation, management and development.<sup>15</sup> Bangladesh has been working to implement the obligations and guidelines under these agreements relating to the socio-economic rights of the coastal fishing people, although there is a little benefits to the coastal fishing people. Failure to protect fish production affects many thousands of coastal poor people, including women, who are engaged in fishing for wild prawn larvae along the coastline during a few months each year. On average, 40% of the total yearly income of these people comes from prawn larvae fishing activity.<sup>16</sup> However, indiscriminate fishing of wild larvae, with high levels of bycatch of juvenile fish and crustaceans, may impact negatively on production and biodiversity in coastal ecosystems and this concern has provoked the imposition of restrictions on larvae collection. The ban, however, has not been firmly enforced, because of the limited availability of hatchery-raised larvae, the lack of an alternative livelihood for the people involved in larvae fishing, and the ban's weak enforcement provisions.<sup>17</sup>

Bangladesh is an active state party to the international declaration and conventions relating to the protection of environment including the Declaration of the UN Conference on the Human Environment (the Stockholm Declaration), 1972; the Sustainable Development Goals (SDGs); and the Millennial Developmental Goals (MDGs). Bangladesh has committed to both the MDGs and the SDGs, the implementation of these goals has not been fully completed by the government. The coastal fishing people are experiencing poverty and are vulnerable to rapid environmental changes.<sup>18</sup> Undeniably, the people involved in fishing in the coastal belt are the

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<sup>14</sup> Oceans and Law of the sea United Nations, The United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (in force as from 11 December 2001) Overview  
< [https://www.un.org/Depts/los/convention\\_agreements/convention\\_overview\\_fish\\_stocks.htm](https://www.un.org/Depts/los/convention_agreements/convention_overview_fish_stocks.htm)>

<sup>15</sup> See subsection III (B) of Chapter 3.

<sup>16</sup> Nesar Ahmed and Max Troell, 'Fishing for Prawn Larvae in Bangladesh: An Important Coastal Livelihood Causing Negative Effects on the Environment', (2010) 39(1) *Ambio* 20–9.  
<<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3357662/>>

<sup>17</sup> Ibid.

<sup>18</sup> JA Fernandes et al, 'Projecting Marine Fish Production and Catch Potential in Bangladesh in the 21st Century Under Long-Term Environmental Change and Management Scenarios'(2016) 15 *ICES Journal Marine Science* 1–13.

ultimate victims of environmental pollution. Moreover, freshwater migratory fish hatchlings will face a survival problem in the south-western part of Bangladesh because of increased salinity from sea-level rise.<sup>19</sup> Although Bangladesh has policies such as the National Environmental Policy and the Fisheries Policy were formulated in the country, the government should instead push for the implementation of the international developmental goals to further lessen the impacts of climate change.

The constitution of Bangladesh has provision for the protection of the environment. The constitutional basis of the environmental protection is Article 18A, inserted in the 15<sup>th</sup> Amendment of the constitution. Due to the urgency of environmental vulnerability and state responsibility to prevent and preserve the environment and biodiversity, this article was inserted as fundamental state policy, which is not directly enforceable, by the law of the land. However, there is no provision in the constitution separately regarding the environmentally distressed people in the coastal area. Still, the fundamental rights of citizens of Bangladesh covers the rights of the distressed people of the coastal area.<sup>20</sup>

In September 2018, the Cabinet of the Bangladesh Government passed new environmental policy which specifically focused on the impact of environmental changes on the fisheries sector.<sup>21</sup> The Bangladesh Government has already taken on mega-projects including Padma Bridge, Karnafuly Tunnel, and the Rampal project. These projects will develop the communication and livelihoods of the coastal community of Bangladesh. The government officials estimate that the new bridge will increase Bangladesh's GDP by 1.2 per cent.<sup>22</sup>

The FAO is a special body of the United Nations, working to alleviate hunger and poverty. As an international organisation, the FAO deals with many issues relating to fishermen and the coastal people, especially with improving conditions that are deteriorating in the wake of climate change. The Climate, Biodiversity, Land and Water Department of FAO draws widely on

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<sup>19</sup> Asian Development Bank, *Country Environment analysis, Bangladesh*, 204.

<<https://www.adb.org/sites/default/files/institutional-document/32179/ban-cea-jul2004.pdf>>.

<sup>20</sup> See Subsection II (C), Chapter Five.

<sup>21</sup> Chap 3.12, *Draft Environmental policy, 2018*. The draft is approved by The Cabinet of Bangladesh Government but has not been enforced yet.

<sup>22</sup> R. Sharmin et al, 'Energy and Environmental Impact for Development of Multipurpose Padma Bridge' (2014) 4 *International Journal of Renewable Energy Resources* 18–27.



expertise in the management and utilisation of natural resources relating to agriculture, crops, livestock, forestry and so on. It plays an important role in regard to the management of fisheries and aquaculture.

Bangladesh is a state party to the FAO. Bangladesh is very closely working to adopt appropriate measures to ensure the right of consumers to safe, wholesome and unadulterated fish and fisheries products with the support of FAO. The *Bangladesh Fisheries Policy 1998* was designed to increase fish production from inland fisheries resources and enhance earnings of foreign currency for economic growth.<sup>23</sup> However, the Policy lacks sufficient provisions for the prosperity of the economic and social conditions of the coastal people in the line of international code of conduct for fisheries resources management.

Bangladesh is also a state party to the Universal Declaration of Human Rights 1948; International Covenant on Civil and Political Rights; and International Covenant on Economic, Social and Cultural Rights. The Constitution of Bangladesh adopted a state commitment to ensure good health for all the people of Bangladesh. According to Article 18 (1) of the constitution: 'The State shall regard the raising of the level of nutrition and the improvement of public health as among its primary duties, and in particular shall adopt effective measures to prevent the consumption, except for medical purposes or for such other purposes as may be prescribed by law, of alcoholic and other intoxicating drinks and of drugs which are injurious to health'. Unfortunately, this commitment was adopted as fundamental state policy and so is not enforceable by law.<sup>24</sup> This means that no person in Bangladesh can go to the constitutional court to enforce this commitment.

### **III COMPARATIVE ANALYSIS OF BANGLADESH AND OTHER REGIONAL COUNTRIES**

#### **A *Comparative Analysis between Bangladesh and India***

India is the third worst-affected country due to climate-induced natural disasters.<sup>25</sup> Its 7,517-km-long coastline is home to 260 million people, one-third of India's population. They live in

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<sup>23</sup> See subsection II (A)(2), chapter Five.

<sup>24</sup> art 8, the Constitution of Bangladesh.

<sup>25</sup> Soumya Sarkar, 'India is one of most vulnerable nations to climate change impacts', *the thirdpole.net* (12 November 2017) <<https://www.thethirdpole.net/en/2017/11/12/climate-risk-perilously-high-in-india/>>.

low-lying areas within 50 km of the seacoast and are perennially exposed to 10 climate variabilities and extreme weather events.<sup>26</sup> Being the largest and most geographically diverse country in south-east Asia, India is at great risk from the impacts of climate change. The country has already faced significant problems involving sea-level rise in about 84 coastal districts due to cyclones.<sup>27</sup> Fishing resources and commodities remain one of the key components of export for the country.<sup>28</sup> In India risks at coastal regions are rapidly increasing. Sea level rise, induced storm surges, increased green-house gas emissions, extreme events like floods and cyclone are predicted major threats for vulnerability of coastal zones.<sup>29</sup>

The conditions of the coastal areas and coastal people in Bangladesh are almost the same as those in India. The coastal areas are the transition areas between land and sea. They are significantly climate sensitive and, in Bangladesh, 80–90% of coastal people depend on fisheries and agriculture for their livelihoods.<sup>30</sup>

Amongst the national policies, the government of India enacted the *National Policy on Marine Fisheries 2017* which promoted the idea of a ‘blue growth initiative’ that focused on the ‘blue revolution’. The policy provides a scheme aimed at improving the lives of the fishing people and their families by utilising the wealth obtained from their aquatic resources and their exports. The *National Policy on Marine Fisheries 2017* emphasises the importance of coastal marine ecosystems and the need for protecting marine species from anthropogenic impacts. Similarly, the Bangladeshi government enacted the *Coastal Zone Policy 2005* with a view to managing and developing coastal zones to further enhance the livelihoods of the fishing people.

Unlike the Indian national policy, Bangladesh does not have any initiatives like the ‘blue revolution, program, which is enforced by the Indian government. Rather, Bangladesh policy focuses more heavily on rehabilitation of coastal regions and on soil erosion, as set out in the

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<sup>26</sup> Aparna Roy, ‘Making India’s Coastal Infrastructure Climate Resilient: Challenges and Opportunities’ (2019) Observer Research Foundation,3

<sup>27</sup> National Cyclone Risk Mitigate Project (NCRMP), ‘Cyclones & their Impacts in India’<https://ncrmp.gov.in/cyclones-their-impact-in-india/>accessed on 20 March 2020

<sup>28</sup> Roy, above n 26.

<sup>29</sup> Komali Kantamaneni, ‘A Systematic Review of Coastal Vulnerability Assessment Studies along Andhra Pradesh, India: A Critical Evaluation of Data Gathering, Risk Levels and Mitigation Strategies’(2019) 11 *Water 2*

<sup>30</sup> Mesbahul Alam et al, ‘Coastal Livelihood Adaptation in Changing Climate: Bangladesh Experience of NAPA Priority Project Implementation’ (2013) *Climate Change Adaptation Actions in Bangladesh* 253–276.

