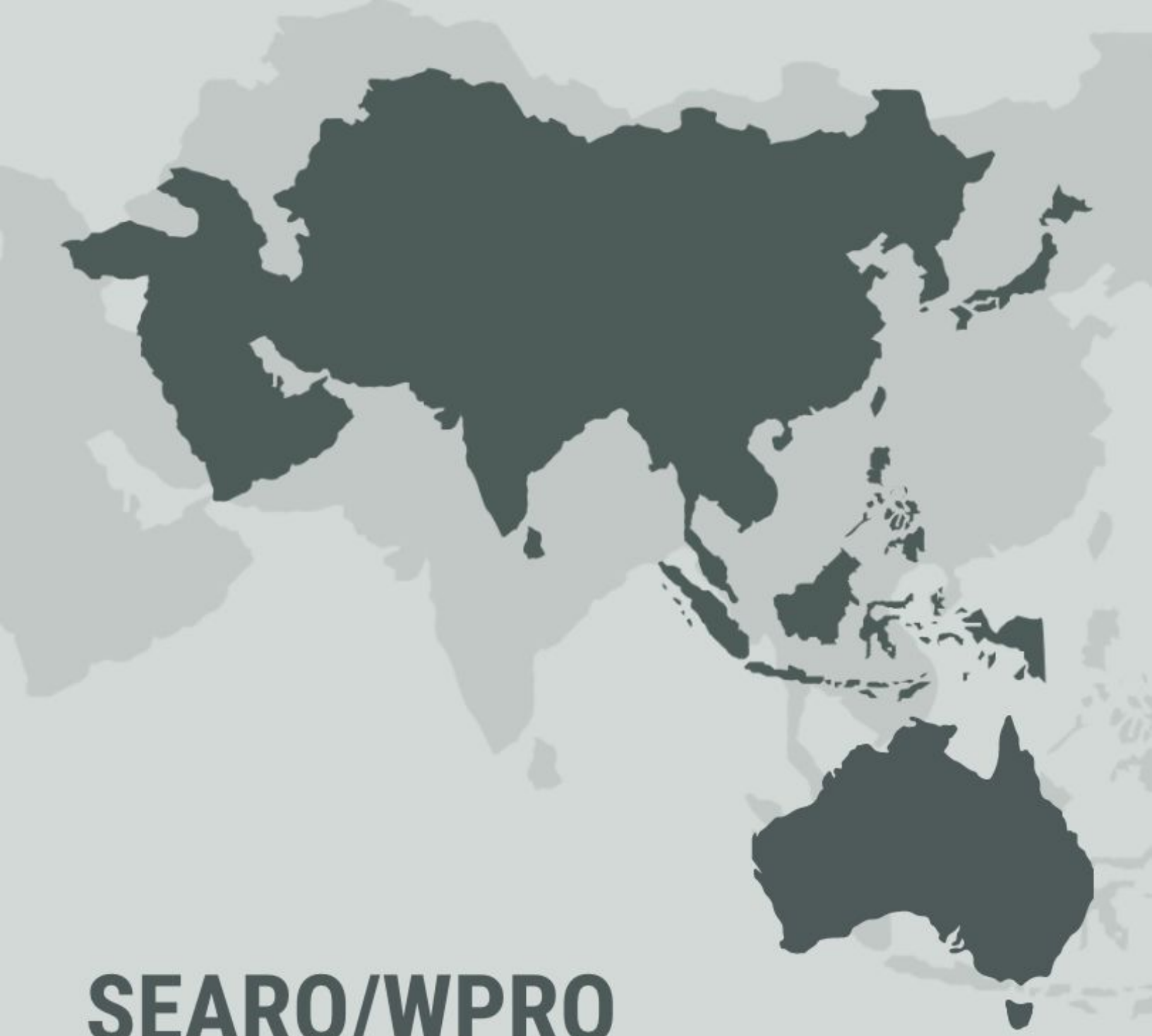


SEARO/WPRO

SOUTH-EAST ASIAN AND WESTERN PACIFIC REGION

REGIONAL GUIDE

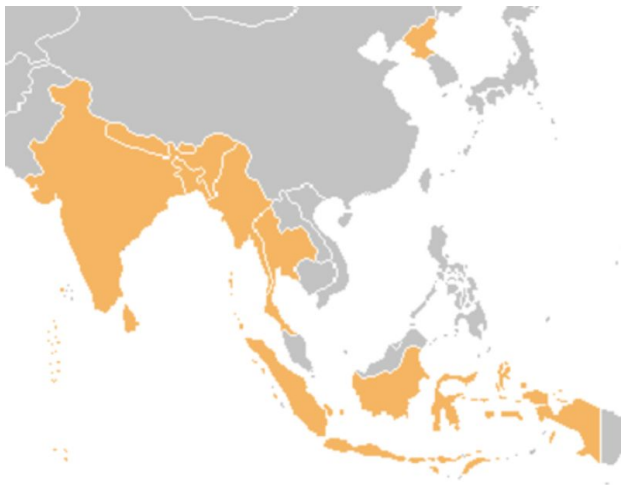
AMWHO

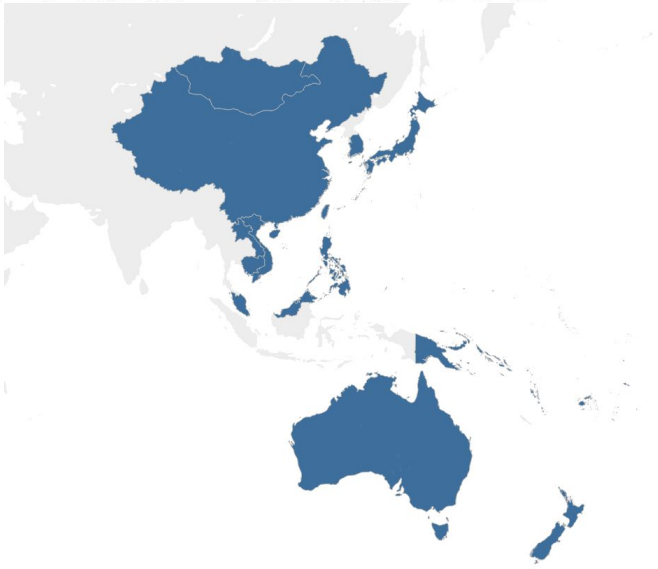
2023 AMWHO INTERNATIONAL CONFERENCE

PLANETARY HEALTH AND THE HUMAN CONDITION

INTRODUCTION

The World Health Organization's South-East Asia Region (SEARO) consists of 11 countries, and the Western Pacific Region (WPRO) consists of 37 countries.[1,2] Together, the countries in SEARO/WPRO are spread across a large part of the eastern hemisphere and are home to over a quarter of the world's population. For both regions, epidemiological and natural disasters are prevalent and are at the forefront of the World Health Organization's priorities. Many of these countries face high rates of neonatal and maternal mortality, as well as the lasting impacts of communicable and non-communicable disease, such as high medical costs or psychological conditions.[3] These issues are concentrated in lower and middle income countries and may be combated by more robust healthcare systems. Current healthcare systems exacerbate the socioeconomic hardships faced by those who suffer from infectious diseases like malaria, HIV/AIDS, and tuberculosis. Thus, universal healthcare coverage is necessary for the region in order to end communicable or vector-borne diseases, aid in the management and treatment of infectious diseases, and eradicate preventable mortality.





The Western Pacific and its many low-lying pacific islands, like the Philippines and Micronesia, are highly vulnerable to climate change. Rising sea levels, global warming, and an increase in prevalence and intensity of natural disasters all contribute to challenges like food insecurity and displacement. People tend to settle along the coastlines of the Pacific Islands and because of their low-lying nature, moving to higher elevations during natural disaster threats is simply not possible.[4] Coral reefs protect these islands by disrupting energy from large waves. However, climate change and rising sea temperatures are threatening coral reefs. As a result, rising sea levels coupled with catastrophic typhoons and hurricanes will lead to more substantial flooding of these islands. This lends itself to the displacement of people on the island that lack the money to sufficiently relocate as well as the contamination of freshwater aquifers that are heavily relied on. These issues negatively impact the health and wellbeing of these populations and thus require policy solutions. Amongst countries in both regions, infrastructure can be improved to combat health and environmental disaster that is only exacerbated by climate change.

