

The Climate Crisis:
Climate Induced Migration in the Asia-Pacific Region

Stefanie R. Montes
The University of Texas at El Paso
Capstone

Abstract

Although global climate change has been occurring for many centuries, there has been an increase in the effects of climate change within the last few decades. The number of natural disasters has nearly doubled over the last few decades and researchers have been predicting the possible outcomes based that growth. The climate crisis has many organizations pushing for policymakers and researchers to find and implement solutions to the problems. The Asia-Pacific region is the most vulnerable to the effects of global climate change, mostly attributed to the vast number of poverty-stricken countries living along the coastlines. The effects of climate change have also affected the migration patterns of the Asia-Pacific region, as climate change influences many of the driving forces behind migration. The predicted effects of climate change claim that natural disasters will leave millions of people displaced and turning to migration for adaption. This paper seeks to identify the vulnerabilities of the Asia-Pacific region in terms of climate change and to identify how the effects will influence migration patterns. It also seeks to identify how policymakers can protect the region from the potential harms climate change can cause. The use of current policies regarding climate change, such as the Kyoto Protocol, may not be enough to combat the expected numbers of climate-induced migrants in the future. With very little efficient data available on the subject, the conclusions are based upon the identified driving forces of migration and the vulnerabilities of the Asia- Pacific region to climate change.

Keywords: climate change, migration, adaption, vulnerabilities, policies

1. Introduction

Global climate change (also known as “Global Warming”) has rapidly increased over the last few decades as the world has seen a growth in population and technological advances. The United Nations (UN) has started a series of talks regarding the global climate issue, which is aimed at making changes that can help eliminate the excess gas. Greenhouse gas (GHG) emissions have grown considerably over the last few decades; these gases keep the heat trapped in the earth’s atmosphere and has caused noticeable changes to the global climate. Scientists have been mapping the changes in the Earth’s temperatures and have noticed the gradual increase over the last few decades. Scientists have attributed the rise in temperature to the extra amounts of gases found in the atmosphere which they believe came from the large amounts of fossil fuels the world burns. Due to the increased temperature, glaciers and ice caps have started to melt and have caused sea levels to rise as much as 10 inches in some areas over the last one hundred years.¹ The rising temperatures also contribute to the severity of weather phenomena, such as hurricanes, typhoons, snowstorms, and droughts. With such extreme weather phenomena happening, people are losing their basic human security and are migrating to areas where they are able to ensure they are getting the necessities for survival.

In order to understand the impact that climate change has on the earth, it is important to look at specific regions affected by climate change. The Asia-Pacific region is home to just over half of the world population and is often blamed for contributing most of the gases in the atmosphere. In the year 2000, it was reported that the Asia- Pacific region contributed 12% of the world’s greenhouse gas emissions, which was a 27% increase from 1990.² This region has been hit hard by extreme weather in the past and suffered significant losses. These extreme weather phenomena have only increased over time as the levels of gases in the atmosphere have risen as well. These incidents have been studied by many and brought to light in attempts to cut back the amount of gas emissions being released into the atmosphere. Policymakers are being targeted with information regarding the climate change or global warming phenomena in hopes that changes can be made to switch to other forms of energy, which will allow the gas emission levels to decrease.

Migration in the Asia Pacific region has increased over time as well, but has not necessarily been studied alongside climate change in depth to understand what factors are causing people to move to new locations and what the impacts of migration are. When large groups of people migrate, the issues of human security come into play. Looking at the reasons behind migration can shed light as to why people chose to leave their homes and how they determine where they will re-settle. It is important to identify the impacts of migration, especially if it is large-scale numbers of people. The need to establish

¹ Paul Challen, *Migration in the 21st Century: How will globalization and climate change affect migration and settlement?* (New York: Crabtree Publishing Company, 2010), 6.

² Tae Yong Jung, “Review of the Economics of Climate Change on Southeast Asia”, in *Climate Change in Asia and the Pacific: How Can Countries Adapt?*, ed. Venkatachalam Anbumozhi, Meinhard Breiling, Selvarajah Pathmarajah, and Vangimalla R. Reddy, (New Delhi: Sage Publications, 2012), 11.

settlements where there are resources that are vital for livelihood can affect migration trends throughout the region. It is important to understand the impacts of migration on the environment and how the environment plays a role in migration as well. In order to make necessary changes, researchers and policymakers must understand if climate change and migration pose a threat to the Asia-Pacific region and then they can look into the choices available to ensure that human security is protected in this region.

2. Climate Change in the Asia-Pacific Region: Vulnerabilities and Policies

The Asia Pacific region is extremely vulnerable to the effects of climate change. This region not only houses over half the world's population, but it also houses some of the most poverty-stricken areas as well. As of 2005, there were nearly 19% of the population living on less than \$1.25 (US dollars) a day.³ The extreme effects of climate change not only hinder the region from attempting to address their poverty issues, but it can add to the increase of the poverty population by destroying the vital assets needed for human security. Climate change affects the ability for developing countries, such as the poverty-stricken Asia-Pacific ones, to continue to function. These areas are vulnerable to the impacts of climate change because they are less likely to have the ability to adapt to the changes.

In order to combat the effects of climate change in the most vulnerable areas, "the world requires massive and coordinated global efforts through diplomacy, projects, and financing".⁴ The necessary changes for combating climate change are being voiced to policymakers, but not all believe that it is a pressing issue and the process is moving along slowly. Climate change affects the Asia-Pacific region not only by the extreme weather phenomena that occur because of the temperature rise, but it also affects food productivity and people's general health. In order to create a global plan to combat climate change, it is vital that all possible impacts from climate change are acknowledged and considered.

2.1 Extreme Weather Vulnerability

The Asia-Pacific region has been bombarded with many extreme weather incidents over the last few decades. The number of extreme weather phenomena has increased over the last decade. The Asia-Pacific region is a danger zone for extreme weather phenomena due to its vast coastlines. However, since global gas emissions have increased, the area has been repeatedly hit by the effects of climate change. Since the average amount of natural disasters in the region have increased in the last few decades it has become difficult for the region to recover

³ Ibid., pg. 9.

⁴ Agus P. Sari, "Introduction: Climate Change and sustainable development in Asia", in *Climate Change in Asia: Perspectives on the Future Climate Regime*, ed. Yasuko Kameyama, Agus P. Sari, Moekti H. Soejachmoen and Norichika Kanie, (New York: United Nations University Press, 2008), 3.

from one natural disaster to the next. A report from the United Nations Convention to Combat Desertification found that,

Scientific studies indicated the [Asia-Pacific] region's coasts will continue to experience climate damages in the decades ahead. These damages include coastal inundation and erosion from sea-level rise, the displacement of communities, increased coastal management and [defense] costs, and the potential for more intense tropical cyclones. Most at risk are poor people living in the low-lying river deltas of Bangladesh, India, Vietnam, and China as well as the small island states.⁵

The United Nations Environmental Programme established the Intergovernmental Panel on Climate Change (IPCC) in 1988 to analyze the combined scientific information found by researchers in different countries. The IPCC creates global assessments of climate change and the possible effects it will have on the world in the future. The reports that the IPCC publish are aimed at aiding policymakers in making decisions on how to handle the issues that arise with the growing threat of climate change. In 2011, the IPCC released a report outlining how to manage the risks of extreme events. They found evidence, which supports the theories, that extreme weather phenomenon will continue grow over the 21st century.

