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PHILIPPINES

Disaster Management Reference Handbook

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Front Cover

Views from Fort Santiago. Photo by Michael Buillerey on Unsplash. https://unsplash.com/photos/KwgEwVEsao8

Disclaimer

This handbook has been prepared in good faith based on resources available at the time of publication. Information was gathered from the public domain, from local and government sources, as well as from subject matter experts. Where possible, a link to the original electronic source is provided in the endnote (reference) section at the end of the document. While making every attempt to ensure the information is relevant and accurate, the Center for Excellence in Disaster Management and Humanitarian Assistance (CFE-DM) does not guarantee or warrant the accuracy, reliability, completeness, or currency of the information in this publication. Each handbook is a working document and will be updated periodically as new and significant information becomes available. We hope that you find these handbooks informative, relevant, reliable, and useful in understanding disaster management and response. We welcome and appreciate your feedback to improve this document and help fill any gaps to enhance its future utility. For feedback, comments, or to request a printed copy please email cfe.dmha.fct@pacom.mil. Please visit our website to download copies of this publication and other products (https://www.cfe-dmha.org). All parts of this publication may be reproduced, stored in retrieval systems, and transmitted by any means without the written permission of the publisher.

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Letter from the Director

The Philippines frequently endures significant disasters and has increasingly developed disaster management capabilities at the national and local levels. However, it still periodically experiences disasters of such a scale to require international support to national first responders. Regular typhoons, earthquakes, volcanic eruptions, storm surges, flooding, and landslides are now being exacerbated by the impacts of climate change that threaten the Philippine people and their livelihoods. Thus, it is highly probable that the country will experience a large-scale disaster in the coming years, even as it confronts long-term challenges whose solutions require international cooperation and collaboration.

A network of global, regional, and bilateral partnerships allows the Philippines to call upon various agencies and organizations in times of calamity and to help in developing structures and practices that promote climate change adaptation. UN agencies are present in the country and participate in the Philippines own cluster system to coordinate large-scale disaster responses. In addition, as a member-state of the Association of Southeast Asian Nations (ASEAN), the Philippines has the opportunity to contribute to and benefit from Southeast Asian states' pooled expertise and resources during emergencies. Finally, Manila has built strong ties across the region and around the world to ensure that it can call upon partners with whom it has rehearsed disaster relief. Among these last partners are the U.S. government and armed forces.

The Armed Forces of the Philippines (AFP) is a primary responder to disasters and have been deployed frequently to several disaster relief operations in the country in recent years. The AFP regularly works with U.S. forces to conduct military training exercises focused on a variety of missions, including disaster relief, humanitarian assistance, and counterterrorism. Beyond incorporating humanitarian assistance and disaster relief into exercises such as Balikatan, PHIBLEX, Pacific Responder, Pacific Partnership, and others, the 2014 Enhanced Defense Cooperation Agreement allows the two countries and their militaries to build infrastructure and pre-position equipment and supplies to facilitate emergency response. This robust partnership demonstrates U.S. commitment to aiding the Philippines in saving lives, and it underscores the need for U.S. military members and civilian agencies to be prepared for disaster relief.

This Philippines Disaster Management Reference Handbook offers an operational understanding of both the country's disaster management capability and information on demographics, hazards, infrastructure, laws and guidelines, risks and vulnerabilities, and other areas vital to a comprehensive disaster management knowledge base. It is hoped that individuals and organizations planning for or executing a disaster response operation in the Philippines will benefit from this information to support the country's responders and affected communities in their times of need.

Sincerely,



Joseph D. Martin, SES
Director

About the Center for Excellence in Disaster Management & Humanitarian Assistance

Overview

The Center for Excellence in Disaster Management and Humanitarian Assistance (CFE-DM) is a United States (U.S.) Department of Defense (DoD) organization comprised of nearly 30 subject matter experts that provide academic research, civil-military coordination training, and operational insights to support decision making before, during, and after crises. The Center is designed to bridge understanding between humanitarians, civilian, and military responders. CFE-DM partners with a diverse group of governmental and nongovernmental actors, as well as academic institutions to increase collaborations and capabilities in humanitarian assistance and disaster response. While maintaining a global mandate, the Indo-Pacific region is our priority of effort and collaboration is the cornerstone of our operational practice. The Center is a direct reporting unit to U.S. Indo-Pacific Command (USINDOPACOM) and is located on Ford Island, Joint Base Pearl Harbor-Hickam, Hawaii.

Vision

The Joint Force, allies, and partners are fully prepared to conduct and support foreign humanitarian assistance.

Mission

CFE-DM builds crisis response capacity, enhances coordination and collaboration, and strengthens relationships to save lives and alleviate human suffering before, during, and after humanitarian crises.

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EXECUTIVE SUMMARY

The Philippines' location on the "Pacific Ring of Fire" and along the Pacific typhoon belt mean that the country experiences many forms of natural disasters such as typhoons, earthquakes, floods, volcanic eruptions, landslides, and fires. The devastation of Typhoon Haiyan in 2013 spurred the Philippines to further develop its disaster management structures and resources by improving communication and institutionalizing roles and responsibilities for national and international players. Thus, more recent floods, typhoons, and landslides have seen improved communication and coordination that mitigated impacts on lives and livelihoods.

Such mitigation is crucial to the Philippines' economic and social recovery in the wake of the Coronavirus Disease – 2019 (COVID-19) pandemic. Pre-pandemic, the Philippines boasted one of the region's most dynamic economies. It was driven by consumer demand, a strong labor market, and remittances from overseas, all supported by the trends of a growing middle class, increasing urbanization, and demographics. The Philippines sustained an average annual Gross Domestic Product (GDP) growth rate of 4.5% during 2000-2009, and this rate increased to an average of 6.4% during 2010-2019.[1] The country was on a trajectory toward upper middle-income status, but the economic setback of the pandemic likely means the country will maintain a lower middle-income classification. The pandemic and community quarantine measures have led to declines across consumption, investment, exports, tourism, and remittances, and the consequences are likely to be long-lasting, particularly for the 16.6% of people who were in poverty before the pandemic.[2]

In addition to poverty and the knock-on effects of the pandemic, the country's people are already confronting climate change impacts, including sea level rise, increased frequency of extreme weather events, rising temperatures, and heavy rainfall. In part, this is due to the archipelago's vulnerability to natural hazards and concentrations of settlements in coastal areas, but it is also linked to reliance on climate-sensitive natural resources. Sea levels around the Philippines are rising faster than the global average, posing a greater risk of higher storm surges, which are expected to affect 14% of the population and 42% of coastal residents. Informal settlements, which comprise 45% of the urban population, are particularly at risk due to precarious infrastructure and will be vulnerable to negative impacts due to limited access to clean water and a lack of health care access.

As a result of both natural hazards and climate change, society has developed strategies and mitigation mechanisms that have buy-in at the highest levels of national government. Until recently, the country had focused on disaster management policy, but the past decade has seen greater integration of disaster risk management and climate change adaptation into the National Disaster Risk Reduction and Management Framework.[3] The Philippine Congress enacted the National Disaster Risk Reduction and Management Act in 2010 to establish a multi-level disaster risk management system. Moreover, the Philippine Government is putting significant thought into developing resilient infrastructure to allow communities to recover swiftly. Finally, investing in green infrastructure is a priority as the government seeks to meet climate commitments.

All the preparedness in the world will not stop disasters from striking, and in major natural disasters, the Philippines may accept international assistance. The country has developed structures and institutions to screen and expedite entry of international humanitarian teams, equipment, and donations. Coordination includes not only national, provincial, and local government civilians, but also the armed forces and police as well as international agencies.[4] Finally, the U.S. government and armed forces have historically been involved in disaster response in the Philippines and, via the 2014 Enhanced Defense Cooperation Agreement (EDCA), they have been able to advance relations on humanitarian assistance and disaster response (HADR).[5]

COUNTRY OVERVIEW

History

The oldest discovered inhabitants of the modern Philippines' territory date back 47,000 years, although additional evidence suggests early humans may have been in the islands as far back as 709,000 years ago.[6] The dominant ethnic and linguistic Malay influences arrived via several waves of migration between 100 and 1,000 Common Era (CE), during which time the Chinese were the first foreigners to trade with the islands. While animists of Malay origin were predominant in Luzon or Visayas a millennium ago, migrants from Brunei brought Islam to the southern regions of Mindanao and Sulu. A significant cultural influence from South Asia was a Sanskrit-based writing system carried to the islands by Indonesian empires during the 7th–16th centuries CE, leading to baybayin and other scripts indigenous to the Philippines. However, the cultural influences of East and South Asia were limited compared to elsewhere in Southeast Asia, as the archipelago never adopted Buddhism or Hinduism. Different from the rest of Southeast Asia in another way, the Philippines endured Western colonization before a dominant culture or central government consolidated to rule over the territory.

The Philippines was named for King Phillip II of Spain by Spanish explorer Ruy Lopez de Villalobos, who visited some of the islands in 1543 CE, though he was preceded by other Spanish fleets like that led by Ferdinand Magellan, who visited in 1521.[7] The 1546 fleet dispatched by King Phillip II to colonize and convert people to Catholicism was led by Miguel Lopez de Legazpi, who subdued various areas by force including, ultimately, Manila. In 1565 Legazpi, who was appointed by King Phillip II as the first Governor-General, declared Manila as the capital. Spanish rule weakened toward the end of the 19th century, as nationalists who had studied overseas, mostly in Europe, began to emerge in resistance. This movement was epitomized by Dr. José Rizal, a medical doctor, poet, and novelist who established the Liga Filipina as a reform-oriented society in 1892 before he was executed by the Spanish in 1896. After Rizal's 1892 arrest, activists formed the Katipunan, dedicated to expelling the Spanish and prepared for armed revolution.[8] The Philippine Revolution (1896-1897) started after the Spanish found out about the Katipunan, and the resistance leaders were compelled to act. In April 1898, the short-lived Spanish-American war started in Cuba between the U.S. and Spain but would eventually draw in the Philippines, still a Spanish colony. The war ended in August 1898 with an American victory that resulted in the U.S. acquiring the Philippines from Spain. During the war, the Revolutionary Government of the Philippines was founded in June 1898 but lasted less than a year. In January 1899 the Malolos Constitution established the First Philippine Republic, the "Malolos Republic," which endured until 1901. The Philippine-American War started in February 1899 and lasted until July 1902. The United States prevailed and colonized the islands until 1935, when the Philippines became a self-governing commonwealth. However, during World War II, the archipelago fell under Japanese occupation in 1942, and U.S. and Filipino forces fought together in 1944-1945 to regain control. On 4 July 1946, the Philippines attained independence, and Manuel Roxas of the Nationalist Party was inaugurated as the first President of the Republic of the Philippines.[9]

In 1965, the charismatic Ferdinand Marcos was elected to the Presidency under the slogan "this nation can be great again." By 1970, a wave of protests occurred across Manila, spurred by poverty, inflation, poor public funding, and corruption. The killing of several demonstrators by police outside the presidential palace stained Marcos' image. He declared martial law in 1972, citing left-leaning student groups and the communist New People's Army. Martial law also had the effect of allowing Marcos to stay in

power beyond the constitutionally allowed two terms and protect his business interests. Under martial law, the press was censored, curfew was imposed, international travel banned, and tens of thousands of Marcos' opponents were jailed, exiled, or killed. Martial law was lifted in 1981, and Marcos' expulsion was brought about by the People Power movement.

People Power started in Manila in February 1986, following the assassination of the very popular opposition politician Ninoy Aquino. Millions of people marched in the street against the Marcos regime, leading Marcos to call for a snap election on 7 February 1986. Marcos won against Ninoy Aquino's widow, Corazon Aquino, but she was widely perceived as having been cheated of victory, which was given credence by an international observer delegation.[10] The People Power movement also became known as EDSA1, after millions of people gathered on 26 February along Epifanio de los Santos Avenue (EDSA) in protest after the elections. The U.S. counseled President Marcos to resign, and Ferdinand and Imelda Marcos boarded a U.S. plane and flew to Hawaii to live in exile.

Corazon Aquino's presidency experienced several attempted coups that prevented a return to full political stability and economic development. In 1992, Fidel Ramos was elected president, and his administration is credited with increased stability for renewing international confidence in the Philippine economy. Also in 1992, the U.S. closed its last military bases in the country. In 1998, Joseph Estrada, former film actor, was elected president, but his term ended under a cloud after corruption allegations led to an aborted impeachment trial. Amid street protests demanding he step down, dubbed the second People Power movement (EDSA 2), Estrada resigned on 20 January 2001. His vice-president, Gloria Macapagal-Arroyo, was sworn in as president, and she won re-election in May 2004. Her administration was marred by several corruption allegations, but the Philippine economy expanded each year of her administration and was one of the few economies to avoid contraction in the wake the 2008 global financial crisis. Benigno "Noynoy" Aquino III, a former People Power pro-democracy leader, was elected as president in May 2010, following the death the previous year of his mother, Corazon Aquino. The economy continued to grow under his presidency, although he also faced criticism for lack of infrastructure improvement and for instituting the Disbursement Acceleration Program to fast-track a stimulus package by bypassing the legislature in a potentially unconstitutional way. His administration is also noteworthy for pushing back against China's territorial claims and bringing a case before the Permanent Court of Arbitration in The Hague against China's claim to most of the South China Sea. The court ruled in the Philippines' favor in July 2016, just months after Aquino left office, though China rejected the ruling. Aquino was succeeded in May 2016 by Rodrigo Duterte, who was elected on promises to end corruption and crime and to improve relations with China. He carried out a war on drugs, which has led to the deaths of more than 12,000 Filipinos, primarily urban poor. The campaign has drawn international criticism for the extrajudicial violence, including from the UN[11] and Human Rights Watch.[12] His administration also faced criticism for COVID-19 policies that did not balance economic needs, given the heavy use of widespread enhanced community quarantine (ECQ) and low vaccination rates.[13]

The government faces threats from several groups, some of which are on the U.S. Government's foreign terrorist organization list. The Philippines also deals with the influence of the Islamic State of Iraq and Syria (ISIS), which works with Abu Sayyaf, Maute group, and other local jihadist groups. Notably, in 2017, the Philippine armed forces battled an ISIS-Philippines siege in Marawi City from May to October. More than 900 rebel fighters, 165 soldiers and police officers, and 47 civilians were killed,[14] and at least 200,000 residents were displaced.[15]

Manila has waged a decades-long struggle against ethnic Moro insurgencies in the southern Philippines. A peace agreement was signed with

the Moro National Liberation Front (MNLF) in 1996 that also created the Autonomous Region in Muslim Mindanao (ARMM). In 2013, the Nur Misuari faction of the MNLF declared independence for the Bangsamoro Republik, a short-lived breakaway state, in the Zamboanga crisis. Peace talks with a different group, the Moro Islamic Liberation Front (MILF), stalled in 2008, but in 2014 a peace agreement was signed, which paved the way for the creation of an autonomous Bangsamoro region. In 2019, in a culmination of years of peace talks with several groups, the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) was formalized, replacing the ARMM. Peace talks have not panned out with another group, the New People's Army (NPA), the armed wing of the Communist Party of the Philippines (CPP), which has engaged in protracted armed rebellion for decades. In 2017, President Duterte proclaimed the CPP-NPA a terrorist group,[16] and in 2019 he permanently ended peace talks with them.[17]

Culture and Demographics

Philippine society is diverse in many ways, and it is unique in the region. While geographically part of Southeast Asia, the country has strong Euro-American influences, due to more than three centuries of Spanish colonization, followed by half a century of American colonization. Hispanic influences are evident in traditional Philippine folk music, folk dance, language, food, art, and religion.

Pre-colonial Philippines had indigenous written scripts. The most prominent is Baybayin, a script containing 17 symbols and believed to be one of the Asian indigenous alphabets that originated from India's Sanskrit. Baybayin was widespread in the 16th century among coastal groups, including the Tagalog, Bisaya, Iloko, Pangasinan, Bikol, and Pampanga. The biggest collection of surviving ancient Baybayin writings resides in the archives of the University of Santo Tomas, in Manila. There has been a resurgence of interest in learning Baybayin and tracing Filipino roots, to the extent it has been proposed as a national writing system. However, it was only one of at least 16 written scripts present in pre-colonial times. Two other places in the Philippines that have preserved ancient scripts are Mindoro, where the Hanunóʻo-Mangyan and Buhid-Mangyan people refer to their scripts as Surat Mangyan, and Palawan, where the Tagbanua and Pala'wan groups shared a writing system they called Surat.[18] Other known pre-colonial scripts include the Basahan script of the Bicolanos, Badlit of the Visayans, Kurdita of the Ilocanos, Kulitan of the Kapampangans, and Jawi of the Tausugs.[19]

Several Asian ethnic groups, particularly the Chinese and Japanese, have settled in the Philippines since the colonial period, and their influences can be seen in the popularity of mahjong, jueteng, Filipino martial arts, and a variety of cuisine.[20]

As in many societies, family relationships are the basic building block of Philippine culture. Daily life generally revolves around the extended family, including parents, grandparents, aunts, uncles, cousins (up to several times removed), and others. Godparents, to whom care of children is entrusted should the parents die or be incapacitated, figure prominently in the kinship network of Catholic families. Extended families often gather for major religious and national holidays, and major life events including marriages, baptisms, and confirmations (for Catholic Filipinos), and circumcisions (for Muslim Filipinos).[21]

There is a rich tradition in local and regional lore, which encompass mythology covering the origin of the world, the first man and woman on earth, why the sky is high, why the sea is salty, and tales associated with Spanish colonization.

The flag of the Philippines is full of cultural and historical symbolism, having been designated by Republic Act No. 8491 to be "blue, white, and red with an eight-rayed golden-yellow sun and three five-pointed stars, as consecrated and honored by the people," as depicted in Figure 1.[22] The white triangle signifies the emblem of the Society of the Katipunan, which was formed

in 1892 on the night that revolutionary José Rizal was sentenced to exile with the society starting the Philippine Revolution in 1896. The three stars represent the three principal islands in the Philippine Archipelago – Luzon, Mindanao, and Panay. The sun's eight rays stand for the eight provinces that initiated the revolution – Manila, Cavite, Bulacan, Pampanga, Nueva Ecija, Bataan, Laguna, and Batangas.[23] The colors of blue, red, and white historically reflect the influence of the United States, as cited in the proclamation of independence.[24]

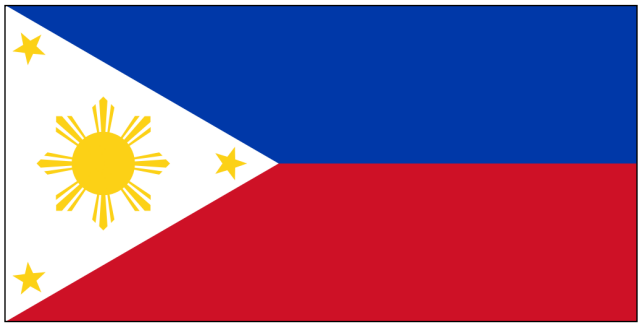


Figure 1: National Flag of the Philippines

Ethnic Makeup

The ethnic composition of the Philippines is 28% Tagalog, 13% Cebuano, 9% Ilocano, 8% Bisaya, 8% Hiligaynon, 6% Bikol, 3% Waray, and 25% other ethnic groups.[25] The majority of Filipinos are ethnically related to Malaysians and Indonesians, with substantial Chinese heritage mixed in, as well as some lingering colonial Spanish and U.S. heritage legacies.

There are around 100 cultural minority groups throughout the country, depending on how groups are delineated. Ethnic minorities can generally be categorized into three main groups, Negrito, Igorot, and Manobo. The Negritos are widely considered to be the aboriginal inhabitants of the islands. Comprised of approximately 25 scattered ethnolinguistic groups, population estimates for Negritos range from 15,000 to 35,000 people. They reside on several major islands, including Luzon, Palawan, Panay, Negros, Cebu, and Mindanao. Their religion is often animistic, with some Catholic influence. The population of the Negritos has declined drastically since the early Hispanic period of the 1600s and continues declining today due to encroachment by outsiders, deforestation, depletion of their traditional game resources, poverty, and disease.[26] "Igorot" is the general collective name for mountain-dwelling tribes, primarily located in the Cordillera region of northern Luzon. The Igorot include the Apayao (or Isneg), Kalinga, Ifugao, Benguet, Bontoc, and Tingguian (or Itneg). Many of the Igorot are known for rice-terrace farming.[27] The Manobo generally describes the major indigenous groups of Mindanao, of which the Badjao, Maguindanao, Maranao (or Maranaw), Tausag (or Tausug), and Samal identify themselves as Muslim. Non-Muslim indigenous groups of Mindanao include the Bukidnon, Bagobo, Mandaya, Mansaka, and other peoples.[28]

Key Population Centers

One-third of the country's population resides in the Metro Manila area, which is comprised of 17 cities and municipalities organized into four districts. The 1st District is the National Capital Region of Manila. The 2nd District (Eastern Manila District) consists of Mandaluyong, Marikina, Pasig, Quezon City, and San Juan. The 3rd District (Camanava District) contains Caloocan, Malabon, Navotas, and Valenzuela. The 4th District (Southern Manila District) encompasses Las Piñas, Makati, Muntinlupa, Parañaque, Pasay, Pateros, and Taguig. The population for the entire Metro Manila region is more than 13.4 million people.

When considering separate cities, several of the biggest cities by population are in the Metro Manila area. Quezon City is the most populous in the country with over 2.9 million people; it was the national capital from 1948 to 1976 and remains a notable educational, cultural, and entertainment center. Next is the capital, Manila, with more than 46,178 persons per square kilometer.[29] As the national capital, Manila also serves as the political, economic, educational, and ecclesiastical center of the Philippines. The next most populous city is Davao City with over 1.6 million people, and serves as the main industry, commerce, and trade hub of Mindanao.

Davao City is a high-income city and the largest city by land size, with more than 2,442 square kilometers (943 square miles), giving it a lower population density than other cities in the Philippines. Next is Caloocan, in Metro Manila's 3rd District, with more than 1.5 million people. Significant cities with less than one million people include Cebu, Zamboanga City, Taguig, Pasig, Cagayan de Oro City, and Parañaque.[30]

Language

The national language of the Philippines is Filipino, which is structurally based on Tagalog.[31] The country has two official languages, Filipino and English,[32] both mandated in the 1987 constitution as official languages of instruction and communication. English is widely spoken throughout the country to the extent that the Philippines is considered one of the biggest English-speaking countries worldwide, with most of its people possessing at least some degree of fluency in it.[33]

The Philippines is one of the most linguistically diverse countries in the world. Estimates vary regarding the number of languages spoken due to how related languages and dialects may be differently categorized. Low estimates are that the Philippines has around 140 different languages,[34] while high estimates approximate more than 500 dialects across 80 language groups.[35] Ten languages account for over 90% of what Filipino people speak at home. These are Tagalog, Bisaya, Cebuano, Ilocano, Hiligaynon Ilonggo, Bikol (or Bicol), Waray, Maguindanao, Kapampangan, and Pangasinan, most of which are indigenous languages belonging to the Austronesian language family.[36]

Religion

The religious composition of the country is 83% Catholic, 5% Muslim, 4% non-Catholic Christians, 2% Iglesia ni Cristo (a homegrown, independent, non-trinitarian Christian church),[37] and 6% other religious beliefs. The Constitution of the Philippines formalizes the separation of church and state, although the majority religion, Catholicism, has influence over politics at the national and local levels.[38] The Philippines is the only predominately Christian country in Asia, a legacy of Spanish colonialism.

Approximately 86% of the population identifies as Roman Catholic. The Chinese minority has been culturally significant in influencing Filipino Catholicism with various beliefs and practices of Buddhism, Taoism, and Confucianism. An additional 6% is associated with national Christian cults, and 2% belong to an estimated 100 Protestant denominations. Roughly 4% of the population identifies as Muslim. The Filipino Muslim population is mostly located on the southern islands of Mindanao, Sulu, and Southern Palawan. The residual 2% identify with non-Western, indigenous beliefs and practices and are predominately located in isolated, rugged regions.

Vulnerable Groups

This is not an exhaustive list of vulnerable groups but, rather, a trigger to consider heightened social vulnerability, particularly to disaster risks, in the context of the Philippines. These categories also overlap in ways that increase vulnerabilities. The most effective way to increase protection for vulnerable people is to increase their participation in decision-making processes that affect them.

Displaced

Displaced persons have a higher degree of vulnerability, including to the impacts of disasters. Displaced persons, especially those displaced for an extended period, face major challenges. Hardships include securing safe, durable housing, access to basic services such as education, and generating income as areas of displacement often lack livelihood opportunities.

People are usually displaced because of three things: 1) disasters, 2) conflict, and 3) development projects. Displacement due to disasters is often temporary, with the majority of people sheltering with family and relatives and a minority in evacuation centers until the hazard has passed. In 2020, as a result of disasters,

there were 145,000 internally displaced persons (IDP), and 4,439,000 displacements (number of movements, not people, as individuals can be displaced several times). During the same year, because of conflict, there were 153,000 IDPs and 111,000 displacements. The conflict-related displacements disproportionately occurred in the southern region of Mindanao, which has been affected by instability for decades, with thousands of IDPs living in a protracted displacement situation. The number of disaster-induced displacements is high at over 4.4 million, the second-highest national figure after China. It is important to note that a large portion of displacements are pre-emptive evacuations ahead of an anticipated disaster.[39]

The Philippines also has many informal settlers displaced by development or urbanization, especially around urban areas. From the 1970s, estimates of informal settlers have varied, from 470,000 families to 2.5 million families.[40] Growth in Manila attracts migrants from rural areas looking for better jobs. But as urbanization and development outpace city planning, rural migrants are unable to afford safe housing, and informally settle in higher-risk zones. The precarity of their shelter situation not only exposes them to more environmental hazards, but also makes them less able to prepare for and mitigate against disasters.[41] Among the National Capital Region's 13 million residents, an estimated 20-35% live in informal settlements, often going through a cycle of eviction or displacement and relocation.[42] However, the issue is not confined to the capital region. Informal settlements outside Manila include those in Butuan City, which typify the difficult problem of the urban poor securing housing and services.[43]

Women

Women and girls are vulnerable to gender-based violence in the Philippines at a higher rate than the global average. An estimated 20% of women and girls aged 15-49 years of age experienced violence at least once in their lifetime, with the most common perpetrator being a current or most recent partner. COVID-19 has increased economic and social pressures, rendering women and girls more vulnerable. There has been a global surge in violence against women during the pandemic, including in the Philippines. Lockdown and quarantines trapped women and girls with abusive partners and family members, while supportive survivor services such as women's shelters were reduced. Despite Government efforts to respond to violence against women and girls and continue providing survivor services, support has been disrupted to survivors of gender-based violence, including access to protection and justice mechanisms. Women's groups have pointed out that transportation restrictions, under the COVID-19 ECQ, have reduced options for women seeking protection or support. The Commission on Human Rights and women's groups have noted concerns over underreporting and monitoring of gender-based violence cases during COVID-19, as women are prevented from leaving the home.

Women are also disproportionately affected economically and have less capacity to absorb the financial shocks associated with COVID-19. With 6.6 million women working in the informal sector, they comprise a disproportionate part of the nation's informal economy. Work in the informal sector has less earning capacity and job security, leading to reduced savings and safety nets. Informal workers also have little access to labor protections, including sick leave or protections against dismissal. Furthermore, livelihoods based on informal work often depend on public spaces and social interactions, restricted due to COVID-19 limits on movement.[44]

Children

The Philippines' population skews toward a younger demographic. Almost 40% of the population was under 18 years of age in 2010. Children are among the most vulnerable during disasters and emergencies. Children comprise approximately 60% of those most likely to be affected by disasters, per Lotta Sylwander,

United Nations Children's Fund (UNICEF) representative to the Philippines. Children will be the ones most likely to perish in the event of a 7.2 magnitude earthquake striking Metro Manila (a scenario increasingly incorporated into Philippines' disaster planning), according to Renato Solidum Jr., Department of Science and Technology (DOST) Undersecretary for disaster risk reduction.[45]

Poor

The poor are especially vulnerable to natural disasters. A greater incidence of high-intensity typhoons is linked to more than double the risk of impoverishment, as opposed to a permanent escape from poverty. The immediate effects of these disasters are evident in infrastructure and housing damage while the long-term impacts on education and livelihoods may be less visible up front but can impact wellbeing long after the disaster passes. For households who escape but fall back into poverty, health shocks are the main reason cited, with an increase in health spending associated with a higher risk of impoverishment. Household strategies for permanently escaping poverty focus on social capital, which is instrumental in initially escaping poverty. Families without supportive networks are often amongst the most vulnerable. There are many intersecting variables involved, but the role of social capital and health alone show how destructive disasters can be when displacing impoverished populations.[46]

About 17% of the Philippines' population lives below the national poverty line.[47] Development challenges contributing to poverty include increased frequency and intensity of natural disasters, inadequate natural resource management, armed conflict in Mindanao, inadequate education and health services, and weak governance.

Disabled Persons

About 15% of the world's population is thought to have some form of disability, and for these people long-term physical, mental, or sensory impairments hinder effective and equal participation in society. The 2010 Philippines census reported that 1.57% of the household population of 92.1 million, or 1.443 million Filipinos had a disability,[48] which may indicate an undercount. Localized studies have found higher prevalence of disability, including 6.8% in Quezon City and 13.6% in Ligao City. People living with disabilities had lower well-being scores and less access to health services, work, rehabilitation, education, government social welfare, and disaster management.[49] About 5.1 million Filipino children with disabilities are the most vulnerable sector during major disasters. "Every emergency affects them, more so they lose their lives, because they can't get away. They get malnourished during a protracted emergency and get unhealthy from poor water and sanitation conditions. They also are unable to access schooling and that psycho-social stress is also a serious factor for children in any emergency," said UNICEF representative to the Philippines Lotta Sylwander.[50]

The Women's Refugee Commission reported that women, children, and persons with disabilities were the most vulnerable to Typhoon Haiyan,[51] and that the top ten critical needs to consider in typhoon and other disaster response are:

1. Ensure displaced persons are settled in a safe place
2. Provide safe access to basic needs, including food, safe and appropriate cooking fuel, potable water, sanitation, and shelter
3. Communicate with the people most affected and ensure their safety whether or not they have legal status or official documents, and ensure every adult is provided with individual documentation that allows access key services
4. Provide life-saving health care, including reproductive health care, and ensure there are enough health workers and all necessary medicines and supplies to prevent and respond to infectious diseases and other health needs; establish priority reproductive health services for women and girls

5. Prevent and respond to sexual violence; protect women and children from sexual violence by ensuring safe access to food, cooking fuel, water, latrines, and other basic necessities; offer medical services and psychosocial support to survivors of sexual violence
6. Reduce the transmission of HIV; enforce use of infection control measures by health workers; make condoms freely available; and ensure blood for transfusion is safe by screening it for HIV and other blood-borne diseases
7. Prevent excess maternal and newborn mortality and morbidity; provide skilled birth attendants for normal births; manage obstetric complications at health facilities; establish 24-hour emergency referral system; provide contraceptives to meet demands; provide clean delivery kits to all visibly pregnant women
8. Identify vulnerable individuals with specific needs, such as unaccompanied minors, child- or women-headed households, pregnant women, victims of trafficking and persons with disabilities; secure their care and physical security; monitor, report, and respond to violations against children
9. Provide education to children and young people; offer structure for children and restore hope and a sense of normalcy in a safe, adult-supervised space; teach basic literacy and numeracy skills and provide vocational training for young people
10. Provide economic opportunities and preserve existing economic assets; build on refugees' skills, taking into account local market needs, to provide the best chance for a sustainable income; protect women and girls from sexual exploitation by providing them with economic opportunities.[52]

Economics

The Philippine economy prior to COVID-19 was among the most dynamic economies in East Asia and the Pacific, driven by consumer demand, a strong labor market, and remittances from overseas. This was supported by the trends of a growing middle class, increasing urbanization, and a large population that skewed younger. Strong consumer demand is supported by remittances from the large population of Overseas Filipino Workers (OFW) who reside in other countries for employment. Personal remittances received in the Philippines have comprised 9-12% of GDP in the last two decades.[53]

Major sectors of the economy include agriculture, services, and industry. The industrial sector is concentrated around urban metro Manila, with industrial production focused on food processing, tobacco, rubber products, textiles, clothing and footwear, pharmaceuticals, paints, plywood and veneer, paper and paper products, small appliances, electronics, and automobile parts. Heavier industries include the production of cement, glass, industrial chemicals, fertilizers, iron and steel, and refined petroleum products. Arable farmland accounts for more than 40% of the total land area, though agricultural productivity gains have been limited by infrastructure constraints and lack of financing. The agricultural sector employs almost 40% of the work force but provides less than 20% of GDP. Mining has additional economic potential, as the Philippines possesses reserves of chromite, nickel, and copper. Discoveries of natural gas off the islands of Palawan have added to the country's geothermal, hydro, and coal energy reserves.[54]

The Philippines sustained an average annual GDP growth rate of 4.5% during 2000-2009, a number that increased to an average of 6.4% during 2010-2019, with drivers of growth including private consumption, investment, and services.[55] The national economy had previously resurged from 2010 to 2016 under former president Benigno Aquino, whose policies prioritized sustainable growth, pursued graft and tax evaders, and increased transparency and accountability. While economic growth stalled somewhat under the Duterte administration, there were still many positive indicators, including the strong performance of the services

industry, which included business process outsourcing, real estate, tourism, and the banking and insurance industries.[56] The country had been on a trajectory to be considered an upper middle-income economy, though with the economic setback of the COVID-19 pandemic, it is currently maintaining a lower middle-income classification. In 2020, the country's gross national income (GNI) per capita went down by 11%, from $3,850 to $3,430, falling within the income bracket for lower middle-income economies of $1,046 - $4,095 GNI per capita.[57] The pandemic and community quarantine measures have challenged real economic growth, which contracted significantly in 2020, driven by declines across consumption, investment growth, exports, tourism, and remittances.

Economic health prior to the COVID-19 crisis was mixed. Strengths included the decline of poverty from 23.3% in 2015 to 16.6% in 2018.[58] Challenges included increasing public dept burdens and corruption. Manila's ranking declined 14 places in Transparency International's 2019 index, which scores and ranks perceived levels of public sector corruption. It decreased another two places in the 2020 index to 115 out of 180 countries, despite holding the same score of 34% (with the highest any country scoring being 88%).[59] The Philippine economy is anticipated to experience one of the more challenging recoveries in Asia from a COVID-19 pandemic-induced recession,[60] attributed to a variety of reasons including less fiscal stimulus, lower vaccination rates, and tighter COVID-19 lockdowns.[61] Following a GDP contraction of more than 9% in 2020, external analyses[62] project the Philippine economy to rebound with GDP growth ranging from 4.5-4.7% in 2021, and 5.5-6.2% in 2022.[63]

Government

The Republic of the Philippines is a presidential republic, whereby the president is both head of state and head of government. The government is comprised of three separate yet interdependent branches – the legislative branch (the law-making body), the executive branch (the law-enforcing body), and the judicial branch (the law-interpreting body). Executive power is exercised by the government under the leadership of the president.[64] The Cabinet is appointed by the president with the consent of the Commission of Appointments, an independent body of 25 Congressional members including the Senate president (ex officio chairman), appointed by the president. The president and vice-president are directly elected on separate ballots by simple majority popular vote for a single 6-year term. President Rodrigo Duterte and Vice President Leni Robredo were elected in 2016; the next election is expected in May 2022.

The Legislature contains a bicameral Congress (Kongreso), which consists of the Senate and House of Representatives. The Senate (Senado) has 24 seats, with senators directly elected in multi-member constituencies by majority vote and serving 6-year terms with half of the membership elected every three years. A senator is allowed only two consecutive terms. The House of Representatives (Kapulungan Ng Mga Kinatawan) contains 297 seats, with members serving 3-year terms. Out of the 297 seats, 238 representatives are directly elected in single-member constituencies by simple majority vote, and 59 represent minorities directly elected by party-list proportional representation vote.

The highest court of the Judicial branch is the Supreme Court, which consists of a chief justice and 14 associate justices. The Judicial and Bar Council is a constitutionally created six-member body that recommends Supreme Court nominees. Justices are appointed by the president on the recommendation of the Council and serve until age 70. Lower courts in the judicial system include the Court of Appeals, Sandiganbayan (special court for corruption cases of government officials), Court of Tax Appeals, regional, metropolitan, and municipal trial courts. There are also five sharia district courts, all in the Mindanao region, under which fall about three dozen sharia circuit courts, where Muslims can file certain cases often pertaining to family law. Decisions of sharia district courts can

be appealed to the Supreme Court.[65]

The current constitution was enacted in February 1987 and has not been amended since. There have been several previous constitutions, going back to 1899.[66] Philippine citizenship is granted by descent only, with at least one parent required to be a citizen of the Philippines.[67]

Environment

The Philippines faces numerous environmental challenges, especially as one of the fastest growing countries in Asia. Water and air pollution levels exceed generally accepted healthy standards, particularly in urban or urbanizing areas. Pollution also affects coastal mangrove swamps, which are important fish breeding grounds. Overfishing and degradation of coral reefs also contribute to concerns about food security and the health of ecosystems. Greenhouse gas emissions are increasing from the country's transport and power sectors. In the last century, forest cover of land has declined from 70% to less than 20%. Uncontrolled deforestation is a concern, especially in watershed areas, as it exacerbates soil erosion and landslide risk and contributes to degraded water quality.[68] The islands also deal with plastic trash floating ashore from other parts of Southeast Asia. Climate change plays a role in exacerbating almost all of these environmental issues, which often have a disproportionate impact on the poor and women.[69]

Geography

The Philippines is the world's second largest archipelago with only Indonesia forming a larger group of islands. The Philippines is composed of 7,107 islands, stretching approximately 1,810 kilometers (km) (1,125 miles) from the tip of Batanes in the north to the Sulu archipelago in the south. The country is divided into three main island groups – Luzon, Visayas, and Mindanao. It is located between 4° 15' N and 21° 25' N latitude, and between 112° 15' E and 127° E longitude. The total land area is roughly 300,000 square km (115,831 square miles), of which 46% is classified as forest and woodlands. The terrain is mostly mountainous with narrow to extensive coastal lowlands. The highest point is Mount Apo (known locally as Apo Sandawa), a large, dormant stratovolcano in Mindanao; the summit is 2,954 meters (m) (9,692 feet) above mean sea level. The Philippines has 36,289 km (22,549 miles) of coastline, and 2,229,438 square km (860,791 square miles) of territorial waters that are rich in marine life. In the Philippine Sea lies the Mindanao Trench (also known as the Philippine Trench or Deep), which is the second-deepest spot in the world's oceans at 10,497 m (34,439 feet), exceeded only by the depths of the Mariana Trench. The archipelago is part of the "Coral Triangle," a global center for marine biodiversity, and has a higher concentration of species per unit area than anywhere else.[70]

Borders

The Philippines has no land borders. However, the country retains a claim to a land border with Malaysia as a result of its dormant claim to Malaysia's Sabah State in northern Borneo, based on the Sultanate of Sulu having granted the Philippines Government power of attorney to pursue a sovereignty claim on his behalf.[71] The Philippines has 36,289 km (22,549 miles) of coastline, as a country comprised of more than 7,000 islands.[72]

Climate

The climate is tropical, with an average temperature of 27°C (80.6°F) and humidity of about 75%. There are regional variations to climate patterns, but in general the dry season is typically December to April or May, with the coolest months being December to February. Rising temperatures in May signal the coming wet season. The rainy months are from June to October or November, when the southwest monsoon brings the rains.[73] A second rainy season occurs from December to February on the eastern and northern coasts. Typhoon season runs July-October, when 70% of typhoons develop.[74]

DISASTER OVERVIEW

The Philippines is susceptible to many natural hazards, and commonly experiences tropical cyclones or typhoons, earthquakes, volcano eruptions, and other natural disasters. This is due to the country's location straddling the typhoon belt, an area in the western Pacific Ocean where nearly one-third of the world's tropical cyclones form. This area is the most active in the world and has the most intense storms globally.[75] The Philippines is also located on the Ring of Fire, also known as the Circum-Pacific Belt, which is a path along the Pacific Ocean that traces the boundaries between several tectonic plates – the Pacific, Juan de Fuca, Cocos, Indian-Australian, Nazca, North American, and Philippine Plates. Due to the movement of these tectonic plates, 75% percent of earth's volcanoes (more than 450 volcanoes) are located along the Ring of Fire, and 90% of the world's earthquakes occur along it.[76]

Climate Change

The Philippines is already being affected by climate change, to the extent it was considered the country fourth most affected by climate change in the world over the past two decades.[77] The country is particularly susceptible to being affected by climate change events, including sea level rise, increased frequency of extreme weather events, rising temperatures, and heavy rainfall. This is due to the archipelago's vulnerability to natural hazards, reliance on climate-sensitive natural resources, and extensive coastline, which are home to the country's main cities and most of the population. Sea levels around the Philippines are rising faster than the global average, posing a greater risk of higher storm surges. Storm surges are expected to affect 14% of the population and 42% of coastal residents. Informal settlements, which comprise 45% of the urban population, are particularly at risk from flooding due to precarious infrastructure and will be particularly vulnerable to negative impacts due to limited access to clean water and a lack of health insurance.

Ocean waters around the Philippines are already warming, with temperature spikes of 4-5°C (more than 15°F) above normal having been recorded. Warmer waters damage coral reefs, an impact that can decrease fish populations and threaten human food security. While healthy coral reef sustains a yearly harvest of 15-20 tons of fish, damaged reefs may only sustain 4-5 tons of fish. Emerging irregular climate patterns are already associated with increased rainfall in some areas, droughts in others, and agricultural disruptions. Rainfall in Tacloban City increased 257% between 1998 and 2011. Heavier precipitation results in more flooding, which could lead to landslides in some areas. Landslides and flooding increase runoff, degrade water quality, and destroy water supply infrastructure, all of which exacerbate water scarcity. In approximately one-fourth of coastal districts, water quality is already affected by saltwater intrusion into aquifers, which is likely to worsen as sea levels continue to rise.[78]

The 2009 Climate Change Act provided a framework to address rising environmental threats and created the Climate Change Commission (CCC) to develop policies and coordinate programs. The CCC developed the National Climate Change Action Plan (NCCAP) 2011-2028 as a national road map for all climate change actions. The Department of Environment and Natural Resources (DENR) is the lead agency on climate change and was tasked by the Climate Change Act with creating a climate change information management system. DENR is also tasked to lead the Cabinet Cluster on climate change adaptation, mitigation, and disaster risk reduction (CCAM-DRR).[79]

While disproportionately impacted by climate change, the Philippines itself is responsible for less than one-half of one percent of world greenhouse gas emissions.[80] Although the country's share of global emissions is small, they have been growing in the last decade; thus, in 2021 President Duterte approved a commitment

to reduce emissions by 75% by the year 2030. Of the 75% target, 72.29% is contingent upon the support of climate finance, technology, and capacity development by developed countries, in accordance with the Paris Agreement.[81]

Hazards

The Philippines has primarily experienced the following natural hazards in the past four decades (1970-2020): storm (55%), flood (25%), earthquake (5%), landslide (5%), and volcano (4%).[82] In addition to these, which are summarized below, other disasters the country deals with include epidemic, drought, mass movement, and wildfire.

Tropical Cyclones (Typhoons)

The Philippines is the country most exposed to tropical storms in the world.[83] The Philippines straddles the typhoon belt, an area in the western Pacific Ocean where nearly one-third of the world's tropical cyclones form. This area is the most active in the world for tropical cyclones and experiences the most intense storms globally. Approximately 22 tropical cyclones enter the Philippines area each year; of these storms, an average of 6-7 annually cause significant damage.[84] Among the Philippine islands, northern Luzon and eastern Visayas are most affected by tropical cyclones.[85] Figure 2 depicts tropical storm tracks recorded over nearly 150 years, with the most intense storms depicted in red and orange – and the Philippines (in the green triangle) located in the path of some of the most intense and frequently occurring tropical cyclones.[86]

Flooding

Floods and typhoons are devastating natural disasters due to their significant economic and social impact. These events account for 80% of disaster deaths, 90% of affected people, and 92% of economic damage. Monsoon rains can bring damaging floods to low-lying, marginally developed areas. Stronger monsoon seasons

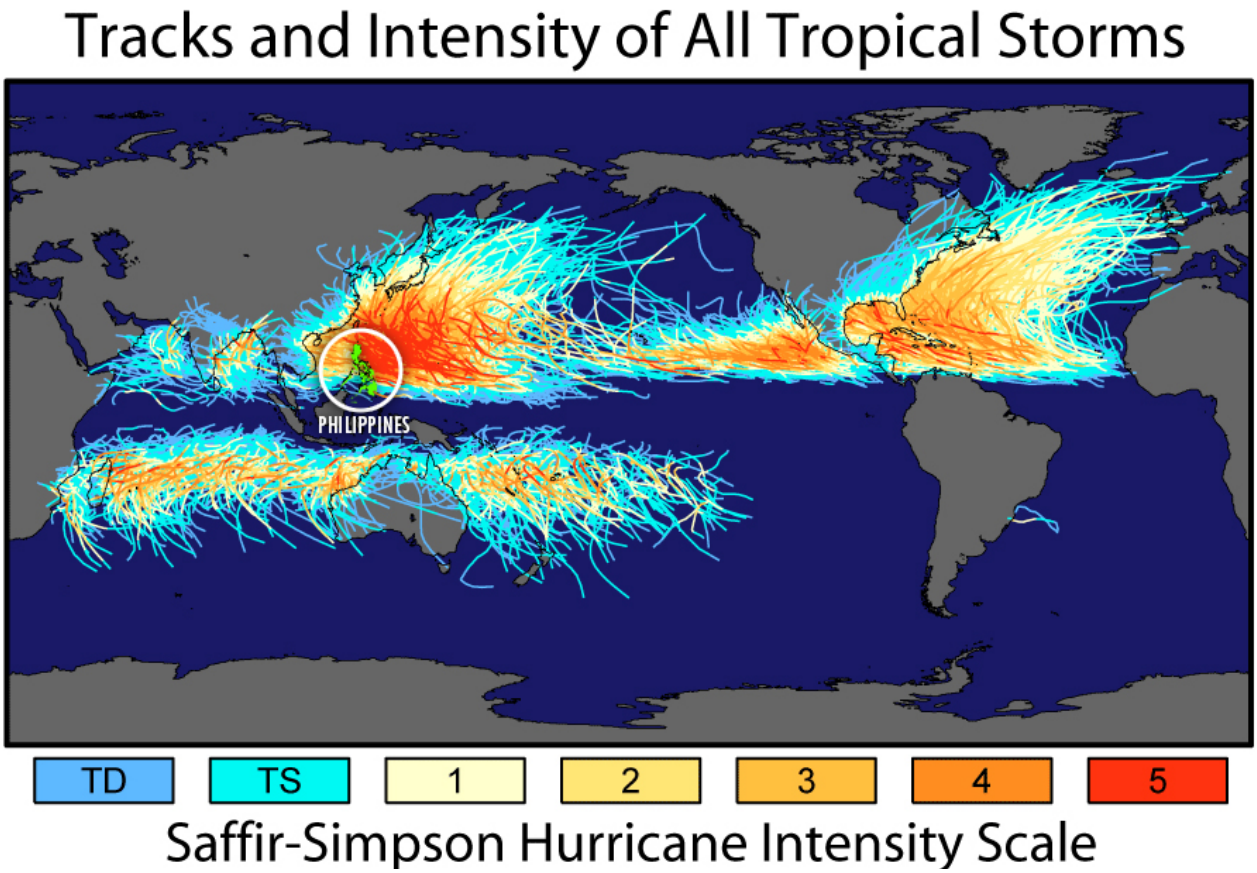


Figure 2: Philippines in Path of Most Intense and Frequent Tropical Storm Tracks for Nearly 150 Years

combined with increasing urban development exacerbates flood risks, as drainage channels are insufficient or impeded. The Philippines is also very susceptible to sea level rise along the coast, contributing to flood risks. Repeated flooding is a problem for the metro Manila area, which houses about 13 million people and contributes approximately 35% to the national economy. The Manila area experiences perennial floods during rainy seasons as it is located in a river delta by the ocean.[87]

Earthquake

As with volcanic risk, the cause of the Philippine's heightened earthquake risk is due to its location over multiple tectonic plate boundaries. Multiple earthquakes occur each day, the majority of which are not strong enough to be felt. Estimates range from five earthquakes per day to 20 per day.[88] However, strong destructive earthquakes are a serious risk in the Philippines, and seismic activity is common throughout most of the country. The more earthquake prone regions are eastern Mindanao, Leyte, and Samara, which notch an average of 16 felt earthquakes per year.[89] Earthquake impacts can vary depending upon soil conditions in an area. Liquefaction is a significant concern in central Luzon, especially in the provinces of Pangasinan, Tarlac, and some areas in Metro Manila.[90]

The infrastructure would be highly vulnerable in a massive earthquake, though there is increasing awareness of the need to prepare for such a possibility, as seen with the 7.2 Manila earthquake scenario increasingly used in disaster planning.[91] Philippine Institute of Volcanology and Seismology (PHIVOLCS) operates 108 seismic monitoring stations all over the Philippines, as of December 2020.[92]

Landslide

Landslides are a significant hazard, usually brought on by other events, such as rainfall, particularly during the monsoon season, typhoons, earthquake, and volcanic eruptions. Landslides occur with the downward mass movement of a various materials, including rock, soil, and debris. Landslide hazards are most common in the mountainous and inland regions of the islands and are generally a greater threat to rural than urban populations.

The Dynaslope Project, which began in the University of the Philippines Diliman, is a research program developing an early warning system for deep-seated and catastrophic landslides, through landslide sensor technology and community participation. It is being implemented by PHIVOLCS in 50 sites around the country.[93]

Volcano

The Philippines has 53 active volcanoes, which were produced at the junction of the Philippines and Eurasian tectonic plates. The tectonic situation is rather complex, as there are a number of small tectonic plates squeezed between larger convergent plates, with small subduction zones (where one plate is forced beneath another) and major transform faults (where two plates slide horizontally past one another) in between.