*Marine Fisheries policy of 2017*, whilst also encouraging the proper practices of crab culture, pearl culture and sea grass cultures. Furthermore, India has compiled a draft *National Mariculture Policy (NMP) 2019* which aims to protect marine life whilst incorporating a sustainable farming framework of seafood production for the benefit of food and nutritional security in India. The Indian *National Environmental Policy 2006* focused on the need to protect mangroves, coral reefs, estuaries and coastal forests in the country. The central aim of this policy is to identify and counteract the vulnerabilities imposed by climate change in India. The policy encourages Indian industries and the workforce to adopt an eco-friendlier approach by taking part in the Clean Development Mechanism (CDM).

The existing marine fisheries policies and related documents have no obvious long-term outlook on the quantification, judicious exploitation, restoration and protection of marine resources. Marine fisheries policies should be frequently reviewed—for example, in every 10-year planning cycle—in line with changes in government policy, climatic changes, and new international codes of conduct. Fisheries research plans should also be formulated based on same planning cycle and inform policy updates at national revision points. In Bangladesh, when the Department of Fisheries—and to a lesser extent, Bangladesh Fisheries Research Institute (BFRI)—considers that changes are necessary are initiatives usually undertaken. Since there is no specific marine environmental or ecosystem-based policy in Bangladesh, the current implementation plans need to be broadened to incorporate all necessary elements. The policy should be sustainable and based on long-term perspectives and a wider national marine development policy and planning framework.<sup>31</sup>

The objectives of India's *National Fisheries Policy of 1998* were enhancing fisheries production, creating self-employment, improving the socio-economic conditions of the fishers by alleviating poverty, fulfilling the demand for protein, earning more foreign currency (and thus achieve economic growth) by exporting fish and fisheries products, maintaining ecological balance, conserving biodiversity and ensuring recreational facilities.<sup>32</sup> It provides policy directions for procurement, preservation and management of fisheries resources in open-water bodies, for

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<sup>31</sup> Md. Mostafa Shamsuzzaman et al, 'Review of Fisheries Legal Framework of Bangladesh: Towards Policy Implications' (2017) 46 (01) *Indian Journal of Geo Marine Sciences* 16–22.

<sup>32</sup> See subsection II (A), Chapter Four.

fish culture and management in closed freshwater bodies, for culture of shrimps in coastal regions, and for the exploitation, conservation and management of marine fisheries resources. The policy also provides guidance on establishing hygienic fish-landing centres, transportation, marketing, processing, quality control, fish export, fisheries education, extension, research, organisational facilities for fisheries sector, the fisheries environment, fisheries' credit and on fisheries co-operatives. However, monitoring the impacts of climate change, response measures, institutional strengthening and coordination, as well as disaster risk reduction, are serious issues that need to be further addressed in this policy.

Except for the *Marine Fisheries Sub-strategy* under the *National Fisheries Strategy, 2006* of Bangladesh, the legal and policy documents pertain to the regulation of marine fisheries. This 2006 strategy, with its eight sub-strategies, was framed to help implement the *National Fisheries Policy* and offer support to guide the sector. The *Marine Fisheries Sub-strategy* states that a marine fisheries management plan will be prepared as a precautionary measure. However, the marine fisheries management plan has not been prepared to date in India.<sup>33</sup>

In contrast, the Bangladeshi government enacted the *Environment Policy 2018* to protect the environmental integrity of coastal regions with the inclusion of 9 more areas (including water resource management, resource management, air pollution and safe water) along with the pre-existing 15 areas specified in the *Environmental Policy 1992*. Although the aim of this policy is quite reasonable—unlike India's *National Environmental Policy 2006*—the Bengali national policy does not boast an eco-friendlier approach (such as the CDM) amongst the fishing people of Bangladesh, which is a crucial aspect to consider when trying to preserve the land.

The Indian government has enacted several pieces of legislation aimed at enhancing the prosperity of fishing people in general, including the coastal fishing people. The Indian *Fisheries Act 1897* was the primary law enacted in British India at the time. The aim of the act was linked to the central philosophy, namely, to protect the water and the fisheries. It still plays a prominent role in the protection of fisheries and their resources in India, protecting the interests of the fishing people by confirming water and fishes.

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<sup>33</sup> Abdullah-Al Arif, 'Marine Fisheries Law: Adopting the Precautionary Principle', *The Daily Star* (27 September 2016) <<https://www.thedailystar.net/law-our-rights/marine-fisheries-law-adopting-the-precautionary-principle-1290157>>.

In contrast, Bangladesh does not have any separate law to protect the interest of the fishing community and to ensure its prosperity. In Bangladesh, the *Private Fisheries Protection Act 1889* is the main law that protects private rights for fishing, but it has a very limited application. The objective of the Indian *Fisheries Act* is wider and more comprehensive, aiming to improve the livelihood and advantages of fishing people. However, the *Bengal Protection and Conservation of Fish Act 1950* has a significant role in the management of fisheries in Bangladesh. Compared to the Indian *Fisheries Act 1897*, the laws in Bangladesh have not been amended over time to coincide with the interests of the people and to protect fisheries resources.

In addition, Bangladesh has the *Marine Fisheries Ordinance, 1983* which demarcates the area from an 18.29 m depth line to the limits of the territorial sea (where destructive fishing practices are very common). The *Protection and Conservation of Fish Act, 1950* is the act currently in place for regulating inland fishing practices and may have questionable application to the area. In spite of possessing an institutional setup for sustainable use of coastal fishery resources, conflict of jurisdiction and overlapping of functions of authority has led to confusing situations regarding the appropriate departments to implement fishery regulations.<sup>34</sup>

In relation to the conservation of the environment, India adopted the *Biological Diversity Act 2002* and the *Environment (Protection) Act 1986*. Both aim both to protect natural resources and to improve the condition of the fishing people. The *Environment (Protection) Act 1986* was enacted in the wake of the Bhopal tragedy. It is an umbrella act, providing the framework for local, state and federal agencies to work together to protect and improve the environment.<sup>35</sup> The *Biological Diversity Act 2002* provides a mechanism for the equitable sharing of benefits arising out of the use of traditional biological resources and knowledge. In accordance with these two acts, the *Costal Regulation Zone (CRZ) Notification, 2011* was formally notified and published, replacing the 1991 CRZ notification. The 2011 CRZ notification raised the need to

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<sup>34</sup> Md Mostafa Shamsuzzaman et al, 'Towards Sustainable Development of Coastal Fisheries Resources in Bangladesh: An Analysis of the Legal and Institutional Framework' (2017) 17 *Turkish Journal of Fisheries and Aquatic Sciences* 831–839.

<sup>35</sup> Edward Broughton, The Bhopal Disaster and its Aftermath: A Review, (2005) 4(6) *Environmental Health* 3, doi:10.1186/1476-069X-4-6.

bring about notifications in laws and regulations that allow for faster growth and deeper environmental conservation.

In contrast, Bangladesh adopted the *Environment Conservation Act 1995* with the aim of conserving the environment and to mitigate modern world problems such as air pollution and water pollution. Although the aim of the act is quite admirable, the laws aim solely to protect the environment of the country. Compared to the laws of India, Bangladesh has substantially stronger laws for protection from piracy, from theft by fishing and for protection of the rights of the people. In addition, Bangladesh has the *Bangladesh Maritime Zones Act, 2018* aimed at protecting against the exploitation and illegal exploration of living and non-living resources in maritime zones.

To further improve the welfare of its coastal people, the Indian government has initiated a welfare program (one that is both protective and promotional). Some of the many benefits offered by the program include a fisherman insurance of Rs. 50,000 in cases of death or permanent disability and Rs. 25,000 in cases of partial disability.<sup>36</sup> Under this scheme, the government paid out about 12.2 lakhs in the 2000–01 period. Similarly, the Bangladeshi government has the *Deceased Fisherman's Family or Permanently Disabled Fishermen's Incentives Policy 2018* which provides financial support to the under-privileged and helps those in need in the fishing community. Although this policy accentuates the government's aim to protect and nurture the fishing community, unlike the Indian welfare programs, it does not specify the total amount of benefits or how the government aims to help the people financially.

## **B Comparative Analysis between Bangladesh and Sri Lanka**

The fisheries sector plays an indispensable role in the economy of Sri Lanka, contributing around 2 per cent to the country's GDP.<sup>37</sup> In 2016, the Ministry of Fisheries and Aquatic Resources Development revealed that per capita fish consumption in Sri Lanka had increased by over 9 per cent when compared to the 2013–15 average.<sup>38</sup> The coastal region of Sri Lanka is the

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<sup>36</sup> See chap 5, s IIA.1. e in this regard.

<sup>37</sup> FAO Fishery Country Profile: Sri Lanka, <<http://www.fao.org/fi/oldsite/FCP/en/LKA/profile.htm>>.

<sup>38</sup> FAO, *Understanding Food Security, Incomes and Livelihoods in a Changing Shark and Ray Fisheries Sector in Sri Lanka*, Fisheries and Aquaculture Circular No. 1185 FIAF/C1185 (En), 2019.

most densely populated region of the country and its fishery sector is a vital source of food, employment and income. Sri Lanka has been a signatory to many treaties around the world that play a major role in directly or indirectly supporting wetland conservation and wise use. Sri Lanka enacted national policies and laws to further protect their ecosystems. Among their policies, the *National Climate Change Policy 2011* aims to provide guidance and direction to all stakeholders on responding to climate change, whilst focusing on environmentally friendly economic development. Moreover, Sri Lanka's 10-year fisheries and aquatic development plan, prepared in line with the policy of the *Mahindra Chintanaya*, has improved the nutritional intake and food security of the people by increasing the national fish production, minimising post-harvest losses, and improving the quality and safety of fish products.

