



Oscar M. Lopez Center

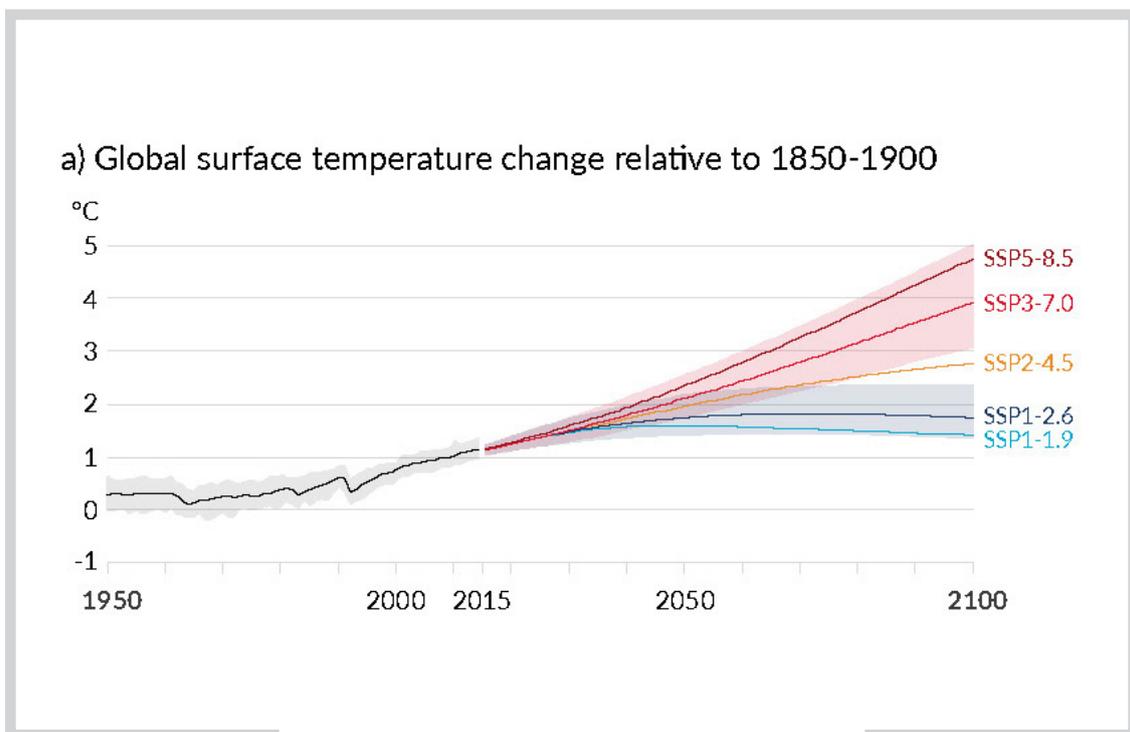
Science for Climate Resilient Communities

BUSINESS IMPLICATIONS OF IPCC AR6 WG1

The Intergovernmental Panel on Climate Change's (IPCC) Working Group Report 1 Sixth Assessment Report (WG1 AR6)

has made it unequivocally clear that humans are the leading cause of the unprecedented warming of the atmosphere, ocean and land. Global surface temperatures have already increased by 1.07 °C than preindustrial times (1850-1900) bringing us even closer to the 1.5 °C threshold, when scientists predict irreversible tipping points, such as ocean warming, Greenland glacial melting, and sea level rise, will be crossed. Given the findings of WG1 AR6, irreversible changes to our climate system are already happening and will continue to accelerate.

All scenarios¹ outlined by WG1 AR6 project that global surface temperatures will cross the 1.5 °C threshold by 2040-2060, putting humanity on a path of 1.6 °C at best and as much as 2.4 °C under a business-as-usual (BAU) scenario. The climate impacts we are witnessing today are the result of only 1.07 °C warming.



As global surface temperature continues to rise, so does the extent of the changes in the climate system. This equates to more frequent and more intense extreme events such as hot extremes, marine heat waves and heavy precipitation, agricultural droughts, and sea ice and snow cover reductions.

¹All projection estimates for each scenario are expressed with a certain level of confidence. The level of confidence is used to synthesize the author teams' judgements on the **validity of findings** based on the evaluation of **evidence and agreement**. *Low* and *very low confidence* do not mean distrust in the data, but simply imply that it is the best conclusion derived from currently available knowledge.

CLIMATE PROJECTIONS IN WG1 AR6 AND PHILIPPINE BUSINESSES

**THE PHILIPPINES
CONSISTENTLY
RANKS AMONG THE
MOST AFFECTED BY
EXTREME WEATHER
EVENTS LINKED TO
CLIMATE CHANGE.**

Its geographic location, as well as archipelagic structure exposes the country to an average of 20 tropical cyclones annually, about half of which hit land. The country is highly vulnerable to climate-related natural hazards such as storm surges, floods and landslides. To compound matters, about 60% of the country's population are found along coastlines exposing them to slow onset impacts such as sea level rise. (you may find more information on the implications to the Philippines [here](#))

Not surprisingly, Philippine businesses are already suffering from the physical, and to a lesser extent (for now), the transitional risks of climate change. What has become increasingly clear is that climate change is no longer a peripheral risk treated with varying materiality but rather an uncertain terrain that businesses must align their strategies to. With climate change impacts expected to intensify, enterprise risk management, as well as strategic planning processes must be viewed through a climate lens and incorporate longer time horizons.

