2: The Philippines

In brief: With over 7,000 islands and affected by El Niño, the Philippines is extremely vulnerable to natural disasters and erratic agricultural production due to climate variability.

Right Now: In 2013, Typhoon Haiyan claimed 6,000 lives.

Future climate change risks: Eroded coastlines and coral reefs; increased risk of tropical storms.

Emissions of CO₂ per capita: 0.9 metric tons – approximately nine times less than Ireland

2.1 Introduction

The Philippines is classified as one of the least developed countries in the world, ranked at 117 out of 187 countries on the 2014 Human Development Index. Over half of its population live in poverty. As population rates grow, people are increasingly constrained to living and farming in areas not suitable for settlement and agriculture such as on riverbanks and mountain slopes, thereby exacerbating the damage caused by extreme weather events and climate change.

The Philippines has always been susceptible to variations in ocean temperature and rainfall, due to the El Niño effect. According to the 2013 Climate Change Vulnerability Index, the Philippines ranked 9th most at risk country in the world and as early as 2012, the Asian Development Bank (ADB) released a study stating that “50.3% of the country’s land area is economically at risk from multiple hazards such as floods, typhoon, and earthquakes. This means some 81.3% of the country’s population or around 76.6 million Filipinos are prone to economic impacts brought by natural disasters.”

Indeed, in recent years the country has seen an increase in both frequency and intensity of extreme weather events. In 2011, a study highlighted the early recognition of the increased potential for disasters as a matter of urgent concern. Two years later, super typhoon Haiyan devastated the Philippines, killing over 6,000 people and displacing millions of families.

In addition to the direct impact on human life, and the costs of response and recovery, such extreme events seriously impact the country’s natural ecosystems that are major sources of livelihoods and development. Over seven thousand islands make up the nation of the Philippines, of which some 2,000 islands are inhabited. Rising sea levels are projected to result in agricultural land loss and destruction of coral reef ecosystems, on which many Filipinos are dependent for coastal protection, subsistence fisheries and tourism.

Future projections of climate indicate that the Philippines is expected to experience a significant rise in temperature and increased rainfall variability, with the highest increases projected to occur in major agriculture regions. Climate change therefore presents a systemic challenge to the country’s efforts to address poverty and realise sustainable development.

As a nation, the Philippines is acutely aware of the threats which climate change poses to their people’s well-being. A national Climate Change Commission was established in 2009 in the Philippines as an independent government agency. In the aftermath of typhoon Haiyan, the Climate Change Commission delegation to the UN Climate Change Summit in Warsaw pleaded with the international community to "take drastic action now to ensure that we prevent a future where super typhoons are a way of life", and to "stop calling events like these natural disasters" because "It is not natural when science already tells us that global warming will induce more intense storms."

The commission’s message is representative of a general awareness and activism on climate change and Disaster Risk Reduction in the Philippines, where local organisations and networks strive to raise these issues at a national and more global level.

2.2 Observed Climate Variability and Change

There is an increase in observed mean
temperatures in the Philippines of 0.64°C from 1951-2010. The increases in temperature were greater in the latter half of that period, and 1998 and 2010 were the warmest years since 1951 in the Philippines. The country is experiencing an increased number of hot days and a decreasing number of cold nights.

The El Niño effect causes year to year variations in rainfall and large variability in extreme precipitation in the Philippines. Increasing trends in the number of “no rain” days have been observed over western Philippines. The total southwest monsoon rainfall has declined significantly over the last 50 years, with time series analysis showing rates of decrease ranging from 0.026 per cent to 0.075 per cent per decade in the western half of the country. For all of the Philippines, significant drying trends in the dry season are observed which may cause droughts while a wetting tendency is observed during the wet season which may increase risk of flooding potential. Households have perceived changes in climate including an increase in rainfall variability, rising sea levels and an increase in the intensity and frequency of storm events.

2.3 Projections of Future Climate Change

Figure 1 shows the projected changes in annual temperature for south-east Asia to the end of the 21st century. Temperature increases are predicted for all scenarios of greenhouse gas emissions examined, with the rate of temperature increase diverging after mid-century. If greenhouse emissions are not decreased – the ‘business as usual’ RCP 8.5 scenario – an average warming of approximately 4°C is predicted, with some models indicating temperature increases above 5°C. The best case scenario (RCP2.6), which would require an ambitious global agreement to reducing emissions, shows an average warming of approximately 1°C by the end of the century.

Figure 1 Projected changes in annual temperature relative to 1986-2005 under different greenhouse gas emissions pathways for south-east Asia. Red is business as usual emissions (RCP8.5), dark blue represents ambitious reductions in global emissions (RCP2.6) Thin lines denote a single model projection; thick lines show the mean simulation for multiple climate models.