Sri Lanka has tabled a *Coastal Zone Management Plan (CZMP)* in 1990 for coastal conservation. The *Coastal Zone Management Plan (CZMP)* has been revised in 1997 and 2004 respectively. The Coastal Zone and Coastal Resource Management Plan, 2018 —adopted to ensure sustainable use of the coastal resources. The Coast Conservation Department (CCD) of Sri Lanka is responsible for the management of the coastal zone. Sri Lanka has also adopted the National Biodiversity Strategy and Action Plan (NBSAP) that aims to play a prominent role in the protection of bioregions that are considered high priority for conservation (such as wetlands). In comparison to Sri Lanka, Bangladesh does not have such diverse plans and developmental goals. Bangladesh solely focuses on the policies adopted by the government for aiding and engaging in management programs for improving the conditions of fishing people.

In Bangladesh, coastal areas in a delta are a vital part of its living landmass, constantly interacting with sea and ocean and defining the coastline and shape of the coastal zone. Integrated Coastal Management (ICM) is necessary for physical and biological resource conservation, biodiversity protection and renewable resource exploitation. As a concept, ICM incorporates all policies, sectoral and individual interests. It is an appropriate platform for involving all stakeholders in a participatory way. ICM should involve all governing authorities and should address all forms of sustainability: socio-cultural, economic, geographical and environmental. ICM will help to implement a code of conduct for responsible fisheries and

assist in the sustainable development of livelihoods based on coastal resources as part of Coastal Zone Management (CZM) policy.<sup>39</sup>

In Bangladesh, a major part of fisheries policy implementation is the monitoring both of policy status and the effectiveness of fisheries and marine fisheries policy management and mitigation approaches. It needs to result in the desired decrease of marine fisheries stresses while leading to improved fish and fisheries quality. So far, it appears that fisheries and related policies lack adequate evaluation clauses and impact assessments based on policy implementation.<sup>40</sup>

In Sri Lanka, the National Environment Policy and strategy for the Ministry of Environment and Natural Resources 2003, one of the most essential non-sectoral policies, has helped to develop a national fisheries management plan, incorporating management plans for the different sectors within an overall national plan. Unlike the Sri Lankan Policy, the Bangladesh National Environmental Policy (NEP) is divided into 24 sectors, which focus on the management of fisheries, education, public awareness, urbanisation and food. However, the main issue surrounding the Bengali national policy is that it is not non-sectoral. It primarily aims at improving the economic sectors of the country rather than the wellbeing of the fishing people. However, Bangladesh's *Deceased Fisherman's Family or Permanently Disabled Fishermen's Incentive Policy 2018* provide fishing people with some guaranteed support.

Sri Lanka has developed the action plan for the Haritha Lanka (Green Sri Lanka) Program, a platform that was formulated to function as a national approach to launch and promote a sustainable environment under the National Council for Sustainable Development (NCSD). Among many of its works, the program identified climate change, land degradation, loss of forest cover and pollution as areas to be addressed, by both mitigation and adaptation. In contrast to the Haritha Lanka program, the *Coastal Zone Policy 2005* has similar aims to the Sri Lankan program, but only at a coastal level, where it aims to improve the sustainability of the coastal regions and their resources. The Bangladesh government should take steps to implement a nationwide plan much like the Green Sri Lanka program, which will improve the ecology of the country on a greater scale. Moreover, the *National Environment Policy* of 2003,

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<sup>39</sup> Shamsuzzaman et al, above n 31.

<sup>40</sup> Ibid.



enacted by the Sri Lankan Government, aims at enabling social and economic development while at the same time preserving environmental integrity. It also aims to manage the environment—and enable its stability—by linking the interests, activities and perspectives of all stakeholders. Much like the Sri Lankan policy, the newly amended *Environment Policy 2018* in Bangladesh aims at improving the same areas while establishing solutions to counteract floods, droughts and soil erosion.

In Sri Lanka, under the *National Environmental Act, 1980* (as amended by Act of 56 of 1988 and 53 of 2000) magistrate court is authorised to impose fines.<sup>41</sup> In Bangladesh, the Environmental Court was established in 2000 by the *Environmental Court Act, 2000*. Later, the act was strengthened with the *New Environmental Court Act, 2010*.<sup>42</sup> However, the Environmental Court system in Bangladesh did not meet the hopes and aspiration of the people and does not play a key role in environmental management. There are many reasons behind this. As per the Environmental Court Act, the Department of Environment can file cases before these courts, but it is not clear whether the same right applies to people in general. This raises the question of whether the Department of Environment is strong enough to fight those powerful interests who create environmental pollution. Another issue is whether the Department of Environment has a strong legal organ to produce evidence before the court to prove their cases. The main object of the Environmental Court can play an active role to prevent environmental pollution.<sup>43</sup>

In Sri Lanka, the *Fisheries Aquatic Resources Act 1996* is the principal legal document, from which several regulations have been framed for the management of fisheries and aquaculture. As a part of the international conventions and agreements ratified and signed by Sri Lanka, the Parliamentary Law, established in 1996, adheres to the new fisheries management control. Section 61 of the *Fisheries Aquatic Resources Act 1996* allows the introduction of regulations to strengthen the legal provisions relating to “responsible fishing”.<sup>44</sup> Similarly, the Bangladeshi government manages fisheries and private properties under the laws of the *Private Fisheries*

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<sup>41</sup> United Nations Environment Programme (UNEP), Judges and Environmental Law, A handbook for the Sri Lankan Judiciary (2009) Environmental Foundation Limited 121-122

<sup>42</sup> *Environmental Court Act, 2000* (Bangladesh), Act no 11 of 2000,

<sup>43</sup> Preamble of *The Environmental Court Act 2000*

<sup>44</sup> The Compendium of High Seas Fishing Legislations in Sri Lanka (2016), Department of Fisheries and Aquatic Resources Colombo, Sri Lanka.4

*Protection Act 1889*, which helps to protect the ownership of private fisheries. Also, the *Bengal Protection and Conservation of Fish Act 1950* carries a significant fisheries management role. However, unlike the Sri Lankan laws, the laws enacted in Bangladesh do not have legal provision relating to responsible fishing, which is something to consider in order to reduce the chances of over-culturing fish and to protect the ecosystem.

In Bangladesh, the Mobile Court is led by an Executive Magistrate to prevent fishermen catching Hilsha fish at particular times of the year (usually mid-May- mid July at the breeding period). The fishermen are charged under the *Protection and Conservation of Fish Act, 1950* for defying a 22-day ban on netting the fish.<sup>45</sup> These charges ultimately go against root-level poor fishermen who are basically day labour where the owners of the fishing boats and nets are rarely charged. This disproportionate use of the law does not ensure environmental justice and cannot bring about any effective solution.<sup>46</sup> So, for proper effective enforcement of environmental management through application of law, it must be used against the powerful section of the society who receive the main benefit of environmental violence. In Sri Lanka, for the sake of safely fishing in the coastal regions of the country, the government enacted the *Local Fishing Boat (Life Jackets) Regulation, 2008* and the *Fishing Boat Safety Regulations 2009* which applies primarily to the construction of new fishing boats. These two Regulations make the owner of the boats liable for any fault in breach of local fishing boat safety. This can be a major aspect for the Bangladeshi government to consider, as it will help ensure the safety of fishing people around the coastal regions by bringing the owner of the fishing boat liable for breach of safety regulations.

The live fish export and import regulations of the *Fisheries Management Regulations 1996* in Sri Lanka restrict people from using any type of fishing gear other than a fishing rod and line for the purposes of taking a fish in any part of the inland waters. Such laws would be helpful in Bangladesh, as there are currently only laws pertaining to the private sector, and these have no influence on the larger scale protection of all fisheries resources. Similarly, in Sri Lanka the *Aquaculture Management Regulations 1996* states that no person shall set up or operate an

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<sup>45</sup> '47 fishermen jailed, 2 fined for netting hilsa', *The Daily Star* (17 October 2018)  
<<https://www.thedailystar.net/country/news/47-fishermen-jailed-2-fined-netting-hilsa-1647769>>.

<sup>46</sup> See subsection II (2). chapter Five.

aquaculture enterprise except under the authority of a license issued by the Director of Fisheries and Aquatic Resources. A person who uses a mechanised fishing boat must have it registered under the *Fishing Boats regulations 1980 Act*. There is no equivalent act in Bangladesh, but such an act would help settle legal disputes regarding fishermen, especially in regard to theft.

In Sri Lanka, the government has taken various measures to protect the interests of fishing people with the enactment of the *Fauna and Flora Protection (Amendment) Act of 1949*. This act provides periodic pensions to fishermen in their old age. It also provides for insurance to be paid to those suffering from a physical disability or to the families of those who have died. In Bangladesh there are only policies regarding insurance for fishermen (the *Deceased Fisherman's Family or Permanently Disabled Fishermen's Incentives Policy 2018*), but this is only relevant when fishermen are suffering from a physical disability or have died. Furthermore, only a small amount is guaranteed to the fishing people. To ensure the safety and comfort of fishers, the government should enact laws that will provide government pensions to fishing and coastal people.

In addition to taking care of the lives of coastal people, the *Coast Conservation Act 1981* prohibits individuals from engaging in a development activity within the coastal zone of Sri Lanka without a permit. Such laws in Bangladesh would limit unplanned or unsuitable development in rural coastal regions, thereby conserving the ecosystem and avoiding situations where soil erosion and landslides could occur.