The IPCC found that precipitation will likely increase over time and that it is also likely that “the average maximum wind speed of tropical cyclones [typhoons and hurricanes] will increase throughout the coming century”⁶ but the IPCC also stated that it is also likely that “overall there will be either a decrease or essentially no change in the number of tropical cyclones”.⁷ The IPCC's final statement contradicts all other research found that there will be an increase, and already has been an increase, in the average number of tropical cyclones. The coastlines of the Asia-Pacific region have seen that typhoons have increased in frequency and magnitude over the last decade.

On November 8, 2013 the largest tropical cyclone in world history, Typhoon Haiyan, hit the Philippines. While it is only an assumption at this point that climate change played a large part in this natural disaster, it is apparent that the strength and frequency of natural disasters are growing, like predicted, due to climate change. Tropical cyclones need warm waters to build themselves up, and with climate change causing global temperatures to rise, the water temperatures are raising as well, giving the tropical cyclones a larger chance for development. Millions of people have been affected by Typhoon Haiyan's powerful landfall, but while the country is still in the process of attempting to recover from the devastation, there are no definite figures of loss at this point. It is estimated that there are close to 5,000 people dead, though these numbers include the people who have been reported missing. The reality of this natural disaster is that it has

⁵ “Climate Change Impacts in the Asia/Pacific Region,” United Nations Convention to Combat Desertification. accessed September 15, 2013, <http://www.ifad.org/events/apr09/impact/pacific.pdf>

⁶ Intergovernmental Panel on Climate Change, “IPCC Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation”, November 28, 2011, http://ipcc-wg2.gov/SREX/images/uploads/IPCC_SREX_fact_sheet.pdf

⁷ Ibid.

left millions without food, water, or shelter and the help needed has been slowly making its way to the Philippines.⁸

Bangladesh is considered the most vulnerable country in the region, as it “gets flooded on a yearly basis... [and has] 21 percent of its population living on coastal areas”.⁹ If the sea levels continue to rise there will be areas of the Bangladesh coastline that will be completely submerged underwater. Climate change has Bangladeshis more concerned about mitigating the impact of climate change rather than reducing greenhouse gas emissions. The amount of tropical cyclones seen in this coastal area has increased largely in the last few decades and, “it is forecasted that climate change and its associated hazards will affect the adaptive capacities of the population, which is already overburdened by absolute poverty, recurring natural disasters, and governance-related issues”.¹⁰ The Bangladesh government has to come up with a plan to protect their region from the natural disasters that may happen in the future, but as money is an issue, it may not be possible for a proper protection plan to be implemented. River erosion is another concern for the people of Bangladesh, “during hazard times, people need to travel long distances to collect water and more than half of the households affected by riverbank erosion need to do it”.¹¹ If the region’s people are already living in poverty, traveling long distances may become difficult because they lack resources (and means to get resources) to sustain themselves on long trips.

Events like this, however, are likely to continue to occur if there are no changes to the way the world consumes fossil fuel energy. There has been an increase in the activity of storms, cyclones, and surges along the coastlines of Asia since the amounts of greenhouse gasses have increased. The warmer global temperatures experienced are causing ice caps to melt and sea levels to rise. However, “sea levels are projected to continue rising for hundreds of years after stabilization of greenhouse gas concentrations because of the long time scales on which the deep ocean adjusts to climate change”.¹² While we cannot completely stop sea levels from rising over time, we should still make efforts to stabilize our greenhouse gas emissions so that we do not continue to speed up the process with increased warm weather.

Aside from heavy rainfalls and typhoons, another climate induced extreme weather condition that is seen in the region is droughts. The extreme droughts experienced in the region also have an effect on human security, food security and water security. Droughts make it harder to provide regions with safe drinking water and water used for irrigation. Many countries in the region have been

⁸ Daniella Silva, “Typhoon Haiyan: A Crisis by the Numbers”, *NBC News*, November 17, 2013,

http://worldnews.nbcnews.com/_news/2013/11/17/21496134-typhoon-haiyan-a-crisis-by-the-numbers?lite

⁹ Agus P. Sari, “Introduction: Climate Change and sustainable development in Asia”, in *Climate Change in Asia: Perspectives on the Future Climate Regime*, ed. Yasuko Kameyama, Agus P. Sari, Moekti H. Soejachmoen and Norichika Kanie, (New York: United Nations University Press, 2008), 3.

¹⁰ Gulsan Ara Parvin, Fumito Takahashi and Rajib Shaw, “Coastal Hazards and Community-Coping Methods in Bangladesh”, *Journal of Coastal Conservation* 12, no. 4 (2008): 182.

¹¹ *Ibid.*, pg. 189

¹² Kristie L. Ebi, Nancy D Lewis, and Carlos Corvalan, “Climate Variability and Change and Their Potential Health Effects in Small Island States: Information for Adaptation Planning in the Health Sector”, *Environmental Health Perspectives* 114, no. 12 (2006): 1959.

affected by extreme droughts throughout the last few decades; Southern China experienced a drought in 2006, which was considered the “worst drought in half a century [in which] nearly 8 million local residents had difficulty accessing drinkable water, and some 2.07 million hectares of farmland was affected”.¹³ Extreme hot and dry periods stand to affect many people by causing water shortages, not allowing crops to be grown and even causing deaths of not only animals, but people as well. If the droughts in the region continue to occur and alter the length of the hot and rainy seasons then the region’s agriculture sector will end up suffering.

2.2 Agricultural Vulnerabilities

Climate change has an impact on a nation’s ability to sustain their agriculture sector of their critical infrastructure. Whether a region experiences extreme rainfall, flooding, or drought, it will inevitably affect their ability to grow crops as it is said that climate and weather conditions are key factors for agricultural productivity.¹⁴ Water supplies are in danger of contamination from the heavy rains, flooding, and extreme natural disasters; droughts are causing water shortages in some of the areas. For the Asia-Pacific region it is feared that with “the pressure of fast population growth and urbanization, the risk of hunger is expected to remain extremely high in several developing countries... for the least developed nations, such agriculture impacts may threaten not only food security, but also national economic productivity”¹⁵. Concerning the impact climate change has on agriculture, Fan Zhai and Juzhong Zhuang wrote that,

Global warming would alter natural climate and environmental systems in many ways, leading to an increased frequency of extreme weather events, rising sea levels, reversal of ocean currents and changes in precipitation patterns. These changes could impact the social and economic activities, with serious implications for the well-being of humans into the future¹⁶

Agriculture is an important aspect to the sustainability of Southeast Asia and many of the residents, mostly in the rural areas, depend on the production of food for their livelihood.

For Asia, “the development of the rice sector is always a priority for national governments... for economic growth, social security and political stability”¹⁷, therefore, they needed to look into ways to protect themselves from any challenges with food production that they might be faced with. Since the area

¹³ Liu Lian You and Wu Wei, “Drought in Asia and the Pacific” (presentation, Regional Implementation Meeting (RIM) for Asia and the Pacific for the CSD-16, Jakarta, Indonesia, November 26, 2007).

¹⁴ Fan Zhai and Juzhong Zhuang, “Agricultural Impact of Climate Change: A General Equilibrium Analysis with Special Reference to Southeast Asia” in *Climate Change in Asia and the Pacific: How Can Countries Adapt?*, ed. Venkatachalam Anbumozhi, Meinhard Breiling, Selvarajah Pathmarajah, and Vangimalla R. Reddy, (New Delhi: Sage Publications, 2012), 17.

¹⁵ “Climate Change Impacts in the Asia/Pacific Region,” United Nations Convention to Combat Desertification, accessed September 15, 2013, <http://www.ifad.org/events/apr09/impact/pacific.pdf>

¹⁶ *Ibid.*, pg. 17.