FAMINE AND FOOD INSECURITY

Globally, food insecurity has risen dramatically: over 345 million people in 82 countries suffer from acute food insecurity.[5] The SEARO/WPRO region has especially seen significant impacts of rising temperatures and climate change. between 2008 and 2018, Asia accounted for 74% of the world's loss of crop and livestock, worth around $207 billion.[6] Loss in crop in livestock can significantly impact the already occurring food crisis in the region. In 2020 in Southeast Asia, for example, 7.3% of the population is undernourished and 18.8% were moderately to severely food insecure.[7] Out of these crops, the most consequential is rice. Southeast Asia is both the largest exporter and importer of rice and being water-dependent, rice is highly threatened by varying rainfall and delays in the monsoon season.[8] COVID-19 and the War in Ukraine have further exacerbated these effects of climate change by stressing food supply chains and increasing prices.[9] Overall, the region has had to reckon with the effects of climate change to ensure its population and the rest of the world retain their access to food and survival of the agricultural sector.

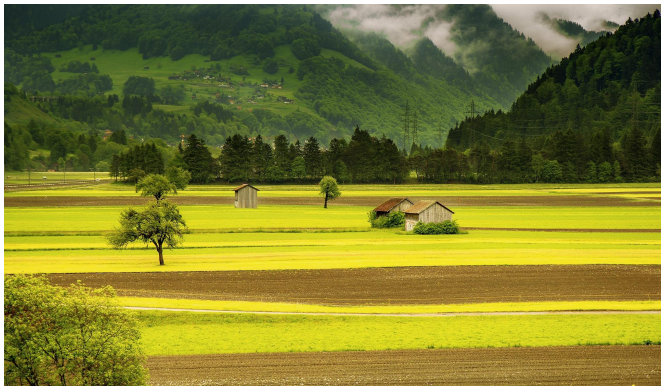
CASE STUDY 1: THE POLITICAL TURMOIL OF NEPAL AND ITS CONTRIBUTION TO FOOD INSECURITY

Nepal is one of the world's most vulnerable countries in regards to food insecurity.[10] This is an issue that has only been made worse by the COVID-19 pandemic. Poverty has reduced over the last few decades, however the country still sees substantial social and income inequality.[11] At one point, the Karnali area of Nepal flourished due to its proximity to a nearby trade route. However, in the 1970s, droughts and political conflict stopped trade, leaving the area impoverished.[11]

In 1996, Nepal underwent a civil war in which the country transitioned to a democratic regime and created a new constitution. During this time, the government was extremely unstable and political tension plagued the nation.[10] In 2015, the country was hit by the Gorkha earthquake, which killed and displaced nearly 30,000 people. The earthquake severely impacted the economy and the government saw billions of dollars in losses.[11] Though the constitution has since been passed and implemented amongst society, political turmoil remains a significant issue.

Agricultural industries make up a large fraction of Nepal's gross domestic product and majority of Nepalis work in the agriculture sector.[10] However, it is difficult for farmers to produce beyond subsistence levels as they often have very small landholdings and lack the resources to increase productivity. Nepal has three distinct geographical regions that include mountains, hills, and plains.[10] This topography severely limits land availability for farming. The Karnali area of Nepal is characterized by steep terrain and little cultivable land as the soil is eroded and poor in quality.[2] Scientists even say this area is highly vulnerable to the effects of global temperatures and precipitation. At its current state, Nepal requires agricultural interventions that would improve food security and nutrition for the entire population as well as resources for farmers. Aside from limited resources, one of the major issues is the inadequate knowledge and skills of farmers in Nepal which results in low efficiency. In Nepal, only about half of the agricultural land is irrigated, leaving the remaining susceptible to destructive weather events. Food insecurity in Nepal and around the world engenders and exacerbates other societal issues, like gender inequality, poor education rates, and a lack of a comprehensive healthcare system.[10]