Bangladesh has various departments—such as the Department of fisheries (DoF) responsible for management, extension, project implementation, law and regulation enforcement, policy formulation and administration relating to fishing. The Bangladesh Fisheries Development Corporation (BFDC) provides training, producing and marketing of fish products as well as encouraging the formation of fishermen co-operative societies. Moreover, Bangladesh has the Bangladesh Fisheries Research Institute which undertakes research. Although there are several departments and institutions working with the management and control fishing in Bangladesh, the institutions are not adequately coordinated. On the other hand, the departments and

institutions working for management and administration of fishing and fisheries resources are well connected and coordinated.<sup>47</sup>

### **C Comparative Analysis between Bangladesh and the Maldives**

Located in the heart of the Indian Ocean, the Maldives is an island country with a total size of 298 km<sup>2</sup>, making it the smallest country in Asia.<sup>48</sup> Aside from the export of tuna—the country's primary source of income—fisheries are the second most important source of income, with fishermen going out to fish while women are responsible for drying the salted fish for export to Sri Lanka. Being an island, it is a challenge for the Maldivian government to resolve concerns regarding the sustainability of fishing activities. As an island country, the Maldives faces unique challenges in the years ahead, from social and economic challenges, to mitigating the effects of climate change.

The government of the Maldives enacted its third *National Environmental Action Plan (2009–2013)*, NEAP 3, which sets out a five-year agenda for environmental protection and management in the Maldives. The plan was initially set to achieve measurable environmental changes that matter to the people of Maldives. It was also aimed at the protection of the natural environment and at making people more property resilient. NEAP 3 provides the basis for environmental planning, budgeting, performance measurement and accountability in the country. Besides NEAP 3, the government enacted the Maldives Enhance Climate Resiliencies and Water Security Project (Maldives GCC) which provides for reliable access to safe water for the island residents through the help of USAID. USAID has also provided technical assistance and capacity-building to help regulators make informed decisions about water resource management and to develop the knowledge, skills and attitudes that island residents need for the prosperity of their islands.

The Maldives has also initiated the Reefs Generate Environmental and Economic Resiliency for Atoll Ecosystem program (REGENERATE) which has helped to strengthen the management of coral reef ecosystems and mitigate the adverse impacts of climate change in the Maldives. One

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<sup>47</sup> See Subsection II (B), Chapter Five.

<sup>48</sup> About Maldives, High Commission of Maldives, Kuala Lumpur, Malaysia< <https://maldives.org.my/about-maldives>>

of the cores aims of REGENERATE is to support decision-making by improving access to relevant science and technology. It also aims to establish policy frameworks, thereby strengthening government management in the protection of reef ecosystems while establishing sustainable financing mechanisms to support climate-resilient marine management. On addition, the National Adaptation Program of Action 2006 (NAPA) gives priority to increasing the adaptive capacities and climate resilience of communities.

NAPA emphasises wetland conservation through flood control, aquifer recharge and protecting natural water catchment areas. It recognises the importance of coral reefs through coastal protection services by explicitly putting a ban on coral mining and protecting reefs from developmental impacts. Bangladesh too is carrying out various research and development tasks, formulated by the Bangladesh Fisheries Resource Institute, such as research into freshwater aquaculture, coastal aquaculture and inland open-water fisheries.<sup>49</sup> In line with the Bangladesh Fisheries Development Corporation, many fish harbor, processing, cold storages, auction houses and transportation centres for fish were established. The corporation also takes measures to develop fisheries and fishing industries and encourages the establishment of fishermen co-operative societies. But there is little focus on research and initiative relating to the mitigation of the climate induced impacts on the fishing people in Bangladesh. On the other hand, the Maldives, the government has taken several effective measures to create plans and projects that help protect the country from climate change whilst also ensuring that the interests of the fishing community of the coastal regions are honoured.<sup>50</sup>

National Adaptation Program of Action (NAPA) of Bangladesh does not provide any strategy in order to safeguard communities from climate change while protecting the ecosystem of the country. For example, migration of affected people is a common concern in assessing environmental challenges and the lack of funding for the migration is especially worrisome. There are no dedicated sources of funding to help offset the costs that may be supportive for climate change migration. The situation in the Maldives regarding financial support for the coastal climate change migration is almost same to Bangladesh. However, the Maldives have

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<sup>49</sup> BFRI at a glance, Bangladesh Fisheries Research Institute 13–14.

<sup>50</sup> See Subsection II (C), Chapter Four.

successfully persuaded and achieve financial support from the international organization and community to provide incentive to the climate induced migrants.<sup>51</sup>

The *Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009* demonstrates the country's commitment to addressing climate change, through both adaptation and mitigation. In 2010, the Bangladesh Climate Change Trust (BCCT) Act was formulated and consequently the government set up the Climate Change Trust Fund (CCTF) for implementing urgent and immediate actions specified in the act.<sup>52</sup> Operating since 2010, the fund is currently managed by the Bangladesh Climate Change Trust (BCCT) and the government, and has allocated Tk 2,900 crore during the last six fiscal years until 2014–2015, but the fund allocation has been declining since the 2012–2013 fiscal year. It was revealed in the budget speech that the allocation for the 2015–2016 fiscal year was further reduced to Tk 100 cr.<sup>53</sup> Unfortunately, there is no allocation of funds for internally migrated people, so this fund does not have any impact on them.

One of the major actions of the Maldives government is in signing treaties to protect the endangered ecosystems of the country. The government is also working with various intergovernmental organisations (IGOs)—such as the United Nations and the FAO—on Technical Cooperation Programs (TCP). Other IGOs—such as the European Union and the Australian Agency for International Development (AUSAID)—have also contributed to remedy the horrendous conditions brought about by climate change. AUSAID made a contribution of AUD 1 million and the EU gave € 6.5 million to help the Maldives government. This aid also helped to initiate various eco-friendly projects, such as Clean Energy Mitigation, Wetlands Conservations and Coral Reef Monitoring for Adaptation.

In comparison, Bangladesh is not involved with international organisations who provide financial and capacity-building support, but the need for the country to engage internationally is crucial. With aid from various IGOs—such as the United Nations, USAID and AUSAID—the

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<sup>51</sup> Katrina Miriam Wyman, 'Responses to Climate Migration' (2013) 37 *Harvard Environmental Law Review* 167.

<sup>52</sup> Remeen Firoz, 'An analysis of BCCSAP Projects Implemented in Bangladesh', *Dhaka Tribune* (16 February 2018) <<https://www.dhakatribune.com/tribune-supplements/tribune-climate/2018/02/16/analysis-bccsap-projects-implemented-bangladesh>>.

<sup>53</sup> Md Kamruzzaman, 'Introduction to the Climate Change Trust Fund of Bangladesh' (International Centre for Climate Change and Development, 2015) <[www.icccad.net/introduction-to-the-bangladesh-climate-change-trust-fund-2/](http://www.icccad.net/introduction-to-the-bangladesh-climate-change-trust-fund-2/)>.

Government of Bangladesh could expand their development goals while maintaining the sustainability of its ecosystems. The help of IGOs is an important consideration in regard to improving existing policies for counteracting the impact of climate change. Furthermore, plans similar to the Maldives Enhance Climate Resiliencies and Water Security project should be considered and raised to cabinet level, with the ultimate goal of refining the currently inadequate state laws.

Although the Maldives is a small nation, its coastal regions are governed by a number of laws that are prevalent thorough out the territorial jurisdiction. The *Fisheries Act 1987* remains the fundamental law in the Maldives. Under the powers of that law, the Ministry of Fisheries and Agriculture (MOFA) has developed several fisheries-related regulations for the management and development of the legal framework for the Maldives that augment the *Fisheries Act*, the *Environmental Protection and Conservation Act* and the *Maritime Zones of the Maldives Act*. For example, the government only allows fishermen to fish within a radius of 75 km and only with a legally issued license (which are issued by the Ministry of Trade and Industries). Furthermore, MOFA sets the annual total weight of permitted catch. The Government of Maldives enacted the *Environment Protection and Preservation Act* to protect the interest of the fisheries and fishers. This act is quite significant in that it identifies environmental vulnerability as a threat to this sector. It plays a prominent role in protecting beaches, reefs, lagoons and all other natural habitats that are essential for the sustainability of the ecosystem.

The Ministry of Planning, Human Resources and Environment is responsible for identifying areas needing protection and draws up rules and regulations to ensure that protection. One of ministry's main aims is to reduce the disposal of toxins and nuclear wastes that may be harmful to marine life and to the environment. Given the government's commitment to protecting the ecosystems and human health, it is now compulsory for people to seek a permit to dispose of wastes 3 months beforehand.

Bangladesh does have similar laws to protect the ecological integrity of its environment, but they are much stronger and are enforced nationally. The *Bangladesh Environmental Conservation Act 1995*; the *Climate Change Trust Act 2010*; and the *Environmental Court Act 2000* are the legislation regarding the conservation of environment and addressing the impacts

of climate change. The legislation emphasises the importance of tracking and punishing those who damage the environment. However, Bangladesh does not have any policy or act that prohibits the dumping of wastes and toxins, as there is in the Maldives. The application such laws would force people to think twice before dumping unwanted waste into the ocean, resulting in an environment that is better protected.

Planned climate change adaptation policies and actions are necessary and the Government of Bangladesh (GoB) already prepared national adaptation plans such as the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) of 2009. The fundamental requirement for implementing this action plan is to characterize the impacts because adaptation is highly context dependent. Therefore, different communities may require different climate change impacts adaptation plans.<sup>54</sup> The adaptation policy for the coastal fishing people of Bangladesh should focus on the socio-economic rights of the coastal fishing people.

