



International Actuarial Association
Association Actuarielle Internationale

Glossary of Defined Terms Used in IAA Climate-Related Risk Publications

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This Glossary has been prepared and is maintained by the Climate Risk Task Force of the International Actuarial Association (IAA).

The IAA is the worldwide association of professional actuarial associations, with several special interest sections and working groups for individual actuaries. The IAA exists to encourage the development of a global profession, acknowledged as technically competent and professionally reliable, which will ensure that the public interest is served.

The role of the Climate Risk Task Force is to deliver on the Statement of Intent for IAA Activities on Climate-Related Risks as adopted by the IAA's Council on 7 May 2020.



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Glossary of Defined Terms Used in IAA Climate-Related Risk Publications

This glossary is the single repository of all defined terms used in IAA climate-related risk publications.

ACPR: French Prudential Supervisory Authority

Adaptation: the process of adjustment to actual or expected climate and its effects.

Anthropogenic global warming: global warming caused by human greenhouse gas emissions.

ARn: nth Assessment Report of the Intergovernmental Panel on Climate Change. The first assessment report is confusingly called FAR.

BAU: Business as Usual, a scenario where no actions to lower greenhouse gas emissions are being taken. It is equivalent to a pathway with radiative forcing of 8.5 W/m² by 2100 (Representative Concentration Pathway 8.5).

Biosphere: the sum of all ecosystems of the Earth, or the zone of life.

BP: British Petroleum

Carbon footprint: the amount of greenhouse gases – primarily carbon dioxide – released into the atmosphere by a particular human activity.

Carbon footprint per capita: A measure of the carbon dioxide emission per person. Values range from 50 tons in Qatar to approximately 16 tons in Canada and the US, 8.6 tons in the European Union and close to zero in sub-Saharan Africa. (Data from Emissions Database for Global Atmospheric Research (EDGAR) for 2018.)

Carbon footprint per GDP: A measure of carbon dioxide emission per GDP. It is measured by kg per GDP at Purchasing Power Parity and ranges from 0.5 for China to 0.3 for the US and Canada and 0.1 for Switzerland. (Data from the World Bank for 2016.)

CBES: Climate Biennial Exploratory Scenario (Bank of England)

CCS: Carbon Capture and Storage are technologies for capturing carbon dioxide and storing it so that it will not enter the atmosphere.

CFRF: Climate Financial Risk Forum, a forum set up in 2019 and co-chaired by the UK prudential and conduct regulators PRA and FCA.

Climate: the long-term average and variability of weather, typically averaged over a period of 30 years.

Climate Action 100+: Investor initiative launched in 2017 to ensure the world's largest corporate greenhouse gas emitters take necessary action on climate change.

Climate change: the statistically defined change in the average and/or variability of the climate system, which includes the atmosphere, the water cycle, the land surface, the cryosphere, the biosphere and their interactions.

Climate refugees: people fleeing the effects of climate change. The United Nations Human Rights Committee ruled that "refugees fleeing the effects of the climate crisis cannot be forced to return home by their adoptive countries".

Climate-related risk: the potential negative impacts of climate change on an entity.

Climate system: consists of interaction of the atmosphere, the hydrosphere, the cryosphere, the lithosphere and the biosphere.

CO₂e: carbon dioxide equivalent is a unit that allows emissions of greenhouse gases of different warming potential to be added together to simplify analysis and comparisons. However, the conversion does not fully reflect the differences in persistency and in the timing of the resulting warming effect.

COP: Conference of the Parties, the supreme decision-making forum of the United Nations Framework Convention on Climate Change, held annually. All states that are Parties to the Convention are represented at the COP, at which they review the implementation of the Convention and any other legal instruments that the COP adopts and take decisions necessary to promote the effective implementation of the Convention, including institutional and administrative arrangements.

Cryosphere: parts of the Earth's surface where water is frozen, including sea, lake and river ice, glaciers, snow cover, ice sheets and caps, and permafrost.