In 2020, Nepal received a global hunger index score of 19.5, which is categorized as moderate. Though, nutrition and food insecurity remain societal issues.[10] For those that reside in the mountains, food deserts and nutrient deficiencies are common. Nepal's rate of child stunting, while having decreased from 2001, is still concerningly high. This and other indexes, like the child wasting rate, are indicators of chronic undernutrition. Gender inequality plays an important role in nutrition. In Nepal, child marriage remains a relatively common practice. In many cases, young mothers and girls do not receive the same amount of food and nutrition as their male counterparts.[10]



In recent years. Nepal has placed major emphasis on improving children's nutritional status and implemented a successful vitamin A supplementation project.[10] However, there remains much work to do to resolve the multitude of societal issues that exacerbate food insecurity. Many organizations recommend the implementation of agricultural programs within the home and school, like school gardening and nutrition education initiatives. Furthermore, the government should take more of an active role in solving the issue of food insecurity by creating policy that accounts for the many variables at play that impact food insecurity. The government should also work on bolstering the agricultural industry by supplementing farms with technology and more diverse markets to create better managed and more resourceful farms.[10]

CASE STUDY 2: BANGLADESH'S FOOD SECURITY COMPROMISED BY REFUGEES AND INCREASED FLOODING

Aside from Bangladesh being one of the most densely populated countries, it faces numerous challenges in ensuring food security for its citizens: the increasingly severe annual flooding that is detrimental to farmers and agriculture overall, rising food prices, and the nearly 900,000 Myanmarese refugees that take asylum in Bangladesh.[12] Bangladesh is characterized by its deltaic plain and hilly topography. Nearly 80 percent of Bangladesh is made up of plains, which are fertile and made up of nutrient-rich soil. However, most of the Bangladeshi plain has an elevation less than 10 meters above sea level, making it extremely vulnerable to flooding. A significant part of the country is submerged by water for much of the monsoon season.[13]

Bangladesh's flooding is only set to worsen with the effects of climate change. In 2020, Bangladesh saw the most significant effects of flooding, with millions of homes being destroyed and hundreds of thousands of people being displaced or killed.[13] While nearly 230 rivers flow into the Bay of Bengal carrying almost a billion tons of fertile soil, this leaves Bangladesh vulnerable to flooding. Flooding is already beginning to cover areas of land in which key crops, rice and wheat, are grown.[13] Some of the greater challenges farmers in Bangladesh face are inadequate resources and population pressure, which limit a farmer's access to arable land. In Bangladesh, rice is one of few staple crops. While the country achieved self-sufficiency in rice production back in 2012, low dietary diversity is a pressing issue. Nearly 16 percent of the population is undernourished, with many experiencing calorie deficits and nutrient deficiencies and about 21 percent of the total population facing severe chronic food insecurity.[13] Though rates of undernourishment, child stunting and child mortality have declined since 2000, they still remain high and the child wasting rate has risen since 2000.

Many credit these conditions to the nutrition status of pregnant mothers seeing as child stunting begins before birth. Research has found that the length of babies at the time of birth, the weight of the mother, and socioeconomic status influenced stunting far more than dietary diversity and breastfeeding which had no significant effect on child stunting.[13] This issue is exacerbated by teen pregnancies in which the mother's increased nutritional needs are not met.

Despite these obstacles, Bangladesh is working to mitigate food insecurity and improve agricultural practices, as seen in the Green Revolution which heavily increased rice yields.[14] Nutrition education, community gardening, and livestock production are all programs that would increase yield and contribute to greater dietary diversity.