The Maldives as an island country has various useful and relevant national policies, plans, legislation and institutions for the management of coastal fisheries and the protection of the socio-economic rights of the coastal fishing people by mitigating the impacts of climate change. Fiji too has several practices that could be relevant for Bangladesh. Fiji is a Small Island Country (SIC) in the Asia Pacific region. Fish and fishing are extremely important to the economy of Fiji. A large number of people are employed in the fisheries sector and fish makes an important contribution to the diet of local residents. In addition, fishing is cherished for its recreational and social aspects. In relative terms, fisheries make up Fiji's third largest natural resource sector.<sup>55</sup> The Fiji government has enacted several acts, regulations, strategies, and policies for the wellbeing of its coastal fishermen. Integrated Coastal Zone Management (ICZM) is one of these effective initiatives for sustainable coastal development and the benefit of the coastal fishing people.<sup>56</sup> The Department of Environment of Fiji launched its Integrated Coastal

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<sup>54</sup> Nazmul Huq et al, 'Climate Change Impacts in Agricultural Communities in Rural Areas of Coastal Bangladesh: A Tale of Many Stories' (2015) 7 *sustainability* 8437-8460

<sup>55</sup> Food and agriculture Organization of the United Nations, Fishery and Aquaculture Country Profiles, The Republic of Fiji, <<http://www.fao.org/fishery/facp/FJI/en>>

<sup>56</sup> Ms. Batiri Thaman and Professor Bill Aalbersberg, 'Initiating Integrated Coastal Management (ICM) in the Fiji Islands' A paper presented at the Coastal Zone Asia-Pacific (CZAP) Symposium, 2004, p 1  
< [https://www.crc.uri.edu/download/Initiating\\_ICM\\_in\\_Fiji.pdf](https://www.crc.uri.edu/download/Initiating_ICM_in_Fiji.pdf)>



Management Framework 2011 with a view to protect the socio-economic and environmental rights of the coastal community including the fishing people.<sup>57</sup> The ICZM framework proposed action and policy towards sustainable coastal resource management.

The Fiji government enacted *the Fisheries Act* 1942 (Chapter 158) which makes provisions for the protection of native customary rights of the coastal fishing people. Moreover, the Act regulates licences and registrations, mesh sizes, prohibited methods and areas and fish size limits for sustainable fishing.<sup>58</sup> The Act establishes a Native Fisheries Commission with the duty of ascertaining the customary fishing rights of the coastal fishing people.<sup>59</sup> The Fisheries Act prohibits any practices or methods or employment of equipment or devices or materials, which are likely to be injurious to the maintenance and development of a stock of fish. The Act provides areas and seasons within which the taking of fish is prohibited or restricted, either entirely or with reference to a named species, which provides a scope for spatial management of coastal fishing. The Act prescribes limits to the size of nets or the mesh size of nets which may be employed in taking fish either in Fiji's fisheries waters or in any specified part thereof. Most importantly, the Act provides necessary regulations for the conservation, protection and maintenance of a stock of fish within the coastal water of Fiji. Apart from the Fisheries Act, the Fiji government enacted the Marine Space Act (Cap.158A) for sustainable management of the coastal fisheries. The main objective of the Act is to give priority to local fishing people and fisheries industries rather than foreign fishing vessels and industries.<sup>60</sup>

In 2012, the Fiji government passed the Offshore Fisheries Management Decree for the conservation, management and development of fisheries.<sup>61</sup> The Decree provides an ecosystem

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<sup>57</sup> Integrated Coastal Management Framework of the Republic of Fiji 2011, Department of Environment, Ministry of Local Government, urban Development, Housing and Environment, p 6, < <http://macbio-pacific.info/wp-content/uploads/2017/08/Integrated-Coastal-Management-Plan-Framework-for-the-Republic-of-Fiji-2011.pdf>>

<sup>58</sup> Lydia C.L. Teh, Louise S.L. Teh, Ben Starkhouse, U. Rashid Sumaila,

'An overview of socio-economic and ecological perspectives of Fiji's inshore reef fisheries' (2009), *Marine Policy*, vol 33, p807-817 <[https://www.researchgate.net/publication/46488078\\_An\\_overview\\_of\\_socio-economic\\_and\\_ecological\\_perspectives\\_of\\_Fiji's\\_inshore\\_reef\\_fisheries](https://www.researchgate.net/publication/46488078_An_overview_of_socio-economic_and_ecological_perspectives_of_Fiji's_inshore_reef_fisheries)>

<sup>59</sup> Fishery and Aquaculture Country Profiles, The Republic of Fiji <http://www.fao.org/fishery/facp/FJI/en#CountrySector-LegalFrameworkOverview>

<sup>60</sup> Information on Fisheries Management in Fiji (2002) < <http://www.fao.org/fi/oldsite/FCP/en/FJI/body.htm>>

<sup>61</sup> 5/12/12 – Cabinet Approves Offshore Fisheries Management Decree 2012, < <https://www.fiji.gov.fj/Media-Centre/Cabinet-Releases/5-12-12---CABINET-APPROVES-OFFSHORE-FISHERIES-MANA>>

approach for sustainable management of coastal fisheries and integrated management with due consideration to the socio-economic interests of the coastal fishing people.

Fiji's tuna fisheries are managed on regional and national levels. On the regional level, Fiji is a member of the Western and Central Pacific Fisheries Commission (WCPFC) that was established by the Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean. On the national level, the tuna fisheries are managed by the Fiji Tuna Management and Development Plan (2012-2016).<sup>62</sup> The Fiji government has made available much technical assistance in the fisheries sector with the support of a number of bilateral donors including Japan, Australia, New Zealand, the United Kingdom, the European Union, the FAO and other United Nation agencies.<sup>63</sup>

These practices of Fiji are highly relevant to Bangladesh to achieve sustainable management of coastal fisheries and protection of the socio-economic benefits of the local coastal fishing people. Moreover, international collaboration with other countries will facilitate collective effort for the improvement of the socio-economic conditions of the coastal fishing people of Bangladesh.

An analysis of the legal and institutional arrangements for the protection of the socio-economic and environmental rights of the coastal fishing people in Bangladesh, when compared to India, Sri-Lanka and the Maldives and Fiji, reveals several shortcomings. One important shortcoming is the gap in explicit provisions for the protection of the socio-economic rights of the coastal fishing people as prescribed by the international legal documents. The national policies, plans and legislations do not provide adequate protection against the socio-economic and environmental vulnerability of the coastal fishing people of Bangladesh. In Bangladesh, the coastal fishing people are vulnerable to poverty because of job and livelihood losses due to natural disasters and longer-term climatic changes.<sup>64</sup> However, their national policies and legislations do not provide any long-term plan for mitigating the impacts of these natural

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<sup>62</sup> Food and agriculture Organization of the United Nations, Fishery and Aquaculture Country Profiles, The Republic of Fiji,< <http://www.fao.org/fishery/facp/FJI/en>>

<sup>63</sup> Food and agriculture Organization of the United Nations, Fishery and Aquaculture Country Profiles, National Fisheries Sector Overview Fiji ,p11<[http://www.fao.org/tempref/FI/DOCUMENT/fcp/en/FI\\_CP\\_FJ.pdf](http://www.fao.org/tempref/FI/DOCUMENT/fcp/en/FI_CP_FJ.pdf)>

<sup>64</sup> Md. HabibTorikul, Sonia Farjana and Shah Muntamin Mujtaba, 'Climate Change, Natural Disaster and Vulnerability to Occupational Changes in Coastal Region of Bangladesh'(2015) *Journal of Geography & Natural Disasters*, Vol 5,issue 1,p1

disasters. The current national legislation does not provide any specific provisions for the socio-economic rights of the coastal fishing people as a special category or group.

Bangladesh is a state party to the Paris Agreement which asks for active initiatives for mitigation of the impact of climate change. Climate change effects, such as increased sea temperature and altered current flows, will bring shifts in the distribution of marine fish stocks.<sup>65</sup>

Climate change is impacting coastal fisheries severely, which is ultimately leading to the collapse of coastal fisheries and the livelihoods dependent on them in the longer term.<sup>66</sup> The current policies, plans and legislations do not provide adequate arrangements for mitigation of the climate induced impacts on the coastal fishing people of Bangladesh. The current legal and institutional frameworks do provide a general regime applicable for all but without any special consideration or arrangement for the vulnerable coastal fishing people. Although there are several government development plans for mitigating the impact of climate change, these are neither adequate nor specifically focused on the coastal fishing people. Therefore, the socio-economic conditions of the coastal fishing people in Bangladesh are becoming more vulnerable every day.<sup>67</sup>

Apart from these gaps between the international and national legal frameworks, there is a gap in the legal definition of the concept of the coastal fishing people. It is difficult to accurately discern the existence of coastal fisheries in terms of legal identification. The government of Bangladesh has passed several acts, ordinances and rules to provide a framework for the exploitation, development, management and conservation relevant for the coastal fisheries.<sup>68</sup> In particular, the government of Bangladesh has imposed fishing ban periods in hilsa sanctuary areas to increase the size and sustainability of the hilsa catch. To compensate for the loss of

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<sup>65</sup> Climfish, Climate change and impacts on fisheries,< <https://climefish.eu/climate-change-and-impacts-on-fisheries/>>

<sup>66</sup> The World Bank, Bangladesh Sustainable Coastal and Marine Fisheries Project (2018),p7,< <http://documents1.worldbank.org/curated/en/308831538969417996/pdf/Bangladesh-Sustainable-Coastal-and-Marine-Fisheries-PAD-P161568-2-09182018.pdf>>