The good news is that there is a growing wealth of information and tools available for businesses to make more climate-informed decisions. The WG1 AR6 provides a logical starting point for businesses to plan for a whole range of different scenarios and their accompanying possibilities. To contextualize the impacts of climate change in the Philippines, the OML Center produces a number of publications that elucidates climate risk information to support climate-resilient decision making.

The OML Center together with the First Philippine Holdings Corporation (FPH) conducted an initial study to understand the physical risks of climate change to select industries in the Philippines. The information below is a synthesis of the implications of AR6 on the Philippines, as well as some of the findings from the OML Center and FPH's study on climate change's physical risks to business.

Risk / Hazard	Impact to Philippines	Potential Impacts to Business
 <p>Sea Level Rise¹</p>	<p>Under the business as usual (BAU) scenario, relative to the 1995-2014 baseline, global sea levels are expected to rise by about 0.77 m at a rate of 12.1 mm/year by 2100. According to IPCC, over the next 2,000 years, global mean sea level will rise by around 2 to 3 m if warming is limited to 1.5 °C, but may rise to 2 to 6 m and 19 to 22 m with 2 °C and 5 °C, respectively.</p> <p>IPCC noted, however, that relative sea levels around Asia have increased faster than the global average as exacerbated by coastal area loss and shoreline retreat (IPCC WG1 AR6, 2021).</p> <p>Under the same BAU scenario, sea level projections of Southeast Asian countries, including the Philippines, range from 0.63 to 1.89 m at a rate of 11.3 to 24.5 mm/year by 2100 at <i>medium confidence</i> (IPCC WG1 AR6, 2021).</p> <p>The sea level of Manila Bay has already increased by 0.80 m from 1947 to 2012 and is projected to further increase by half a meter more by mid-century and up to 1.33 m by 2100 under the highest emissions scenario.</p> <p>Similarly, Legaspi, Cebu, and Davao are</p>	 <p>Assets located near coasts and in flood-prone areas may experience business disruptions because of inundation.</p> <p>Slow-onset sea level rise may decrease coastal and in-land asset values.</p>

¹ The Oscar M. Lopez Center has an ongoing study on sea level rise and its impacts to the Philippines. The project aims to help equip decision-makers in select coastal cities in the Philippines by providing more localized SLR data and projections, to enable communities to effectively adapt to climate change, specifically taking into account the impacts of future sea level rise.

Risk / Hazard	Impact to Philippines	Potential Impacts to Business
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Sea Level Rise

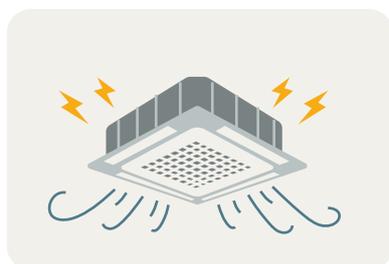
expected to reach 0.98 m, 0.78 m, and 0.81 m respectively by the year 2050 at the highest emission scenario at **medium confidence** (Reyes & Blanco, 2012; IPCC WG1 AR6, 2021).

Projected increase in sea level may induce higher storm surges during intense typhoon events. Coastal areas in Central Visayas (Samar, Leyte, Iloilo), Southern Luzon (Bicol, Manila, Bulacan) and North Eastern Mindanao (Surigao) are the most vulnerable to **high storm surges** (Lapidez et al, 2015).

Sea level rise is also expected to accelerate coastal erosion, shoreline retreat, wetland flooding, saltwater intrusion, and biodiversity and habitat loss (IPCC WG1 AR6, 2021).



Increased temperatures



The country has been experiencing hotter-than-normal temperatures since 1996. In 2019, a temperature anomaly of 1.7 °C was recorded in Guiuan, Eastern Samar, the highest recorded throughout the country. This was followed by Cotabato City and Dipolog both with 1.6°C anomaly (SPC 2019).

With the projected average mean temperature increase of **1.2 - 2.3 °C** by mid-century in the country, a continuous increase in the number of hot days and warm nights is expected under the highest emissions scenario (PAGASA, 2021).

Workers face a higher risk of heat strokes, colds and fevers, which could affect overall productivity.

Warmer temperatures may increase power demand for cooling services (**Ministry of Environment Government of Japan, 2019**), which could lead to higher operational costs.

Warmer temperatures may result in faster wear and tear of equipment, resulting in higher costs and the need for more frequent replacement (**University of Cambridge, 2014 (b)**)

Impact

Impact to Philippines

Potential Impacts to Business



Reduced rainfall for some regions; extreme rainfall events for others

Global models project wetter conditions over the equatorial Pacific, parts of the monsoon regions and the high latitudes, while drier conditions are projected over parts of the subtropics and the tropics (IPCC AR6 WG1, 2021).