The volcanoes of the Philippines rank as the most deadly and costly in the world. About 13% of the country's historic eruptions have caused fatalities, most notably at Taal and Mayon, and 22% of its eruptions caused significant damage. Since the establishment of PHILVOLCS, the negative impact of the eruptions, including damage, has been significantly reduced.[94]

History of Natural Disasters

The following is a summary of natural disasters in the Philippines in recent years:

Tropical Strom Kompasu (Maring) - October 2021

On 11 October 2021, Tropical Storm Kompasu (local name Maring) made landfall over Cagayan Province in the north, with maximum winds of 100 km/hour (62 miles per hour (mph)). The tropical storm, coming with the southwest monsoon, brought flooding, landslides, and overflowing rivers in several Northern Luzon

provinces, affecting at least 7,000 people, and prompting rescue operations. An estimated 1,900 residents were rescued and taken to evacuation centers by local authorities with the support of the uniformed services. There were reportedly nine fatalities, with 11 other people missing as of 12 October.[95]

Floods and Landslides - July 2021

Heavy monsoon rains driven by moisture from Typhoon In-fa (local name Fabian), caused flooding and landslides in areas of Luzon Island, and floodwater inundated more than 170 villages in Central Luzon and the National Capital Region. At least three people died, five people were injured, and 450 houses were damaged.[96] According to the Department of Social Welfare and Development's Disaster Response Operations Monitoring and Information Centre (DSWD-DROMIC), more than 570,240 people were affected and 42,111 of these were displaced. Floods damaged at least 293 houses, with 69 destroyed.[97]

Landslides and floods affected additional parts of the Philippines from 28 July to 1 August, after heavy rains hit Ilocos, Central Luzon, Eastern Visayas, Zamboanga Peninsula, Mimaropa, Cordillera Administrative Region, and the National Capital Region. According to the ASEAN Coordinating Centre for Humanitarian Assistance on disaster management (AHA Centre), one person was missing, 40,783 people were displaced, and more than 613,000 were affected. Nearly 300 houses were damaged, along with 12 roads and a bridge.[98]

Taal Volcano - July 2021 and January 2020

July 2021 – On 1 July 2021, the Taal Volcano in Luzon's Batangas province had a phreatomagmatic eruption that generated a plume 1 km (0.62 mile) high, leading to Alert Level 3 for magmatic unrest. On 2 July, 3,523 families (14,495 individuals) were evacuated from Agoncillo and Laurel municipalities. Hundreds of volcanic earthquakes followed over several weeks. A total of 4,153 families or 14,766 people were displaced in Calabarzon, the majority staying with friends or relatives, but about one-fourth took temporary shelter in 23 evacuation centers. As of 24 July, the Taal Volcano was labeled with Alert Level 2 (decreased unrest), which means sudden steam- or gas-driven explosions, volcanic earthquakes, minor ashfall, and expulsions of volcanic gas can still occur and threaten surrounding areas. An estimated 6,165 families or 22,228 persons were affected by the volcanic eruption across 148 barangays in the Calabarzon region.[99]

January 2020 – On 12 January 2020, PHIVOLCS recorded increased volcanic activities generating an eruption plume 1 km (0.62 mile) high. Volcanic tremors and earthquakes were felt on Volcano Island and in barangays of Agoncillo, Batangas province, and residents from at least three municipalities in Batangas were evacuated.[100] The government proclaimed Alert Level 3, and within several hours raised it to Alert Level 4 (hazardous eruption imminent). Volcanic activity progressed into a magmatic eruption on 13 January.[101] The following months brought steam-laden plumes and hundreds of volcanic earthquakes. By 12 March, at least 846,000 people were affected in Batangas, Quezon, Laguna, and Cavite provinces, and 235,000 people had been temporarily displaced.[102]

Typhoon Surigae (Bising) – April 2021

Tropical Cyclone Surigae (local name Bising) brushed by the Philippines after becoming the strongest tropical cyclone on record for the month of April and one of only 20 in the world to have reached wind speeds of 306 km/hour (190 mph) or greater.[103] It formed on 12 April 2021, reached peak strength on 17 April, and fully dissipated on 2 May. While it did not pass directly over the Philippines, it came close enough to the eastern coast to have a significant impact. The typhoon led to at least four fatalities, 13 people injured, and an estimated 98,546 families (401,867 persons) affected across the regions of Cagayan Valley, Bicol, Eastern Visayas, and Caraga Regions.[104]

Typhoon Vamco (Ulysses) - November 2020

Tropical Cyclone Vamco (local name Ulysses) struck the main island of Luzon on 11-12 November 2020, resulting in at least 67 deaths and 21 injuries. A reported 324,363 individuals were displaced in 2,980 evacuation centers, and over one million people were affected in total. Affected areas include the provinces of Pampanga, Bulacan, Nueva Ecija, Cagayan, Isabela, Marikina City, Rizal, Laguna, Aurora, and Quezon provinces.[105]

Typhoon Goni (Rolly)- November 2020

Tropical Cyclone Goni (local name Rolly) made landfall in the Philippines on 1 November 2020 with maximum sustained winds of 225 km/hour (140 mph). Bicol bore the brunt of the storm, though the regions of Cagayon Valley, Central Luzon, Metro Manila, Calabarzon, Mimaropa, and Easter Visayas were also significantly affected.[106] At least 20 people died and 74 were injured. An estimated 41,200 houses were destroyed while another 141,100 were damaged, in addition to 67 health facilities and thousands of schools also sustaining structural damage.[107]

Typhoon Molave (Quinta) - October 2020

Tropical Cyclone Molave (local name Quinta) made landfall over southern Luzon near Legazpi City on 25 October 2020 before moving over Vietnam. In the Philippines, it led to at least 16 deaths, 77,000 people being evacuated, and more than 242,000 affected in Central Luzon, Calabarzon, Mimaropa, Bicol, Western Visayas, Central Visayas.[108]

Typhoon Vongfong (Ambo) - May 2020

Typhoon Vongfong (local name Ambo) made landfall on 14 May 2020 as a Category 3 typhoon in San Policarpo, Eastern Samar, moving northwest the following day towards mainland Luzon, and making landfalls in Northern Samar, Masbate, and Quezon provinces.[109] At least 141,450 families (or 583,783 persons) were affected in 560 barangays in Ilocos, Cagayan Valley, Central Luzon, Eastern Visayas, and the Cordillera regions, with at least 973 families (or 3,455 persons) taking temporary shelter in 66 evacuation centers.[110]

Typhoon Phanfone (Ursula) - December 2019

Typhoon Phanfone (local name Ursula) made landfall on 24 December 2019, in Salcedo, Eastern Samar, with maximum winds reported of 120 km/hour (75 mph), bringing heavy rainfall and rough waters to southern Luzon and the Visayas.[111] By 2 January 2020, the government had reported 50 dead, 362 people injured, and more than 2 million people affected in the regions of Mimaropa, and Western, Central, and Eastern Visayas.[112]

Earthquake – December, October 2019

On 15 December 2019 at 2:11 p.m. local time, a 6.9-magnitude earthquake struck Matanao municipality in the province of Davao del Sur, Mindanao, becoming the fourth quake above magnitude 6.0 in two months to hit this part of Mindanao. Similar earthquakes in October partially or totally damaged over 47,600 houses,[113] including a 6.4-magnitude earthquake on 16 October in North Cotabato province and an earthquake of 6.6 magnitude on 29 October in Cotabato Province on Mindanao.[114] By the end of the month, a reported 394,355 people were affected by the earthquakes in 218 barangays in the regions of Davao and Soccsksargen in Mindanao. More than 140,000 people were displaced, out of which 40,424 temporarily sheltering in 102 evacuation centers and the remainder with relatives, friends, or in open spaces.[115] In total, 13 people were killed and over 200 people were injured by collapsing structures, falling debris, cardiac arrest, and other earthquake-related traumas.[116]

Typhoon Kammuri (Tisoy) - December 2019

Tropical Cyclone Kammuri (local name Tisoy) made landfall on 3 December 2019 over the north-east Mindonoro Island, close to Naujan City, with maximum sustained winds up to 210 km/hour (130 mph).[117] At least 13 people died, and more than 1,992,100 people were affected

across almost 4,200 barangays in the regions of Central Luzon, Calabarzon, Mimaropa, Bicol, Eastern Visayas, and Caraga.[118]

Earthquakes - July 2019

On 27 July 2019, a series of earthquakes struck the island of Batanes, the northernmost province in the Philippines, including a 5.4-magnitude quake at 4:16 a.m. local time, a 5.9-magnitude quake at 7:37 a.m., and a 5.8-magnitude quake at 9:24 a.m. As of 5 August, nine people were confirmed dead, 2,982 persons had been affected, and hundreds of houses damaged by the earthquake events in five barangays in Itbayat, Batanes.[119]

The following lists the numerous natural disasters the Philippines has experienced through the last ten years:

- Floods and Landslides - June 2019
- Drought - 2019-2020
- Tropical Depression Amang - January 2019
- Tropical Depression Usman - December 2018
- Typhoon Mangkhut (Ompong) - September 2018
- Floods and Landslides - June 2018
- Mayon Volcano - January 2018
- Tropical Cyclone Tembin (Vinta) - December 2017
- Tropical Storm Kai-Tak - December 2017
- Earthquakes - July 2017
- Earthquakes - February 2017
- Floods and Landslides - January 2017
- Typhoon Nock-ten (Nina) - December 2016
- Typhoon Haima (Super Typhoon Lawin) - October 2016
- Typhoon Sarika (Karen) - October 2016
- Floods and Landslides - August 2016
- Tropical Depression Twenty-Nine - December 2015
- Typhoon Melor (Nona) - December 2015
- Typhoon Koppu (Lando) - October 2015
- Drought - 2015-2017
- Floods and Landslides - June 2015
- Typhoon Maysak (Julian) - March 2015
- Tropical Storm Jangmi - December 2014
- Typhoon Hagupit (Ruby) - December 2014
- Tropical Storm Fung-Wong - September 2014
- Typhoon Rammasun (Glenda) - July 2014
- Floods and Landslides - June 2014
- Floods and Landslides - January 2014
- Typhoon Haiyan (Yolanda) - November 2013
- Earthquake - October 2013
- Typhoon Nari (Kiko) - October 2013
- Typhoon Wutip (Betty) - October 2013
- Typhoon Usagi (Odette) – September 2013
- Floods and Landslides - August 2013
- Typhoon Utor (Labuyo) - August 2013
- Tropical Depression Shanshan - February 2013
- Tropical Storm Wukong - December 2012
- Typhoon Bopha (Pablo) - December 2012
- Typhoon Son-Tinh (Ofel) - October 2012
- Tropical Storm Kai-Tak - August 2012
- Typhoon Saola (Gener) - July 2012
- Floods and Landslides - June 2012
- Earthquake - February 2012

Country Risks

At least 60% of the Philippine's total land area is exposed to multiple hazards, and 74% of the population is susceptible to their impact. Approximately 85.2% of the sources of the country's production have been reported to be susceptible to disasters, and 50.3% of the total land area is considered to be economically at risk. The typhoon season costs about 2% of the country's annual GDP, and another 2% of GDP is consumed by recovery activities and recurrent disaster costs.[120]

Climate change drives or exacerbates nearly all of the Philippines' major environmental and disaster risk concerns, including increased coastal development, deforestation, overfishing and destructive fishing, pollution, ocean acidification, rising sea temperatures, and rising sea levels.[121]

Water pollution and a lack of proper sewage is believed to contribute to 55 deaths every day in the Philippines. More than 30 million people do not have access to adequate sanitation facilities, and nine million people rely on unsafe water supplies. Drinking water in key agricultural areas is contaminated with nitrates, with 30%

of sampled groundwater wells indicating nitrate levels above the World Health Organization (WHO) safety limit. Due to water pollution, the country will likely face a shortage of water for sanitation, drinking, agriculture, and industrial use by 2030.[122]

Overfishing is also a large concern, as an estimated 70% of fishing grounds in the country are likely overfished. "Based on the available relevant studies, it shows that the Philippines is already overfished by 60%. Now, I estimate that it may now reach 70%," Nygiel Armada, head of the U.S. Agency for International Development (USAID) Fish Right Program in the Philippines, said in 2019.[123] Overfishing contributes to tensions with China when Chinese fishing vessels are spotted in the Philippines' Exclusive Economic Zone (EEZ) in the South China Sea.[124] While China claims the vast majority of the South China Sea as their territorial waters, that claim is not in line with the UN Convention on the Law of the Sea (UNCLOS) or recognized by any other country.

Deforestation has occurred on a large scale over centuries in the Philippines, from 92% forest cover early in the Spanish colonial period to current official estimates of 23%. Forest loss continues despite protection laws. Deforestation drives a wide range of negative environmental effects. It increases flooding during storms and periods of heavy rainfall, as forests and watersheds would hold large amounts of rainwater that otherwise flow into communities. It also increases the endangerment of species as habitat is lost – particularly significant as the Philippines is one of the few mega-biodiverse countries in the world and one of the most vulnerable to climate impacts.[125]

Country Risk Profile

Risk calculation takes into account exposure to hazards, vulnerability, and institutional coping capacity, all of which are important factors in Disaster Risk Management. The Index for Risk Management (INFORM) Global Risk Index (GRI) measures the risk of humanitarian crisis and disasters in 191 countries. The INFORM GRI supports a proactive crisis management framework. INFORM GRI is helpful for establishing an objective allocation of resources for disaster management as well as for coordinating actions focused on anticipating, mitigating, and preparing for humanitarian emergencies. The INFORM GRI model is based on risk concepts published in scientific literature with three dimensions of risk: Hazards & Exposure, Vulnerability, and Lack of Coping Capacity. The first dimension measures the natural and human hazards that pose the risk. The second and third dimensions cover population factors that can mitigate against or exacerbate the risk. The vulnerability dimension considers the strength of individuals and households relative to a crisis while the lack of coping capacity dimension considers factors of institutional strength.[126]

The INFORM GRI model is split into different levels to provide a quick overview of the underlying factors leading to humanitarian risk. INFORM gives each country a risk score of 1-10 (1 being the lowest and 10 the highest) for each of the dimensions, categories, and components of risk, as well as an overall risk score.[127] The higher the score the more at risk a country is to disasters. In the 2022 INFORM Global Risk Index, the Philippines had an overall risk of 5.3/10, which INFORM categorizes as the "high" risk class. The "Hazards and Exposure" dimension score takes into account a combination of both natural and human hazards, and the Philippines rated 7.8/10, within which the "Natural" category had an 8.4/10 overall risk score, and the "Human" category had a 7.0/10 overall score. The "Vulnerability" dimension score was 4.4/10, within which the "Socio-Economic" category scored 3.8/10 and the "Vulnerable Groups" category scored 4.9/10. The Lack of Coping Capacity dimension score was 4.3/10, within which the "Institutional" category scored 4.7/10 and the "Infrastructure" category scored 3.8/10.[128]

Figure 3 graphically depicts the Philippine's risk scores across the three dimensions (Hazard & Exposure, Vulnerability, Lack of Coping Capacity), the main categories within those dimensions, and select indicators.[129]

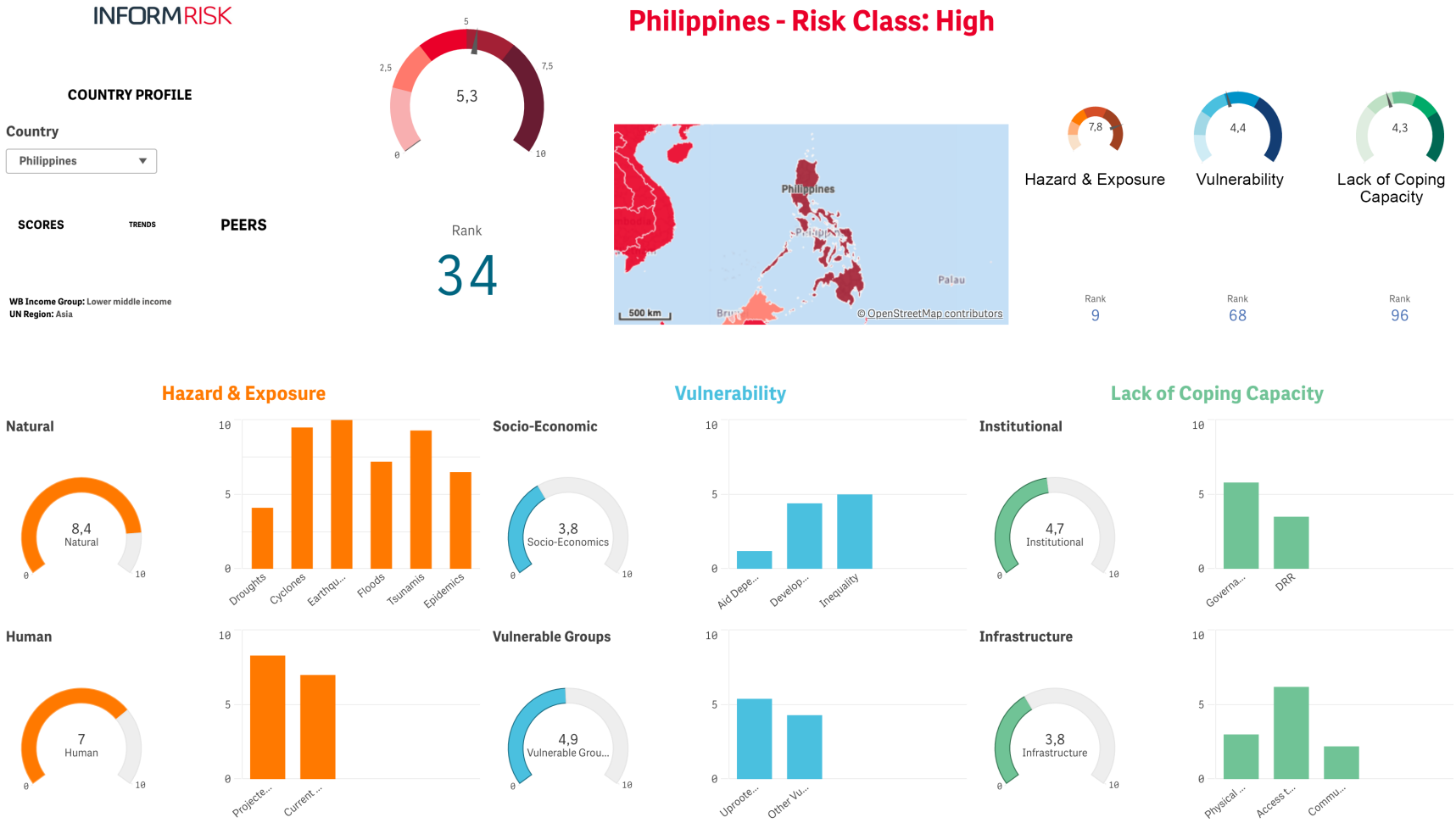


Figure 3: 2022 INFORM Risk Index, Philippines

ORGANIZATIONAL STRUCTURE FOR DISASTER MANAGEMENT

The National Disaster Risk Reduction and Management Council (NDRRMC) is the primary body responsible for coordinating preparedness, response, prevention and mitigation, and rehabilitation and recovery. It is situated under the Department of National Defense (DND). Other government departments have specific roles under NDRRMC that delineate their place within the disaster response process. Legislation passed by the House but awaiting action in the Senate as of mid-2021 would erect a Department of Disaster Resilience (DDR). DDR would replace the NDRRMC structure with one body having responsibility for disaster risk reduction, preparedness, response, and recovery. An exception to this structure is the Bangsamoro Disaster Risk Reduction Management Council of the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM).

Lead Government Agencies in Disaster Response

NDRRMC is responsible for coordinating preparedness, response, prevention and mitigation, and rehabilitation and recovery. The Secretary of National Defense chairs NDRRMC with the Administrator of the Office of Civil Defense (OCD) as NDRRMC Executive Director. Other leadership positions include:

- Secretary of the Department of Interior and Local Government (DILG) as Vice-Chair for Preparedness
- Secretary of the Department of Social Welfare and Development (DWSD) as Vice-Chair for Disaster Response
- Secretary of the Department of Science and Technology (DOST) as Vice-Chair for Disaster Prevention and Mitigation
- Director-General of the National Economic and Development Authority (NEDA) as Vice-Chair for Disaster Rehabilitation and Recovery.

Figure 4 shows the organizational structure under which NDRRMC falls.[130]

Beyond leadership, NDRRMC has representation from 44 government agencies, 14 government departments, the Armed Forces of the Philippines (AFP) and Philippine National Police (PNP), the Philippine Red Cross (PRC) and other civil society organizations, provincial and local governments, social security and insurance organizations, national councils, and the private sector. The NDRRMC Chair has the authority to call upon other government, non-government, and civil agents, entities, or organizations for assistance. This authority extends to the power to call on AFP Reserve Command to assist in disaster relief. The NDRRMC may recommend that the President declares a state of emergency.

DSWD, through the Disaster Response Assistance and Management Bureau, is the lead agency under NDRRMC for disaster response, planning, and coordination. It is responsible for leading immediate disaster relief efforts and for ongoing monitoring. In addition to leading the NDRRMC's disaster response pillar, DSWD provides technical assistance and resource augmentation, camp coordination and management activities, food and non-food items, and protection of IDPs. It has 16 regional field offices throughout the country.[131] Under DSWD, the Office of the Undersecretary for Operations is responsible for leading DSWD programs, including disaster response projects via the Disaster Response Management Sub-Cluster. The Disaster Response Management Group provides leadership, staff expertise, and support in managing and administering financial resources, facilities, warehouses, physical

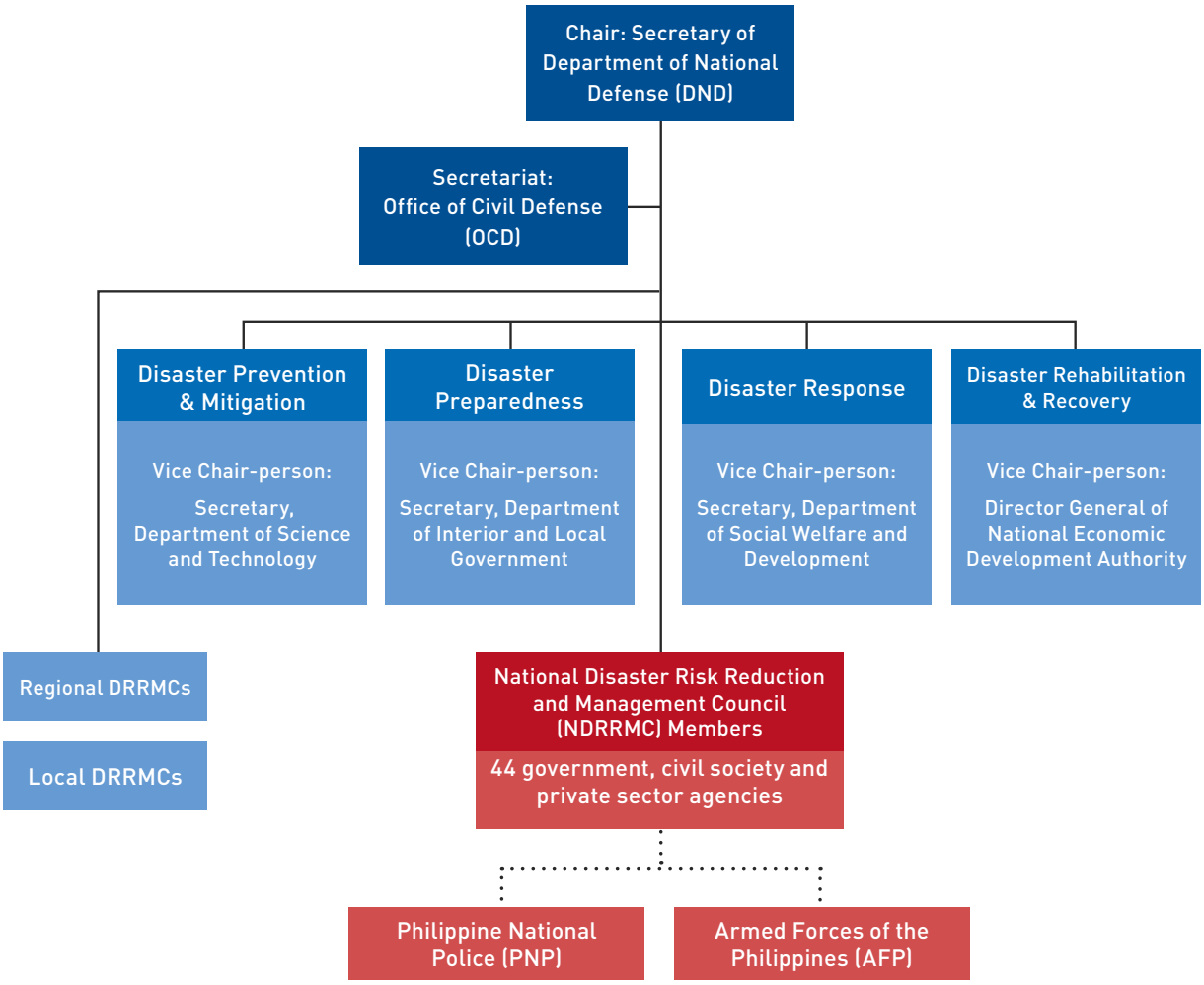


Figure 4: Government Disaster Management Structure

infrastructure, personnel, legal management and assistance, supplies, and other logistical and procurement activities, including the production of food packs and donation facilitation. The Office of the Undersecretary for Disaster Response Management assists the Secretary in leading the implementation of the disaster response programs, activities, and projects of the DSWD and of the National Response Clusters of NDRRMC.[132]

OCD is the NDRRMC Secretariat. Its primary mission is administering a comprehensive national civil defense and disaster risk reduction and management (DRRM) program by providing leadership in the continuous development of strategic and systematic approaches as well as measures to reduce the vulnerabilities and risks to hazards and manage the consequences of disasters.[133] OCD oversees Regional Disaster Risk Reduction and Management Councils (RDRRMC) and personnel for HADR through education, training, and information support. OCD maintains partnerships with other local agencies, NGOs, and civilian and military partners for coordination, cooperation, and sharing of best practices and technological advancements in HADR operations and DRRM.[134] OCD and AFP maintain a partnership for coordinating use of military assets during HADR.[135] OCD's organizational structure is shown in Figure 5.[136]

The NDRRMC Operations Center (NDRRMOC or Command Center) coordinates all national response clusters. It is composed of focal points designated by the NDRRMC member agencies. The Command Center is managed by OCD and coordinates all requests from cluster lead agencies. It also collates

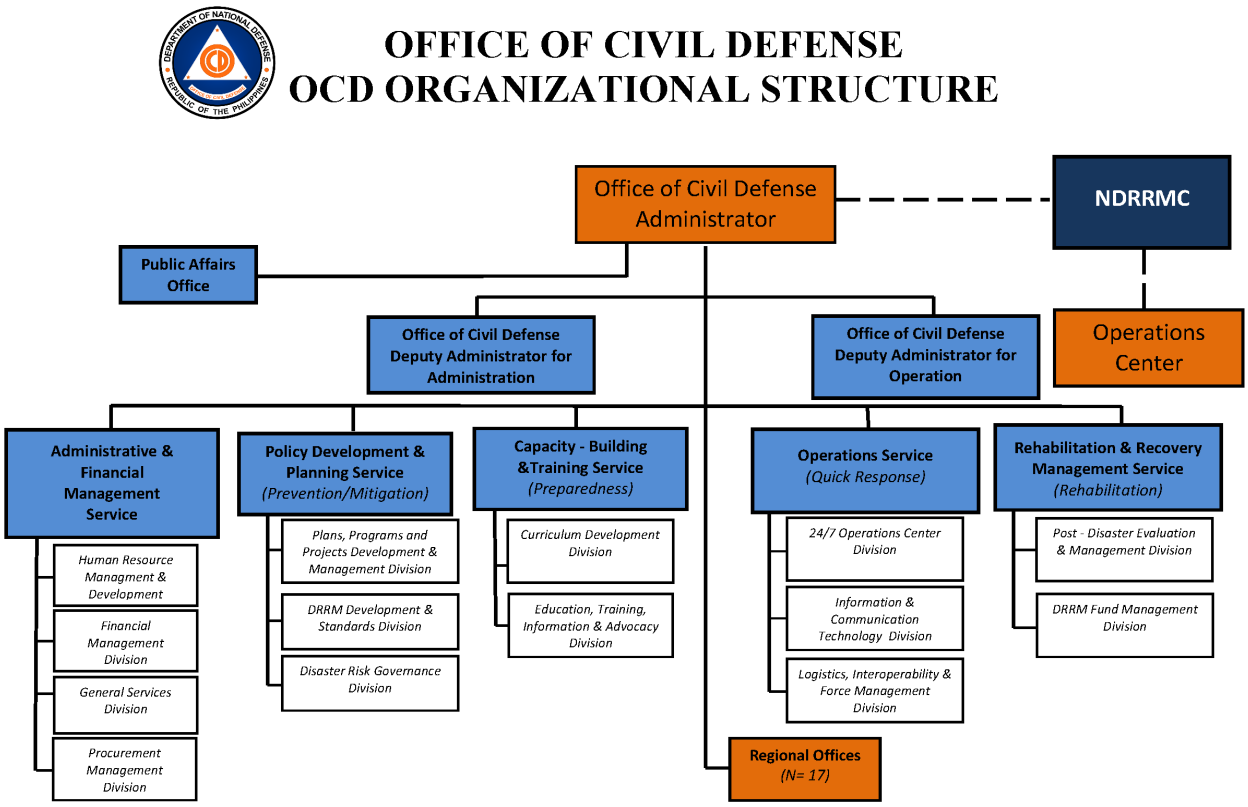


Figure 5: Office of Civil Defense Organizational Structure

situation reports from affected regional OCD offices. Operations Centers can also be established off-site in the affected region by NDRRMC-designated Rapid Deployment Teams, which can conduct a Rapid Disaster Needs Assessment, establish an operations center, serve as coordination hubs, and facilitate whole-of-response operations in the affected areas. Regional and local (R/L) DRRMCs are also required to activate Emergency Operations Centers (EOC) in preparation for disaster response. LDRRMCs report to RDRRMCs, which feed information up to NDRRMC.[137]

OCD's Operations Service is the quick response branch and has the following divisions and tasks:

- 24/7 Operations Center
  - Conduct 24/7 operations at the NDRRMOC, monitoring multi-agency and multi-level operational coordination response, resource mobilization, and information management
  - Monitor the probable consequences of potential disasters or emergency situations
  - Coordinate with responsible agencies for the timely early warning dissemination
  - Prepare disaster situation report
- Information and Communications Technology Division
  - Monitor information systems and communication (electronics) resources of OCD
  - Update OCD's Information Systems Plan
  - Administer communication (electronics) resources
- Logistics, Interoperability, and Force Management Division
  - Formulate policies, plans, and programs for acquisition of goods and services and infrastructure projects for disaster response
  - Provide technical assistance on infrastructure projects for disaster response
  - Formulate plans, protocols, and policies on OCD's operational activities and response initiatives

  - Prepare criteria and procedures for enlistment of accredited community disasters volunteers, National Service Reserve Corps, civil society and donors, and the private sector
  - Prepare the manual of operations for volunteers and monitor their mobilization

OCD's 17 Regional Offices are mandated to:

- Ensure efficient and effective planning, programming, implementation, monitoring, and evaluation of all regional civil defense and DRRM plans
- Conduct DRRM trainings to enable local government units (LGU), civil society organizations (CSO), private groups, volunteers, and communities within the region
- Maintain an operating facility for the Regional Disaster Risk Reduction and Management Operations Center (RDRRMOC)
- Chair the RDRRMC and provide secretariat services
- Review Local DRRM Plans to ensure integration of DRRM measures into the Local Comprehensive Development Plan and Comprehensive Land-use Plan.[138]

Bangsamoro Disaster Risk Reduction Management Council (BDRRMC)

The BARMM authority has organized a separate DRRM agency, the Bangsamoro Disaster Risk Reduction Management Council (BDRRMC) to replace the former Regional Disaster Risk Reduction and Management Office. Under Republic Act 11054, the Organic Law of BARMM, 2017, DRRM are under exclusive oversight of the Bangsamoro Government.

At its inaugural meeting in July 2019, BDRRMC launched an emergency and disaster response office, the Rapid Emergency Action on Disaster Incidence (Readi-BARMM), based on BARMM Executive Order 12, which provided for the establishment of the BDRRMC and a DRRM operation center, the Readi-BARMM. Readi-BARMM is also the information management facility and clearing house for reports on emergencies in BARMM.

The BARMM Ministry on Interior and Local Government (MILG) serves a coordinating role, bringing together the ministers of the Bangsamoro Government, LGUs, and NDRRMC on programs and activities pertaining to disasters. In addition, MILG coordinates with OCD in monitoring and responding to displacements resulting from human-induced and natural disasters within BARMM.[139]

Disaster Relief and Emergency Response

From mid-2017, the Philippine Congress has been crafting, debating, and moving forward a law that would establish a cabinet department solely focused on long-term disaster mitigation, relief, and recovery, i.e., the Department of Disaster Resilience (DDR). DDR would replace the existing NDRRMC structure and have responsibility for: 1) disaster risk reduction; 2) preparedness and response; and 3) recovery and 'building forward better.' The DDR bill includes a plan for a Humanitarian Assistance Action Center, an inter-agency mechanism responsible for streamlining the process of managing humanitarian assistance, equipment, and services from local or international sources.[140] It would establish a National Disaster Operations Center, Alternative Command Centers, and Disaster Resilience Research and Training Institute. As of September 2021, the Senate continued to work on the legislation under pressure from the Duterte administration to pass it before general elections in 2022.[141]

Disaster Risk Reduction and Management Councils (DRRMC) operate at the national, regional, and local levels. LGUs have primary responsibility as first responders to any incident that occurs within their jurisdictions. LGUs are divided into three levels: provinces, cities/municipalities, and barangays. In some municipalities, barangays consist of two additional administrative sub-levels. RDRRMCs

are composed of regional representatives of government agencies and are responsible for coordinating LDRRMCs, which are convened at the provincial, city, municipal, and barangay levels. At the barangay level, the Barangay Development Council functions as the LDRRMC. During emergencies, LDRRMCs take the lead in preparing for, responding to, and recovering from the effects of any disaster.

In the context of disaster response, the NDRRMC and LDRRMCs provide support functions to the affected LGUs. This includes coordinating the transition from immediate emergency response operations to early recovery functions undertaken by government agencies and the cluster system. The DRRM Act of 2010 stipulates that Local Disaster Risk Reduction and Management Offices (LDRRMO) be established in every province, city, and municipality under the LGU. LDRRMOs and LDRRMCs are responsible for organizing, training, and supervising local emergency response teams. Under this law, LGUs are also required to allocate at least 5% of their estimated revenue from regular sources to the Local Disaster Risk Reduction and Management Fund. This revenue is used for pre- and post-disaster activities and programs including construction of dams or embankments to mitigate flood risks, risk assessment, training, life-saving equipment, relief items, shelter, alternative livelihood, and construction or rehabilitation of damaged infrastructure facilities and evacuation centers.

In case of emergency, the Philippines can activate its Incident Command System (ICS), which is a standardized, on-scene, all-hazard management concept. The framework for the ICS is pictured in Figure 6.[142] When activated, ICS integrates facilities, equipment, personnel, procedures, and communications into a structure. Under an incident commander, ICS facilitates interoperability via liaison officers in government agencies, NGOs, and private entities.

In 2007, the Philippines launched a cluster approach based on the UN cluster system. It has been used several times since development, e.g., in response to Typhoons Haiyan (2013) and Hagupit (2014). In 2018, it was updated to include 11 clusters, some of which do not have UN counterparts. Figure 7 illustrates the Philippines cluster system, including the lead government agency and supporting agencies for each cluster.[143]

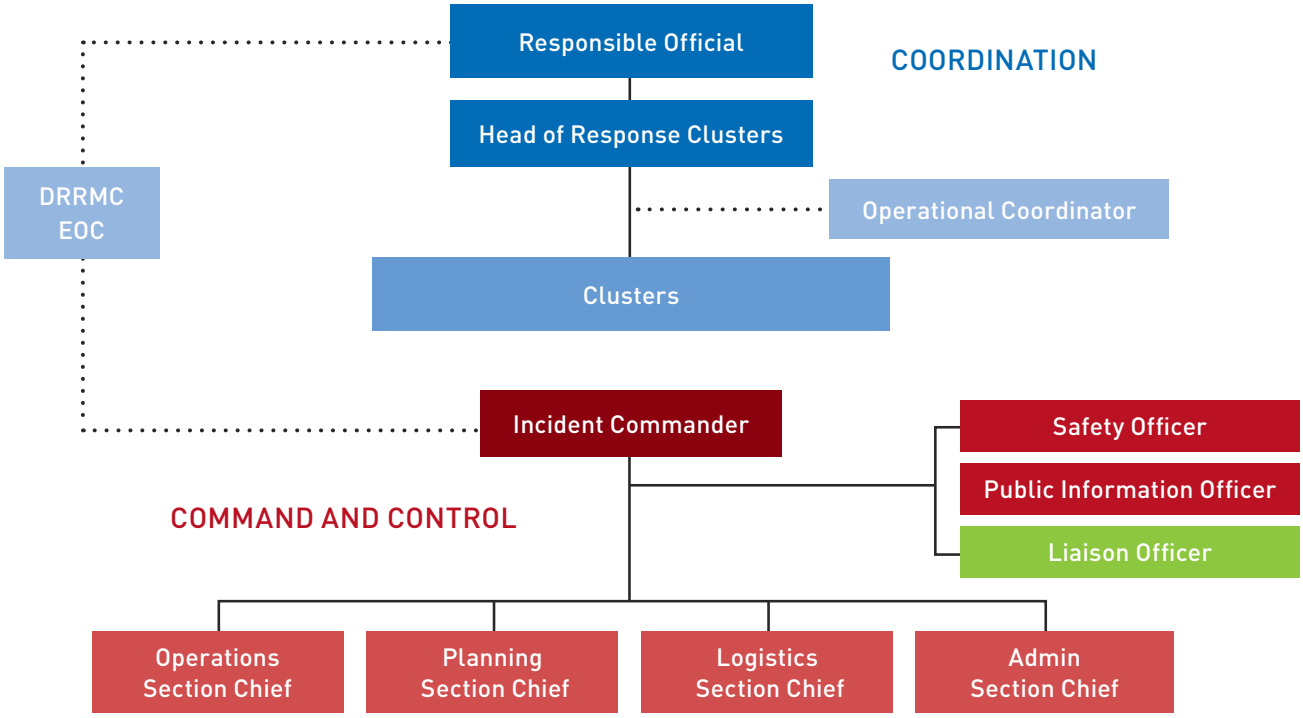


Figure 6: Incident Command System Framework for Disaster Response Coordination

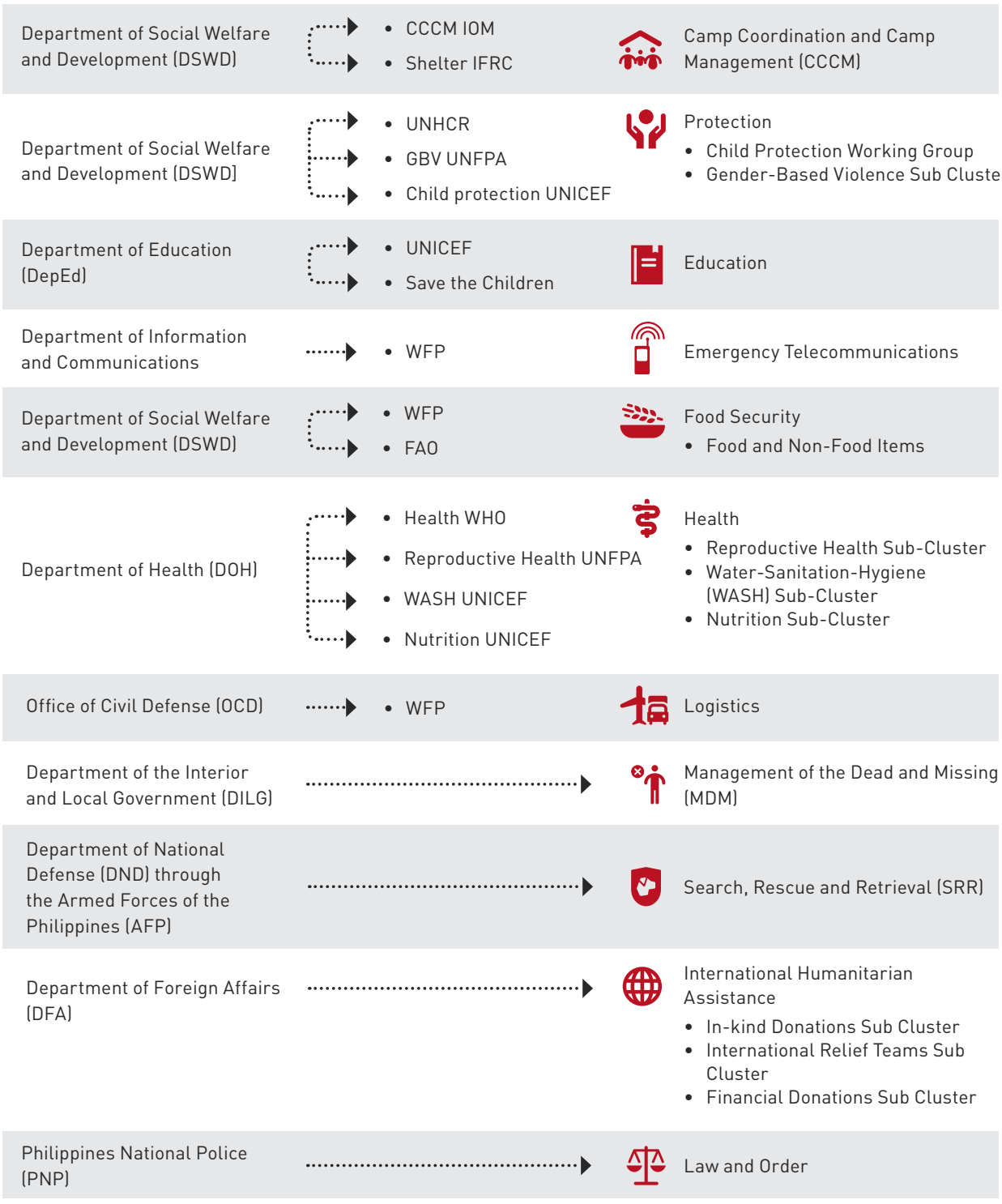


Figure 7: National Cluster System for Disaster Response Coordination

Armed Forces Role in Disaster Relief

The Chief of Staff of AFP sits on the NDRRMC.[144] The Secretary of National Defense is the chair of NDRRMC, and DND thru OCD assists the lead agencies in the four thematic areas of the National DRRM Plan: DILG for Disaster Preparedness, DSWD for Disaster Response, DOST for Disaster Prevention and Mitigation, and NEDA for Rehabilitation.[145] Further, DND through AFP takes the lead role in advancing integrated and coordinated Search,

Rescue, and Retrieval (SRR) capacity either via the SRR cluster, transportation assistance, or availability of aircraft for Rapid Damage Assessment and Needs Analysis and Post-Disaster Needs Assessment.[146]

AFP is made up of three branches (Army, Navy, and Air Force) and is organized along six unified (geographical) commands that employ the forces. HADR is among the three specified internal defense missions under DND's strategy. This mission area covers the before-during-after disaster phases. It includes providing support to civilian agencies in the conduct of pre-disaster warnings, search and rescue operations, and relief operations. AFP, as first responders, together with OCD, cooperate for an efficient and effective execution of disaster response plans and programs. AFP maintains links with local and international disaster response related institutions and has forged agreements with these bodies for an effective disaster response mechanism. Of note are the ASEAN "One ASEAN, One Response" Declaration and the UN Office for the Coordination of Humanitarian Affairs (OCHA) International Search and Rescue Advisory Group (INSARAG).[147]

AFP's key functions and responsibilities as they relate to the disaster themes are:

- Prevention and Mitigation: engineering units may help build dikes or other flood control systems and structures, or they may assist in safety inspection of buildings
- Preparedness: AFP may pre-position DSWD or other agency assets and goods in disaster-prone areas, provide training, or support procurement of equipment, and military units may disseminate warnings and information in isolated areas
- Response: conduct SRR, conduct evacuations, clear roads, assist in transporting relief goods and rescue teams, delegate personnel to support NDRRMC and clusters, assist in restoring government functions, assist police in maintaining order, and respond to LGU or cluster requests for assistance
- Rehabilitation and Recovery: engineering units may help rebuild communities and infrastructure[148]

The Philippines not only faces regular, large-scale natural disasters, but it is also highly vulnerable to the effects of climate change, which has already brought extreme weather conditions (e.g., extreme maximum and minimum temperatures, more frequent and intense rains, and more disastrous tropical cyclones). The DND's National Defense Strategy (2018-2022) demands that AFP be prepared to respond immediately in case of earthquake, tsunami, landslide, or other events. From a military point of view, effects of climate change have led the ASEAN militaries, including AFP, to diversify their capabilities and acquire assets that may be used to address both traditional and non-traditional security threats.

A specific subset of AFP plans addresses the potential for a major (7.2-magnitude or greater) earthquake at the West Valley Fault, the Manila Trench, or both simultaneously that would impact the Greater Metro Manila area and its neighboring provinces. The worst-case scenario would displace about 2.8 million people, cause thousands of deaths and injuries, damage infrastructure, properties, the environment, and livelihoods, disrupt economic activities, and lead to breakdown of peace and order.[149]

AFP has developed a coordination mechanism for HADR. The Civil-Military Coordination Center (CMCC) is activated at the General Headquarters by the Civil Military Operations (CMO) unit, led by the Deputy Chief of Staff for CMO. The CMCC facilitates coordination across government and non-government entities and handles requests for assistance. It is staffed by liaison officers from all AFP operational units and NDRRMC-designated liaisons. The OCD-AFP Coordination Center is established by AFP's Civil Relations Service in the disaster area and provides a means for command and control as well as civil-military coordination. In large-scale emergencies that overwhelm LGUs, the OCD-AFP coordination center may support international integration into the CMCC concept via ICS protocols.

When an emergency overwhelms not only the LGU but also national capacity to respond, AFP can activate the Multi-National

Coordination Center (MNCC) that is co-located with NDRRMOC. The Philippine International Humanitarian Assistance Cluster (PIHAC), discussed in the next section, is responsible for communicating requests to the international community, including for foreign military assistance. The OCD is responsible for consolidating and communicating civilian agencies' requests for foreign military support. When the government accepts, the mission structure can be joint, combined, or multi-national. The MNCC is the last resort mechanism if other liaison mechanisms are insufficient. The purpose of the MNCC is to provide common situational awareness between AFP and assisting foreign militaries, facilitate information sharing, and ensure the efficient use of military support locations, capabilities, and coordination.[150]

Disaster Management Partners

In major natural disasters, when the government declares a State of Calamity, the Philippines may accept specific offers of assistance targeted to meet gaps in national capacity or resources. PIHAC is the main institutional framework and coordinating body for the mobilization of international assistance. The guidelines also institutionalize the Philippines International Humanitarian Assistance Reception Center (PIHARC), a one-stop-shop facility to screen, facilitate, and expedite the processing and entry of international humanitarian teams, equipment, and in-kind donations. If the Government requests or accepts international assistance, coordination is initiated among the HCT agency co-leads for the clusters, the Resident Coordinator/Humanitarian Coordinator (RCHC), and the national response systems and bodies, including NDRRMC and DSWD. The HCT is composed of 24 UN agencies, international NGOs, private sector representatives, and donor agencies, all under UN RCHC leadership.

The PIHAC is led by the Department of Foreign Affairs (DFA) with DSWD, the Department of Health (DOH), DND via AFP, Department of Finance (DOF), and Department of Budget and Management (DBM) each managing the various in-kind donations, financial donations, and in-person relief teams that may come from international partners. Figure 8 illustrates the PIHAC relationships with the international aid community.[151]

Since 2005, when the Philippines joined 167 other nations at the World Conference on Disaster Management in Kobe, Japan, the country has expanded its capacity to build

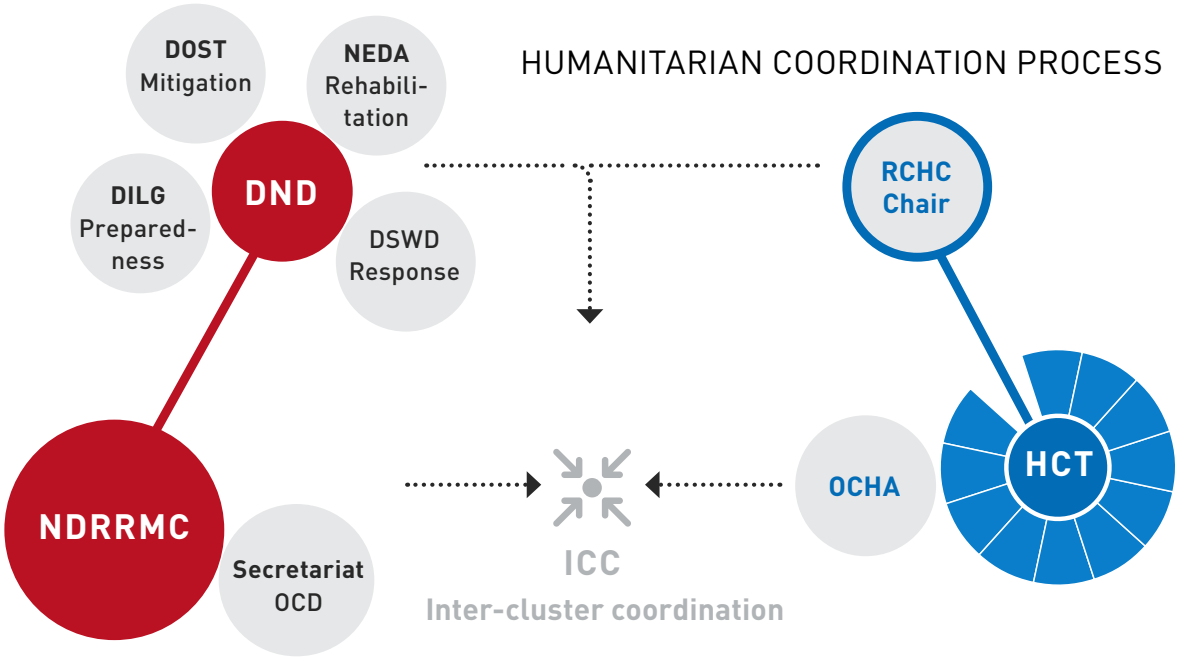


Figure 8: PIHAC Lines of Coordination

resilience to disasters. Of note is its ratification of the ASEAN Agreement on Disaster Management and Emergency Response (AADMER), which is translated into 5-year work plans. For the Philippines, OCD is the national focal point for AADMER.[152] ASEAN celebrated its 50th year in 2017, and the organization declared a desire for deeper integration. However, the economic gap among member-nations is a hurdle that must be overcome to achieve the "One ASEAN" ideal. The Philippines supports ASEAN's centrality in the multilateral architecture of the region. Thus, the Philippine defense establishment actively participates in various defense and security platforms of ASEAN.

The U.S. remains the only treaty ally of the Philippines. The 1951 Republic of the Philippines-U.S. Mutual Defense Treaty (MDT) was bolstered by the 2014 Enhanced Defense Cooperation Agreement (EDCA) aimed at advancing the implementation of the MDT and U.S.-Philippines defense relations through: (1) Interoperability; (2) Capacity-building; (3) Maritime Security; (4) Maritime Domain Awareness; and (5) HADR.[153] In January 2019, the U.S. Ambassador to the Philippines and the Philippines' Secretary of National Defense cut the ribbon on the first major project under the EDCA at Cesar Basa Air Base, Pampanga, northwest of Manila. The unveiled HADR warehouse will be used to pre-position equipment and supplies critical to the U.S. and Philippines' ability to respond quickly and effectively to humanitarian crises in the region. Since then, other EDCA projects have been undertaken at Fort Magsaysay Military Reservation (north of Manila), Lumbia Air Base (Cagayan de Oro), Antonio Bautista Air Base (Palawan), and Mactan Benito Ebuen Air Base (Mactan, Cebu).[154]

Australia is a strong security partner of the Philippines, a relationship that was enhanced by the establishment of Philippines-Australia comprehensive partnership in 2015. The two countries cooperate on anti-terrorism measures, maritime security, natural disasters, and human trafficking, and they undertake trainings and academic exchanges. The Status of Visiting Forces Agreement between the Philippines and Australia is a foundation for sustained expansion of relations. Philippines-Japan security relations are based on various agreements on defense cooperation and education exchanges, cooperation on capacity building, defense equipment and technology, logistics support, and cooperation on non-traditional concerns especially on Peacekeeping Operations, HADR, and maritime security.[155]

The International Red Cross and Red Crescent Movement

International Committee of the Red Cross

The International Committee of the Red Cross (ICRC) is a private, independent, humanitarian organization, headquartered in Geneva, Switzerland. The ICRC bases its activities on the provisions of International Humanitarian Law (IHL), and it is neutral in politics, religion, and ideology. The ICRC assists with the protection of civilian victims of armed conflict and internal strife and their direct results. Within these roles, it may take any humanitarian initiative as a neutral and independent intermediary.[156] During 2020 and 2021, ICRC has been a partner in pandemic response via technical, educational, and resource delivery to promote public health and support livelihoods. On-going programs provide food and non-food items to displaced persons, provide health screenings for imprisoned populations, and provide training in IHL to legal and academic personnel.[157]

International Federation of Red Cross and Red Crescent Societies

The International Federation of Red Cross and Red Crescent Societies (IFRC) is a humanitarian organization that provides assistance and promotes humanitarian activities carried out by the National Societies, with a view to preventing and alleviating human suffering. IFRC was founded in 1919 and includes 192 National Societies. The IFRC carries out relief operations to assist victims of disasters and combines

this with development work to strengthen the capacities of its member National Societies.[158]

Philippine Red Cross (PRC)

PRC has roots in 1899 but was a chapter of the American National Red Cross until Philippine independence in 1946. The PRC Charter, Republic Act 95, was signed in 1947, and in 2009, Republic Act No. 10072, the Philippine Red Cross Act, affirmed the country's "conformity with the Geneva Conventions of 1949 and their additional protocols, and the Statutes of the International Red Cross and Red Crescent Movement," and it confirmed the PRC's standing as a "voluntary, independent, and autonomous non-governmental society auxiliary to the authorities of the Republic of the Philippines in the humanitarian field." In May 2017, on its 70th anniversary, PRC welcomed the country's first ever humanitarian ship, the M/V PRC Amazing Grace, launched at the Philippine Navy National Headquarters, Manila.[159] PRC is involved in the country's blood donation and management system and provides training to public and private entities in First Aid and water safety.[160] Annually, PRC responds to small and large disasters within the country, such as 2020's Typhoons Goni and Vamco, which struck in the midst of the COVID-19 pandemic. PRC responded by pre-positioning emergency response teams, first aid, hygiene kits, and other relief supplies. Teams helped evacuate people from vulnerable areas and, after the storms had passed, PRC deployed utility vehicles to rescue people and ferry stranded persons to safety. It distributed relief materials and supported damage assessments and searches for missing persons. Photo 1 shows a PRC volunteer providing aid after Typhoons Goni and Vamco.[161]



Photo 1: Philippine Red Cross Teams Administer First Aid after Typhoons (2020)

U.S. Government Agencies in the Philippines

The U.S. has designated the Philippines as a Major Non-NATO (North Atlantic Treaty Organization) ally, and there are close and abiding security ties between the two nations. Moreover, the U.S.-Philippine Bilateral Strategic Dialogue advances discussion and cooperation on bilateral, regional, and global issues. There is a focus on economic, commercial, and people-to-people ties, the last via programs such as Fulbright, International Visitor Leadership Program, and the Kenney-Lugar Youth Exchange and Study program.[162] The 2011 Partnership for Growth Statement of Principles reinforced a shared interest in promoting inclusive and sustainable economic growth in the Philippines.[163]

By August 2021, the U.S. government, through USAID, DoD, and the Department of State, had invested nearly 1.4 billion Philippine Pesos (PHP) (US$27.9 million) to support the Philippines' response to the COVID-19 pandemic. U.S. government assistance helped the country implement internationally recognized infection prevention and control strategies, strengthen laboratory systems, build capacity of frontline health workers to prevent, detect, trace, isolate, treat, and manage COVID cases, communicate effectively about health risks, and roll out vaccines. The Philippines has received more than 13.3 million doses of vaccines from the COVID-19 Vaccines Global Access (COVAX) facility, with more than 6.2 million of those vaccines donated by the U.S.[164]

Focusing on strengthening economic growth, democratic governance, health, and education, USAID partners with agencies and groups in the Philippines to advance sustainable, inclusive development. USAID also aims to improve natural resource management and boost environmental resilience in the face of frequent natural disasters. Bolstering the country's environmental resilience, USAID helps improve the management of over 90% of the Philippines' forests, which help prevent erosion and provide energy and water.[165] Many of USAID's ongoing development projects are in the health sector beyond pandemic-related assistance. Indeed, USAID's health and humanitarian assistance supports Philippine government implementation of prevention, control, and response strategies against all infectious diseases.[166]

To specifically address the country's battle against COVID-19, USAID has been assisting local governments to prevent the spread of COVID-19 through stronger health service delivery at the barangay and household levels where it helps individuals, families, and frontline health workers to protect themselves from infection through widespread training programs. USAID plays a key role supporting DOH to rapidly and effectively communicate COVID-19 guidelines. Moreover, to boost DOH testing capacity, USAID partnered with international organizations to upgrade laboratories and expand specimen transport systems. Finally, the United States donated 100 new, state-of-the-art ventilators and associated supplies to the Philippines.

