

How to Resettle EDPs From Disappearing Lands Due to Global Warming

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ABSTRACT

Global warming is one of the serious climate problems in the world. Researchers have confirmed that some island countries are at risk of flooding due to rising sea levels. People in some countries will be forced to leave their homes. These people are called EDPs (Environmentally displaced persons). With analyzing 988 original data of Mean monthly temperature and sea level from 1993 to 2019, we constructed a simple model of the relationship between global warming and sea level rise, which will estimate sea level changes in recent years and help to predict the number of environmental refugees impacted by this phenomenon. Through literature review and policy reports, this article summarized the long-term policy and emergency measures adopted by governments to deal with environmentally displaced people, which mainly involve mitigation of global warming, protection of human rights of refugees and protection of cultural heritage of countries at risk. We should not only consider EDPs' survival but also their life quality and dignity.

Keywords: *environmentally displaced people; policy; sea level rise*

1. INTRODUCTION

The report released by the World Meteorological Organization in March 2019 shows that physical signs of climate change and socio-economic impacts are accelerating. According to IPCC's fourth assessment report, the main reason for the rise in global temperature is inseparable from human activities.[1].

With the rise of average global temperature, there are series of environmental problems such as sea level rise and desertification arising. Rising sea levels, intensified desertification, and floods caused by catastrophic weather have

caused a large number of permanent immigrants. They are also known as environmental displaced persons. At present, the number of globally displaced people reaches a record high of 70.8 million, including 2.54 million people who have become refugees across the border. Among them, more than 17.1 million people have been forcibly displaced by natural disasters. This type of population migration caused by environmental changes is receiving increasing attention from governments and the international community.

2. THE MAIN CAUSE OF EDPs: SEA LEVEL RISE IMPACTED BY GLOBAL WARMING

2.1. Predicting the trend of sea level rising with a simple model

Based on the EEMD-BP combined model, the global sea level prediction includes the time sequence decomposition and prediction. Firstly, using the EEMD decomposition extract the physical sense symbol in the process of sea level change[2]. Then, BP neural network is used to analyze and forecast the future trend. We have developed a mathematical model of the relationship between global warming and sea level rise to estimate the changes in sea level in recent years (different seasons). With the collection of the data of monthly mean temperature and annual mean sea level in 1993 to 2019, we made them into a scatter plot and found that the two are linear. After the analyzing the future trend by using the BP neural network, we get the trend which shown in this picture.

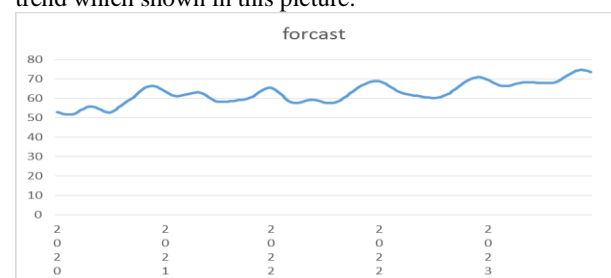


Figure1 The forecast data of sea level rise for the next five years (2020-2024)

According to the analysis, we can get the result that future sea level rise is expected, and there also exist some seasonal changes.

At the same time, we focus on the report of IPCC in 2018. The accumulation of greenhouse gases such as carbon

dioxide and methane in the atmosphere leads to a gradual rise in global temperatures. The Intergovernmental Panel on Climate Change predicts that global temperatures will rise by 1.4-5.8 degrees Celsius by 2100 according to climate models. Based on this forecast, global temperatures will experience dramatic changes that have never occurred in the past 10,000 years.

2.2. Environmentally displaced people

According to information released by the UNEP, just in 2018, there were 17.2 million people forced to leave their homes due to natural disasters in 148 countries or regions around the world. These groups of people are identified as environmentally displaced people[3]. The numbers of environmental refugees affected by natural disasters can be domestic or cross-border, and will be temporary or permanent. The policy analysis and recommendations for the resettlement of environmental refugees will be explained from the immigration in different locations and areas caused by different environmental problems. For example, in Asia-Pacific region, Pacific island country Tuvalu has signed an immigration agreement with New Zealand. Once Tuvalu's islands are submerged due to rising sea levels, all 11,600 residents of the country can move to New Zealand.

According to the IPCC 2019 report, by the end of the 21st century, global temperatures will rise by more than 2 degrees Celsius, and sea level rise caused by global warming will cause some island countries or low-lying areas to flood. It means that 280 million people may lose their homes in the natural disaster. As the model shown in preceding part, the severity of sea level rising will increase year by year as global average temperatures rise. Thus, pay more attention on the policy that how to resettle the climate refugees caused by sea level rising will be one of the most important issues in recent years.