<sup>67</sup> Md. Monirul Islam, Susannah Sallu, Klaus Hubacek and Jouni Paavola, 'Vulnerability of fishery-based livelihoods to the impacts of climate variability and change: insights from coastal Bangladesh'(2014),*Regional Environmental Change*, Vol 14,p283

<sup>68</sup> Md. Mostafa Shamsuzzaman, 'Towards Sustainable Development of Coastal Fisheries Resources in Bangladesh: An Analysis of the Legal and Institutional Framework'(2017),*Turkish Journal of Fisheries and Aquatic Sciences*,17(4),p835

income during the banned period, the government of Bangladesh also provided support for alternative occupations for the affected fishers. These supports, however, were insufficient. The alternative income-generating opportunities for the fishers are very limited. These limitations related to the lack of diversity in these isolated local economies, the fishers' lack of other skills and their lack of start-up capital for other types of ventures. In such a situation, they choose the alternative livelihood options.<sup>69</sup>

The government of Bangladesh introduced an incentive program of 40 kg of rice per month each for the fishing people during the ban period. However, because of mismanagement and official corruption among local government administration and bureaucrats, not all coastal fishing people receive this benefit. Moreover, the inadequacy of other government support together with irregularities in its distribution has caused a spike in tensions in relation to the socio-economic conditions of the Bangladeshi coastal fishing people.<sup>70</sup> Furthermore, gaps in responses to the environmental vulnerability of the coastal fishing people through the national environmental legislation is causing severe environmental damage to the coastal fishing people of Bangladesh.<sup>71</sup>

#### IV CONCLUSION

Bangladesh is an active participant in international efforts to protect the socio-economic welfare of its people and to mitigate the adverse impacts of climate change. It has enacted several policies, laws, plans and regulations relevant to this commitment. However, Bangladesh has had the least success internationally in enhancing the socio-economic conditions of its coastal fishing people. This is largely because of gaps in legal and institutional frameworks.

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<sup>69</sup> Mohammad Mojibul Hoque Mozumder, Md. Abdul Wahab, Simo Sarkki, Petra Schneider and Mohammad Mahmudul Islam, 'Enhancing Social Resilience of the Coastal Fishing Communities: A Case Study of Hilsa (*Tenualosa ilisha* H.) Fishery in Bangladesh'(2018),*Sustainability*,Vol-10,p11

<sup>70</sup> Mohammad Mojibul Hoque Mozumder, Aili Pyhälä, Md. Abdul Wahab, Simo Sarkki, Petra Schneider and Mohammad Mahmudul Islam, 'Understanding Social-Ecological Challenges of a Small-Scale Hilsa (*Tenualosa ilisha*) Fishery in Bangladesh'(2019),*International Journal of Environmental Research and Public Health*,Vol 16(23),481

<sup>71</sup> 7th Five Year Plan, FY2016-FY2020, Accelerating Growth, Empowering Citizens, General Economic Division (GED), Planning Commission, Government of the People's Republic of Bangladesh, p288

Bangladesh does not have a comprehensive policy for enhancing the socio-economic conditions of the coastal people (including fishing people). Because of a lesser focus on the impacts of climate change, the current regulatory regimes are not sufficient for the advancement of the socio-economic conditions of the coastal people of Bangladesh. Furthermore, the legal and institutional arrangements to mitigate the impacts of climate change on the socio-economic conditions of the coastal fishing people are only at the rudimentary stage in Bangladesh. Bangladesh may need to learn from the legal and institutional arrangements of other regional coastal states, such as India, Sri Lanka and the Maldives. These countries have achieved good progress in improving the socio-economic conditions of their coastal fishing people.

India has successfully established and been operating its National Institute for Climate Change Studies and Actions (NICCA) under the Climate Change Action Programme (CCAP). Sri Lanka has developed the Green Sri Lanka Programme and Coastal Zone Management Plan which contain provisions for the wellbeing of the coastal fishing people. The Maldives have developed the Maldives Enhance Climate Resiliencies and Water Security in the Maldives (Maldives GCC) Project; the Reefs Generate Environmental and Economic Resiliency for Atoll Ecosystems Project; and the Sustainable Fisheries Resources Development Project for better protection of the coastal fishing people. These can serve as lessons for Bangladesh to help it improve the socio-economic conditions of the coastal fishing people of Bangladesh. The main shortcomings in the current legal and institutional arrangements for climate change and socioeconomics are an absence of uniform legislation, and a lack of dedicated institutions for the protection of the socio-economic prosperity of the coastal fishing people of Bangladesh.

This chapter has evaluated the current legal and institutional arrangements for addressing climate change and the socio-economic wellbeing of the coastal fishing people of Bangladesh. It has explored the shortcomings by comparing it to other regional coastal countries. The next chapter will be the concluding chapter of this research, discussing findings and offering recommendations for improving the socio-economic conditions of the coastal fishing people of Bangladesh.

## CHAPTER SEVEN

### CONCLUSION

Bangladesh is a coastal state on the Bay of Bengal (BoB) and the socio-economic conditions of the coastal fishing people are being increasingly affected by climate change. Increasing global temperatures, sea-level rise, climatic disasters and ecological imbalances are some of the factors impacting the socio-economic conditions of these fishing people. In particular, climatic disasters such as cyclones, storms and floods, have caused significant loss of life and have adversely affected marine living resources. The coastal fishing people are the most vulnerable community of the coastal area of Bangladesh. The socio-economic rights of these people include the right to food, work, housing, health and a healthy environment.

Bangladesh is a state party to several international treaties and declarations that impose a commitment to protect the socio-economic rights of people in Bangladesh, including these vulnerable coastal fishing people. However, their socioeconomic conditions and rights have been violated because of the impacts of climate change. The issue has become a concern in international forums. The *United Nations Framework Convention on Climate Change 1992* and the *Paris Agreement 2015* are the main legal instruments imposing obligations on Bangladesh to mitigate the impacts of climate change. Moreover, the international legal regimes provide an obligation to protect and upheld the socio-economic conditions of the coastal fishing people.

Several international organisations—notably the Intergovernmental Panel on Climate Change (IPCC), the Climate, Biodiversity, Land and Water Department, the Climate and Environment Division, the International Council for the Exploration of the Sea (ICES), the Asia-Pacific Fishery Commission (APFIC), the Food and Agriculture Organization (FAO) and the Fisheries and Aquaculture Department—are working towards mitigating the impacts of climate change.<sup>1</sup>

Several socio-economic rights, including the right to food, right to housing, right to health and right to work, are included in the constitution of Bangladesh. However, these socio-economic rights have been violated in the case of coastal fishing people because of shortcomings in the current legal and institutional frameworks.

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<sup>1</sup> See Subsection II, Chapter Three.

Bangladesh is working with various international organisations, such as the IPCC and FAO, to improve the socio-economic and environmental conditions of the coastal fishing people. However, these rights have not been well protected because of a lack of specific focus on them.

India, a regional coastal country in the BoB belt, has achieved significant progress in the socio-economic development of their coastal fishing people, despite some shortcomings. For example, the Indian *National Policy on Marine Fisheries 2017* fails to address the real problems of traditional fishing communities. The legal arrangement has improved fishing capacity of the coastal fishing people and increased fish production in India. The vibrancy of India's fishing industry and its coastal fishing people can be seen by the overwhelming 17-fold increase that India achieved in fish production in six and a half decades, i.e. from 0.75 million metric tons (MMT) in 1950-51 to 12.6 MMT during 2017- 18. India exported 1,377,244 MT of fish and fishery products worth an all-time high of USD7.08 billion in 2017-18 as against 1,134,948 MT and USD 5.78 billion a year earlier, registering an impressive growth of over 20%.<sup>2</sup> Moreover, the development of community-based fisheries management systems, for example, the South Indian Federation of Fishermen Societies (SIFFS), has established collaborative management with the support of national and international authorities working for the wellbeing of the coastal fishing people of India. The results have been encouraging, as the fishermen's local problems have been addressed through their own institutions. A rising demand for community-based management appears to be spreading to other villages and districts in India.<sup>3</sup> The overall impact of the legal and institutional arrangements for the benefits of the coastal fishing people have contributed to India's improved ranking – 11<sup>th</sup> position - in the Climate Change Performance Index (CCPI) 2019. However, India's coastal fishing people are still lacking in safety and security as the relevant legislation does not provide adequate provisions to mandate the Indian Coast Guard to monitor and supervise fishing vessels operating in coastal waters. This affects the safety and security of Indian fishing communities.