USAID projects continue to advance good governance, quality education, and sustainable livelihoods with the added goal of addressing the social and economic effects of the pandemic. USAID is partnering with local governments in some of the hardest hit areas around the country to promote effective crisis management and implement response plans. For example, USAID maximized its ongoing partnership with eight key urban hubs, supporting them to design and implement crisis communication strategies. It is also strengthening the capacity of local crisis response centers to disseminate accurate and timely information, manage quarantine measures, and set up public handwashing facilities. In addition, USAID projects provide supply chain analytics and promote a regulatory environment that facilitates logistics and transportation. Further, USAID has introduced key digital solutions that have helped local governments strengthen supply chains, and USAID is facilitating access to credit and provide grants and skills training to heavily affected sectors and communities.

To advance basic education, higher education, and workforce development, USAID collaborates closely with the Department of Education (DepEd) to continue to protect children's right to quality education. USAID's early grade education project shares tips and resources that families and teachers can use to create meaningful reading and learning experiences in the home. USAID is supporting DepEd efforts to improve remote learning options and identify and address learning gaps for students as schools reopen. USAID is also supporting the roll-out of learning continuity plans for out-of-school youth enrolled in the Alternative Learning System and is offering free online life skills training to boost their employability. In higher education, USAID-supported universities with strengthened science and technology research capacity are addressing local needs, such as production of ethanol-based disinfectants to benefit communities, and training of medical technologists.[167] Photo 2 shows officials from the Philippines Department of Education and City Government of Legazpi, as they accept distance learning equipment donated by USAID to help restore access to education for vulnerable out-of-school youth.[168]



Photo 2: USAID Delivers Supplies to Department of Education to Serve Out-of-School Youth

Bureau for Humanitarian Assistance

Recognizing the significant disaster risk in the Philippines, USAID's Bureau for Humanitarian Assistance (BHA), maintains robust disaster risk reduction programs that build the capacity of local communities, government agencies, and NGOs to prepare for and respond to the range of natural disasters that frequently impact the country. With support from BHA, the U.S. Forest Service conducts Incident Command System (ICS) training programs for local incident management teams, national disaster management authorities, first responders, AFP, and local disaster response officials in provinces where BHA disaster risk reduction activities are implemented.

BHA supports UN OCHA to increase the technical capacity of the Philippine government to undertake preparedness and response activities and activate in-country humanitarian coordination mechanisms during disasters. The project also facilitates opportunities for the government to engage in regional collaborative initiatives for effective disaster risk reduction monitoring, early warning, emergency response and preparedness.[169]

USAID's contact information includes:

USAID
Sean Callahan, Acting Mission Director
USAID/Philippines
Annex 2 Building, U.S. Embassy
1201 Roxas Boulevard, Ermita
Manila
Philippines
1000
Tel: +63-2-301-6000
Fax: +63-2-301-6213
E-mail: infoph@usaid.gov

USAID Contact
Sarah Mentrup, Desk Officer
U.S. Agency for International Development
1300 Pennsylvania Avenue, NW
Washington, DC 20523
Tel: 571-217-0270
E-mail: smentrup@usaid.gov

U.S. Embassy in Philippines
1201 Roxas Boulevard
Manila, Philippines 1000
Tel: (632) 5301-2000
Fax: (632) 5301-2017

Laws, Policies, and Plans on Disaster Management

National Disaster Risk Reduction and Management Act (DRRM Act, 2010)

Republic Act 10121 provided a legal and institutional basis for DRRM and lays the groundwork for development of plans and policies and for implementation of projects pertaining to DRRM.[170] The DRRM Act outlined provisions for the establishment of NDRRMC and laid out the Implementing Rules and Regulations for National, Regional, and Local DRRMCs and their respective powers and functions.[171]

Anti-Terrorism Act (Republic Act 11479, 2020)

Of concern during emergencies is the issue of humanitarian action coming into conflict with the Philippines' strict anti-terror laws and policies. Section 13 of this Act specifies an exemption for humanitarian activities "undertaken by the International Committee of the Red Cross (ICRC), the Philippine Red Cross (PRC), and other state-recognized, impartial humanitarian partners or organizations in conformity with International Humanitarian Law." This section exempts listed entities from Section 12 that ascribes criminal liability for terrorist action to any person or entity that provides "material support" to terrorists while knowing that such persons or entities are involved in terrorism.[172]

Climate Change Act (2009)

The Climate Change Act (Republic Act 10174) created the Climate Change Commission to tackle climate change adaptation and disaster risk reduction across the country. The Commission, in turn, cosponsored the DRRM Act of 2010. The Climate Change Act required that the State "systematically integrate the concept of climate change in various phases of policy formulation, development plans, poverty reduction strategies and other development tools and techniques by all agencies and instrumentalities of government." Moreover, it implemented a National Climate Change Action Plan including addressing national impacts of climate change, identifying vulnerable communities and ecosystems, defining the disproportionate impact on men, women, and children, assessing management of risks, and identifying greenhouse gas mitigation potentials. It proposed a series of Local Climate Change Action Plans, which would allow frontline agencies to formulate, plan, and implement plans in their area.[173]

National Defense Strategy (2018-2022)

Strategic Priority #3 of the current National Defense Strategy is to ensure that the country has attained the highest standard of capability and preparedness to address the consequences of natural and man-made disasters. As such, DND is tasked with improving inter-agency coordination while exploring new ways to integrate risk mitigation measures in HADR. OCD is mandated to be proactive in implementing and monitoring DRRM programs at the LDRRMCs and to strengthen links with international and local partners to enhance cooperation on DRRM-Climate Change Adaptation and Mitigation (CCAM). OCD must ensure the prompt and accurate dissemination of warnings and advisories and prioritize capacity development on its DRRM-CCAM programs and activities.

The strategy specifies that AFP shall consolidate, staff, equip, and train selected units for the first responder role and improve coordination with other agencies as well as

civil society organizations for humanitarian assistance and DRRM operations. Further, AFP shall enhance its Communications, Electronics, and Information Systems requirements and capabilities to support HADR units. In addition, DND shall invest in upgrading HADR units of AFP to INSARAG standards and develop basic HADR capability notwithstanding existing inherent equipment.[174]

National Framework Strategy on Climate Change (NFSCC) (2010-2022)

NFSCC recognizes climate change as the most serious and pervasive threat facing humanity. The Philippines faces threats from more intense tropical cyclones, drastic changes in rainfall patterns, sea level rise, and increasing temperatures, which contribute to serious impacts on river basins, coastal and marine systems, and biodiversity and, thus, impact food security, water resources, human health, public infrastructure, energy, and human settlements. NFSCC commits the country to ensuring and strengthening adaptation of natural ecosystems and human communities to climate change. The Framework is risk-based, and it demands strategies and activities be formulated based on the causes, magnitude, and impacts of hazards. Adaptation measures shall be based on equity, in accordance with common but differentiated responsibility with equitable protection of the poor, women, children, and other vulnerable and disadvantaged sectors. The Framework adopts the Philippine Agenda 21 for Sustainable Development to fulfill human needs while maintaining the quality of the natural environment for current and future generations. NFSCC triggers the development of a National Climate Change Action Plan (NCCAP) to provide details and guide LGUs in the preparation of their respective Local Climate Change Action Plans.[175]

National Disaster Risk Reduction and Management Plan (NDRRMP) (2011-2028)

The NDRRMP covers four thematic areas: (1) Disaster Prevention and Mitigation; (2) Disaster Preparedness; (3) Disaster Response; and (4) Disaster Rehabilitation and Recovery. These areas correspond to the structure of NDRRMC. By law, OCD formulates and implements the NDRRMP and ensures that the physical framework, social, economic, and environmental plans of communities, cities, municipalities, and provinces are consistent with the plan. The NDRRMP is consistent with the National DRRM Framework (NDRRMF), which envisions a country of "safer, adaptive, and disaster-resilient Filipino communities." It conveys a paradigm shift from reactive to proactive DRRM wherein people have increased their awareness and understanding of DRRM, with the objective being to increase people's resilience and decrease their vulnerabilities.

Among other things, the NDRRMP lays out lead agencies for each thematic area and the underlying outcomes. DOST has oversight for Disaster Prevention and Mitigation with OCD, DENR, Department of Public Works and Highways (DPWH), and DOF as supporting agencies. DILG has oversight over Disaster Preparedness with the Philippine Information Agency (PIA) and OCD as implementing partners. DSWD has oversight over Disaster Response with support from the DRRMCs, OCD, DND, DILG, DOH, and LGUs. NEDA has oversight over Disaster Rehabilitation and Recovery with OCD, the National Housing Authority, DPWH, DOH, and DSWD as implementing partners.[176]

National Disaster Preparedness Plan (NDPP) (2015-2028)

The objectives of the NDPP emanate from the NDRRMP. The NDPP helps the national and local governments and other stakeholders contribute to the following objectives:

- Increased awareness and enhanced capacity of communities to anticipate, avoid, reduce, and survive the threats and impacts of all hazards
- Fully equip communities with the necessary skills and capability to face and survive hazards and cope with the impacts of disasters

- Increased DRRM and Climate Change Adaptation capacity among LDRRMCs, LDRRMOs and LDRRMOCs
- National and local preparedness and response policies, plans, and systems are developed and implemented in a comprehensive way
- Strengthened partnership and coordination among all key players and stakeholders.

Consistent with the NDRRMP and other mandates, the NDPP aims to contribute to the broader vision of reducing loss of lives and assets due to hazards and the impacts of disasters by aiming at safe and resilient communities. National and local public and private stakeholders will work in partnership to contribute to the objectives with the government taking the lead in facilitating interventions and ensuring that communities are able better to anticipate, cope with, and recover from hazards.[177]

National Disaster Response Plan (NDRP)

NDRP is the Government of the Philippines' "multi-hazard" response plan. DSWD, together with OCD, and in consultation with NDRRMC member agencies developed and formulated the NDRP. The Plan outlines the processes and mechanisms to facilitate a coordinated response by national or local level departments and agencies. Local government institutions are responsible for the development and improvement of local response plans relative to their areas of responsibility and underlying risks. Effectiveness depends on the level of preparedness done by the different levels of LGUs (province, city, and municipality), as well as that of the field offices and attached agencies.[178]

The NDRP embraces various contingencies. Three versions of the plan exist for separate incidents: earthquake/tsunami, hydro-meteorological, and consequent management/ terrorism.

NDRP for Hydro-Meteorological Hazards Version 2 (2017)

This multi-hazard plan outlines the processes and mechanisms for national, regional, and local disaster response, focusing on hydro-meteorological hazards (e.g., typhoons, tropical storms, and flooding). The plan outlines the role of AFP, which leads the SRR cluster. The 2017 update establishes three new response clusters and specifies mechanisms for civil-military coordination through the CMCC and multi-national military-to-military coordination through the MNCC.

NDRP for Earthquake and Tsunami (2017)

The NDRP for Earthquake and Tsunami outlines key players and mechanisms for national, regional, and local response to sudden onset of these disasters. The plan explains specific criteria for activation as well as necessary actions during the disaster and post-disaster phases. Military forces and assets will be used for damage assessment and SRR operations.[179]

NDRP for Consequence Management and Terrorism

The NDRP for human-induced hazards focuses on the impacts of terrorism but can be applied to other man-made incidents. It aims to ensure timely, effective, and coordinated response by government entities by providing support to the areas affected. The type of response for consequence management that the NDRP lays out at the national level has two approaches: augmentation to the operations of the affected LGUs or assumption of functions of the LGUs in providing response assistance to affected population. "Augmentation" sees the national government respond to requests from RDRRMCs that have identified gaps in their own capacity and capability to provide adequate assistance. "Assumption" of response activities requires reaching a trigger point that confirms that the impact of an incident overwhelms the concerned government agencies and institutions; triggers may be a declaration of a state of calamity, request for assistance from the LDRRMC, or other request from a regional agency on the ground. The responsibility to prevent terrorism and protect vulnerable

communities from attacks lies with different authorities, under the Anti-Terrorism Council, than those agencies responsible for responding to the humanitarian needs of communities stricken by a terror attack.[180]

Harmonized National Contingency Plan for the Magnitude 7.2 Earthquake (2019)

NDRRMC's plan outlines response arrangements in the event of a 7.2 magnitude earthquake, which might affect three regions: Metro Manila; Cavite, Laguna, Batangas, Rizal, and Quezon (CALABARZON); and Central Luzon. It outlines pre-identified assisting RDRRMCs in Luzon, Visayas, and Mindanao, and it forecasts international partners that can support the capacity of the NDRRMC. The OCD Regional Office, through the Regional Director, will take charge as Chairperson of the assisting RDRRMC, overseeing activities and decisions of the 12 pre-identified response clusters.[181]

Revised Operations Plan (OPLAN) "Tulong Bayanihan 2" (2019)

The OPLAN provides systems and protocols for AFP in the conduct of HADR operations in each disaster phase (pre, during, and after). It also details the operational protocols of AFP in relation to personnel, logistics, communications, electronics and information systems, education and training, and MNCC during disasters. It built upon OPLAN Tulong Bayanihan (2016), which outlined the core functions and operational processes of AFP in HADR operations.[182]

National Climate Change Action Plan (NCCAP)

The Climate Change Act (Republic Act 9729) drove the development of the policy framework with which the country will systematically address the growing threats to community life and impacts on the environment of climate change. The Act established an organizational structure, the Climate Change Commission, and allocated budgetary resources for its important functions. These functions include:

- Formulation of a framework strategy and program, in consultation with the global effort to manage climate change
- Mainstreaming climate risk reduction into national, sector, and local development plans and programs
- Assessment of vulnerability and facilitation of capacity building
- Formulate a framework strategy and program, in consultation with the global effort to manage climate change.

The NCCAP itself outlines the agenda for climate change adaptation and mitigation through 2038. NCCAP prioritizes food security, water sufficiency, ecological and environmental stability, human security, climate-smart industries and services, sustainable energy, and knowledge and capacity development as the strategic direction for 2011 to 2028.[183]

Philippine Development Plan (PDP) (2017-2022)

The PDP attempts to quantify targets of the administration's socio-economic agenda and to further progress toward AmBisyon Natin 2040, the long-term strategy to improve the overall well-being of Filipinos across family, community, lifestyle, and a secure future. The first three years emphasized sustained and inclusive economic growth with targets of reducing poverty, improving the country's fiscal position, doubling the positive impact of national infrastructure projects, and reducing unemployment. The categories of health and resiliency of Filipinos was given priority in a reflection of overall national strategic and planning emphases on resiliency in the face of hazards and climate change.[184]

Enhanced Policy Guidelines on Philippine International Humanitarian Assistance (PIHA) (2017)

The Enhanced Policy Guidelines on PIHA seek to establish PIHAC, led by DFA, as the primary body coordinating incoming and outgoing international humanitarian assistance before, during, and after emergencies and disasters. PIHAC coordinates with the NDRRMC to manage in-kind donations, international relief teams, and financial donations, and

ensures that policies and mechanisms are in line with international agreements at the regional and global level. The guidelines aim to institutionalize the PIHARC to screen, facilitate, and expedite the processing and entry of international humanitarian teams, equipment, and in-kind donations. In the event of a catastrophe that overwhelms government capacities, the PIHA guidelines state that NDRRMC shall recommend to the President the issuance of an appeal for international humanitarian assistance, with PIHAC, in coordination with the NDRRMC Response Pillar, determining the start and end for the call of international humanitarian assistance. The PIHA guidelines also include the policy that "in case of donations from foreign governments, acceptance thereof shall be subject to the prior clearance and approval by the President of the Philippines upon recommendation of the Secretary of Foreign Affairs."[185]

Disaster Rehabilitation and Recovery Planning Guide (2020)

The Disaster Rehabilitation and Recovery Planning Guide has been formulated by NEDA and serves as the recovery and rehabilitation template for national and local government to use in post-disaster (and post-conflict) recovery planning. The guide provides templates for a recovery framework, planning process, institutional arrangements, coordination and implementation mechanisms, options for funding resources, and proposed monitoring arrangements.[186]

Disaster Management Communications

The Philippine government and disaster response stakeholders learned from 2013's Typhoon Haiyan that disaster risk reduction and preparedness include building robust Early Warning Systems (EWS), publicizing evacuation processes and points, pre-positioning relief items, and educating communities on safer locations to build and plant based on risk assessments.

Early Warning Systems

DOST is responsible for monitoring and forecasting and serves as Vice-Chair for Disaster Preparedness and Mitigation of NDRRMC.

Under DOST, the Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA) provides tropical cyclone warnings, flood bulletins and advisories, and weather forecasts. PAGASA's products include both steady state weather forecasts and emergency watches, warnings, and forecasts. Among other products and services, the below are critical public information services from PAGASA:

- Severe weather: 6-hourly Tropical Cyclone Warnings, hourly Tropical Cyclone Updates, Shipping Forecasts and Tropical Cyclone Warnings for Shipping, Gale Warnings, Storm Surge Warnings, Rainfall Warnings, and Thunderstorm Alerts
- Flood warnings: Basin Flood Bulletins, General Flood Advisories, Dam Discharge Warning Information during spilling operations, Community-Based Flood Early Warning, and daily hydrological forecasts during non-flood watches
- Public outreach: public awareness campaigns on natural hazards (weather, climate, typhoons, floods, storm surges, etc.), seminars and workshops on meteorological and hydro-meteorological hazards, conduct flood drills, and conduct annual Typhoon and Flood Awareness Week[187]

Figure 9 displays PAGASA's homepage where active weather warnings are displayed.[188]

The two prongs of DOST-PAGASA information management are risk knowledge, and observation and monitoring. The production of hazard and risk maps and assessments includes developing coastal, metropolitan, and other visual aids to inform decision-makers. These assessments feed into PAGASA's GeoRiskPH and GeoMapper Exposure Data Mapper integrated systems. National and local government agencies can input their data into the GeoRiskPH servers, and various analyses can deliver pre- and post-

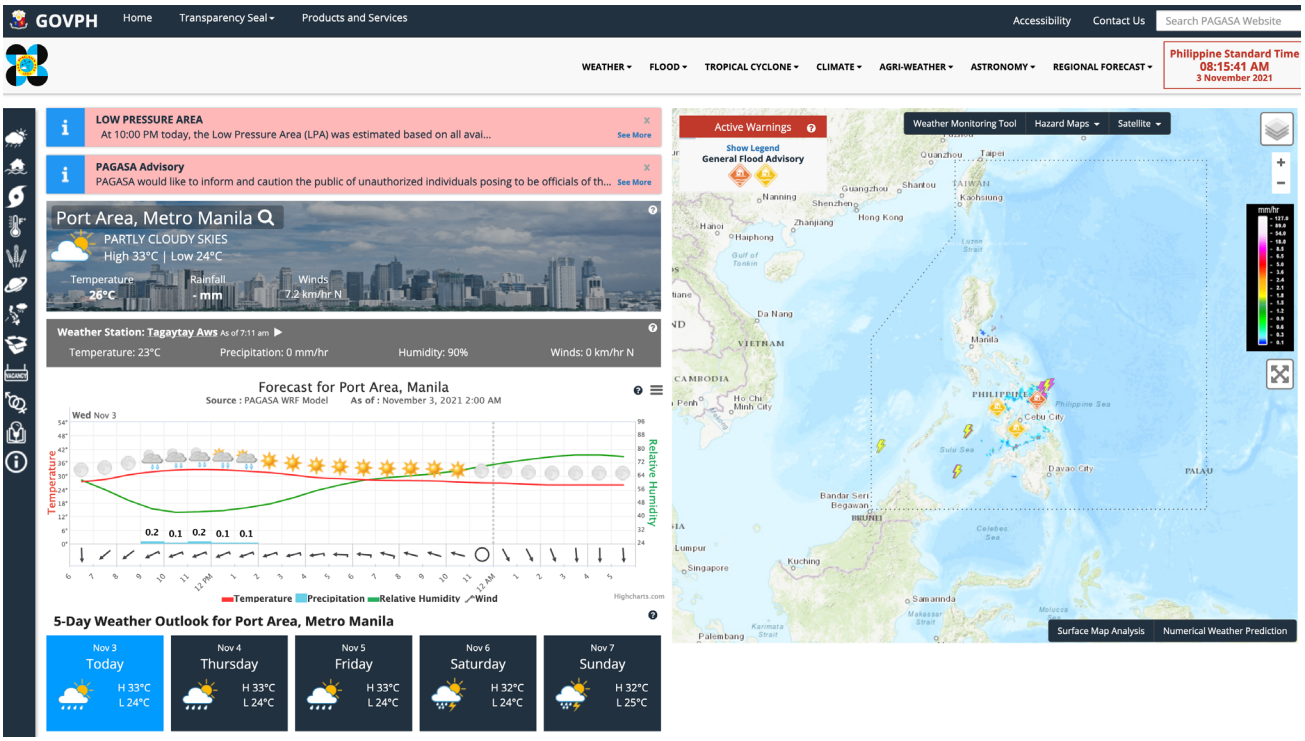


Figure 9: Homepage of PAGASA, Showing Active Weather Warnings

disaster assessments via the web application, GeoMapper Exposure Data Mapper.

DOST-PAGASA maintains 24/7 observation, data collection, and transmission via field stations, satellites, radar, buoys, drones, and other sensors that feed data into PAGASA systems whereby agents can customize warnings and advisories that are then disseminated via telecommunications systems to authorities, mass traditional and social media, and the public. The challenge is "last-mile" warnings in remote areas where telecommunications infrastructure may be weak and require analog interventions by local leaders (megaphones, sirens, whistles, etc.). PAGASA warnings go both direct to the public and to officials to mobilize N/R/LDRRMCs. PAGASA does have offices and centers at the national and local levels.[189]

PHIVOLCS is a service institute of DOST and is responsible for the mitigation of disasters that may arise from volcanic eruptions, earthquakes, and tsunamis. To promote risk awareness and alert Filipinos to imminent danger, PHIVOLCS issues bulletins and warnings as necessary for volcanic or seismic activity. While national and local media can disseminate these bulletins, PHIVOLCS also has in-house apps and services via which Filipinos can directly inform themselves of the risks they face and how to react.

- PHIVOLCS FaultFinder app does proximity searches for active faults, using a phone or other device's tracking software. It may also be used to measure the shortest distance between an active fault and a specific site, identified by a user. The app can support land-use planning, risk assessment, disaster risk reduction planning, and awareness.[190]
- REDAS (Rapid Earthquake Damage Assessment System) is a PHIVOLCS software that can simulate earthquake hazards (ground shaking, liquefaction, landslides, and tsunami). It computes earthquake impacts in terms of physical damage, casualties, and economic loss. REDAS was originally conceived for use in earthquake hazard and impact assessment, but it now has incorporated other multi-hazard maps (floods, storm surge, and rain-induced landslides). REDAS has been shared with LGUs as a tool for emergency preparedness, contingency planning, and mainstreaming

disaster risk reduction. The Severe Wind Impact Forecasting Tool (SWIFT) and Flood Loss Assessment Tool (FLOAT) modules of REDAS were co-developed with PAGASA. SWIFT deals with impact estimation from severe wind hazards while FLOAT deals with losses from floods. Additional modules are the Tsunami Simulation and Impact Assessment Module (TsuSIM) and the Crop Damage Assessment Tool (CropDAT).[191]

- HazardHunterPH is an on-line tool that can be used to generate indicative hazard assessment reports on a user's specified location. It is a reference for property owners, buyers, land developers, planners, and other stakeholders needing immediate hazard information and assessment. It increases awareness to natural hazards and advocates the implementation of plans to prepare for and mitigate the effects of hazards.[192]

Information Sharing

Understanding how to overcome the information challenges that civilian and military agencies experience during a typical disaster response mission is important. Knowing what the available HADR resources are will assist responding leaders and staff during mission planning and during execution. No single responding entity – NGO, International Governmental Organization, assisting country government, or the host government – can be the source of all the required information. Thus, sharing information across responders reduces the potential for duplicated efforts and enhances collaboration that promotes the mission of saving lives and reducing human suffering.[193]

Collaboration, information sharing, and networking have been the backbone of successful disaster response and preparation. Disseminating information not only to those in-country and threatened by disaster, but also to those responding to assist in the emergency has been crucial to timely, efficient, and effective disaster response. Recent technology advances have improved disaster prediction and alert around the world. In turn, these improvements have helped establish early warning and evacuation measures and led to opportunities for communities to react and prepare for incoming threats.

The following are some of the ways in which information regarding disaster risk management and response are shared. Managing information is central to the overall mechanisms within disaster preparedness and response. There are many informational resources, stakeholders, and components to consider before, during, and after a natural disaster. This section will discuss country-specific, humanitarian, regional, government, and DoD information sources.

Philippines Information Sources

National Disaster Risk Reduction and Management Council (NDRRMC)

NDRRMC is the lead agency for disaster response. It coordinates preparedness, response, prevention and mitigation, and rehabilitation and recovery. It manages information on potential emergencies using reports from the country's meteorological, seismic, and climate science agencies, and it maintains and updates information on the country's response to emergencies, including contributions from NGOs and international partners.

Current data are available via the homepage/ dashboard at: *https://ndrrmc.gov.ph/*

NDRRMC Operation Center
NDRRMC Building, Camp General Emilio Aguinaldo, Quezon City
Hotlines: 8911-1406; 8912-2665; 8912-5668; 8912-3046; and 8911-5061 to 65 (TRUNK LINE)
Local: 100
E-mail: *ndrrmoc@ocd.gov.ph*
Facebook: @NDRRMC
Twitter: @NDRRMC_OpCen

Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA)

PAGASA maintains the national network of scientific and technical tools to observe and

forecast weather, flooding, and other climactic conditions. It also performs research and assessments into atmospheric and related data to provide warnings and risk assessments to economic interests (agricultural, commercial, and industrial). It is the agency that publishes and updates severe weather and tropical cyclone forecasts, alerts, and warnings.

To disseminate warnings and other information, PAGASA uses SMS, fax, telephone, radio, TV, e-mail, social media, and print outlets. The agency's homepage is a dashboard with all current warnings: *http://www.pagasa.dost.gov.ph/*
PAGASA Science Garden Complex, BIR Road, Brgy. Central, Quezon City, Metro Manila 1100
Tel: 02-8284-0800
Local Hotlines: Weather – 805; Public Information: 102 / 103
E-mail: *information@pagasa.dost.gov.ph*
Twitter: @dost_pagasa

Philippine Institute of Volcanology and Seismology (PHIVOLCS)

PHIVOLCS is principally mandated to mitigate disasters that may arise from volcanic eruptions, earthquakes, tsunami, and related geotectonic phenomena. It provides information and services for warning, disaster preparedness, and mitigation through the development and application of technologies for prediction and determination of areas prone to volcanic eruptions, earthquakes, tsunamis, and related hazards. In addition to its education and planning roles, it maintains up-to-the-minute data on assigned hazards and publishes that data on-line. It uses this data to provide information to the public regarding eruption, earthquake, or tsunami warnings.

Via the homepage (*https://www.phivolcs.dost.gov.ph/*), dashboards are available for volcano bulletins (*https://www.phivolcs.dost.gov.ph/index.php/volcano-hazard/volcano-bulletin2*), earthquake information (*https://www.phivolcs.dost.gov.ph/index.php/earthquake/earthquake-information3*), and tsunami advisories and warnings (*https://www.phivolcs.dost.gov.ph/index.php/tsunami/tsunami-advisory-and-warning3*).
PHIVOLCS Building, C.P Garcia Ave., Diliman, Quezon City, Philippines 1101
Tel: 632-8426-1468 up to 79
Email: *phivolcs_mail@phivolcs.dost.gov.ph*
Twitter: @phivolcs_dost
Seismological Observation & Earthquake Prediction Division (SOEPD)
E-mail: *soepd@phivolcs.dost.gov.ph*
Volcano Monitoring and Eruption Prediction Division (VMEPD)
E-mail: *vmepd@phivolcs.dost.gov.ph*

Disaster Response Operations Monitoring and Information Center (DROMIC)

DROMIC is a division of the Disaster Response Management Bureau of DWSD. It is responsible for gathering, curating, consolidating, presenting, and disseminating information related to all phases of disaster response undertaken by the DSWD. Among its information collections are registries of responders and an updated Common and Fundamental Operational Datasets (CAFOD) for disaster response. DSWD's Rapid Emergency Telecommunications Team (RETT) is the rapid deployment team equipped with information and communications technology (ICT) resources organized to address the communications, electronics, and information needs of disaster managers and affected population in a disaster-stricken area. DSWD RETT is an active member of the Emergency Telecommunications Cluster led by OCD.

Information on on-going emergencies and updated alerts are available at: *https://dromic.dswd.gov.ph/*
Twitter: @dwsd_dromic
E-mail: *dromic@dswd.gov.ph*
SMS: text "DSWD dromic [your name and message]" to 3456
Tel (landline): +6329322573
UHF radio: 440.235 Mhz (RETT Frequency)
Tel (satellite): +8821664503497

Philippine Red Cross (PRC)

Annually, PRC responds to small and large disasters within the country. It can pre-position emergency response teams, first aid, hygiene kits, and other relief supplies. PRC teams

help evacuate people from vulnerable areas and support rescue teams. It distributes relief materials and supports damage assessments.

Information on on-going responses is available via:
Facebook: @phredcross
Twitter: @philredcross
Instagram: @philredcross

Humanitarian Information Sources

United Nations Office for the Coordination of Humanitarian Affairs (OCHA) Regional Office for Asia and the Pacific (ROAP)

UN OCHA's ROAP seeks to optimize the speed, volume, and quality of humanitarian assistance and coordinates emergency preparedness and response in the world's most disaster-prone region in support of national governments. ROAP covers 41 countries and partners with them for coordinated and effective international responses to emergency situations.
Website: *https://www.unocha.org/roap*
For OCHA situation reports, click on "Subscribe" button at top of page.

ReliefWeb

ReliefWeb is a service of UN OCHA that consolidates information and analysis from organizations, countries, and disasters for the humanitarian community.
Website: *https://reliefweb.int/*
Philippine country page: *https://reliefweb.int/country/phl*

PreventionWeb

PreventionWeb is provided by the UN Office for Disaster Risk Reduction (UNDRR) to consolidate disaster risk reduction information into an online, easy to understand platform.
Website: *https://www.preventionweb.net*

International Federation of Red Cross and Red Crescent Societies (IFRC)

IFRC is the world's largest humanitarian organization, comprised of 192 National Societies including the Philippine Red Cross, a secretariat in Geneva, Switzerland, and over 60 delegations around the world. The IFRC carries out relief operations to assist victims of disasters alongside development work to strengthen the capacities of the National Societies. IFRC's work focuses on four core areas: promoting humanitarian values, disaster response, disaster preparedness, and health and community care.
Website: *https://media.ifrc.org*

International Committee of the Red Cross (ICRC)

ICRC is an impartial, neutral, and independent organization whose exclusively humanitarian mission is to protect the lives and dignity of victims of armed conflict and other situations of violence and to provide them with assistance. It also works to prevent suffering by promoting and strengthening humanitarian law and universal humanitarian principles. ICRC, together with IFRC and the 192 Red Cross Red Crescent Societies, make up the Red Cross Red Crescent Movement.
Website: *https://www.icrc.org/en*

Humanitarian Response

Humanitarian Response is a platform providing the humanitarian community a means to aid in coordination of operational information and related activities.
Website: *https://www.humanitarianresponse.info*
Philippine country page: *https://www.humanitarianresponse.info/en/operations/philippines*

Global Disaster Alert and Coordination System (GDACS)

GDACS is a cooperation framework between the UN, the European Commission, and disaster managers worldwide to improve alerts, information exchange, and coordination in the first phase after major sudden-onset disasters.
Website: *https://www.gdacs.org/alerts/*
The latest alerts can be found here: *http://www.gdacs.org/Alerts/default.aspx*
To subscribe: *http://www.gdacs.org/About/contactus.aspx*

Virtual OSOCC

The Virtual OSOCC is a real-time online coordination tool for disaster response professionals from urban search and rescue teams, national authorities, as well as regional and international organizations at a global level.
Website: *https://vosocc.unocha.org/*

Think Hazard

Think Hazard is a website that provides detailed information on a country. Information is provided on the Philippines regarding hazards, country assessments, projects, early warning systems, and other resources.
Website: *http://thinkhazard.org*

Humanitarian Country Teams (HCT)

HCT is a strategic and operational decision-making and oversight forum established and led by the Humanitarian Coordinator in each country. It is generally comprised of representatives from UN agencies including the International Organization for Migration (IOM), international NGOs, and the IFRC as well as the respective Red Cross/Crescent National Society. During a disaster response, HCTs often produce a Situation Report (SitRep), usually in conjunction with OCHA.
Most HCT SitReps can be found through ReliefWeb: *https://reliefweb.int/*

Humanitarian Data Exchange (HDX)

HDX is an open platform for sharing data across crises and organizations. The goal is to centralize humanitarian data for easy access and analysis. HDX is managed by OCHA's Center for Humanitarian Data in The Hague.
Website: *https://data.humdata.org/*

Regional Information Sources

AHA Centre

The ASEAN Coordinating Centre for Humanitarian Assistance on disaster management (AHA Centre) was established to facilitate cooperation and coordination of disaster management amongst ASEAN Member States, of which the Philippines is one. AHA Centre primarily works with the National Disaster Management Organization of Member States and with partnerships such as international organizations, the private sector, and civil society organizations, such as the Red Cross and Red Crescent Movement, the UN, and AADMER Partnership Group.

AHA Centre Information products regarding disasters and disaster responses are available via the Disaster Monitoring and Response System (DMRS) and the ASEAN Disaster Information Network (ADINet). DMRS was designed in partnership with the Pacific Disaster Center (PDC) and receives constant information feeds from the PDC system. It shows real time information of the hazards in the region, as well as hydro-meteorological data. The basic maps can be overlaid with additional information, such as population density data, location of airports and seaports, and major roads and infrastructure. ADINet is a repository of information concerning hazards and disasters that have happened. The public can submit information about any hazard and disaster. Then, the AHA Centre verifies and validates information and can add new information when relevant.
Request a DMRS account via: *https://dmrs.ahacentre.org/dmrs/*
For ADINet products, request an account via: *https://adinet.ahacentre.org/*
Twitter and Instagram: @AHACentre

Changi Regional HADR Coordination Centre (RHCC)

Changi RHCC was launched in September 2014 to support the military of a disaster affected state in coordinating actions by assisting foreign militaries. It aims to provide open, inclusive, and flexible platforms that allow both regional and extra-regional militaries work together effectively in a multinational disaster response. Changi RHCC manages the OPERA CIS web portal to broadcast the updated situation status of multinational military responses to disasters to minimize duplication and gaps in the provision of foreign military assistance.

Website: *https://www.changirhcc.org/*
To subscribe to RHCC Weekly and Spot Reports, email: Changi_RHCC@defence.gov.sg

U.S. Government Sources

U.S. Agency for International Development (USAID)

USAID is committed to responding to crises around the world to help people and places most in need. They aim to:

- Promote Global Health
- Support Global Stability
- Provide Humanitarian Assistance
- Catalyze Innovation and Partnership
- Empower Women and Girls

USAID produces a monthly newsletter called USAID Newsletter which is available digitally at *https://www.usaid.gov/news-information/newsletter.*

More information and updates from USAID are available via Facebook (@USAID), Twitter (@usaid), and YouTube (@usaidvideo).
Website: *https://www.usaid.gov/*

Bureau for Humanitarian Assistance (BHA)

USAID BHA is responsible for leading and coordinating the U.S. Government response to disasters overseas. BHA responds to an average of 75 disasters in 70 countries every year. BHA fulfils its mandate of saving lives, alleviating human suffering, and the reduction of the social and economic impact of disasters worldwide in partnership with USAID functional and regional bureaus and other U.S. government agencies. BHA works with the international population to assist countries prepare for, respond to, and recover from humanitarian crises.[194]

USAID/BHA products include situation reports and maps, which are available via email mailing lists as well as Reliefweb.org. Info products (HA Updates/Fact Sheets, etc.) are also available on USAID.gov (*https://www.usaid.gov/humanitarian-assistance*)

For BHA updates on a disaster response, ask the BHA representative for the respective DoD Geographic Combatant Command to add you to the email list, if you have a U.S. government email address:

- *BHA.INDOPACOM@usaid.gov*
- *BHA.SOUTHCOM@usaid.gov*
- *BHA.NORTHCOM@usaid.gov*
- *BHA.AFRICOM@usaid.gov*
- *BHA.SOCOM@usaid.gov*
- *BHA.CENTCOM@usaid.gov*
- *BHA.EUCOM@usaid.gov*

Pacific Disaster Center Global (PDC)

PDC Global has trademarked an early warning and decision support system called DisasterAWARE®. DisasterAWARE® is primarily for disaster management practitioners and senior decision makers. It supports disaster risk reduction and best practices throughout all phases of disaster management from early warning to multi-hazard monitoring. It has a collection of scientifically verified, geospatial, data and modeling tools to assess hazard risks and impacts. A restricted version of DisasterAWARE is the EMOPS (Emergency Operations) system, which is specifically for the disaster management community, including government agencies and humanitarian assistance organizations serving at local, state, federal, and regional levels.[195]

PDC also provides a public version, Disaster Alert, which offers open access to a world map documenting 18 hazard types.[196] Disaster Alert also has a free, early-warning app (Apple or Android) to receive customizable maps based visual alerts of active hazards. The app offers a global notification system covering natural and man-made hazards. It is available on both iPhone and Android.[197]
Website: *https://www.pdc.org/* OR *https://www.pdc.org/apps/disasteraware/*
Emergency Operations (EMOPS) system (request account): *https://emops.pdc.org/emops/*

All Partners Access Network (APAN)

APAN is the Unclassified Information Sharing Service for the U.S. DoD. APAN provides the DoD and mission partners community space and collaboration tools to leverage information to effectively plan, train, and respond to meet their business requirements and mission objectives. Importantly, APAN's technology team has been supporting HADR operations for over 15 years.[198] APAN has played an integral role in the success of disaster responses, such as the 2015 California Wildfire Response and the 2013 Typhoon Haiyan Response in which they provided organizations and militaries a centralized location to share information, increase situational awareness, and decrease response time and duplicated efforts for best practices in HADR services.[199]
Website: *https://www.apan.org/*

Joint Typhoon Warning Center

JTWC provides advanced warning for U.S. Government agencies and organizations in relevant areas.
Website: *https://www.metoc.navy.mil/jtwc/jtwc.html*

Daniel K. Inouye Asia-Pacific Center for Security Studies (DKI-APCSS)

DKI-APCSS is a U.S. DoD institute that addresses regional and global security issues, inviting military and civilian representatives of the U.S. and Asia-Pacific nations to its program of executive education and workshops.
Website: *https://apcss.org/*

The Center for Excellence in Disaster Management and Humanitarian Assistance (CFE-DM)

CFE-DM is a U.S. DoD organization that was established by the U.S. Congress in 1994 and is a direct reporting unit to U.S. INDOPACOM. CFE-DM provides training and education to help U.S. and foreign military personnel navigate complex issues in disaster management and humanitarian assistance. They produce country focused disaster management reference handbooks, after action reports, best practices, and lessons learned for advancement in response coordination. CFE-DM also works to improve cross-coordination and reduce duplication of efforts and promote U.S. involvement in civ-mil consultations and dialogues with relevant HADR parties such as the AHA Center, OCHA, and Changi RHCC. CFE-DM provides resources and updates at its website, as well as via their Facebook and Twitter accounts (@cfedmha).
Website: *https://www.cfe-dmha.org/*

Disaster Management Reference Handbooks are available for download at: *https://www.cfe-dmha.org/DMHA-Resources/Disaster-Management-Reference-Handbooks*

CFE-DM Disaster Information Reports are available for download at: *https://www.cfe-dmha.org/Publications/Reports-Studies*

Civil-Military Coordination in Foreign Disaster Relief Missions: Best Practices for Information Sharing is available here: *https://www.cfe-dmha.org/Publications/Best-Practices-Pamphlets*

COVID-19 Information Sharing Sources

Johns Hopkins Coronavirus Resource Center
https://coronavirus.jhu.edu/

Cases Database
https://github.com/CSSEGISandData/COVID-19

INFORM's COVID-19 Risk Index
https://data.humdata.org/dataset/inform-covid-19-risk-index-version-0-1-4

INFRASTRUCTURE

All levels of the Philippine government acknowledge that the impacts of infrastructural shortfalls include heavy traffic congestion in cities and limited access to reliable water supply or sanitation. For example, on average, drivers in the Manila Metro area spend up to 71% extra travel time due to traffic, and estimates find that the Philippines loses PPHP3.5 billion (US$70 million) per day due to traffic congestion. Further, the lack of sufficient infrastructure can be expected to undermine the country's global competitiveness, and the government has sought to stave off loses via more investment, hitting a record infrastructure-spending-to-GDP ratio of 5% in 2017. The ambitious "Build, Build, Build" program aimed to raise infrastructure spending to 7% of GDP by the end of 2019 with priority given to transport, followed by water and energy.[200]

The Philippines is among the countries hardest hit in the world by natural disasters with upwards of 20 tropical cyclones striking the country annually. This puts immense strain on the country's already overtaxed infrastructure. Not only is the development of resilient infrastructure important for communities recovering from disasters but investing in green infrastructure projects is also a priority as the government seeks to ensure the country meets its climate commitments. By and large, both public and public-private-partnership pathways are used to fund infrastructure investment in the Philippines although the economic downturn caused by the COVID-19 pandemic has undercut the public side of funding, with likely knock-on impacts for several years.

Transport

The transport system consists of road, water, air, and rail. While water and air play important roles due to the archipelagic nature of the country, road transport is by far the dominant subsector accounting for 98% of passenger traffic and 58% of cargo. Transport infrastructure is somewhat well spread across the country with about 215,000 km (133,594 miles) of roads, 1,300 public and private ports, and 215 public and private airports. However, the level of service is inconsistent due to a lack of sustainable financing.[201]

The Philippine Development Plan (2017-2022) identifies the improvement of connectivity and mobility through transportation as one of the key drivers for economic development. It also outlines that a significant expansion of mass transport infrastructure is needed to decarbonize transport emissions and combat the extreme traffic congestion experienced in the Manila metro area. The transportation sector is central to the Philippines' emissions reduction strategy, because without transition into mass transport and a cleaner source of transport energy, the sector is expected to account for up to 90% of total energy demand in 2030. To date, clean emissions vehicles have been the most prominent part of the government's green transport initiative, but there is now some progress in scaling up the construction of railway transport infrastructure. Some major projects include the rehabilitation of the North-South Commuter Railway (NSCR), rehabilitation of the Metro Rail Transit Line 3 (MRT-3), and the extension of the Light Rail Transit Line 1 (LRT-1) in Cavite and the Subic-Clark Railway. The Philippines is expected to expand its total railway length to 1,144 km (710 miles) in 2022, a significant expansion from only 77 km (48 miles) in 2016.[202]

Airports

There are more than 200 airports in the Philippines, of which 84 are owned and controlled by the government, with the rest privately owned and operated. Of government-controlled airports, 10 are designated as international airports, 15 are Principal Class 1 airports, 19 are Principal Class 2 airports, and 40 are community airports. The country's busiest

airport is Manila's Ninoy Aquino International Airport (NAIA), followed by the Mactan-Cebu International Airport (MCIA) and Clark Diosdado Macapagal International Airport (CRK) northwest of Manila.[203]

Despite concerns over congestion, NAIA, 7km (4.3 miles) south of Manila, remains the primary airport in the Philippines, handling nearly 48 million passengers in 2019. NAIA has four terminals with international traffic using Terminals 1-3, and Terminal 4 hosting local and regional flights.[204] MCIA is the southern hub of the Philippines national air transport system. It is located 20km (12.5 miles) from Cebu City and handles upward of 11 million passengers annually via two terminals, one for international and one for domestic traffic.[205] During the 2013 response to Typhoon Haiyan, to streamline the customs procedures for humanitarian organizations bringing relief goods into the Philippines, a "One-Stop-Shop" was established at airports in Manila (NAIA) and Cebu (MCIA). The Purpose of the "One-Stop-Shop" was to bring together key staff for expediting customs clearances; this included representatives of DSWD, DOH, Bureau of Food and Drugs, DOF, and DFA.[206] Table 1 gives specifications of select Philippine airports.[207]

Seaports

Ports are essential as connecting hubs. There are nine major ports that handle most domestic and international cargo: Manila, Subic, Batangas, Cebu, Davao, Zamboanga, Cagayan de Oro, Iloilo, and General Santos. In addition, there are approximately 1,300 ports of varying sizes, of which 1,000 are government owned. Of the state-owned ports, 114 fall under the jurisdiction of the Philippine Ports Authority (PPA), and the Cebu Ports Authority oversees operations at one base port and five sub-ports. The remainder are the responsibility of other government agencies or LGUs.[208]

In recent years, there has been significant development of roll-on roll-off (ro-ro) ferry services, which are aimed at providing an alternative to traditional long-distance interisland shipping services. The ro-ro system allows vehicles to drive onto and off ro-ro ferries without loading or offloading of cargo. Because this eliminates cargo-handling labor and equipment and reduces the amount of time cargo is required to be in port, reductions in sea transport costs can be considerable. Since 2003, the Government has promoted via the Strong Republic Nautical Highway Program composed of three major trunk lines – western, eastern, and central – that are further broken down into 12 main routes served by different shipping operators. The ro-ro policy has reduced transport costs and connected smaller islands into the national cargo network.[209]

Figure 10 displays some of the Philippines' major ports; small fishing and ferry ports are not shown.[210]

Manila
Latitude: 14° 37' 52" N
Longitude: 120° 58' 19" E

On the eastern shore of Manila Bay, the main port comprises four areas: South Harbor, Manila International Container Terminal (MICT), North Harbor, and Harbour Centre Terminal. North Harbor generally handles domestic cargo, and South Harbor handles international cargo. Cargoes handled include containers, passengers, dry and liquid bulk, ro-ro, and breakbulk.[211] In total, the Port of Manila has 22 available berths and 12 piers with an annual cargo tonnage of around 75 million and container volume of 4.5 million twenty-foot equivalent units (TEU) annually.[212] MICT sits between the North and South Harbors. It has an annual capacity of 3 million TEU.

Terminal Area: 94.8 hectares (234 acres)
Annual Capacity: 3.3 million TEU
Container Yard: 50 hectares (120 acres)
Container Freight Station: 2.88 hectares (7 acres)
Berth Length: 1,700m (5,577 feet)
Berthing Positions: 7
Berth Depth (alongside): 13.5m (44 feet)[213]

Airport	IATA/ICAO Code	Runway Length and Width, meters (m)
Major International Airports		
Ninoy Aquino International Airport (NAIA)	MNL / RPLL	Runway 6: 3,560 m (11,679 feet) Runway 13: 2,026 m (6,646 feet)
Mactan Cebu International Airport (MCIA)	CEB / RPVM	3,300 m (10,827 feet)
Diosdado Macapagal International Airport	CRK / RPLC	3,200 m (10,499 feet)
Other Airports		
Bacolod – Silay	BCD / RPVB	1,956 m (6,417 feet)
Bagabag	BGN / RPUZ	1,200 m (3,937 feet)
Bagasbas	DTE / RPUD	1,150 m (3,772 feet)
Baler	BQA / RPUR	1,151 m (3,776 feet)
Basco	BSO / RPUO	1,250 m (4,101 feet)
Borongon	BPR / RPVW	1,199 m (3,933 feet)
Calbayog	CYP / RPVC	1,476 m (4,842 feet)
Catarman	CRM / RPVF	1,350 m (4,429 feet)
Catbalogan	n/a / RPVY	1,200 m (3,937 feet)
Caticlan	MPH / RPVE	950 m (3,116 feet)
Cauayan	CYZ / RPUY	2,100 m (6,889 feet)
Cuyo	CYU / RPLO	1,524 m (5,000 feet)
Daniel Z. Romualdez Airport	TAC / RPVA	2,137 m (7,014 feet)
Dumaguete	DGT / RPVD	1,870 m (6,135 feet)
Francisco B. Reyes Airport (Busuanga and Coron cities)	USU / RPVV	1,006 m (3,300 feet)
Francisco Bangoy International Airport (Davao)	DVO / RPMD	2,999 m (9,842 feet)
Guiuan	SAA / RPVG	2,094 m (6,870 feet)
Hilongos	n/a / RPVH	1,000 m (3,280 feet)
Iba	n/a / RPUI	900 m (2,952 feet)
Iloilo International Airport	ILO / RPVI	2,500 m (8,202 feet)
Kalibo	KLO / RPVK	2,187 m (7,175 feet)
Laguindingan Airport	CGY / n/a	2,100 m (6,890 feet)
Laoag	LAO / RPLI	2,780 m (9,120 feet)
Legazpi	LGP / RPLP	2,280 m (7,480 feet)
Lingayan	n/a / RPUG	1,043 m (3,418 feet)
Loakan (Baguio City)	BAG / RPUB	1,802 m (5,912 feet)
Lubang	LBX / RPLU	1,260 m (4,133 feet)
Maasin	MSN / RPSM	1,110 m (3,641 feet)
Marinduque	MRQ / RPUW	1,458 m (4,783 feet)
Masbate	MBT / RPVJ	1,200 m (3,937 feet)
Mindoro	VGN / RPUQ	1,186 m (3,891 feet)
Naga	WNP / RPUN	1,402 m (4,599 feet)
Ormoc	OMC / RPVO	1,865 m (6,118 feet)
Puerto Princesa Airport	PPS / RPVP	2,599 m (8,530 feet)
Plaridel	n/a / RPUX	900 m (2,952 feet)
Roxas	RXS / RPVR	1,890 m (6,200 feet)
San Fernando	SFE / RPUS	1,200 m (3,937 feet)
San Jose	SJI / RPUH	1,836 m (6,023 feet)
Subic Bay International Airport (Olongapo City)	SFS / RPLB	2,744 m (9,002 feet)
Tacloban	TAC / RPVA	2,138 m (7,014 feet)
Tagbilaran	TAG / RPVT	1,779 m (5,836 feet)
Tugdan	TBH / RPVU	1,390 m (4,560 feet)
Tuguegarao	TUG / RPUT	1,967 m (6,453 feet)
Virac	VRC / RPUV	1,560 m (5,118 feet)

Table 1: Codes and Runway Lengths for Main Airports

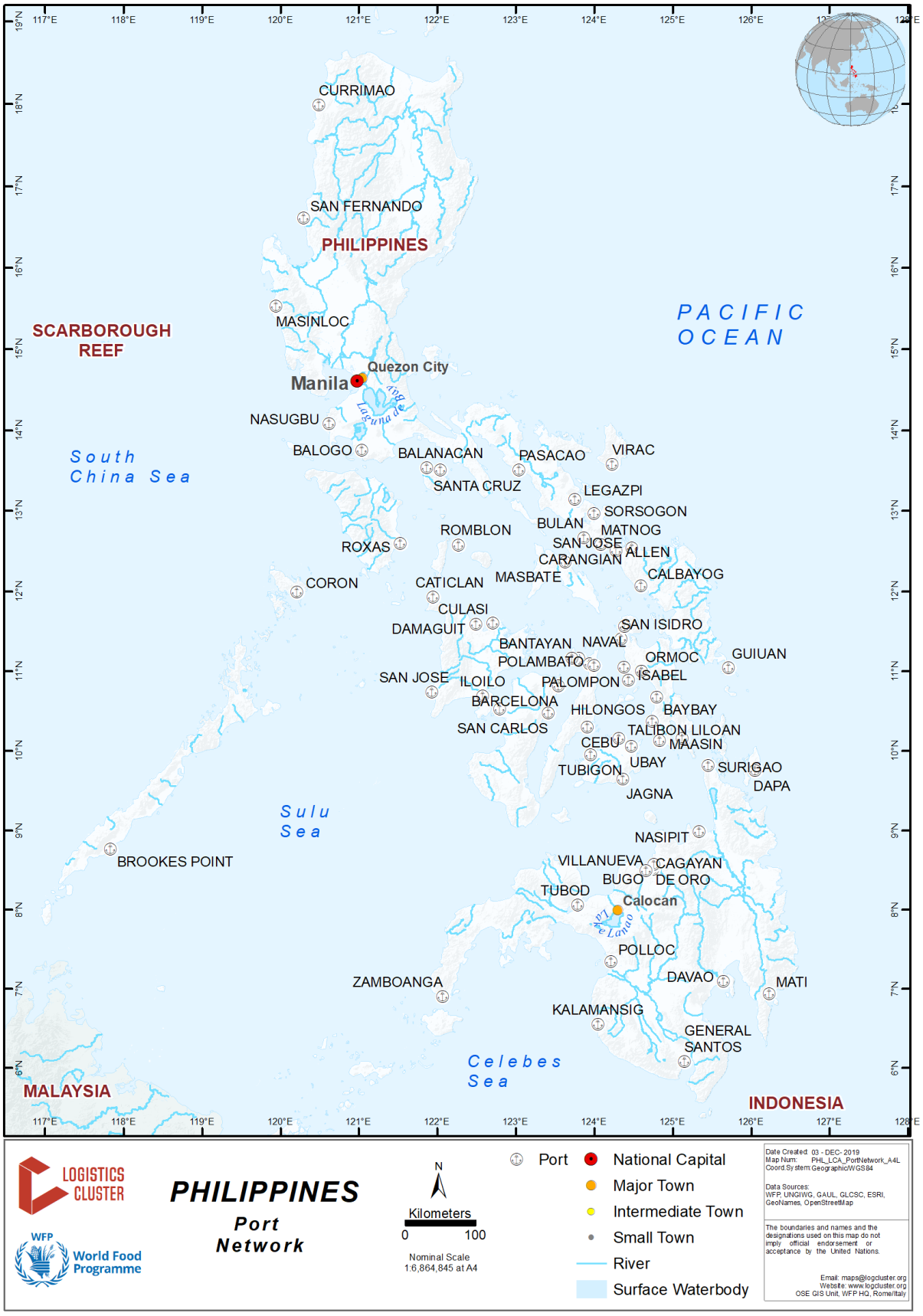


Figure 10: Map of Major Ports

The North Harbor covers about 52.5 hectares (129 acres) of land and contains about 5,200m (17,000 feet) of quays with ten berths and eight quays that can accommodate a wide range of inter-island vessels. The quays contain 54 berthing areas, and there are areas for rolling cargoes at all piers. The South Harbor covers a total area of 85 hectares (210 acres) divided into the Old Port Zone and the Expanded Port Zone. South Harbor is protected by rock barriers that enclose about 600 hectares (1,482 acres) of anchorage. It has five finger piers with a total length of over 2,000m (6,900 feet) with alongside depths from 9 to 11m (29.5-36.1 feet).[214]

Subic
Latitude: 14° 48' 30" N
Longitude: 120° 16' 46" E

About 82km (51 miles) northwest of Manila, the Port of Subic Bay provides a natural deep-water harbor that is protected from typhoons. It was the country's first free port, and it is home to over 700 investment projects, including ship-building facilities.[215] In April 2008, the New Container Terminal-1 (NCT-1) launched to meet demand for containerized trade in Northern and Central Luzon; it has been augmented with a second terminal, NCT-2.

