



# Philippines

This climate fact sheet summarizes the available information on the climate of the Philippines and the impact of climate change on humanitarian activities in-country. Each fact sheet in the series was written using information from peer-reviewed academic papers, government publications, and other documentation from international non-governmental organizations.

## 1. Climate overview

**Average annual temperature:** Temperatures vary throughout the Philippines and average between 22–29°C. The Philippines archipelago is hottest in April to June and coldest in January to March.

**Average annual rainfall:** The country's annual rainfall oscillates between 5,000mm along the east coast to 1,000mm in several of the sheltered valleys and the west coast.

**Main driver of climate variability:** 1. El Niño–Southern Oscillation (ENSO), occurs irregularly, typically every two–seven years and reduces rainfall and cyclone activity; 2. La Niña events that occur less frequently than El Niño, and increase heavy rainfall and cyclone activity; 3. south-west and north-east monsoons which bring rainy seasons; 4. Indian Ocean Dipole (IOD) 5. topography; 5. cold fronts that occur at a certain time of year (USAID, 2017; Amirul Islam *et al.*, 2018).

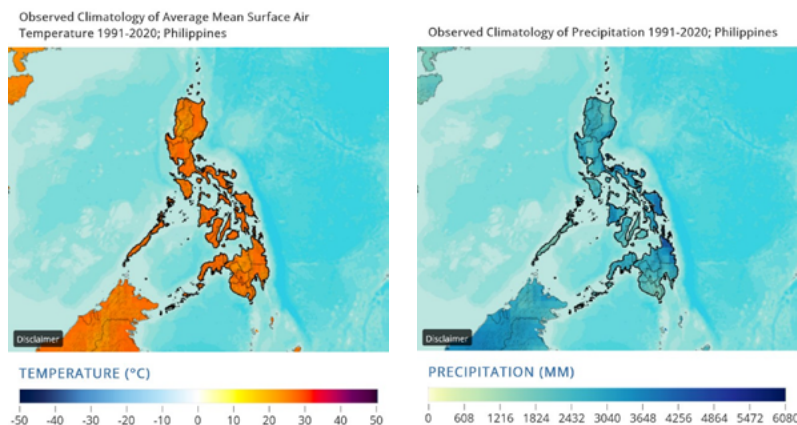


Figure 1: Observed climatology of (left to right) mean temperature and mean precipitation between 1991 and 2020 (from World Bank Climate Change Knowledge Portal).

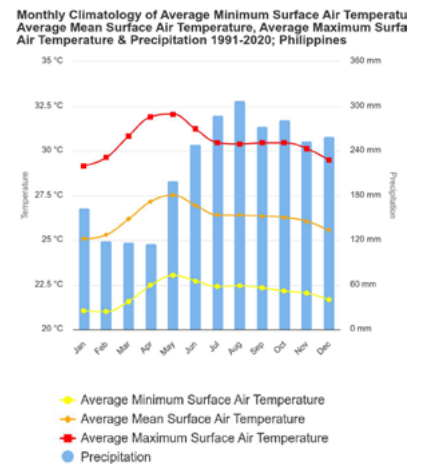


Figure 2: Observed average monthly climatology between 1991 and 2020 (from World Bank Climate Change Knowledge Portal).

## Short overview

The Philippines is an archipelagic country including 7,100 islands. Its topography is characterized by predominantly mountainous terrain, narrow coastal plains and interior valleys and plains. The Philippines has a humid equatorial climate marked by high temperatures, heavy annual rainfall and widespread equatorial cloudiness (UNDP, 2022).

As a result of its geography and location, the Philippines is exposed to a multitude of geophysical and hydrometeorological hazards; with 60 per cent of the total area categorized as hazard exposed, and 74 per cent of the population susceptible to the impacts of those hazards (UNDRR, 2019). This means that the Philippines is ranked as a country at great risk of disaster and exposure to multiple high-intensity hazards (WFP, 2024).

Hydrometeorological hazards include typhoons, storm surges and flooding, all of which cumulatively accounted for 80 per cent of natural disasters in the country in the last half-century (Jha, 2018). Due to its geographical location, the Philippines is affected by tropical cyclones more than anywhere else in the world. The period from May to December is considered the tropical cyclone season, with the peak tropical cyclone activity occurring from July to October (GOVPH, n.d.). Disaster events have a significant impact on the country's economy, and the United Nations Office for Disaster Risk Reduction (UNDRR) (2019) estimates that, since 1990, the country has seen 565 disaster events which have caused approximately 23 billion US dollars of damage (UNDRR, 2019; Jha, 2018).