Lengthening of seasonal dry periods, and an increasing frequency of droughts are likely under the ‘business as usual’ scenario. Longer wet and dry periods would have implications for food production, coastal system services including fisheries, human settlement and health, livelihoods and socio-economic development.

Country level studies for the Philippines project a mean annual temperature increase of 0.9 to 1.1°C by the 2020s, and 1.8 to 2.5°C by 2050 under a medium high emissions scenario (SRES2). These climate projections further indicate that a reduction in rainfall in most parts of the country during the summer season is expected. Yet, the country is expected to experience increases in both the frequency and intensity of extreme daily rainfall events.

2.4 Food Production and Climate Change

Climate change poses significant risks for food security in the Philippines, particularly for agriculture and fisheries. Under current conditions natural climate variability has a large impact on agricultural productivity with the effects of El Niño being felt in various sectors of the economy: agriculture, environment, water resources, energy and health. The agricultural sector is most vulnerable to drought and changes in the southwest monsoon rainfall. About thirteen million hectares of agricultural area produce a wide
Feeling the Heat

A destroyed house on the outskirts of Tacloban on Leyte island. This region was the worst affected by the typhoon, causing widespread damage and loss of life. Caritas is responding by distributing food, shelter, hygiene kits and cooking utensils.

Variety of fruits, grains and vegetables. More than half of this area is devoted to rice and corn, the Filipino staple foods. Corn and rice producing areas are vulnerable to El Niño.54

Coastal resources are highly vulnerable in the Philippines. Over 60 per cent of the population live by the coast, with the majority of these people depending on agriculture and fisheries for food and livelihoods.55

Resources on the coast will likely be severely impacted by global warming, particularly coral reefs which underpin fisheries in the country.

Sea levels are forecast to rise and some low-lying islands may be completely submerged.56

Climate variability also impacts heavily on fisheries. In El Niño years, when the Pacific Ocean warms, fish move to colder waters in search of food. An increase in the occurrence of El Niño events would therefore impact fish catch. Fish catch, which tends to be lower during dry (summer) months than during rainy months, will also be affected by the projected lengthening of the dry seasons.57 Coastal flooding, coastal erosion, saltwater intrusion and drought may exacerbate food insecurity and habitat degradation in coastal regions, for example in Manila Bay.58 Among the various socioeconomic groups in the Philippines, poor coastal families, specifically small scale fishermen and shellfish gatherers are the most vulnerable to these impacts, followed by the enterprising poor and the self-employed. Women within these socioeconomic groups are particularly vulnerable to food insecurity impacts.59

As noted above, increasing temperatures are expected to negatively impact on coral reefs, an important resource in small tropical islands and a source of well being for many island communities. Reefs play a significant role in supplying sediment to island shores and in dissipating wave energy thus reducing the potential foreshore erosion.60 Coral reefs also provide habitat for a host of marine species upon which many island communities are dependent for subsistence foods, and underpin beach and reef-based tourism and economic activity. There is clear evidence that climate change will kill off living coral and consequently fishing production.61 The impact of climate change in the Philippines could therefore lead to more malnutrition, higher poverty levels, and possibly, heightened social unrest and conflict in certain areas in the country due to loss of land.
It only took a few seconds to destroy a lifetime’s work.

Gerardo and Jovita Amantillo were both at home when Typhoon Haiyan struck on November 8th, 2013. The couple, both aged 74, had been warned that a bad storm was on its way but nothing had prepared them for the intensity of what they faced.

The winds had been battering their home for several hours when suddenly the waves crashed down all around them, destroying their home and leaving Gerardo and Jovita fighting for their lives.

The strength of the waves carried Gerardo and Jovita out of their home. They survived only by clinging to the neighbour’s roof – almost three metres off the ground.

“We held on to the roof,” says Gerardo. “The only reason the roof was not blown away was because there were so many of us lying on it. After around two hours the winds died down and the water receded. Our house was completely gone.”

Miraculously, they received only superficial wounds to their legs but were otherwise unharmed. However, sitting on Ormoc pier waiting for a boat to take them off Leyte island, which was the worst affected region of the Philippines, the couple has just one small bag of possessions. Everything else was lost.

“We stayed with neighbours for a few nights but we plan on living with our son for the next few months,” says Gerardo. “I do not know when we will be able to move back.”

Across the Philippines over 4 million people were displaced by Typhoon Haiyan. Approximately 400,000 are living in evacuation centres, with the rest sheltering with friends or family.

Trócaire is offering shelter and food to people who lost their homes, but also rebuilding affected areas so as people like Gerardo and Jovita can look forward to the day when they can return home.