Terminal Area: 26.32 hectares (65 acres)
Annual Capacity: 600,000 TEU
Container Yard Storage Area: 11.14 hectares (27 acres)
Container Yard Reefer Station: 240 units at 440 volts
Berth Length: 560m (1,837 feet)
Berthing Positions: 2
Berth Controlling Depth: 13.7m (45 feet)[216]

Iloilo
Latitude: 10° 41' 37" N
Longitude: 122° 34' 57" E

The Port of Iloilo's commercial complex occupies almost 21 hectares (52 acres) of reclaimed land. It contains 11,400 square meters (122,708 square feet) of open space, a 97,000-square meter (1 million square feet) backup area, and 348m (1,141 feet) of railway. The Port also contains a 7,800-square meter (83,900 square feet) container freight station and a 720-square meter (7,750 square feet) passenger shed. The Port can accommodate vessels up to 400m (1,312 feet) long with alongside depth of 10.5m (34 feet) and a width of 26.2m (86 feet).[217] In 2019, PPA was negotiating with International Container Terminal Services, Inc. to develop Iloilo to allow larger, more modern ships to serve the port. Of note was the need to deepen the entry channel and purchase modern container-handling equipment.[218]

General Santos
Latitude: 6° 5' 59" N
Longitude: 125° 9' 0" E

The Port of General Santos, on Mindanao's southern coast, serves as the gateway to the national and international markets of agricultural and marine products from South Cotabato, Cotabato, Sultan Kudarat, Sarangani, General Santos City, the nearby Davao del Sur and North Cotabato.

Terminal Area: 14 hectares (34 acres)
Container Yard: 4 hectares (10 acres)
Berthing Positions: 9
Berth: Western Wharf: 288m (945 feet)
Berth: Eastern Wharf: 300m (984 feet)
Berth: New Wharf Extension: 111m (364 feet)
Berth: Controlling Depth: 10-12m (33-40 feet)
Open Storage: 5
Reefer Outlets (220V | 440V): 30 | 144
Ro-Ro Ramp: 30 x 12.92m (98 x 42 feet)[219]

Batangas
Latitude: 13° 46' 12" N
Longitude: 121° 2' 30" E

Covering 150 hectares (370 acres), the port is the alternate for the Port of Manila for large consignments of cargo and containers. Located in the southern part of the city of Manila, Batangas

is involved in handling most of the cargo going in and out of the islands in the archipelago and large shipping companies tend to use it as a lay-berth port. The container terminal has been modernized.[220] In mid-2019, the opening of a second berth at Batangas Container Terminal (BCT) expanded the terminal's capacity from 300,000 TEU annually to 500,000 TEU.[221] BCT covers 15 hectares (37 acres) and has two quay cranes and four rubber-tired gantries in addition to other handling equipment.

Berths: 2
Length: 600m (1,968 feet)
Depth: 13m (43 feet)
Reefer Outlets: 352[222]

Cagayan de Oro
Latitude: 8° 28' 49" N
Longitude: 124° 39' 37" E

The Port of Cagayan de Oro can handle rolling cargoes, agricultural products, industrial products, and chemicals and petrochemicals. The Port is part of the Central Nautical Highway under the Roll-On Roll-Off Transport System linking Mindanao to Cebu, Iloilo, Bacolod, Jagna, and Tagbilaran in Visayas, and Manila and Batangas in Luzon.

Total Port Area: 288,347 square meters (3.1 million square feet)
Berth Length: 1,398m (4,586 feet)
One (1) Ro-Ro ramp: 10.5 x 12.5m (34 x 41 feet); LCT type, 10m (32 feet) draft
Wharf # and Draft
Berths 1-2: 9.10m (30 feet)
Berths 3-5: 8m (26 feet)
Berths 6-7: 8.46m (27.7 feet)
Berths 8-9: 10.31m (33 feet)
Berth 10: 10.84m (35 feet)
Berth 11: 11.36m (37 feet)
Berths 12-14: 13m (42.6 feet)
Berths 15-16: n/a
Open Storage Areas: 40,087.5 square meters (431,498 square feet)
Transit Shed 2: 2,760 square meters (29,708 square feet)
Open Transit Shed 1: 5,040 square meters (54,250 square feet)
Open Transit Shed 2: 5,000 square meters (53,819 square feet)
Container Freight Station: 10,872 square meters (117,025 square feet)
Container Marshaling Yard: 32,194 square meters (346,533 square feet)
Reefer Outlets (440V): 36 units[223]

Zamboanga
Latitude: 6° 54' 39" N
Longitude: 122° 4' 39" E

The Port of Zamboanga is in Zamboanga City, western Mindanao. The port is the beginning and ending terminal of the Pan-Philippines National Highway. Total cargo throughput stands at about 2.6 million metric tons annually; these totals are comprised of 86% domestic cargo and 14% foreign cargo with 75% of operations largely at Baseport (non-ro-ro).

Area: 15.6 hectares (38.5 acres)
Docks: 19 (12 are privately owned)
Berths: 6
Draft Alongside: 6-13m (19-42 feet)
Storage
Reefer Point: 8
Paved Storage: 6,200 square meters (66,736 square feet)
Ro-ro ramps: 2 + Finger Pier with a ro-ro platform
Container Yard: 5,400 square meters (68,125 square feet)
Container Freight Station: 4,320 square meters (46,500 square feet)
Paved Marshalling Yard: 13,700 square meters (147,465 square feet)[224]

Davao
Latitude: 7° 3' 52" N
Longitude: 125° 35' 34" E

The Port of Davao is on Mindanao. Davao itself contains as many as 50 small commercial ports, but the major transit facility of the Port of Davao is a deep-water terminal at Sasa Wharf, 8km (5 miles) northeast of Davao City's Santa Ana port. The Port handles upwards of 9 million tons of cargo annually split roughly 5 million tons international and 4 million tons domestic. About 4 million tons are containerized.[225] Davao International Container Terminal, Inc. (DICT) can accommodate Post-Panamax vessels.

Container Yard: 8.8 hectares (21.7 acres)
DICT Berth: 423m (1,387 feet) at 15m (49 feet) depth[226]
Berth Length Old Quay: 980m (3,215 feet)
Berth Length New Quay: 113m (370 feet)
Berthing Positions: 10
Berthing Controlling Depth: 10.6m (34.7 feet)
Storage Area: 2 hectares (4.9 acres)
Warehouse Area: 0.6 hectares (1.5 acres)
Reefer Area (288 Outlets): 0.054 hectares (0.13 acres)[227]

Cebu Ports

The Cebu Baseport is composed of Cebu International Port (CIP) and the Baseport - Domestic Zone. There are five subports within the Cebu Port Authority's jurisdiction, Mandaue, Danao, Santa Fe, Toledo, and Argao; these are smaller, mostly ferry-oriented, ports that are essential to the flow of domestic inter-island commerce.[228] Cebu ports suffered damage in 2013 when Typhoon Haiyan/Yolanda hit, but CIP suffered only minor damage and swiftly resumed operations.[229] Figure 11 shows the locations and imagery of the ports of Cebu.[230]

Cebu International Port (CIP)
Latitude: 10° 18' 0" N
Longitude: 123° 52' 0" E

Situated at the city frontage between Cebu and Mactan islands, CIP comprises 4,397m (14,425 feet) of quayside (including Cebu Baseport with international (690m (2,263 feet)) and domestic (3,707m (12,162 feet)) zones). The total port area is 42.3 hectares (104.5 acres).[231]

Water Depth in/at:
Channel: 7.1-9.1m (26-30 feet)
Cargo Pier: 6.4-7.6m (21-25 feet)
Anchorage: 14-15.2m (46-50 feet)
Oil Terminal: 4.9-6.1m (16-20 feet)[232]

Roads

As of 2014, the country's road system comprised about 216,000 km (134,000 miles),[233] of which about 15% were classified as national roads, thereby falling under the jurisdiction of DPWH. The remaining 85% of the network are local roads and fall under the jurisdiction of a variety of LGUs.[234] As of 2014, only 28% of all roads were paved.[235] DPWH is the national government entity charged with design, construction, and maintenance of national roads and bridges. As of its 2020 census of national roads, DPWH assessed that 32,000 km (19,800 miles) of national highways under its purview were paved although less than half (43%) were in "good" condition.[236]

The main transport corridor is an integrated network of highways and vehicle ferries that form the Strong Republic Nautical Highway (SRNH). The 919km (570 miles) SRNH covers the provinces and cities of Oriental Mindoro, Tagaytay City (Cavite), Marinduque, Romblon, and Batangas City in Luzon; Aklan, Antique, Iloilo, Capiz, Negros Oriental, Negros Occidental, Bohol, Bebu, Guimaras, and Siguijor in the Visayas; and Misamis Occidental, Misamis Oriental, Lanao del Norte, and Dapitan City in Mindanao.[237] Figure 12 illustrates the SRNH routes that provide multi-modal trade routes through the country's central regions.[238]

The Pan-Philippine (Maharlika) Highway is a 3,517 km (2,200 mile) network of roads, bridges, and ferry services that connects the islands of Luzon, Samar, Leyte, and Mindanao and serves as the country's principal transport backbone. The next most important highway is Epifanio de los Santos Avenue, which serves Metro Manila and passes through six of the 17 settlements in the region. A number of modern expressways

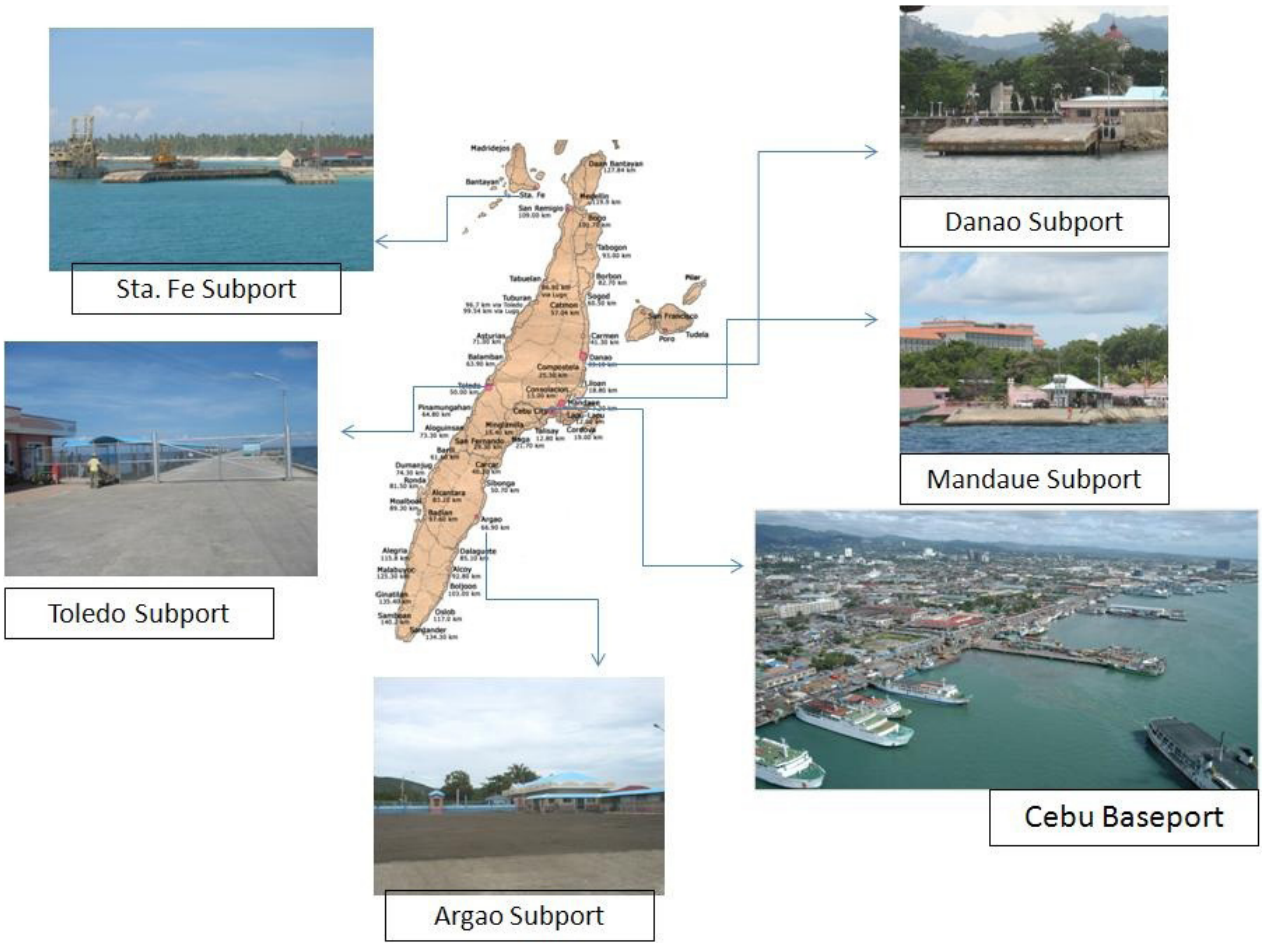


Figure 11: Map of Cebu Ports



Figure 12: Map of Strong Republic Nautical Highway Routes

also make up part of the national road network, mostly connecting urban areas across Luzon.

Two key challenges for road transport are the country's archipelagic nature and market forces that promote overloading of vehicles. For decades, road transport struggled with the costly and time-consuming unloading and reloading of cargo required to use older ferries to move cargo and people inter-island. In more recent years, SRNH has modernized island-to-island links through a series of ro-ro ferries, which allow cars and trucks to roll on and off. As for the larger problem of poor road quality and durability, one of the major causes is the overloading of trucks. Surveys consistently showed that 11-12% of all trucks were overloaded, a situation that has only worsened in the past decade. Damage done to already poor-quality roads results in a high number of traffic accidents.[239] Nonetheless, the country has seen improving metrics on this front in the past decade from its 2011 toll of 20 road deaths per 100,000 people, to its 2019 toll of 12 road deaths per 100,000 people, according to WHO data.[240]

Railways

The country has only 77 km (48 miles) of operational rail. Plans exist for an expansion by building 1,200km (746 miles) by 2022; in addition to refurbishing the existing network on Luzon, this plan would build a 100km (62 miles) network on Mindanao.[241]

The present network serves only the urbanized areas of Metro Manila and Luzon and includes three networks: the Manila light railway transit system (LRT-1 and LRT-2), Metro-Rail Transit Line 3 (MRT-3), and the Philippine National Railways (PNR). Passenger services dominates the sector via the LRT lines (579,000 riders per day) and MRT (400,000 riders per day). PNR does operate commuter lines that serve areas such as Luzon south of Metro Manila. The Metro South Commuter Line extends as far south as Calamba City, Laguna, and transports approximately 100,000 commuters every day. The other main line operated by PNR is the Bicol Express, which links towns in the Bicol region with Manila. As for future PNR plans, the Department of Transportation (DOTR) is focusing on reviving the long-defunct northern railway line via the North Rail Project and expanding lines outside of Luzon.[242]

There are more than 400 railroad crossings across the PNR network, and all are "at grade" or at road level. Figure 13 shows the PNR network, all on Luzon and connecting Metro Manila to Legazpi.[243]



Figure 13: Philippine National Railways Route Map

Waterways

The country has 3,219 km (2,000 miles) of navigable waterways within the country, all limited to traffic by vessels of less than 1.5 m (5 feet) draft.[244]

Schools

The basic educational structure in the Philippines includes elementary, junior high, and senior high schools. Elementary consists of kindergarten and grades 1-6. Junior High is grades 7-10 with the first two years dedicated to exploratory technical and livelihoods education (TLE) and the third and fourth years dedicated to the specialized TLE or technical vocational livelihood (TVL) course chosen by the student.[245] TLE courses fall under the rubrics of agriculture and fisheries, home economics, information and communications technology, the industrial arts, and maritime specialties.[246] The final two years of basic education occur in senior high schools where core subjects (humanities, sciences, and math) are taught alongside the TLE or TVL course in addition to sport and arts.[247]

Under the DepEd Schools Division Office are 62,605 schools. These include 49,209 elementary schools (38,648 public and 10,561 private) and 13,396 secondary schools (7,976 public and 5,420 private).[248] An additional line of education, the Alternative Learning System (ALS) tries to reach adults who may have left school early and to re-integrate out-of-school youth into a non-formal structure to improve their outcomes.[249] As an augmenting program to ALS, USAID partners with DepEd on the Opportunity 2.0: Second-chance Opportunities for Out-of-school Youth project to provide relevant education, employability skills, and work experience in 12 cities and in cooperation with 2,200 employers and 50 education or training institutions.[250]

In early 2021, DepEd reported that, amidst pandemic induced shutdowns and other hardships, nearly 4 million students were not able to enroll for the current school year. At the beginning of the 2020-2021 school year (September 2020 through June 2021), DepEd had reported that 23 million students had enrolled across public and private schools, a significant reduction from the 27.7 million enrollees in 2019-2020. An estimated 2.75 million of the 4 million who did not enroll were private school students, and DepEd laid significant blame for the exodus on restrictions on face-to-face education. In recent years, the Philippine Statistics Authority data showed that about 9% or 3.53 million of the estimated 39.2 million Filipinos aged 6 to 24 years old were "out-of-school youth." Of that number, 83% were 16 to 24 years old, 11% were 12 to 15 years old, and 6% were 6 to 11 years old. The Authority indicated that the most common reasons for not attending school were marriage or family matters, lack of personal interest, and high cost of education or financial concerns.[251]

Disaster Risk Reduction in the Education Sector

The Philippines is exposed to various natural and human-induced hazards. In times of disaster, education is one of the most vulnerable sectors. Disasters often disrupt learning and the normal operations of schools and administrative offices; more importantly, they threaten and affect the lives of learners and personnel as well as damaging other educational resources and investments. From school year 2009-2010 to school year 2017-2018, 43,810 schools throughout the Philippines reported impacts from natural hazards, and 21,949 schools had documented impacts of human-induced hazards.[252] Beyond preparedness and risk reduction activities, the country's disaster management plan includes an Education Cluster, a coordination mechanism for school safety during disaster response. With DepEd as the Convener and UNICEF as the co-lead, members include DSWD, DILG, media conglomerate ABS-CBN, ChildFund, media conglomerate GMA Network, Plan International, Save the Children, Union of Local Government Association in the Philippines, and World Vision. The Education Cluster is one among the few national clusters that is actively engaged with partners even during non-disaster periods.

Since 2007, DepEd has mainstreamed disaster risk reduction in the education sector. This led to the first publication of the Disaster Risk Reduction Resource Manual for school administrators, principals, supervisors, and teachers. Then, in 2010, the Philippine DRRM Act was passed, and DepEd created the Disaster Risk Reduction and Management Office (DRRMO) as the focal point in planning, implementing, coordinating, and monitoring activities. With the creation of DRRMO, a DRRM Focal Point for each region and division was assigned. In 2015, DRRMO was elevated to the DRRM Service (DRRMS), which has equal authority with other offices in DepEd.[253] DRRMS takes the lead in:

- Empowering learners, personnel, schools, and offices to ensure safety and learning continuity
- Institutionalizing DRRM, Climate Change Adaptation, and Education in Emergencies in the scope of work across and within all levels of DepEd
- Strengthening the resilience of K-12 education in the context of natural and human-induced hazards

In 2015, DRRMS issued the Comprehensive DRRM in Basic Education Framework, which serves as a basis for all DRRM efforts in education towards the attainment of DepEd's three major education outcomes: Access, Quality, and Governance.[254] It sets the direction and priority areas for DRRM in DepEd, and based on the framework, DepEd, which sits on NDRRRMC, published a two-volume School Disaster Risk Reduction and Management (SDRRM) Manual for use by school heads and administrators to develop policies, practices, protocols, and plans at the school level to ensure the safety of students and educators. The first booklet covers Comprehensive DRRM in the Basic Education Framework, including institutional mechanisms. The second booklet provides practical steps and useful tools to operationalize DRRM.

In addition to institutionalizing DRRM at the national level, DepEd has created division-level (regional) DRRM Coordinator positions to integrate DRRM policies across the country and to facilitate the development of information management and the definition of roles and responsibilities. At the school level, schools are required to have a School Planning Team and SDRRM Team who, together, assess, plan, implement, monitor, evaluate, and report DRRM interventions. The Comprehensive DRRM in Basic Education Framework has three pillars: 1) Safe Learning Facilities; 2) School Disaster Management; and 3) Disaster Risk Reduction in Education. The goals thereunder include physically protecting students and educators, planning for learning continuity in the face of hazards or threats, safeguarding investments, and strengthening risk reduction and resilience in the education sector.

The SDRRM Team is tasked with the following:

1. Ensure the establishment of an Early Warning System (i.e., bulletin board for weather advisories, bell/siren emergency signal, etc.)
2. Conduct an annual student-led risk identification and mapping exercise within and around the school premises to ensure a safe environment that is conducive to teaching and learning
3. Maintain close coordination with local DRRMC on the conduct of preparedness activities and on response needs
4. Provide capacity building activities for teachers, non-teaching staff, and learners on DRRM
5. Maintain, disseminate, and post relevant and updated emergency hotlines in strategic locations throughout the school
6. Post safety and preparedness measures and evacuation plans
7. Conduct disaster preparedness measures, including but not limited to quarterly multi-hazard drills applicable to the school's identified hazard such as earthquake, fire, and flood
8. Maintain the safekeeping of vital school records and learning materials

9. Organize SDRRM Team to support the implementation of preparedness and response measures
10. Ensure the availability of updated baseline education data of the school
11. Integrate DRRM in regular school programs and activities and school improvement plan
12. Pre-identify possible Temporary Learning Spaces and alternative delivery modes of education
13. Monitor the effects of hazards, including the use of the school as evacuation center
14. Track all school personnel during disasters or emergencies
15. Prepare and submit reports on the effects of any hazard
16. Ensure implementation of DepEd Order No. 43, s. 2012, the "Guidelines on the Implementation of Executive Order No. 66 s. 2012 (Prescribing Rules on the Cancellation or Suspension of Classes and Work in Government Offices Due to Typhoons, Flooding, Other Weather Disturbances, and Calamities)"
17. Conduct rapid assessment of damages after every hazard and submit that assessment within 72 hours via SMS
18. Facilitate immediate resumption of classes to track learners
19. Monitor recovery and rehabilitation interventions being implemented in the school

Among other protocols, schools are required to involve students in risk assessments and plans. The student-led process of watching schools and mapping hazards are the first steps in engaging learners. These activities raise awareness and equip learners with information and skills necessary to address the impact of hazards. Moreover, the student-developed hazard map feeds assessments of strategic School Improvement Plans. Beyond the practices of identifying hazards and planning to address emergencies, the Philippines has integrated disaster risk reduction and climate change adaptation into the K-12 curriculum in health, social studies, and science classes.[255]

Booklet 2 of the SDDRM Manual walks schools through a 4-step process of Assess, Plan, Implement, and Monitor and Report. "Assessing" is the most focused on involvement of students who learn a list of items to watch on their campuses and which they can either change or report to adults. That list extends from such basic maintenance items as broken windows or exposed electrical wires to improperly stored equipment, poorly maintained perimeter fencing, and the placement of First Aid kits in every classroom. This inculcating of awareness into daily life, then, feeds into the planning event, Brigada Eskwela, an annual school maintenance week, which seeks to ensure that all public school facilities are prepared ahead of the annual return to school opening. Moreover, as part of the planning stage, schools are required to conduct four drills during the span of the school year, and they are encouraged to include a different hazard for each drill. Photo 3 shows elementary school children taking part in a quarterly disaster preparedness exercise.[256]

Mechanisms to inform students and personnel



Photo 3: Philippine School Children Rehearse How to Behave in a Disaster

on hazards and emergencies require schools to have sources of credible information and strategy for their use. The SDRRM Manual recommends simple interventions like bulletin boards for posting and updating of hazard information. However, it also recommends use of technology such as SMS blasts to keep teachers informed of important updates. Existing bells and alarms, common across all campuses, are fit for use to signal emergencies. In addition, schools can build links with the country's main disaster reporting agencies, such as PAGASA and PHILVOLCS.[257]

Communications

Telecommunications and mass communications are privatized and competitive. Although the state retains public service broadcasting, government outlets are consumed at a vastly lower rate than commercial print, broadcast, and digital media. Two major telecom companies do dominate fixed and mobile telephone and the internet backbone.

Telephones
Total fixed lines: 4,255,808 (3.96 lines per 100 inhabitants)
Mobile subscriptions: 167,322,432 (155.61 lines per 100 inhabitants)

A history of high unemployment and the country's rural population long impeded investment in fixed-line infrastructure. The advent of modern mobile communications has changed the contours of access to telecommunications, and the mobile segment, including broadband, has been the target of significant investment focused on fiber infrastructure in urban areas. 4G service is available in most areas.[258]

PLDT (formerly Philippine Long Distance Telephone Company) and Globe Telecom have dominated the national telecom market for decades, but in 2017, the government legally removed their duopoly status. Two new entrants – DITO Telecommunity and NOW Telecom – have joined the market, but delays in their respective launch programs have caused minimal impact to the leaders' market shares. Both PLDT and Globe continue to roll out fixed networks in some urban areas where it remains feasible to do so (primarily to support fixed broadband). However, the bulk of telecoms investment over the coming years appears set to be in 5G and 5G-enabled LTE networks. Coverage of LTE and 5G networks extends to over 95% of the population, and for most people mobile will likely remain their only platform for telecom services.[259]

Internet Access
Internet users: 91 million (81.9% of population)[260]
Broadband - fixed subscriptions: 5,920,087 (5.51 lines per 100 inhabitants)[261]
Active Social Media Users: 89 million (80.7% of population)[262]

At the beginning of 2020, the Philippines had a reported internet penetration rate of just over 67% of the country's total population, and penetration continued its upward trajectory through the pandemic year, 2020, reaching nearly 82% of the population by late June 2021.[263] Internet usage via mobile devices outweighs fixed-line connectivity with 51% of traffic via mobiles and 45% via laptop or desktop computer. An estimated 98% of the population has a mobile phone, 98% of which are smartphones. Moreover, 77% of the population has a laptop or desktop computer, and 33% have a tablet device. In 2020, the average Filipino spent nearly 11 hours every day on-line, across all devices and accounting for all activities, and surveys find that more than four hours daily are spent on social media. Nearly 100% of on-line Filipinos use the internet to watch videos, more than 80% listen to music or other radio. YouTube is the top social media platform with 97.2% of on-line Filipinos using it; Facebook comes a close second place with 96.8%. Twitter is well behind at fifth place with 62%.

Average mobile and fixed broadband download speeds stand at 22.5 and 31.44 megabits per second (Mbps), respectively.[264]

The Department of Information and Communications Technology (DICT) has begun piloting the National Broadband Plan to lower costs and improve connectivity. Since 2015, DICT has managed a project that aims to provide free Wi-Fi in some public places, and in 2017, President Duterte signed legislation creating the Free Internet Access Program. The law requires public places such as transport terminals, hospitals, schools, and government offices to provide free Wi-Fi at major congregation points. As of April 2020, DICT had installed 3,832 hotspots. In 2020, DICT aimed to roll out another 10,000 Wi-Fi access points and sought arrangements to build common towers to provide faster and cheaper internet service in the country.

A digital divide does exist in the Philippines, driven mainly by cost and geography. Connectivity is concentrated in densely populated urban areas, and many poor, rural areas remain largely underserved. While affordability of smartphones and mobile data is still a major problem, the 2019 Affordability Report noted an improvement in the Philippines, moving up 5 notches to place 25th out of 61 countries.

At present, the telecommunications industry is dominated by two companies, although a new provider, DITO Telecommunity, is expected to become operational in 2021. One provider, PLDT, plays an outsized role in the country's telecommunications infrastructure. The company owns the majority of fixed-line connections and a 221,000-km (137,323-mile) fiber-optic network that connects to several international networks; it also fully or partly owns five out of nine international cable landing stations. Alongside PLDT, Globe is the second major player; they have each acquired a number of minor players over the last two decades and mostly split the market between themselves. PLDT reports mobile coverage that reaches 94% of the country's population. All internet service providers connect to PLDT or Globe.

Online platforms are regularly used to discuss politics, especially around elections. Generally, the Philippine blogosphere is rich and thriving. No systematic government censorship of online content has been documented in the Philippines, and internet users enjoy unrestricted access to both domestic and international sources of information. Internet users freely access social networks and communication apps including YouTube, Facebook, Twitter, and international blog-hosting services. Government authorities have been reported to force people to publicly apologize over critical social media posts, including during the COVID-19 pandemic. Moreover, several troubling developments threaten the diversity of the online information landscape, including the increase in disinformation, the impact of hyper-partisan content, continued harassment against independent outlets and journalists, online self-censorship, and distributed denial-of-service attacks against alternative media outlets.

Digital activism has had a significant impact in the country in the past. Mobilization tools and websites are freely available. The use of hashtags on social media is popular, both to draw attention to individual events and to participate in broader social movements. Although this has more frequently been used for social movements and pro-rights protests, it is also effective in informing and mobilizing Filipinos during emergencies.[265]

Social media use is widespread, but rights groups have expressed concern about threats against and censorship of online criticism and the criminalization of allegedly libelous social media posts. The Department of Justice began investigating the spread of coronavirus-related misinformation and fake news in early February 2020. Arrests increased following the March enactment of an emergency law, the Bayanihan to Heal as One Act, which criminalized posting fake news in overly broad language and was immediately criticized by rights advocates. Within weeks, investigators had summoned over a dozen persons for their social media posts. Multiple people were charged with crimes, including cyber-libel, for satirical posts or criticism of Duterte and the government.[266]

Mass Media

The country's traditional mass media includes multiple national private TV and radio networks and hundreds of private press titles. Multi-channel satellite and cable TV systems are available and popular; about 1,500 cable TV providers have millions of subscribers. In addition, there are upwards of 1,400 radio stations.[267] Powerful commercial interests control or influence much of the media. This is most evident in the private press, which is vigorous but where the most popular titles are Filipino-language tabloids, which can be prone to sensationalism.[268]

The constitution provides for freedoms of expression and the press. Private media are vibrant and outspoken, and the country's state-owned television and radio stations cover controversial topics and sometimes criticize the government. While the censorship board has broad powers to edit or ban content, government censorship is generally not a serious problem in practice. Nonetheless, the Philippines remains one of the most dangerous places in the world for journalists. The Philippine Center for Investigative Journalism found attacks and threats on the media have continued relentlessly throughout the Duterte administration (2016-present), and that there had been no major efforts by state agencies to investigate serious incidents or otherwise address the problem. Other obstacles to press freedom include Executive Order 608, which established a National Security Clearance System to protect classified information, and the Human Security Act, which allows journalists to be wiretapped based on suspicion of involvement in terrorism. Libel is a criminal offense, and libel cases have been used frequently to quiet criticism of public officials.[269]

Post

PhilPOST is the national postal service with 1,383 post offices across the country. It provides letter and parcel service domestically and in connection with international partners. It has set itself the goal of, by 2022, having delivery to even the smallest barangays in the country. As a government agency in nearly every community, PhilPOST also serves as a handler for bill paying, and it provides government recognized Postal IDs.[270]

UPS, FedEx, and other global parcel services do deliver to areas of the Philippines.

Utilities

The country continues to extend public utilities access – on-grid power, water, and sanitation facilities. An estimated 96% of the population has electric power, 95% have access to clean water, and 91% have access to improved sanitation. The country has made a start to converting to green power as government at all levels recognize the impact of anthropogenic climate change on Filipinos, but significant investment is still necessary over the short- and long-term.

Power

The power sector is overseen by the Department of Energy (DOE), which sets policy and elaborates plans such as the Philippines Energy Plan (2017-2040). In 2001, the country enacted the Electric Power Industry Reform Act (EPIRA) to liberalize the sector, unbundle services and generation, and promote competition. The subsequent 20 years have seen transformations that include the development of spot wholesale markets in at least two island groups, the establishment of an autonomous regulatory body, the emergence of the private sector in generation, transmission, and retail, the removal of subsidies, and the extension of electric power coverage[271] to 96% of the country by 2019.[272] Despite these improvements, the cost of electric power has been persistently high compared to the region, due to the high cost of domestic natural gas production and the costs of shipping and transporting imported gas, oil, and coal.

Energy demand increases are expected from growth in the industrial, commercial, and domestic sectors in each island group.

The expansion of the electric grid continues, and households in areas that are currently not fully grid-connected, such as parts of Mindanao and Mindoro, are likely to gain better access to electricity supply in the coming years. The government set a target to reach 100% electrification across the Philippines by 2022. In more rural and less-developed areas, member-owned and not-for-profit electric cooperatives provide electricity to customers. The National Electrification Administration, a government-owned and –controlled corporation, oversees the cooperatives involved in building, rehabilitating, up-grading, and expanding this rural electrification effort.

Historically, the Philippine National Oil Company (PNOC) has been the country's vehicle for all energy exploration, development, and production, including of renewables. The country has significant indigenous reserves of natural gas (98.54 billion cubic meters) and oil (316 million tons) as well as exploitable hydro opportunities of up to 13,097 megawatts (MW). It has high wind and solar power potential. In the last 10 years, PNOC spun off the Energy Development Corporation, which is now private and operates some 2.7 gigawatts (GW) of renewable generation. The National Power Corporation (NPC) was the incumbent owner of all generation and transmission assets, but under EPIRA NPC's remit was reduced; it now handles generation on smaller islands and isolated grids that cannot be serviced by distribution utilities or other qualified third parties, and it preserves and maintains the never-commissioned Bataan nuclear power plant.

Fossil fuels dominate the primary energy mix at 61% of inputs; oil accounts for 32.2%, coal for 23.1%, and natural gas for 5.7%. The traditional renewable energy sources – geothermal and hydro – account for 36.5% of primary energy supply and are key resources for electricity generation. The biggest share of final energy is consumed by the transport sector (36%) followed by industry (29%). By 2035, the final energy consumption of the country is expected to double to 49 Mtoe, and much of the heightened demand is expected to be filled by coal, oil, and geothermal as the country's natural gas reserves decrease. However, a clean energy scenario could see total primary energy supply grow to 137.8 Mtoe rather than the 148.1 Mtoe predicted if the country reduced reliance on oil and coal.

In 2016, the country generated 90.8 terawatt-hours (TWh) of electricity from a total installed capacity of 21,423 MW. The mix of generation source is somewhat diverse and relies heavily on indigenous resources. Natural gas was long the most important input, followed by coal and various renewables; however, sustained investments in coal power plants have seen that resource become a bigger factor in generation since 2017. Each island group uses a different mix in a reflection of differing risk assessments, access agreements, and natural factors. For example, Luzon relies heavily on natural gas from the Malampaya field; Leyte and Negros (both in the Visayas) use significant geothermal; Mindanao has greater hydro usage and is the most reliant region in terms of oil-fired generation. Luzon and the Visayas have consistently reduced oil's role by increasing solar and wind capacity. Figure 14 charts the growth of power generation in the Philippines, by source, from 1991 to 2016.[273]

Nearly all oil is imported, mostly from the Middle East. The Malampaya field is the only major productive gas field in the country, and as it matures and production decreases, the country nominally plans to replace Malampaya gas with imported liquefied natural gas (LNG), but there have been no advances in building the necessary LNG terminal, floating storage and regasification plant, or pipelines that would carry imported LNG to gas-powered plants.[274] Much oil and gas move from the ports where they enter to refineries and power plants via pipeline with expanded pipelines slated to be complete by 2022. However, barges and trucks are also used to move some oil and gas, exposing those shipments to accidents, crime, weather disturbances, traffic congestion, and contamination.[275] Given the lack of oil and gas infrastructure in most of the country, coal will retain dominance as a fuel.

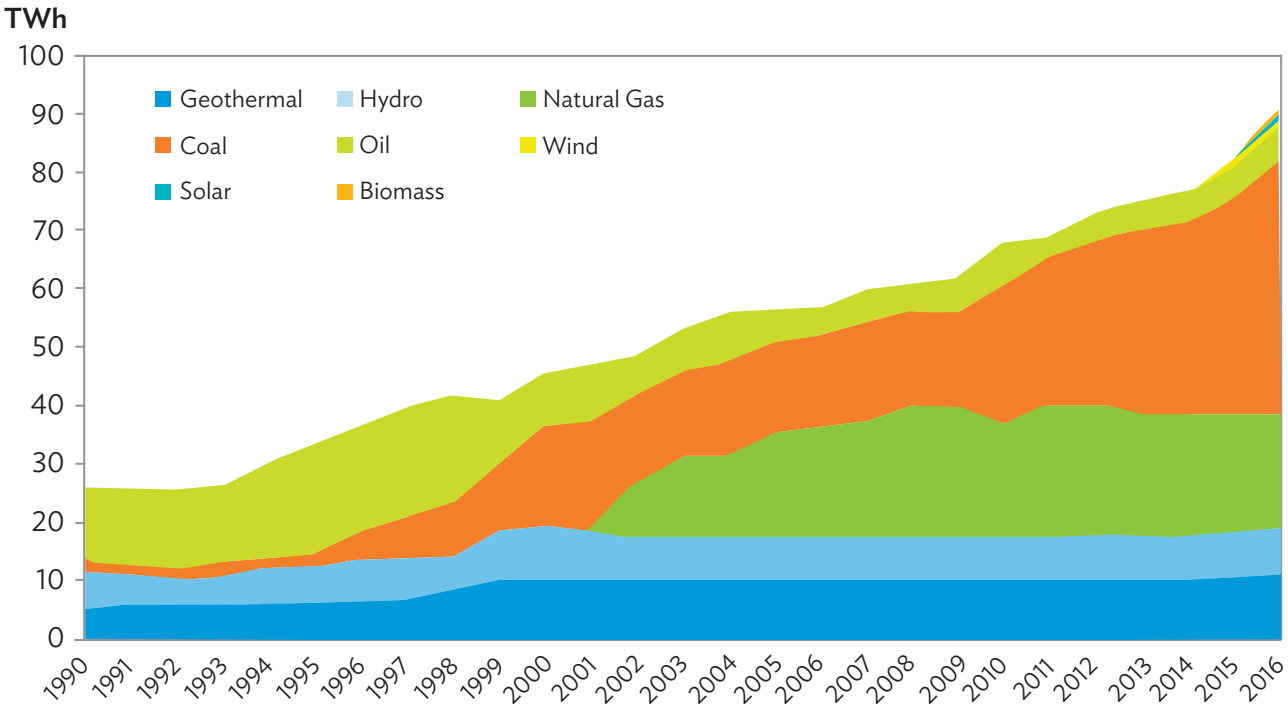


Figure 14: Power Generation (in Terawatt-Hours (TWh)), by Source (1991-2016)

The Philippines does rank as the world's third largest producer of geothermal. Since the development of the country's first commercial plant at Makban on Luzon in 1979, geothermal resources have grown. As of 2016, installed capacity had reached 1,916 MW, and geothermal was filling 12.2% of the country's total electricity requirements. Most of the country's geothermal is on Leyte and Negros. Hydropower plays an important role, providing almost one-fifth of the country's total indigenous electricity supply. The total installed capacity was 3,618 MW as of June 2016, with 2,537 MW in Luzon, 1,061 MW in Mindanao, and only 20 MW in the Visayas. Grid-based hydropower generation includes storage hydropower, pumped storage, and run-of-river with massive storage hydropower plants such as the San Roque Dam (435 MW). Storage hydropower provides an important source of reserve capacity for the grid, but the greatest challenge is seasonal fluctuations that result from intra- and inter-year variations in precipitation and temperature. In most years, plants have a significantly higher capacity factor December through March following the end of the rainy season. The climatic cycles of El Niño and La Niña have an impact on hydro availability. Hydropower plants also pose challenges at a social and environmental level and there are concerns that construction of newer and larger dams may exacerbate water shortages, impact local ecosystems, and displace indigenous populations. The recently announced 500 MW Wawa pumped storage project targets completion of construction by 2022 and will likely impact six communities and alter the downstream watershed.

The Philippines was the first country in Southeast Asia to enact biofuels legislation, offering tax exemptions for biofuel production and use under the Biofuels Act of 2006, which targeted transport fuels. Biomass and biofuels make a small but meaningful contribution to the power sector. As of December 2016, there were 16 existing biomass-fueled power plants, nine in Luzon, six in the Visayas, and one in Mindanao. These plants run on bagasse (residue from sugarcane processing), rice-husks, or landfill gas recovery. They collectively provide 233 MW of installed capacity. The National

Renewable Energy Program (NREP) targeted 276.7 MW of installed biomass power generating capacity, a number exceeded by the end of 2016 and that had reached 407 MW by late 2017. While biomass makes a relatively small contribution to power production, it fuels a variety of other industrial and household needs including cooking and heating, crop-drying, and mechanical and electrical applications. Most households still rely on traditional biomass fuels for cooking.

Since 2008, the National Grid Corporation of the Philippines (NGCP) has held a 25-year concession of the transmission network franchise. Under EPIRA, NGCP is mandated to "improve and expand its transmission facilities" to "adequately serve generation companies, distribution utilities, and suppliers requiring transmission service." Luzon is home to about 73% of all generation in the country. Three large gas-fired plants in Batangas account for 2,880 MW of installed capacity, a concentration that makes this region vulnerable to large-scale disruptions either to gas supply or to catastrophe at the plants. NGCP's focus for Luzon is on strengthening the transmission system and improving resilience through extensions of the existing 500-kilovolt (kV) transmission backbone from around Metro Manila into the generation heartlands of Western Luzon and Batangas. NGCP is also due to loop the Northern Luzon 230 kV backbone, which carries power generated by hydro and the Burgos wind projects on the northern tip of the island. In the Visayas, NGCP is advancing the Cebu–Negros–Panay 230-kV backbone via expansion of the Negros–Panay submarine interconnection, upgrading the Negros over-ground transmission network, and expansion of the Negros–Cebu submarine interconnection. While there is a major interconnection between Luzon and Leyte, all other interconnections are low voltage.

The physical integration of Mindanao to the broader Luzon–Visayas grid has been an enduring objective of the DOE and NGCP. NGCP had originally envisaged that Mindanao would be interconnected with Leyte in the Visayas in 2011. In 2016, the proposed route was deemed not feasible due to unexploded wartime ordnance, shipwrecks, and a large ocean trench with the potential for volcanic activity. Integration is now envisioned through the Mindanao 230kV backbone project which features a new interconnection route between Mindanao (Zamboanga) and Cebu for a 450 MW-rated high-voltage direct current link. Mindanao's electrification rate at 74.8% remains significantly behind Luzon and the Visayas. As of December 2016, only 10 of the 36,061 subdistricts in the Philippines were without access to electricity and eight of these are situated in BARMM. The autonomous region of Bangsamoro in the west of Mindanao features an electrification rate of just 37.8% and chronically high distribution losses of electric cooperatives of up to 26%. The power challenges in Bangsamoro are being targeted through ongoing international assistance programs. In March 2017, the Japan International Cooperation Agency signed a grant agreement with the government to provide PHP349 million (US$6.9 million) in aid for the provision of power distribution equipment to improve supply coverage and reliability in the region. The World Bank is also implementing a "last mile" electrification program to provide solar home systems to an initial 40,500 households nationally (including Bangsamoro), which is funded by the Global Partnership on Output-Based Aid and the European Union with additional assistance provided by the DOE.

A key item on the government's agenda as set out in the Philippine Development Plan 2017–2022 and the Energy Sector Accomplishment Report for 2016 of the DOE is energy security by which Manila hopes to utilize more indigenous energy resources. Energy self-sufficiency increased from 57.9% in 2008 to 59.6% in 2011 but fell to 53.5% in 2015 due to greater demand for oil by the transport sector and increased use of imported coal in electricity generation; coal is largely sourced from Australia and Indonesia. Energy security is also emphasized in DOE's Philippine Energy Plan for 2017–2040. Without diversification into more renewables, energy self-

sufficiency is all but unachievable as the country's main domestic natural gas field, Malampaya, is depleted.[276]

Water and Sanitation

The Philippines is endowed with abundant water resources such as rainfall, surface water resources (e.g., rivers, lakes, and reservoirs), and groundwater as well as 18 major river basins. However, the country consistently struggles with water insecurity as its resources are under severe pressure from growing populations, rapid urbanization, and industrialization that increase extraction, exploitation, and competition. Inadequate water and wastewater management infrastructure and policies often result in inefficiencies in water use and pollution of waters.[277]

The country has made progress increasing access to clean, potable water. The Philippine Water Supply Sector Roadmap and the Philippine Sustainable Sanitation Sector Roadmap each have targets of 100% access by 2025 for water and by 2028 for sanitation.[278] By 2017, access to clean water had reached just over 95% of the population[279] while access to improved sanitation sat at 91.4%.[280] In November 2020 DOH, WHO, and UNICEF reported that around 50.3 million Filipinos (10 million families) do not have access to safe sanitation, and of these people, some 24 million use unimproved toilets or none at all.[281]

There is an estimated total annual renewable water resource of 479 billion cubic meters (m^3) from surface- and groundwater sources. This translates into an annual per capita availability of about 6,100 m^3. The National Water Resources Board (NWRB) estimates total available groundwater supply to be 20.2 billion m^3/year. Agricultural use accounts for 83% to 85% of total offtake, the remainder being shared by the industrial, commercial, and domestic sectors. Growing populations, especially in urban areas, together with water pollution, wasteful and inefficient use, continued denudation of forest cover (particularly in watersheds), and saltwater intrusion caused by excessive withdrawal of groundwater (particularly in the metropolitan areas of Cebu, Davao City, and certain areas of Metro Manila), pose challenges to the country.[282]

Water service in Metro Manila and adjacent provinces is provided by Metropolitan Waterworks and Sewerage System (MWSS) and its two private concessionaires: Manila Water Company, Inc., which is the concessionaire serving Manila's east zone, and Maynilad Water Services, Inc., the concessionaire serving Manila's west zone. Together with MWSS and the Local Water Utilities Administration, DPWH undertakes the bulk of spending in the water-sewerage sector.

In rural areas, water is generally supplied by LGUs and small-scale community-based organizations, including cooperatives (around 180 water cooperatives are registered), barangay water and sanitation associations, and rural waterworks and sanitation associations. Some households have their own shallow or deep wells. Promoting projects to improve water supply services in rural areas was long incredibly difficult because investment costs are difficult to recover. In the 1990s, the Rural Water Supply and Sanitation Sector Project constructed new water supply and sanitation facilities in selected municipalities in Mindanao and the Visayas, but over time, many underlying projects proved unsustainable.

There is no separate sanitation agency; personnel from water agencies also handle sanitation issues. Institutions mandated to construct, operate, and maintain sanitation and sewerage systems include MWSS for Metro Manila and LGUs for areas outside Metro Manila. The Clean Water Act of 2004 requires LGUs and water districts to create septic tank programs in areas without sewerage systems. However, most LGUs and water districts long lacked the capacity, technical knowledge, or funds to act, and in many cases, treatment and disposal of sludge are likely to not be noncompliant with environmental regulations.[283]

HEALTH

DOH published the National Objectives for Health (NOH) 2017–2022 to serve as a roadmap toward universal healthcare. It lays out the health system pillars of financing, service delivery, regulation, governance, and performance accountability that underpin the Philippine Health Agenda goals: (1) better health outcomes with no major disparity among population groups; (2) financial risk protection for all especially the poor, marginalized, and vulnerable; and (3) a responsive health system which makes Filipinos feel respected, valued, and empowered. The NOH is the DOH's main document to guide agencies, LGUs, and other stakeholders to develop concrete programs and projects that will allow all Filipinos to readily access healthcare.[284]

DOH has been the policy leader in setting testing and vaccination procurement and delivery as well as outlining the public health interventions to be taken by regional administrations to prevent the spread of COVID-19. As of 27 September 2021, Philippines had confirmed 2.49 million cases of COVID-19 with 37,405 deaths from the disease.[285] Meanwhile, by 26 September 2021, the country's health authorities had administered more than 43.9 million vaccine doses (23.6 million first doses and 20.3 million second doses).[286] Beyond COVID-19, the country continues to struggle with high burdens of communicable diseases and non-communicable diseases (NCD) alongside shortfalls of staff across the entire healthcare system and the traumatic impacts of climate change-exacerbated natural disasters. Although the country's average life expectancy rose from 61.1 years in 1960 to 71.1 years in 2018 and infant mortality fell from 66.4 per 1000 live births to 22.2 over the same period, challenges remain. DOH reports shortfalls getting the population vaccinated against vaccine-preventable diseases; the rate of fully immunized children under one year old stood at 66.2% in 2018, compared to the government's goal of 95%. As a result of shortfalls in uptake, at least 900 children under the age of 15 died in 2018 from measles, tetanus, tuberculosis (TB), and diphtheria – all of which are vaccine-preventable.[287]

DOH reports that the leading causes of death are diseases of the heart and vascular system, pneumonia, cancer, TB, accidents, chronic obstructive pulmonary disease (COPD), diabetes, nephritis, and other diseases of respiratory system. Among these diseases, six are NCDs.[288] Figure 15 shows the top ten causes of death in Philippines, and it reflects the toll taken by NCDs despite the presence of communicable diseases and violence still in the top ten.[289]

Health Care System Structure

At the national level, DOH is part of the government's Cabinet-level Human Development and Poverty Reduction cluster, under which regulation, and health policy and strategy fall. However, under the 1991 Local Government Code, LGUs have a significant role in delivery of health services. Both the national government and LGUs manage the delivery of promotive, preventive, curative, and rehabilitative health services.[290] DOH is responsible for providing tertiary care, while primary care is largely the responsibility of LGUs.[291] DOH supervises the government corporate, specialty, and regional hospitals. At the local level, the provincial governments manage district and provincial hospitals. Meanwhile, municipal governments provide primary care including preventive and promotive health services and other public health programs through the Rural Health Units (RHU), health centers, and Barangay Health Stations (BHS), which are the first point of contact for government-provided health services.