Metropolitan Manila (Metro Manila) is ranked one of the most vulnerable cities in the world, with studies suggesting that a 10 per cent increase in wave surge-height would increase the population vulnerable to flooding impacts by 3.4 million people (World Bank, 2022; Brecht, 2012). Other cities in Metro Manila will also be impacted; projections show that the urban areas of Caloocan, Davao, Malabon and Taguig (among others) will see an increase in the exposed population (80,000–230,000 people), if storm wave-height increases by 10 per cent (World Bank, 2022).

## 1.2 Climate change in the Philippines

Historical climate	Projected climate
<b>Temperature</b>	
<ul style="list-style-type: none"> <li>▪ The mean annual temperature over the Philippines has increased at a rate of approximately 0.2°C/decade in 1961–2015 (IPCC, 2022).</li> <li>▪ The intensity and frequency of hot extremes have increased, while the intensity and frequency of cold extremes have decreased (Seneviratne <i>et al.</i>, 2021).</li> </ul>	<ul style="list-style-type: none"> <li>▪ Mean temperatures over the region are projected to rise until 2050 by at least 2–2.5°C for a high greenhouse gas concentration scenario (SSP5–8.5) and by 1.5–2°C for a low greenhouse gas concentration scenario (SSP2–4.5) (IPCC, 2022).</li> <li>▪ Maximum and minimum temperature will increase, and heatwaves will intensify in duration. The annual number of very hot days (above 35°C) is projected to rise dramatically and with high certainty (IPCC, 2022).</li> </ul>

**Historical climate**

**Precipitation**

- Average rainfall increased over the southern Philippines in 1961–2015 (IPCC, 2022).
- Global mean sea level rise has increased in recent decades, and it has contributed to flooding in coastal areas (IPCC, 2019).

**Projected climate**

- Significant projected increases in mean total precipitation during December, January and February (DJF) as well as decreases in June, July and August (JJA) are projected under both RCP4.5 and RCP8.5 by the end of 21st Century (IPCC, 2022).
- Heavy rainfall during the wet season is projected to be more intense as a result of the warmer atmosphere. Increases in the intensity and frequency of heavy precipitation are predicted to cause flooding and soil erosion (Seneviratne *et al.*, 2021).

## 2. Priorities of the Red Cross Red Crescent Movement under climate change

### 2.1 Scale up climate-smart disaster risk reduction (DRR) early action and preparedness

**Observed hazard**

**Flooding**

Cruz *et al.* (2017) expect the risk of flooding to rise significantly by 2050 and areas in the Pasig-Marikina River basin (including Manila as well as several other regions) are likely to be at high risk from flooding. Some estimates show that for a 1-in-100-year event, more than 2.5 million people could be affected in high population density urban areas. Water levels are projected to reach between 8–50cm and costs could be up to 5 billion US dollars (Cruz *et al.*, 2017).

**Projected risk**

Flooding and storm surges are some of the greatest threats currently faced by populations across the Philippines; climate change is projected to increase wave heights, thus increasing the impact of storm surges and ensuing flooding for some of the most densely populated areas of the Philippines (World Bank, 2022).

**Tropical cyclones**

It is estimated that annually 20 tropical cyclones enter the waters of the Philippines, with approximately 8–9 making landfall (UNDRR, 2019). Cyclones are very destructive for the country because most of the population lives within 60km of the coastline. Cruz *et al.* (2017) highlight the Bicol Region, Cagayan Valley, Central Luzon, Cordillera Administrative Region, National Capital Region and Southern Tagalog to be the most vulnerable regions to tropical cyclones in the Philippines.

The World Bank (2022) estimates that climate change could increase emergency response costs resulting from typhoons by over 50 per cent for severe events in the coming years. The interactions of climate change with typhoon risk are complex and difficult to predict. Of the known and understood risks, sea level rise is one of the most important factors to interact with the risk posed to communities living near the coastline who will be vulnerable to higher-reaching storm surges. Modelling in general on cyclone intensity points towards a trend of reduced cyclone frequency but increased intensity of events (World Bank, 2022; Walsh *et al.*, 2015).

The proportion of Category 4 and 5 tropical cyclones and associated precipitation rates, along with their average intensity, are projected to rise with increases in global warming levels. This will further increase the magnitude of resultant storm surges and flooding (Gutiérrez *et al.*, 2021; Seneviratne *et al.*, 2021).

