



Short Review Paper

Madagascar post Paris: moving ahead on loss and damage framework

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Abstract

Madagascar's climate change policy is marred by conflicts of governance and economic loss and damages. The adverse debate around climate change and associated natural disasters has started to hurt Madagascar's economy and are projected to cause economic losses worth 114-1047 million US\$. To cope up with various loss and damages due to climate change, Madagascar would require 42 billion US\$, but it faces various technical, social and policy constraints. The problem is compounded by high poverty rates and higher rates of climate change and global warming. Given the extreme vulnerability of Madagascar to climate change associated risks and disasters, developed countries could do well to come together and financially provide adequate contributions to save this island nation.

Keywords: Climate change, Disaster, Economy, Loss and Damage, Madagascar.

Introduction

Madagascar: An Overview: Madagascar ranks as the world's fourth largest island with a total geographic area of 5,87,041 square kilometers (sq. km). The average temperature of Madagascar varies between 16-27°C with annual variation of 3°C in the northern regions and 7.5°C in the southwest regions. The average annual precipitation in the country varies between 1000-1500 mm. Madagascar ranks as 10th poorest country of the world with a gross national per capita income of 1 US\$^{1,2}. Nearly 70% of the country's total population (~ 25 million) are poor and almost half of the Madagascar's infant population (below five years) are malnourished. Madagascar ranks 158 out of 188 countries world over in terms of Human Development Index³. UNFCC has ranked Madagascar 25th in the list of Least Developed Countries (LDCs). In the absence of any major industry or economic enterprise, Madagascar's economy is predominantly driven by agriculture, fisheries and livestock production. All these sectors are highly dependent on natural resources that in turn are dependent on climate of the region. Thus, in the likely event of increased temperature along with changes in precipitation patterns in the region, the livelihoods of the local people are going to be seriously affected with ultimate reduction in income, food security, water supply and quality.

Climate Change in Madagascar

Climate change models predict that by 2100, the average temperature of Madagascar would increase by 2.5°C-3°C⁴. The southern Madagascar region is expected to warm more (increase of 2.5°C) compared to the northern regions (increase of 1.1°C). The rainfall patterns are expected to show varying trends; the tropical regions are expected to experience more intense and increased rainfall with more frequent storms, while the east and

southern regions are expected to experience decreased precipitation levels⁵. During the wet season (November-April), precipitation is reported to increase by 5-20% over the coming 100 years, while the dry season (May-October) is expected to become drier with a net decrease of 10-30% precipitation levels over the next century⁶. Even the intensity of cyclones in the entire region is predicted to increase by almost 46%⁷. During the past two decades, the country has witnessed 35 extreme events of cyclones, 8 floods and 5 droughts⁴. This is almost a three-time increase in the incidence of extreme weather related disasters over the past twenty years. The 2006-2007 season can be considered as worst cyclone season, in which as many as seven tropical cyclones hit the island nation, impacting almost 190,000 people and causing losses in million of dollars⁸. The 2017 Global Climate Risk Index ranks Madagascar eighth amongst the most vulnerable countries to extreme weather events in 2015⁹. The Climate Change and Environmental Risk Atlas 2011 prepared by Maplecroft has considered Madagascar to be the third country most vulnerable to climate change associated risks¹⁰.

Loss and Damages Associated with Climate Change in Madagascar

Numerous risk modeling studies predicts that Madagascar suffer direct economic losses in the range of 100 million US\$ each year due to tropical cyclones and floods¹¹. Between 1980 and 2013, economic losses worth 8.8 billion US\$ were incurred due to various national disasters¹². Intensive cyclones alone contributed to 85% of the total economic loss during this period. A series of three consecutive cyclones (Fame, Ivan and Jokwe) in 2008 caused damage and losses worth 333 million US\$ in the island nation¹³. The worst hit sectors were housing and public

administration sector (total loss of 127.6 million US\$), agriculture, fisheries and livestock sector (total loss of 103 million US\$) and transportation sector (total loss of 45.7 million US\$)¹⁴. The gross domestic product (GDP) growth rate of Madagascar slowed down by 0.3% and overall budget deficit of government increased to -5.0% from -4.9% percent of GDP in 2008 due to impact of these three cyclones¹³. The magnitudes of such losses are expected to increase manifold with changing climate scenarios in the coming years when cyclones are predicted to become more frequent and intense in nature. For example, a 20-year, 50-year and 100-year return period tropical cyclone would cause economic losses of 114.3, 409.95 and 1046.7 million US\$, respectively in Madagascar¹³.

Conclusion

Madagascar has already developed a national action plan to address the adverse impacts and risks associated with climate change. As a part of its' COP21 commitments, Madagascar has committed to reduce its emissions of Green House Gas (GHG) by 14% and increase its GHG absorption capacity by 32% by 2030, compared to business-as-usual scenario¹⁵. The estimated cost of meeting these desired objectives would be 42 billion US\$: 29 billion US\$ would be required for climate change adaptation measures, 6 billion US\$ for climate change mitigation measures, 2 billion US\$ for capacity building measures and 5 billion US\$ would be required for technology transfer, development and research¹⁵. Out of the estimated 42 billion US\$, the national government is only ready to contribute 4% (approximately 1.68 billion US\$). For the rest 40 billion US\$, Madagascar is highly reliant on financial support from the other nations and Green Climate Fund. The country in its Intended Nationally Determined Contribution Report¹⁵ warns that in case the above financial contributions are not met, the overall emissions of GHG in Madagascar would reach 214 metric tons (Mt) CO₂ in 2030 as compared to 87 Mt CO₂ in the year 2000, a nearly 2.45 fold increase within 30-year period. The total GHG absorption capacity is also expected to decrease from 290 Mt CO₂ in 2000 to 92 Mt CO₂ in 2030, if no mitigation climate change counter measures are adapted. If adequate financial resources are provided, Madagascar has proposed to create an operational sustainable national financial mechanism by the end of 2020 that will particularly deal with climate change issues¹⁵. It is needless to say that given the extreme vulnerability of Madagascar to climate change associated risks and disasters, developed countries could do well to come together and financially provide adequate contributions to save this island nation.

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