The Philippines' healthcare system is a mixed public-private one. The private sector, paid for through user fees at point of service, caters to about 30% of the population but is far larger than the public system in terms of financial

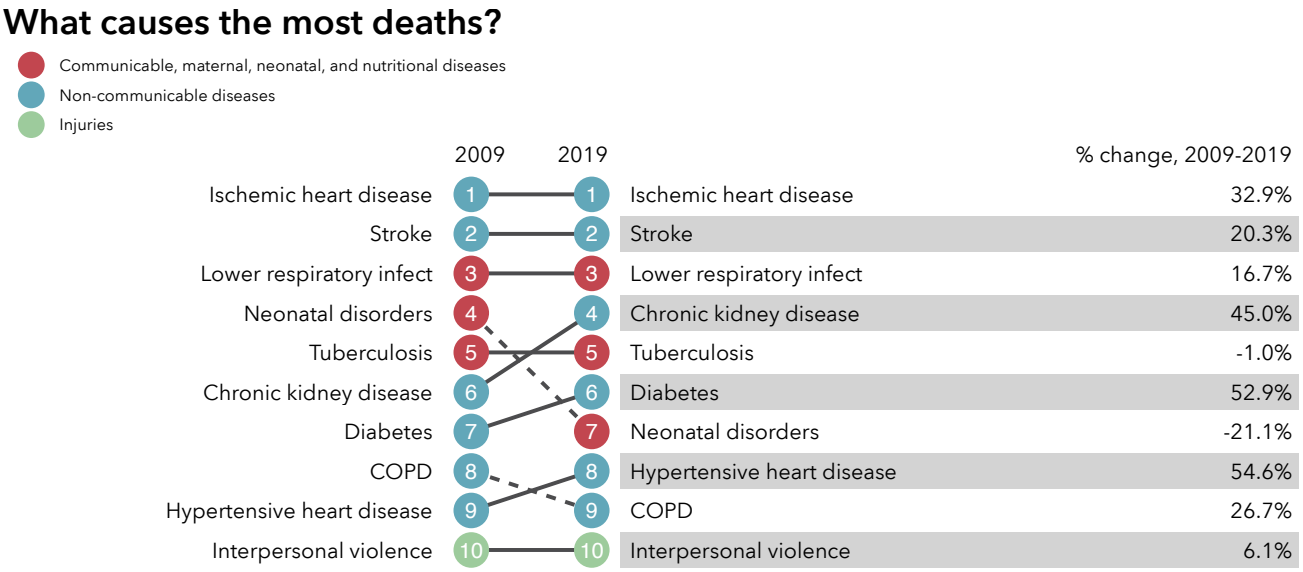


Figure 15: Top Ten Causes of Death and Percent Change (2009-2019)

resources and staff. About 65% of the country's hospitals are private. Beyond the private system, government facilities include DOH hospitals and specialty centers and LGU-managed BHSs, health centers, RHUs, district hospitals, and provincial hospitals. There were 20,065 BHSs and 2,590 RHUs providing primary care services in 2016, a shortfall estimated at 700 too few BHSs and 2,600 too few RHUs nationwide. The national capital region and BARMM are among the regions unable to meet the targeted BHS-population ratio of 1:5,000. The gap in RHUs is more pronounced with only Cordillera (northern Luzon) meeting the recommended 1 RHU to 20,000 population ratio in 2016.

The National Health Insurance Act of 1995 created the Philippine Health Insurance Corporation (PhilHealth) to provide health insurance coverage for all Filipinos, but enrolment was not made compulsory. In 2013, the Act was amended, expanding the contribution-based national health insurance program beyond formal employment to include the underprivileged, sick, elderly, persons with disabilities, women, and children. It strengthened the roles of LGUs and health providers. However, healthcare provision, health regulation, facility improvements, and human resource deployment are still subsidized by the government, mainly through DOH.[292]

Health Strategies and Surveillance

High population mobility due to travel, tourism, economic activity, climate change, and rapid urbanization alongside weak surveillance systems make the Philippines susceptible to the threats of emerging and reemerging diseases. DOH has developed Preparedness and Response Plans for the prevention and control of diseases such as Zika, Middle East Respiratory Syndrome (MERS), and Ebola. Interim guidelines were developed to: (1) ensure inter-agency coordination on the prevention or minimization of entry and spread of the disease; (2) provide procedures for isolation, case management, and infection control; (3) establish disease surveillance and reporting; (4) ensure health security of overseas Filipino workers (OFW) in affected countries; (5) ensure the health security of Filipino UN peacekeepers; and (6) conduct risk assessment for the disease in the deployment of OFWs.

In 2014, DOH developed the Manual of Procedures for the Philippine Integrated

Disease Surveillance and Response (PIDSR) to standardize the approach for indicator-based monitoring of notifiable diseases and other health-related events of public health importance. Surveillance is targeted toward epidemic-prone diseases, diseases targeted for eradication or elimination, and other conditions of public health importance. The Event-based Surveillance and Response complements PIDSR by capturing information on new events that are not included in indicator-based surveillance, events that occur in populations which do not access health care through formal channels, and rare, unusual, or unexpected events. To date, case detection activities have been hampered by challenges within Epidemiology and Surveillance Units in cities and provinces. These obstacles include limited time of health personnel to monitor surveillance units given competing tasks, weak analysis and feedback, and unstable or slow internet connectivity in LGUs.[293]

With DOH as chair, the Inter-Agency Task Force for the Management of Emerging Infectious Diseases (IATF-EID) was also established in 2014 in the expectation that it would activate inter-sectoral collaboration to ensure preparedness and adequate response in terms of assessment, monitoring, containing, controlling, and preventing the spread of epidemics.

On 28 January 2020, recognizing the threat of the Severe Acute Respiratory Syndrome – Coronavirus - 2 (SARS-CoV-2), IATF-EID was activated with members including DILG, DFA, Department of Justice, Department of Labor and Employment, DOTR, DICT, and Department of Tourism. Additional government agencies were incorporated in the collective fight against COVID-19 by IATF Resolution No. 12, Series of 2020, which organized Regional Inter-Agency Task Forces to respond to more localized issues and concerns.[294] IATF-EID outlined the National Action Plan (NAP) Against COVID-19 to contain and prevent the spread and ultimately eliminate the threat of the disease. The NAP outlines the policy guidelines issued by IATF-EID and as executed by the National Task Force (NTF) against COVID-19 and its Regional and Local Task Forces.[295]

Communicable Diseases

The Philippines is burdened with the following communicable and vector-borne diseases: tuberculosis, HIV/AIDS, Dengue, malaria, schistosomiasis, and leprosy.

Dengue

There is a low but measurable incidence of Dengue. Risk of Dengue is present throughout the country with the most cases in Negros Occidental followed by Iloilo, Aklan, Antique, Capiz, Iloilo City, Bacolod City, and Guimaras. Transmission occurs year-round with peak transmission during the rainy season (May-November).[296] On average, 170,503 symptomatic infections and 750 deaths were officially reported to DOH annually from 2010 to 2014, an incidence of about 178 symptomatic dengue episodes per 100,000 people and a reported case fatality rate of approximately 0.44%.[297] By 6 February 2021, 6,614 dengue cases were reported, including 20 deaths. The number of cases in this period is 77% lower compared to the 29,184 cases reported in the same period in 2020.[298]

Dengue is a viral infection caused by four viruses that are transmitted through the bite of infected Aedes aegypti and Aedes albopictus female mosquitoes that feed both indoors and outdoors during the daytime (dawn to dusk). These mosquitoes thrive in areas with standing water, including puddles, water tanks, containers, and old tires. In some cases, Dengue infection is asymptomatic. Those with symptoms get ill 4-7 days after the bite. The infection is characterized by flu-like symptoms which include a sudden high fever coming in separate waves, pain behind the eyes, muscle, joint, and bone pain, severe headache, and a skin rash with red spots. Treatment includes supportive care of symptoms. There is no antiviral treatment available. The illness may progress to Dengue Hemorrhagic Fever. Symptoms include severe abdominal pain, vomiting, diarrhea, convulsions, bruising,

and uncontrolled bleeding. High fever can last 2-7 days. Complications can lead to circulatory system failure and shock and can be fatal (also known as Dengue Shock Syndrome).

Travelers should take meticulous measures to prevent mosquito bites during the daytime. A vaccine is available for people living in some Dengue endemic countries but is not commercially available for travelers.[299]

HIV/AIDS

The first case of human immunodeficiency virus (HIV) / acquired immunodeficiency syndrome (AIDS) infection in the Philippines was reported in 1984. Since then, there have been 85,651 confirmed HIV cases reported to the HIV/AIDS and Anti-Retroviral Therapy Registry of the Philippines (HARP), an office under DOH's Epidemiology Bureau. Ninety-four percent (80,468) of those diagnosed were male and 6% (5,172) female. At the time of diagnosis, more than half (51%, 43,503) were 25-34 years old while 24,530 (29%) were youth (15-24 years old). Thirteen percent (11,363) of the reported cases had clinical manifestations of advanced infection at the time of testing.

Some 65% (55,388) of the total diagnosed cases in the Philippines were reported from January 2016 to March 2021.[300] While the Philippines has controlled the HIV epidemic among female sex workers, the country noted a shift in the epidemic from 2007, notably among males who have sex with males (MSM) and persons who inject drugs. Data showed that in 2016, 83% of newly reported HIV cases occurred among MSM and transgender women (TGW) who have sex with males. In light of these shifts, the Philippines retooled its program to expand HIV services for MSM and TGW and has opened clinics that cater specifically to their needs in urban areas, where the risk of HIV is higher. The strategy is to focus on 117 cities where 80% of the new infections have been reported and to open in each such city at least one "Sundown" HIV clinic with convenient evening hours for working people and that is a one-stop shop for prevention, counseling, laboratory work-up, and treatment services. DOH is providing antiretroviral medicine free to anyone who tests positive for HIV, as well as other out-patient services to a maximum of PHP30,000 ($600) a year per person.[301]

Leprosy

Leprosy is caused by Mycobacterium leprae, a bacterium affecting the skin, the peripheral nerves, mucosa of the upper respiratory tract, and the eyes. A breakthrough in the treatment of the disease occurred in the 1940s with the development of dapsone. It became largely curable with the introduction in the 1980s of a multi-drug therapy comprised of rifampicin, clofazimine, and dapsone. The disease was eliminated in the Philippines at the national level in 1998. Two years later, it was declared by the WHO as no longer being a public health concern globally as its prevalence was only less than one case per 10,000 people.[302] Leprosy prevalence rates in the Philippines declined from 0.88 per 10,000 people in 2008 to 0.22 cases per 10,000 in 2013 but rose again to 0.4 per 10,000 in 2014[303] and stayed at that level through 2017 possibly owing to the decline in case detection rate and treatment completion rate.[304]

Malaria

In April 2021, DOH announced that it was moving 19 more provinces into the category of "malaria free" after periods of zero local transmission. These 19 provinces joined 60 others previously declared free from malaria. At the end of 2020, only 126 barangays in two provinces recorded local malaria transmission. This extent marked a significant reduction in the incidence of the mosquito-borne disease by 87% from 48,569 cases in 2003 to 6,120 in 2020. The country also reported a 98% reduction in the number of deaths due to malaria, from 162 in 2003 to three in 2020. DOH and WHO aim to declare the Philippines malaria-free by 2030, which means the country will have seen at least three consecutive years of "zero indigenous cases."[305]

Malaria is transmitted by the night-time

- dusk to dawn - biting female Anopheles mosquito. Risk is generally low in rural areas. Low risk areas are in Mindanao (specifically Davao del Norte and Sultan Kudarat), Palawan, and the Sulu Archipelago. Areas below 600m elevation are the areas of highest risk with the risk period peeking in January and December.[306]

Schistosomiasis

Schistosomiasis, also known as bilharzia, is a disease caused by parasitic worms. The parasites that cause schistosomiasis live in certain types of freshwater snails. The infectious form of the parasite, known as cercariae, emerge from the snail into the water. People become infected when skin comes in contact with contaminated freshwater. Most human infections are caused by Schistosoma mansoni, S. haematobium, or S. japonicum.[307]

Schistosomiasis remains a public health problem in endemic areas in the Philippines with approximately 12 million people residing in 28 endemic provinces at risk of S. japonicum infection. A total of 190 municipalities and 1212 barangays are currently endemic, based on surveys conducted over the past decade. Bovines, water buffaloes (carabaos) in particular, play a major role in the transmission of schistosomiasis with infection prevalence close to 90% in some endemic barangays.[308] Schistosomiasis prevalence sharply declined from 5.9% in 2010 to 2.7% in 2011[309] but rose again to reach 4.68% in 2017, and there are 357 (22% of) barangays that have greater than 5% prevalence.[310]

In the 1980s, when the highly effective anti-schistosome drug praziquantel was introduced in the Philippines, the schistosomiasis control program rolled out a large-scale community-based chemotherapy approach to eliminate the risk of parasite-associated morbidity – this approach became the backbone of schistosomiasis control in the. Other control measures to prevent transmission from snail intermediate hosts to humans like health education, behavioral modification, improved sanitation, and snail control were continued but not sustained and only on a limited scale. After more than three decades of community-based chemotherapy with praziquantel, challenges with this approach have surfaced. Extensive community-based campaigns including mass drug administration in the last 10 years has reduced the parasite-associated clinically apparent morbidities, although the hepato-splenic form of schistosomiasis japonica persists in hard-to-reach endemic zones.[311]

Tuberculosis (TB)

The National Tuberculosis Prevalence Survey 2016 estimated the prevalence of smear-positive and bacteriologically confirmed pulmonary TB in people 15 years of age or older at 434 per 100,000 and 1,159 per 100,000, respectively. The burden of TB remained high with 760,000 Filipinos (15 years of age and above) estimated to have pulmonary TB.[312] TB claimed 22,103 lives in 2018 and was the eighth-leading cause of death. As of 2018 the treatment rate for Filipinos with TB was 63% – a statistic the government aims to improve through the 2017-22 Philippine Strategic TB Elimination Plan. The roadmap aims to harmonize and enforce standards of care, while reducing patient costs.[313]

Coronavirus Disease (COVID-19)

From 3 January 2020 to 28 September 2021, there were 2,490,858 confirmed cases of COVID-19 with 37,405 deaths in the Philippines and reported to WHO. As of 9 September 2021, a total of 37,728,114 vaccine doses had been administered.[314] The Philippine government started to roll-out a national vaccination campaign on 01 March 2021 with the arrival of doses from the COVAX Facility and stocks purchased through bilateral agreements with other countries. The government targeting inoculation of 50 to 70 million people (at least one-half of the population) by the end of 2021.[315]

The National Contingency Plan (NCP) for COVID-19 includes a strategic framework, which provides an integrated and coordinated response for specific stages corresponding to a color code (White, Blue, and Red). DOH is the lead implementing agency of the NCP, which

is divided into cluster-specific implementation plans.

Following confirmation of the first localized transmission in March 2020, DOH raised its COVID-19 alert system to Code Red Sub-Level 1, and President Duterte formally declared a nationwide public health emergency by issuing Proclamation No. 225. On 13 March, the Government further raised the COVID-19 Alert System to its highest level of Code Red Sub-Level 2 and imposed a 'community quarantine' over the National Capital Region and stringent social distancing measures. Enhanced quarantine measures were eventually imposed over the entire island of Luzon; these measures included the suspension of classes and school activities, prohibition of mass gatherings, home quarantine with movement limited to access basic necessities, restriction on overland and domestic air and sea travel, and imposition of a curfew. Later in March, the President declared a state of calamity throughout the Philippines, which allowed the national government and LGUs to utilize appropriate funds, including the Quick Response Fund, and signed the "Bayanihan To Heal as One" Act (Republic Act 11649) into law, providing him with emergency powers to further strengthen the government response during the COVID-19 State of National Emergency.[316]

While the Government of the Philippines uses a cluster system as the main vehicle for coordination in times of emergency or natural disaster, Manila stood up IATF-EID for the response to the COVID-19 pandemic. IATF-EID subsequently established the NTF against COVID-19 to manage daily operational concerns. The structure was adopted down to the sub-national levels. The HCT and its Clusters as well as other UN and international agencies plug in at national and local levels for coordination.[317] Figure 16 illustrates the Philippines Government coordination structure for the response to COVID-19; explanations of the initialisms can be found in the next two paragraphs.[318]

The strategic level is led by the President as the national command in authority (NCA), supported by the IATF led by the Secretary of Health. At the operational level, NDRRMC is

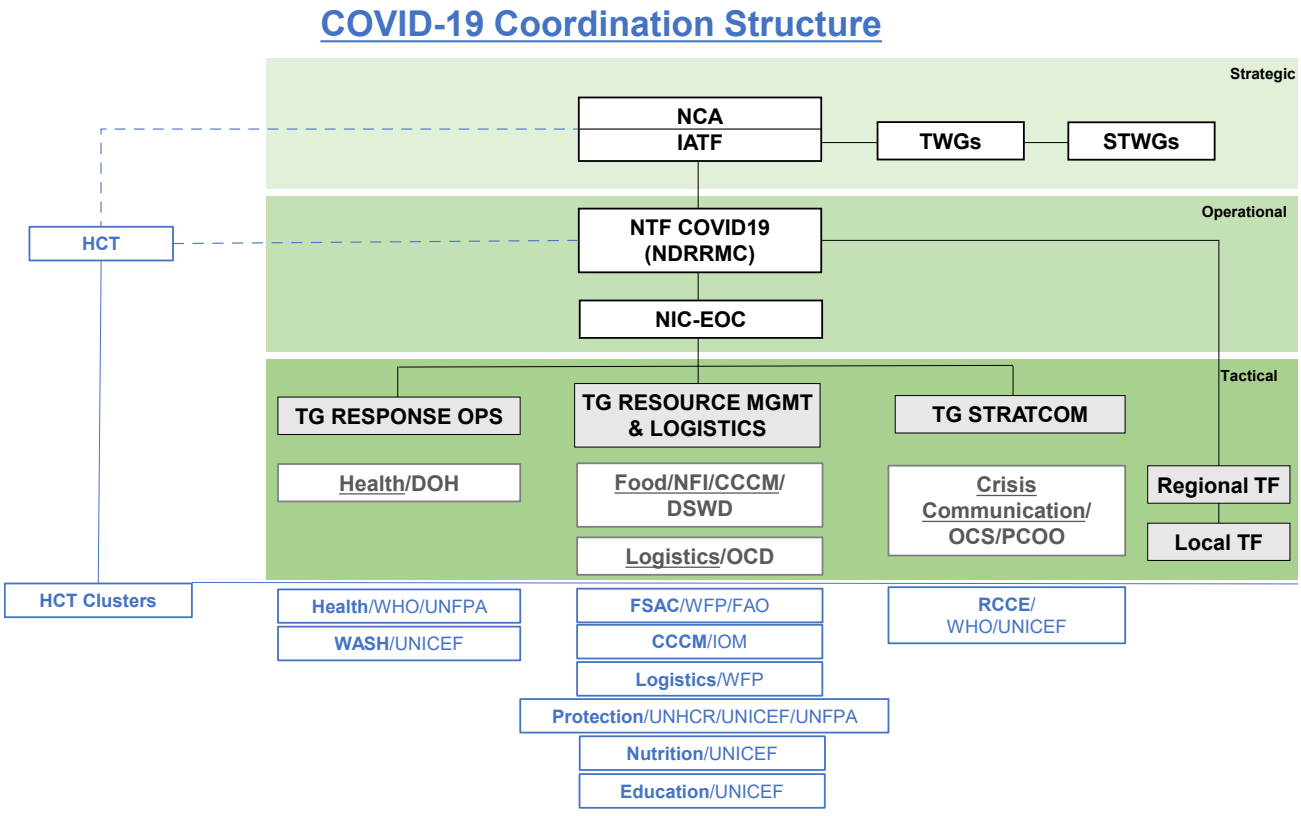


Figure 16: Government Organization Response Structure for COVID-19

organized as the NTF for COVID-19 response with the DND Secretary as Chair, Secretary of DILG as vice-chair, and OCD as Executive Director and secretariat. The NTF established its base of operations at the NDRRMC EOC with a national incident commander (NIC) at the Secretary level, overseeing and managing its daily operations.

The tactical level is organized into three task groups: Response Operations, Resource Management and Logistics, and Strategic Communications. The Response Operations Task Group, led by DOH with PNP, AFP, DSWD, Department of Agriculture, DOST, DILG, and Department of Labor and Employment, among others, covers activities that should be implemented at the national and local levels, including contact tracing, quarantine facilities management, development and implementation of quarantine protocols, research and development, maintenance of law and order, and provision of emergency relief to affected and vulnerable groups. The Resources Management and Logistics Task Group, led by DSWD, ensures the availability of resources, supplies, and facilities for response operations in collaboration with LGUs; moreover, in consultation with relevant entities, it formulates economic plans, programs, and projects to help communities cope with the impacts of the crisis. The Strategic Communications Group, led by Office of the Cabinet Secretary, is charged with dissemination of appropriate, accurate, and timely messages from the national to the local levels via all available platforms.

At the regional and local levels, standard coordination arrangements are followed: OCD Regional Directors are overall regional coordinators, and at the province and municipal/city levels, the Governors and Mayors take the lead for coordinating the response. For humanitarian partners wishing to support the local response, the point of contact is the Governor or Mayor as appropriate.[319]

DOH systems for routine health data gathering required some adaptation and the addition of external organization data gathering and dissemination, but there remained obstacles. Daily DOH updates on COVID-19 were supplemented by weekly WHO and thrice-weekly Logistics Cluster situation reports as well as OCHA Who's Doing What Where (3W) reports; together, these reports support response planning by providing key information on health status and threats to affected populations and availability of health resources and services. Despite the availability of data, some humanitarian agencies shared that the absence of active data sharing agreements prevented the full access to government databases. Movement restrictions, coupled with slow internet services in remote areas, prevented the collection and validation of some data at the community level.[320]

Non-Communicable Diseases

Non-communicable diseases (NCD) such as cancer, cardiovascular disease, diabetes, and chronic respiratory diseases and their risk factors are an increasing public health and development challenge in the Philippines. Together, NCDs account for 67% of all deaths and cost the national economy an estimated PHP756.5 billion (US$14.8 billion) per year, equivalent to 4.8% of the country's annual GDP in direct and hidden costs, the latter arising from reduced workplace productivity and premature deaths among working age adults. Figure 17 displays the share of NCDs as a factor in mortality in the Philippines.[321]

Research by DOH, WHO, the United Nations Development Programme (UNDP), and the UN Interagency Task Force (UNIATF) on the Prevention and Control of NCDs reveals that investment in the prevention and control of NCDs could prevent the premature deaths of over 350,000 people and contribute to economic growth over the next 15 years. Premature deaths from NCDs are largely caused by unhealthy behaviors including tobacco use, an unhealthy diet, physical inactivity, and harmful use of alcohol. In the Philippines, 40% of men and 12% of 13-15-year-old school-based adolescents

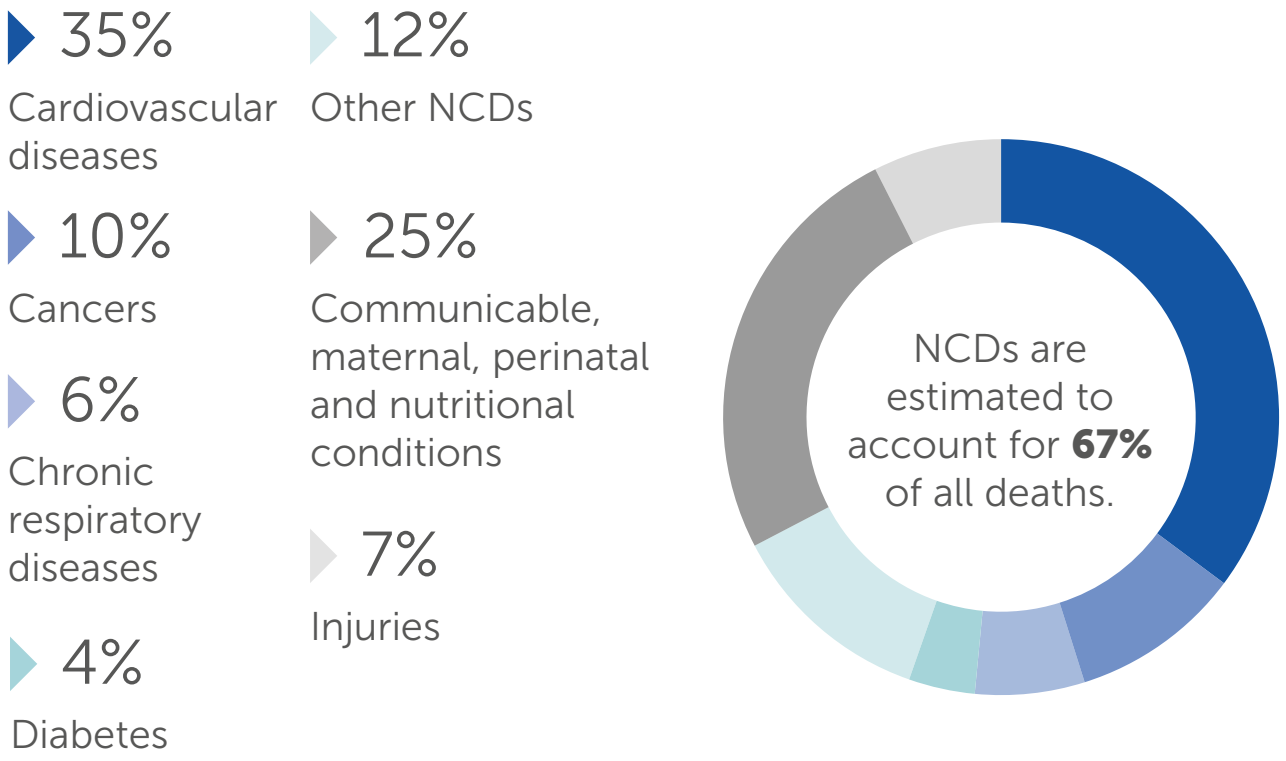


Figure 17: Non-Communicable Diseases as a Factor in Mortality (2018)

smoke. Among alcohol users, 48% of men and 17% of women 'binged' (defined as consuming six or more drinks in one sitting) during the month before the survey. In 2015, another survey revealed that 43% of adults were not sufficiently physically active, with women at higher risk of physical inactivity than men. Furthermore, the average daily salt intake is more than double the WHO recommendation.[322]

In addition to those conditions traditionally considered NCDs, the Philippine Statistics Authority reports that accidents are a major cause of mortality. On average, 2% of total deaths are related to road traffic accidents every year. Road traffic deaths nearly doubled between 2006 and 2017, reaching more than 10,000 in 2017. Men are much more badly affected at a ratio of five men killed in traffic accidents for every woman killed. Indeed, land transport accidents are the top cause of death for Filipino men ages 20-29. Nearly three-quarters of these traffic deaths involve a motorcycle while 15% involve a pedestrian.[323] Despite the decade-long rise in accidents and associated deaths, registered deaths attributed to transport accidents did begin to decrease, notching a 37.4% drop between 2019 and 2020, falling from 12,800 (2.1% share) in 2019 to 8,000 (1.4% share) in 2020 although reduced traffic due to COVID-19-related movement restrictions may have played a role.[324]

Finally, the country confronts challenges related to mental health and neurological disorders. The most common cause of deaths related to mental and neurologic disorders (not considering "other diseases of the nervous system") is intentional self-harm or suicide, which registered 2,111 deaths or 2.1 per 100,000 people in 2014 – similar to its 2013 level.[325] These numbers have fluctuated somewhat in more recent years, but there was a spike (25% increase year-on-year) in suicides in 2020. After 2,808 registered deaths due to intentional self-harm in 2019, 2020 saw 3,529 such deaths.[326] All mental and neurological disorders, except for Alzheimer's disease, affect more males than females. Mortality rates for suicide are particularly high among the elderly (65+) and young adults (i.e., 20-34 years).[327]

Training for Health Professionals

The public and private health sectors include physicians, nurses, midwives, community and barangay health workers, pharmacists, supply officers or supply chain managers, laboratory technicians, public health associates, dentists, and oral health professionals. The absence of a central database on the quantity and geographic distribution of general practitioners, specialists, and other health personnel, as well as the lack of evaluation studies on the health labor market and appropriate skill mix impede analysis and improvement of the human resource situation. The health personnel distribution is thought to be skewed towards hospital-based services and in urban areas where economic opportunities are perceived to be better. Moonlighting in private hospitals is also common among government physicians.[328]

As of 2019 the ratio of public doctors and nurses to the population both stood at 1:20,000 – far below the WHO recommended ratio of 1:1,000 – and midwives numbered one for every 5,000 people. The public sector employs the majority of medical professionals (i.e., 91% of midwives and 61% of nurses). Over 90% of doctors and nearly 75% of nurses are stationed in hospitals, while health centers and barangay health stations – typically the first point of contact for government-provided services – averaged only one doctor and two nurses each. The scarcity of government health care professionals is worst in BARMM, Davao, Zamboanga Peninsula, and CALABARZON.

Staffing has proven a particularly knotty problem amidst the two drivers of the Covid-19 pandemic and the country's push for universal health care. A large proportion of medical personnel are employed on a contractual basis, and a provision in the Universal Health Care Law aims to end this practice and regularize jobs in the public sector. The Law also tasks DOH with progressively increasing the number of permanent government health workers, in part by granting permanent positions to staff hired in priority areas. Meanwhile, DOH implements various deployment programs to fill staffing needs; for example, "Doctors to the Barrios" places doctors on two-year assignments in municipalities that have not had a doctor for at least two years. Another initiative assigns dentists, medical technologists, and nutritionists to RHUs to complement existing staff. The most recent push to ensure adequate geographic distribution of staff came in October 2020 when the Senate ratified legislation that granted full scholarships for doctoral degrees in medicine to at least one qualified applicant from each municipality and then requires them to serve at a government health facility in their hometown for a minimum of four years after licensing.[329]

Staffing up is also a particular challenge given that only 14 of 51 medical schools are accredited by the Philippine Accrediting Association of Schools, Colleges, and Universities. The average passing rate of medical schools in the Philippine Licensure Examination stands at 75%. Government agencies involved in seeking to boost the performance of the country's medical educational institutions are the Commission on Higher Education, the Technical Education and Skills Development Authority, the Professional Regulation Commission, and professional societies.[330]

The duration of medical school is typically five years. In the first and second year, students are taught basic medical sciences, and in the third year, clinical and diagnostic approaches. The last two years are spent on a clerkship and internship, which include practical experience in intensive hospital training. After the internship, the medical student becomes eligible to take the Philippine Licensure Examination, administered twice a year. About 3,000 students sit for the examination each session. New medical doctors then enter residency training programs that last 3-5 years, and further specialization entails more years.[331]

WOMEN, PEACE, AND SECURITY

The goal of the Philippines 2017-2022 National Action Plan on Women, Peace, and Security (NAPWPS) is to ensure the expansion of women's role in the various spaces for peace and security, highlighting women as both leaders and participants in the country. This current NAPWPS (NAP) builds on the previous NAP (2010-2016) continuing the work but also identifying and addressing the gaps. The Plan was a result of civil society and government consultation in a process that began in 2007.

The current NAP includes information on formal peace negotiations as well as informal spaces (i.e., civil society and grassroots participation). While it does not have a detailed monitoring and evaluation framework, the NAP does identify monitoring and evaluation among its objectives. The current NAP adopts a broader framing of addressing the situation of women in armed conflict and recognizing their contributions to peacebuilding. The Plan adheres to the tenets found within the Philippine Magna Carta of Women (Republic Act 9710) promoting and protecting women's rights, specifically in conflict. The NAP also incorporates some key recommendations made in the 2015 Global Study on UN Security Council Resolution (UNSCR) 1325 such as the prioritization of the following:

- conflict prevention;
- framing women, peace, and security from a human rights perspective;
- participation and leadership of women in all levels of the peace project;
- transitional justice;
- inclusive and participatory localization efforts;
- combating extremism by supporting women peacebuilders;
- multi-level and multi-stakeholder approach to implementation; and
- financing initiatives aimed at materializing women, peace, and security.

The NAP seeks to embed the language of women's human rights as provided for in the Convention on the Elimination of all forms of Discrimination against Women (CEDAW) as well as women's human security as stipulated in CEDAW General Recommendation 30 with regard to ensuring their human rights "before, during, and after" various conflict contexts.

Women are vulnerable in various conflict situations. Women and girls, particularly those from IDP camps, become victims to sexual and gender-based violence (SBBV) to include trafficking, rape, and domestic violence. Women also endure economic, social, and political insecurity. In this regard, the NAPWPS 2017-2022 aims to strengthen protection and coordination initiatives for women and girls in various emergencies, including conflict and disaster situations.[332]

The country has seen an increase in the presence of women in leadership roles and had a woman as head of state for over 15 of the past 50 years, which shows it has closed some gender gaps in leadership roles. However, there are still few seats in the parliament held by women (28%) and fewer women among ministers (13%). Out of 156 countries assessed around the world for the Global Gender Gap Report, the Philippines occupies 17th place, with Afghanistan ranking 156th (the worst). Regarding the index rankings by region compared to globally, the country ranks 2nd out of 20 for the East Asia and the Pacific region. The Global Gender Gap Index is a composite measure of gender gaps on four socio economic outcomes: economic participation and opportunity; educational attainment; health and survival; and political empowerment.[333]

CONCLUSION

The Philippines ranked as the ninth most disaster-prone country in the world in the 2020 World Risk Index,[334] and it was the fourth most at risk country in the Long-Term Climate Risk Index based on data from 2000-2019.[335] Due to the country's proximity to the "Pacific Ring of Fire" and its location along the Pacific typhoon belt, the Philippines experiences many forms of natural disasters. For example, in an average year, the country experiences 20 typhoons, five of which are destructive. It experienced its most destructive disaster in recorded history in 2013 when Typhoon Haiyan struck; the storm affected 14 million people and claimed at least 6,000 lives.[336]

Not only does this level of battering put lives and livelihoods at risk, but it also puts immense strain on the country's already overtaxed infrastructure. As a result, the country is putting resources into developing resilient and green infrastructure to allow communities to recover from disasters more swiftly and to ensure the country meets its international climate commitments. The Philippine Development Plan (2017-2022) lays out plans to improve all infrastructure from the perspectives of planning, construction, and financing. Transport infrastructure is a particular target with plans in place to adapt to the threats of climate change-induced sea level rise and severe weather.[337]

As a society, the Philippines has responded to risk by developing strategies and mitigation mechanisms that have buy-in at the highest levels of national government. The past decade has seen integration of disaster risk management and climate change adaptation into the National Disaster Risk Reduction and Management (DRRM) Framework.[338] The Philippine Congress enacted the National DRRM Act in 2010 to establish a multi-level disaster risk management system. The Act formed the basis for the establishment of the NDRRMC and institutionalization of the National DRRM Plan. However, since 2017, Congress has been crafting a law that would establish a cabinet department solely focused on long-term disaster mitigation, relief, and recovery. As of September 2021, the Senate continued to work on the legislation to form the Department of Disaster Resilience.[339]

The devastation of Typhoon Haiyan also spurred the Philippines toward two key developments: 1) improving early warnings and disaster information dissemination; and 2) institutionalization of the role of AFP, international agents, and civil-military coordination. The government swiftly grasped the importance of early warning systems, clear evacuation directions, pre-positioned aid assets, and education on safer building. The upshot has been mitigation of the impact of more recent floods, typhoons, and landslides as communities have had easy access to information via websites and mobile phone applications. Moreover, building on growing evidence that acting prior to the onset of a predictable, severe hazard is significantly more cost-effective than traditional responses, the Philippines is encouraging and participating in projects related to anticipatory action. With OCHA facilitation, in 2021-2022, the Philippines will be a pilot for Anticipatory Action for Tropical Cyclone that builds on existing capacity and networks to establish a trigger mechanism that produces damage predictions beginning at 72 hours before a damaging cyclone is expected to strike.[340]

Since all the information in the world cannot stop an earthquake, tsunami, or typhoon from hitting, the Philippines has also moved to formalize disaster response structures, specifically those involving AFP. HADR is among AFP's specified internal defense missions, and, as part of its specified role as a first responder, AFP has developed coordination mechanisms, the Civil-Military Coordination Center, which facilitates coordination across government and non-government entities, and the Multi-National Coordination Center, which provides common situational awareness between AFP and assisting foreign militaries, facilitates information sharing, and ensures the efficient use of military support locations, capabilities, and coordination.[341]

APPENDICES

DoD DMHA Engagements in the Past Six Years (FY 2015-2021)

Balikatan, April 2021

Despite the challenges of the COVID-19 pandemic, both Philippines and U.S. forces were able to achieve the objectives of Exercise Balikatan in April 2021. The objective of this iteration of the exercise was to train both countries together on defense and security efforts, leveraging the capability, experience, and strength of both militaries' longstanding friendship. Exercise Balikatan is an annual U.S.-Philippine bilateral military exercise focused on a variety of missions including HADR, counterterrorism, and other combined military operations. The name Balikatan comes from a Tagalog phrase meaning "shoulder-to-shoulder." As part of the humanitarian and civic assistance activities, participants built two classrooms and a daycare center in Plaridel, Bulacan Province, a classroom in Atimonan, and a health center in Mauban. Photo 4 shows the building of one of the classrooms.[342]



Photo 4: Exercise Balikatan, Classroom Building in Atimonan, Quezon, Philippines (2021)

Development and Disaster Response Workshop, April 2021

As part of their Professional Military Education program, field grade officer students of AFP Command and General Staff College Cohort 16 (CGSC Cohort 16) attended a workshop on Development and Disaster Response. The workshop was created after the Political Section at the U.S. Embassy in Manila received a request from the Development Academy of the Philippines (DAP) for a lecture on how the U.S. military responds to foreign disasters. The workshop was facilitated by the DAP. Due to the enormous number of HADR operations that the AFP and U.S. DoD have performed together, the organizers of the workshop put together an understanding of U.S. policies and procedures for DoD Foreign Disaster Response (FDR) which is critical for the officer students' professional development. A DMHA advisor from the CFE-DM produced and delivered a tailor-made course of instruction for CGSC Cohort 16. The students engaged in a robust discussion of DoD policies and procedures, comparing them to the policies and procedures of the AFP. Other presenters during the workshop included a former Philippines Secretary of National Defense, as well as the former Chief of Staff of the AFP, and Under Secretary at the Office of the President.[343]

Armed Forces of the Philippines Visit to Hawaii, November 2019

AFP Chief of Staff Maj. Gen. Noel S. Clement visited CFE-DM, the United States Indo-Pacific Command (USINDOPACOM), the Daniel

K. Inouye APCSS, and the Defense POW/MIA Accounting Agency (DPAA) in Hawaii from 4 to 6 November 2019. Accompanying Gen. Clement were Maj. Gen. Augusto D. Dela Peña, Deputy Chief of Staff for Plans (J5) AFP, and Maj. Jean Alia Y. Robles, Public Affairs. Also present were Deputy Consul General Angelica C. Escalona, Philippine Defense and Armed Forces Attaché Brig. Gen. Marlo M. Guloy, and AFP Liaison Officer to USINDOPACOM Col. Joseph P. Archog.[344]

HADR Train the Trainer Course for AFP, October 2019

CFE-DM staff led a two-day HADR Train-the-Trainer course for the AFP CGSC at Camp Aguinaldo, Manila, Philippines, from 15 to 16 October 2019. The course consisted of two days of instruction facilitated by experts from CFE-DM, Philippines Red Cross, Philippines Office of Civil Defense, UNOCHA-Manila, and the AFP to train 27 CGSC and headquarters personnel in preparation for an AFP led program. To complete the course, participants undertook a military planning exercise using an earthquake scenario based in Metro Manila. The program prepares the CGSC faculty to conduct a five-day HADR module for approximately 150 field-grade officer students. Photo 5 shows participants at work.[345]

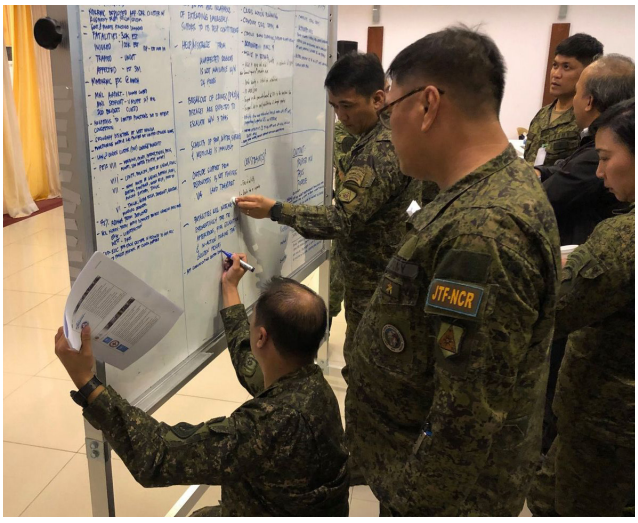


Photo 5: HADR Train the Trainer Course, Manila, Philippines (2019)

SALAKNIB Exercise, March 2019

AFP and U.S. Army Pacific participated in Exercise Salaknib 2019, at Fort Magsaysay, Palayan, and Nueva Ecija, Philippines from 4 to 24 March 2019. Salaknib is an annual, bilateral exercise sponsored by U.S. Army Pacific and hosted by the Philippine Army. Exercise Salaknib 2019 provided a venue for the exchange of tactics, techniques, and procedures for HADR operations, demonstrating the bilateral relationship and importance to support the security interests of allies and partners in the region.[346]

Balikatan, July 2018

During the 34th iteration of Balikatan, an annual US-Philippine military exercise, CFE-DM worked closely with US Pacific Command and AFP exercise planners, the Philippine Office of Civil Defense, and several humanitarian organizations to create realistic humanitarian scenarios that the military could encounter in a conflict environment.[347]

SALAKNIB, November 2017

The U.S. Army and the Philippine Army conducted exercise SALAKNIB from 16 to 27 November 2017, in Luzon, Philippines. Both counterparts participated in Subject Matter Expert exchanges and practical exercises to share information and reinforce their long military partnership. The U.S. and Filipino soldiers shared information such as gunnery procedures and maintenance for the Armored Personnel Carrier, artillery tactics and processes, as well as study and validation of the Philippine Army Sustainment Functional Concept Document.[348]

Pacific Responder, October 2017

The 36th Contingency Response Group of the U.S. Air Force and the Philippine Air Force partnered during the first Pacific Responder exercise, 23-29 September 2017, at Andersen Air Force Base, Guam. The exercise was a week-long engagement in which forces focused

on leadership planning and disaster response execution. Multiple fields such as command and control, security forces, engineering assistance, structures, and aircraft maintenance were shared.[349]

KAMANDAG, October 2017

The Third Marine Expeditionary Brigade (III MEB) of the U.S. Marine Corps and AFP collaborated during the inaugural iteration of exercise KAMANDAG, which took place 2-11 October 2017 at multiple locations on the island of Luzon. KAMANDAG enables military-to-military exchanges between AFP and U.S. forces, with a focus on enhancing counterterrorism capabilities, HADR capabilities, and conducting humanitarian and civic assistance projects. The purpose of this Philippines-led military exercise was to conduct bilateral exchanges between Philippine and U.S. forces allowing for enhanced cooperation and interoperability between the forces. This is consistent with the Mutual Defense Treaty and Visiting Forces Agreement.[350]

Balikatan, May 2017

Balikatan 2017 was the 33rd iteration of the annual U.S.-Philippine bilateral military exercise. From 8 through 19 May 2017, Balikatan focused on multiple missions, to include HADR, counterterrorism, and other combined military operations. During the 2017 exercise, multinational forces from the Australian Defence Force and the Japan Self-Defense Forces joined the U.S. and the Philippines in all major training events.[351]

PHIBLEX, October 2016

Philippine and U.S. Marines came together for exercise PHIBLEX 2016, a U.S.-Philippine military bilateral exercise that combines amphibious capabilities with humanitarian civic assistance efforts to strengthen interoperability and working relationships. Over 1,400 U.S. Marines and 500 AFP members participated in the exercise.[352]

Balikatan, April 2016

The 32nd iteration of Exercise Balikatan involved approximately 5,000 U.S. service members and 3,500 members of AFP, in addition to nearly 80 Australian Defence Force personnel and observers from 12 other nations. CFE-DM presented training on the importance of military coordination and international response at the HADR command post exercise (CPX) at Camp General Emilio Aguinaldo, Quezon City, on 17 May 2017. HADR CPX training allows AFP and the U.S. military to partner with international relief organizations to provide a faster and more effective response to natural disasters.[353] As part of Balikatan 16, the Philippine Southern Luzon Command conducted a Multinational Coordination Center meeting in Manila on 8 April 2016. The Government of the Philippines NDRRMC Office of Civil Defense, a DMHA advisor for CFE-DM, and USAID participated in the meeting. Also in attendance were Australian Defence Force and Hawaii Army National Guard representatives and officials from U.S. Pacific Command.[354]

PHIBLEX, October 2015

PHIBLEX is an annual, bilateral training exercise conducted by U.S. Marine and Navy forces alongside members of the AFP. It focuses on strengthening the partnership and relationship between the two nations, across a range of military operations, including disaster relief and complex expeditionary operations.[355]

Exercise Pacific Endeavor, September 2015

USPACOM facilitated a Multinational Communications Interoperability Program as part of exercise Pacific Endeavor in September 2015. This included the development and integration of a HADR scenario event, including civil-military coordination related to communications interoperability.[356]

Tempest Express-27, July 2015

Tempest Express-27 was held in Manila, Philippines, from 23 to 31 July 2015. This continued the series of multilateral engagements

in the Indo-Asia-Pacific region designed to promote regional peace and security and enhance multinational capabilities and capacity of nations participating in the Multinational Planning and Augmentation Team workshop. The Philippine military and police force, and civilian humanitarian agency representatives from Australia, Bangladesh, Cambodia, Canada, France, Germany, Indonesia, Japan, Korea, Mongolia, Nepal, New Zealand, Singapore, Sri Lanka, United Kingdom, U.S., and Vietnam participated. The participants contributed to the refinement of staff skills to operate in a coalition or multinational force headquarters as part of multinational military disaster response operations.[357]

Balikatan, April 2015

U.S. and Philippine forces began the 31st iteration of Exercise Balikatan, an annual bilateral training exercise and humanitarian assistance engagement. Military service members from both countries conducted a combined CPX and field training and live-fire exercises to improve the readiness of participating U.S. and Philippine forces. Recalling the devastation of more than 35 provinces in the Philippines during Typhoon Haiyan in November 2013, Philippines government agents understand the import of training for these responses. The 2013 Typhoon displaced nearly 500,000 residents.[358]

International/Foreign Relations

The country's international affairs are influenced by ties to its Southeast Asian neighbors, China, the U.S., and the Middle East. There are territorial disputes in the region and China continues to construct military and industrial outposts on artificial islands it has built in disputed waters over rich natural resources such as untapped oil, natural gas, and fishing areas. The U.S. has also increased its naval presence in the region.

The Philippines, China, and Taiwan all claim sovereignty over Scarborough Reef. In addition, China, Taiwan, and Vietnam are involved in an ongoing territorial dispute claiming the Spratly Islands in their entirety, while portions are claimed by Malaysia and the Philippines. Finally, Brunei has claimed a continental shelf that overlaps a southern reef and claims an EEZ over this area but has not made any formal claim to the reef. The Spratly Islands consist of more than 100 small island reefs surrounded by rich fishing grounds. Approximately 45 islands are occupied by a small number of military forces from China, Malaysia, the Philippines, Taiwan, and Vietnam. The 2002 "Declaration on the Conduct of Parties in the South China Sea," has eased tensions in the Spratly Islands but falls short of a legally binding "code of conduct" of the interested countries. The national oil companies of China, the Philippines, and Vietnam signed a joint accord to conduct marine seismic activities in the Spratly Islands in 2005. In July 2016, the Permanent Court of Arbitration at The Hague issued its ruling on a claim brought against China by the Philippines under UNCLOS, ruling in favor of the Philippines; however, China refuses to accept the court's authority. [359]

Washington's defense treaty with Manila could draw the United States into a potential China-Philippines conflict over the substantial natural gas deposits or lucrative fishing grounds in disputed territory. The failure of Chinese and Southeast Asian leaders to resolve the disputes by diplomatic means could also undermine international laws governing maritime disputes and encourage destabilizing arms buildups.[360]

On 8 September 2021, Philippine Defense Secretary Delfin Lorenzana said there was a need for a comprehensive review of his country's alliance with the U.S., and he complained that Manila received less from its relationship with Washington than non-treaty allies despite growing pressure from China. There have been questions over amending the 1951 mutual defense treaty between the U.S. and the Philippines and discussions to determine whether or not it applies in the Pacific maritime area where the Philippines faces rival territorial claims in the South China Sea with increasing

pressure from China. Manila has protested the presence of Chinese maritime vessels in the Philippines' EEZ. In addition, Philippines President Duterte's recent call for engagement with China has added to tensions.[361]

Disaster relief and recovery has become an increasingly important area of U.S. assistance to the Philippines over the last ten years. The U.S. aided the Philippines in relief and recovery efforts after Typhoon Haiyan/Yolanda devastated the country in 2013 (over $143 million). The U.S. also supports long-term humanitarian assistance and stabilization funding in response to the Marawi siege of 2017 (over $60 million).[362]

Participation in International Organizations

Philippines participates in the following international organizations:

Asian Development Bank (ADB), Asia-Pacific Economic Cooperation (APEC), ASEAN Regional Forum (ARF), Association of Southeast Asian Nations (ASEAN), Bank for International Settlements (BIS), Conference on Disarmament, Conference on Interaction and Confidence Building Measures in Asia (CICA), Colombo Plan, East Asia Summit (EAS), Food and Agriculture Organization of the United Nations (FAO), Group of 24 (G-24), Group of 77 (G-77), International Atomic Energy Agency (IAEA), International Bank for Reconstruction and Development (IBRD), International Civil Aviation Organization (ICAO), International Chamber of Conference (ICC-national committees), Institute of Catastrophe Risk Management (ICRM), International Development Association (IDA), International Fund for Agricultural Development (IFAD), International Finance Corporation (IFC), International Federation of Red Cross and Red Crescent Societies (IFRC), International Hydrographic Organization (IHO), International Labour Organization (ILO), International Monetary Fund (IMF), International Maritime Organization (IMO), International Mobil Satellite Organization (IMSO), International Criminal Police Organisation (INTERPOL), International Olympic Committee (IOC), UN International Organization for Migration (IOM), Inter-Parliamentary Union (IPU), International Organization for Standardization (ISO), International Telecommunications Satellite Organization (ITSO), International Telecommunications Union (ITU), International Trade Union Confederation (ITUC-NGOs), Multilateral Investment Guarantee Agency (MIGA), Non-Aligned Movement (NAM), Organization of American States (OAS – observer), Organisation for the Prohibition of Chemical Weapons (OPCW), Permanent Court of Arbitration (PCA), Pacific Islands Forum (PIF - partner), United Nations (UN), United Nations Conference on Trade and Development (UNCTAD), UN Educational, Scientific, and Cultural Organization (UNESCO), UN High Commissioner for Refugees (UNHCR), UN Industrial Development Organization (UNIDO), Union Latina, World Tourism Organization (UNWTO), Universal Postal Union (UPU), World Customs Organization (WCO), World Federation of Trade Unions (WFTU NGOs), World Health Organization (WHO), World Intellectual Property Organization (WIPO), World Meteorological Organization (WMO), World Trade Organization (WTO).

