

Economic Stability to Papua New Guinea by Contribution in Reducing Carbon Emissions through Support of DC

Eshan Ahuja*, Sidharth Ahuja **, Dr. Navin Kumar Kohli ***

*(Department of Mechanical Engineering, Australian National University, Canberra, Australia,)

** (BE, Electrical Engineering, India)

*** DGM, MP Power Management Co. Ltd., India)

ABSTRACT

Papua New Guinea is said to be PNG which is one of the most adversely affected small country by the impacts of climate change. Climate Change is one of the biggest challenges facing by them today, its devastation is widespread and intense. This issue has been discussed to evolve a method to support the nation in achieving the goal of emission reduction. The affects include those on Agriculture, Fisheries, Forestry and Tourism which have major contribution towards GDP of the PNG. PNG has a very low economic growth rate according to several economic and social indicators, the performance of the PNG economy since independence has been disappointing. Thus, there is need of taking special attention & responsibilities by giving cooperation by the nations. This is to be done by especially developed ones so as to support the small island nations in adaptation to the impacts of climate change through financial support. Through this act, the Least Developed Countries will achieve economic stability as well as imparting in reduction of carbon emissions. This paper discusses to find a path and sort out the issue. The paper also discusses various negotiating points so as to achieve the said goal mutually and amicably.

Keywords - PNG, Climate Change, Least Developed Countries and negotiating points

I. INTRODUCTION

Papua New Guinea is said to be PNG is one of the most adversely effected by the impacts of climate change. Climate Change is one of the biggest & greatest challenges facing by them today, its devastation is widespread and intense. It is a major and lasting change in spatial weather patterns in the earth's climate system. Key findings and reports indicate that anthropogenic activities have and are resulting in increased concentrations of CO₂ in the atmosphere which are destabilizing the environment. Based on empirical modeling, [1] estimated that mean sea level is projected to continue to rise during the 21st century, with increases of up to +140 cm projected for 2100. Moreover as by United Nations Framework Convention on Climate Change, vulnerability and adaptation to Climate Change in SIDS there might be an increase in the intensity of Cyclones in PNG and other areas of Pacific in the upcoming future. A sad reality of climate change impacts is that the countries least equipped to deal with the issue are the ones most affected by it. It has been estimated that maximum of the climate change related deaths have resulted in the LDC countries. The PNG is another such country which has been suffering from adverse impacts of climate change. These changes have affected the agriculture, forestry and tourism sectors the worst. Other impacts include degradation of land, health and welfare of citizens,

higher frequency of natural disasters as well as impacts on bio diversity. The Canberra Accord

convention is an opportunity for PNG to assure the world that their opinions are heard with respect to the climate change issue.

II. PNG ECONOMY AND ITS STATUS

According to the Australian Government Department of Foreign Trade and Affairs, Papua New Guinea country brief, [2] PNG is a small island nation with an area of about 463,000 square kilometres twice the size of UK, home to the world's third-largest tropical forest and one of the greatest concentrations of biological diversity has a population of about 6.7 million which is estimated to be growing at a rate of 2.8 percent per annum .The country has more than 800 known languages out of which English, Hiri Motu and Tok Pisin are the official languages spoken by the natives who are mostly Melanesian.

The nation has a Dual economy comprising of a corporate based sector & the informal sector. The informal sector includes agriculture, forestry and fisheries while corporate sector includes industries, manufacturing, and public sector service. Among these, the predominant economic sectors of PNG include Mining, Agriculture, Tourism and Fisheries. As per Australian Government [2] more than 2/3rd of the population is dependent and engaged in the

informal sector which generates more than 1/3rd of the country's GDP. PNG has a very low economic growth rate according to several economic and social indicators, the performance of the PNG economy since independence has been disappointing.

It remains one of the least developed nations on earth and according to United Nations Development Programme. Papua New Guinea, Human Development Index rank of the nation is 156th of 187 countries surveyed, lower than any other country in the Pacific. On the basis of Australian Government [2], the nation's GDP growth rate was above 9 per cent in 2012. This growth rate is supported by improved mining productivity as well as the construction activity in relation to PNG's Liquefied Natural Gas Project.

