

CLIMATE CHANGE Global Risk Background Paper

"Climate change knows no borders. It will not stop before the Pacific Islands and the whole of the international community has to shoulder a responsibility to bring about a sustainable development."

– Angela Merkel, Chancellor of the Federal Republic of Germany

Introduction

Considered by many to be one of the most significant threats facing the international community today, **climate change** poses a range of potentially serious risks to human societies.¹ Based upon the work of hundreds of scientists around the world, the **United Nations' Intergovernmental Panel on Climate Change (IPCC)** has concluded that the steady rise of **greenhouse gas emissions (GHGs)** in the Earth's atmosphere is influencing global climate conditions. By some estimates, if left unchecked, the atmosphere's concentration of greenhouse gases could double by the end of the century.²

Researchers believe that these changes to the climate are impacting our planet's **global commons**—the oceans, atmosphere, and climate system—thereby threatening the long-term health of the earth's **biophysical and ecological systems**. Consequently, these changes could also pose a variety of economic, political, and diplomatic challenges, with consequences for all spheres of human activity. For example, changing weather patterns or water crises can cause **desertification** and food shortages that could trigger or worsen domestic or regional conflicts, humanitarian challenges, and **large-scale involuntary migration**, especially in politically unstable countries and fragile areas³. Therefore, the failure to develop effective strategies to prevent climatic changes (**mitigation**) and to adjust to the result of these shifts (**adaptation**), as well as to ignore proposals that employ technologies that are intentionally designed to counteract the climate effects of past emissions (**climate remediation or geoengineering**) could impose a steep cost on populations and economies, especially for those living in **developing countries**.



A boy pulls a cow through a dry paddy field in India.
Source: Deutsche Welle.

¹ This briefing paper is prepared for a student simulation to draft resolutions on climate change under the auspices of the United Nations. As such, this paper does not address nor analyze the diversity of public, government, media and/or corporate opinion as to whether human-caused climate change exists. Among citizens of 39 countries surveyed, Americans, whose opinions on climate change are sharply drawn along political and ideological lines, remain among the least concerned about the threat posed by climate change. The Middle East comes in a close second. This contrasts to most populations around the globe, including Canada, Europe, the Asia/Pacific region, Latin America and Africa, where the majority of public opinion considers climate change to be a major threat to global health and national security ([Pew Research Global Attitudes Project, June 24, 2014](#); [Pew Research Center, November 11, 2013](#); [Pew Research, Center for People and the Press, November 1, 2013](#)).

² "Future of Climate Change." United States Environmental Protection Agency. 2013.

³ "The Global Risks Report 2017." World Economic Forum. 2017.

Nonetheless, efforts to reach an international agreement on strategies to confront climate change have proven to be extremely challenging as nations have often protected and pursued their own interests. Moreover, while roughly 15 to 20 countries account for 75 percent of all global greenhouse emissions, no one country accounts for more than 26 percent of the global total.⁴ Consequently, cutting greenhouse gas emissions requires broad cooperation between countries, as well as innovative solutions by governments, businesses, and individuals, alike.

Defining Climate Change

Climate change refers to any distinct and measureable change in the climate that lasts for a long period of time, generally decades or longer.⁵ Examples of climate change can be seen in the sustained shifts in the average global temperature, **precipitation patterns**, size of glaciers, sea ice coverage, and wind patterns. Causes of climate change include natural sources, like volcanic activity, shifts in the sun's energy, and/or ocean circulations⁶, as well as some naturally occurring greenhouse gases. Human activities that most scientists believe affect the Earth's climate include the burning of **fossil fuels** (primarily coal, petroleum/oil, and natural gas) and land development (e.g., **deforestation**, rapid **urban development**).

