



# PHILIPPINES

## CLIMATE VULNERABILITY PROFILE



US Foreign Assistance: <sup>1</sup> (thousands USD)	Requested FY 2012	Requested FY 2013
Estimated total:	142,435	144,432
Adaptation:	12,500	10,500
Water:	2,047	1,500
Priority Adaptation Country in 2011:	YES	
Key Climate Stressors:	Heat, Flooding, Sea level rise	

## INTRODUCTION

The Philippines is an archipelago of 7,107 islands with a total population of about 91 million people. The country's territory includes both mountainous terrain and narrow coastal plains. The Philippines is one of the world's most biologically rich and diverse countries and has one of the world's longest coastlines. Over half of the Philippines population lives in urban areas. The services sector contributes more than half of overall Philippine economic output, followed by industry and agriculture. Many communities also depend on coastal ecosystems (fisheries, aquaculture, and related tourism) for their livelihoods.

## PROJECTED WEATHER AND CLIMATE CHANGES

The Philippine climate is characterized by relatively high temperatures, humidity, and abundant rainfall. Temperatures average around 25.5°C in the winter and around 28.3°C in the summer. During the summer months, rainfall is typically concentrated in the southwest portion of the country. During the winter months, the northeast portion of the country experiences an average of 20 monsoons and tropical cyclones per year.

**TEMPERATURE:** Average annual temperatures have increased by approximately 1°C since 1970 at an average rate of 0.3°C per decade. Sea surface temperatures in the surrounding waters have increased between 0.6°C and 1°C since 1910, with the most significant warming occurring after the 1970s. Temperatures are projected to increase by about 1.4°C by 2050 and 3.1°C by 2100 compared to the 1980-1999 base period.

**PRECIPITATION:** Rainfall projections are inconsistent across climate models. In addition to the uncertainty in projections, there are also significant regional variations. For example, increases in rainfall are projected for the Central Visayas and Southern Tagalog provinces, while decreases are projected for the Mindanao province. Furthermore, La Niña years bring wet periods and more storms, while El Niño causes prolonged dry periods. Recent evidence and model simulations suggest there may be more frequent drought conditions in the region.

**SEA LEVEL RISE:** Sea levels in the Philippines are projected to rise 23-47 cm by the end of the century (2090-2099). Actual sea level changes are projected to vary around the country due to differences in ocean circulation and density.

**EXTREME EVENTS:** Typhoons are common in the Philippines, with most occurring between June and December. These events are projected to intensify with rising sea surface temperatures. The heavy rainfall associated with these typhoons is projected to lead to more frequent and more

intense floods and landslides. Climate change projections also suggest that severe droughts associated with weather patterns (e.g., El Niño) may increase, which have implications for agricultural production such as reduction in crop yield and greater incidence of pests.

## KEY CLIMATE IMPACTS AND VULNERABILITIES

The Philippines' agricultural production and coastal infrastructure and ecosystems are particularly vulnerable to projected climate change impacts. Increasing temperatures combined with periods of heavy rainfall and drought will stress crop and fisheries production. Increased typhoons will inflict further damage on crop stocks. In addition, rising sea levels could contaminate freshwater ponds, lead to saltwater intrusion, inundate infrastructure, and affect aquaculture. Storms, sea level rise, and associated storm surge will affect a majority of the country's population, as 60 percent of municipalities and 10 of the country's largest cities are located on the coast. Due to this coastal concentration, significant amounts of infrastructure, livelihoods, and other assets are vulnerable to climate changes.

## KEY USAID PROGRAM VULNERABILITIES

**ENERGY AND ENVIRONMENT:** USAID's efforts in the Philippines in the energy and environment sector focus on four areas: forests, marine conservation, water, and renewable energy. All of these efforts integrate climate change to some degree. USAID works in target geographies for each of the program areas to maximize impacts and results. The program also focuses on advancing low emissions development strategies and improving climate resilience through adaptation activities.

To improve natural resources and environmental services, USAID addresses the continuing degradation of biodiversity and natural resources while also more deeply integrating climate change considerations into long-term planning. USAID also expands related key infrastructure and makes it more affordable, which increases access to fundamental services while proofing them against anticipated climate change impacts. Additionally, programs strengthen weak governance of natural resources, energy, and water and expand the benefits of sustainable natural resources management while confronting issues of overexploitation and undervaluation that reduce benefits in the long term. Furthermore, the programs increase the resilience of key energy and water infrastructure, environmental services, and already fragile ecosystems to natural disasters and climate change impacts. Finally, USAID is also working with the Philippines to develop a long-term plan to reduce its greenhouse gas emissions while considering population and economic growth.

<sup>1</sup> US foreign assistance includes both USAID and Department of State program funding, but in most cases the bulk of this funding is implemented through USAID. In order to have comparable figures in these categories, all country profiles use figures from the Congressional Budget Justification (CBJ) (see <http://transition.usaid.gov/performance/cbj/185016.pdf> and <http://transition.usaid.gov/performance/cbj/158269.pdf>). Between the time of the budget request and the 653(a) report to Congress, these figures can change significantly.

Projects under these areas will be vulnerable to the impacts of climate change. For example, USAID is promoting the adoption of clean energy sources, including small-scale solar and hydropower. Future climate patterns should be taken into account to ensure that these sources of energy are sustainable (e.g., water availability and/or variability could impact small-scale hydropower production). Further, the interaction between biofuels use and food security should be taken into account, given that future agricultural production may be reduced due to climate changes.