¹⁷ Aldas Janaiah and Mahabub Hossain, “Can Hybrid Rice Technology Help Productivity Growth in Asian Tropics? Farmers’ Experiences”, *Economic and Political Weekly* 38, no. 25 (2003): 2492

had already witnessed some challenges in food production in the 1990's, they had begun looking into the idea of hybrid rice practices to compensate for the shortcomings they were faced with. Hybrid rice production was successful in China and was attempted in other Asian countries; however, the production of hybrid rice was not as successful. The quality of soil and environmental conditions play an enormous role in the way crops can be grown.

Climate change's impact on agriculture shows that the "rain-fed ecosystems are subjected to the vagaries of nature, such as drought, floods, temporary submergence from heavy rains, and typhoons"¹⁸, which is now becoming more problematic as these weather phenomena are increasing yearly. In the areas of Asia where they are using rain-fed production systems, climate change has caused changes in the quality of soil which in turn has affected the amount of foods being produced in that area.

Fan Zhai and Juzhong Zhuang's study on the impact of climate change on agriculture included a model, which projected effects of climate change on crop production; while it found that most of the decline in production would be moderate, it did consider it significant.¹⁹ Their study found that "developing countries would bear disproportionately large losses arising from climate change"²⁰ and that "reversing this trend of declining agricultural productivity would be an important component for Southeast Asia strategy".²¹ Each country's government and the policymakers should make their agriculture sector's protection a high priority since they depend on the production of goods as a means of economic stability through trade and because they are residents make their earnings from the food production.

2.3 Human Health Vulnerabilities

When researchers and policymakers look at climate change, they are mostly focused on the extreme weather phenomena and how that will affect a region. While it is important to note those changes, human health vulnerabilities are often overlooked as being an impact of climate change. Some of the international organizations dedicated to combating climate change have used assessments to aid in their understanding of the effects of climate change. The assessment found that those living on the edge of the vectors where malaria is spreading are at risk of becoming part of those vectors as the climate change causes the spread of the disease; in order to prevent this from happening, it is suggested that these areas implement prevention activities.²²

¹⁸ Ibid., pg. 2493

¹⁹ Fan Zhai and Juzhong Zhuang, "Agricultural Impact of Climate Change in Southeast Asia," in *Climate Change in Asia and the Pacific: How Can Countries Adapt?*, ed. Venkatachalam Anbumozhi, Meinhard Breiling, Selvarajah Pathmarajah, and Vangimalla R. Reddy, (New Delhi: Sage Publications, 2012), 24.

²⁰ Ibid., pg. 33.

²¹ Ibid., pg. 34.

²² Kristie L. Ebi, R. Sari Kovats and Bettina Menne, "An Approach for Assessing Human Health Vulnerability and Public Health Interventions to Adapt to Climate Change", *Environmental Health Perspectives* 114, no. 12 (2006): 1931

It has also been found that “coastal hazards like cyclones and tidal surges are often followed by skin diseases, fever, and diarrhea”²³, yet most people in the rural areas of the Asia-Pacific region are not financially able to seek treatment for those ailments. The areas that are the most vulnerable to having health impacts from climate change are the small island areas. The islands are easily susceptible to health risks due to their remote location, vulnerability to extreme weather phenomena, and their small land size combined with large populations. Many small islands are not economically able to adapt to the brutal effects from climate changes. In addition, many of the small islands rely on their own means for disposing of their sewage, but these means are not necessarily the safest practices. Often the rural communities will dump their waste into rivers or streams for disposal; when these areas are hit by storms and experience flooding or run off water they may “become contaminated with fecal waste... and can pose serious health risks”.²⁴ The spread of waterborne diseases increases greatly when there are extreme weather conditions causing contaminated water to encompass the area.

Illnesses cannot only occur when drinking water supplies become contaminated, but the climate change can allow for the spread of some illnesses, which are transmitted through insect bites. In Southwest Asia, the sand-fly bites can cause people to become affected with the “sand-fly fever”, a vector borne disease, which is more commonly diagnosed within summer months. Studies have shown that “sandflies must have a habitat with a constant, relatively high humidity”²⁵ If the global temperature continues to rise and the summer months tend to become longer, there is an issue of the spread of this disease to continue on in the months where it previously was not present. One study found that “if an increased geographic and seasonal distribution of *P. papatasi*, [sand-fly fever], occurs due to global warming, the impact of these diseases on human health could be substantial”.²⁶

The spread of Malaria is also a potential risk for the Southeast Asia region experiencing climate change as the prolonged warm and wet seasons give mosquitoes a perfect breeding ground. Even though there have been successful efforts to eradicate the malaria risks throughout the world, “in many tropical countries malaria remains a major cause of illness and death”.²⁷ A simulation created to assess the potential risk of malaria spreading found that if nothing is done to mitigate climate change, there will be a “widespread increase in transmission potential of the malaria mosquito population and an extension of the areas conducive to malaria transmission”.²⁸ Regional governments should be

²³ Gulsan Ara Parvin, Fumito Takahashi and Rajib Shaw, “Coastal Hazards and Community-Coping Methods in Bangladesh”, *Journal of Coastal Conservation* 12, no. 4 (2008): 188.

²⁴ Kristie L. Ebi, Nancy D Lewis, and Carlos Corvalan, “Climate Variability and Change and Their Potential Health Effects in Small Island States: Information for Adaptation Planning in the Health Sector”, *Environmental Health Perspectives* 114, no. 12 (2006): 1960

²⁵ Eleanor R. Cross and Kenneth C. Hyams. “The Potential Effect of Global Warming on the Geographic and Seasonal Distribution of *Phlebotomus papatasi* in Southwest Asia”, *Environmental Health Perspectives* 104, no. 7 (1996): 724

²⁶ *Ibid.*, pg. 727.

²⁷ Willem J. M. Martens, Louis W. Niessen, Jan Rotmans, Theo H. Jetten and Anthony J. McMichael, “Potential Impact of Global Climate Change on Malaria Risk”, *Environmental Health Perspectives* 103, no. 5 (1995): 458

²⁸ *Ibid.*, pg. 463

focused on preventing the spread of disease and should focus on preventative measures to help mitigate the expansion of the disease vectors in their region.

2.4 UN Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol

The UNFCCC was created to move forward with the global plans to combat climate change in 1992. It was recognized that global climate change is a concern for all humanity and that there were many necessary changes that needed to be made in order to ensure that the climate crisis would not worsen over time. Within the Framework Convention it is noted that,

The largest share of historical and current global emissions of greenhouse gases has originated in developed countries, that per capita emissions in developing countries are still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development needs.²⁹

Because of that, the UNFCCC “calls on rich countries, Annex I [(or Annex B)], to take the lead in controlling GHG emissions”³⁰ It soon became clear that the framework alone was not enough to be successful in the ultimate goals of implementing the rules and objectives on climate change mitigation. In 2001, the Marrakech Accords set forth the rules for the UNFCCC and paved the way for the Kyoto Protocol.