UN peacekeeping missions that Philippines is contributing personnel to, as of 31 July 2021:[363]

- UN Multidimensional Integrated Stabilization Mission in Central African Republic (MINUSCA) – 2 experts
- UN Mission in Republic of South Sudan (UNMISS) – 2 experts
- UN Military Observer Group in India and Pakistan (UNMOGIP) – 6 experts

Force Protection/Pre-Deployment Information

The following information is provided for pre-deployment planning and preparations. Visit www.travel.state.gov prior to deployments for further up-to-date information. DoD personnel

must review the Foreign Clearance Guide (FCG) for travel to Philippines (www.fcg.pentagon.mil). All official travel and personal travel for active-duty personnel must be submitted through an APACS request. Contact information for the Defense Attaché Office can be found in the FCG if you have additional questions.[364]

Passport/Visa

U.S. citizens must have a visa to enter the Philippines for all travel purposes, including tourism. Travelers must receive a visa from a Philippine embassy or consulate prior to traveling to the Philippines. Persons who remain in the Philippines beyond the "admit until" date stamped in their passports by immigration authorities may be subject to fines and detention by the Philippine Bureau of Immigration.

Safety and Security

Terrorism: Terrorist groups, and those inspired by such organizations, are intent on attacking U.S. citizens abroad. Terrorists are increasingly using less-sophisticated methods of attack – including knives, firearms, and vehicles – to target crowds more effectively. Frequently, their aim is unprotected or vulnerable targets, such as: high-profile public events (sporting contests, political rallies, demonstrations, holiday events, celebratory gatherings, etc.), hotels, clubs, and restaurants frequented by tourists, places of worship, schools, parks, shopping malls and markets, and public transportation systems (including subways, buses, trains, and scheduled commercial flights).

U.S. citizens should remain alert to the potential for explosions and bombings as part of pre-planned attacks, as well as the threat of kidnapping.

Crime: Confidence games (con games), pickpocketing, Internet scams, and credit/ATM card fraud are common. Be wary of unknown individuals who attempt to befriend you, especially just after your arrival in country. Do not accept food, drinks, or rides in private vehicles from strangers, even if they appear to be legitimate. Solo travelers have been drugged and robbed by strangers after accepting an invitation to visit a tourist destination.

Kidnappings, physical assaults, murder-for-hire, and other violent crimes occur in the Philippines. Philippine government law enforcement agencies are engaged in a nationwide counter-narcotics campaign that has resulted in a sharp increase in violence between police and individuals suspected of involvement in the drug trade. As part of this campaign, law enforcement is engaged in aggressive search and buy-bust operations that could affect foreigners.

Taxis or ride-sharing applications are the recommended form of public transportation. However, taxi drivers and/or individuals using stolen taxi cabs have committed robberies. Ask the hotel, restaurant, and/or business establishment to call a reliable taxi service for you.

- Do not enter a taxi if it has already accepted another passenger.
- Request that the taxi driver use the meter to record your fare.
- Wait for another cab if the driver is unwilling to comply with these requests.
- Make a mental note of the license plate number of your taxi, or text it to someone, should there be a problem.
- When driving in the city, make certain that vehicle doors are locked and windows are rolled up.

Travelers have been stopped and robbed shortly after leaving Manila Ninoy Aquino International Airport in a taxi or private vehicle.

One common form of credit/ATM card fraud involves an illicit electronic device attached to ATM card readers that retrieves and records information, including the PIN, from a card's magnetic strip.

Internet romance and financial scams are prevalent in the Philippines. Scams are often initiated through Internet postings/profiles or by unsolicited emails and letters. Scammers almost always pose as U.S. citizens who have no one else to turn to for help. Common scams include: romance/online dating, money transfers,

lucrative sales, gold purchase, contracts with promises of large commissions, grandparent/relative targeting, free trip/luggage, lotteries, inheritance notices, work permits/job offers, and bank overpayments.

Victims of Crime: U.S. citizen victims of sexual assault are encouraged to contact the U.S. Embassy for assistance.

Report crimes to the local police at the 911 hotline and contact the U.S. Embassy at +63-2-5301-2000. Remember that local authorities are responsible for investigating and prosecuting the crime.

The U.S. Embassy or Consulate can:

- Help find appropriate medical care.
- Assist in reporting a crime to the police.
- Contact relatives or friends with written consent.
- Provide general information regarding the victim's role during the local investigation and following its conclusion.
- Provide a list of local attorneys.
- Provide our information on victim's compensation programs in the U.S.
- Provide an emergency loan for repatriation to the United States and/or limited medical support in cases of destitution.
- Help find accommodation and arrange flights home.
- Replace a stolen or lost passport.

Domestic Violence: U.S. citizen victims of domestic violence are encouraged to contact the Embassy for assistance.

Tourism: Check with the Philippine Department of Tourism before traveling. The safety standards one might expect of transport and tour operators, including adventure activities such as diving, are not always met. Sufficient safety equipment may not be provided, and recommended maintenance standards and safety precautions may not be observed. Always use available safety equipment, such as lifejackets or seatbelts, even if others do not. If appropriate safety equipment is not available, use another provider. In the event of an injury, appropriate medical treatment is widely available throughout the country. Outside of a major metropolitan center, it may take more time for first responders and medical professionals to stabilize a patient and provide life-saving assistance. U.S. citizens are encouraged to purchase medical evacuation insurance. Persons planning to dive should consult the Diver's Alert Network for information on diving accident management.

Emergency Contact Information

U.S. Embassy Manila
1201 Roxas Boulevard
Manila, Philippines 1000
Tel: +63-2-5301-2000
Emergency Tel: +63-2-5301-2000
Fax: +63-2-5301-2017
E-mail: *ACSInfoManila@state.gov*
Website: https://ph.usembassy.gov/embassy/manila/

Consulate
U.S. Consular Agency - Cebu City
Ground Level, Waterfront Hotel
Salinas Drive
Lahug, Cebu City
Philippines 6000
Tel: +63-32-231-1261
Emergency After-Hours Tel: +63-2-301-2000
(U.S. Embassy in Manila)
Fax: +63-32-231-0174
E-mail: *ACSInfoCebu@state.gov*

Currency Information

US$1.00 = 50.13 Philippine Pesos (PHP) or US$0.0199 = PHP1.00 (as of 23 August 2021)[365]

Travel Health Information

The U.S. Centers for Disease Control and Prevention (CDC) provides guidance that all travelers to Philippines should be up to date on routine vaccinations. The following are additional recommendations for travel to Philippines. The information in Tables 2 and 3 are taken directly from the CDC website under the Travelers Health Section (https://wwwnc.cdc.gov/travel/destinations/list/).[366]

Routine vaccines (for all travelers)	Make sure you are up-to-date on all routine vaccines before every trip. Some of these vaccines include • Chickenpox (Varicella) • Diphtheria-Tetanus-Pertussis • Flu (influenza) • Measles-Mumps-Rubella (MMR) • Polio • Shingles
COVID-19	Everyone 16 years of age and older should get fully vaccinated for COVID-19 before travel.
Cholera	Vaccination may be considered for adults who are traveling to areas of active cholera transmission. Areas of active cholera transmission are localized to the regions of Bicol, Caraga, Eastern Visayas, and National Capital. Cholera is rare in travelers but can be severe. Certain factors may increase the risk of getting cholera or having severe disease. Avoiding unsafe food and water and washing your hands can also help prevent cholera.
Hepatitis A	Recommended for unvaccinated travelers one year old or older going to the Philippines. Infants 6 to 11 months old should also be vaccinated against Hepatitis A. The dose does not count toward the routine 2-dose series. Travelers allergic to a vaccine component or who are younger than 6 months should receive a single dose of immune globulin, which provides effective protection for up to 2 months depending on dosage given. Unvaccinated travelers who are over 40 years old, immunocompromised, or have chronic medical conditions planning to depart to a risk area in less than 2 weeks should get the initial dose of vaccine and at the same appointment receive immune globulin.
Hepatitis B	Recommended for unvaccinated travelers of all ages to the Philippines.
Japanese Encephalitis	Recommended for travelers who: • Are moving to an area with Japanese encephalitis to live • Spend long periods of time, such as a month or more, in areas with Japanese encephalitis • Frequently travel to areas with Japanese encephalitis • Consider vaccination for travelers: • Spending less than a month in areas with Japanese encephalitis but will be doing activities that increase risk of infection, such as visiting rural areas, hiking, or camping, or staying in places without air conditioning, screens, or bed nets • Going to areas with Japanese encephalitis who are uncertain of their activities or how long they will be there Not recommended for travelers planning short-term travel to urban areas or travel to areas with no clear Japanese encephalitis season.
Malaria	CDC recommends that travelers going to certain areas of the Philippines take prescription medicine to prevent malaria. Depending on the medicine, you will need to start taking this medicine multiple days before your trip, as well as during and after your trip. Talk to your doctor about which malaria medication you should take.
Measles	Infants 6 to 11 months old traveling internationally should get 1 dose of measles-mumps-rubella vaccine before travel. This dose does not count as part of the routine childhood vaccination series.
Polio	A single lifetime booster dose of Inactivated Polio Vaccine is recommended for adults who received the routine polio vaccination series as children; the routine series is recommended for unvaccinated or incompletely vaccinated children and adults and those with unknown vaccination status.
Rabies	Rabid dogs are commonly found in the Philippines. If bitten or scratched by a dog or other mammal while in the Philippines, there may be limited or no rabies treatment available. Consider rabies vaccination before your trip if your activities mean you will be around dogs or wildlife. Travelers more likely to encounter rabid animals include • Campers, adventure travelers, or cave explorers (spelunkers) • Veterinarians, animal handlers, field biologists, or laboratory workers handling animal specimens • Visitors to rural areas Since children are more likely to be bitten or scratched by a dog or other animals, consider rabies vaccination for children traveling to the Philippines.
Typhoid	Recommended for most travelers, especially those staying with friends or relatives or visiting smaller cities or rural areas.

Table 2: CDC Information for Vaccine-Preventable Diseases in the Philippines

Chikungunya	Mosquito bites can carry chikungunya; there is no prophylaxis. Avoid bug bits.
Dengue	Mosquito bites can carry dengue; there is no prophylaxis. Avoid bug bits.
Hantavirus	Hantavirus can be spread by breathing in air or accidentally eating food contaminated with the urine, droppings, or saliva of infected rodents, or bite from an infected rodent. Less commonly, it is spread by being around someone sick with hantavirus (only occurs with Andes virus). To avoid infection, avoid rodents and areas where they live, and avoid sick people.
Leptospirosis	Leptospirosis can be contracted by touching urine or other body fluids from an animal infected with leptospirosis, swimming or wading in urine-contaminated fresh water, or contact with urine-contaminated mud, or by drinking water or eating food contaminated with animal urine. To avoid infection, avoid contaminated water and soil.
Schistosomiasis	Schistosomiasis can be spread by wading, swimming, bathing, or washing in contaminated freshwater streams, rivers, ponds, lakes, or untreated pools. Avoid contaminated water.
Tuberculosis (TB)	TB is most commonly contracted when one breathes in TB bacteria that is in the air from an infected and contagious person who has coughed, spoken, or sang. To avoid potential contamination, avoid sick people.
Zika	Zika is spread by the bite of an infected mosquito or by an infected pregnant woman to her unborn baby. To avoid infection, avoid bug bites.

Table 3: CDC Information for Non-Vaccine-Preventable Diseases in the Philippines

Health Alerts for Philippines: At the time of writing this handbook (23 August 2021), the CDC lists Philippines as a "Level 3" or "high level" country for COVID-19. The agency recommends the following for persons traveling to Philippines during the pandemic:

- Make sure you are fully vaccinated before traveling to the Philippines.
- Unvaccinated travelers should avoid nonessential travel to the Philippines.
- Because of the current situation in the Philippines, all travelers may be at risk for getting and spreading COVID-19 variants.
- Travelers should follow recommendations or requirements in the Philippines, including wearing a mask and staying 6 feet apart from others.

The following actions you can take to stay healthy and safe on your trip include:

Eat and Drink Safely

Unclean food and water can cause travelers' diarrhea and other diseases. Reduce your risk by sticking to safe food and water habits.

Eat

- Food that is cooked and served hot
- Hard-cooked eggs
- Fruits and vegetables you have washed in clean water or peeled yourself
- Pasteurized dairy products

Don't Eat

- Food served at room temperature
- Food from street vendors
- Raw or soft-cooked (runny) eggs
- Raw or undercooked (rare) meat or fish
- Unwashed or unpeeled raw fruits and vegetables
- Unpasteurized dairy products
- "Bushmeat" (monkeys, bats, or other wild game)

Drink

- Bottled water that is sealed
- Water that has been disinfected
- Ice made with bottled or disinfected water
- Carbonated drinks
- Hot coffee or tea
- Pasteurized milk

Don't Drink

- Tap or well water
- Ice made with tap or well water
- Drinks made with tap or well water (such as reconstituted juice)
- Unpasteurized milk

Take Medicine

Talk with your doctor about taking prescription or over-the-counter drugs with you on your trip in case you get sick.

Prevent Bug Bites

Bugs (like mosquitoes, ticks, and fleas) can spread a number of diseases in the Philippines. Many of these diseases cannot be prevented with a vaccine or medicine. You can reduce your risk by taking steps to prevent bug bites.

What can I do to prevent bug bites?

- Cover exposed skin by wearing long-sleeved shirts, long pants, and hats.
- Use an appropriate insect repellent (see below).
- Use permethrin-treated clothing and gear (such as boots, pants, socks, and tents). Do not use permethrin directly on skin.
- Stay and sleep in air-conditioned or screened rooms.
- Use a bed net if the area where you are sleeping is exposed to the outdoors.

What type of insect repellent should I use?

- FOR PROTECTION AGAINST TICKS AND MOSQUITOES: Use a repellent that contains 20% or more DEET for protection that lasts up to several hours.
- FOR PROTECTION AGAINST MOSQUITOES ONLY: Products with one of the following active ingredients can also help prevent mosquito bites. Higher percentages of active ingredient provide longer protection.
  - DEET
  - Picaridin (also known as KBR 3023, Bayrepel, and icaridin)
  - Oil of lemon eucalyptus (OLE) or para-menthane-diol (PMD)
  - IR3535
  - 2-undecanone
- Always use insect repellent as directed.

What should I do if I am bitten by bugs?

- Avoid scratching bug bites, and apply hydrocortisone cream or calamine lotion to reduce the itching.
- Check your entire body for ticks after outdoor activity. Be sure to remove ticks properly.

What can I do to avoid bed bugs?

Although bed bugs do not carry disease, they are an annoyance. See our information page about avoiding bug bites for some easy tips to avoid them. For more information on bed bugs, see Bed Bugs.

Safety and Security

Note that conditions can change rapidly in a country at any time. To receive updated Travel Advisories and Alerts for the countries you choose, sign up at step.state.gov.

Sendai Framework

The Sendai Framework is the global blueprint and fifteen-year plan to build the world's resilience to natural disasters.[367] The information in this section is sourced directly from the Sendai Framework. The Sendai Framework for Disaster Risk Reduction (DRR) 2015-2030 outlines seven clear targets and four priorities for action to prevent new and reduce existing disaster risks:

The Seven Global Targets include:

- Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality rates in the decade 2020-2030 compared to the period 2005-2015.
- Substantially reduce the number of affected people globally by 2030, aiming to lower average global figure per 100,000 in the decade 2020-2030 compared to the period 2005-2015.
- Reduce direct disaster economic loss in relation to global GDP by 2030.
- Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030.
- Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020.
- Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of this Framework by 2030.
- Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030.[368]

The Four Priorities of Action include:

- Understanding disaster risk;
- Strengthening disaster risk governance to manage disaster risk;
- Investing in disaster reduction for resilience; and
- Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation, and reconstruction.

The Sendai Framework aims to achieve the substantial reduction of disaster risk and losses in lives, livelihoods, and health and in the economic, physical, social, cultural, and environmental assets of persons, businesses, communities, and countries over the next 15 years. It was adopted at the Third United Nations World Conference on Disaster Risk Reduction in Sendai, Japan, in 2015.[369] The Sendai Framework is the successor instrument to the Hyogo Framework for Action (HFA) 2005-2015: Building the Resilience of Nations and Communities to Disasters.[370] Figure 18 shows the Sendai DRR Framework.[371]

The Philippines has supported the implementation of the Sendai Framework. The Philippine Government organized a Regional Workshop on Disaster Risk Reduction, Preparedness, and Disaster Displacement on the island of Panglao in Bohol, Philippines, in June 2018. In attendance were 11 Pacific Island countries and Timor-Leste. The Philippines also attended the 2018 Asian Ministerial Conference on Disaster Risk Reduction in Mongolia in July 2018.[372]

The Philippines has made progress in collecting comprehensive and updated risk information using different technological tools including Geographical Information Systems, Light Detection and Ranging, Interferometric Synthetic Aperture Radar, computer simulations, and fault mapping. Country assessments include community vulnerabilities and seismic, hydro-meteorological, and geological hazards. This also includes climate projects and products including urban exposure maps, population exposure maps, and road network exposure maps for LGUs. The assessment relies on base maps including resource assessment and mapping, delineation of maritime boundaries, and risk mapping at the sub-national levels. [373]

Chart of the Sendai Framework for Disaster Risk Reduction
2015-2030

Scope and purpose

The present framework will apply to the risk of small-scale and large-scale, frequent and infrequent, sudden and slow-onset disasters, caused by natural or manmade hazards as well as related environmental, technological and biological hazards and risks. It aims to guide the multi-hazard management of disaster risk in development at all levels as well as within and across all sectors

Expected outcome

The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries

Goal

Prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience

Targets

Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality between 2020-2030 compared to 2005-2015	Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 between 2020-2030 compared to 2005-2015	Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030	Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030	Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020	Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of this framework by 2030	Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030

Figure 18: UN Sendai Framework for Disaster Risk Reduction (2015-2030)

HFA Country Progress Report

The Hyogo Framework for Action (HFA) was adopted as a guideline to reduce vulnerabilities to natural hazards. The HFA assists participating countries to become more resilient and to better manage the hazards that threaten their development. The most recent levels of progress results published from the Philippines are from 2013-2015 and are represented in Figure 19 and Table 4. Table 5 provides an overview of the overall challenges and the future outlook statement from the HFA report. The information in this section is sourced directly from the HFA Country Progress Report.[374]

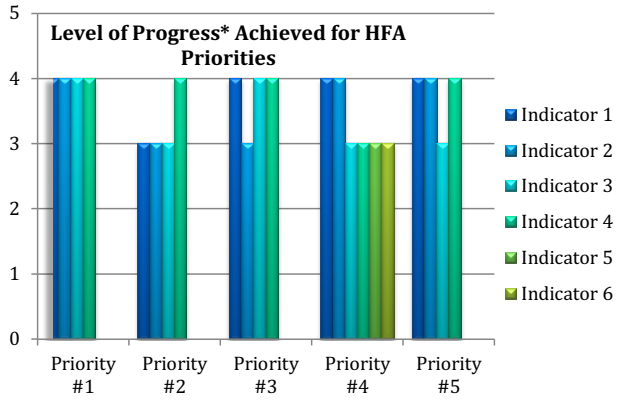


Figure 19: HFA Level of Progress Achieved

Core Indicator*	Indicator Description	Level of progress Achieved*
Priority for Action #1: Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation.		
1	National policy and legal framework for disaster risk reduction exists with decentralized responsibilities and capacities at all levels.	4
2	Dedicated and adequate resources are available to implement disaster risk reduction plans and activities at all administrative levels.	4
3	Community participation and decentralization is ensured through the delegation of authority and resources to local levels.	4
4	A national multi sectoral platform for disaster risk reduction is functioning.	4
Priority for Action #2: Identify, assess and monitor disaster risks and enhance early warning.		
1	National and local risk assessments based on hazard data and vulnerability information are available and include risk assessments for key sectors.	3
2	Systems are in place to monitor, archive and disseminate data on key hazards and vulnerabilities.	3
3	Early warning systems are in place for all major hazards, with outreach to communities.	3
4	National and local risk assessments take account of regional / trans-boundary risks, with a view to regional cooperation on risk reduction.	4
Priority for Action #3: Use knowledge, innovation and education to build a culture of safety and resilience at all levels		
1	Relevant information on disasters is available and accessible at all levels, to all stakeholders (through networks, development of information sharing systems, etc.).	4
2	School curricula, education material and relevant trainings include disaster risk reduction and recovery concepts and practices.	3
3	Research methods and tools for multi-risk assessments and cost benefit analysis are developed and strengthened.	4
4	Research methods and tools for multi-risk assessments and cost benefit analysis are developed and strengthened.	4

Table 4: National Progress Report on the Implementation of the HFA

Priority for Action #4: Reduce the underlying risk factors.		
1	Disaster risk reduction is an integral objective of environment related policies and plans, including for land use natural resource management and adaptation to climate change.	4
2	Social development policies and plans are being implemented to reduce the vulnerability of populations most at risk.	4
3	Economic and productive sectorial policies and plans have been implemented to reduce the vulnerability of economic activities.	3
4	Planning and management of human settlements incorporate disaster risk reduction elements, including enforcement of building codes.	3
5	Disaster risk reduction measures are integrated into post disaster recovery and rehabilitation processes.	3
6	Procedures are in place to assess the disaster risk impacts of major development projects, especially infrastructure.	3
Priority for Action #5: Strengthen disaster preparedness for effective response at all levels.		
1	Strong policy, technical and institutional capacities and mechanisms for disaster risk management, with a disaster risk reduction perspective are in place.	4
2	Disaster preparedness plans and contingency plans are in place at all administrative levels, and regular training drills and rehearsals are held to test and develop disaster response programs.	4
3	Financial reserves and contingency mechanisms are in place to support effective response and recovery when required.	3
4	Procedures are in place to exchange relevant information during hazard events and disasters, and to undertake post-event reviews.	4

Table Notes:
*Level of Progress:
1 – Minor progress with few signs of forward action in plans or policy
2 – Some progress, but without systematic policy and/ or institutional commitment
3 – Institutional commitment attained, but achievements are neither comprehensive nor substantial
4 – Substantial achievement attained but with recognized limitations in key aspects, such as financial resources and/ or operational capacities
5 – Comprehensive achievement with sustained commitment and capacities at all levels

Table 4: National Progress Report on the Implementation of the HFA (cont.)

Future Outlook Area 1: The more effective integration of disaster risk considerations into sustainable development policies, planning and programming at all levels, with a special emphasis on disaster prevention, mitigation, preparedness and vulnerability reduction.	
Challenges:	National Level: The integration of DRR-CCA was at first done only with external assistance, and only for piloting. The country was only compelled to continue it in order to sustain the programs; hence, the integration was only very recent. There are plans in place, but implementation remains a challenge, such as, for the integrated coastal management strategy of the DENR. Local Level: There is increased awareness on DRR but proper integration with CCA and other sustainable development policies is still insufficient. RA 10121 is still not completely localized, and there is also not complete clarity on questions of LGU monitoring and supervision. DRRM and CCA have been integrated in the various plans including the comprehensive land use and physical framework plans and the local DRRM Plan, but with so many plans being required, LGUs may be overwhelmed. There is a need to come up with a more harmonized and at the same time comprehensive planning process with clear demonstration of linkages. Furthermore, there is some difficulty in understanding the plans and their link to sustainable development. Some LGUs submit only for compliance purposes. Inter-LGU collaboration/cooperation in planning and ecosystem-based approach also remains a challenge.
Future Outlook Statement:	Review RA 10121 (Sunset Review of the law and its implementation plan). Harmonize the whole planning process. Mainstream all established guidelines (DRR-CCA Policy Integration and Harmonization). Fully integrate DRR-CCA functions. Enhance DRRM appreciation and understanding for local governments as well as communities through more vigorous IEC.
Future Outlook Area 2: The development and strengthening of institutions, mechanisms and capacities at all levels, in particular at the community level, that can systematically contribute to building resilience to hazards.	
Challenges:	The institutions that should ensure the full implementation of RA 10121 as the DRRM framework and guide to action for the Philippines are still in the process of being fully formed and operationalized, though the basic building pieces have already been put in place. The NDRRMC has been fully constituted, with all its members and representatives from civil society, the academy, and the Church already filled in. The challenge now is making every component constantly aware that DRRM is a year-round concern; that they are all aware that the Council now is collective body with each part expected to fully and seamlessly performing its role. The strengthening of institutions and building of capacities for DRR still have some gaps, notwithstanding the considerable achievements that have been reached already. The lack of resources remains a concern, given the increasing enormity of hazards compounded by the unabated change in climate. Apart from resource availability, the systems in accessing and using the funds still need to be fine-tuned. While the procedures have already been put in place (through joint memoranda and supporting guidelines), much effort needs to be done in orienting and familiarizing the national institutions and the LGUs. With these done, problems in coordination, duplication, and waste of resources will be avoided. There is the question of culture. Some communities still tend to be more reactive rather than proactive. The culture of preparedness has yet to be really absorbed universally. Poverty and lack of access to resources contribute to this situation. Ensuring economic security and improving governance are also called for.

Table 5: HFA Country Progress Report Future Outlook Areas, Philippines

Future Outlook Statement:	The integration of DRRM into the educational system needs to be more purposive and comprehensive. It should be recognized as a distinct discipline and accorded a higher level of priority. Priority should also be given to the full institutionalization of DRR offices, as prescribed under RA 10121, especially at the local level. The establishment of fully functioning and fully represented local DRRMCs should be the first order of the day. Stakeholder involvement should be upgraded. The willingness to help and direct involvement of civil society, the private sector, and other stakeholders are already there, it is now a question of putting order and system in this so that actors can interact and cooperate with each other with synergy and greater harmony and mutuality. The problem of resources should be addressed in the following manner: accurately identifying exactly where the needs are; finding the possible sources; and systematizing how these are utilized. The latter involves proper channeling, allocation, and prioritization which are all functions of management, organization, leadership, and vision. What goes where, and when, and towards what? These are matters that need to be fully addressed if the country wants to be one step ahead of disasters. There is the matter of culture. Filipinos have coping capacities. But the times call for the need to go beyond coping and making do. A culture of transcending needs to be adopted; a disposition that dictates controlling the givens instead of being controlled by what comes. Governance reform should be integral to DRRM.
Future Outlook Area 3: The systematic incorporation of risk reduction approaches into the design and implementation of emergency preparedness, response and recovery programs in the reconstruction of affected communities.	
Challenges:	The main challenge for the country is how to keep up with the increasing frequency and severity of disasters that happen on its shores, constantly testing the limits of its institutions and preparedness mechanisms that have been put in place. The problems in fully localizing the DRRM framework result in some confusion in actual disaster response, including the accessing of earmarked funds, as well as the conduct of recovery. The recovery framework also needs a thorough revisiting. The RA 10121 provides that the responsibility for post-disaster recovery and rehabilitation falls under the NEDA, but the practice after Yolanda – specifically the creation of a new office called the OPARR or Office of the Presidential Assistant for Rehabilitation and Recovery – shows that the mechanisms, systems, and structures on recovery have yet to be clarified and institutionalized. This is an imperative in order to ensure that the country can quickly “build back better” after every disaster.
Future Outlook Statement:	There are a number of positive ways forward in the area of response and recovery. Foremost is the development of a national recovery framework, with the notion of “building back better” or “bouncing forward” as a core guiding principle. The laws and policies also need to be harmonized in order to ensure a clearer, more effective response system. These include the RA 10121 and the Local Government Code primarily, as well as the Climate Change Act of 2009 (RA 9729), the NDRRM Plan, the National Climate Change Action Plan (NCCAP), National Disaster Response Plan, National Disaster Preparedness Plan and other related policies and guidelines. The integration of DRR and CCA should be fully operationalized. Community-Based DRRM should also be strengthened and institutionalized, through the national agencies’ support to LGUs as well as that of civil society. There should also be constant post-incident evaluation. On the whole the monitoring and evaluation framework and mechanisms should be institutionalized. Lastly, the welfare and safety of DRRM workers, especially the disaster responders, should be ensured. One possible way is the creation of a Magna Carta for DRRM Workers.

Table 5: HFA Country Progress Report Future Outlook Areas, Philippines (cont.)

Country Profile

The information in the Country Profile section is sourced directly from the CIA World Fact book for Philippines. Additional numbers on country comparison to the world can be found by going directly to the CIA website (https:/www.cia.gov). It discusses topics including geography, people and society, government, economy, energy, communications, military and security, transportation, terrorism, and transnational issues.[375]

Background

The Philippine Islands became a Spanish colony during the 16th century; they were ceded to the US in 1898 following the Spanish-American War. In 1935 the Philippines became a self-governing commonwealth. Manuel QUEZON was elected president and was tasked with preparing the country for independence after a 10-year transition. In 1942 the islands fell under Japanese occupation during World War II, and US forces and Filipinos fought together during 1944-45 to regain control. On 4 July 1946 the Republic of the Philippines attained its independence. A 21-year rule by Ferdinand MARCOS ended in 1986, when a "people power" movement in Manila ("EDSA 1") forced him into exile and installed Corazon AQUINO as president. Her presidency was hampered by several coup attempts that prevented a return to full political stability and economic development. Fidel RAMOS was elected president in 1992. His administration was marked by increased stability and by progress on economic reforms. In 1992, the US closed its last military bases on the islands. Joseph ESTRADA was elected president in 1998. He was succeeded by his vice-president, Gloria MACAPAGAL-ARROYO, in January 2001 after ESTRADA's stormy impeachment trial on corruption charges broke down and another "people power" movement ("EDSA 2") demanded his resignation. MACAPAGAL-ARROYO was elected to a six-year term as president in May 2004. Her presidency was marred by several corruption allegations, but the Philippine economy was one of the few to avoid contraction following the 2008 global financial crisis, expanding each year of her administration. Benigno AQUINO III was elected to a six-year term as president in May 2010 and was succeeded by Rodrigo DUTERTE in May 2016.

The Philippine Government faces threats from several groups, some of which are on the US Government's Foreign Terrorist Organization list. Manila has waged a decades-long struggle against ethnic Moro insurgencies in the southern Philippines, which led to a peace accord with the Moro National Liberation Front and a separate agreement with a breakaway faction, the Moro Islamic Liberation Front. The decades-long Maoist-inspired New People's Army insurgency also operates through much of the country. In 2017, Philippine armed forces battled an ISIS-Philippines siege in Marawi City, driving DUTERTE to declare martial law in the region. The Philippines faces increased tension with China over disputed territorial and maritime claims in the South China Sea.

Geography

Location

Southeastern Asia, archipelago between the Philippine Sea and the South China Sea, east of Vietnam

Geographic coordinates

13 00 N, 122 00 E

Area

total: 300,000 sq km
land: 298,170 sq km
water: 1,830 sq km
country comparison to the world: 74

Area - comparative

slightly less than twice the size of Georgia; slightly larger than Arizona

Land boundaries

total: 0 km

Coastline

36,289 km

Maritime claims
territorial sea: irregular polygon extending up to 100 nm from coastline as defined by 1898 treaty; since late 1970s has also claimed polygonal-shaped area in South China Sea as wide as 285 nm
exclusive economic zone: 200 nm
continental shelf: to the depth of exploitation

Climate
tropical marine; northeast monsoon (November to April); southwest monsoon (May to October)

Terrain
mostly mountains with narrow to extensive coastal lowlands

Elevation
highest point: Mount Apo 2,954 m
lowest point: Philippine Sea 0 m
mean elevation: 442 m

Natural resources
timber, petroleum, nickel, cobalt, silver, gold, salt, copper

Land use
agricultural land: 41% (2018 est.)
arable land: 18.2% (2018 est.)
permanent crops: 17.8% (2018 est.)
permanent pasture: 5% (2018 est.)
forest: 25.9% (2018 est.)
other: 33.1% (2018 est.)

Irrigated land
16,270 sq km (2012)

Total renewable water resources
479 billion cubic meters (2017 est.)

Population distribution
population concentrated where good farmlands lie; highest concentrations are northwest and south-central Luzon, the southeastern extension of Luzon, and the islands of the Visayan Sea, particularly Cebu and Negros; Manila is home to one-eighth of the entire national population

Natural hazards
astride typhoon belt, usually affected by 15 and struck by five to six cyclonic storms each year; landslides; active volcanoes; destructive earthquakes; tsunamis

volcanism: significant volcanic activity; Taal (311 m), which has shown recent unrest and may erupt in the near future, has been deemed a Decade Volcano by the International Association of Volcanology and Chemistry of the Earth's Interior, worthy of study due to its explosive history and close proximity to human populations; Mayon (2,462 m), the country's most active volcano, erupted in 2009 forcing over 33,000 to be evacuated; other historically active volcanoes include Biliran, Babuyan Claro, Bulusan, Camiguin, Camiguin de Babuyanes, Didicas, Iraya, Jolo, Kanlaon, Makaturing, Musuan, Parker, Pinatubo, and Ragang; see note 2 under "Geography - note"

Environment - international agreements
party to: Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Climate Change-Paris Agreement, Comprehensive Nuclear Test Ban, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Marine Dumping-London Convention, Marine Dumping-London Protocol, Nuclear Test Ban, Ozone Layer Protection, Ship Pollution, Tropical Timber 2006, Wetlands
signed, but not ratified: none of the selected agreements

Geography - note
note 1: for decades, the Philippine archipelago was reported as having 7,107 islands; in 2016, the national mapping authority reported that hundreds of new islands had been discovered and increased the number of islands to 7,641 - though not all of the new islands have been verified; the country is favorably located in relation to many of Southeast Asia's main water bodies: the South China Sea, Philippine Sea, Sulu Sea, Celebes Sea, and Luzon Strait
note 2: Philippines is one of the countries along the Ring of Fire, a belt of active volcanoes and

earthquake epicenters bordering the Pacific Ocean; up to 90% of the world's earthquakes and some 75% of the world's volcanoes occur within the Ring of Fire
note 3: the Philippines sits astride the Pacific typhoon belt and an average of 9 typhoons make landfall on the islands each year - with about 5 of these being destructive; the country is the most exposed in the world to tropical storms

People and Society

Population
110,818,325 (July 2021 est.)
country comparison to the world: 13

Nationality
noun: Filipino(s)
adjective: Philippine

Ethnic groups
Tagalog 24.4%, Bisaya/Binisaya 11.4%, Cebuano 9.9%, Ilocano 8.8%, Hiligaynon/Ilonggo 8.4%, Bikol/Bicol 6.8%, Waray 4%, other local ethnicity 26.1%, other foreign ethnicity .1% (2010 est.)

Languages
unspecified Filipino (official; based on Tagalog) and English (official); eight major dialects - Tagalog, Cebuano, Ilocano, Hiligaynon or Ilonggo, Bicol, Waray, Pampango, and Pangasinan

Religions
Roman Catholic 80.6%, Protestant 8.2% (includes Philippine Council of Evangelical Churches 2.7%, National Council of Churches in the Philippines 1.2%, other Protestant 4.3%), other Christian 3.4%, Muslim 5.6%, tribal religion 0.2%, other 1.9%, none 0.1% (2010 est.)

Demographic profile
The Philippines is an ethnically diverse country that is in the early stages of demographic transition. Its fertility rate has dropped steadily since the 1950s. The decline was more rapid after the introduction of a national population program in the 1970s in large part due to the increased use of modern contraceptive methods, but fertility has decreased more slowly in recent years. The country's total fertility rate (TFR) – the average number of births per woman – dropped below 5 in the 1980s, below 4 in the 1990s, and below 3 in the 2010s. TFR continues to be above replacement level at 2.9 and even higher among the poor, rural residents, and the less-educated. Significant reasons for elevated TFR are the desire for more than two children, in part because children are a means of financial assistance and security for parents as they age, particularly among the poor.

The Philippines is the source of one of the world's largest emigrant populations, much of which consists of legal temporary workers known as Overseas Foreign Workers or OFWs. As of 2019, there were 2.2 million OFWs. They work in a wide array of fields, most frequently in services (such as caregivers and domestic work), skilled trades, and construction but also in professional fields, including nursing and engineering. OFWs most often migrate to Middle Eastern countries, but other popular destinations include Hong Kong, China, and Singapore, as well as employment on ships. Filipino seafarers make up 35-40% of the world's seafarers, as of 2014. Women OFWs, who work primarily in domestic services and entertainment, have outnumbered men since 1992.

Migration and remittances have been a feature of Philippine culture for decades. The government has encouraged and facilitated emigration, regulating recruitment agencies and adopting legislation to protect the rights of migrant workers. Filipinos began emigrating to the US and Hawaii early in the 20th century. In 1934, US legislation limited Filipinos to 50 visas per year except during labor shortages, causing emigration to plummet. It was not until the 1960s, when the US and other destination countries – Canada, Australia, and New Zealand – loosened their immigration policies, that Filipino emigration expanded and diversified. The government implemented an overseas employment program in the 1970s, promoting

Filipino labor to Gulf countries needing more workers for their oil industries. Filipino emigration increased rapidly. The government had intended for international migration to be temporary, but a lack of jobs and poor wages domestically, the ongoing demand for workers in the Gulf countries, and new labor markets in Asia continue to spur Philippine emigration.

Age structure
0-14 years: 32.42% (male 18,060,976/female 17,331,781)
15-24 years: 19.16% (male 10,680,325/female 10,243,047)
25-54 years: 37.37% (male 20,777,741/female 20,027,153)
55-64 years: 6.18% (male 3,116,485/female 3,633,301)
65 years and over: 4.86% (male 2,155,840/female 3,154,166) (2020 est.)

Dependency ratios
total dependency ratio: 55.2
youth dependency ratio: 46.6
elderly dependency ratio: 8.6
potential support ratio: 11.7 (2020 est.)

Median age
total: 24.1 years
male: 23.6 years
female: 24.6 years (2020 est.)
country comparison to the world: 168

Population growth rate
1.49% (2021 est.)
country comparison to the world: 64

Birth rate
22.66 births/1,000 population (2021 est.)
country comparison to the world: 58

Death rate
5.99 deaths/1,000 population (2021 est.)
country comparison to the world: 159

Net migration rate
-1.75 migrant(s)/1,000 population (2021 est.)
country comparison to the world: 164

Population distribution
population concentrated where good farmlands lie; highest concentrations are northwest and south-central Luzon, the southeastern extension of Luzon, and the islands of the Visayan Sea, particularly Cebu and Negros; Manila is home to one-eighth of the entire national population

Urbanization
urban population: 47.7% of total population (2021)
rate of urbanization: 2.04% annual rate of change (2020-25 est.)
total population growth rate v. urban population growth rate, 2000-2030

Major urban areas - population
14.159 million MANILA (capital), 1.866 million Davao, 994,000 Cebu City, 931,000 Zamboanga, 903,000 Antipolo, 770,000 Cagayan de Oro City (2021)

Sex ratio
at birth: 1.05 male(s)/female
0-14 years: 1.04 male(s)/female
15-24 years: 1.04 male(s)/female
25-54 years: 1.04 male(s)/female
55-64 years: 0.86 male(s)/female
65 years and over: 0.68 male(s)/female
total population: 1.01 male(s)/female (2020 est.)

Mother's mean age at first birth
23.5 years (2017 est.)
note: median age at first birth among women 25-49

Maternal mortality rate
121 deaths/100,000 live births (2017 est.)
country comparison to the world: 64

Infant mortality rate
total: 20.55 deaths/1,000 live births
male: 23.49 deaths/1,000 live births
female: 17.46 deaths/1,000 live births (2021 est.)
country comparison to the world: 81

Life expectancy at birth
total population: 70.32 years
male: 66.78 years
female: 74.03 years (2021 est.)
country comparison to the world: 169

Total fertility rate
2.89 children born/woman (2021 est.)
country comparison to the world: 53

Contraceptive prevalence rate
54.1% (2017)

Drinking water source
improved: urban: 97.7% of population
rural: 92.7% of population
total: 95.4% of population
unimproved: urban: 2.3% of population
rural: 7.3% of population
total: 4.6% of population (2017 est.)

Current Health Expenditure
4.4% (2018)

Physicians density
0.6 physicians/1,000 population (2017)

Hospital bed density
1 beds/1,000 population (2014)

Sanitation facility access
improved: urban: 95% of population
rural: 88.2% of population
total: 91.4% of population
unimproved: urban: 5% of population
rural: 11.8% of population
total: 8.6% of population (2017 est.)

HIV/AIDS - adult prevalence rate
0.2% (2020 est.)
country comparison to the world: 110

HIV/AIDS - people living with HIV/AIDS
120,000 (2020 est.)
country comparison to the world: 38

HIV/AIDS - deaths
1,600 <1,000 (2020 est.)
country comparison to the world: 49

Major infectious diseases
degree of risk: high (2020)
food or waterborne diseases: bacterial diarrhea, hepatitis A, and typhoid fever
vector-borne diseases: dengue fever and malaria
water contact diseases: leptospirosis
note: on 8 October 2019, the Centers for Disease Control and Prevention issued a Travel Health Notice regarding a polio outbreak in the Philippines; CDC recommends that all travelers to the Philippines be vaccinated fully against polio; before traveling to the Philippines, adults who completed their routine polio vaccine series as children should receive a single, lifetime adult booster dose of polio vaccine

Obesity - adult prevalence rate
6.4% (2016)
country comparison to the world: 168

Children under the age of 5 years underweight
19.1% (2018)
country comparison to the world: 24

Education expenditures
NA

Literacy
definition: age 15 and over can read and write
total population: 98.2%
male: 98.1%
female: 98.2% (2015)

School life expectancy (primary to tertiary education)
total: 13 years
male: 13 years
female: 15 years (2017)

Unemployment, youth ages 15-24
total: 6.8%
male: 5.9%
female: 8.3% (2019 est.)
country comparison to the world: 156

People - note
one of only two predominantly Christian nations in Southeast Asia, the other being Timor-Leste

Environment

Environment - current issues
uncontrolled deforestation especially in watershed areas; illegal mining and logging; soil erosion; air and water pollution in major urban centers; coral reef degradation; increasing pollution of coastal mangrove swamps that are important fish breeding grounds; coastal erosion; dynamite fishing; wildlife extinction

Environment - international agreements
party to: Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Climate Change-Paris Agreement, Comprehensive Nuclear Test Ban, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Marine Dumping-London Convention, Marine Dumping-London Protocol, Nuclear Test Ban, Ozone Layer Protection, Ship Pollution, Tropical Timber 2006, Wetlands
signed, but not ratified: none of the selected agreements

Air pollutants
particulate matter emissions: 18.38 micrograms per cubic meter (2016 est.)
carbon dioxide emissions: 122.29 megatons (2016 est.)
methane emissions: 51.32 megatons (2020 est.)

Total water withdrawal
municipal: 8.929 billion cubic meters (2017 est.)
industrial: 15.85 billion cubic meters (2017 est.)
agricultural: 67.97 billion cubic meters (2017 est.)

Total renewable water resources
479 billion cubic meters (2017 est.)

Climate
tropical marine; northeast monsoon (November to April); southwest monsoon (May to October)

Land use
agricultural land: 41% (2018 est.)
arable land: 18.2% (2018 est.)
permanent crops: 17.8% (2018 est.)
permanent pasture: 5% (2018 est.)
forest: 25.9% (2018 est.)
other: 33.1% (2018 est.)

Revenue from forest resources
forest revenues: 0.18% of GDP (2018 est.)
country comparison to the world: 96

Revenue from coal
coal revenues: 0.07% of GDP (2018 est.)
country comparison to the world: 28

Urbanization
urban population: 47.7% of total population (2021)
rate of urbanization: 2.04% annual rate of change (2020-25 est.)
total population growth rate v. urban population growth rate, 2000-2030

Major infectious diseases
degree of risk: high (2020)
food or waterborne diseases: bacterial diarrhea, hepatitis A, and typhoid fever
vectorborne diseases: dengue fever and malaria
water contact diseases: leptospirosis
note: on 8 October 2019, the Centers for Disease Control and Prevention issued a Travel Health Notice regarding a polio outbreak in the Philippines; CDC recommends that all travelers to the Philippines be vaccinated fully against polio; before traveling to the Philippines, adults who completed their routine polio vaccine series as children should receive a single, lifetime adult booster dose of polio vaccine

Waste and recycling
municipal solid waste generated annually: 14,631,923 tons (2016 est.)
municipal solid waste recycled annually: 4,096,938 tons (2014 est.)
percent of municipal solid waste recycled: 28% (2014 est.)

Government

Country name
conventional long form: Republic of the Philippines
conventional short form: Philippines
local long form: Republika ng Pilipinas
local short form: Pilipinas
etymology: named in honor of King PHILLIP II of Spain by Spanish explorer Ruy LOPEZ de VILLALOBOS, who visited some of the islands in 1543

Government type
presidential republic

Capital
name: Manila
geographic coordinates: 14 36 N, 120 58 E
time difference: UTC+8 (13 hours ahead of Washington, DC, during Standard Time)
etymology: derives from the Tagalog "may-nila" meaning "where there is indigo" and refers to the presence of indigo-yielding plants growing in the area surrounding the original settlement

Administrative divisions
81 provinces and 38 chartered cities
provinces: Abra, Agusan del Norte, Agusan del Sur, Aklan, Albay, Antique, Apayao, Aurora, Basilan, Bataan, Batanes, Batangas, Biliran, Benguet, Bohol, Bukidnon, Bulacan, Cagayan, Camarines Norte, Camarines Sur, Camiguin, Capiz, Catanduanes, Cavite, Cebu, Cotabato, Davao del Norte, Davao del Sur, Davao de Oro, Davao Occidental, Davao Oriental, Dinagat Islands, Eastern Samar, Guimaras, Ifugao, Ilocos Norte, Ilocos Sur, Iloilo, Isabela, Kalinga, Laguna, Lanao del Norte, Lanao del Sur, La Union, Leyte, Maguindanao, Marinduque, Masbate, Mindoro Occidental, Mindoro Oriental, Misamis Occidental, Misamis Oriental, Mountain, Negros Occidental, Negros Oriental, Northern Samar, Nueva Ecija, Nueva Vizcaya, Palawan, Pampanga, Pangasinan, Quezon, Quirino, Rizal, Romblon, Samar, Sarangani, Siquijor, Sorsogon, South Cotabato, Southern Leyte, Sultan Kudarat, Sulu, Surigao del Norte, Surigao del Sur, Tarlac, Tawi-Tawi, Zambales, Zamboanga del Norte, Zamboanga del Sur, Zamboanga Sibugay; chartered cities: Angeles, Bacolod, Baguio, Butuan, Cagayan de Oro, Caloocan, Cebu, Cotabato, Dagupan, Davao, General Santos, Iligan, Iloilo, Lapu-Lapu, Las Pinas, Lucena, Makati, Malabon, Mandaluyong, Mandaue, Manila, Marikina, Muntinlupa, Naga, Navotas, Olongapo, Ormoc, Paranaque, Pasay, Pasig, Puerto Princesa, Quezon, San Juan, Santiago, Tacloban, Taguig, Valenzuela, Zamboanga

Independence
4 July 1946 (from the US)

National holiday
Independence Day, 12 June (1898); note - 12 June 1898 was date of declaration of independence from Spain; 4 July 1946 was date of independence from the US

Constitution
history: several previous; latest ratified 2 February 1987, effective 11 February 1987
amendments: proposed by Congress if supported by three fourths of the membership, by a constitutional convention called by Congress, or by public petition; passage by either of the three proposal methods requires a majority vote in a national referendum; note - the constitution has not been amended since its enactment in 1987

Legal system
mixed legal system of civil, common, Islamic (sharia), and customary law

International law organization participation
accepts compulsory ICJ jurisdiction with reservations; withdrew from the ICCt in March 2019

Citizenship
citizenship by birth: no
citizenship by descent only: at least one parent must be a citizen of the Philippines
dual citizenship recognized: no
residency requirement for naturalization: 10 years

Suffrage
18 years of age; universal

Executive branch
chief of state: President Rodrigo DUTERTE (since 30 June 2016); Vice President Leni ROBREDO (since 30 June 2016); note - the president is both chief of state and head of government
head of government: President Rodrigo DUTERTE (since 30 June 2016); Vice President Leni ROBREDO (since 30 June 2016)
cabinet: Cabinet appointed by the president with the consent of the Commission of Appointments, an independent body of 25 Congressional members including the Senate president (ex officio chairman), appointed by the president
elections/appointments: president and vice president directly elected on separate ballots by simple majority popular vote for a single 6-year term; election last held on 9 May 2016 (next to be held in May 2022)
election results: Rodrigo DUTERTE elected president; percent of vote - Rodrigo DUTERTE (PDP-Laban) 39%, Manuel "Mar" ROXAS (LP) 23.5%, Grace POE (independent) 21.4%, Jejomar BINAY (UNA) 12.7%, Miriam Defensor SANTIAGO (PRP) 3.4%; Leni ROBREDO elected vice president; percent of vote Leni ROBREDO (LP) 35.1%, Bongbong MARCOS (independent) 34.5%, Alan CAYETANO 14.4%, Francis ESCUDERO (independent) 12%, Antonio TRILLANES (independent) 2.1%, Gregorio HONASAN (UNA) 1.9%

Legislative branch
description: bicameral Congress or Kongreso consists of:
Senate or Senado (24 seats; members directly elected in multi-seat constituencies by majority vote; members serve 6-year terms with one-half of the membership renewed every 3 years)
House of Representatives or Kapulungan Ng Mga Kinatawan (297 seats; 238 members directly elected in single-seat constituencies by simple majority vote and 59 representing minorities directly elected by party-list proportional representation vote; members serve 3-year terms)
elections:
Senate - elections last held on 9 May 2016 (next to be held on 13 May 2019)
House of Representatives - elections last held on 9 May 2016 (next to be held on 13 May 2019)
election results:
Senate - percent of vote by party - LP 31.3%, NPC 10.1%, UNA 7.6%, Akbayan 5.0%, other 30.9%, independent 15.1%; seats by party - LP 6, NPC 3, UNA 4, Akbayan 1, other 10; composition - men 18, women 6, percent of women 25%
House of Representatives - percent of vote by party - LP 41.7%, NPC 17.0%, UNA 6.6%, NUP 9.7%, NP 9.4%, independent 6.0%, others 10.1%; seats by party - LP 115, NPC 42, NUP 23, NP 24, UNA 11, other 19, independent 4, party-list 59; composition - men 210, women 87, percent of women 29.8%; note - total Congress percent of women 29.4%

Judicial branch
highest courts: Supreme Court (consists of a chief justice and 14 associate justices)
judge selection and term of office: justices are appointed by the president on the recommendation of the Judicial and Bar Council, a constitutionally created, 6-member body that recommends Supreme Court nominees; justices serve until age 70
subordinate courts: Court of Appeals; Sandiganbayan (special court for corruption cases of government officials); Court of Tax Appeals; regional, metropolitan, and municipal trial courts; sharia courts

Political parties and leaders
Akbayon [Machris CABREROS]
Laban ng Demokratikong Pilipino (Struggle of Filipino Democrats) or LDP [Edgardo ANGARA]
Lakas ng EDSA-Christian Muslim Democrats or Lakas-CMD [Ferdinand Martin ROMUALDEZ]
Liberal Party or LP [Francis PANGILINAN]
Nacionalista Party or NP [Manuel "Manny" VILLAR]
Nationalist People's Coalition or NPC [Eduardo COJUNGCO, Jr.]
National Unity Party or NUP [Albert GARCIA]

PDP-Laban [Aquilino PIMENTEL III]
People's Reform Party or PRP [Narcisco SANTIAGO]
Puwersa ng Masang Pilipino (Force of the Philippine Masses) or PMP [Joseph ESTRADA]
United Nationalist Alliance or UNA

International organization participation
ADB, APEC, ARF, ASEAN, BIS, CD, CICA (observer), CP, EAS, FAO, G-24, G-77, IAEA, IBRD, ICAO, ICC (national committees), ICCt, ICRM, IDA, IFAD, IFC, IFRCS, IHO, ILO, IMF, IMO, IMSO, Interpol, IOC, IOM, IPU, ISO, ITSO, ITU, ITUC (NGOs), MIGA, MINUSTAH, NAM, OAS (observer), OPCW, PCA, PIF (partner), UN, UNCTAD, UNESCO, UNHCR, UNIDO, Union Latina, UNMIL, UNMOGIP, UNOCI, UNWTO, UPU, WCO, WFTU (NGOs), WHO, WIPO, WMO, WTO

Diplomatic representation in the US
chief of mission: Ambassador Jose Manuel del Gallego ROMUALDEZ (since 29 November 2017)
chancery: 1600 Massachusetts Avenue NW, Washington, DC 20036
telephone: [1] (202) 467-9300
FAX: [1] (202) 328-7614
consulate(s) general: Chicago, Honolulu, Los Angeles, New York, Saipan (Northern Mariana Islands), San Francisco, Tamuning (Guam)

Diplomatic representation from the US
chief of mission: Ambassador (vacant); Charge d'Affaires Heather C. VARIAVA (since 17 September 2021)
embassy: 1201 Roxas Boulevard, Manila 1000
mailing address: 8600 Manila Place, Washington DC 20521-8600
telephone: [63] (2) 5301-2000
FAX: [63] (2) 5301-2017
email address and website: *acsinfomanila@state.gov*

Flag description
two equal horizontal bands of blue (top) and red; a white equilateral triangle is based on the hoist side; the center of the triangle displays a yellow sun with eight primary rays; each corner of the triangle contains a small, yellow, five-pointed star; blue stands for peace and justice, red symbolizes courage, the white equal-sided triangle represents equality; the rays recall the first eight provinces that sought independence from Spain, while the stars represent the three major geographical divisions of the country: Luzon, Visayas, and Mindanao; the design of the flag dates to 1897
note: in wartime the flag is flown upside down with the red band at the top

National symbol(s)
three stars and sun, Philippine eagle; national colors: red, white, blue, yellow

National anthem
name: "Lupang Hinirang" (Chosen Land)
lyrics/music: Jose PALMA (revised by Felipe PADILLA de Leon)/Julian FELIPE
note: music adopted 1898, original Spanish lyrics adopted 1899, Filipino (Tagalog) lyrics adopted 1956; although the original lyrics were written in Spanish, later English and Filipino versions were created; today, only the Filipino version is used

Economy

Economic overview
The economy has been relatively resilient to global economic shocks due to less exposure to troubled international securities, lower dependence on exports, relatively resilient domestic consumption, large remittances from about 10 million overseas Filipino workers and migrants, and a rapidly expanding services industry. During 2017, the current account balance fell into the negative range, the first time since the 2008 global financial crisis, in part due to an ambitious new infrastructure spending program announced this year. However, international reserves remain at comfortable levels and the banking system is stable.