CASE STUDY 3: AGRICULTURAL IMPACTS OF CLIMATE CHANGE IN REPUBLIC OF KOREA

The effects of climate change on food systems has demanded change in how countries respond to protecting crop yields as well as the agricultural sectors of their economies. In the Republic of Korea (referred to as ROK hence forward), climate change has already made significant impacts in the region: Between 1981 and 2010, the Korean Peninsula has seen an increase of 1.2 degrees Celsius (℃) in average annual temperature.[15] Precipitation has seen a 3.4% increase in this time period and seasons have shifted with winter 17 days shorter and summer 19 days longer.[15]

As the Peninsula heads towards a warming future, food systems have already begun to reflect this new future. Agroclimatic zones in ROK have shifted northwards for many crops like tomatoes, apples, mandarins, etc. making it harder for farmers and producers to have effective yields.[15]

Future projections also indicate negative effects on staple crops: according to the Crop Estimation through Resource and Environment Synthesis (CERES) models, by 2050, rice production could fall by 17.8%, soybean by 21.2%, and barley by 13.7%.[15] One important prediction from the CERES model suggests that ROK's self-sufficiency to produce rice for the demands in-country may fall, leading to a need to import rice and severely impact ROK's rice cultivation industry.[15]

To combat these risks of climate change on its food systems, ROK has implemented a strategy that addresses both immediate and long-term concerns. This strategy consists of four major plans enacted by various parts of the Korean government. One of these plans is the Mid- to Long-Term Climate Change Response Plan on Agricultural Technology Development developed by the Korean Rural Development Administration. This plan intends to forecast and monitor climate change related impacts on agriculture including developing climate-resistant crop species and technologies to reduce climate-related diseases. This overall strategy is intended to mitigate food insecurity within the country.[15]

When discussing ROK, it is also important to mention their neighbors to the north; the effects of climate change have also significantly impacted North Korea. To begin with, North Korea is considered to be one of the most food insecure nations in the world but with the impacts of climate change could potentially lead to further insecurity and even famine.[16] With the lack of internal agricultural management and external support from NGOs, a famine could potentially result in a humanitarian crisis with both political and economic consequences on the peninsula.

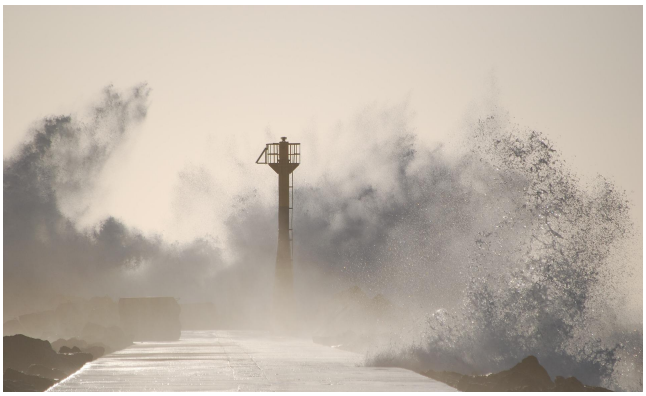
NATURAL DISASTERS AND EFFECTS OF DISPLACEMENT

Higher average global temperature increases the amount of water vapor, which acts as fuel for powerful storms like hurricanes and tsunamis to form. These storms are further exacerbated by warmer ocean surface temperatures and heat in the atmosphere. Climate change engenders the displacement of people in Southeast Asia and the Western Pacific in numerous ways. In most cases, people are displaced as they relocate to escape the effects of an extreme weather event. However, as previously mentioned, climate change also leads to changing weather patterns that make communities uninhabitable. These weather patterns often threaten the livelihoods of residents, whether that be running a business or growing food. Similarly, weather events can permanently affect key resources. Often, this has led to conflict over the resource and, in turn, the displacement of many.[17] Southeast Asia and the Western Pacific are especially vulnerable to the impacts of climate change due to the proximity to oceans and coasts. Furthermore, for most of these countries, their economies and the livelihoods of their citizens are heavily dependent on agriculture and fishing.[18] These industries are highly affected by temperature, precipitation and sea level, all of which are at the center of climate change.

CASE STUDY 1: TYPHOON GONI AND ITS EFFECTS ON THE PEOPLE AND LANDSCAPE OF THE PHILIPPINES

Typhoons, like tropical cyclones and hurricanes, are intense circular storms that originate over warm tropical waters and are characterized by heavy winds and rains.[19] In the last two decades alone, these storms took the lives of over 200 thousand people and displaced or injured over 700 million people.[19] Such storms cause massive economic losses, especially in countries whose economies are centered around tourism.