The Kyoto Protocol has been the major international response to combating climate change through attempting to stabilize greenhouse gases in the atmosphere. The Kyoto Protocol calls for bringing the gas levels down level that is non-threatening to the atmosphere. The protocol was adopted in 1997 but not actually enforced until 2005. The actions of the protocol are broken into “commitment periods” with the first lasting from 2008-2012. During the five-year period, the Protocol required that those countries listed under “Annex B” or “Annex I” reduce their emissions by only five percent from the levels found in 1990. This reduction is very small when looking at the “60-80 per cent required by the IPCC to stabilize the climate system”³¹

In the second commitment period for the Kyoto Protocol, “parties committed to reduce GHG emissions by at least 18 percent below 1990 levels in the eight-year period from 2013 to 2020; however, the composition of Parties in the second commitment period is different from the first”.³² All parties are expected to submit reports on their gas emissions, which are reviewed for compliance. If there are countries struggling to meet their targeted emission

²⁹ “United Nations Framework Convention on Climate Change,” United Nations, accessed on September 19, 2013, http://unfccc.int/essential_background/convention/items/6036.php

³⁰ Sitanon Jesdapipat, “Architectures of post-Kyoto options: Asian perspectives,” in *Climate Change in Asia: Perspectives on the Future Climate Regime*, ed. Yasuko Kameyama, Agus P. Sari, Moekti H. Soejachmoen and Norichika Kanie, (New York: United Nations University Press, 2008), 169.

³¹ Agus P. Sari, “Introduction: Climate Change and sustainable development in Asia”, in *Climate Change in Asia: Perspectives on the Future Climate Regime*, ed. Yasuko Kameyama, Agus P. Sari, Moekti H. Soejachmoen and Norichika Kanie, (New York: United Nations University Press, 2008), 5.

³² “Kyoto Protocol,” United Nations Framework Convention on Climate Change. accessed October 9, 2013, http://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf

numbers, a compliance committee can provide aid to them. Despite all that the UNFCCC and Kyoto Protocol are trying to do, the changes made are not a long-term fix for the climate crisis. They merely will slow down the process of global climate change by a few years.

The biggest issue with a global approach to combating climate change is that there is a great abundance of uncertainty. It is important to remember that societies are constantly changing and this greatly affects the influence humans have on the environment. The changes that are proposed are affecting the way humans influence the environment but are not directly impacting climate change, as the climate is not something that can be physically controlled. If we are to try to make differences in the issue of climate change, we must “consider adaptation to climate to be as important as matters of energy policy in discussion of response options”.³³

3. Migration in the Asia-Pacific Region: Causes and Effects

Migration is something that has occurred throughout time, for many different reasons, and has been an important contributor to the diversity of countries. Migration is often done to ensure that the people are living in conditions that best offer them their human security. Even with technology as advanced as it is in some areas of the world, there is still a desire to live closest to the resources needed for everyday life (food and water). It is important to understand the underlying causes of migration so that we can understand the effects it has on society, the environment, and even link it to climate issues. Migration is usually occurring because of factors (the causes) categorized as “pushes and pulls”, which are considered to be the “driving forces behind most people’s migration”.³⁴ Migration can be a positive change for some people or the experience can be negative and possibly dangerous for the migrant. This section explores the phenomena of migration and establishes the patterns for migration throughout time. For some migrants, migration can be “considered an investment with costs now and benefits later”.³⁵ Before exploring the most current factors of migration for the Asia-Pacific region, we must take a brief look into the history of migration in the region.

3.1 A History of Migration in the Region: Establishing Patterns

Between 1850 and 1930, Asia experienced great expansion “amid the political and economic transformations”³⁶; this first period has been referred to as Asia’s ‘Age of Migration’. The growth and development of Asia at this time was much attributed to the migration within the region. They experienced many changes in the migration movement and “European expansion in Asia depended

³³ Roger A. Pielke Jr. and Daniel Sarewitz, “Bringing Society Back into the Climate Debate,” *Population and Environment* 26, no. 3, (2005): 256

³⁴ Robert Walker, *Pushes and Pulls: Why do People Migrate?* (New York: Crabtree Publishing Company, 2010), 5.

³⁵ Philip Martin, “Migration in the Asia-Pacific Region: Trends, factors, impacts,” *Human Development Research Paper* 32, (2009): 5.

³⁶ Sunil Amrith, *Migration and Diaspora in Modern Asia* (New York: Cambridge University Press, 2011), 18.

on (and in turn stimulated) slavery and other forms of coerced migration”.³⁷ Other changes in migration surfaced from political conflicts in the region, which sent many refugees running away from the conflict, and the workforce in Asia, which brought many people in to secure new jobs.

Between 1930 and 1950, migration was reversing and there were more people returning to their homelands than there were migrating into new territories for labor incentives. This second period of Asian migration found that there was a boom in migration slightly due to a collapse in the economy, but more largely due to the effects of violent warfare. At the end of the 1940s, Asia was re-mapped and there were new states added and new borders drawn. Migration of refugees increased because they “found themselves on the ‘wrong’ side of the new borders”.³⁸ During this period, there were also many cases of forced migration for labor in other countries; during wartime, migrant labor was necessary for the Japanese success in conquering land. There were high offers of wages and promises of bonuses to entice workers to leave behind their families and work to support them. However, these empty promises caused “recruitment to slow down and the Japanese [to resort] to coercion”.³⁹

From 1950 to 1970, there were now new borders drawn and Asia began to institute rules regarding citizenship and ways to monitor the movement of people. During this third period, the use of passports became huge for attempting to maintain control over the movement of people into many countries in the region. During this period there was an increase in the urbanized population in Asia, and it was viewed by policymakers as “a symptom of the ‘population explosion’ that threatened the Third World”⁴⁰ The migrants were leaving the rural areas, stricken with poverty, and attempting to find better opportunities in the urban areas. However, when they reached the cities, they were more prone to move into the slums or lived with people who they knew from their old villages.

Since 1970, the region has been experiencing migration in the globalized world. The patterns of migration are still similar to the past, but in this fourth period, the region is experiencing a mix of internal migration and international migration together. The allure of globalization, new cultures and technologies, has driven many to seek new opportunities in other regions. Despite the new opportunities, the Asia-Pacific region still contributes a majority of the labor force who are transporting trade commodities by sea. This contribution makes the region “central to the process of globalization”.⁴¹ This period of migration also saw more refugee migration as Pakistan and Iran allowed Afghan refugees into their countries.

Many refugees from Vietnam made their way to new destinations, often opting to move west to the United States because other countries in the region would not welcome them in. The patterns of migration in the Asia-Pacific region are the same throughout time, the pushes and pulls that drive them to migrate have not changed much since the 19th and 20th centuries.

³⁷ Ibid., pg. 21.

³⁸ Ibid., pg. 90.

³⁹ Ibid., pg. 107

⁴⁰ Ibid., pg. 142

⁴¹ Ibid., pg. 153

3.2 Migration Pushes: Examples

When there is a factor that pushes someone into migration, it is often something that is not easily controlled by the person. “Pushes” are anything that forces someone to leave their homes in search of something they are lacking, or a “push” forces someone away from their home through deceit. When looking at the migration over time it can be said that,

In Asia there have been large-scale forced migrations initiated by political conflicts, environmental disasters and large-scale construction projects. However, much of this movement has occurred within nations. The main type of such movement, which crosses international boundaries, is that of refugees and this ebbs and flows with political conflicts. Some of the largest such moves in history have occurred in Asia during the postwar period.⁴²

In times when new borders are drawn and the rule of the land exchanges from one hand to another, migration can occur to provide people safety elsewhere.

In 1947, the migration of millions of Muslims from India to the newly formed state of Pakistan occurred. Likewise, the migration of millions of Hindus from Pakistan to India occurred as nobody of these religious background wanted to be in the minority of their original location. Before becoming the independent nation of Bangladesh, the area was once known as East Pakistan or Bengal. Some political troubles left the people of East Pakistan feeling oppressed and the government started a brutal crackdown, killing hundreds of thousands of the people. This violent government crackdown caused another mass migration, only this time the people of East Pakistan fled to their neighboring country of India, where some still had ties to the Bengali people living there.