2.5 Access to Water

Freshwater supply in small island environments continues to present challenges and in all previous IPCC reports fresh water supply in small islands has remained highly vulnerable. Watersheds and river catchments are highly sensitive to rainfall variations. In the Philippines, rivers on volcanic and granitic islands have limited storage for water. In addition rivers on porous limestone and low atoll islands have minimal surface runoff and water rapidly percolates into the groundwater. Therefore, the projected changes in rainfall, with longer dry seasons and more intense rainfall in the wet season, are expected to create severe water shortages and stress both in quantity and quality. Increases in rainfall variability and longer dry periods will affect the amount of water in dams which provide irrigation services to farmers, especially those in rain fed areas, thereby, limiting agricultural production. The Fifth Assessment Report of the IPCC indicates that stress on water due to heavy rain and increases in temperature will increase the risk of diarrheal diseases among the resource poor.

The effects of climate change on domestic water supply are compounded by governance and infrastructure challenges in the Philippines, adversely affecting access to safe water, especially in the rural areas. Although the joint Monitoring Programme for Water Supply and Sanitation indicates that access to improved water sources is being achieved and access to sanitation is on track, the country’s water quality is greatly compromised. Surface water and groundwater quality is deteriorating rapidly. Major pollution sources for surface and coastal waters in terms of Biological Oxygen Demand (BOD) load are point sources. Among non-pollution sources, agricultural runoff is the major source of pollution. More intense rainfall will increase nutrient washout from agricultural land.

2.6 Gender

It is clear that climate variability has rapidly become a serious threat to human society and well being in the Philippines. The country often experiences climate-related disasters, and both men and women have developed adaptation strategies that make them resilient to extreme weather events. Available evidence shows that men and women adapt to flooding according to their traditional roles but women have extra new
Feeling the Heat

roles and burdens in addition to farming roles and managing daily household welfare. Contemporary studies indicate that often men occupy freer spaces in society, enabling them to cope with and recover from disasters much more easily than women, who occupy enclosed private spaces without windows of opportunity to adapt. Even in their productive roles, women struggle to cope with and recover after disasters because they are marginalised in governance structures and have unequal access to entitlements as compared to male counterparts.

In the Philippines women lack resources and power and usually take up roles that make them less mobile. Although in the Philippines there is some transformation that may help women cope with climate related extreme events, literature shows that culturally, they continue to have less power over family finances and other assets. There is gender bias in power and decision-making that limits engagement in community development and politics by women, and is exacerbated by many cultural restrictions on mobility and education. Women in the countryside have lower incomes and are more likely to be economically dependent which compromises their adaptive capacity.

Following disasters, the vulnerabilities of poor women are exacerbated, leaving them more at risk to the threat of trafficking. According to anecdotal evidence, there is an increase in human trafficking in the wake of disasters.

2.7 Migration

Literature indicates that the Filipinos have always migrated seeking employment globally. With future climate change projections and intensifying disasters, however, migration is likely to increase. Weather related disasters have forced huge numbers of Filipinos to leave their homes. Gerardo and Jovita Amantillo, featured in the story opposite were just two of the 4 million displaced by Typhoon Haiyan. Following disasters, many Filipinos have migrated to seek employment and support their families through remittances as a way of coping.

Internal migration in the Philippines is driven by socio-economic factors. The general trends of migration show that poor people move away from areas of high risk, especially into cities. Urban-rural migration is common, with people moving into cities where services and infrastructure are more developed. This is exacerbated by the impact of climate variability on the agricultural sector. Crop and livestock producers abandon agriculture because of decreasing yields and migrate to urban areas to seek new job opportunities. These shifts in population result in additional pressures on already under-resourced and vulnerable urban areas, particularly in mega cities.

2.8 Health

Globally, the effects of climate change on human health will be both direct and indirect, and are expected to exacerbate existing health risks, especially in the most vulnerable communities where the burden of disease is already high. Direct impacts of climate change on health in the Philippines relate to increased incidences of floods and droughts, and also typhoons. Incremental increases in temperatures and changing rainfall regimes could trigger adverse health impacts; in particular, the outbreak and spread of water-based and vector-borne diseases leading to higher morbidity and mortality. For example, in addition to the direct loss of life caused by Typhoon Haiyan in the Philippines, the storm was also associated with waterborne illnesses.

2.9 Economic impacts

Between 1998 and 2009 12.1 million were exposed to extreme weather events, with damages accounting for a 23.9 per cent loss in GDP. Under a medium high emissions scenario, losses of up to 2.2 per cent of GDP are projected annually by 2100 due to climate change impacts on agriculture. Projected losses are well above the world’s projected mean GDP loss of 0.6 per cent each year by 2100 due to market impact alone. Losses connected to agriculture could reach 5.7 per cent of GDP and 6.7 per cent of the GDP if catastrophic risks are also taken into account.