Climate changes will have a direct impact on environmental governance, which aims to improve governance of natural resources and conserve biodiversity. Climate changes threaten ecosystem health by changing conditions on which species depend. Changing temperature and precipitation patterns, as well as inundation from sea level rise and storm surge, could impact the distribution and abundance of species, change species' phenology, or make certain areas uninhabitable.

Finally, climate change could affect USAID's support of sanitation and water supply. For example, erratic rainfall patterns could stress water supply in many ways. Droughts could reduce water availability, while heavy rainfall events could increase contaminant loading in the water supply.

**ECONOMIC GROWTH:** In the Philippines, USAID supports economic reforms that sustain good fiscal performance and remove barriers to investment and competition. In addition, USAID supports the economic development of Mindanao through infrastructure projects and improved agribusiness competitiveness. USAID efforts in Mindanao are vulnerable to the impacts of climate change, since both agribusiness and infrastructure construction are vulnerable to climate patterns. For example, roads and ports can be affected by rising sea levels and storm surges, coastal erosion patterns, and heat stress. Likewise, agriculture can be affected by changing temperature and precipitation patterns.

**DEMOCRACY AND GOVERNANCE:** The USAID mission to the Philippines supports several efforts that are aimed at improving democracy and governance institutions and mitigating conflict situations. These programs focus on capacity building and technology adoption within institutions and local governments and by other stakeholders and communities. These programs do not currently appear to be directly vulnerable to the impacts of climate change. However, future climate stressors could exacerbate current governance and socio-economic issues and lead to conflict. For example, increased water stress due to droughts, forced relocation due to sea level rise, or increased poverty from reduced agriculture productivity could all contribute to conflict.

**HEALTH:** Currently, USAID programs in the Philippines focus on improving child and maternal health, family planning, tuberculosis, and HIV outcomes; expanding the role of private health service providers; promoting healthy behaviors and practices; and improving the policy environment for provision of health services. Climate changes could affect the distribution and abundance of food-, water- and vector-borne diseases with resulting infectious and diarrheal disease impacts. For example, a combination of higher temperatures and more rainfall in some areas may increase the incidence of dengue, encephalitis, or malaria cases. Climate changes could also affect agricultural production, which would increase the risk of malnutrition and affect maternal and child health.

**EDUCATION:** Much of USAID's education work in the Philippines is concentrated in the Mindanao region. Currently, USAID education programs support improvements in quality education for primary, post-secondary, and adult learners. Activities include teacher trainings, parent and community involvement in education, the return of out-of-school children and youth to school, provision of learning materials, teaching English proficiency for selected college and university students, and promoting adult literacy. Climate changes will impact education in terms of infrastructure, classroom and school furniture, and materials, including computers and other information technology equipment. For example, after recent disasters like tropical storm Ketsana/Ondoy and tropical storm Washi/Sendong, schools lost furniture and other school supplies.

**HUMANITARIAN ASSISTANCE:** The Philippines is vulnerable to both man-made and natural disasters. USAID's humanitarian assistance

programs are tailored to assist the country in times of need. USAID efforts have included early recovery of internally displaced persons, help with reconstruction, and disaster risk reduction. Climate changes could increase the frequency of typhoons and other extreme weather events, which could increase the need for humanitarian assistance and stress USAID efforts. In responding to disasters and providing reconstruction assistance, USAID provides seeds for grains and other crops, infrastructure construction support (of housing, schools, roads, etc.), and capacity building for disaster response officials. Climate changes could affect all of these activities. For example, USAID may need to shift the types of seeds provided to ensure the crops are viable given climate changes, ensure that construction efforts are located in less exposed zones, and that disaster response officials are equipped with better early warning systems.

## ACTIONS UNDERWAY<sup>2</sup>

Some of USAID's current programs already focus on adaptive responses to the impacts of climate changes. Specifically, USAID is taking into account the impacts of climate changes in the Environmental Governance focus area of their Energy and Environment programs. USAID supports the Coral Triangle Support Partnership and the Biodiversity Conservation Partnership, which are actively adapting to projected climate change impacts by designing strategies and conserving critical ecosystems through better governance. In addition to USAID and the Philippine Government, other organizations such as the World Bank, GIZ, and UN-Habitat are actively involved in adaptation efforts.

## CHALLENGES TO ADAPTATION

Challenges to adaptation in the Philippines can be divided into three main areas: research, institutional coordination, and data and information. Research gaps include the need for improved sub-national information about the impacts of climate changes on agricultural production, as well as detailed climate change risk assessments for water and coastal resources. Institutionally, coordination among donors, agencies, and other relevant institutions is difficult but crucial for synergistic action on disaster response and disaster risk reduction more generally. Lastly, improving the country's meteorological services, mapping hazards and vulnerabilities, and downscaling climate information to individual islands have all been cited as necessary to building climate resiliency.

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## RESOURCES

Philippine Atmospheric, Geophysical & Astronomical Services Administration, 2012. Climate of the Philippines. Accessed 4/26/2012. <http://kidlat.pagasa.dost.gov.ph/cab/climate.htm>

USAID, 2012. Philippines Country Page. Accessed 4/26/2012. <http://philippines.usaid.gov/>

World Bank, 2012. Philippines Dashboard. Accessed 4/26/2012. [http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country\\_profile&CCcode=PHL](http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country_profile&CCcode=PHL)

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<sup>2</sup> Actions underway include those from direct adaptation funds and indirectly attributed funds. More information on U.S. climate finance can be found at <http://www.state.gov/e/oes/climate/faststart/index.htm>.