Pakistan did their fair share in hosting refugees from Afghanistan during “three decades of ever-changing tides of political, social, and religious turmoil”.⁴³ The Afghan people first fled from the Soviet forces that overtook Afghanistan between 1979 and 1989. Once the Soviet forces left Afghanistan some of the Afghan people returned to the country only to be met with more conflict. In the 90s the people of Afghanistan were fleeing from the Taliban controlled Afghanistan and from an extreme drought that threatened their livelihood; once again they fled to their neighbor countries Iran and Pakistan. However, Iran and Pakistan were forced to close their borders because they were overwhelmed with the amount of refugees they had already taken in.

In 2001 approximately “3.6 million Afghans had left their country and an additional 375,000 were internally displaced”,⁴⁴ After the 9/11 attacks on the US, Afghanistan was again struck with conflict as the “War on Terror” sent US and allied troops into Afghanistan to battle the Taliban. Since the end of Taliban’s

⁴² Graeme Hugo, “Improving Statistics on International Migration in Asia,” *International Statistical Review/ Revue Internationale de Statistique* 74, no. 3, (2006): 343.

⁴³ Sunil Amrith, *Migration and Diaspora in Modern Asia* (New York: Cambridge University Press, 2011), 30.

⁴⁴ *Ibid.*, pg. 31

control on Afghanistan, many of the refugees are trying to make their way back to their homes.

Between 1959 and 1975, the Vietnam War caused many from South Vietnam to flee in yet another mass migration for the region. Many fled from their villages to escape the guerilla warfare, which took place during the war. However, many more people fled after the war was dying down in fear of punishment for supporting the South Vietnam government. Hundreds of thousands of refugees migrated to countries that either were supporters of South Vietnam or remained neutral during the war. The United States took in nearly 130,000 Vietnamese refugees and the rest of the refugees fled to places such as Australia, France, and Canada.

Other instances where people have been forced from their homes come under false pretenses; they are promised opportunities for work in a new country or promised help to enter a country that they are not able to enter and instead become trapped into “lives of forced labor or sexual exploitation”.⁴⁵ Human trafficking has been around for centuries and women have been forced into sexual exploitations for that long as well. Their parents, sometimes under the impression that they would learn to become nurses or seamstresses, only to be forced to work in the brothels, sent many young women away. Children are not exempt from the exploitations and are often forced to work in factories. Young boys from Cambodia and Burma are trafficked to work on fishing boats for long periods, but sometimes “these young crews never return, and boys that become ill are frequently thrown overboard”.⁴⁶

3.3 Migration Pulls: Examples

Migration pull factors are those that provide an incentive to influence the person’s decision to migrate. In most cases, this factor drives people to migrate for labor or educational purposes. In the fourth (and current) period of migration discussed earlier, international migration had begun to increase with the globalization age and had become an important crossroads of migration. The trend for international labor migration started in the 70s in the gulf countries, which were “capital-rich but labor-short”.⁴⁷ As an incentive to move to a new destination, “international migrants move to a place where they already have... relatives or friends living there; these networks... assist the migrant in adjusting to the situation in the destination”.⁴⁸ The networks of people are not just limited to the family or friends of the migrant, but can also be employers or people who lent money to provide aid in the migration process. These networks are big “selling points” for the migrants when they are considering seeking new opportunities outside their homes. Networks provide the illusion of easy adaptation to the location.

⁴⁵ Robert Walker, *Pushes and Pulls: Why do People Migrate?* (New York: Crabtree Publishing Company, 2010), 14.

⁴⁶ David A. Feingold, “Human Trafficking,” *Foreign Policy*, no. 150 (2005): 27.

⁴⁷ Maruja M.B. Asis, “Recent Trends in International Migration in Asia and the Pacific,” *Asia-Pacific Population Journal* 20, no. 3, (2005): 17.

⁴⁸ Graeme Hugo, “Improving Statistics on International Migration in Asia,” *International Statistical Review/ Revue Internationale de Statistique* 74, no. 3, (2006): 336

This new period of migration also saw females as having a bigger opportunity to migrate for domestic work. Prior to this period, women were not afforded the opportunities for work because most of the work forces needed were jobs in construction, agriculture, and manufacturing; predominantly for male workers. Within this new period, more women are entering the workforce in the big cities, leaving their homes without someone to manage them; therefore, they solved this issue with importing migrant workers to handle the job. They consider this new development to be the feminization of migration. The 90s brought about another change in migration in the Asia-Pacific region. The majority of the workforce needed prior to this time was those who were less skilled. Now with many countries developing at a rapid pace, the call for highly skilled and professional workers is in high demand. The market for workers skilled in things such as nursing and Information Technology (IT) has affected students to set their educational goals on learning those skills. Currently, some of the countries who welcome migrant workers are encouraging their local women to take on some of the domestic jobs regarded as migrant work so they can reduce the migrant population.

3.4 The effects of migration

When people migrate it is not always something that is easily done and without consequence. In the cases where migration happens in hurry due to war or natural disasters, there is little time for camps to be set up properly for their arrival. In some cases, the migrants have no shelter awaiting them and no access to clean water. The United Nations Refugee Agency will help manage how much impact the refugees have on the location of their camps, but sometimes the effects of migration are inevitable. The local population is often upset by the large amounts of refugees because of “competition for resources such as firewood and locally available food”.⁴⁹ The local people often times will be resentful of the aid that is provided to the refugees because it may be more than they themselves have; depending on the amount of aid provided by aid groups, refugees have access to food, schooling, and healthcare. Despite the amount of aid given, most camps are on the low quality soil that does not allow crop growing or animal rearing, which is hard for some refugees because they can be living in these camps for long periods.

Deforestation and manmade disasters are more concerns, which have stemmed from migration. Because of a huge increase in the population of Indonesia, the Indonesian government forced nearly six million people, over a span of 30 years, to migrate to other islands in the region. The families who were forced to move “were each given a plot of the forest to farm”⁵⁰; which led to the deforestation. A project that involved the migrants from Indonesia who arrived in Borneo led to a great disaster. After clearing out a couple millions of acres of swamp forest, the migrants were expected to use the land to grow rice, despite

⁴⁹ Sally Morgan, *Changing Planet: What is the environmental impact of human migration and settlement?* (New York: Crabtree Publishing Company, 2010), 15.

⁵⁰ *Ibid.*, pg. 10.

evidence that the soil conditions would not allow the production. The project failed and the cleared land dried up and caught fire from the sun. The land is still catches fire during the dry season and smoke clouds add more carbon dioxide to the already polluted atmosphere. The mistake led the people, both the locals and the migrants, to have no way to earn a living. While it was not necessarily the fault of the migrants, the project was only considered because they had moved the people into the area.

When people migrate for work purposes, there are both positive and negative effects associated with it. While the migrants are offered great opportunities to either use their skills or advance them, it can cause a shortage of people with those skills back in the country they're from; "the loss of these skilled and technical people can hurt a nation economically, as well as in terms of social, medical, and scientific advancement".⁵¹ Migrants can also find themselves being paid less than the locals and not be entitled to the same benefits either. Yet, the positive side of labor migration is that they can send money back home to their families. The money that migrants are sending back home are referred to as remittances and are becoming a focus for international migration. Remittances are considered "an important source of economic inflows into many countries... [With the money] flowing to poorer and more disadvantaged areas"⁵², greatly affecting the economy in the home country.