3. LONG-TERM POLICY SUGGESTIONS TO CROSS-BORDER EDPs

In order to meet the challenge of land flooded caused by sea level rise, both countries at risk and international community should adopt a series of measures at both domestic and international level. As a country seriously affected by the rise of sea level, it should face up to the root causes of these problems, reduce greenhouse gas emissions by reducing carbon emissions, using new energy and other measures, and alleviate the grim situation of global warming. At the same time, it is also important to seek international cooperation on emissions reduction and refugee resettlement. These are effectively long-term goals for tackling climate refugees

3.1. Long term policy 1: Reduce Carbon Emission

The government can subsidize low-emission alternatives through fiscal measures and levy taxes on fossil dyes, to lead the correct consumption in the energy sector and significantly reducing carbon emissions. The basic method to solve the problem caused by the growing number of climate refugees should be alleviating the global warming. So, reducing carbon emission is the long term but necessary policy.

At present, most states or regions have implemented or plan to implement solutions based on carbon pricing, covering about 15% of global emissions. However, in combination with the economic production methods and production capacities of some island countries, the continued reduction of carbon emissions will have little effect on mitigating global warming when the original carbon emission level is low. Since it takes a long-term effort to reduce carbon emissions, green economy should be realized through industrial transformation or energy structure upgrading. A common solution is particularly important.

3.2. Long term policy 2: Searching for the International Emission Reduction Cooperation

Most of South Pacific island countries represented by Tuvalu have ratified the "Kyoto Protocol" and clearly stated their positions at the Copenhagen Climate Conference: They demanded that the agreement of the "Kyoto Protocol" be adhered to. Reduce emissions by at least 45% by 2020 and at least 95% by 2050[4]. Therefore, it is an effective way to make full use of international public opinion and strive for international support to attract more international attention to the affected countries to solve environmental and climate problems within the framework of the United Nations system.

Some low-lying Pacific island nations, such as Tuvalu, Maldives, and Kiribati, consist of atolls that are only a few meters above sea level. Moreover, it is difficult for domestic long-term measures to deal with short-term threats, and it cannot effectively save the lives and property of citizens. It is necessary to mobilize international community, to complete the resettlement and assistance of refugees.

3.3. Long term policy 3: Establishing the Multi-dimensional Climate Governance

The global climate governance pattern is changing in the international area from the original multilateral government mechanism to a 'complex comprising multiple actors and governance mechanisms'. International cooperation between governments will guarantee the reception and resettlement of environmental refugees. For example, in 2017, Fiji Prime Minister Frank Bainimarama announced that "they would allow the populations of Kiribati and

Tuvalu to settle in Fiji, if these citizens have to relocate due to climate change." In response to the Paris Agreement's emission reduction plan in the post-Paris era, INGO has made significant contributions to global climate governance by interacting with many non-party stakeholders in its "top-down" governance mechanism. .

Founded in Geneva, PDD is also such a state-led process dedicated to providing better protection for refugees who have lost their homes due to natural disasters, and to understand how the international community should be for forced migrants caused by severe climate change prepare for[5]. The IOM and UNHCR that have been created today are also very active in this field.

4. EMERGENCY POLICY SUGGESTIONS FOR THE RESETTLEMENT AND CULTURAL PRESERVATION

In a recent ruling, the UN has recognized that some EDPs might qualify as refugees. Responding the plight of refugees is a common project of humankind. It is necessary for international society to deal with this dilemma with long term goals, the emergency measures should also be taken to solve problems of refugees in a short time effectively. Some island countries are in danger of being completely flooded. How to carry on the traditional culture of these countries is also an issue we need to consider when formulating policies to deal with EDPs.

4.1. Emergency policy 1: Estimating the number of EDPs

The first task in addressing environmental refugee resettlement is to reasonably predict the number of inhabitants in coastal or island countries threatened by rising sea levels by mathematical model.

In addition, in most areas likely to be affected by sea-level rise, the phenomena such as the rapid increase in the number of newborns and the expansion of the youth population are common. When the sea level is raised through model calculations, based on natural geographic features such as altitude, coastal erosion, and the risk of floods caused by meteorological disasters in history, it can be inferred which coastal lands are at risk of being flooded by seawater. Then, based on the demographic data of the affected islands, deltas or coastal areas, researchers can infer the number of residents in the area in a given period of time, and then extrapolate how many people are likely to face sea level rise. The threat of submerged settlements led to statistics on new environmental refugees in some regions, and preliminary calculations of the number of people who needed large-scale migration.

4.2. Emergency policy 2: To develop resettlement policies based on humanitarianism and non-discriminatory principles

Based on the Global Compact for Refugees adopted by the UN General Assembly in 2018, the Global Compact is derived from the basic principles of humanitarianism and international solidarity, and aims to implement the principles of burden and sharing the responsible[6].