Efforts to improve tax administration and expenditures management have helped ease the Philippines' debt burden and tight fiscal situation. The Philippines received investment-grade credit ratings on its sovereign debt under the former

AQUINO administration and has had little difficulty financing its budget deficits. However, weak absorptive capacity and implementation bottlenecks have prevented the government from maximizing its expenditure plans. Although it has improved, the low tax-to-GDP ratio remains a constraint to supporting increasingly higher spending levels and sustaining high and inclusive growth over the longer term.

Economic growth has accelerated, averaging over 6% per year from 2011 to 2017, compared with 4.5% under the MACAPAGAL-ARROYO government; and competitiveness rankings have improved. Although 2017 saw a new record year for net foreign direct investment inflows, FDI to the Philippines has continued to lag regional peers, in part because the Philippine constitution and other laws limit foreign investment and restrict foreign ownership in important activities/ sectors - such as land ownership and public utilities.

Although the economy grew at a rapid pace under the AQUINO government, challenges to achieving more inclusive growth remain. Wealth is concentrated in the hands of the rich. The unemployment rate declined from 7.3% to 5.7% between 2010 and 2017; while there has been some improvement, underemployment remains high at around 17% to 18% of the employed population. At least 40% of the employed work in the informal sector. Poverty afflicts more than a fifth of the total population but is as high as 75% in some areas of the southern Philippines. More than 60% of the poor reside in rural areas, where the incidence of poverty (about 30%) is more severe - a challenge to raising rural farm and non-farm incomes. Continued efforts are needed to improve governance, the judicial system, the regulatory environment, the infrastructure, and the overall ease of doing business.

2016 saw the election of President Rodrigo DUTERTE, who has pledged to make inclusive growth and poverty reduction his top priority. DUTERTE believes that illegal drug use, crime and corruption are key barriers to economic development. The administration wants to reduce the poverty rate to 17% and graduate the economy to upper-middle income status by the end of President DUTERTE's term in 2022. Key themes under the government's Ten-Point Socioeconomic Agenda include continuity of macroeconomic policy, tax reform, higher investments in infrastructure and human capital development, and improving competitiveness and the overall ease of doing business. The administration sees infrastructure shortcomings as a key barrier to sustained economic growth and has pledged to spend $165 billion on infrastructure by 2022. Although the final outcome has yet to be seen, the current administration is shepherding legislation for a comprehensive tax reform program to raise revenues for its ambitious infrastructure spending plan and to promote a more equitable and efficient tax system. However, the need to finance rehabilitation and reconstruction efforts in the southern region of Mindanao following the 2017 Marawi City siege may compete with other spending on infrastructure.

Real GDP growth rate
6.04% (2019 est.)
6.34% (2018 est.)
6.94% (2017 est.)
country comparison to the world: 29

Inflation rate (consumer prices)
2.4% (2019 est.)
5.2% (2018 est.)
2.8% (2017 est.)
country comparison to the world: 126

Credit ratings
Fitch rating: BBB (2017)
Moody's rating: Baa2 (2014)
Standard & Poor's rating: BBB+ (2019)

Real GDP (purchasing power parity)
$963.121 billion (2019 est.)
$908.257 billion (2018 est.)
$854.095 billion (2017 est.)
note: data are in 2010 dollars
country comparison to the world: 28

GDP (official exchange rate)
$377.205 billion (2019 est.)

Real GDP per capita
$8,908 (2019 est.)
$8,516 (2018 est.)
$8,121 (2017 est.)
note: data are in 2010 dollars
country comparison to the world: 147

Gross national saving
31.6% of GDP (2019 est.)
33.8% of GDP (2018 est.)
35.5% of GDP (2017 est.)
country comparison to the world: 29

GDP - composition, by sector of origin
agriculture: 9.6% (2017 est.)
industry: 30.6% (2017 est.)
services: 59.8% (2017 est.)

GDP - composition, by end use
household consumption: 73.5% (2017 est.)
government consumption: 11.3% (2017 est.)
investment in fixed capital: 25.1% (2017 est.)
investment in inventories: 0.1% (2017 est.)
exports of goods and services: 31% (2017 est.)
imports of goods and services: -40.9% (2017 est.)

Ease of Doing Business Index scores
Overall score: 62.8 (2020)
Starting a Business score: 71.3 (2020)
Trading score: 68.4 (2020)
Enforcement score: 46 (2020)

Agricultural products
sugar cane, rice, coconuts, maize, bananas, vegetables, tropical fruit, plantains, pineapples, cassava

Industries
semiconductors and electronics assembly, business process outsourcing, food and beverage manufacturing, construction, electric/gas/water supply, chemical products, radio/television/communications equipment and apparatus, petroleum and fuel, textile and garments, non-metallic minerals, basic metal industries, transport equipment

Industrial production growth rate
7.2% (2017 est.)
country comparison to the world: 30

Labor force
41.533 million (2020 est.)
country comparison to the world: 15

Labor force - by occupation
agriculture: 25.4%
industry: 18.3%
services: 56.3% (2017 est.)

Unemployment rate
5.11% (2019 est.)
5.29% (2018 est.)
country comparison to the world: 82

Population below poverty line
16.7% (2018 est.)

Gini Index coefficient - distribution of family income
44.4 (2015 est.)
46 (2012 est.)
country comparison to the world: 34

Household income or consumption by percentage share
lowest 10%: 3.2%
highest 10%: 29.5% (2015 est.)

Budget
revenues: 49.07 billion (2017 est.)
expenditures: 56.02 billion (2017 est.)

Taxes and other revenues
15.6% (of GDP) (2017 est.)
country comparison to the world: 188

Budget surplus (+) or deficit (-)
-2.2% (of GDP) (2017 est.)
country comparison to the world: 109

Public debt
39.9% of GDP (2017 est.)
39% of GDP (2016 est.)
country comparison to the world: 128

Fiscal year
calendar year

Current account balance
-$3.386 billion (2019 est.)
-$8.877 billion (2018 est.)
country comparison to the world: 176

Exports
$131.193 billion (2019 est.)
$128.138 billion (2018 est.)
$114.597 billion (2017 est.)
country comparison to the world: 39

Exports - partners
China 16%, United States 15%, Japan 13%, Hong Kong 12%, Singapore 7%, Germany 5% (2019)

Exports - commodities
integrated circuits, office machinery/parts, insulated wiring, semiconductors, transformers (2019)

Imports
$158.307 billion (2019 est.)
$155.441 billion (2018 est.)
$135.585 billion (2017 est.)
country comparison to the world: 37

Imports - partners
China 29%, Japan 8%, South Korea 7%, United States 6%, Singapore 6%, Indonesia 6%, Thailand 5%, Taiwan 5% (2019)

Imports - commodities
integrated circuits, refined petroleum, cars, crude petroleum, broadcasting equipment (2019)

Reserves of foreign exchange and gold
$81.57 billion (31 December 2017 est.)
$80.69 billion (31 December 2016 est.)
country comparison to the world: 29

Debt - external
$81.995 billion (2019 est.)
$75.192 billion (2018 est.)
country comparison to the world: 59

Exchange rates
Philippine pesos (PHP) per US dollar -
48.055 (2020 est.)
50.81 (2019 est.)
52.71 (2018 est.)
45.503 (2014 est.)
44.395 (2013 est.)

Energy

Electricity access
electrification - total population: 96% (2019)
electrification - urban areas: 100% (2019)
electrification - rural areas: 93% (2019)

Electricity - production
86.59 billion kWh (2016 est.)
country comparison to the world: 36

Electricity - consumption
78.3 billion kWh (2016 est.)
country comparison to the world: 37

Electricity - exports
0 kWh (2017 est.)
country comparison to the world: 184

Electricity - imports
0 kWh (2016 est.)
country comparison to the world: 186

Electricity - installed generating capacity
22.13 million kW (2016 est.)
country comparison to the world: 39

Electricity - from fossil fuels
67% of total installed capacity (2016 est.)
country comparison to the world: 116

Electricity - from nuclear fuels
0% of total installed capacity (2017 est.)
country comparison to the world: 165

Electricity - from hydroelectric plants
17% of total installed capacity (2017 est.)
country comparison to the world: 97

Electricity - from other renewable sources
16% of total installed capacity (2017 est.)
country comparison to the world: 53

Crude oil - production
13,000 bbl/day (2018 est.)
country comparison to the world: 76

Crude oil - exports
16,450 bbl/day (2015 est.)
country comparison to the world: 52

Crude oil - imports
211,400 bbl/day (2015 est.)
country comparison to the world: 30

Crude oil - proved reserves
138.5 million bbl (1 January 2018 est.)
country comparison to the world: 64

Refined petroleum products - production
215,500 bbl/day (2015 est.)
country comparison to the world: 50

Refined petroleum products - consumption
424,000 bbl/day (2016 est.)
country comparison to the world: 36

Refined petroleum products - exports
26,710 bbl/day (2015 est.)
country comparison to the world: 65

Refined petroleum products - imports
211,400 bbl/day (2015 est.)
country comparison to the world: 33

Natural gas - production
3.058 billion cu m (2017 est.)
country comparison to the world: 58

Natural gas - consumption
3.143 billion cu m (2017 est.)
country comparison to the world: 72

Natural gas - exports
0 cu m (2017 est.)
country comparison to the world: 168

Natural gas - imports
0 cu m (2017 est.)
country comparison to the world: 175

Natural gas - proved reserves
98.54 billion cu m (1 January 2018 est.)
country comparison to the world: 51

Carbon dioxide emissions from consumption of energy
117.2 million Mt (2017 est.)

Communications

Telephones - fixed lines
total subscriptions: 4,255,808
subscriptions per 100 inhabitants: 3.96 (2019 est.)
country comparison to the world: 33

Telephones - mobile cellular
total subscriptions: 167,322,432
subscriptions per 100 inhabitants: 155.61 (2019 est.)
country comparison to the world: 9

Telecommunication systems
general assessment: high unemployment and rural population impede investment in fixed infrastructure; dominance in the mobile segment and rapid development of mobile broadband; investment focused on fiber infrastructure in urban areas with 4G available in most areas; national broadband plan to improve connectivity in rural areas underway; data center and smart city pilot in Manila; submarine cable link and satellite improves telecom for the region; major exporter of integrated circuits to China, and importer of circuits and broadcasting equipment from China (2021)

domestic: telecommunications infrastructure includes the following platforms: fixed line, mobile cellular, cable TV, over-the-air TV, radio and (very small aperture terminal) VSAT, fiber-optic cable, and satellite for redundant international connectivity; fixed-line 4 per 100 and mobile-cellular 155 per 100 (2019)

international: country code - 63; landing points for the NDTN, TGN-IA, AAG, PLCN, EAC-02C, DFON, SJC, APCN-2, SeaMeWe, Boracay-Palawan Submarine Cable System, Palawa-Illoilo Cable System, NDTN, SEA-US, SSSFOIP, ASE

and JUPITAR submarine cables that together provide connectivity to the US, Southeast Asia, Asia, Europe, Africa, the Middle East, and Australia (2019)

note: the COVID-19 pandemic continues to have a significant impact on production and supply chains globally; since 2020, some aspects of the telecom sector have experienced downturn, particularly in mobile device production; many network operators delayed upgrades to infrastructure; progress towards 5G implementation was postponed or slowed in some countries; consumer spending on telecom services and devices was affected by large-scale job losses and the consequent restriction on disposable incomes; the crucial nature of telecom services as a tool for work and school from home became evident, and received some support from governments

Broadcast media
multiple national private TV and radio networks; multi-channel satellite and cable TV systems available; more than 400 TV stations; about 1,500 cable TV providers with more than 2 million subscribers, and some 1,400 radio stations; the Philippines adopted Japan's Integrated Service Digital Broadcast – Terrestrial standard for digital terrestrial television in November 2013 and is scheduled to complete the switch from analog to digital broadcasting by the end of 2023 (2019)

Internet country code
.ph

Internet users
total: 63,588,975
percent of population: 60.05% (July 2018 est.)
country comparison to the world: 12

Broadband - fixed subscriptions
total: 5,920,087
subscriptions per 100 inhabitants: 5.51 (2019 est.)
country comparison to the world: 29

Transportation

National air transport system
number of registered air carriers: 13 (2020)
inventory of registered aircraft operated by air carriers: 200
annual passenger traffic on registered air carriers: 43,080,118 (2018)
annual freight traffic on registered air carriers: 835.9 million mt-km (2018)

Civil aircraft registration country code prefix
RP

Airports
total: 247 (2013)
country comparison to the world: 24

Airports - with paved runways
total: 89 (2019)
over 3,047 m: 4
2,438 to 3,047 m: 8
1,524 to 2,437 m: 33
914 to 1,523 m: 34
under 914 m: 10

Airports - with unpaved runways
total: 158 (2013)
1,524 to 2,437 m: 3 (2013)
914 to 1,523 m: 56 (2013)
under 914 m: 99 (2013)

Heliports
2 (2013)

Pipelines
530 km gas, 138 km oil (non-operational), 185 km refined products (2017)

Railways
total: 77 km (2017)
standard gauge: 49 km 1.435-m gauge (2017)
narrow gauge: 28 km 1.067-m gauge (2017)
country comparison to the world: 129

Roadways
total: 216,387 km (2014)
paved: 61,093 km (2014)
unpaved: 155,294 km (2014)
country comparison to the world: 25

Waterways
3,219 km (limited to vessels with draft less than 1.5 m) (2011)
country comparison to the world: 30

Merchant marine
total: 1,747
by type: bulk carrier 69, container ship 45, general cargo 682, oil tanker 203, other 748 (2020)
country comparison to the world: 17

Ports and terminals
major seaport(s): Batangas, Cagayan de Oro, Cebu, Davao, Liman, Manila
container port(s) (TEUs): Manila (4,782,240) (2017)

Military and Security

Military and security forces
Armed Forces of the Philippines (AFP): Army, Navy (includes Marine Corps), Air Force (2021)
note: the Philippine Coast Guard is an armed and uniformed service under the Department of Transportation; it would be attached to the AFP in wartime; the Philippine National Police Force (PNP) falls under the Ministry of Interior and Local Government

Military expenditures
1% of GDP (2020 est.)
1% of GDP (2019)
0.9% of GDP (2018)
1.2% of GDP (2017)
1.4% of GDP (2016)
country comparison to the world: 127

Military and security service personnel strengths
the Armed Forces of the Philippines (AFP) have approximately 130,000 active-duty personnel (90,000 Army; 25,000 Navy, including about 8,000 marines; 17,000 Air Force) (2020)

Military equipment inventories and acquisitions
the AFP is equipped with a mix of imported weapons systems, particularly second-hand equipment from the US; since 2014, its top weapons suppliers are Indonesia, South Korea, and the US (2021)

Military service age and obligation
18-23 years of age (officers 21-29) for voluntary military service; no conscription (2019)

Maritime threats
the International Maritime Bureau reports the territorial waters of littoral states and offshore waters in the South China Sea as high risk for piracy and armed robbery against ships; an emerging threat area lies in the Celebes and Sulu Seas between the Philippines and Malaysia where three ships were attacked in 2020; numerous commercial vessels have been attacked and hijacked both at anchor and while underway; hijacked vessels are often disguised and cargoes stolen

Military - note
as of late 2020, the AFP's primary operational focus was on internal security duties, particularly in the south, where several insurgent and terrorist groups operated and up to 60% of the armed forces were deployed; the Philippines National Police (PNP) also has an active role in counterinsurgency and counter-terrorism operations alongside the AFP, particularly the Special Action Force, a PNP commando unit that specializes in counter-terrorism operations.

Terrorism

Terrorist group(s)
Abu Sayyaf Group; Communist Party of the Philippines/New People's Army; Islamic State of Iraq and ash-Sham – East Asia (ISIS-EA) in the Philippines
note: details about the history, aims, leadership, organization, areas of operation, tactics, targets, weapons, size, and sources of support of the group(s) appear(s) in Appendix-T

Transnational Issues

Disputes - international
Philippines claims sovereignty over Scarborough Reef (also claimed by China together with Taiwan) and over certain of the Spratly Islands, known locally as the Kalayaan (Freedom) Islands, also claimed by China, Malaysia, Taiwan, and Vietnam; the 2002 "Declaration on the Conduct of Parties in the South China Sea," has eased tensions in the Spratly Islands but falls short of a legally binding "code of conduct" desired by several of the disputants; in March 2005, the national oil companies of China, the Philippines, and Vietnam signed a joint accord to conduct marine seismic activities in the Spratly Islands; Philippines retains a dormant claim to Malaysia's Sabah State in northern Borneo based on the Sultanate of Sulu's granting the Philippines Government power of attorney to pursue a sovereignty claim on his behalf; maritime delimitation negotiations continue with Palau

Refugees and internally displaced persons
IDPs: 153,000 (government troops fighting the Moro Islamic Liberation Front, the Abu Sayyaf Group, and the New People's Army; clan feuds; armed attacks, political violence, and communal tensions in Mindanao) (2020)
stateless persons: 387 (2020); note - stateless persons are descendants of Indonesian migrants

Illicit drugs
domestic methamphetamine production has been a growing problem in recent years despite government crackdowns; major consumer of amphetamines; longstanding marijuana producer mainly in rural areas where Manila's control is limited

Acronyms and Abbreviations

° C / F	Degrees Celsius / Fahrenheit
° N/S/E/W	Degrees North / South / East / West (Latitude / Longitude)
3W	Who's Doing What Where (OCHA)
AADMER	ASEAN Agreement on Disaster Management and Emergency Response
ADB	Asian Development Bank
ADINet	ASEAN Disaster Information Network
AFP	Armed Forces of the Philippines
AHA Centre	ASEAN Coordinating Centre for Humanitarian Assistance on disaster management
ALS	Alternative Learning System
APAN	All Partners Access Network
APEC	Asia-Pacific Economic Cooperation
ARF	ASEAN Regional Forum
ARMM	Autonomous Region in Muslim Mindanao
ASEAN	Association of Southeast Asian Nations
BARMM	Bangsamoro Autonomous Region in Muslim Mindanao
BCT	Batangas Container Terminal
BDRRMC	Bangsamoro Disaster Risk Reduction Management Council
BHA	Bureau for Humanitarian Affairs (of USAID)
BHS	Barangay Health Station
BIS	Bank for International Settlements
CAFOD	Common and Fundamental Operational Datasets
CALABARZON	Cavite, Laguna, Batangas, Rizal, and Quezon
CCAM	Climate Change Adaptation and Mitigation
CCAM-DRR	Climate Change Adaptation, Mitigation, and Disaster Risk Reduction
CCC	Climate Change Commission
CDC	U.S. Centers for Disease Control and Prevention
CE	Common Era
CEDAW	Convention on the Elimination of all forms of Discrimination against Women
CFE-DM	Center for Excellence in Disaster Management and Humanitarian Assistance
Changi RHCC	Changi Regional HADR Coordination Centre
CGSC	Command and General Staff College
CICA	Conference on Interaction and Confidence Building Measures in Asia
CIP	Cebu International Port
CMCC	Civil-Military Coordination Center
CMO	Civil Military Operations
COPD	chronic obstructive pulmonary disease
COVAX	COVID-19 Vaccines Global Access
COVID-19	Coronavirus Disease 2019

CPP	Communist Party of the Philippines
CPP-NPA	Communist Party of the Philippines—New People's Army
CRK	Clark Diosdado Macapagal International Airport
CropDAT	Crop Damage Assessment Tool
CSO	civil society organization
DAP	Development Academy of the Philippines
DBM	Department of Budget and Management
DDR	Department of Disaster Resilience
DENR	Department of Environment and Natural Resources
DepEd	Department of Education
DFA	Department of Foreign Affairs
DICT	Davao International Container Terminal, Inc. OR Department of Information and Communications Technology
DILG	Department of Interior and Local Government
DKI-APCSS	Daniel K. Inouye Asia-Pacific Center for Security Studies
DMHA	Disaster Management and Humanitarian Assistance
DMRS	Disaster Monitoring and Response System (of the AHA Centre)
DND	Department of National Defense
DoD	Department of Defense (U.S.)
DOE	Department of Energy
DOF	Department of Finance
DOH	Department of Health
DOST	Department of Science and Technology
DOTR	Department of Transportation
DPWH	Department of Public Works and Highways
DROMIC	Disaster Response Operations Monitoring and Information Center
DRR	Disaster Risk Reduction
DRRM	disaster risk reduction and management
DRRMC	Disaster Risk Reduction and Management Council
DRRMO	Disaster Risk Reduction and Management Office
DRRMS	Disaster Risk Reduction and Management Service
DWSD	Department of Social Welfare and Development
EAS	East Asia Summit
ECQ	Enhanced Community Quarantine
EDCA	Enhanced Defense Cooperation Agreement
EDSA 1 & 2	People Power movements 1 & 2 (acronym from protests on Epifanio de los Santos Avenue)
EEZ	Exclusive Economic Zone
EMOPS	Emergency Operations
EOC	Emergency Operations Center
EPIRA	Electric Power Industry Reform Act

EWS	Early Warning Systems
FAO	Food and Agriculture Organization
FCG	Foreign Clearance Guide
FDR	Foreign Disaster Response
FLOAT	Flood Loss Assessment Tool
GDACS	Global Disaster Alert and Coordination System
GDP	Gross Domestic Product
GNI	Gross National Income
GW	gigawatt
HADR	humanitarian assistance and disaster response
HARP	HIV/AIDS and Anti-Retroviral Therapy Registry of the Philippines
HCT	Humanitarian Country Team
HDX	Humanitarian Data Exchange
HFA	Hyogo Framework for Action
HIV / AIDS	human immunodeficiency virus / acquired immunodeficiency syndrome
IAEA	International Atomic Energy Agency
IATA	International Air Transport Association
IATF-EID	Inter-Agency Task Force for the Management of Emerging Infectious Diseases
IBRD	International Bank for Reconstruction and Development
ICAO	International Civil Aviation Organization
ICC	International Chamber of Conference
ICRM	Institute of Catastrophe Risk Management
ICRC	International Committee of the Red Cross
ICS	Incident Command System
ICT	Information and Communications Technology
IDA	International Development Association
IDP	Internally Displaced Persons
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IFRC	International Federation of Red Cross and Red Crescent Societies
IHL	International Humanitarian Law
IHO	International Hydrographic Organization
ILO	International Labour Organization
IMF	International Monetary Fund
IMO	International Maritime Organization
IMSO	International Mobil Satellite Organization
INFORM GRI	Index for Risk Management Global Risk Index
INSARAG	International Search and Rescue Advisory Group
INTERPOL	International Criminal Police Organisation
IOC	International Olympic Committee

IOM	International Organization for Migration
IPU	Inter-Parliamentary Union
ISIS	Islamic State of Iraq and Syria
ISO	International Organization for Standardization
ITSO	International Telecommunications Satellite Organization
ITU	International Telecommunications Union
ITUC	International Trade Union Confederation
JTWC	Joint Typhoon Warning Center
km	kilometer
kV	kilovolt
LDRRMC	Local Disaster Risk Reduction and Management Council
LDRRMO	Local Disaster Risk Reduction and Management Office
LGU	local government unit
LNG	liquefied natural gas
LRT	Light Rail Transit
m	meter
m3	cubic meter
Mbps	megabits per second
MCIA	Mactan-Cebu International Airport
MDT	Mutual Defense Treaty
MERS	Middle East Respiratory Syndrome
MICT	Manila International Container Terminal
MIGA	Multilateral Investment Guarantee Agency
MILF	Moro Islamic Liberation Front
MILG	Ministry on Interior and Local Government (Bangsamoro)
MINUSCA	UN Multidimensional Integrated Stabilization Mission in Central African Republic
MNCC	Multi-National Coordination Center
MNLF	Moro National Liberation Front
mph	Miles per hour
MRT	Metro Rail Transit
MSM	males who have sex with males
Mtoe	million tons of oil equivalent
MW	megawatt
MWSS	Metropolitan Waterworks and Sewerage System
NAIA	Ninoy Aquino International Airport
NAM	Non-Aligned Movement
NAP	National Action Plan
NAPWPS	National Action plan on Women, Peace, and Security
NATO	North Atlantic Treaty Organization
NCA	national command in authority

NCCAP	National Climate Change Action Plan
NCD	non-communicable disease
NCP	National Contingency Plan
NCT	New Container Terminal
NDPP	National Disaster Preparedness Plan
NDRP	National Disaster Response Plan
NDRRMC	National Disaster Risk Reduction and Management Council
NDRRMF	National Disaster Risk Reduction and Management Framework
NDRRMOC	NDRRMC Operations Center
NDRRMP	National Disaster Risk Reduction and Management Plan
NEDA	National Economic and Development Authority
NFSCC	National Framework Strategy on Climate Change
NGCP	National Grid Corporation of the Philippines
NGO	non-government organization
NIC	national incident commander
NOH	National Objectives for Health
NPA	New People's Army
NPC	National Power Corporation
NREP	National Renewable Energy Program
NSCR	North-South Commuter Railway
NTF	National Task Force
NWRB	National Water Resources Board
OAS	Organization of American States
OCD	Office of Civil Defense
OCHA	Office for the Coordination of Humanitarian Affairs (of the UN)
OFW	overseas Filipino worker
OPCW	Organisation for the Prohibition of Chemical Weapons
OPLAN	Operations Plan
PAGASA	Philippine Atmospheric, Geophysical, and Astronomical Services Administration
PCA	Permanent Court of Arbitration
PDC	Pacific Disaster Center
PDP	Philippine Development Plan
PhilHealth	Philippine Health Insurance Corporation
PHIVOLCS	Philippine Institute of Volcanology and Seismology
PHP or ₱	Philippine Peso
PIA	Philippine Information Agency
PIDSR	Philippine Integrated Disease Surveillance and Response
PIF	Pacific Islands Forum
PIHA	Philippine International Humanitarian Assistance
PIHAC	Philippine International Humanitarian Assistance Cluster

PIHARC	Philippines International Humanitarian Assistance Reception Center
PNOC	Philippine National Oil Company
PNP	Philippine National Police
PNR	Philippine National Railways
PPA	Philippine Ports Authority
PRC	Philippine Red Cross
RCHC	Resident Coordinator/Humanitarian Coordinator
RDRRMC	Regional Disaster Risk Reduction and Management Council
RDRRMOC	Regional Disaster Risk Reduction and Management Operations Center
Readi-BARMM	Rapid Emergency Action on Disaster Incidence (Bangsamoro)
REDAS	Rapid Earthquake Damage Assessment System
RETT	Rapid Emergency Telecommunications Team
ROAP	Regional Office for Asia and the Pacific (of UN OCHA)
ro-ro	roll-on roll-off
RHU	Rural Health Unit
SARS-CoV-2	Severe acute respiratory syndrome – Coronavirus - 2
SBBV	sexual and gender-based violence
SDRRM	School Disaster Risk Reduction and Management
SRNH	Strong Republic Nautical Highway
SRR	Search, Rescue, and Retrieval
SWIFT	Severe Wind Impact Forecasting Tool
TB	tuberculosis
TEU	twenty-foot equivalent unit
TGW	transgender women
TLE	technical and livelihoods education
TsuSIM	Tsunami Simulation and Impact Assessment Module
TVL	technical vocational livelihood
TWh	terawatt-hour
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNDRR	UN Office for Disaster Risk Reduction
UNESCO	UN Educational, Scientific, and Cultural Organization
UNHCR	UN High Commission on Refugees
UNIATF	UN Interagency Task Force
UNICEF	United Nations Children's Fund
UNIDO	UN Industrial Development Organization
UNMISS	UN Mission in Republic of South Sudan
UNMOGIP	UN Military Observer Group in India and Pakistan

UNSCR	United Nations Security Council Resolution
UNWTO	World Tourism Organization
UPU	Universal Postal Union
U.S.	United States
USAID	United States Agency for International Development
WCO	World Customs Organization
WFTU	World Federation of Trade Unions
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WMO	World Meteorological Organization
WTO	World Trade Organization

Endnotes

1 ADB. Asian Development Bank and the Philippines: Fact Sheet. July 2021. https://www.adb.org/publications/philippines-fact-sheet

2 BusinessWorld. Philippines maintains lower-middle-income status amid pandemic. 5 July 2021. https://www.bworldonline.com/philippines-maintains-lower-middle-income-status-amid-pandemic/

3 National Disaster Risk Reduction and Management Council. National Disaster Risk Reduction and Management Plan (NDRRMP) 2011-2028. https://ndrrmc.gov.ph/attachments/article/41/NDRRM_Plan_2011-2028.pdf

4 Regional Consultative Group: Humanitarian Civil-Military Coordination for Asia and the Pacific. Humanitarian Civil-Military Coordination in Emergencies: Toward a Predictable Model (2020 edition). January 2021. https://humanitarianadvisorygroup.org/wp-content/uploads/2021/01/RCG_Towards-a-predictable-model_2nd-ed__Final_electronic.pdf

5 Department of National Defense. National Defense Strategy (2018-2022). 7 August 2019. https://www.dnd.gov.ph/Files/ShowFile?url=/FilesUploaded/Ckeditor/file/NDS_7_August_2019.pdf

6 T. Ingicco, G. D. van den Bergh, C. Jago-on, J.-J. Bahain, M. G. Chacón, N. Amano, H. Forestier, C. King, K. Manalo, S. Nomade, A. Pereira, M. C. Reyes, A.-M. Sémah, Q. Shao, P. Voinchet, C. Falguères, P. C. H. Albers, M. Lising, G. Lyras, D. Yurnaldi, P. Rochette, A. Bautista & J. de Vos. Earliest known hominin activity in the Philippines by 709 thousand years ago. 2 May 2018. https://www.nature.com/articles/s41586-018-0072-8

7 CIA World Factbook. Philippines: History. https://www.cia.gov/the-world-factbook/countries/philippines/#government

8 Harding, Paul, Greg Bloom and Celeste Brash. Philippines. Lonely Planet. 2018. pg. 424-427.

9 Encyclopedia Britannica. Philippines: History. https://www.britannica.com/place/Philippines/Sports-and-recreation#ref387366

10 International Observer Delegation. A Path to Democratic Renewal: A Report on the February 7, 1986 Presidential Election in the Philippines. U.S. National Democratic Institute for International Affairs and U.S. National Republican Institute for International Affairs. https://pdf.usaid.gov/pdf_docs/PNABK494.pdf

11 UN News. Philippines drug campaign directive seen as 'permission to kill': UN rights office. 4 June 2020. https://news.un.org/en/story/2020/06/1065582

12 Human Rights Watch. Philippines' 'War on Drugs." https://www.hrw.org/tag/philippines-war-drugs#

13 CNN Philippines. Govt fails to balance COVID-19 response with economic needs — NEDA. 14 October 2021. https://cnnphilippines.com/news/2021/10/14/NEDA-government-COVID-19-pandemic-response.html

14 Reyes, Victor. 12 Maute stragglers killed. Malaya Business Insight. 7 November 2017. https://web.archive.org/web/20181213131228/https://www.malaya.com.ph/business-news/news/12-maute-stragglers-killed

15 Marawi Residents Will Return this Year, Philippine Govt Says. Benar News. 24 May 2018. https://www.benarnews.org/english/news/philippine/philippines-militants-05242018121034.html

16 Ranada, Pia. Duterte signs proclamation labeling CPP-NPA as terrorist group. Rappler. 5 December 2017. https://www.rappler.com/nation/duterte-proclamation-communist-party-philippines-new-peoples-army-terrorist-group

17 Roque, EJ. Duterte permanently ends peace talks with Reds. Philippine News Agency. 21 March 2019. https://www.pna.gov.ph/articles/1065301

18 Casal, Chang. Ancient Filipino writing systems that aren't Baybayin. CNN Philippines. 22 August 2018. https://cnnphilippines.com/life/culture/2018/8/22/ancient-Filipino-scripts-surat-Baybayin.html

19 Limos, Mario Alvaro. Unpopular Opinion: Baybayin Should Not Become a National Writing System. Esquire Magazine. 8 September 2020. https://www.esquiremag.ph/politics/opinion/baybayin-national-writing-system-a00293-20200908-lfrm2

20 Philippine Culture, Customs and Traditions - Filipino Culture. Cebu-Philippines. http://www.cebu-philippines.net/philippine-culture.html

21 Encyclopedia Britannica. Philippines: Cultural Life. https://www.britannica.com/place/Philippines/Cultural-life

22 Flag Image: https://commons.wikimedia.org/wiki/File:Flag_of_the_Philippines.svg

23 National Commission for Culture and the Arts. Symbolisms/ Meanings in the Philippine Flag. https://ncca.gov.ph/about-culture-and-arts/culture-profile/philippine-fast-facts/symbolisms-meanings-in-the-philippine-flag/

24 Malacanan Palace, Presidential Museum and Library. Origin of the Symbols of our National Flag. http://malacanang.gov.ph/3846-origin-of-the-symbols-of-our-national-flag/

25 Harding, Paul, Greg Bloom and Celeste Brash. Philippines. Lonely Planet. 2018. Page 423.

26 Headland, Thomas. Philippine Negritos. Encyclopedia.com. https://www.encyclopedia.com/humanities/encyclopedias-almanacs-transcripts-and-maps/philippine-negritos#:~:text=Philippine%20Negritos.%20The%20Negritos%20of%20the%20Philippines%20are,to%20be%20the%20aboriginal%20inhabitants%20of%20the%20archipelago.

27 Encylopedia.com. Igorot. https://www.encyclopedia.com/reference/encyclopedias-almanacs-transcripts-and-maps/igorot

28 Harding, Paul, Greg Bloom and Celeste Brash. Philippines. Lonely Planet. 2018. Page 434.

29 Wright, Steph. Cities With the Highest Population Density In The World. World Atlas. 4 October 2020. https://www.worldatlas.com/articles/the-world-s-most-densely-populated-cities.html

30 Misachi, John. 5 January 2021. Biggest Cities in The Philippines. World Atlas. https://www.worldatlas.com/articles/biggest-cities-in-the-philippines.html

31 Karunungan, Renee. A History of the Philippines' official languages. https://reneekarunungan.com/2019/08/15/a-history-of-the-philippines-official-languages/

32 World Atlas. What Languages are Spoken in the Philippines. https://www.worldatlas.com/articles/what-language-do-they-speak-in-the-philippines.html

33 Premise: Journal of English Education and Applied Linguistics Vo. 9 No 1, April 2020, e-ISSN: 2442-482x, p-ISSN: 2089-3345, pp. 78-93. https://files.eric.ed.gov/fulltext/ED606138.pdf

34 Betts, Jennifer. Filipino vs. Tagalog: What Is the Philippines Language? YourDictionary Reference. https://reference.yourdictionary.com/reference/other-languages/filipino-vs-tagalog-what-is-the-philippine-language.html

35 National Commission for Culture and the Arts, Government of the Philippines. Philippine Fast Facts. https://ncca.gov.ph/about-culture-and-arts/culture-profile/philippine-fast-facts/

36 Koyfman, Steph. What Language Is Spoken In The Philippines? Babbel Magazine. 31 July 2019. https://www.babbel.com/en/magazine/what-language-is-spoken-in-the-philippines

37 Iglesia ni Cristo. https://iglesianicristo.net/

38 Harding, Paul, Greg Bloom and Celeste Brash. Philippines. Lonely Planet. 2018. p. 423.

39 Internal Displacement Monitoring Centre. Philippines. https://www.internal-displacement.org/countries/philippines

40 Mawis, Sara Mae D. Dealing with informal settlements. Business Inquirer. 13 April 2019. https://business.inquirer.net/268622/dealing-with-informal-settlements#ixzz79EibXcpH

41 Project Information Document Appraisal Stage: Metro Manila Flood Management Project. 23 May 2017. https://documents1.worldbank.org/curated/en/569821495531675047/pdf/PID-Appraisal-Print-P153814-05-23-2017-1495531642159.pdf

42 Informal City Dialogues. Manila: Philippines. https://nextcity.org/informalcity/city/manila#:~:text=Philippines%20A%20conglomeration%20of%2016%20cities%20and%20one,informal%20settlements.%20But%20they%20don%E2%80%99t%20live%20in%20peace.

43 Navarro, Ma. Kresna and Almaden, Catherine Roween. The Cost of Misguided Urbanization: The Case of Informal Settlements in Butuan City, Philippines. Academic Journal of Interdisciplinary Studies, Vol. 3, No. 6. 25 November 2014. pp. 441-451. https://mpra.ub.uni-muenchen.de/60517/

44 UN Women. Gender Snapshot: COVID-19 in the Philippines. April 2020. https://asiapacific.unwomen.org/-/media/field%20office%20eseasia/docs/publications/2020/04/phl-covid%20gender%20snapshot%20april%202020.pdf?la=en&vs=3508

45 Punay, Edu. Kids with disabilities most vulnerable to disasters. PhilStar. 23 July 2018. https://www.philstar.com/headlines/2018/07/23/1835944/kids-disabilities-most-vulnerable-disasters

46 Vidya, Diwakar. Resilience And Sustainable Poverty Escapes In The Philippines. USAID. August 2018. https://pdf.usaid.gov/pdf_docs/PA00TM7H.pdf

47 OPHI & UNDP. Global Multidimensional Poverty Index 2021. Page 29. http://hdr.undp.org/sites/default/files/2021_mpi_report_en.pdf

48 Department of Health. Persons with Disabilities. https://doh.gov.ph/persons-with-disabilities

49 Manjula Marella, Alexandra Devine, Graeme Ferdinand Armecin, Jerome Zayas, Ma Jesusa Marco & Cathy Vaughan. Rapid assessment of disability in the Philippines: understanding prevalence, well-being, and access to the community for people with disabilities to inform the W-DARE project. Population Health Metrics, Volume 14, Article number: 26 (2016). https://pophealthmetrics.biomedcentral.com/articles/10.1186/s12963-016-0096-y

50 Punay, Edu. Kids with disabilities most vulnerable to disasters. PhilStar. 23 July 2018. https://www.philstar.com/headlines/2018/07/23/1835944/kids-disabilities-most-vulnerable-disasters

51 Quick, Diana. Women, children and persons with disabilities most vulnerable to typhoon Haiyan. 23 November 2013. https://reliefweb.int/report/philippines/women-children-and-persons-disabilities-most-vulnerable-typhoon-haiyan

52 Women's Refugee Commission. Top ten critical needs to consider in the response to typhoon Haiyan in the Philippines. 23 November 2013. https://reliefweb.int/report/philippines/top-ten-critical-needs-consider-response-typhoon-haiyan-philippines

53 World Bank. Personal remittances, received (% of GDP) – Philippines. 2020. https://data.worldbank.org/indicator/BX.TRF.PWKR.DT.GD.ZS?locations=PH

54 History Central. Philippines: Economics. https://www.historycentral.com/nationbynation/Philippines/Economy.html

55 ADB. Asian Development Bank and the Philippines: Fact Sheet. July 2021. https://www.adb.org/publications/philippines-fact-sheet

56 FutureLearn. The Philippines Economy and the Impact of COVID-19. 18 August 2021. https://www.futurelearn.com/info/futurelearn-international/philippines-economy-covid-19

57 World Bank. The World Bank in the Philippines: Overview. 7 April 2021. https://www.worldbank.org/en/country/philippines/overview#1

58 BusinessWorld. Philippines maintains lower-middle-income status amid pandemic. 5 July 2021. https://www.bworldonline.com/philippines-maintains-lower-middle-income-status-amid-pandemic/

59 Transparency International. Corruption Perceptions Index 2020. https://www.transparency.org/en/cpi/2020/index/phl

60 World Bank. Philippines Economic Update, June 2021: Navigating a Challenging Recovery. 4 June 2021. https://openknowledge.worldbank.org/handle/10986/35690

61 Pesek, William. Philippine Economy Is A Mess As Duterte Fiddles On Covid-19. Forbes. 31 May 2021. https://www.forbes.com/sites/williampesek/2021/05/31/philippine-economy-is-a-mess-as-duterte-fiddles-on-covid-19/?sh=32efd2c2f96e

62 Asian Development Bank. Economic indicators for the Philippines. September 2021. https://www.adb.org/countries/philippines/economy

63 Mendiola, Ritchel. Moody's Analytics: Philippines Last To Recover In Asia. Asian Journal. 8 January 2021. https://www.asianjournal.com/philippines/across-the-islands/moody-analytics-philippines-last-to-recover-in-asia/

64 Embassy of the Philippines. The Philippine Government. https://www.philembassy.no/the-philippine-government#:~:text=The%20Philippine%20Government%201%20Executive%20Branch.%20The%20executive,at%20least%202%25%20...%203%20Judiciary%20Branch.%20

65 Asian Institute of Journalism and Communication. Courts for Muslims: A Primer on the Philippine Shari'a Courts. https://aboutphilippines.org/files/code_muslim_sharia_courts.pdf

66 Official Gazette. Philippine Constitutions. https://www.officialgazette.gov.ph/constitutions/

67 CIA World Factbook. Philippines: Government. https://www.cia.gov/the-world-factbook/countries/philippines/#government

68 CIA World Factbook. Philippines: Environment. https://www.cia.gov/the-world-factbook/countries/philippines/#environment

69 USAID. Philippines: Environment. https://www.usaid.gov/philippines/energy-and-environment

70 Harding, Paul, Greg Bloom and Celeste Brash. Philippines. Lonely Planet. 2018. Page 438.

71 CIA World Factbook. Philippines: Transnational Issues. https://www.cia.gov/the-world-factbook/countries/philippines/#transnational-issues

72 Water Environment Partnership in Asia (WEPA). Philippines: State of water environmental issues. http://www.wepa-db.net/policies/state/philippines/seaareas.htm

73 Government of the Philippines, National Commission for Culture and the Arts. Philippine Fast Facts. https://ncca.gov.ph/about-culture-and-arts/culture-profile/philippine-fast-facts/

74 FutureLearn. Everything you need to know about climate change in the Philippines. 13 August 2021. https://www.futurelearn.com/info/futurelearn-international/climate-change-philippines

75 Habitat for Humanity. Response to Typhoons in the Philippines: Background. https://www.habitatforhumanity.org.uk/what-we-do/disaster-response/response-to-typhoons-philippines/

76 National Geographic Society. Resource Library: Encyclopedic Entry. Ring of Fire. https://www.nationalgeographic.org/encyclopedia/ring-fire/

77 Eckstein, David, Vera Künzel, and Laura Schäfer. Global Climate Risk Index 2021. GermanWatch. pg. 13. https://www.germanwatch.org/sites/default/files/Global%20Climate%20Risk%20Index%202021_2.pdf

78 FutureLearn. Everything you need to know about climate change in the Philippines. 13 August 2021. https://www.futurelearn.com/info/futurelearn-international/climate-change-philippines

79 Department of Environment and Natural Resources (DENR). Climate Change in the Philippine Context. https://climatechange.denr.gov.ph/

80 Jalandoni, Apples. Greenhouse gas emissions in PH rising: report. ABS-CBN News. 20 November 2018. https://news.abs-cbn.com/news/11/20/18/greenhouse-gas-emission-in-ph-rising-report

81 Philippine News Agency. Duterte OKs 75% emissions reduction PH commitment by 2030. 16 April 2021. https://www.pna.gov.ph/articles/1137085

82 Regional Consultative Group: Humanitarian Civil-Military Coordination for Asia and the Pacific. Humanitarian Civil-Military Coordination in Emergencies: Toward a Predictable Model (2020 edition). January 2021. Page 131. https://humanitarianadvisorygroup.org/wp-content/uploads/2021/01/RCG_Towards-a-predictable-model_2nd-ed__Final_electronic.pdf

83 Deutsche Welle (DW). Philippines: A country prone to natural disasters. https://www.dw.com/en/philippines-a-country-prone-to-natural-disasters/a-17217404

84 UN Office for the Coordination of Humanitarian Affairs (OCHA). About OCHA in the Philippines. Accessed 29 September 2021. https://www.unocha.org/philippines/about-ocha-philippines

85 Habitat for Humanity. Response to Typhoons in the Philippines: Background. https://www.habitatforhumanity.org.uk/what-we-do/disaster-response/response-to-typhoons-philippines/

86 NASA Earth Observatory. Historic Tropical Cyclone Tracks. 2006.

https://earthobservatory.nasa.gov/images/7079/historic-tropical-cyclone-tracks; Image source:

https://eoimages.gsfc.nasa.gov/images/imagerecords/7000/7079/tropical_cyclone_map_lrg.gif

Photo credit: Robert A. Rohde. https://eoimages.gsfc.nasa.gov/images/imagerecords/7000/7079/tropical_cyclone_map_lrg.gif

87 World Bank. Project Highlights: Metro Manila Flood Management. 29 September 2017. https://www.worldbank.org/en/country/philippines/brief/project-highlights-metro-manila-flood-management

88 Asian Disaster Reduction Center (ADRC). Philippines' Country Profile. https://silent-gardens.com/earthquakes.php

89 ASEAN Earthquake Information Center. Earthquake and Volcano Monitoring Network in the Philippines. http://aeic.bmkg.go.id/aeic/philippines.html

90 Flores, Helen. Phivolcs: Metro Manila areas prone to liquefaction. The Philippine Star. 25 April 2019. https://www.philstar.com/headlines/2019/04/25/1912439/phivolcs-metro-manila-areas-prone-liquefaction

91 Filipino Times. Phivolcs' 'earthquake scenario' anticipates 7.2 magnitude quake in Metro Manila. 6 October 2020. https://filipinotimes.net/latest-news/2020/10/06/phivolcs-earthquake-scenario-anticipates-7-2-magnitude-quake-in-metro-manila/

92 PHIVOLCS. Introduction to Earthquake. https://www.phivolcs.dost.gov.ph/index.php/earthquake/introduction-to-earthquake

93 PHIVOLCS. Landslide: DYNASLOPE Project. https://www.phivolcs.dost.gov.ph/index.php/landslide/dynaslope-project

94 Volcano Discovery. Volcanoes of the Philippines. https://www.volcanodiscovery.com/philippines.html

95 OCHA. Asia and the Pacific: Weekly Regional Humanitarian Snapshot. 5-10 October 2021. https://reliefweb.int/sites/reliefweb.int/files/resources/ROAP_Snapshot_211012.pdf

96 OCHA. Asia and the Pacific: Weekly Regional Humanitarian Snapshot (20 – 26 July 2021) https://reliefweb.int/report/india/asia-and-pacific-weekly-regional-humanitarian-snapshot-20-26-july-2021

97 ECHO. Published ECHO Daily Flash of 29 July 2021. https://erccportal.jrc.ec.europa.eu/ECHO-Products/Echo-Flash#/daily-flash-archive/4260

98 ECHO. Published ECHO Daily Flash of 03 August 2021. https://erccportal.jrc.ec.europa.eu/ECHO-Products/Echo-Flash#/daily-flash-archive/4265

99 Government of the Philippines, DROMIC. Taal Volcano Eruption [01 Jul 2021] [TERMINATED]. https://dromic.dswd.gov.ph/taal-volcano-eruption-01-jul-2021/

100 ECHO. Philippines - Taal volcano eruption (DG ECHO, media) (ECHO Daily Flash of 12 January 2020). https://reliefweb.int/report/philippines/philippines-taal-volcano-eruption-dg-echo-media-echo-daily-flash-12-january-2020

101 OCHA. Flash Update No. 1 - Philippines: Taal Volcano eruption (As of 13 January 2020, 2 p.m. local time). https://reliefweb.int/report/philippines/flash-update-no-1-philippines-taal-volcano-eruption-13-january-2020-2-pm-local

102 DSWD. DSWD DROMIC Report #69 on the Taal Volcano Eruption as of 12 March 2020, 6PM. https://reliefweb.int/report/philippines/dswd-dromic-report-69-taal-volcano-eruption-12-march-2020-6pm

103 Weather.com Surigae Brushing By Philippines After Becoming a Record-Setting April Super Typhoon on Saturday. 19 April 2021. https://weather.com/storms/hurricane/news/2021-04-16-typhoon-surigae-philippines-forecast

104 NDRRMC Update: Sitrep No. 10 re Preparedness Measures and Effects of Typhoon "BISING" (I.N. SURIGAE), 25 April 2021, 8:00 AM https://ndrrmc.gov.ph/article/4150

105 European Civil Protection and Humanitarian Aid Operations. ECHO Daily Flash. 15 November 2020. https://erccportal.jrc.ec.europa.eu/ECHO-Products/Echo-Flash/ECHO-Flash-old/ECHO-Flash-List/yy/2020/mm/11

106 DSWD, Government of the Philippines. DSWD DROMIC Report #32 on Super Typhoon "Rolly"

as of 24 November 2020, 6PM. https://reliefweb.int/sites/reliefweb.int/files/resources/DSWD-DROMIC-Report-32-on-Super-Typhoon-Rolly-as-of-24-November-2020-6PM.pdf

107 OCHA. Philippines: Super Typhoon Goni (Rolly) and Typhoon Vamco (Ulysses) - Flash Update No. 4 (as of 12 November 2020, 11 p.m. local time). https://reliefweb.int/sites/reliefweb.int/files/resources/20201112%20Flash%20Update%20no.4%20on%20Typhoon%20Goni.Vamco_final_0.pdf

108 ECHO. Philippines, Vietnam, Cambodia - Typhoon MOLAVE update (GDACS, JTWC, UN OCHA, NDRRMC, VNDMA, NOAA-CPC, media) (ECHO Daily Flash 29 October 2020). https://reliefweb.int/report/viet-nam/philippines-vietnam-cambodia-typhoon-molave-update-gdacs-jtwc-un-ocha-ndrrmc-vndma

109 OCHA. Philippines: Typhoon Vongfong Flash Update No. 1 (As of 15 May 2020, 7 p.m. local time). https://reliefweb.int/report/philippines/philippines-typhoon-vongfong-flash-update-no-1-15-may-2020-7-pm-local-time

110 DSWD DROMIC Report #27 on Typhoon "Ambo" as of 10 June 2020, 6PM. https://reliefweb.int/report/philippines/dswd-dromic-report-27-typhoon-ambo-10-june-2020-6pm

111 IFRC. Philippines: Typhoon Phanfone - Information Bulletin. 24 December 2019. https://reliefweb.int/report/philippines/philippines-typhoon-phanfone-information-bulletin

112 NDRRMC. NDRRMC Update: Situational Report No. 20 re Preparedness Measures and Effects of Typhoon "URSULA" (PHANFONE), 02 January 2020, 6:00 AM. https://reliefweb.int/report/philippines/ndrrmc-update-situational-report-no-20-re-preparedness-measures-and-effects

113 OCHA. Philippines: 6.9-magnitude earthquake, Davao del Sur Flash Update No. 1 (As of 16 December 2019) https://reliefweb.int/report/philippines/philippines-69-magnitude-earthquake-davao-del-sur-flash-update-no-1-16-december

114 ReliefWeb. Philippines: Earthquakes - Oct 2019. https://reliefweb.int/disaster/eq-2019-000140-phl

115 DSWD. DSWD DROMIC Report #11 on the Ms 6.9 Earthquake Incident in Matanao, Davao del Sur as of 29 December 2019, 6PM. https://reliefweb.int/report/philippines/dswd-dromic-report-11-ms-69-earthquake-incident-matanao-davao-del-sur-29-december

116 UNHCR, Protection Cluster. Philippines: Mindanao Displacement Dashboard, June 2020 - Issue No. 70. https://reliefweb.int/report/philippines/philippines-mindanao-displacement-dashboard-june-2020-issue-no-70

117 ECHO. Philippines - Tropical Cyclone KAMMURI update (GDACS, JTWC, PAGASA, NDRRMC, media) (ECHO Daily Flash of 3 December 2019). https://reliefweb.int/report/philippines/philippines-tropical-cyclone-kammuri-update-gdacs-jtwc-pagasa-ndrrmc-media-echo

118 DSWD. DSWD DROMIC Report #17 on Typhoon "TISOY" as of 12 December 2019, 6PM. https://reliefweb.int/report/philippines/dswd-dromic-report-17-typhoon-tisoy-12-december-2019-6pm