CMSI: Climate Measurement Standards Initiative (Australia)

CSR: Corporate Social Responsibility

CSSR: the Climate Science Special Report is to be published every four years by the United States Global Change Research Program (USGCRP). The USGCRP is moving towards an assessment process to integrate scientific knowledge into the mandated quadrennial National Climate Assessment. As part of this process, the USGCRP is developing the CSSR, a technical report that details the current state-of-science relating to climate change and its physical impacts. The CSSR is intended to focus on climate change in the US and to inform future USGCRP products.

EIOPA: European Insurance and Occupational Pensions Authority

ERM: Enterprise Risk Management

ESG: Environmental, Social, and Governance, factors measuring the sustainability and social impact of investments and businesses.

FAR: First Assessment Report of the Intergovernmental Panel on Climate Change (1990).

FCR: Financial Condition Report

Geo-engineering: deliberate and large-scale intervention in the Earth's climate system, usually with the aim of mitigating the adverse effects of global warming. It includes techniques for solar radiation management and methods of greenhouse gas removal.

GFC: Global Financial Crisis

Hydrosphere: the combined amount of water above, on and under the surface of the Earth.

GHG: greenhouse gas – gas that absorbs and emits radiant energy within the thermal infrared range. Greenhouse gases in the Earth's atmosphere are primarily water vapour (H₂O), carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O) and ozone (O₃).

GWP: Global Warming Potential, the heat absorbed by any greenhouse gas in the atmosphere, as a multiple of the heat that would be absorbed by the same mass of carbon dioxide. Carbon dioxide has a GWP of 1, methane 12.4, and carbon tetrafluoride (CF₄) 50,000.

IAA: International Actuarial Association.

IEA: International Energy Agency

IMF: International Monetary Fund

IPCC: Intergovernmental Panel on Climate Change, the United Nations (UN) body for assessing the science related to climate change. Created by the UN in 1988, it is an organization of governments

that are members of the UN or the World Meteorological Organization, comprising 195 members. (Data from the IPCC for 2020.)

Keeling Curve: the graph of the daily values of the carbon dioxide concentration in the Earth's atmosphere in ppm, taken at the Mauna Loa Observatory on the island of Hawaii and available continuously from the Scripps Institution of Oceanography from 1958 to the present day.

Kyoto Protocol: an international treaty which extends the 1992 United Nations Framework Convention on Climate Change that commits state Parties to reduce greenhouse gas emissions, based on the scientific consensus that global warming is occurring and is extremely likely to be anthropogenic. The Protocol was adopted in Kyoto in 1997 and entered into force in 2005. There are currently 192 Parties to the Protocol.

Lithosphere: the crust and uppermost mantle of the Earth.

LRR: Legal and Reputation Risks

Methane clathrate: a form of water ice that contains a large amount of methane within its crystal structure, occurring in ocean sediments and under permafrost regions. Their release would add substantially to anthropogenic carbon emissions.

Mitigation: efforts to reduce or prevent emission of greenhouse gases by new technologies, renewable energies, higher efficiencies and lower consumption and changes in consumer behaviour.

Negative emissions: using carbon-capture technologies, improving soil carbon capture, or by increasing forestry, emissions could potentially be made negative.

Net Zero Scenario: a scenario where net zero emissions are being reached by 2050 rather than 2100 and keep cumulative carbon dioxide concentration below 400 ppm.

NDC: Nationally Determined Commitments are at the heart of the Paris Agreement. The Paris Agreement requires each Party to prepare, communicate and maintain successive nationally determined contributions that it intends to achieve for its post-2020 climate actions. They embody efforts by each country to reduce national emissions and adapt to the impacts of climate change.

NDC scenario: a scenario where emissions are such that they lead to a radiative forcing of 2.6 W/m² by 2100 (Representative Concentration Pathway 2.6).

NGFS: Network of Central Banks and Supervisors for Greening the Financial System, established at the Paris One Planet Summit in December 2017. Eight central banks and supervisors established the NGFS to help strengthen the global response required to meet the goals of the Paris Agreement and enhance the role of the financial system to manage risks and to mobilize capital for green and low-carbon investments.

Ocean acidification: the decrease in the pH of the Earth's oceans, caused by the uptake of carbon dioxide from the atmosphere.

OECD: Organisation for Economic Co-operation and Development.