Policymakers are now looking into how remittances can affect the home countries in battling the poverty issues they are plagued with. They are looking at making policies that can make it easier to send the remittances to the home country and on how those funds can possibly be used as investments for bettering the economy. Through it all, migration can boost the development of countries by bringing in new skills, money, and networking that was not available otherwise. There are policies and programs in place, which help "to protect the rights of migrant workers and provide them with legal and economic safety nets even when they are far from home".⁵³

As discussed earlier, human trafficking is lumped into the migration patterns for the Asia-Pacific region. Women and children are the prime victims of this epidemic, but the statistics on human trafficking from the region are not completely accurate. Most focuses are on the sexual exploitation of human trafficking victims, neglecting to include those who are exploited for their labor. Thailand purposely excludes the trafficking of men in their statistics because "according to its national law, men cannot qualify as trafficking victims".⁵⁴ However, male laborers are often subjected to cruel treatment, not unlike females, such as beatings and being forced to work for no pay. Despite trafficking usually being associated with sexual connotations, the need for labor is far greater than the market for sex.

3.5 Responses to Migration in the Asia-Pacific Region

⁵¹ Robert Walker, *Pushes and Pulls: Why do People Migrate?* (New York: Crabtree Publishing Company, 2010), 42.

⁵² Robyn Eversole, "Development in Motion: What to think about Migration?," *Development in Practice* 10, no. 1, (2008): 95.

⁵³ *Ibid.*, pg. 98.

⁵⁴ David A. Feingold, "Human Trafficking," *Foreign Policy*, no. 150 (2005): 26.

Actions done to attempt to control the migration situation in the Asia-Pacific region is not as easy as it may seem. Countries try closing their borders to stop the influx of people migrating into their country, but what can really stop people who are desperately trying to keep themselves safe and secure? The Chinese government saw that their attempts to regulate labor migration caused a rise in smuggling and trafficking rates. Despite trying to control trafficking through immigration policies, “the recent global tightening of asylum admissions has increased trafficking by forcing many desperate people to turn to smugglers”.⁵⁵ Regardless of whether or not someone goes willingly with traffickers, many policymakers and organizations hoping to put a stop to human trafficking have addressed the issue of trafficking. The United Nations Office on Drugs and Crime (UNODC) has implemented protocols that they hope will aid protecting the human rights of the migrant people. The Protocol to Prevent, Suppress, and Punish Trafficking in Persons, Especially Women and Children was a huge step forward for the international effort to combat human trafficking. As outlined in the report from the convention, the main purposes of this protocol are,

- (a) To prevent and combat trafficking in persons, paying particular attention to women and children;
- (b) To protect and assist the victims of such trafficking, with full respect for their human rights; and
- (c) To promote cooperation among States Parties in order to meet those objectives.⁵⁶

The UNODC not only assists people who have been victims of trafficking, but they also gather research to raise awareness of the situation and create partnerships to further promote their protocols.

There are also policies in place that are devoted to protecting migrant workers. For example, the Philippines have extensive policies to protect their contract migrant workers since they are the second largest labor exporting country. The Philippine government created two agencies, The Philippines Overseas Employment Administration (POEA) and the Overseas Workers Welfare Administration (OWWA), regulate documentation and oversee the welfare of labor workers.⁵⁷ The Philippine government also puts a great deal of pressure on the countries who receive migrant workers to sign the UN Convention on the Protection of Rights of all Migrant Workers and their Families. The convention was enforced in 2003 and it called for the protection of migrant workers and their families from human rights violations.

Many countries in the Asia Pacific region have tried their best to track down the people who exploit migrant workers, protect the migrant workers, and create contracts with the countries they send their workers to in an effort to make sure that things are done properly. Government involvement is very important to

⁵⁵ Ibid., pg. 27.

⁵⁶ “United Nations Convention Against Transnational Organized Crime and the Protocols Thereto,” United Nations Office on Drugs and Crime. accessed on November 10, 2013, <http://www.unodc.org/documents/treaties/UNTOC/Publications/TOC%20Convention/TOCebook-e.pdf>

⁵⁷ *Labour migration: trends, challenges and policy responses in countries of origin*, (Geneva, Switzerland: IOM, 2003), 35.

handle the terms of employment through agreements; the International Labour Organization (ILO) has constructed “detailed guidelines for the formulation of migration policies for both labour sending and receiving countries”⁵⁸ which can help set a basis for what each country will agree to. The ILO’s Asian Programme on the Governance of Labour Migration has a main goal to “promote dialogue and cooperation related to improved management of labour migration, with a particular emphasis on gender and rights”.⁵⁹

4. Making the Link between Climate Change and Migration

There is not a great deal of data available, which shows how climate change has affected the migration patterns in the Asia Pacific region, or how it possibly can in the future. Making estimates of the number of people who are likely to be displaced from climate change will be subject to many uncertainties. Migration is a complex topic with many factors that climate change has no bearing on, but climate change has affected the decision for migration of many in the region. Policy makers must remember, “In regions already with a high level of poverty and difficult living conditions, climatic change is a triggering factor of migration”.⁶⁰ Understanding how climate change and migration are linked will help policymakers make proper decisions on what they should do about climate change and migration policies. Climate induced migration can be complex because it can either be short term (temporary) or long term (permanent), forced or voluntary. Typically, what is seen in terms of climate-induced migration is that weather extremes “lead to short-term internal movement, but slow-onset changes such as land degradation or rising sea levels in coastal areas may force populations to make permanent moves”.⁶¹ When natural disasters strike, people often will remain within the same area and wait to rebuild their lives which may often be a result of an inability to finance a permanent move. Although it may seem as if climate induced migration is a simple situation, the fact of the matter is that it is complex as many external factors (socio-economic and political factors) play a significant role in the climate induced migration relationship.

4.1 Estimates of Climate Induced Migration

In 1990, the IPCC predicted that by the year 2050 there would be at least 200 million people migrating because of impacts of climate change on the world. Figures found that, “80 million of the estimated 200 million international migrants worldwide live in Asia and the Pacific”⁶², however, these numbers are not related to the IPCC prediction on climate migrants. The number of climate migrants will

⁵⁸ Ibid., pg. 37.

⁵⁹ “Asian Programme on the Governance of Labor Migration,” International Labor Migration. accessed November 10, 2013, http://www.ilo.org/asia/whatwedo/projects/WCMS_099943/lang--en/index.htm

⁶⁰ Alassane Drabo and Linguère Mously Mbaye, “Climate Change, Natural Disasters and Migration: An Empirical Analysis in Developing Countries,” Discussion Paper for the Institute for the Study of Labor, (2011): 7.

⁶¹ Julia R Barnett, “Migration Associated with Climate Change: Modern Face of an Ancient Phenomenon,” *Environmental Health Perspectives* 120, no. 5, (2012): A205.

⁶² Asian Development Bank, “Climate Change and Migration in Asia and the Pacific,” (2011):1

simply match the number of international migrants in the world right now. It is believed that most of the migration that is to occur from climate change will be internal; most affected by climate change impacts will move to nearby cities or other rural areas that can still provide the basic human necessities. However, others believe that the intensity of natural disasters in the future will not only leave 1 billion people displaced and migrating, but that it will send climate migrants to other countries and possibly overseas. It is reported that “98 per cent of all deaths related to natural disasters occur in developing countries”.⁶³ This is due largely to the fact that natural disasters affect developing countries because “they lack the infrastructure and resources to cope with climate-related changes, and they often are already contending with pre-existing public health challenges”.⁶⁴ Migration is believed to be an adaptation response to climate change for the countries that are still in the process of developing. Developed countries contribute the largest amounts of greenhouse gas emissions and countries attempting to develop themselves are playing the price due to their lack of financial stability. However, if global warming occurs as predicted in the future, some of the developed countries are at risk as well; these countries simply will be able to adapt much more easily.