For the Philippines, a **general drying trend** is projected, with some localized extreme rainfall “wet spots”. Under the BAU scenario, rainfall decreases of as much as 600 mm throughout the country by the mid-century is expected. By the end of the century, while the projected decrease in annual rainfall will be more widespread and severe, extreme rainfall events are also projected over north Luzon, Bicol region and western Mindanao (PAGASA, 2021).

Projected increase in dry days could lead to water scarcity on days when consumer demand is high.

Both reduced rainfall and extreme rainfall events may result in agricultural damage and productivity losses.



Extreme Events:

- Tropical cyclones
- Extreme Heat
- Unprecedented compound extreme events

The number of TCs that make landfall may decrease, but the intensity of TCs will be greater (IPCC AR6 WG1, 2021).

Rising sea level also worsens storm surge hazards during intense typhoon events.

Extreme heating events coinciding with an El Niño event increase the risk of forest fires and agricultural damages (IPCC AR6 WG1, 2021).



TCs may affect power and communication infrastructures, which has an effect in lowering operational efficiency.

Extreme heat events increased consumer demand for energy.

Impact	Impact to Philippines	Potential Impacts to Business
 <p>Extreme Events:</p> <ul style="list-style-type: none"> • Tropical cyclones • Extreme Heat • Unprecedented compound extreme events 	 <p>Aside from the complications of the current pandemic, multiple extreme events of either different or similar types occurring simultaneously or in succession are also expected to be more probable and severe (IPCC AR6 WG1, 2021).</p>	<p>Extreme events may also cause:</p> <ul style="list-style-type: none"> • Physical damage to equipment and property (United States Department of Energy Office of Policy and International Affairs, & National Renewable Energy Laboratory (US DOE-PI & NREL), 2013) • Supply chain disruption and availability and access to raw materials (United Nations Industrial Development Organization (UNIDO), 2015) • Operational delays and adverse effects on labour productivity. (University of Cambridge, 2014 (b))
<p>Cross-cutting</p>		<p>Changing climate patterns will have a direct effect on infrastructure integrity and may also have indirect adverse impacts on asset values and changing customer preferences (Kahana et al.)</p>

BUILDING CLIMATE RESILIENCE

THE RUNWAY TO THE 2030 GOAL POST IS SHRINKING,
THE YEAR IN WHICH MANY GLOBAL DEVELOPMENTAL
COMMITMENTS ARE DUE.

The actions we take in the next eight to ten years will be definitive in shaping the world for businesses and the stakeholders who depend on them. But understanding the physical risks brought about by climate change and responding to them will not be enough. The WG1 AR6 has underscored the different futures we face between a 1.5 °C and 2 °C world. It is therefore imperative that we not only brace for impact but make deep and rapid cuts to our carbon-intensive economies towards a decarbonized world.

A people's initiative named **AKO ANG BUKAS** provides a localized carbon calculator for individuals and organizations, including businesses, as part of its efforts to involve all sectors nationwide in taking urgent, concerted action to address the climate crisis. The calculator helps assess which among individual regular activities, or in the case of businesses where in the

value chain, has the highest potential for carbon avoidance and reduction. There is a hierarchy of actions that can be done:

a) avoid carbon intensive activities, b) shift to low carbon technologies like renewable energy or low carbon fuel from gasoline to biofuel, and c) participate in restoring or reforesting open areas as plants use carbon to produce their food.

While the risks and impacts of climate change seem insurmountable as it looms over us, it also offers us opportunities to transform the paradigm we are living in and shift it towards one that is regenerative, in that it heals our relationship with all aspects of nature and the planet. We have to come to terms with the notion that life, as we know it, is no longer a viable option going forward. Building back and going back to a system that has shown us our/its failures should not be difficult to

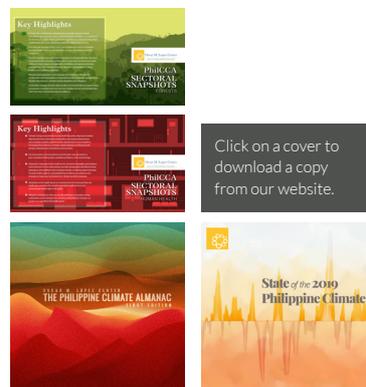


comprehend. Not only does this make business sense into the future but also provides a pathway for a more just and inclusive economy for future Filipinos...

(OML Center) is a climate change research foundation focused on adaptation and actionable climate science.

The IPCC's Sixth Assessment Report (AR6) comprises three Working Group contributions: Working Group 1 (the physical science basis), Working Group 2 (impacts, adaptation and vulnerability), and Working Group 3 (mitigation), a Synthesis Report, three Special Reports, and a refinement to its latest Methodology Report. The Synthesis Report will be the last of the AR6 products, currently due for release in 2022.

The First Philippine Holdings Corporation (FPH) is a Philippine-based conglomerate with principal interests in clean and renewable energy, premium real estate, manufacturing, construction, healthcare and education. The Oscar M. Lopez Center





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