OPEC: Organization of Petroleum Exporting Countries

ORSA: Own Risk Solvency Assessment

Paris Agreement: an agreement within the United Nations Framework Convention on Climate Change dealing with greenhouse gas emissions mitigation, adaptation and finance, signed in 2016 by 189 governments. Its long-term temperature goal is to keep the increase in global average temperature to well below 2°C above pre-industrial levels; and to pursue efforts to limit the increase to 1.5°C.

Pathway: a representation of a scenario by a curve, called a pathway or trajectory, that traces the evolution of a metric over time, often complemented by a confidence interval.

Permafrost: ground (soil or rock and included ice and organic material) that remains at or below 0°C for at least two consecutive years.

Physical risks: risks resulting from climate change can be event-driven (acute) or longer-term (chronic) shifts in climate patterns. Physical risks may have financial implications for organizations, such as direct damage to assets and indirect impacts from supply chain disruption. Organizations' financial performance may also be affected by changes in water availability, sourcing and quality; food security; and extreme temperature changes affecting organizations' premises, operations, supply chain, transport needs and employee safety.

ppm: parts per million.

QNV2030: Qatar National Vision 2030

Radiative forcing: the difference between energy absorbed by the Earth and energy radiated back to space. It is a measure of the influence a factor has in altering the balance of incoming and outgoing energy in the Earth's atmosphere, and is an index of the importance of the factor as a potential climate-change mechanism. In this report, radiative forcing values are for changes relative to pre-industrial conditions – defined as before the year 1750 – and are expressed in W/m^2 .

RCP: Representative Concentration Pathway, a greenhouse gas concentration trajectory adopted by the Intergovernmental Panel on Climate Change. The pathways describe different climate futures, depending on the volume of greenhouse gases being emitted. They are labelled after the possible range of radiative forcing values in the year 2100 (2.6, 4.5, 6, and 8.5 W/m^2).

RCPx: Representative Concentration Pathway leading to a radiative forcing value of x W/m^2 .

Renewable energy: generated from resources which are naturally replenished on a human timescale; for example, from wind, sunlight, rain, tides, waves or geothermal heat.

Scientific consensus on climate change: the agreement by most scientists and scientific organizations that the Earth is warming and that this warming is caused mainly by human activities. This consensus is supported by various studies of scientists' opinions and by position statements of scientific organizations, many of which explicitly agree with the Intergovernmental Panel on Climate Change's synthesis reports. Currently, among major scientific organizations, only the American Association of Petroleum Geologists has issued a non-committal statement.

SDGs: Sustainable Development Goals

Shift Project: a French non-profit think-tank created in 2010 that aims to limit climate change and the economy's dependency on fossil fuels.

SSPs: Shared Socioeconomic Pathways

Stranded assets: assets that have suffered from unanticipated or premature write-downs, devaluations or conversion to liabilities.

TCFD: Task Force on Climate-related Financial Disclosure, established by the Financial Stability Board (FSB), with members chosen by the FSB to include both users and preparers of disclosures from across the G20's constituency, covering a broad range of economic sectors and financial markets.

Transition risks: risks emanating from transitioning to a lower-carbon economy that may entail extensive policy, legal, technology and market changes to address mitigation and adaptation requirements related to climate change. Depending on the nature, speed and focus of these changes, transition risks may pose varying levels of financial and reputational risk to organizations.

UNEP: United Nations Environment Programme, founded in 1972 and responsible for coordinating the UN's environmental activities and assisting developing countries in implementing environmentally sound policies and practices.

UNEP FI: United Nations Environment Programme Finance Initiative, created in 1992 following the Earth Summit in Rio de Janeiro as a global partnership established between the UNEP and the financial sector.

UNFCCC: United Nations Framework Convention on Climate Change, adopted on 9 May 1992 as an international environmental treaty. Its objective is to “stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system”.

UNPRI: United Nations Principles for Responsible Investment. Six aspirational principles of a UN-supported international network of investors.

WEC: World Energy Council, a forum promoting sustainable supply and use of energy.

W/m²: watts per square metre.

WMO: World Meteorological Organization, an intergovernmental organization with a membership of 193 Member States and Territories; a specialized agency of the United Nations.