Economy of PNG faces risks such as impacts from growth in the mineral sector, fisheries and the LNG project. Some of the obstacles to the economic development are Policy instability, Poor Infrastructure, Inflation, Foreign Currency & Trade regulations also PNG government revenues remain vulnerable to volatility in global prices for gold, copper and oil. According to New Agriculturist, PNG is a major exporter to Australia, Japan and China and amongst all the exported products agriculture based products contribute to about 1/5th of the overall exports moreover the nation is amongst the top exporters of tropical hardwood all over the world. Major exports include gold, copper ore, logs, coffee, cocoa, fishes & prawns.

III. CLIMATE CHANGE IMPACTS ON PNG

According to the World Bank, World Development Indicators [3],[4] PNG's net energy consumption rose more than 30 % from 1990-2011, moreover there is a two-fold increase in total carbon dioxide emissions of the nation in a time span of 20 years initiating from 1990. Pokana wrote out of all the carbon emitting sources of the nation Land use, land use change and forestry (LULUCF) contributes to more than 3/4th of total emissions by the main drivers of emissions to be Logging and Subsistence agriculture. [5] As by UFCCC, commercial logging is fairly widespread throughout the regions of the nation with more than 1 million hectares already logged, other than logging the other contributors to the emissions in PNG are Agriculture Leases and Commercial Agriculture etc. The climate change impact on PNG is much worse compared to other small island nations as a result of its geographical location. Majority population of the nation especially, rural, have natural resources as the only source of Income. Over recent times, Droughts, floods increased frequency of tropical cyclones e.g. El Nino case have affected thousands of people every year causing billions worth damages in

addition to loss of lives and property. There are various most affected aspects which are most vulnerable to climate change which account for more than 3/4th of the nation's GDP and more than 80 % of the population relies on them as the major source of food and income. [6][7]

- i. Agriculture is the most important sector on the basis of the economic conditions of the nation as it consists of a wide variety of crops which are exported to other countries. According to Bell, increase of extreme weather events due to climate change affects the livelihood & the business of the rural people by causing damage to agriculture crops. [1] This was evident by a decreased production of crops like Taro, Cassava, Sugarcane & some major commercial crops such as coffee, cocoa due to extreme variations in the rainfall patterns.[8] As per PNG, crops such as coconuts, mango, betel nut and breadfruit are now observed in higher altitudes than before.[9] Thus as by worldwide fund for nature in PNG, overall the livelihood, employment and food security of the people of PNG are affected by the impacts of climate change on the agricultural sector. As this sector supports the unstable economy of the nation thus, there is a dire need of attention to it so as to strengthen the economy as well as to improve the standard of living of the people of PNG.[3]
- ii. PNG on the basis of New Agriculturist, comprises of one of the largest fisheries zone in the Pacific and has extensive and valuable fisheries resources ranging from inland river fisheries, and aquaculture to large-scale deep water tuna fisheries.[10] The increase in Coastal Erosion and Saltwater intrusion as a result of Sea level rise in low lying coastal areas result in increased fishing pressure on coastal habitats. Moreover, the decline in the saturation level considered adequate for coral growth due to Ocean Acidification is contributing in the destruction of ocean life especially fishes like Tuna which are amongst the highest contributors in exports so such conditions if left unseen can impact the economy of the nation.
- iii. The tourism potential in PNG is far ahead of that of other tourism based nations and its group members of small island nations yet it is underdeveloped. One of the reasons behind this is improper organisation and less priority been given to tourism by the government of PNG moreover according to Institute of National Affairs (INA). Research of economic growth in PNG majority of the rural parts of the nation remains untouched by modern industry and has archaeological and geological landscapes such

as grand sierras and majestic canyons still at present, the annual tourism income is about 20 million US dollars, and recently evidence of some of the earliest agricultural people on earth is found in PNG. Thus, as by UNFCC, vulnerability and adaptation to climate change in SIDS.[12] Tourism is one of the major economic sectors in PNG but due to impacts of climate change such as Sea-level rise, accelerated beach erosion, degradation of coral reefs (including bleaching), and the loss of cultural heritage on the coasts through inundation and flooding, the attractiveness of the nation is affected. Increase in the frequency or intensity of hurricanes and cyclones also strongly affects the tourism industry.