It is important to note that many of these hazards are interrelated and produce compound risks in the same areas and communities. In addition, risk must be understood as the interplay between hazard, exposure and vulnerability which makes certain individuals, communities and sectors more impacted by the hazards. All project design should take such compounding risks into account.

## Disaster risk management (DRM) strategies

The country has made significant progress in understanding disaster risk using technological tools (UNDRR, 2019). Through tools such as Geographical Information Systems (GIS), Light Detection and Ranging (LiDAR), computer simulations and fault mapping, the country has achieved a better understanding of the disaster risks it faces (UNDRR, 2019).

One of the country's priorities in DRR is strengthening local institutional capacity (UNDRR, 2019). This will involve understanding the different capacities as well as the constraints of local governments; and finding ways to conduct multi-sectoral risk assessments and overcoming funding constraints, which are some of the core challenges the country is currently facing in strengthening local capacity.

The Philippines faces a challenge in DRR in identifying ways to address the increasing frequency and severity of disasters as a result of climate change (UNDRR, 2019). The rate at which the frequency and intensity of hazards will increase for the country will place pressure on the institutions addressing the risks as well as the preparedness mechanisms to address them. The UNDRR (2019) highlights issues that the country has in localizing the DRM framework. This challenge is coupled with a need for better management of disaster finance. Bollettino *et al.* (2020) report that although most Filipinos perceive natural hazards to be a threat, only one-third of people take measures to prepare for disasters (Bollettino *et al.*, 2020).

## 2.2 Reduce health impacts of climate change

Despite significant advancements in public health, several overarching health outcomes make the Philippines vulnerable to climate change and pose a threat to the public health gains made over the last decades. These are evident in several ways:

- Changes in the social and environmental determinants of health may lead to changes in the patterns of diseases such as acute watery diarrhoea (a leading cause of mortality), cholera, dengue fever, malaria and malnutrition.
- Studies also indicate that climate change poses a risk to mental health, especially among young people (Aruta & Guinto, 2022; Aruta & Simon, 2022).
- Climate change will result in water shortages and the contamination of water supplies, with negative consequences for human health (Government of the Philippines, 2015).

The projected increase in extreme weather events is expected to increase damage to health service infrastructure, and cause more injuries and deaths in the Philippines. Due to infrastructure damage caused by Super Typhoon Rai – known locally as Odette – in 2021, homes and schools were severely damaged, while hospitals and other health services faced significant challenges in providing essential healthcare to communities (*ibid*). Following the typhoon, 41 per cent of health stations in the *barangays* (villages) and one-in-three (28 per cent) of hospitals across 11 regions of the Philippines were damaged (WHO, 2022).

## 2.3 Ensure sustainable water supplies

The Philippines is very likely to experience a high degree of water shortage by 2040 (Government of the Philippines, 2015). Drinking water and water infrastructure are already reaching crisis levels in some parts of the country. The ongoing water crisis, including water shortages in Metro Manila, is worsened by the impacts of climate change. The country's local freshwater supply is particularly vulnerable to climate change. Freshwater concerns include projected changes in annual runoff, groundwater recharge and the water withdrawal rate (*ibid*).

The Philippines also has alarmingly low cumulative dam storage capacity per capita and limited water distribution infrastructure (Lee *et al.*, 2020). Most of the population will face challenges relating to drinking water access, including via public standpipes, boreholes, protected springs and wells, and other rainwater infrastructure in the country (*ibid*).

## 2.4. Enable climate-resilient livelihoods and economic security

Outside the capital, Manila, climate change risks and hazards – including droughts, flash floods, strong winds, thunderstorms and typhoons – have severe impacts for farmers, the economy and Filipino communities overall. In the Bicol Region, for example, extreme weather events create uncertainties for rice farmers as rice is particularly sensitive to changes in rainfall and weather patterns (USAID, 2016). The impacts of extreme weather events on rice crops creates food security issues as rice is one of the primary crops in the Philippines and most Filipinos rely on rice as a staple food (*ibid*).

Climate change has marked impacts on overall food security and production systems across the Philippines – an increasingly unpredictable climate will significantly decrease the country's capacity to feed people and meet its economic production rates (FAO, 2017). In 2017, the annual population growth rate in the Philippines was 1.5 per cent (then the 13th largest population in the world), while the country faced as much as a 25 per cent decline in crop yields due to climate change (*ibid*). Other economic outputs including rice crops and catches of the main fish species are expected to decline by as much as 25 per cent if climate change emissions continue unmitigated (*ibid*).