Measuring the Rate of Change⁷

The international scientific community continues to build complex computer models designed to reflect the changes in the Earth's atmosphere, the rate of change, and the resulting consequences to human health. These models suggest that the concentration of greenhouse gases in the atmosphere has been gradually increasing, putting the Earth on a path to warm approximately 4.5° Fahrenheit (approx. 2.5° Celsius) by 2050.⁸

Global greenhouse gas emissions continue to grow, currently by about 52 billion tonnes of CO2 equivalent per year⁹, even though the share from industrial and energy sources may be peaking as investment and innovation in green technology increases. The year 2016 has been confirmed the warmest on record according to analysis by the World Meteorological Organisation.¹⁰ It was the first time the global average temperature was 1.8° Fahrenheit (1° Celsius) or more above the 1880–1999 average. According to the National Oceanic and Atmospheric Administration (NOAA), each of the eight months from January through August 2016 were the warmest each month has been in the whole 137 year record.¹¹

Impact of Climate Change

Researchers conclude that a gradual rise in the atmosphere's average temperature may lead to more extreme weather events, including drought, flooding, heat waves, and hurricanes. Regardless of a nation's wealth, these changes could disrupt our environment and way of life now and in the future. Some of the most significant changes to our global commons include:

- **Rising Sea Levels** – Rising sea levels in wealthy and developing places, like New York City and Dhaka, Bangladesh, respectively, present a dangerous threat to millions of people. As ocean

⁴ ["Each Countries Share of CO2 Emissions."](#) *Union of Concerned Scientist*. 2011.

⁵ ["Glossary of Climate Change Terms."](#) *Environmental Protection Agency*. 2016.

⁶ Through a process called thermohaline, the oceans currents redistribute large amounts of heat around the planet. Pattern changes in thermohaline circulation can cause abrupt changes in the climate ([Potsdam Institute for Climate Impact Research](#)).

⁷ This section has been adapted from the *World Economic Forum's "The Global Risks Report 2017."*

⁸ ["Major Greenhouse Gas Reductions Needed by 2050: IPCC."](#) *Climate Central*. 2014.

⁹ ["The Emissions Gap Report."](#) *United Nations Environment Programme (UNEP)*. 2016.

¹⁰ ["Provisional WMO Statement on the Status of the Global Climate in 2016."](#) *World Meteorological Organization (WMO)*. 2016.

¹¹ ["August marks ongoing rend of record-breaking heat for the globe."](#) *National Oceanic and Atmospheric Administration (NOAA)*. 2016.

waters warm and glaciers melt, sea-levels will likely rise. This would affect nearly half of the world's population as 44% of people live within 150 kilometers (93 miles) of the ocean.¹² Places as diverse as Canada, India, Denmark, Nigeria, and Indonesia would be tremendously impacted, with long term effects on population, economics, and energy.

- **Extreme Weather** – In the Caribbean and **Southeast Asia**, as well as other places around the world, hurricanes, cyclones, blizzards, tornados, droughts, and other forms of extreme weather have increased in severity and frequency in the past decade. This will likely result in more flooding, destroyed infrastructure, damaged crops, and the loss of human life.
- **Changing Precipitation Patterns** – Climate change will likely result in an increase in the number of droughts and floods. For countries in **sub-Saharan Africa** and the Middle East, unpredictable precipitation patterns would have a great impact on agriculture and farming, disrupting millions of lives and livelihoods.
- **Higher Temperatures** – A warmer earth would impact many aspects of life, especially with population growth and urbanization. Higher temperatures would likely increase the number of forest fires and lead to greater **food insecurity** and **water scarcity**.

Humanitarian & Economic Risks¹³

Policy experts predict that, if left unchecked, increased frequencies of extreme weather conditions will affect international food security, water supply, global health, and future wars and conflicts. Therefore, all nations will likely experience climate change in some shape or form. However, those living in the developing regions of the world, most in the **Global South** (for example, Guatemala, Laos, Angola, and Yemen), could potentially be the most severely affected.¹⁴

The latest analysis by the UN High Commissioner for Refugees (UNHCR) estimates that, on average, 21.5 million people have been displaced by climate- or weather-related events each year since 2008,¹⁵ and the UN Office for Disaster Risk Reduction (UNISDR) reports that close to 1 billion people were affected by natural disasters in 2015.¹⁶ Communities from Alaska to Fiji have already been relocated or are making plans to do so because the rising sea level threatens their lands.¹⁷ The World Bank forecasts that water stress could cause extreme societal stress in regions such as the Middle East and Africa's Sahel,¹⁸ where the economic impact of water scarcity could put at risk 6% of **GDP** by 2050.¹⁹ The World Bank also forecasts that water availability in cities could decline by as much as two thirds by 2050, as a result of climate change and competition from energy generation and agriculture. The Indian government advised that at least 330 million people were affected by drought in 2016.²⁰ The combination of risks around water scarcity, climate change, extreme weather events and involuntary migration remains a dangerously, disruptive mix and a "risk multiplier," especially in the world economy's more fragile regions and nations.