These storms also send millions into poverty by destroying their homes and businesses, ultimately leaving them without a place to live and without a steady source of income.



In 2020, the Philippines was hit by Typhoon Goni, the strongest landfalling typhoon in recorded history.[20] Categorized as a super typhoon, Goni made landfall across the Philippines and displaced nearly 500,000 people. The typhoon caused serious damage to the landscape: volcanic mudflows, flooding, landslides, and wind destruction. However, aside from the risk that the typhoon posed to the lives of residents, the typhoon destroyed their livelihoods. Wind from the typhoon damaged shelters, destroyed hundreds of thousands of homes, and left a dozen towns completely inaccessible.[20] The mudflows from the active volcano on the island buried hundreds of homes. There was extensive damage to hospitals and private clinics, schools, electrical infrastructure, and COVID-19 testing sites and laboratories.[20] Because of the immense flooding, residents were forced to consume water from surface water sources, like springs and hand pumps, that were likely contaminated with flood water. Those whose homes had been destroyed lost access to adequate sanitation facilities. These factors coupled with thousands of people staying in overpopulated evacuation centers severely increased the risk of disease outbreaks, especially during the height of the pandemic. That coupled with poor sanitation and a lack of COVID-19 testing compromised the health of all that were seeking refuge from the storm.[20,21]

The Philippines' location along the typhoon belt and the Pacific Ring of Fire makes it especially vulnerable to the growing threat of climate change.[21] As mentioned, climate change enables energy to collect in the atmosphere, making natural disasters like volcanic eruptions, earthquakes, and tropical storms much more intense and frequent. Because the Philippines is an island country and sea levels are rising, citizens do not have the option of moving to higher elevations or taking refuge in bordering countries.[22] Many can not afford to continually evacuate and return to rebuild their lives. For many communities in the Philippines, this lifestyle is no longer sustainable and many key resources that continue to be destroyed are not being replenished at a quick enough rate. The best and most sustainable solution is for the country to cooperate with NGO's to build back the economy, infrastructure, and livelihoods of its citizens. It must work on developing a strong disaster recovery plan that highlights evacuation plans, building more resilient infrastructure, and improving leadership.[22]

CASE STUDY 2: EXTREME WEATHER IN CHINA IN JUNE 2022

As climate change perpetuates and global temperatures rise, there have been an increased number of extreme weather instances. One country facing the repercussions of climate change related extreme weather events is China. In June 2022, China was hit with a record breaking heat wave that lasted for more than 70 days.[23] The heat wave had devastating impacts on China's agricultural industry, with crops drying and lakes and reservoirs low on water. In total, 900 million people and 17 provinces were affected by the extreme heat waves.[24]

As temperatures reached almost 113 degrees Fahrenheit, millions increased their air conditioner and electricity use to combat the heat. However, China mostly relies on clean hydroelectricity for power and the severe droughts dried up the rivers used for electricity, leaving a negative loop of high temperatures and struggles to maintain power.[25] The Yangtze River, responsible for providing 50% of water for hydroelectricity, fell to its lowest water level since 1865 due to the 2022 heat waves.[26] With 80% of energy supplied by hydropower, many factories had to shut down operations to save power.[26]

To conserve energy, the government turned to power-saving blackouts which left air conditions futile and subway stations dark.[25] In addition to darkened regions, the drought exacerbated the crisis in agriculture and global supply chain. Industries affected included: the steel, chemical, and fertilizer industries–all of which are foundational to construction, manufacturing, and food industries for China and the world.[27]

Other than scorching heat waves, China also endured heavy rainstorms that caused severe floods and landslides, destabilizing many communities in southern China.[28] One province affected, Guangdong, faced the heaviest downpours in 60 years in June 2022. With flood roads and landslides, economic productivity of the province decreased drastically and homes and livelihoods were destroyed by rain. China's southeastern province Jiangxi, had 223,000 hectares of bamboo and timber destroyed, while the province of Hunan had 96,160 hectares of rice farmland ruined by torrential downpour.[29]

Examples of the heat waves and severe rainstorms demonstrate the direct implications of these disasters while also shedding light on catastrophe that results indirectly, such as dismantling economies and lowered quality of life.