4.2 Forced Migration

Although most instances of forced migration mentioned previously revolved around the issue of human trafficking, climate-induced migration has now found itself within this same category. Forced migrations have already begun because of climate change and it is possible that there will be more instances in the future. The first instance of forced climate migration is currently underway in the Carteret Islands of Papua New Guinea. In 2005, the decision to relocate the residents of the Carteret Islands was made and the process began. The islands are slowly beginning to become uninhabitable as flooding is occurring due to rising seawaters. Experts have even predicted that “the islands will be underwater by 2015”⁶⁵, but the evacuation process is slated to have the entire population moved by 2020. The people of the Carteret Islands are mostly being evacuated to the nearby island of Bougainville. The residents of the islands are being referred to as the first ‘environmental refugees’, but there are many who disagree with the use of this term because “they do not fit the legal definition contained in the 1951 Geneva Convention, irrespective of whether their movement is compelled or not”.⁶⁶

Many people believe that by using the term ‘refugee’ it is misrepresenting the situation in order to gain sympathy from the rest of the world. These are not the only islands in danger of the effects of global climate change; other islands are at risk for suffering the impacts of climate change as well. The future

⁶³ Philippe Boncour, “The Moment of Truth- Adapting to Climate Change,” *Migration* (2009): 4.

⁶⁴ Julia R Barnett, “Migration Associated with Climate Change: Modern Face of an Ancient Phenomenon,” *Environmental Health Perspectives* 120, no. 5, (2012): A205

⁶⁵ Paul Challen, *Migration in the 21st Century: How will globalization and climate change affect migration and settlement?* (New York: Crabtree Publishing Company, 2010), 35.

⁶⁶ Asian Development Bank, “Climate Change and Migration in Asia and the Pacific,” (2011): 31.

possibility for other islands enduring forced migration due to climate change impacts are likely if the sea levels continue to rise. It was found that it is very likely that within the next 30 to 50 years people there could be “significant migration from the central Pacific to other countries”.⁶⁷ The decision to relocate entire populations may end up being the short-term solution, as most countries are pushing for adaption strategies. Regardless of what route is taken, the issue of funding will play a part in how quickly and efficiently the situation is handled.

4.3 Organizations involved in the Climate- Migration Research

Many organizations, which collect, analyze and present data for policymakers have looked into the climate- migration topic. The Global Migration Policy Associates are a group who collect the available data that can be used specifically for creating policies on various levels of migration issues. As stated previously, there is few data available, which has been deemed sufficient to produce forecasts for the level of climate- migration that will be seen in the future. This organization believes that the forecasts that are currently available are “exaggerated, but are taken as a basis for public policy debate”.⁶⁸ However, the organization does believe that climate-migration will be a cause for concern and continues to search for information that can be used to create policies that can help control the issues that are possible.

The International Organization for Migration was established in 1951, which has worked hard to help manage the issues that develop from migration. This organization has been involved in the climate-migration issue since the 90s and has continued to monitor the situation. The IOM has set themselves goals for managing migration caused by climate change. The IOM outlined their three main goals as,

1. Prevention of forced migration resulting from environmental factors.
2. Providing assistance and protection to affected populations who have been forced to migrate; looking at possible solutions to aid them in their situation.
3. Facilitate migration as an adaption strategy to climate change.⁶⁹

The efforts of the IOM have opened up the lines of communication between many people who are interested in putting forth a strategy for climate-induced migration. The IOM also collaborates with other organizations to spread the awareness of the impacts of climate-induced migration and to develop policy forums to discuss the strategies needed to combat the issue. In 2008, the Climate Change, Environment and Migration Alliance (CEEMA) was created to gather all the organizations who are taking an active interest in the study of climate change, environment and migration and provide them a forum to discuss

⁶⁷ Ibid., pg. 57.

⁶⁸ Guillermo Kerber and Patrick Taran, “Environment and Climate Change,” Global Migration Policy Associates. accessed on December 1, 2013. <http://www.globalmigrationpolicy.org/climate.html>

⁶⁹ “Migration and Climate Change: IOM’s perspective” International Organization for Migration. accessed on December 1, 2013. <http://www.iom.int/cms/envmig>

key topics. Their aim is to raise the awareness of the complex issues that the world faces when it comes to climate change and migration.⁷⁰

4.4 Policy Discussion

Much has been debated about the climate-migrant issue. With few data available, many policymakers are reluctant to make decisions regarding the climate-migrant situation with the forecasts that have been produced. The number of potential climate-migrants has varied significantly from a potential 200 million to 1 billion affected people by the year 2050. Many researchers agree that the numbers are exaggerated and reflect the worst-case scenario and may not be the best data to base policies on. However, the situation is still something that must be addressed. If combating climate change is the best solution to the climate-migrant issue, then policymakers in the Asia-Pacific region should focus efforts on implementing adaption strategies.

One suggestion for policymakers is that they look into enhancing the adaption strategies for the Asia-Pacific region's most vulnerable areas. This strategy is a key component to reducing vulnerabilities to the effects of climate change. However, research found "adaption to climate change has not yet become a high priority policy issue... as policymakers are preoccupied with other development priorities".⁷¹ However, they neglect to see that there is potential for the adaption strategies to lead to a better chance for development, which in turn can lead to less migration (not just climate-induced migration, but possibly even labor migration). Adaption and development will reduce some of the driving forces behind migration. The Asian Development Bank stated, "Migration itself will be an adaptive strategy, but arguably more frequent, migration will be the result of an adaptive capacity unable to cope with climate impacts."⁷² The way migration can be viewed in this sense would be dependent on the situation the people are faced with. Migration as an adaption strategy would benefit those leaving areas that are completely devastated from a natural disaster, such as people leaving the Carteret Islands and the Philippines. Migration as a failure of adaption strategies would most likely affect people who cannot find ways to protect crops from the varied climate changes such as drought or excessive rainfall. Regardless of how you look at the situation, the implementation of adaption strategies is very important for the region. The IOM has outlined the approaches they feel are necessary for combating climate-induced migration, which include "development policies aimed at enhancing the sustainability of livelihoods... [and] also integrate migration as a potential outcome or coping

⁷⁰ "Climate Change, Environment, and Migration Alliance Objectives," CCEMA. accessed on December 1, 2013. <http://www.ccema-portal.org/article/read/about/>

⁷¹ Venkatachalam Anbumozhi, "Enhancing the Adaptive Capacity in the Asia and Pacific Region," in *Climate Change in Asia and the Pacific: How Can Countries Adapt?*, ed. Venkatachalam Anbumozhi, Meinhard Breiling, Selvarajah Pathmarajah, and Vangimalla R. Reddy, (New Delhi: Sage Publications, 2012), 295.

⁷² Asian Development Bank, "Climate Change and Migration in Asia and the Pacific," (2011): 10.

option into the assistance rendered to communities affected or expected to be affected in the future by environmental degradation and/or natural disasters.”⁷³

With regard to climate-induced migration, most of the migration is expected to occur nationally, as people are more likely to stay in cities nearby their home. However, there is likely to be a significant increase in the amount of cross-border migrations as well. Policymakers must also encourage countries to work together to share information and to provide security measures for those climate-migrants crossing borders. Policymakers should implement policies to help to reduce the number of victims of human trafficking. Since victims of human trafficking are often those who are left vulnerable after a major natural disaster, another way to ensure the safety of climate-migrants is to consider granting them similar protection as refugees. Despite the argument of whether or not these migrants qualify as refugees, under the legal definition, policymakers should find a way to protect those who migrate due to natural disasters.