- iv. Nation's reliance on Oil & gas sector shows its importance and even justifies the money invested on the production side. According to World Bank Group in PNG, PNG economic briefing, the impacts of climate change is affecting the economic growth of this sector as seen in the recent year case i.e. wetter than usual weather was one of the major factors which hampered the Oil & Gas production especially in the first half of the year 2012.[13]
- v. Frequent precipitation events and flooding due to sea level rise is affecting the land use at a much higher level. As per Climate Frontlines, Climate Change in PNG, the impact of flooding in the case of Carteret Island in PNG resulted in resettlement of the people to other areas in Bougainville, there are other low lying atolls too such as Tuvalu, Tokelau, Kiribati etc. which are experiencing the same issues. Furthermore, United Nations Framework Convention on Climate Change (UNFCC), vulnerability and adaptation to climate change in SIDS wrote inappropriate land use practices due to intensified farming systems accelerate the land degradation (e.g. soil erosion, siltation, and loss of soil fertility), especially the indigenous population of PNG. As they have connected cultural values with their land so the land loss can affect them psychologically as well as sociologically. [14]

IV. KEY NATIONAL INTERESTS

Today, PNG suffers from numerous climate change impacts these include short term and long term, irreversible and impacts of tremendous magnitude. The economy of the country is highly dependent on its agriculture, marine eco systems, mining and tourism sector. Needless to say, climate change threatens their economy as well as the lives of people and stands in the way of our path towards security and sustainability. Based on the above

mentioned future impacts, there is a constitution of independent state of PNG. The PNG government has the following key national interests:

- i. To achieve Development Primarily through the use of Papua New Guinean forms of social , political and economic organization
- ii. Stability of economy
- iii. Reducing Emissions from deforestation and forest degradation
- iv. Sustainable management of forest and enhancement of Forest Carbon Stocks
- v. Protection of coastal marine and land ecosystems

Highlighting the importance of coastal marine ecosystems such as mangroves, tidal salt marshes and sea grass meadows to adaptation and mitigation to climate change and looking forward to continue work on this under Subsidiary Body for Scientific and Technological Advice (SBSTA).

V. UNFCC APPROACH

In the Rainforest Politics & the Carbon-Credit Trade in PNG, one of the previous approaches of the nation is its activeness with regards to deforestation. It has been a founding member of the rainforest coalition alongside Costa Rica. Its interests in deforestation were shown initially in the Montreal conference of 2005. PNG out of all the small island nations has got recognition as one of the leaders in promotion of International level of discussions on Reduced Emissions from Deforestation and Forest Degradation (REDD) moreover PNG's role in encouraging the carbon trading is globally appreciated. [15] Majority of population is dependent on the forest products as their source of livelihood. One of the significant initiatives by PNG for improving their livelihood is evident from the PNG-Australia Forest Carbon Partnership (PNGA-FCP) which further aims to protect the biodiversity. Overall, PNG has shown great interest in forest conservation and has been a prominent player in the climate regime in the context to deforestation. Some of the Current Funds to PNG and other small island nations so as to deal with the devastating effects of climate change are discussed below.

Global Climate Change Alliance (GCCA), funded by the European Commission Development that aims to increase capacities to adapt to the effects of climate change. Global Facility for Disaster Reduction and Recovery (GFDRR) funded by the World Bank provides technical and financial assistance to mainstream disaster risk reduction into the national plans. International Development Association (IDA) funds projects supporting adaptation to climate change, including improved access to clean energy, and transition to low carbon development. MDG Achievement Fund by the

Spanish Govt. is in environment and climate change related activities.

Small Activities Scheme (SAS) funded by Australia's Aid Program (AUSAID) provides funds for community generated climate change adaptation projects. The negotiating points as discussed below considering the national interests of PNG and the previous approaches under UNFCCC.

5.1 Negotiating Point No 1-(Financial Assistance and Adaptation Fund)

According to Canberra Accord,[16] parties agree to establish the Financial Assistance and Adaptation Fund (FAAF) to facilitate the mandatory contribution of funds to those are adversely affected by climate change and the transition to clean technology.

- i. In order for full transparency and fairness the FAAF board will be composed equally and answerable to the COP.
- ii. Funded by a global tax on international currency transfers of less than 0.1%.
- iii. o qualify FAAF grant, the receiving party must demonstrate co-operation to advance free trade agreements between parties.
- iv. Funding will be assigned towards a science based ecological accounting system.
- v. Takes note that recipients of FAAF assistance shall be subject to a midterm review.
- vi. Funding shall be arranged on the condition that fund will allow open talk on trade agreements.