CASE STUDY 3: FREQUENT EARTHQUAKES IN INDONESIA

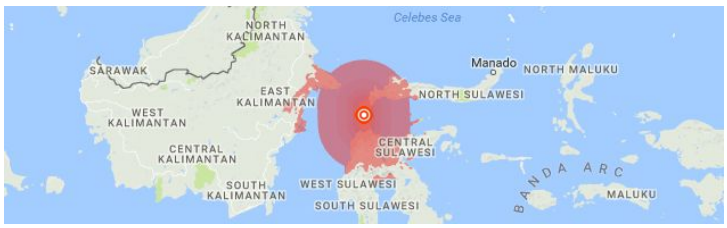
The Pacific Ring of Fire is a horse-shoe shaped geographic region stretching just shy of 25,000 miles on the edge of the Pacific ocean, consisting of a string of volcanoes and large amounts of tectonic activity.[30,31] The region experiences approximately 90% of all earthquakes globally, and as these earthquakes are largely unpredictable, the Pacific Ring of Fire is very dangerous for those who live in it.[31] Worse still, some experts note an increase in these seismic activities due to climate change. Professor Anthony Reid stated that the Ring of Fire in "The 21st century has in its first decade already far exceeded the number of casualties from ... the whole 20th century" due to climate change.[30]

As a country located in this 25,000 mile stretch, Indonesia is prone to earthquakes and is a victim to their worsening effects due to climate change. Indeed, the country suffered a 7.5 magnitude shock on September 28, 2018 that ultimately displaced thousands of people.[32] Central Sulawesi and the city of Palu experienced the initial shock, followed by aftershocks, landslides, and a tsunami which killed 2,000, injured 4,400, and damaged or destroyed 68,000 homes.[32,33] 80% of the homes in the northern region of the earthquake were damaged or destroyed, a region which housed about 200,000 people.[34] As a result, it was estimated that 212,000 individuals were displaced from the disasters, and the most affected city Palu saw more than half of its population displaced. Of all of those displaced, an estimated 5,000 children were separated from their families.[35] These individuals were left as the most recent additions in the global increase of climate refugees.[35]

Beyond displacement, the earthquake caused devastating effects to Indonesia. Rubble made providing direct help difficult, and telecommunication to coordinate this help was significantly hampered.[35] Outside of Palu and affected cities, rural areas experienced broken roads, nonexistent communication, and landslides.[35] The Palu airport suffered damage to its runway, leaving help from the sky a difficult task as well.[34] These impacts worsened the burden on those injured and displaced in Indonesia – leaving them struggling without help for days or weeks.

The Indonesian government led the humanitarian response to the crisis, and many countries came to Indonesia's aid, with Australia donating up to $4 million.[36] One organization, Wahana Visi Indonesia, said between September of 2018 and March of 2019, 116 villages in four districts had been served. They claimed to have reached 30,654 households and 100,551 distinct beneficiaries.[33] The UN mobilized its support as well, but even with help, the recovery phase was forecasted by officials to be a years long process, both for the nation as a whole and the individuals suffering injuries and displacement within it.[33]

Since this earthquake in 2018, Indonesia has experienced dozens more.[37] Worsened by climate change and other anthropogenic forces, Indonesia and its residents continue to suffer, with large tremors over magnitude 6 occurring almost yearly.[32] If the patterns hold, more individuals will be displaced and more lives will be lost as climate change worsens and seismic activities worsen with it.



CONCLUSION

As the world has had to reckon with climate change, the SEARO/WPRO region has seen increasing impacts on all areas of life and livelihood. Climate change has brought increasing changes to weather patterns, which has impacted the agricultural sector as well as food security of the population. Typhoons and other natural disasters have caused increasing displacement of peoples and a rise of disease which has stretched resources for the entire region. However, the region has been making progress towards developing innovations to combat the effects of climate change on crops and livestock and reducing emissions. While this progress has been steady, the region still has far to go if it is to tackle climate change and its consequences.

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