Economically, damage to property and infrastructure, disruption in work and productivity, increased migration, threats to **international security**, and unreliable energy are all problematic effects of a changing climate. As different regions and countries around the world will face differences in the type and

¹² "2012 State of the Climate: Global Sea Level." *National Oceanic and Atmospheric Administration (NOAA)*. 2013.

¹³ This section has been adapted from the *World Economic Forum's "The Global Risks Report 2017."*

¹⁴ "Climate change will hit poor countries hardest, study shows." *The Guardian*. 2013.

¹⁵ "Warsaw International Mechanism Executive Committee (WIM ExCom) Work Plan Action Area 6 on Migration, Displacement and Human Mobility." *United Nations High Commissioner for Refugees (UNHCR)*. 2016.

¹⁶ "2015 disasters in numbers." *Center for Research on Epidemiology of Disasters (CRED)*. 2016

¹⁷ For information on relocation plans for Alaska, see "Thomson Reuters Foundation News." 2016; For Fiji, see "Climate Home News." 2014.

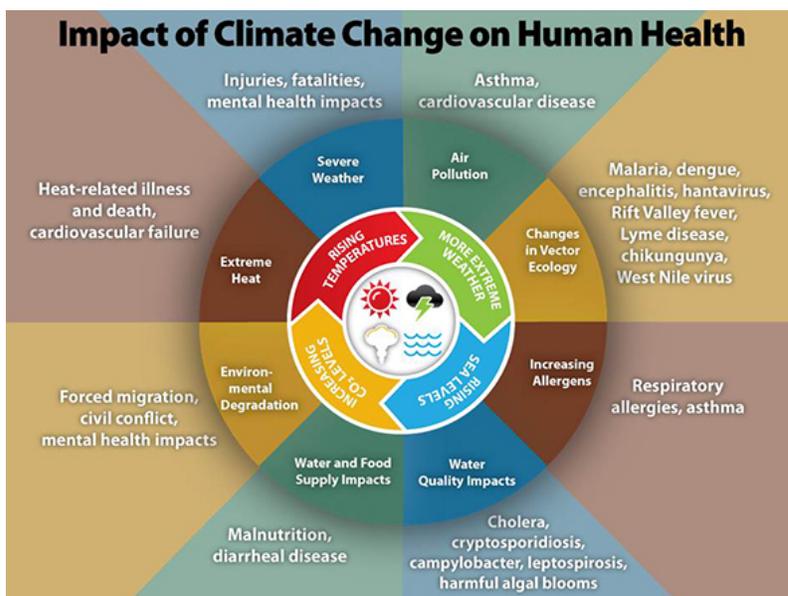
¹⁸ The Sahel is the ecoclimatic and biogeographic zone of transition in Africa between the Sahara to the north and the Sudanian Savanna to the south.

¹⁹ "Beyond conflict, water stress contributed to Europe's migration crisis." *Water Resources Institute Blog*. 2015; "High and Dry: Climate Change, Water, and the Economy." *World Bank*. 2016.

²⁰ "India drought: 330 million people affected." *BBC News*. 2016.

severity of environmental consequences, the same is true for how climate change will impact economic systems of production, resource allocation, and the distribution of goods and services.

In a recent poll of over 750 experts conducted by the **World Economic Forum**, a catastrophe caused by climate change was viewed as the biggest threat to the global economy.²¹ As weather patterns change, societies are disrupted in new and unexpected ways. **Supply chains** and ecosystems could be impacted, affecting the delivery of goods and services and all other aspects of the global market.



Source: Center for Disease Control and Prevention.

Whether it be from the previously mentioned threats, or their consequences, disorder resulting from climate change is a serious threat to our current economic system.

For example, a drought in East Africa could cause millions of people to be in need of food assistance. It would not only affect the people living in that area, but all people connected to the economy of that region. If crops are lost and agricultural production is down, food prices will fluctuate, people will migrate, and essential goods and services could become in short supply. These effects would likely be felt throughout all parts of society, often with the burden falling hardest on the poor.