The previous negotiation had a similar objective but didn't considered such a broad spectrum and was lacking a scope of efficient and strategic applications because it doesn't included the an approach of funds as per the global tax on international currency transfers which ensures proper regulation, implementation as well as commitments from the parties. Final decisions related to funding on that gets how much. Economic conditions of the government of PNG don't allow the allocation of a monetary fund for the Ecological Accounting Systems (EAS) in order to assess its ecological assets worth. Moreover, economic status of PNG also results in very low market exchange rates, in times of transfer of technology the net benefit received is very low the global tax on currency transfer being administered by World Bank ensures maximised benefits for LDC'S Developing the ability to resist sustain and mitigate impacts of climate change requires grants and funding which aim to develop clean and resistive technologies towards climate change. The distribution of funds from a central body with a specific objective of assisting most effected poor nation would ensure an

equitable distribution and swift achievement of objectives.

5.2 Negotiating Point No 2- Ensuring the effectiveness of the REDD+ mechanism

- i. Parties agree to establish REDD+ as an international mechanism by including it in the LULUCF agreement currently included under the UNFCCC.
- ii. REDD+ will create incentives for forest conservation and preservation for all countries through carbon credits and offsets.
- iii. The current United Nations Collaborative Programme on reducing emissions from deforestation and forest degradation will incorporate LULUCF.

The poor economic conditions of PNG is in a dire need of an economic incentive , with forest as our biggest natural asset the initiatives of their carbon credits for their conservation would allow a steady inflow of funds. According to INA, research of economic growth in PNG, only 50% of the population in PNG receives primary education and the numbers are even worse in the rural areas, the reason for high rate of deforestation apart from lack of alternatives is the lack of knowledge. Educating this segment of population is expected to drastically reduce these rates ultimately leading to decreased GHG emissions from PNG. Thus, for dealing with the devastating effects of climate change REDD+ effectiveness is a must.

5.3 Negotiating Point No 3- establishment of an Insurance Fund

On the basis of Canberra Accord, parties agree to establish an insurance fund to aid non-Annex countries in combating future unforeseen or unpredictable climate change impacts and emergencies including, but not limited to, natural disasters (i.e. droughts, floods, storms) and the spread of infectious diseases. Funding priority will be given to countries with higher indexes of vulnerability to the impacts of climate change. This fund would be contributed annually by all countries on 1% of their GDP, and on a voluntary basis by all the other parties as all countries are eligible for funding.

PNG is aware of the economic and social impacts of the natural disasters. The risks as well as the costs related to these disasters are increasing with respect to the continuous changes in the climate. Events such as the Western Highlands floods where smallholder coffee plantations were washed away are one such investment as these types of calamities effects people's financial security. This agreement will ensure the government and its poor citizens do not have to pay for such calamities in the future.

Historically, malaria was limited to coastal regions, but a warming climate is enabling mosquitoes to survive in the highlands, endangering the lives of 2 million people who were previously not at risk. Thus, there is a need for disaster risk management (DRM) not only to address current risks, but also risks heightened through climate change, and this insurance fund will ensure Security to the people of PNG and will help reduce migration of the nation's population to other countries.

VI. CONCLUSION

According to UNFCCC, vulnerability and adaptation to climate change in SIDS amongst the members of AOSIS and SIDS, PNG is one of the most adversely affected by the impacts of climate change. There is a need of mutual understanding of responsibilities and cooperation amongst the nations especially developed ones so as to support the small island nations in adaptation to the impacts of climate change by contributing some percentage of their GDP as a financial aid on the basis of respective needs of the LDC as well transfer of technological expertise with the latter going towards adaptation strategies. This will act as an opportunity for the Least Developed Countries to achieve economic stability as well as contribute in reducing carbon emissions thereby achieving the emission reduction goals on a large scale. Thus, according to the basic requirements of the above mentioned goals the negotiating points are being framed.

As PNG contributes to climate change mainly via deforestation and the Clean Development Mechanism is such that afforestation and reforestation are the only carbon sequestration activities allowed. Thus ensuring the continuity of REDD as a market based system by including in LULUCF is reasonable and appropriately justified. Overall, we appreciate that the entire negotiations occurred making use of science and equity, as discussed above and resulted in a win-win solution for all the countries.

VII. ACKNOWLEDGEMENTS

Eshan Ahuja is BE (Mech. Engg.) and has experience in energy efficiency consulting firm. He has published six papers in the past on energy and climate change. He is completing Master of Energy Change from the Australian National University, Canberra. He acknowledges with thanks for the support provided by the Australian National University, in completing the present paper.