The first thing should be acknowledged is the disproportionate impact of women and children in natural disasters. As the report of United Nations Agency for Gender Equality and the Empowerment of Women in 2016, according to the existing data disaggregated by sex at that time, from 1991 to 2015, in countries such as India, Indonesia, Myanmar and other countries where gender inequality may exist, women accounted for a greater proportion of deaths. At the same time, women also face secondary effects such as sexual violence and demographics.

Therefore, on the basis of promoting the exchange of experience between relevant countries, and encouraging cooperation in relevant policy areas, international organizations should focus more on human rights and economic and social development issues in non-developed countries and regions from a humanitarian perspective.

4.3. Emergency policy 3: Collect immigration information and establish a database

It is important for the national or international community of environmental refugees who are trying to protect the environment to grasp the demographic characteristics of immigrants such as gender, age and nationality. 1) The national decision-making body should establish an early warning system in advance, apply a reasonable mathematical model to evaluate, understand natural disasters, such as sea level rise, land desertification and other issues, and lock down areas that may be affected in the country, and initially estimate the number of EDPs risks. 2) Countries of origin should strengthen the management of the overseas citizenship registration system and simplify the unimpeded information registration system so that the government can contact migrants in crisis situations and provide them with effective information on assistance available during the crisis. 3) The host country should also facilitate the exchange of information with the country of origin of the immigrants, and collect and improve the immigration information when the immigrants arrive.

4.4. Emergency Policy 4: The identify of some EDPs as refugees and encourage them to integrate into new communities

When entering the host country, environmental displaced people need to be able to obtain identity authentication, basic public services, and financial assistance. Fortunately, the refugee status of some EDPs has been recognized.

(1) Education: It is a basic human right and an important way to protect refugees. This requires the joint efforts of the international community and stakeholders to provide appropriate financial and resource assistance in accordance with the education laws and policy plans of the host country to improve the quality and inclusiveness of the host country's education system.

(2) Jobs: International community can provide certain resources or assistance to the country of residence, analyzing the labor market, determining market demand and create employment opportunities. At the same time, combined with job opportunities in the market, special training should be provided appropriately for refugees in need of employment.

(3) Health: The right to health is a basic human right. To address similar issues and guarantee the right to health of cross-border refugees, governments and stakeholders need to provide resources and expertise to host countries, expand national health systems and improve the quality of services in accordance with national health care laws, policies and plans. The funds of the international community can be used to help repair and equip sanitation facilities and strengthen services..

All in all, regardless of their legal status, all refugees and migrants have the right to health services and social protection, adhere to the humanitarian spirit, oppose racial and gender discrimination.

4.5. Cultural Preservation

With the influence of global climate change, some low-lying island nations and coastal areas are facing the risk of being flooded. In addition to issues related to basic security, health and human rights protection, it is also important to focus on cultural breaks. The large-scale population migration will disrupt cultural continuity and diversity.

(1) Construction of cultural heritage risk assessment model

The first step in conducting a risk analysis and cultural heritage assessment is a national cultural heritage survey. The use of GIS in emergency operations to draw accurate drawings clearly shows that the cultural heritage in different regions of the country is threatened by natural disasters, such as floods, to clarify the protection target of material culture and make risk planning in advance.

(2) Protection of transferable material cultural heritage

For material cultural heritage that has been successfully protected and transferred, the host government can assist refugee groups in establishing a cultural protection

museum. Museum management can use statistics from the Heritage Census database to more easily and effectively protect its vast collections.

(3) Special Cultural Carrier

To protect intangible cultural heritage, the host country government can encourage refugee groups to use other cultural carriers, such as national cuisine, traditional cultural activities, to achieve the cultural communication, understanding and tolerance. For example, the puppet show in the Lebanese refugee camp also played a profound role in helping Syrian refugee children understand the cultural heritage of their hometown. Different cultural groups will form unique cultural symbols in the development process.

5. CONCLUSION

To resettle and solve the problem of EDPs, the current response policy for international community to summarize are long-term strategies and emergency strategies, which are respectively dedicated to the mitigation of climate warming and the resettlement of environmental refugees. These policies can not only avoid the problems like national conflict, discrimination, leak of human rights effectively, but also reduce the number of EDPs fundamentally with the solution of reducing carbon emission to mitigate global warming. The prediction of sea level rise by mathematical models in the next few years is helpful for relevant governments to make countermeasures in advance. Through a combination of long-term strategies and short-term strategy, governments should focus on environmental refugee resettlement problems and risk of the country's cultural heritage protection, to maximize the maintenance of the citizen's human rights, such as the right to education, the right to work, the right to health, and protect the human's precious cultural heritage. These policies are also consistent with the development goals of the UN and achieving world peace and development.

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