Another impact of climate change is **sustainability**. As countries in the Global South seek to expand and develop their economies, they often face strong pressure to do so in sustainable and environmentally-friendly ways, despite **developed countries** having achieved their status in ways that have potentially harmed the environment. Additionally, the economies of developed countries depend on **consumption**. This makes fighting climate change highly complex and political, especially considering the economic impact of climate change.

Responding to Climate Change: Mitigation, Adaption & Remediation²²

Actions to address the risks associated with climate change have largely involved a two-pronged approach:

- Reducing emissions of and stabilizing the levels of heat-trapping greenhouse gases in the atmosphere (mitigation);
- Adapting to the climate change already likely to occur (adaptation).

Mitigation – reducing climate change – involves reducing the flow of heat-trapping greenhouse gases into the atmosphere, either by reducing sources of these gases (for example, the burning of fossil fuels for

²¹ "Global Risks Report 2016." World Economic Forum. 2016.

²² This section was adapted from the NASA webpage: "Responding to Climate Change." 2017.

electricity, heat or transport) or enhancing the “sinks” that accumulate and store these gases (such as the oceans, forests and soil). The goal of mitigation is to avoid dangerous human interference with the climate system, and “stabilize greenhouse gas levels in a timeframe sufficient to allow ecosystems to adapt naturally to climate change, ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.”²³

Adaptation – adjusting to life in a changing climate – involves adjusting to actual or expected future climate. The goal is to reduce our vulnerability to the harmful effects of climate change (like rising sea-levels, more intense extreme weather events, or food shortages). It can also encompass making the most of any potential beneficial opportunities associated with climate change (for example, longer growing seasons or increased crop yields in some regions).

In addition to the established climate mitigation and adaptation strategies, a third approach has recently gained increased attention. While not without controversy, climate remediation or geoengineering is an approach that employs technologies that are intentionally designed to counteract the climate effects of past greenhouse gas emissions to the atmosphere. While the assortment of concepts and technologies vary widely in application, there are two central types of remediation measures: carbon dioxide removal and solar radiation management. Carbon dioxide removal addresses the cause of climate change by removing one of the greenhouse gases (carbon dioxide) from the atmosphere. Solar radiation management attempts to offset effects of greenhouse gases by causing the Earth to absorb less solar radiation.²⁴

Past International Action

International efforts to address climate change began with the United Nations’ 1988 Intergovernmental Panel on Climate Change, which was tasked with analyzing the international research and scientific data pertaining to the risk of human-induced climate change. The first report, issued in 1992, formed the basis of the *United Nations Framework Convention on Climate Change (UNFCCC)*, which has since been ratified by 196 countries, including all United Nations Member States.

Most recently, in 2016, a majority of the world’s governments agreed on an ambitious plan to tackle climate change, known as the **Paris Agreement**. This agreement set out a global action plan to put the world on track to avoid dangerous climate change by limiting global warming to well below 3.6° Fahrenheit (2° Celsius). The agreement is due to enter into force in 2020. In order to achieve this, each country must now sign and indicate their consent to be bound by the Agreement. The Paris Agreement will be in full legal force and effect when at least 55 countries to the UNFCCC that account for at least 55 percent of the total global greenhouse gas emissions have deposited their instruments of ratification, acceptance, approval or accession. This means that the United States, China, and India must agree, as these countries together make up more than 50% of all greenhouse gas emissions.

Solutions²⁵

The Emissions Gap Report 2016 from the United Nations Environment Programme (UNEP) shows that even if countries deliver on the commitments– known as Nationally Determined Contributions (NDCs) – that they made in Paris, the world will still warm by 5.4 to 5.7° Fahrenheit (3.0 to 3.2° Celsius).²⁶ To keep

²³ “[Mitigation of Climate Change](#).” *United Nations Intergovernmental Panel on Climate Change (IPCC)*. 2014.

²⁴ This section has been adapted from the *Bipartisan Policy Center* “[Task Force on Climate Remediation Research](#).” October 2011.

²⁵ This section has been adapted from the *World Economic Forum’s* “[The Global Risks Report 2017](#).”

²⁶ “[The Emissions Gap Report 2016](#).” *United Nations Environment Programme (UNEP)*. 2016.

global warming to within 3.6° Fahrenheit (2° Celsius) and limit the risk of dangerous climate change, the world will need to reduce emissions by 40% to 70% by 2050 and eliminate them altogether by 2100.²⁷ While attention will be focused on China, the United States, the **European Union (EU)**, and India – which collectively comprise more than half of global emissions – all countries will need to ratchet up their action in order to limit warming to 3.6° Fahrenheit (2° Celsius).