The combined outcomes of conflict and climate change – including a 1°C increase in growing season nighttime temperature – can cause as much as a 10 per cent loss of rice yields in the region (Chandra *et al.*, 2017; Stuecker *et al.*, 2018). For over 50 years, the Philippine government has been in conflict with the New People's Army, the armed wing of the Communist Party of the Philippines. The rebellion, which began in 1969, is one of Asia's oldest insurgencies and has resulted in at least 40,000 deaths, mostly in its early years. The New People's Army is currently active in around 70 of the country's 82 provinces, with significant activity in northern Mindanao, southern Luzon, and parts of the Visayas, leading to at least 220 fatalities in 2023. However, only 200 villages are still under the communist movement influence, a big reduction compared to 2008 with 1,380 villages (ICG, 2024). Marginalized women, women farmers and widows of those killed in combat are often disproportionately impacted by conflict, limited access to food and poverty. This trend is likely to continue and be exacerbated by climate change impacts (Chandra *et al.*, 2017).

## 2.5 Address climate displacement and protection

### Current and future displacement challenges

The Philippines is increasingly experiencing climate displacement due to disasters – mainly storms – with 5.7 million people displaced in 2021 (IDMC, 2022). While the Philippines has a relatively small refugee population, there are also high rates of individuals internally displaced by violence and conflict. For example, internally displaced persons (IDPs) accounted for more than 153,000 individuals in the Philippines in 2019 (World Bank, 2020).

Over 60 per cent of the Filipino population lives in coastal areas and will be forced to relocate due to the projected one-metre sea level rise induced by climate change. Sixty million people are anticipated to have to move by 2100 (Gonzalez & Dadey, 2021).

Typhoons and rising temperatures have been found to increase internal migration within the Philippines (Bohra-Mishra *et al.*, 2017). Projections of the increased frequency and severity of typhoons as well as a significant rise in temperature suggests that further out-migration from different regions will occur, not only due to the immediate impact of disasters, but the growing challenge of agricultural production.

Both conflict and climate change may continue to trigger widespread social and economic upheaval in different regions. Marginalized women, female farmers and the widows of those killed in combat, as well as children and human rights defenders, have been particularly affected by the increase in conflict and other situations of armed violence in the country (Chandra *et al.*, 2017).

Migration will remain a key coping mechanism for affected Filipinos, highlighting the importance of safe, adaptive migration through legal channels. Some research has found that the impacts of climate change on agricultural production may increase the number of female migrants moving to nearby cities to support their families (Oxfam, 2017; Chandran, 2018).

### Potential needs of migrants and displaced people

Tailored approaches to support those most vulnerable to and in displacement will be important. In the Philippines, 80 per cent of people displaced by climate disasters are women (IOM, 2021). Urban poor, particularly along coastlines, have low adaptive capacities to climate impacts and will continue to be severely affected by sea level rise and other crises (*ibid*).

## Existing displacement laws and policies

- No policy instruments directly address climate migration in the Philippines, but climate risks are recognized in two key policies: RA 9729 (Climate Change Act of 2009) and RA 10121 (Disaster Risk Reduction and Management Act of 2010). These policy measures are the closest to addressing climate migration and mention the pre-disaster evacuation of people and assets in hazard-prone areas (Esbay, 2019).
- Recently, a working Sub-Committee on Internal Migration and Development (SCIMD) was formed by the National Economic and Development Authority (NEDA) to oversee concerns on internal migration. The Commission on Population and Development (CPD) is a member of this sub-committee and has developed partnerships with other agencies to address climate migration. Notably, it has piloted Migration Information Centers (MICs) along common migration routes such as Malay in Aklan and Tanay in Rizal (IOM, 2022).
- The Philippines is also a co-chair with the United States of the Migrants in Countries in Crisis Initiative, which has “non-binding and voluntary” guidelines to improve migration protection in instances when the countries “... in which they live, work, study, transit, or travel experience a conflict or natural disaster.” (*ibid*).

## Protection and weapons contamination

Civilian populations living in and around conflict areas in the Philippines have faced several protection and human rights concerns, which can be exacerbated by climate change. For example, detentions, the recruitment of children into non-state armed groups, and the protection risks faced by human rights defenders pose protection risks such as loss of family links, disproportionate exposure to climate change and natural hazards as well as reduced access for data collection and monitoring by humanitarian groups (ICRC, 2012a).

A 2017 study conducted by Oxfam International indicates that conflict and climate change have triggered widespread social and economic upheaval in several regions of the Philippines (Chandra *et al.*, 2017). Marginalized women, female farmers, and the widows of those killed in combat, as well as children and human rights defenders, have been particularly affected by the increase in conflict and other situations of armed violence in the country. Access to health services and social protection for the poor have also been limited by decades of violence, conflict and regional marginalization (*ibid*).