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<sup>2</sup> Annual Report 2017-18, National Fisheries Development Board, Department Animal Husbandry, Dairy and Fisheries, Ministry of Agriculture and Farmers Welfare, Govt.of India, p3

<sup>3</sup> India and FAO Achievements and success stories, FAO Representation in India(2011)p12, < <http://www.fao.org/3/a-at007e.pdf>>

Sri Lanka has achieved remarkable progress in its coastal management. Sri Lanka's fisheries and aquaculture policies have generally been consistent over the years. The fishing sector enhances the livelihoods of the coastal and rural poor, so that many people have been provided with direct or indirect employment opportunities within the sector. At present, around 281,460 people actively engage in both marine and freshwater fishing and aquaculture. Fisheries exports have increased tremendously after the complete lifting of the ban imposed on fisheries exports from Sri Lanka. It generated USD 257.3 million (Rs. 39,230 million) in foreign exchange from the growing export market during the year 2017. The foreign exchange earnings within the fishery industry account for 2.25 percent of the entire export earnings.<sup>4</sup>

Aquaculture production was about 28,000 tonnes in 2017, more than triple the 2011-2012 average. Exports of marine products (shrimp, tuna, ornamental fish, etc.) have developed into one of the fastest growing sub-sectors. In 2017, total exports of fish and fishery products were valued at USD 256 million. Marine fisheries production reached about 422,600 tonnes in 2017, exceeding the catch levels prior to the destructive tsunami of December 2004.<sup>5</sup> Sri Lanka established a new Vessel Monitoring System (VMS) to monitor the deep-sea fishing fleet, as it was a mandatory requirement for removal of the EU fish ban. Sri Lanka is also in the process of implementing a fishery improvement project (FIP) for Sri Lankan longline tuna and billfish (LT&B) and blue swimming crabs which will help to promote Sri Lanka seafood as a sustainably sourced seafood.<sup>6</sup> Sri Lanka is ranked amongst the top 50 countries in the world for exports. This country is promoting organic aquaculture production, especially organic shrimps, targeting high end markets.<sup>7</sup>

However, despite the existence of legal provisions that could support a fisheries management regime, fisheries management in Sri Lanka has been ineffective, mostly due to the lack of a

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<sup>4</sup> Fisheries in Sri Lanka, Ministry of Fisheries and Aquatic Resources, <

[https://www.fisheries.gov.lk/web/index.php?option=com\\_content&view=article&id=64&Itemid=174&lang=en](https://www.fisheries.gov.lk/web/index.php?option=com_content&view=article&id=64&Itemid=174&lang=en)>

<sup>5</sup> Food and Agriculture Organization of the United Nations, Fishery and Aquaculture Country Profiles, The Democratic Socialist Republic of Sri Lanka < <http://www.fao.org/fishery/facp/LKA/en>>

<sup>6</sup> Industry Capability Report, Sri Lankan fisheries sector, Export Development Board (EDB), (2019), p5 < <https://www.srilankabusiness.com/ebooks/fish---fishery-products---industry-capability-report---december-2019.pdf>>

<sup>7</sup> Industry Capability Report, Sri Lankan fisheries sector, Export Development Board (EDB), (2019), p7 < <https://www.srilankabusiness.com/ebooks/fish---fishery-products---industry-capability-report---december-2019.pdf>>



comprehensive policy. Sri Lanka has implemented seven fisheries development plans, all of which are relevant to coastal fisheries management. However, these plans suffered from weak and unreliable data and statistics, the absence of catch- and effort-monitoring systems, and institutional deficiencies both in the design and implementation stages.<sup>8</sup> The fisheries sector suffers from the lack of formal regulatory and socio-economic structures that can assess the long-term impact that fishing may have on the ecosystem and on the communities dependent on them.

In the Maldives, the constraints on the fisheries sector include the incapacity of the regulatory body—the Ministry of Fisheries and Agriculture—to coordinate and enable the sustainable development of the sector. The legal and institutional arrangements for the interests of the coastal fishing people facilitate the implementation of the Sustainable Fisheries Resources Development Project of the World Bank in 2017. With a commitment of \$18 million, the project, which ends in 2022, has been improving the management of fisheries at both regional and national levels, including the provision of support for the establishment of the coastal fishing people in the Maldives.<sup>9</sup> However, there are no clear fisheries management plans to cover each of the fisheries management units. This is because of the lack of fisheries management systems (defined in plans) and technology and the absence of an enabling business environment, so that most of the fisheries, especially offshore, operate under free- and open-access conditions.<sup>10</sup> Although infrastructure development (of harbors, electricity, roads, transport, etc.) in the Maldives has increased significantly in recent years, there are still some deficiencies, in particular in the atolls, which limit the movement and trade of perishable fish.

In Bangladesh, the current legal and institutional regimes for improving socio-economic conditions and mitigating the impacts of climate change are at rudimentary stage compared to

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<sup>8</sup> J.A.D.B. Jayasooriya, N.D.P. Gunawardane and R.P.P.K. Jayasinghe,

'Appendix XV Current concerns on production and update of national fisheries statistics, including data collection in Sri Lanka' (2010), Report of the BOBLME fisheries statistics working group meeting, p66

<sup>9</sup> The World Bank, Conserving Maldives' ocean resources for a sustainable livelihood, <

<https://www.worldbank.org/en/news/feature/2020/02/27/maldives-ocean-resource-conservation-sustainable-livelihood>>

<sup>10</sup> The World Bank, Conserving Maldives' ocean resources for a sustainable livelihood, <

<https://www.worldbank.org/en/news/feature/2020/02/27/maldives-ocean-resource-conservation-sustainable-livelihood>>

the other coastal countries of the BoB. There is no specific act governing coastal fisheries; rather, coastal fisheries are governed by *general* national fishery laws, rules and policies. The national laws provide guidelines for the conservation, management and development of marine fisheries resources. However, there are limitations in the implementation of these laws, such as a lack of clear policy guidelines and strategy, inadequacy of existing regulatory framework, non-enforcement of legislation, jurisdictional conflicts, the absence of regular law review and updating mechanism, and competing by-laws, rules and orders.

Although the existing legal framework covers fisheries conservation, ecosystem management and biodiversity protection, the implementation of these provisions is often hindered by non-compliance, which is driven by poverty, poor governance and conflicts among stakeholders. Absence of the legal framework for sustainable coastal zone management causes over exploration of the coastal resources and coastal pollution. The coastal fishing people become the victims of the impacts of unsustainable coastal management. The probable impacts of climate change play an important role in developing sustainable coastal management plan.

Among the nineteen coastal districts of Bangladesh, coast based economic activities mostly involve fishing. The coastal people are relatively poor compared to other parts of the country.<sup>11</sup> The Bangladesh Government undertook several initiatives to protect coastal communities including the Integrated Coastal Zone Management Plan (ICZMP), the Coastal Zone Policy, 2005, and the Coastal Development Strategy (CDS),2006.<sup>12</sup> The Coastal Zone Management Policy of 2005 is notable for including management and development of the coastal zone, enabling coastal people to enhance their livelihoods. Unfortunately, there are no clear institutional mechanisms of government bodies. Coastal fishing people are affected by over exploitation of coastal resources. Rapid environmental changes, insufficient laws and policies are likely to be major threats to their wellbeing. A comprehensive legal regime with due consideration of the probable impacts of climate change on the socio-economic rights of the coastal fishing people may facilitate sustainable coastal management and better protection of the coastal fishing people.

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<sup>11</sup> Gulsan Ara Parvin, S. M. Reazul Ahsan and Rajib Shaw, '*Community Based Coastal Zone Management in Bangladesh*'(2010) Research Publishing Services,165-184.

<sup>12</sup> See chapter 5 A.1.b in this regard

The introductory chapter of this thesis provides a brief background, sets out the research questions, specifies the objectives and methodology of the research, provides a literature review and justifies the significance of this research. The second chapter defines the relevant terminology used in this research, such as ‘climate change’, ‘human rights’ and ‘coastal fishing people’. The chapter also examines the impacts of climate change on the coastal fishing people of Bangladesh and the human rights that are subsequently affected, thereby addressing the research question: *What is the current socio-economic condition of the coastal fishing people of Bangladesh and how are they affected by climate change?*

The third chapter analyses the existing international declarations, conventions and agreements relevant to mitigating the impacts of climate change on the coastal fishing people. The chapter then considers international legal instruments setting out basic human rights for all. Chapter 3 also analyses the institutions and bodies relevant for the protection of the socio-economic and environmental rights of the coastal fishing people, and addresses the research question: *What are the existing international legal and institutional frameworks responding to the impacts of climate change on the coastal fishing people?*

The fourth chapter investigates the legal and institutional arrangements for the protection of the socio-economic and environmental rights of the coastal fishing people of three other coastal states of the BoB: India, Sri-Lanka and Maldives. It addresses the research question: *What are the regional legal and institutional frameworks responding to the impacts of climate change on the coastal fishing people of the Bay of Bengal (BoB)?*

The fifth chapter analyses the policies, constitutional provisions, laws and strategies for responding to climate-induced impacts on the coastal fishing people of Bangladesh. It investigates the legal regimes in relation to the broader area of climate change and its impact on Bangladesh. The chapter also examines the application and implication of current institutional arrangements relevant to the protection of the socio-economic and environmental rights of the coastal fishing people in Bangladesh. The chapter addresses the research question: *What are the current legal and institutional frameworks concerning the impacts of climate change on the coastal fishing people in Bangladesh?*

The sixth chapter evaluates the current legal and institutional frameworks relating to climate change in Bangladesh to explore their shortcomings for protecting the socio-economic and environmental rights of the coastal fishing people in Bangladesh. It offers a comparative analysis of similar legal and institutional arrangements in India, Sri Lanka and the Maldives, and addresses the research question: *What are the shortcomings of the current legal and institutional frameworks concerning the impacts of climate change on the coastal fishing people of Bangladesh?*

This research has explored the shortcomings in the current legal and institutional arrangements for the advancement of the socio-economic conditions and mitigation of the impacts of climate change of the coastal fishing people of Bangladesh. These shortcomings are summarised below.

- One of the most important shortcomings is the absence of an effective climate change policy to mitigate the impacts of climate change on Bangladeshi coastal fishing people. There is no climate policy in Bangladesh that can help mitigate the impacts of climate change on these people. Any activity in the climate-change field has been carried out in the absence of an umbrella policy. Bangladesh has Intended Nationally Determined Contributions (INDC) which the government produced in 2015 and submitted to UNFCCC and BCCSAP. These set some implicit priority, but do not have correct targets or appropriate approaches. The fishing people are not explicitly included in the targets.
- *The National Fisheries Policy 1998* needs to shed light on how climate change affects important fish species, especially their breeding and adaptation strategies. Monitoring the impacts of climate change, response measures, institutional strengthening and coordination, and disaster risk reduction all need to be addressed further.
- There is a lack of long-term marine fisheries policy in Bangladesh. The existing marine fisheries policies and related documents offer no long-term outlook for quantification, judicious exploitation, restoration and protection of marine resources. Marine fisheries policies should be regularly reviewed to bring them into

line with changes in government policy, climatic changes and international rules. Fisheries research plans also should be formulated based on the same planning cycle, which could thus inform policy updates at national revision points. There is no specific marine environmental or ecosystem-based policy.