Increasingly, legal action is being taken against national governments in an attempt to force action on environmental issues. The United Kingdom is being sued for failing to deal with a “national air pollution crisis”²⁸, and it has also been threatened with legal action if it fails to reduce its greenhouse emissions²⁹; a group of teenagers has challenged the U.S. government for not protecting them from climate change³⁰; the Netherlands has been ordered by a court to cut its emissions³¹; and Norway is being sued over Arctic drilling plans.³² Meanwhile, the U.S. Environmental Protection Agency (EPA)’s Clean Power Plan is being challenged in court and has divided the electricity industry: coal miners, some labor unions, and 27 states support the challenge while the renewable energy industry, leading tech firms, and 18 states are supporting the EPA’s legislation³³.

With power and influence increasingly distributed, however, there is a growing recognition that the response to the risks posed by climate change cannot be delivered by international agencies and governments alone. It requires new approaches that take a wider “systems view” of the interconnected challenges that involve a larger and more diverse set of actors. Some promising recent examples come from the financial sector: the Financial Stability Board’s Taskforce on Climate-related Financial Disclosure is developing recommendations for managing the physical, liability, and transition risks of climate change; rating agencies S&P and Moody’s³⁴ have announced plans to assess the climate risks facing both companies and countries; and investor groups have called for greater disclosure of companies’ exposure to climate risks. The Tropical Forest Alliance 2020³⁵ also offers the promise of advancing new multi-dimensional approaches to help reduce deforestation from global supply chains, such as the recent Africa Palm Oil Initiative.³⁶

Taking systems view also implies accounting for new risks that could be created by successful action to address environmental risks. For example, the transition to a low-carbon future will require measures in some economies to absorb potential labor-market impacts. China’s announcement in early 2016 that it will reduce its coal and steel sector workforce by 1.8 million (15%) over two years, resettling affected workers in response to industrial overcapacity, may provide a glimpse of what is to come.³⁷ While many suggest the shift to clean energy could create a substantial increase in net employment³⁸, the overall policy equation is complex and may require new approaches to skills training and retraining, along with

²⁷ [“Climate Change 2014 Synthesis Report.”](#) United Nations Intergovernmental Panel on Climate Change (IPCC). 2014.

²⁸ [“UK government sued over air pollution levels.”](#) *Triple Pundit*. 2016.

²⁹ [“UK government could face lawsuit over climate failures.”](#) *New Scientist*. 2015.

³⁰ [“Teens challenge US government for not protecting them from climate change.”](#) *The Guardian*. 2016.

³¹ [“Dutch government order to cut carbon emissions in landmark ruling.”](#) *The Guardian*. 2015.

³² [“Norway faces climate lawsuit over Arctic oil exploration plans.”](#) *The Guardian*. 2016.

³³ [“Obama’s clean power plan heads to court: What to know.”](#) *Bloomberg*. 2016.

³⁴ [“Scientists assess bleaching damage on Great Barrier Reef.”](#) *Coral Reef Studies*. 2016.

³⁵ The *Tropical Forest Alliance 2020* is a global public-private partnership in which partners take voluntary actions, individually and in combination, to reduce the tropical deforestation associated with the sourcing of commodities such as palm oil, soy, beef, and paper and pulp.

³⁶ [“Africa Palm Oil Initiative.”](#) *Tropical Forest Alliance 2020*. 2016.

³⁷ [“China to cut 1.8m jobs in coal and steel sectors.”](#) *The Guardian*. 2016.

³⁸ [“The Jobs Potential of a shift towards a Low-Carbon Economy Report.”](#) *Organization for Economic Cooperation and Development (OECD)*. 2012.

measures to facilitate increased labor-force mobility. Ensuring a just transition will be important for societal stability.

Issue-specific and organization-specific silos will need to be dismantled across the **public and private sectors** throughout the world economy. In their place, new multi-actor alliances and coalitions for action will need to be built, cutting horizontally across traditional boundaries of interest, expertise and nationality. The rise of such multidimensional cooperation to manage our global environmental commons will be challenging in the international context described above, but essential if we are to respond adequately to the structural risks posed by climate change, extreme weather, and water crises.