119 ReliefWeb. Philippines: Earthquakes - Jul 2019. https://reliefweb.int/disaster/eq-2019-000086-phl

120 ADPC & UNDRR. Disaster Risk Reduction in the Philippines Status Report 2019. https://www.unisdr.org/files/68265_682308philippinesdrmstatusreport.pdf

121 Amnesty International. Philippines country most at risk from climate crisis. 18 May 2020. https://www.amnesty.org.uk/philippines-country-most-risk-climate-crisis

122 Khalid, Mohammed. Water Pollution in The Philippines. The Borgen Project. 8 April 2018. https://borgenproject.org/water-pollution-in-the-philippines/

123 Aguirre, Jun N. USAid: 70% of Philippine fishing grounds overfished. SunStar. 5 July 2019. https://www.sunstar.com.ph/article/1812928/ILOILO/Local-News/USAid-70-of-Philippine-fishing-grounds-overfished

124 Wary Philippines says 200 Chinese vessels at disputed reef. Asahi Shimbun. 21 March 2021. https://www.asahi.com/ajw/articles/14289026

125 Ilagan, Karol. 7 million hectares of Philippine land are forested – and that's bad news. Rappler. 15 May 2021. https://www.rappler.com/environment/hectares-land-philippines-forested

126 European Commission. Disaster Risk Management Knowledge Centre (DRMKC). INFORM Global Risk Index. Methodology. https://drmkc.jrc.ec.europa.eu/inform-index/InDepth/Methodology

127 INFORM Report 2020. Shared Evidence for Managing Crisis and Disasters. https://publications.jrc.ec.europa.eu/repository/bitstream/JRC120275/01_inform_2020_online_%284%29.pdf

128 European Commission. Disaster Risk Management Knowledge Centre (DRMKC). INFORM Risk Index 2022, v061. Philippines. Accessed 2 October 2021. https://drmkc.jrc.ec.europa.eu/inform-index; https://drmkc.jrc.ec.europa.eu/inform-index/Portals/0/InfoRM/2021/INFORM_Risk_2022_v061.xlsx?ver=2021-09-03-170624-200

129 Graph source: DRMKC, INFORM Risk Index https://drmkc.jrc.ec.europa.eu/inform-index/INFORM-Risk/Country-Profile

130 Regional Consultative Group: Humanitarian Civil-Military Coordination for Asia and the Pacific. Humanitarian Civil-Military Coordination in Emergencies: Toward a Predictable Model (2020 edition). January 2021. https://humanitarianadvisorygroup.org/wp-content/uploads/2021/01/RCG_Towards-a-predictable-model_2nd-ed__Final_electronic.pdf

131 Regional Consultative Group: Humanitarian Civil-Military Coordination for Asia and the Pacific. Humanitarian Civil-Military Coordination in Emergencies: Toward a Predictable Model (2020 edition). January 2021. https://humanitarianadvisorygroup.org/wp-content/uploads/2021/01/RCG_Towards-a-predictable-model_2nd-ed__Final_electronic.pdf

132 Department of Social Welfare and Development. DSWD Organizational Structure. Accessed 1 September 2021. https://www.dswd.gov.ph/organizational-structure-2/

133 Office of Civil Defense. Mandate, Mission And Vision. Accessed 1 September 2021. http://www.ocd.gov.ph/index.php/about-ocd/mandate-mission-and-vision

134 Department of National Defense. National Defense Strategy (2018-2022). 7 August 2019. https://www.dnd.gov.ph/Files/ShowFile?url=/FilesUploaded/Ckeditor/file/NDS_7_August_2019.pdf

135 Regional Consultative Group: Humanitarian Civil-Military Coordination for Asia and the Pacific. Humanitarian Civil-Military Coordination in Emergencies: Toward a Predictable Model (2020 edition). January 2021. https://humanitarianadvisorygroup.org/wp-content/uploads/2021/01/RCG_Towards-a-predictable-model_2nd-ed__Final_electronic.pdf

136 Office of Civil Defense. OCD Organizational Structure. Accessed 1 September 2021. https://ocd.gov.ph/index.php/organizational-structure

137 Regional Consultative Group: Humanitarian Civil-Military Coordination for Asia and the Pacific. Humanitarian Civil-Military Coordination in Emergencies: Toward a Predictable Model (2020 edition). January 2021. https://humanitarianadvisorygroup.org/wp-content/uploads/2021/01/RCG_Towards-a-predictable-model_2nd-ed__Final_electronic.pdf

138 Office of Civil Defense. OCD Organizational Structure. Accessed 1 September 2021. https://ocd.gov.ph/index.php/organizational-structure

139 Jannaral, Julmunir I. BARMM launches new disaster response office. Manila Times. 3 August 2019. https://www.manilatimes.net/2019/08/03/news/regions/barmm-launches-new-disaster-response-office/593955

140 Regional Consultative Group: Humanitarian Civil-Military Coordination for Asia and the Pacific. Humanitarian Civil-Military Coordination in Emergencies: Toward a Predictable Model (2020 edition). January 2021. https://humanitarianadvisorygroup.org/wp-content/uploads/2021/01/RCG_Towards-a-predictable-model_2nd-ed__Final_electronic.pdf

141 Punay, Edu. Senate prodded on bill creating disaster resilience department. Philippine Star. 10 July 2021. https://www.philstar.com/headlines/2021/07/10/2111404/senate-prodded-bill-creating-disaster-resilience-department

142 Regional Consultative Group: Humanitarian Civil-Military Coordination for Asia and the Pacific. Humanitarian Civil-Military Coordination in Emergencies: Toward a Predictable Model (2020 edition). January 2021. https://humanitarianadvisorygroup.org/wp-content/uploads/2021/01/RCG_Towards-a-predictable-model_2nd-ed__Final_electronic.pdf

143 Regional Consultative Group: Humanitarian Civil-Military Coordination for Asia and the Pacific. Humanitarian Civil-Military Coordination in Emergencies: Toward a Predictable Model (2020 edition). January 2021. https://humanitarianadvisorygroup.org/wp-content/uploads/2021/01/RCG_Towards-a-predictable-model_2nd-ed__Final_electronic.pdf

144 Regional Consultative Group: Humanitarian Civil-Military Coordination for Asia and the Pacific. Humanitarian Civil-Military Coordination in Emergencies: Toward a Predictable Model (2020 edition). January 2021. https://humanitarianadvisorygroup.org/wp-content/uploads/2021/01/RCG_Towards-a-predictable-model_2nd-ed__Final_electronic.pdf

145 Department of National Defense. National Defense Strategy (2018-2022). 7 August 2019. https://www.dnd.gov.ph/Files/ShowFile?url=/FilesUploaded/Ckeditor/file/NDS_7_August_2019.pdf

146 Regional Consultative Group: Humanitarian Civil-Military Coordination for Asia and the Pacific. Humanitarian Civil-Military Coordination in Emergencies: Toward a Predictable Model (2020 edition). January 2021. https://humanitarianadvisorygroup.org/wp-content/uploads/2021/01/RCG_Towards-a-predictable-model_2nd-ed__Final_electronic.pdf

147 Department of National Defense. National Defense Strategy (2018-2022). 7 August 2019. https://www.dnd.gov.ph/Files/ShowFile?url=/FilesUploaded/Ckeditor/file/NDS_7_August_2019.pdf

148 Regional Consultative Group: Humanitarian Civil-Military Coordination for Asia and the Pacific. Humanitarian Civil-Military Coordination in Emergencies: Toward a Predictable Model (2020 edition). January 2021. https://humanitarianadvisorygroup.org/wp-content/uploads/2021/01/RCG_Towards-a-predictable-model_2nd-ed__Final_electronic.pdf

149 Department of National Defense. National Defense Strategy (2018-2022). 7 August 2019. https://www.dnd.gov.ph/Files/ShowFile?url=/FilesUploaded/Ckeditor/file/NDS_7_August_2019.pdf

150 Regional Consultative Group: Humanitarian Civil-Military Coordination for Asia and the Pacific. Humanitarian Civil-Military Coordination in Emergencies: Toward a Predictable Model (2020 edition). January 2021. https://humanitarianadvisorygroup.org/wp-content/uploads/2021/01/RCG_Towards-a-predictable-model_2nd-ed__Final_electronic.pdf

151 Regional Consultative Group: Humanitarian Civil-Military Coordination for Asia and the Pacific. Humanitarian Civil-Military Coordination in Emergencies: Toward a Predictable Model (2020 edition). January 2021. https://humanitarianadvisorygroup.org/wp-content/uploads/2021/01/RCG_Towards-a-predictable-model_2nd-ed__Final_electronic.pdf

152 National Disaster Risk Reduction and Management Council. National Disaster Risk Reduction and Management Plan (NDRRMP) 2011-2028. https://ndrrmc.gov.ph/attachments/article/41/NDRRM_Plan_2011-2028.pdf

153 Department of National Defense. National Defense Strategy (2018-2022). 7 August 2019. https://www.dnd.gov.ph/Files/ShowFile?url=/FilesUploaded/Ckeditor/file/NDS_7_August_2019.pdf

154 U.S. Embassy in the Philippines. U.S., Philippines Cut the Ribbon on Enhanced Defense Cooperation Agreement Project. 30 January 2019. https://www.pacom.mil/Media/News/News-Article-View/Article/1744271/us-philippines-cut-the-ribbon-on-enhanced-defense-cooperation-agreement-project/

155 Department of National Defense. National Defense Strategy (2018-2022). 7 August 2019. https://www.dnd.gov.ph/Files/ShowFile?url=/FilesUploaded/Ckeditor/file/NDS_7_August_2019.pdf

156 International Committee of the Red Cross (ICRC). The Movement. Accessed 23 March 2020. https://www.icrc.org/en/movement#:~:text=The%20International%20Red%20Cross%20and,armed%20conflicts%20and%20other%20emergencies.

157 ICRC. Where we work: Philippines. Accessed 7 September 2021. https://www.icrc.org/en/where-we-work/asia-pacific/philippines

158 International Federation of Red Cross (IFRC). Who we are. Accessed 23 March 2021. http://www.ifrc.org/en/who-we-are/

159 Philippine Red Cross. About Us: History. Accessed 7 September 2021. https://redcross.org.ph/about-us/history/

160 Philippine Red Cross. Trainings. Accessed 7 September 2021. https://redcross.org.ph/trainings/#trainings

161 American Red Cross. Philippines: Red Cross Helps After Typhoons Goni, Vamco Strike. 13 November 2020. https://www.redcross.org/about-us/news-and-events/news/2020/red-cross-response-to-typhoon-goni.html

162 U.S. State Department. U.S.-Philippines Relations. Accessed 31 August 2021. https://www.state.gov/countries-areas/philippines/

163 U.S. State Department. U.S. Assistance to Philippines. Accessed 31 August 2021. https://www.state.gov/countries-areas/philippines/

164 U.S. Embassy in the Philippines. United States Donates RT-PCR Extraction Kits to Philippine Genome Center. 27 August 2021. https://ph.usembassy.gov/united-states-donates-rt-pcr-extraction-kits-to-philippine-genome-center/

165 USAID. Philippines Country Profile. Accessed 14 August 2018. https://www.usaid.gov/sites/default/files/documents/1861/Philippines_Country_Profile_0.pdf

166 USAID. United States COVID-19 Assistance To The Philippines. 24 August 2021. https://www.usaid.gov/philippines/covid-19-assistance

167 USAID. United States COVID-19 Assistance To The Philippines. 24 August 2021. https://www.usaid.gov/philippines/covid-19-assistance

168 U.S. Embassy in the Philippines. USAID Donates Php12 Million in Equipment to DepEd to Support Access to Education for Out-of-School Youth. 15 July 2021. https://ph.usembassy.gov/usaid-donates-php12-million-in-equipment-to-deped-to-support-access-to-education-for-out-of-school-youth/

169 USAID. Philippines: Humanitarian Assistance. 24 August 2021. https://www.usaid.gov/philippines/humanitarian-assistance

170 National Disaster Risk Reduction and Management Council. National Disaster Risk Reduction and Management Plan (NDRRMP) 2011-2028. https://ndrrmc.gov.ph/attachments/article/41/NDRRM_Plan_2011-2028.pdf

171 Regional Consultative Group: Humanitarian Civil-Military Coordination for Asia and the Pacific. Humanitarian Civil-Military Coordination in Emergencies: Toward a Predictable Model (2020 edition). January 2021. https://humanitarianadvisorygroup.org/wp-content/uploads/2021/01/RCG_Towards-a-predictable-model_2nd-ed__Final_electronic.pdf

172 Official Gazette. Republic Act No. 11479. Congress of the Philippines. 22 July 2019. https://www.officialgazette.gov.ph/downloads/2020/06jun/20200703-RA-11479-RRD.pdf

173 Smith, Tierney. Is the Philippines' climate law the best in the world? Climate Home News. 5 May 2012. https://www.climatechangenews.com/2012/05/05/is-the-philippines-climate-law-the-best-in-the-world/

174 Department of National Defense. National Defense Strategy (2018-2022). 7 August 2019. https://www.dnd.gov.ph/Files/ShowFile?url=/FilesUploaded/Ckeditor/file/NDS_7_August_2019.pdf

175 Climate Change Commission. National Framework Strategy on Climate Change (2010-2022). https://niccdies.climate.gov.ph/files/documents/National%20Framework%20Strategy%20on%20Climate%20Change%20-NFSCC-.pdf

176 National Disaster Risk Reduction and Management Council. National Disaster Risk Reduction and Management Plan (NDRRMP) 2011-2028. https://ndrrmc.gov.ph/attachments/article/41/NDRRM_Plan_2011-2028.pdf

177 National Disaster Risk Reduction and Management Council. National Disaster Preparedness Plan (2015-2021): Volume 1. https://www.rcrc-resilience-southeastasia.org/wp-content/uploads/2018/01/2015-National-Disaster-Preparedness-Plan-2015-2018-Vol-1.pdf

178 Disaster Response Operations Monitoring and Information Center (DROMIC). National Disaster Response Plans. Accessed 31 August 2021. https://dromic.dswd.gov.ph/ndrp/

179 Regional Consultative Group: Humanitarian Civil-Military Coordination for Asia and the Pacific. Humanitarian Civil-Military Coordination in Emergencies: Toward a Predictable Model (2020 edition). January 2021. https://humanitarianadvisorygroup.org/wp-content/uploads/2021/01/RCG_Towards-a-predictable-model_2nd-ed__Final_electronic.pdf

180 National Disaster Risk Reduction and Management Council. National Disaster Response Plan (NDRP): Consequence Management for Terrorism-related Incidents. https://ndrrmc.gov.ph/attachments/article/3031/NDRP_Consequence_Management_for_Terrorism_related_Incidents.pdf

181 Regional Consultative Group: Humanitarian Civil-Military Coordination for Asia and the Pacific. Humanitarian Civil-Military Coordination in Emergencies: Toward a Predictable Model (2020 edition). January 2021. https://humanitarianadvisorygroup.org/wp-content/uploads/2021/01/RCG_Towards-a-predictable-model_2nd-ed__Final_electronic.pdf

182 Regional Consultative Group: Humanitarian Civil-Military Coordination for Asia and the Pacific. Humanitarian Civil-Military Coordination in Emergencies: Toward a Predictable Model (2020 edition). January 2021. https://humanitarianadvisorygroup.org/wp-content/uploads/2021/01/RCG_Towards-a-predictable-model_2nd-ed__Final_electronic.pdf

183 National Integrated Climate Change Database and Information Exchange System. National Climate Change Action Plan. Accessed 31 August 2021. https://niccdies.climate.gov.ph/action-plans/national-climate-change-action-plan

184 National Economic and Development Authority. Updated Philippine Development Plan (2017-2022). https://pdp.neda.gov.ph/wp-content/uploads/2021/06/6821_Updated-PDP-Brochure_outline.pdf

185 UN OCHA. The Philippine International Humanitarian Assistance (PIHA) guidelines. Philippines Humanitarian Bulletin. Issue 4; May 2018. https://ochaimphil.github.io/Humanitarian-Bulletin/HumBulletinMay2018.html

186 Regional Consultative Group: Humanitarian Civil-Military Coordination for Asia and the Pacific. Humanitarian Civil-Military Coordination in Emergencies: Toward a Predictable Model (2020 edition). January 2021. https://humanitarianadvisorygroup.org/wp-content/uploads/2021/01/RCG_Towards-a-predictable-model_2nd-ed__Final_electronic.pdf

187 Philippine Atmospheric, Geophysical and Astronomical Services Administration. Products and Services. Accessed 8 September 2021. http://www.pagasa.dost.gov.ph/products-and-services

188 Philippine Atmospheric, Geophysical and Astronomical Services Administration. Homepage. Accessed 8 September 2021. http://bagong.pagasa.dost.gov.ph/

189 Monteverde, Maria-Cecilia A., Cinco, Thelma A., and Moron, Lorenzo A. Multi-Hazard Early Warning System (MHEWS) in the

Philippines [PowerPoint]. DOST-PAGASA for the Workshop on Strengthening Early Warning Systems (MHEWS) and Early Actions (EA) in Southeast Asia (SeA), 18-20 February 2020. https://www.unescap.org/sites/default/files/2a_Lorenzo%20Moron_Multi%20Hazard%20Early%20Warning%20System%20in%20the%20Philippines.pdf

190 Philippine Institute of Volcanology and Seismology. The PHIVOLCS FaultFinder. Accessed 8 September 2021. https://www.phivolcs.dost.gov.ph/index.php/information-tool/the-phivolcs-faultfinder

191 Philippine Institute of Volcanology and Seismology. REDAS Activities. Accessed 8 September 2021. https://www.phivolcs.dost.gov.ph/index.php/information-tool/redas

192 HazardHunterPH. About HazardHunterPH. Accessed 8 September 2021. https://hazardhunter.georisk.gov.ph/about-hazardhunterph

193 Joint Publication 3-29. Foreign Humanitarian Assistance. 14 May 2019. Page IV-35. https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp3_29.pdf

194 U.S. Agency for International Development (USAID). Humanitarian Assistance. Accessed 23 March 2021. https://www.usaid.gov/humanitarian-assistance

195 Pacific Disaster Center (PDC Global). About DisasterAWARE. Accessed 23 March 2021. https://www.pdc.org/apps/disasteraware/about-disasteraware/

196 Pacific Disaster Center (PDC Global). Disaster Alert. Accessed 23 March 2021. https://disasteralert.pdc.org/disasteralert/

Pacific Disaster Center (PDC Global). DisasterAWARE Quick Start User Guide, 2019, Version 6.5. https://disasteraware.pdc.org/help/Quick-Start-Guide-DisasterAWARE-screen.pdf

197 Pacific Disaster Center (PDC Global). DisasterAlert™. Accessed 23 March 2021. https://www.pdc.org/apps/disaster-alert/

198 All Partners Access Network (APAN). About Us. Accessed 23 March 2021. https://www.apan.org/pages/about

199 All Partners Access Network (APAN). Solutions. Accessed 23 March 2021. https://www.apan.org/pages/solutions-hadr

200 Climate Bonds Initiative. Green Infrastructure Investment Opportunities: Philippines 2020 Report. https://www.adb.org/sites/default/files/publication/653566/green-infrastructure-investment-philippines-2020.pdf

201 Asian Development Bank. Philippines: Transport Sector Assessment, Strategy, and Road Map. 2012. https://www.adb.org/sites/default/files/institutional-document/33700/files/philippines-transport-assessment.pdf

202 Climate Bonds Initiative. Green Infrastructure Investment Opportunities: Philippines 2020 Report. https://www.adb.org/sites/default/files/publication/653566/green-infrastructure-investment-philippines-2020.pdf

203 Oxford Business Group. Steady progress is under way in the Philippines' transport sector. 2015. https://oxfordbusinessgroup.com/overview/steady-progress-under-way-philippines-transport-sector

204 Manila Airport. Manila Airport – NAIA (MNL). Accessed 12 September 2021. https://www.manila-airport.net/

205 Mactan-Cebu International Airport Authority. MCIA Profile. Department of Transportation, Government of the Philippines. Accessed 12 September 2021. http://mciaa.gov.ph/profile/

206 LogCluster. Philippines Ninoy Aquino International Airport. Accessed 12 September 2021.

https://dlca.logcluster.org/display/public/DLCA/2.2.1+Philippines+Ninoy+Aquino+International+Airport

207 LogCluster. Philippines Aviation. Accessed 12 September 2021. https://dlca.logcluster.org/display/public/DLCA/2.2+Philippines+Aviation; WorldData.info. The 30 largest airports and airlines in the Philippines. Accessed 12 September 2021. https://www.worlddata.info/asia/philippines/airports.php

208 Oxford Business Group. Steady progress is under way in the Philippines' transport sector. 2015. https://oxfordbusinessgroup.com/overview/steady-progress-under-way-philippines-transport-sector

209 Asian Development Bank. Philippines: Transport Sector Assessment, Strategy, and Road Map. 2012. https://www.adb.org/sites/default/files/institutional-document/33700/files/philippines-transport-assessment.pdf

210 LogCluster. Philippines Port Assessment. Accessed 13 September 2021. https://dlca.logcluster.org/display/public/DLCA/2.1+Philippines+Port+Assessment?preview=/852294/34373660/PHL_LCA_PortNetwork_A4P_20191203.png

211 OneOcean Findaport. Manila. Accessed 12 September 2021. https://www.findaport.com/port-of-manila

212 iContainers. Major 5 Ports in Philippines. 30 March 2020. https://www.icontainers.com/us/2020/03/30/top-five-ports-philippines/

213 International Container Terminal Services, Inc. Manila International Container Terminal. Accessed 12 September 2021. https://www.ictsi.com/what-we-do/our-terminals/manila-international-container-terminal

214 World Port Source. Port of Manila: Port Commerce. Accessed 12 September 2021. http://www.worldportsource.com/ports/commerce/PHL_Port_of_Manila_1947.php

215 World Port Source. Port of Subic Bay. Accessed 12 September 2021. http://www.worldportsource.com/ports/review/PHL_Port_of_Subic_Bay_3512.php

216 International Container Terminal Services, Inc. Subic Bay International Terminal Corp. Accessed 12 September 2021. https://www.ictsi.com/what-we-do/our-terminals/subic-bay-international-terminal-corp

217 World Port Source. Port of Iloilo: Port Commerce. Accessed 12 September 2021. http://www.worldportsource.com/ports/commerce/PHL_Port_of_Iloilo_1967.php

218 World Maritime News. ICTSI a Step Closer to Starting Iloilo Port Development. 18 November 2019. https://www.offshore-energy.biz/ictsi-a-step-closer-to-starting-iloilo-port-development/

219 International Container Terminal Services, Inc. South Cotabato Integrated Port Services, Inc. Accessed 12 September 2021. https://www.ictsi.com/what-we-do/our-terminals/south-cotabato-integrated-port-services-inc

220 iContainers. Major 5 Ports in Philippines. 30 March 2020. https://www.icontainers.com/us/2020/03/30/top-five-ports-philippines/

221 Mercurio, Richmond. Newly-expanded Batangas container terminal to help ease port congestion. Philippine Star. 30 April 2019. https://www.philstar.com/business/2019/04/30/1913604/newly-expanded-batangas-container-terminal-help-ease-port-congestion

222 Asian Terminals Incorporated. Batangas Container Terminal. Accessed 13 September 2021. https://www.asianterminals.com.ph/ati_batangascontainer.aspx

223 Philippine Ports Authority. Port of Cagayan de Oro. Accessed 13 September 2021. http://www.pmocdo.ppa.com.ph/port-profile/port-of-cagayan-de-oro/

224 The Maritime Review. The Port of Zamboanga. Accessed 13 September 2021. https://maritimereview.ph/the-port-of-zamboanga/

225 World Port Source. Port of Davao. Accessed 13 September 2021. http://www.worldportsource.com/ports/commerce/PHL_Port_of_Davao_1993.php

226 Davao International Container Terminal, Inc. The Port. Accessed 13 September 2021. https://www.dict.com.ph/the-port

227 International Container Terminal Services, Inc. Davao Integrated Port and Stevedoring Services Corp. Accessed 13 September 2021. https://www.ictsi.com/what-we-do/our-terminals/davao-integrated-port-and-stevedoring-services-corp

228 Cebu Port Authority. The Cebu Port System. Accessed 9 September 2021. https://www.cpa.gov.ph/the-cebu-port-system

229 iContainers. Major 5 Ports in Philippines. 30 March 2020. https://www.icontainers.com/us/2020/03/30/top-five-ports-philippines/

230 Cebu Port Authority via LogCluster. Philippines Port of Cebu. Accessed 12 September 2021. https://dlca.logcluster.org/display/public/DLCA/2.1.4+Philippines+Port+of+Cebu

231 One Ocean Findaport. Cebu. Accessed 12 September 2021. https://www.findaport.com/port-of-cebu

232 SeaRates. Port of Cebu City. Accessed 12 September 2021. https://www.searates.com/port/cebu_city_ph.htm

233 CIA World Factbook. Philippines – Transportation. Accessed 9 September 2021. https://www.cia.gov/the-world-factbook/countries/philippines/#transportation

234 Asian Development Bank. Philippines: Transport Sector Assessment, Strategy, and Road Map. 2012. https://www.adb.org/sites/default/files/institutional-document/33700/files/philippines-transport-assessment.pdf

235 CIA World Factbook. Philippines – Transportation. Accessed 9 September 2021. https://www.cia.gov/the-world-factbook/countries/philippines/#transportation

236 Department of Public Works and Highways. National Road Length by Classification, Surface Type and Condition (Nationwide Summary). 15 October 2020. https://www.dpwh.gov.ph/dpwh/2020%20DPWH%20Road%20and%20Bridge%20Inventory/Road%20Data%202016/index.htm

237 LogCluster. Philippines Road Network. Accessed 9 September 2021. https://dlca.logcluster.org/display/public/DLCA/2.3+Philippines+Road+Network

238 Basilio, Enrico L. State of Trade and Development in the APEC region [PowerPoint presentation]. 6th APEC Transportation Ministerial Meeting (TMM6), 27-29 April 2009, Manila, Philippines. Slide 17. https://images.slideplayer.com/18/6183181/slides/slide_17.jpg

239 Oxford Business Group. Steady progress is under way in the Philippines' transport sector. 2015. https://oxfordbusinessgroup.com/overview/steady-progress-under-way-philippines-transport-sector

240 Global Health Observatory. Estimated road traffic death rate (per 100,000 population). World Health Organization. Accessed 9 September 2021. https://www.who.int/data/gho/data/indicators/indicator-details/GHO/estimated-road-traffic-death-rate-(per-100-000-population)

241 Department of Transportation. Railways Sector. Accessed 13 September 2021. https://dotr.gov.ph/railways-sector.html#pnr-south-long-haul

242 Oxford Business Group. Steady progress is under way in the Philippines' transport sector. 2015. https://oxfordbusinessgroup.com/overview/steady-progress-under-way-philippines-transport-sector

243 Philippine National Railway. PNR Route Map. Accessed 9 September 2021. https://pnr.gov.ph/images/photos/Final_Map2.jpg

244 CIA World Factbook. Philippines – Transportation. Accessed 9 September 2021. https://www.cia.gov/the-world-factbook/countries/philippines/#transportation

245 Department of Education. K to 12 Basic Education Curriculum. Accessed 13 September 2021. https://www.deped.gov.ph/k-to-12/about/k-to-12-basic-education-curriculum/

246 Department of Education. Technology and Livelihood Education (TLE) and Technical-Vocational-Livelihood (TVL) Track. Accessed 13 September 2021. https://www.deped.gov.ph/k-to-12/about/k-to-12-basic-education-curriculum/technology-and-livelihood-education-tle-and-technical-vocational-livelihood-tvl-track/

247 Department of Education. K to 12 Basic Education Curriculum. Accessed 13 September 2021. https://www.deped.gov.ph/k-to-12/about/k-to-12-basic-education-curriculum/

248 Department of Education. History. Accessed 13 September 2021. https://www.deped.gov.ph/about-deped/history/

249 Department of Education. ALS 2.0: About the Program. Accessed 13 September 2021. https://www.deped.gov.ph/about-als/

250 U.S. Embassy in the Philippines. U.S. Government Launches New Project for Out-of-School Youth in the Philippines. 19 August 2020. https://ph.usembassy.gov/us-government-launches-new-project-for-out-of-school-youth-in-the-philippines/

251 Philippine News Agency. Growing number of out-of-school youth 'cause of concern'. 7 February 2021. https://www.pna.gov.ph/articles/1129909

252 Disaster Risk Reduction and Management Service. DRRMS Strategic Plan & Achievements. 9 November 2020. https://www.deped.gov.ph/wp-content/uploads/2020/11/09_TLM_DRRMS-StratPlan_20190709.pdf

253 ASEAN Safe Schools Initiative. School Safety in the Philippines. 1 December 2015. https://aseansafeschoolsinitiative.org/school-safety-in-the-philippines/

254 Disaster Risk Reduction and Management Service. DRRMS Strategic Plan & Achievements. 9 November 2020. https://www.deped.gov.ph/wp-content/uploads/2020/11/09_TLM_DRRMS-StratPlan_20190709.pdf

255 Department of Education. School Disaster Risk Reduction and Management Manual: Booklet 1. http://depedbohol.org/v2/wp-content/uploads/2012/06/DRRM-Manual_Booklet-1_Final-1.pdf

256 Disaster Risk Reduction and Management Service. DRRMS Strategic Plan & Achievements. 9 November 2020. https://www.deped.gov.ph/wp-content/uploads/2020/11/09_TLM_DRRMS-StratPlan_20190709.pdf

257 Department of Education. School Disaster Risk Reduction and Management Manual: Booklet 2. http://depedcapiz.ph/programs/DRRM/lrmds.SDRR%20Manual%20Book%202.pdf

258 CIA World Factbook. Philippines – Communications. Accessed 13 September 2021. https://www.cia.gov/the-world-factbook/countries/philippines/#communications

259 De Rosbo, Sebastien. Philippines' telecom sector weathers the Covid-19 storm. Budde.com. 28 June 2021. https://www.budde.com.au/Research/Philippines-Telecoms-Mobile-and-Broadband-Statistics-and-Analyses

260 Internet World Stats. Internet 2021 Usage in Asia. 30 June 2021. https://www.internetworldstats.com/stats3.htm

261 CIA World Factbook. Philippines – Communications. Accessed 13 September 2021. https://www.cia.gov/the-world-factbook/countries/philippines/#communications

262 Kemp, Simon. Digital 2021: The Philippines. DataRePortal. 11 February 2021. https://datareportal.com/reports/digital-2021-philippines

263 Freedom House. Freedom on the Net: 2020. https://freedomhouse.org/country/philippines/freedom-net/2020

264 Kemp, Simon. Digital 2021: The Philippines. DataRePortal. 11 February 2021. https://datareportal.com/reports/digital-2021-philippines

265 Freedom House. Freedom on the Net: 2020. https://freedomhouse.org/country/philippines/freedom-net/2020

266 Freedom House. Freedom in the World: 2021. https://freedomhouse.org/country/philippines/freedom-world/2021

267 CIA World Factbook. Philippines – Communications. Accessed 13 September 2021. https://www.cia.gov/the-world-factbook/countries/philippines/#communications

268 BBC. Philippines profile – Media. 21 January 2019. https://www.bbc.com/news/world-asia-15527446

269 Freedom House. Freedom in the World: 2021. https://freedomhouse.org/country/philippines/freedom-world/2021

270 Philippine Postal Corporation. https://www.phlpost.gov.ph/

271 Asian Development Bank. Philippines: Energy Sector Assessment, Strategy, and Road Map. October 2018. https://www.adb.org/sites/default/files/publication/463306/philippines-energy-assessment-strategy-road-map.pdf

272 CIA World Factbook. Philippines – Energy. Accessed 2 September 2021. https://www.cia.gov/the-world-factbook/countries/philippines/#energy

273 Asian Development Bank. Philippines: Energy Sector Assessment, Strategy, and Road Map. October 2018. https://www.adb.org/sites/default/files/publication/463306/philippines-energy-assessment-strategy-road-map.pdf

274 Climate Bonds Initiative. Green Infrastructure Investment Opportunities: Philippines 2020 Report. https://www.adb.org/sites/default/files/publication/653566/green-infrastructure-investment-philippines-2020.pdf

275 Manila Times. Pipelines in the pipeline. 3 March 2014. https://www.manilatimes.net/2014/03/03/featured-columns/columnists/pipelines-in-the-pipeline/79789

276 Asian Development Bank. Philippines: Energy Sector Assessment, Strategy, and Road Map. October 2018. https://www.adb.org/sites/default/files/publication/463306/philippines-energy-assessment-strategy-road-map.pdf

277 UN Water. Philippines: UN-Water Country Brief. 8 May 2013. https://www.unwater.org/publications/un-water-country-briefs-philippines/

278 World Health Organization. Global Analysis and Assessment of Sanitation and Drinking Water: Philippines. 2015. https://www.who.int/water_sanitation_health/monitoring/investments/philippines-01-jul-16.pdf

279 CIA World Factbook. Philippines – People and Society. Accessed 9 September 2021. https://www.cia.gov/the-world-factbook/countries/philippines/#people-and-society

280 CIA World Factbook. Philippines – People and Society. Accessed 9 September 2021. https://www.cia.gov/the-world-factbook/countries/philippines/#people-and-society

281 UNICEF Philippines. Sanitation targets are off-track: DOH, WHO and UNICEF ask local governments to invest in sanitation. 19 November 2020. https://www.unicef.org/philippines/press-releases/sanitation-targets-are-track-doh-who-and-unicef-ask-local-governments-invest

282 Asian Development Bank. Philippines: Water Supply and Sanitation Sector Assessment, Strategy, and Road Map. January 2013. https://www.adb.org/sites/default/files/institutional-document/33810/files/philippines-water-supply-sector-assessment.pdf

283 Asian Development Bank. Philippines: Water Supply and Sanitation Sector Assessment, Strategy, and Road Map. January 2013. https://www.adb.org/sites/default/files/institutional-document/33810/files/philippines-water-supply-sector-assessment.pdf

284 Department of Health. National Objectives for Health: Philippines (2017-2022). 2018. https://doh.gov.ph/sites/default/files/health_magazine/NOH-2017-2022-030619-1%281%29_0.pdf

285 World Health Organization. Coronavirus Dashboard: Philippines. Accessed 27 September 2021. https://covid19.who.int/region/wpro/country/ph

286 Department of Health. Updates on COVID-19 Vaccines. Accessed 27 September 2021. https://doh.gov.ph/vaccines

287 Oxford Business Group. A look at the Philippine health sector during and after Covid-19. Philippines 2021. https://oxfordbusinessgroup.com/overview/expanded-coverage-pandemic-response-and-ongoing-challenges-necessitate-collaborative-approach-across

288 Department of Health. WHAT ARE THE LEADING CAUSES OF MORTALITY IN THE PHILIPPINES? Accessed 27 September 2021. https://doh.gov.ph/node/1058

289 Institute for Health Metrics and Evaluation (IHME). Philippines. Accessed 27 September 2021. http://www.healthdata.org/philippines

290 Department of Health. National Objectives for Health: Philippines (2017-2022). 2018. https://doh.gov.ph/sites/default/files/health_magazine/NOH-2017-2022-030619-1%281%29_0.pdf

291 Oxford Business Group. A look at the Philippine health sector during and after Covid-19. Philippines 2021. https://oxfordbusinessgroup.com/overview/expanded-coverage-pandemic-response-and-ongoing-challenges-necessitate-collaborative-approach-across

292 Department of Health. National Objectives for Health: Philippines (2017-2022). 2018. https://doh.gov.ph/sites/default/files/health_magazine/NOH-2017-2022-030619-1%281%29_0.pdf

293 Department of Health. National Objectives for Health: Philippines (2017-2022). 2018. https://doh.gov.ph/sites/default/files/health_magazine/NOH-2017-2022-030619-1%281%29_0.pdf

294 Department of Health. IATF Profile. Accessed 27 September 2021. https://iatf.doh.gov.ph/?page_id=680

295 Department of Health: IATF-EID. National Action Plan. Accessed 27 September 2021. https://iatf.doh.gov.ph/?page_id=815

296 International Association for Medical Assistance to Travellers. Philippines General Health Risks:

Dengue. 30 November 2020. https://www.iamat.org/country/philippines/risk/dengue

297 Undurraga, E. A., Edillo, F. E., Erasmo, J., Alera, M., Yoon, I. K., Largo, F. M., & Shepard, D. S. Disease Burden of Dengue in the Philippines: Adjusting for Underreporting by Comparing Active and Passive Dengue Surveillance in Punta Princesa, Cebu City. The American journal of tropical medicine and hygiene, 96(4), 887–898. 2017. https://doi.org/10.4269/ajtmh.16-0488

298 Outbreak News Today. Dengue fever in Vietnam and the Philippines: Among the most globally so far in 2021. 27 February 2021. http://outbreaknewstoday.com/dengue-fever-in-vietnam-and-the-philippines-among-the-most-globally-so-far-in-2021/

299 International Association for Medical Assistance to Travellers. Philippines General Health Risks:

Dengue. 30 November 2020. https://www.iamat.org/country/philippines/risk/dengue

300 Department of Health. HIV/AIDS & ART REGISTRY OF THE PHILIPPINES. March 2021. https://doh.gov.ph/sites/default/files/statistics/EB_HARP_March_AIDSreg2021.pdf

301 Department of Health. PHILIPPINES ADDRESSES RISING TREND IN NEW HIV INFECTIONS. Accessed 27 September 2021. https://doh.gov.ph/node/10649

302 Calunsod, Ronron. Triumph over leprosy fails to wipe out stigma in Philippines. Kyodo News. 22 December 2019. https://english.kyodonews.net/news/2019/12/0922a49c06fb-focus-triumph-over-leprosy-fails-to-wipe-out-stigma-in-philippines.html

303 Department of Health. National Objectives for Health: Philippines (2017-2022). 2018. https://doh.gov.ph/sites/default/files/health_magazine/NOH-2017-2022-030619-1%281%29_0.pdf

304 Department of Health. NATIONAL LEPROSY CONTROL PROGRAM. 28 October 2018. https://doh.gov.ph/leprosy-control-program

305 Philippine Star. 19 provinces to be declared malaria-free. 28 April 2021. https://www.philstar.com/nation/2021/04/28/2094198/19-provinces-be-declared-malaria-free

306 International Association for Medical Assistance to Travellers. Philippines General Health Risks: Malaria. Accessed 27 September 2021. https://www.iamat.org/country/philippines/risk/malaria

307 Centers for Disease Control and Prevention. Parasites – Schistosomiasis. 11 April 2018. https://www.cdc.gov/parasites/schistosomiasis/index.html

308 Olveda, R. M., & Gray, D. J. (2019). Schistosomiasis in the Philippines: Innovative Control Approach is Needed if Elimination is the Goal. Tropical medicine and infectious disease, 4(2), 66. https://doi.org/10.3390/tropicalmed4020066

309 Department of Health. National Objectives for Health: Philippines (2017-2022). 2018. https://doh.gov.ph/sites/default/files/health_magazine/NOH-2017-2022-030619-1%281%29_0.pdf

310 Department of Health. SCHISTOSOMIASIS CONTROL AND ELIMINATION PROGRAM. 26 October 2018. https://doh.gov.ph/schistosomiasis-control-program

311 Olveda, R. M., & Gray, D. J. (2019). Schistosomiasis in the Philippines: Innovative Control Approach is Needed if Elimination is the Goal. Tropical medicine and infectious disease, 4(2), 66. https://doi.org/10.3390/tropicalmed4020066

312 Asian Development Bank. Philippines: Water Supply and Sanitation Sector Assessment, Strategy, and Road Map. January 2013. https://www.adb.org/sites/default/files/institutional-document/33810/files/philippines-water-supply-sector-assessment.pdf

313 Oxford Business Group. A look at the Philippine health sector during and after Covid-19. Philippines 2021. https://oxfordbusinessgroup.com/overview/expanded-coverage-pandemic-response-and-ongoing-challenges-necessitate-collaborative-approach-across

314 World Health Organization. Coronavirus Dashboard: Philippines. Accessed 28 September 2021. https://covid19.who.int/region/wpro/country/ph

315 Philippines Humanitarian Country Team. Philippines Covid-19 Humanitarian Response Plan Final Progress Report. June 2021. https://reliefweb.int/sites/reliefweb.int/files/resources/210802_COVID-19%20Philippines%20HRP%20Final%20Report.pdf

316 Philippines Humanitarian Country Team. Covid-19 Humanitarian Response Plan: Philippines. August 2020. https://reliefweb.int/sites/reliefweb.int/files/resources/200804%20COVID-19%20Philippines%20HRP%20August%20Revision.pdf

317 Philippines Humanitarian Country Team. Philippines Covid-19 Humanitarian Response Plan Final Progress Report. June 2021. https://reliefweb.int/sites/reliefweb.int/files/resources/210802_COVID-19%20Philippines%20HRP%20Final%20Report.pdf

318 Philippines Humanitarian Country Team. Covid-19 Humanitarian Response Plan: Philippines. August 2020. https://reliefweb.int/sites/reliefweb.int/files/resources/200804%20COVID-19%20Philippines%20HRP%20August%20Revision.pdf

319 Philippines Humanitarian Country Team. Covid-19 Humanitarian Response Plan: Philippines. August 2020. https://reliefweb.int/sites/reliefweb.int/files/resources/200804%20COVID-19%20Philippines%20HRP%20August%20Revision.pdf

320 Philippines Humanitarian Country Team. Philippines Covid-19 Humanitarian Response Plan Final Progress Report. June 2021. https://reliefweb.int/sites/reliefweb.int/files/resources/210802_COVID-19%20Philippines%20HRP%20Final%20Report.pdf

321 World Health Organization. Non-Communicable Diseases (NCD) Country Profile: Philippines, 2018. https://www.who.int/nmh/countries/2018/phl_en.pdf

322 Department of Health. INVESTMENT IN NON-COMMUNICABLE DISEASES PREVENTION AND CONTROL WILL SAVE LIVES AND CONTRIBUTE TO THE PHILIPPINES SAVING UP TO 4.8% OF ANNUAL GDP. 29 October 2019. https://doh.gov.ph/press-release/investment-in-non-communicable-diseases-prevention-and-control-will-save-lives-and-contribute-to-the-Philippines-saving-up-to-4.8%25-of-annual-GDP

323 Philippine Statistics Agency. Land Transport Accidents. 2017. https://psa.gov.ph/system/files/land%20transport%20deaths%20-%20posted%20nov15.pdf?width=950&height=700&iframe=true

324 Philippine Statistics Agency. Causes of Deaths in the Philippines (Preliminary): January to December 2020. 16 March 2021. https://psa.gov.ph/content/causes-deaths-philippines-preliminary-january-december-2020

325 Department of Health. National Objectives for Health: Philippines (2017-2022). 2018. https://doh.gov.ph/sites/default/files/health_magazine/NOH-2017-2022-030619-1%281%29_0.pdf

326 Philippine Statistics Agency. Causes of Deaths in the Philippines (Preliminary): January to December 2020. 16 March 2021. https://psa.gov.ph/content/causes-deaths-philippines-preliminary-january-december-2020

327 Department of Health. National Objectives for Health: Philippines (2017-2022). 2018. https://doh.gov.ph/sites/default/files/health_magazine/NOH-2017-2022-030619-1%281%29_0.pdf

328 Department of Health. National Objectives for Health: Philippines (2017-2022). 2018. https://doh.gov.ph/sites/default/files/health_magazine/NOH-2017-2022-030619-1%281%29_0.pdf

329 Oxford Business Group. A look at the Philippine health sector during and after Covid-19. Philippines 2021. https://oxfordbusinessgroup.com/overview/expanded-coverage-pandemic-response-and-ongoing-challenges-necessitate-collaborative-approach-across

330 Department of Health. National Objectives for Health: Philippines (2017-2022). 2018. https://doh.gov.ph/sites/default/files/health_magazine/NOH-2017-2022-030619-1%281%29_0.pdf

331 Gepte, Diana Francesca. Medical Education in the Philippines. Medical Information Research Center Global. 24 June 2018. https://www.mricg.info/single-post/2018/06/24/medical-education-in-the-philippines

332 Peace Women.org. National Action Plan on Women, Peace, and Security 2017-22. http://1325naps.peacewomen.org/wp-content/uploads/2020/12/Philippines_20172022NAP.pdf

333 Global Gender Gap Report 2021. Insight Report. March 2021. https://www3.weforum.org/docs/WEF_GGGR_2021.pdf

334 Congressional Policy and Budget Research Department. Facts in Figures: World Risk Index 2020. House of Representatives. March 2021 (No. 20). https://cpbrd.congress.gov.ph/images/PDF%20Attachments/Facts%20in%20Figures/FF2021-20_World_Risk_Index_2020.pdf

335 Eckstein, David; Künzel, Vera, and Laura Schäfer. Global Climate Risk Index 2021: Who Suffers Most from Extreme Weather Events? Weather-Related Loss Events in 2019 and 2000-2019. Germanwatch. January 2021. https://reliefweb.int/sites/reliefweb.int/files/resources/Global%20Climate%20Risk%20Index%202021_1_0.pdf

336 World Vision. 2013 Typhoon Haiyan: Facts, FAQs, and how to help. 9 November 2018. https://www.worldvision.org/disaster-relief-news-stories/2013-typhoon-haiyan-facts

337 Climate Bonds Initiative. Green Infrastructure Investment Opportunities: Philippines 2020 Report. https://www.adb.org/sites/default/files/publication/653566/green-infrastructure-investment-philippines-2020.pdf

338 National Disaster Risk Reduction and Management Council. National Disaster Risk Reduction and Management Plan (NDRRMP) 2011-2028. https://ndrrmc.gov.ph/attachments/article/41/NDRRM_Plan_2011-2028.pdf

339 Punay, Edu. Senate prodded on bill creating disaster resilience department. Philippine Star. 10 July 2021. https://www.philstar.com/headlines/2021/07/10/2111404/senate-prodded-bill-creating-disaster-resilience-department

340 UN OCHA. Philippines: Tropical Cyclone Anticipatory Action. 26 August 2021. https://reliefweb.int/report/philippines/philippines-tropical-cyclone-anticipatory-action

341 Regional Consultative Group: Humanitarian Civil-Military Coordination for Asia and the Pacific. Humanitarian Civil-Military Coordination in Emergencies: Toward a Predictable Model (2020 edition). January

2021. https://humanitarianadvisorygroup.org/wp-content/uploads/2021/01/RCG_Towards-a-predictable-model_2nd-ed__Final_electronic.pdf

342 Exercise Balikatan Facebook Page. 12 April 2021 Post. https://www.facebook.com/exercisebalikatan

343 CFE-DMHA.org. CFE-DM News. April 2021. https://www.cfe-dmha.org/LinkClick.ax?fileticket=WTr53M6soOk%3D344 Republic of the Philippines Philippine Consulate General. Honolulu, Hawaii. New AFP Chief of Staff Gen. Noel s. Clement visits Hawaii, calls on Philippine Consul General. Press Release 87-2019. https://honolulupcg.dfa.gov.ph/consulate-news/296-new-afp-chief-of-staff-lt-gen-noel-s-clement-visits-hawaii-calls-on-philippine-consul-general

345 CFE-DM Facebook Post. October 24, 2019. https://www.facebook.com/cfedmha/posts/1389266111238623

346 U.S. Indo-Pacific Command. U.S. and Philippine Armies Launch Exercise Salaknib 19. February 17, 2019. U.S. and Philippine Armies Launch Exercise Salaknib 19

347 CFE-DM Facebook Post. July 2, 2018. https://www.facebook.com/cfedmha/photos/a.378493085649269/1031077643724140

348 U.S. Pacific Command. 2017. U.S. and Philippine Armies Refine Skills during SALAKNIB Practical Exercise.

http://www.pacom.mil/Media/News/News-Article-View/Article/1382254/us-and-philippine-armies-refine-skillsduring-salaknib-practical-exercise/

349 U.S. Pacific Command. 2017. U.S., Philippine Airmen Join Forces for Pacific Responder 17. http://www.pacom.mil/Media/News/News-Article-View/Article/1346020/usphilippine-airmen-join-forces-for-pacific-responder-1

350 U.S. Pacific Command. 2017. Exercise KAMANDAG begins in the Philippines. http://www.pacom.mil/Media/

News/News-Article-View/Article/1331713/exercise-kamandag-begins-in-the-philippines/

351 U.S. Pacific Command. 2017. Philippines, U.S. Begin Balikatan 2017 with Opening Ceremony. http://www.pacom.mil/Media/News/News-Article-View/Article/1176795/philippines

352 U.S. Pacific Command. 2016. Philippine Amphibious Landing Exercise 33 Opening Ceremony. http://www.pacom.mil/Media/News/News-Article-View/

Article/967470/philippine-amphibious-landing-exercise33-opening-ceremony/

353 CFE-DM Facebook Post. May 19, 2017. https://www.facebook.com/cfedmha/photos/a.378493085649269/805628312935742

354 CFE-DM Facebook Post April 8, 2016. https://www.facebook.com/cfedmha/photos/a.378493085649269/592382310927011

355 PACOM. 2015. US Marines, Filipino Forces Begin Partnership Exercise. http://www.pacom.mil/Media/News/Article/621708/us-marines-filipino-forces-beginpartnership-exercise/

356 PACOM. 2015. Multinational Communications Interoperability Program Planning Staff Workshop 1 Held in Papua New Guinea. http://www.pacom.mil/Media/News/Article/672168/multinational-communicationsinteroperability-program-planning-staff-workshop-1/

357 PACOM. 2015. PH, US Concluded Participation in Tempest Express-27 Multinational Staff Planning

Workshop. http://www.pacom.mil/Media/News/Article/612322/ph-us-concluded-participation-i

358 PACOM. 2015. Military Exercises Begin in Ukraine, Philippines. http://www.pacom.mil/Media/News/Article/586184/military-exercises-begin-in-ukraine-philippines/

359 CIA.gov. The World Factbook. Philippines. East Asia/Southeast Asia. Page last updated September 27, 2021. https://www.cia.gov/the-world-factbook/countries/philippines/#government

360 Council on Foreign Relations. Global Conflict Tracker. Last updated October 8, 2021. https://www.cfr.org/global-conflict-tracker/conflict/territorial-disputes-south-china-sea

361 ABSCBN News. PH-US Mutual Defense Treaty needs comprehensive review. David Brunnstrom and Karen Lema, Reuters. September 9, 2021. https://news.abs-cbn.com/news/09/09/21/mutual-defense-treaty-needs-comprehensive-review-dnd

362 U.S. Department of State. U.S. Relations with the Philippines. Bilateral Relations Fact Sheet. January 21, 2020. https://www.state.gov/u-s-relations-with-the-philippines/

363 UN Peace Operations. Contributions of Uniformed Personnel to UN by Country, Mission, and Personnel Type. 31 July 2021. https://peacekeeping.un.org/sites/default/files/03_country_and_mission_40_july2021.pdf

364 U.S. Department of State. Philippines International Travel Information. Accessed 23 August 2021. https://travel.state.gov/content/travel/en/international-travel/International-Travel-Country-Information-Pages/Philippines.html

365 XE. Currency Converter. Accessed 23 August 2021. https://www.xe.com/currencyconverter/convert/?Amount=1&From=USD&To=PHP

366 CDC. Travelers' Health: Philippines. Accessed 23 August 2021. https://wwwnc.cdc.gov/travel/destinations/traveler/none/philippines?s_cid=ncezid-dgmq-travel-single-001

367 PreventionWeb.net. Chart of the Sendai Framework for Disaster Risk Reduction 2015-2030. http://www.preventionweb.net/files/44983_sendaiframeworkchart.pdf

368 UNISDR. Sendai Framework for Disaster Risk Reduction. https://www.unisdr.org/we/coordinate/sendai-framework

369 PreventionWeb.net. Chart of the Sendai Framework for Disaster Risk Reduction 2015-2030. http://www.preventionweb.net/files/44983_sendaiframeworkchart.pdf

370 UNISDR. Sendai Framework for Disaster Risk Reduction. https://www.unisdr.org/we/coordinate/sendai-framework

371 PreventionWeb.net. Chart of the Sendai Framework for Disaster Risk Reduction 2015-2030. http://www.preventionweb.net/files/44983_sendaiframeworkchart.pdf

372 Republic of the Philippines. Department of Foreign Affairs. Ph Gov't, Civil Society Join Hands to Support Sendai Framework for Disaster Risk Reduction. https://dfa.gov.ph/dfa-news/news-from-our-foreign-service-postsupdate/17259-ph-gov-t-civil-society-join-hands-to-support-sendai-framework-for-disaster-risk-reduction

373 UNISDR. Disaster Risk Reduction in the Philippines. Status Report 2019. https://www.unisdr.org/files/68265_682308philippinesdrmstatusreport.pdf

374 PreventionWeb.Net. Philippines National Progress Report on the Implementation of the Hyogo Framework for Action (2013-2015). April 23, 2015. https://www.preventionweb.net/files/43379_PHL_NationalHFAprogress_2013-15.pdf

375 CIA World Factbook. Philippines. Accessed 23 August 2021. https://www.cia.gov/the-world-factbook/countries/philippines/



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