VIII. ABBREVIATIONS

- i. Australia's Aid Program –AUSAID
- ii. Developed Country- DC
- iii. Disaster risk management - DRM

- iv. Ecological Accounting Systems –EAS
- v. Financial Assistance and Adaptation Fund – FAAF
- vi. Global Climate Change Alliance –GCCA
- vii. Global Facility for Disaster Reduction and Recovery –GFDRR
- viii. Institute of National Affairs – INA
- ix. International Development Association - IDA
- x. Land use, land use change and forestry- LULUCF
- xi. Least Developed Country- LDC
- xii. Papua New Guinea- PNG
- xiii. Papua New Guinea-Australia Forest Carbon Partnership - PNGA-FCP
- xiv. Reduced Emissions from Deforestation and Forest Degradation – REDD
- xv. Small Activities Scheme -SAS
- xvi. Subsidiary Body for Scientific and Technological Advice –SBSTA
- xvii. United Nations Framework Convention on Climate Change- UNFCCC

REFERENCES

- [1] Bell, J. D. Vulnerability of tropical Pacific fisheries and aquaculture to climate change. Secretariat of the Pacific Community, New Caledonia. 2011.
- [2] Asik, R. Conference of Parties (COP17). (P. Press, Interviewer) Australian Government Department of Foreign Trade and Affairs. 2013. Papua New Guinea country brief. <http://www.dfat.gov.au/geo/png/>.
- [3] Worldwide Fund for Nature. WWF in Papua New Guinea. 2013. Available from http://wwf.panda.org/who_we_are/wwf_offices/papua_new_guinea/?referer=wwf.org.
- [4] The World Bank Group in Papua New Guinea. (WBG). Papua New Guinea Economic Briefing, 2013. available from <http://www.worldbank.org/content/dam/Worldbank/document/EAP/Papua%20New%20Guinea/PNG-Economic-Brief-2013-1.pdf>
- [5] Pokana, J. An overview of Papua New Guinea's readiness efforts towards the mitigating of its greenhouse gases. 2013. Available from http://www.env.go.jp/en/earth/apnet/documents/seminar/22nd/07_PNG_Pokana.pdf.
- [6] UNFCCC. Papua New Guinea 2000 Under the United Nations Framework Convention on Climate Change.
- [7] UNFCCC, Climate Change: Impacts and Vulnerabilities and Adaptation in Developing Countries, 2007. 53, 1-64. Available from <http://www.gwp.org/Global/>

- ToolBox/References/Climate%20Change.%20Impacts,%20Vulnerabilities%20and%20Adaptation%20in%20Developing%20Countries%20(UNFCCC,%202007).pdf#page=55.
- [8] Bourke, R.M. Main Findings - Solomon Islands Smallholder Agriculture Study, Volume1. AusAID, ISBN 1 920861 68 8, Canberra, Australia. Climate Frontlines. Climate Change in Papua New Guinea 2006. Available from <http://www.climatefrontlines.org/enGB/node/313>.
- [9] Allen, B. R. 'People, Land and Environment'. The Australian National University, 2008. 45-54.
- [10] New Agriculturalist. 2013. Country profile - Papua New Guinea. Available from <http://www.newag.info/en/country/profile.php?a=2924>.
- [11] National Agriculture Research Institute (NARI). 2011. Production Issues in Sweet Potato Needs Addressing. Available from <http://nariweb.nari.org.pg/2010/production-issues-of-sweet-potato-needs-addressing>.
- [12] United Nations Framework Convention on Climate Change. Vulnerability and Adaptation to Climate Change in SIDS. Available from http://unfccc.int/files/adaptation/adverse_effects_and_response_measures_art_48/application/pdf/200702_sids_adaptation_bg.pdf
- [13] The World Bank Development Indicators 2013 Available from <http://wdi.worldbank.org/table/3.8>
- [14] Dimitrov, R. S. Inside UN climate change negotiations: the Copenhagen conference. Review of Policy Research, 27(6) 2010. 795-821.
- [15] The Garamut .Rainforest Politics & the Carbon-Credit Trade in PNG. Available from <http://garamut.wordpress.com/2009/02/06/rainforest-politics-the-carbon-credit-trade-inpng-an-essential-introduction/>
- [16] COP. "Canberra Accord: Decision and Plan of Action (Tuesday)", 2013. UNFCCC/2013/ ANU-CA2/F.