2.10 Looking to the future

The future for the Philippines looks challenging - eroding coast lines and destruction of coral reefs leading to loss of livelihoods, increased risk of typhoons which already cause widespread destruction on a regular basis, and increased risk of climate variability with serious implications for
agricultural production.

Even with these seemingly overwhelming challenges, there is hope. Philippines Climate Change Commissioner Naderev ‘Yeb’ Saño says:

‘Climate change is our opportunity to make the Philippines a better nation. Even if it is a huge problem, it still has a positive side to it because it can change the way we govern our country... This is a war and we will survive because there is no choice.’

With the help of the global community, the Philippines can avoid the worst effects of climate change, and adapt to the challenges which will inevitably arise. In partnership with Caritas Philippines and linking with Irish missionaries and other local partners, Trócaire worked in the Philippines for forty years before transitioning out of the country in 2012. However, following typhoon Haiyan and the Irish public’s generosity, which provided over €3m to support victims of the typhoon, Trócaire is, once again, assisting Filipino communities to cope with their current situation, and to build strength and resilience against future crises.

Immediately after the typhoon, Trócaire supported partners across the worst hit areas in the Visayas to provide food, essential household items, essential hygiene-maintenance supplies, cash grants, emergency shelter kits and psychosocial assistance. Through these partners and as part of a broader Caritas response, Trócaire reached over 300,000 people.

Today, Trócaire and partners have moved from an emergency response to an early recovery and rehabilitation response with the aim of leaving the Philippines with stronger and more disaster-resilient communities. This is being done by ensuring communities re-establish their lives and create a better future by building safe and disaster resilient homes, schools, sanitary facilities and livelihoods. Trócaire and partners are ensuring mitigation of future risk is inbuilt into the recovery effort and that the capacities of communities and local organisations are also strengthened. Meanwhile, advocacy initiatives to tackle underlying vulnerabilities within disaster-prone areas are being encouraged and supported.
### 2.11 Summary of Findings

The Philippines is experiencing hotter days and fewer cold nights, with overall mean temperatures increasing by 0.64°C over the past fifty years. Increasing trends in the number of “no rain” days have been observed over western Philippines while significant decreasing trends are evident in the total southwest monsoon rainfall in the western half of the country.

Significant warming is predicted for the region of south east Asia. With unabated emissions an average warming of approximately 4°C is simulated across all models by the end of the century. Rainfall projections for the region show a large range of changes over the coming century, with the direction of change uncertain. Country level studies indicate a reduction in rainfall in most parts of the country during the dry season and an increase in rainfall during the monsoon seasons.

The country is expected to experience increases in both the frequency and intensity of extreme daily rainfall events. Lengthening of seasonal dry periods, and an increasing frequency of droughts are projected for the region. These more intense wet seasons and longer dry seasons may have serious implications for food production, coastal system services including fisheries, human settlement and health, livelihoods and socio-economic development.

Under a medium high emissions scenario, an estimated loss of up to 2.2 per cent of gross domestic product (GDP) is projected annually by 2100 due to climate change impacts on agriculture.

Climate change poses significant risks for food security in the Philippines, particularly for agriculture and fisheries. Under current conditions natural climate variability has a large impact on agricultural productivity with the effects of El Niño being felt in various sectors of the economy. The agricultural sector is most vulnerable to drought and changes in the southwest monsoon rainfall.

Projected changes in rainfall are expected to create severe water shortages and stress both in quantity and quality. Increases in rainfall variability and longer dry periods will affect the amount of water in dams which provide irrigation services to farmers, especially those in rain fed areas.

The effects of climate change on human health will be both direct and indirect, and are expected to exacerbate existing health risks, especially in the most vulnerable communities where the burden of disease is already high. Direct impacts of climate change on health in the Philippines relate to an increased incidence of floods and droughts. Increases in temperatures and changing rainfall regimes could trigger adverse health impacts; in particular, the outbreak and spread of water-based and vector-borne diseases leading to higher morbidity and mortality.

Research asserts that women are disproportionately impacted by disasters, severe weather events, and climate change because of cultural norms and the inequitable distribution of roles, resources, and power, especially in developing countries. In the Philippines there is gender bias in power and decision-making that limits engagement in community development and politics by women, and is exacerbated by many cultural restrictions on mobility and education.

Migration and relocation are important coping mechanisms for communities living in disaster vulnerable areas. The projected impacts of climate change on agriculture and coastal resources may influence migration. Following weather related disasters many Filipinos have migrated to seek employment and support their families through remittances as a way of coping. With future climate change projections and intensifying disasters, migration as adaptation is likely to increase.