- The current institutional arrangement is not adequate for improving the socio-economic conditions and mitigation prospects of the coastal fishing people of Bangladesh. There is a gap of effective regulatory regimes focused on the improvement of their socio-economic conditions and mitigation and adaptation of the impacts of climate change on the coastal fishing people. In Bangladesh, there is an absence of a realistic and need-based policies and/or plans. In addition, there is a systematic social barrier preventing the coastal fishing people in Bangladesh from gaining access to food, housing, work and health.
- There is also a gap in funding the costs that developing countries may incur in dealing with climate-change migration. This funding gap is arguably an equal, and possibly greater, motivator behind the recent proposals for a new binding multilateral instrument. The *Bangladesh Climate Change Trust Act* was formulated and consequently the government set up the Climate Change Trust Fund to address urgent and immediate needs. However, there is no allocation of funds for coastal fishing people.
- There is an absence of effective court systems for providing environmental justice to the coastal fishing people of Bangladesh. The Environmental Court and Environmental Appellate Court were established, but unfortunately, they did not meet the expectations and aspirations of the people or play a significant role in the area of environmental management. The Department of Environment is not strong enough to fight the powerful interests who perpetrate environmental pollution.
- Another notable shortcoming is the absence of an effective coastal management system in Bangladesh. Coastal areas in a delta are a vital part of a living landmass, constantly interacting with seas and oceans and defining the configuration of the

coastline and shape of coastal areas. Despite this, sea-safety measures are almost absent in the coastal areas.

- Good fisheries policy implementation calls for the effective monitoring of policy status and an assessment of the effectiveness of the policy. Such monitoring will help determine if there has been the desired decrease in marine fisheries stresses and improvement in fish and fisheries quality. There is no monitoring and assessment of the impacts of climate change on the socio-economic conditions of the coastal fishing people in Bangladesh.
- The effectiveness of institutions involved in climate change adaptation is often hampered by limited capacity, lack of coordination and limited participation of stakeholders (such as small farmers and fishers) in planning. Further, corruption or mismanagement (see Bangladesh's high corruption index ranking)<sup>13</sup> hinder the effectiveness of governmental interventions, including those aimed at mitigating climate change<sup>14</sup>.

### **Recommendations**

This research recommends the following reforms to the current legal and institutional arrangements for enhancing the socio-economic conditions of the coastal fishing people of Bangladesh (including helping them to mitigate or adapt to the impacts of climate change):

1. The government of Bangladesh should adopt an effective legal framework for the improvement of the socio-economic conditions of the coastal fishing people. It should safeguard the interests of poor fishing communities by implementing a new fisheries management policy. The coastal fishing sector needs to be improved through such measures as governance reform, increasing coordination between administrative bodies and education of key stakeholders (including fishermen). In developing a comprehensive legal framework, cultural, social and economic barriers need to be considered and the

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<sup>13</sup> Transparency International Bangladesh, <<https://www.ti-bangladesh.org/beta3/index.php/en/>>; 'Corruption in Bangladesh', *Wikipedia* <[https://en.wikipedia.org/wiki/Corruption\\_in\\_Bangladesh](https://en.wikipedia.org/wiki/Corruption_in_Bangladesh)>.

<sup>14</sup> Climate Change Profile: Bangladesh, April 2018, Ministry of Foreign Affairs, Bangladesh.

communities consulted. The perceptions of local communities should be taken into consideration. Finally, ensuring good governance at each step is recommended as a fundamental prerequisite for the sustainable utilisation and management of coastal and marine living resources. The proposed comprehensive framework would significantly assist Bangladesh to meet the imminent challenges of climate change.

2. There is a lack of strict need-based plans, acts, policies and programs for fishery extension at both the national and upazilla/Thana levels for the target population (that is, fishing people). Internet based communications/functions have not been fully established between the fishing people and the Ministry of Fisheries and Livestock and the headquarters of the Department of Fisheries (DOF). Further, the government should promote more participatory law enforcement activities as part of implementing the relevant laws, policies and regulations. Decentralisation—and delegating appropriate administrative and financial responsibilities to field officers—can improve the administrative efficiency of the Department of Environment. A special magistrate can be deputed for fisheries matters to enforce fisheries acts, ordinances and management measures.
3. Bangladesh needs to develop a national climate-change policy specifically focusing on the coastal fishing people. It should build and support the resilience of coastal and other fisheries communities by supporting community-level institutional development and vulnerability-reduction programs.
4. Bangladesh should conduct socio-economic impact studies of those policies and projects related to aquaculture and culture-based open-water fisheries. It needs to strengthen collaboration and coordination between government and other agencies, including universities, NGOs, research and development organisations and the private sector. It should establish a Human Resource Development and Training Section to undertake manpower planning and to provide training to help staff better carry out the mandate of the Ministry of Fisheries and Livestock and the Department of Fisheries.

5. Bangladesh needs to strengthen the organisational set-up of the Ministry of Fisheries and Livestock and the Department of Fisheries to meet international requirements and standards. It should also modernise the existing quality-control laboratories on a priority basis. Training should also be provided to extension workers, depot operators, processing plant workers, factory managers and quality-assurance staff.
6. Bangladesh should establish a national fisheries database and arrange for the easy dissemination of related information to all concerned. The Department of Fisheries needs to strengthen fisheries extension services (to enable the promotion of aquaculture in a sustainable and equitable manner) as well as participatory fisheries management (by involving all stakeholders). It should also introduce training programs for farmers, scientists, extension officers, planners and administrators. Government should also construct a national committee with the relevant expertise.
7. Bangladesh should prepare an Annual Report on the progress of, and problems in, the implementation of fisheries and related projects and programs. It needs to make an appropriate recommendation to the Fishery Technical Committee's Annual Plan and Budget regarding resource allocation priorities and the harmonisation of fisheries research in Bangladesh.
8. The government-owned waterbodies (Jalmohal) leasing policy restricts many fishers from obtaining the rightful benefit. Poor fishers cannot afford the huge cost of a lease. Instead, leases are taken up by rich and powerful people (sometimes politicians) who are not fishers. This leasing system is depriving poor genuine fishers. A fairer system—one open to poor fishers—requires a reduction in leasing prices. At the same time, poor fishers should be offered low-interest financial assistance.
9. Bangladesh needs to provide adequate institutional micro-credit facilities on reasonable terms and conditions. Fishing people are forced to depend on informal credit/loans, and these carry a number of disadvantages (such as low beach prices, high rates of interest and perpetual indebtedness). Bangladesh needs to strengthen credit schemes that will help fishers attend programs for gaining alternative work outside the fisheries sector,



especially during the fishing ban period. Government and non-government organisations should promote the availability of supervised credit (without collateral) for artisanal, traditional fishers supported by extension services and technology inputs. The government can actively involve NGOs in credit programs for poor fishers in aquaculture activities and link credit programs with insurance coverage for fisheries activities.

10. There needs to be an increase in public awareness—through training programmes, by providing necessary education and tool kits as well as fishing manuals. The government should also undertake some initiatives for awareness building for the fishing people regarding existing fishing rights, laws, policies, adaption to and mitigation of climatic changes, and their own responsibilities for improving their living standards. Raising awareness of the impacts of climate change is crucial to ensure that the special risks to the fishery sector is understood and used to plan national climate change responses (including the setting of mitigation targets through such mechanisms as the *Kyoto Protocol* and the *Paris Agreement*). A few NGOs are working on this, but it is not adequate.
11. Bangladesh needs to address the commitments it made under the international agreements relating to climate change, the environment, human rights and fisheries, for the protection of its people's socio-economic rights and for the mitigation of climate-change impacts. It has several policies, laws and plans to meet these commitments. It needs to cooperate with national and international fishery research organisations on matters of fishery research and fishing community development.
12. Bangladesh should support risk-reduction initiatives within fishing communities. These could include conservation of natural storm barriers (for reefs, mangroves and wetlands), warning systems, preparation measures and recovery processes. Integration between government authorities, such as fisheries and maritime authorities, is generally very poor. There is a need for a holistic approach, with collaboration between government authorities and all stakeholders. There is a need for strong political commitment to ensure the sustainability and proper implementation of fisheries' legal

frameworks. There is also a requirement for proper rescue-at-sea reporting systems. The government should provide relevant training and awareness material, such as training manuals, posters and videos, to coastal fishing people.

13. The government should undertake a long-term decision-making process for appropriate coastal-zone management to ensure the wellbeing of the coastal fishing people. Establishing environment reporting processes at the national, district and upazilla level would be a good beginning. Coastal district, upazilla/Thana and village-based NGOs could play a considerable role in increasing awareness, in climate-change education and in coastal management.

The concluding statement\_of this research is that the socio-economic rights of the coastal fishing people are grossly violated in Bangladesh by climate change. Gaps in national policies, legal frameworks, institutional arrangements and coordination are the major shortcomings of the current arrangements relating to the coastal fishing people. The government should adopt national policy, legislation and integrated institutional arrangements in order to improve and safeguard the socio-economic conditions of the coastal fishing people.

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**\*\*The End\*\***