5. Summary of the Data

Since there are few studies that have been conducted that have efficiently found the relationship between climate change and migration, assumptions can be made based on the knowledge that has been presented in this paper. The purpose of this paper was to show the relationship between climate change and migration trends in the Asia-Pacific region, and there are several ways that impacts of climate change can become driving factors for migration. It is important to note that the assumptions are generalized so that they can apply to climate-induced migration on a global scale despite the fact that the Asia-Pacific region has areas of higher vulnerability to the effects of climate change.

First, it is understood that when people have a failure in the production of their crops they will likely migrate to areas where they can produce crops. It is also understood that climate change has an impact on the agriculture sector as it can cause changes in soil quality, changes in precipitation patterns (to include both heavy rainfall or extreme droughts), and can cause flooding from natural disasters and land degradation. Therefore, we can see that climate change's impact on the agriculture sector will cause people to migrate for their livelihood, thus making it a driving force for migration. While there is no estimate of how many people this is likely to affect, it is important that policymakers acknowledge that this situation can become more severe as climate change becomes more aggressive.

Second, we know that natural disasters themselves have become a driving force for migration and have even sparked an instance of forced migration, evident from the evacuation of the Carteret Islands. If natural disasters destroy people's homes they will have to leave the area (more than likely temporarily) in order to provide shelter for themselves. The natural disasters leave residents without their necessities and they will leave in search of clean drinking water. It is likely that the continued increase of tropical cyclones in the

⁷³ “Migration, Climate Change, and the Environment: Policy” International Organization for Migration. accessed on December 4, 2013. <http://www.iom.int/cms/en/sites/iom/home/what-we-do/migration-and-climate-change/policy.html>

Asia-Pacific region will lead to more forced migrations in the future. In addition, if the number of natural disasters continues to increase and the magnitude of the disasters increases as well, then over the next few decades it can leave millions of people displaced and unable to recover from one disaster to the next.

Third, we can see that there is no direct relationship of climate change affecting migration when it comes to human health situations at this time. This is mostly because the regions impacted by climate change have people who are poorer and will not visit a doctor for the slightest signs of illness; therefore, they are not likely to migrate just because they are ill or because their chances of getting ill are high. It is evident though that climate change affects human health because it can spread diseases through contaminated water and can foster conditions that are ideal for insects, which can infect humans with malaria or sand-fly fever, to breed. However, it is important to note that there is an indirect relationship between climate change, migration, and human health. Migration cannot only help spread illness and disease, but it can also be deadly to those who travel a long way without proper food and water to sustain themselves.

Lastly, concerning policies for combating climate-induced migration, there must be an understanding that there is no one approach to be made. The response to climate-induced migration should be complex and multi-leveled. The response should start with enforcing strong gas emission restrictions; most researchers believe that the answer is to reduce greenhouse gas emissions and slowly reverse climate change. While that is an ideal approach, there will still be effects of climate change felt for decades before it slows down. Therefore, it is simply one-step in the overall process to combat climate-migration. Policymakers must also implement adaption strategies and relief strategies for regions most vulnerable to the effects of climate change. Adaption strategies can help to reduce migration, but in the cases of natural disasters, there should be a plan of action comprised to help with the recovery process. Finally, policymakers should encourage states to create their migration policies to include the temporary migration of climate-migrants affected by natural disaster, with an emphasis on protecting people from trafficking.

5.1 Areas for Future Research

The lack of research within the realm of climate-migration is very limited, as previously stated, and there are many areas of the situation that should be researched in order to provide the best data possible for policymakers. Most of the available research reflects upon the fact that there are other environmental factors that contribute to the climate-migration, yet those factors are not listed. There has to be a way to identify those other environmental factors and see what correlation they have to both climate change and migration. Further research into this issue should include surveys conducted in the vulnerable areas of the Asia-Pacific region to gain a better understanding of how climate change has affected them. The surveys can also provide insight into their position on where they will migrate if they must; this would give a picture of where migration policies must be reformed to include climate-migrants in the event of extreme disasters.

Forecasting is still very much needed to provide policymakers the information necessary to begin discussing climate and migration policies. However, there should be a bigger distinction between what is likely to happen within the next few years, the next few decades, and in the next century. Despite not having enough research now, there is no excuse for not making policies to proactively combat climate change, migration, and create the responses necessary for natural disasters.

6. Conclusion

Global climate change has begun to wreak its havoc on the world, causing millions of people to be affected by the disaster left in its wake. If policy makers choose to ignore the signs that climate change is not only real, but becoming a larger issue, then the world can expect more damages in the future. Even if the worst possible effects of climate change are not slated to happen until hundreds of years from now, we can still make a difference today to help slow down the effects. Climate change is something that must be viewed at on a global level, despite researching the effects in an isolated region, because it affects the global ecosystem and global securities. Conflicts may arise as food and water supplies run low in areas struck by the environmental woes of climate change. Making climate induced conflicts another area of concern for the future. It is a possibility that when the biggest effects of climate change occur most nations will close themselves off to climate migrants in order to protect their food and water resources. Worst-case scenarios of climate change predict that a worldwide war will break out, as it becomes a race to obtain the most resources needed to survive. This potential and extreme scenario is not expected to happen in the near future, but the smaller conflict issues may begin to happen if migration increases due to the natural disasters taking place in Asia. Nonetheless, the United Nation's Security Council has viewed all possibilities and has taken efforts to combat climate change globally, but not many countries feel the urgency to take part in the efforts to reduce greenhouse gas emissions. The key to combating the issues of both climate change and climate induced migration is to reduce the greenhouse gas emissions.

What policymakers need to focus their attention on, at this time, are the forecasts of the potential growth of climate-induced migration and what effects are possible to occur in the future. This gives policymakers ample time to implement the strategies needed to protect the people of the Asia-Pacific region from the effects of climate change and form policies that can ensure that climate-induced migration does not become a major issue in the future. As many of the researchers have said before, in order to combat climate change it must be done on a global level in order to reverse the effects that we have already been experiencing. It can also be beneficial for there to be a global response to climate-induced migration, but the possibility for a global policy on migration is not very likely for now as there is a lack of sufficient data based on climate induced migration, but it is not highly unlikely to occur in the future. Regardless of the lack of complete data showing the impacts of climate change on the

migration trends in the Asia-Pacific region, policymakers must not ignore the data they do have which imply that climate induced migration is going to continue to grow as the effects of climate change become more severe. Whether the predictions of the growth of the climate crisis are exaggerated or not, it is always best to prepare for any possibility that can occur. Preparation for any scenario is how the governments in the region can stay on top of natural disaster recovery and their ability to lessen the damages incurred.

The Asia-Pacific region is vulnerable to withstanding the worst of the effects of climate change and will contribute large numbers of climate migrants. The changes in the migration patterns are already beginning with the increase of climate migrants (this includes those deemed 'environmental refugees') and are likely to continue to occur if policymakers do not come together and create a global response to climate change and climate migration. However, if the world can reduce their gas emissions and reverse the effects of climate change, there may be no need to combat global climate migration, as we should see a decline in the migration caused by climate change. This is not an issue that policymakers should wait to act upon when the situation worsens, they should be acting on it now so that they can ensure the protection of the people of the world from the potential harm climate change can inflict.

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