For example, former U.S. Secretaries of State James Baker (1989-1992) and George Schultz (1982-1989) have recently advocated, on behalf of the Climate Leadership Council³⁹, an approach that attempts to tap into the current rise of **populist sentiment** growing across the developed world. Their plan aims to return the income from a nation's **carbon taxes** directly to its citizens through dividends that simultaneously discourages carbon emissions, rewards good behavior, and builds popular support for a gradually increasing carbon tax. As many voters increasingly feel that the political and economic systems are rigged against their own interests, Baker and Schultz argue that their climate dividend plan would redirect voters' energy in a socially beneficial direction. This could help to tip the economic scales toward the interests of the ordinary citizen, at the expense of the wealthy who would pay more, which in turn could inspire a new group of climate advocates. Ultimately, they believe that once one major country or region enacts carbon dividends, this could not only set a precedent but could set in motion a domino effect that compels all major economies – for their own national interest – to do so.⁴⁰

Questions to Consider

- 1) Why is the failure to address climate change a pressing global risk? What challenges and/or opportunities exist for your economic bloc in addressing this risk?

- 2) Is the failure of climate change mitigation and adaptation a high concern for your economic bloc? If so, what specific risks does climate change pose? If not, how might your economic bloc be affected by the impact of climate change in other blocs?

³⁹ The Climate Leadership Council is an international research and advocacy organization whose mission is to convene global opinion leaders around new climate solutions based on carbon dividends, adapted to each of the largest greenhouse gas emitting regions.

⁴⁰ For more information of the climate dividends plan visit the "[Climate Leadership Council website](#)." (2017)

3) How would reducing the risks posed by climate change directly impact long-term economic stability and prosperity in your economic bloc?

4) What recent strategies or actions has your economic bloc taken to address the risks posed by climate change?

5) What specific type of action might be necessary to mitigate and adapt to the results of climate change in your economic bloc?

6) Who should bear the primary responsibility for climate change mitigation and adaptation in your economic bloc (governments, business and industry, individuals or private organizations)? How should roles and responsibilities be allocated among these groups?

7) If sufficient funding were available, what additional strategies would you implement to reduce and better respond to the risks posed by climate change in your economic bloc?

8) In what ways would addressing climate change reduce the impact and severity of the other global risks (nuclear proliferation, rise of political populism, and unpredictability of oil prices)?

Further Resources

- “The Global Risks Report 2016,” *The World Economic Forum*. 2016. <http://reports.weforum.org/global-risks-2016/executive-summary/>
- “Global Climate Change: Vital Signs of the Planet,” *NASA*. 2017. <http://climate.nasa.gov/>
- “Bill Nye the Science Guy explains climate change (video),” *Bill Nye the Science Guy*. 2016. <https://www.youtube.com/watch?v=EtW2rrLHs08>
- “Climate Change is the World’s Biggest Risk,” *Climate Central*. 2017. <https://www.climatecentral.org/news/climate-change-worlds-biggest-risk-charts-21050>
- “United Nations Framework Convention on Climate Change,” *UNFCCC*. 2017. <http://unfccc.int/2860.php>

- “Intergovernmental Panel on Climate Change,” *IPCC*. 2017.
<http://www.ipcc.ch/>
- “UN Sustainable Development Goals,” *United Nations*. 2017.
<http://www.un.org/sustainabledevelopment/climate-change-2/>
- “National Geographic explains climate change (video),” *National Geographic*. 2017.
<http://video.nationalgeographic.com/video/101-videos/global-warming-101>
- UN news related to climate change. *UN Framework Convention on Climate Change*. 2017.
<http://newsroom.unfccc.int/>
- “Coverage on Climate Change,” *The New York Times*. 2017.
<https://www.nytimes.com/topic/subject/global-warming-climate-change>
- *Climate Leadership Council*. 2017.
<https://www.clcouncil.org/>
- “Geoengineering Climate Change.” *Project Syndicate*. 2017.
<https://www.project-syndicate.org/commentary/geoengineering-climate-change-by-bjorn-lomborg-2017-01>