Conflict – immediate and past events – along with natural hazard-related disasters are all scenarios that pose a risk of weapons contamination (ICRC, 2012b). The rise of conflict and armed violence in several regions of the Philippines including Mindanao and the Sulu Archipelago suggest that “... landmines, explosive remnants of war, stockpiles, and small arms” and other weapons contamination may pose a threat to human and environmental health in the region (*ibid*). The International Committee of the Red Cross (ICRC) plays a leading role in tackling weapons contamination within the Red Cross Red Crescent Movement. Here, activities such as data gathering, risk reduction, risk education, surveying and clearance can be conducted in response to concerns about weapons contamination (ICRC, 2012a).

Climate change presents dynamic challenges for addressing the weapons contamination cycle. According to the ICRC, flooding and tsunamis might scatter mines and explosive ordnates (ICRC, 2012a) or displace land surveyance markers. Weapons contamination also impacts on human, animal and environmental health as chemical contaminants permeate the soil, water and food supply chains. Weapons contamination can ultimately cause reductions in biodiversity and changes to the wildlife population, which not only disturbs the food chain but affects several development sectors, such as human health and the economy (ICRC, 2012a).



## 2.6. Policy

Relevant information from the [Nationally Determined Contribution \(NDC\)](#) (2021)

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**Emissions reduction target:** Commitment of a projected greenhouse gas emissions reduction and avoidance of 75 per cent; largely conditional on international support. The sectors of agriculture, waste, industry, transport and energy are specifically targeted by these reductions.

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**Area of focus on adaptation:** Agriculture, forestry, coastal and marine ecosystems and biodiversity, health, and human security, as well as loss and damage.

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**Inclusion of DRR:** The adaptation objectives aim to be coherent with the Sustainable Development Goals and the Sendai Framework for Disaster Risk Reduction.

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**National designated entity:** Climate Change Commission.

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### Other national policies on climate

- The [National Climate Change Action Plan 2011–2028](#) is aligned with the National Disaster Risk Reduction and Management Plan and the Philippine Development Plan that seeks to address poverty, create employment and achieve inclusive growth (NICCDIES, n.d.). It focuses on seven areas: food security, water sufficiency, ecological and environmental stability, human security, climate-smart industries and services, sustainable energy, and knowledge and capacity development. The ‘human security’ element includes climate displacement and migration, noting that governments should create programmes and offer services to protect vulnerable groups (Climate Change Commission, n.d.).
- The **People’s Survival Fund** is a national adaptation fund established in 2012. It was set up to provide long-term finance for adaptation projects of local government units and local/ community organizations aimed at increasing the resilience of communities and ecosystems to climate change.
- The [Philippines country strategic plan 2024-2028](#), guided by Philippine Development Plan 2023–2028, the Bangsamoro Development Plan 2023-2028 and the Philippines 2024–2028 United Nations sustainable development cooperation framework, has an integrated approach addressing the intersections of climate change, conflict, food insecurity and malnutrition (EFP, 2024).

Diverse climate policies are also in place, including the **Climate Change Act** of 2009 and **Renewable Energy Act** of 2008.



## Climate finance

National Societies can explore options for accessing climate funds through smaller funds, such as the [GEF's Small Grants Programme](#) or the [FFEM's Small Scale Initiatives Program](#). These grants range from 20,000–50,000 US dollars and are intended to support community-level initiatives. The Global Environment Facility (GEF) Small Grants Programme sits under the United Nations Development Programme (UNDP) and has a [National Coordinator in each country](#). Other funding from bilateral donors, national climate funds, or multilateral climate funds like the Adaptation Fund, CREWS, or GCCA+ could be explored.

National Societies (NS) cannot apply directly for climate finance from the [Green Climate Fund \(GCF\)](#), but they can be an implementing partner for an accredited entity. NS can investigate national GCF projects that are being designed to help create partnerships.

Engaging in national climate adaptation planning is vital for accessing climate finance.

## Additional resources

Climate Centre. (2022). *Fact sheet on climate finance*. Red Cross Red Crescent Climate Centre. <https://www.climatecentre.org/wp-content/uploads/Fact-Sheet-on-Climate-Finance.pdf>

Climate Centre. (2022). *Entry points for National Societies on climate finance partnerships*. Red Cross Red Crescent Climate Centre. <https://www.climatecentre.org/wp-content/uploads/Entry-Points-for-Climate-Finance>

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