Glossary of Terms

- **Adaptation (in regards to climate change):** strategies that aim to adjust to actual or expected future climatic conditions.
- **Biophysical systems:** the living and non-living surrounding of an organism or population, including the factors that influence the evolution, development, and survival of that organism or population.
- **Carbon tax:** a tax on fossil fuels, especially those used by motor vehicles, intended to reduce the emission of carbon dioxide.
- **Climate change:** a change in global or regional climate patterns, in particular a change apparent from the mid to late 20th century onwards and attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels.
- **Climate remediation (geoengineering):** the deliberate large-scale manipulation of an environmental process that affects the earth's climate, in an attempt to counteract the effects of global warming.
- **Consumption (economic):** the use of goods and services by households and individuals.
- **Deforestation:** the permanent destruction of forests in order to make the land available for other uses.
- **Desertification:** the process of becoming a desert by way of land mismanagement or a change in climate.
- **Developing countries:** countries that have low levels of industrial and economic activity, and where people generally have low incomes.
- **Developed countries:** nations that has a lot of industrial activity and where people tend to have higher incomes.
- **Ecological systems (ecosystems):** a group of interconnected elements, formed by the interaction of a community of organisms with their environment.
- **European Union (EU):** a political and economic union of 28 European member states with an estimated population of over 510 million.

- **Food insecurity**: the state of being without reliable access to a sufficient quantity of affordable, nutritious food.
- **Fossil Fuel**: a natural fuel such as coal, oil, or gas, formed in the past from the remains of living organisms.
- **GDP (gross domestic product)**: a monetary measure of the market value of all final goods and services produced in a period that is commonly used to determine the economic performance of a whole country or region.
- **Global commons**: refers to resource domains or areas that lie outside of the political reach of any one nation State. International law identifies four main global commons: the High Seas; the Atmosphere; Antarctica; and, Outer Space.
- **Global South**: a term used to refer to developing countries in Africa, Latin America, developing Asia, and the Middle East.
- **Global warming**: a gradual increase in the overall temperature of the earth's atmosphere generally attributed to the greenhouse effect caused by increased levels of carbon dioxide, chlorofluorocarbons, and other pollutants.
- **Greenhouse effect**: the process by which radiation from a planet's atmosphere warms the planet's surface to a temperature above what it would be without its atmosphere.
- **Greenhouse gases (GHGs)**: carbon dioxide, carbon monoxide, methane, oxides of nitrogen and halocarbons.
- **International security**: also called global security, refers to the collection of measures taken by states and international organizations, such as the United Nations, European Union, Association of Southeast Asian Nations, and others, to ensure mutual survival and safety.
- **Large-scale involuntary migration**: the forced movement of a group of people away from their home country or region to escape persecution, war or the consequences of natural or manmade disasters.
- **Mitigation (in regards to climate change)**: strategies that aim to reduce the flow of heat-trapping greenhouse gases into the atmosphere, either by reducing sources of these gases or enhancing the ecosystems that accumulate and store these gases.
- **Paris Agreement**: an agreement within the United Nations Framework Convention on Climate Change (UNFCCC) dealing with greenhouse gases emissions mitigation, adaptation and finance starting in the year 2020.
- **Populist sentiment**: beliefs that are part of a program or movement that champions the common person, usually by favorable contrast with an elite.
- **Precipitation patterns**: how often, where, when, and to what extent rain, snow, sleet, or hail that fall to the ground.
- **Private Sector**: the part of the national economy that is not under direct government control.
- **Public Sector**: the part of an economy that is controlled by the government.
- **Southeast Asia**: a sub-region of Asia, consisting of the countries that are geographically south of China, east of India, west of New Guinea and north of Australia.
- **Sub-Saharan Africa**: geographically, the area of the continent of Africa that lies south of the Sahara desert. According to the UN, it consists of all African countries that are fully or partially located south of the Sahara.
- **Supply chains**: the sequence of processes involved in the production and distribution of a commodity.
- **Sustainability**: avoidance of the depletion of natural resources in order to maintain an ecological balance.

- **United Nations' Intergovernmental Panel on Climate Change (IPCC)**: the United Nations body that assesses the scientific, technical and socio-economic information relevant for the understanding of the risk of human-induced climate change.
- **Urban development (Urbanization)**: the social, cultural, economic and physical development of cities, as well as the underlying causes of these processes.
- **Water scarcity**: the lack of sufficient available water resources to meet the demands of water usage within a region.
- **World Economic Forum**: a nonprofit foundation committed to improving the state of the world by engaging business, political, academic, and other leaders of society to shape global, regional, and industry agendas.