

## Planet Pod's A-Z of Climate Change & the Environment

### A

**Abatement** Refers to reducing the degree or intensity of greenhouse-gas emissions

**Acceleration** During the last 60 years human impacts on the earth's climate and environmental system have unfolded at an unprecedented rate and scale which has led scientists to coin the term *The Great Acceleration*

**Adaptation** Action that helps cope with the effects of climate change - for example construction of barriers to protect against rising sea levels, or conversion to crops capable of surviving high temperatures and drought.

**Afforestation** Planting of new forests on lands that historically have not contained forests.

**Anthropocene** Since the last ice age, approximately the last 11,500 years, Earth has been in the Holocene Epoch. However human life is now having such a significant impact on the planet we are now entering the Anthropocene age – a new geological epoch. While this is still a matter of debate among some scientists, there is no arguing with the fact that humans have become the single most influential species on the planet, causing significant global warming and other changes to land, environment, water, organisms and the atmosphere – so called anthropogenic or human-made changes.

The Earth is 4.5 billion years old, and modern humans have been around for around a mere 200,000 years. Yet in that time we have fundamentally altered the physical, chemical and biological systems of the planet on which we and all other organisms depend and that we have had a lasting - and potentially irreversible - influence on Earth's systems, environment, processes and biodiversity.

The word Anthropocene comes from the Greek terms for human ('anthropo') and new ('cene'), but its definition is controversial. It was coined in the 1980s, then popularised in 2000 by atmospheric chemist Paul J Crutzen and diatom researcher Eugene F Stoermer.

**Anthropogenic climate change** Man-made climate change - climate change caused by human activity as opposed to natural processes.

**Aosis** The Alliance of Small Island States comprises 42 island and coastal states mostly in the Pacific and Caribbean. Members of Aosis are some of the countries likely to be hit hardest by global warming. The very existence of low-lying islands, such as the Maldives and some of the Bahamas, is threatened by rising waters.

**AR4 & 5** The Fourth & Fifth Assessment Reports produced by the Intergovernmental Panel on Climate Change (IPCC) published in 2007 and 2013/14 respectively. The reports assessed and summarised the climate change situation worldwide. AR4 concluded that it was at least 90% likely that the increase of the global average temperature since the mid-20th Century was mainly due to man's activity – AR5 said it was 95% certain that humans are the "dominant cause" of global warming since the 1950s. The IPCC put out a special report in Oct 2018 which assessed the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.

## B

**Biodiversity** The technical term for all life on earth, 'biodiversity', is a scientific measure of the variety of species, habitats, and ecosystems across the planet. It's essential for human existence and a flourishing countryside. As well as underpinning the food we eat and the air we breathe, we depend on it for protection from other threats, like pollution, flooding and climate breakdown.

A report last year from the Intergovernmental Science Policy Platform on Biodiversity & Ecosystem Services (IPBES) presented us with the stark evidence that without significant changes, 1 million species will be eradicated from the planet. The loss of species and habitats poses as much a danger to life on Earth as climate change does. The IPBES report assessed changes in biodiversity over the past five decades, and demonstrates that rates of extinction are accelerating hundreds of times faster than usual.

**Biofuel** A fuel derived from renewable, biological sources, including crops such as maize and sugar cane, and some forms of waste. These fuels are considered renewable as long as the vegetation producing them is maintained or replanted, such as firewood, alcohol fermented from sugar, and combustible oils extracted from soy beans. Their use in place of fossil fuels cuts greenhouse gas emissions because the plants that are the fuel sources capture carbon dioxide from the atmosphere. Ethanol – a biofuel derived from crops like sugar cane – is added to petrol or gasoline if you are in the USA – usually in the ratio of about 10% ethanol to 90% gasoline. Biodiesel, derived from things like old cooking oil, can be blended with petroleum based diesel. Shifting away from petroleum based fuels will help cut carbon but, according to the International Energy Agency, global output of biofuels needs to triple by 2030 for sustainable growth.

**Black carbon** The soot that results from the incomplete combustion of fossil fuels, biofuels, and biomass (wood, animal dung, etc.). It is the most potent climate-warming aerosol. Unlike greenhouse gases, which trap infrared radiation that is already in the Earth's atmosphere, these particles absorb all wavelengths of sunlight and then re-emit this energy as infrared radiation.

**Brundtland Report** Also known as *Our Common Future* was published in 1987 by the United Nations. Its targets were multilateralism and interdependence of nations in the search for a sustainable development path. The report placed environmental issues firmly on the political agenda; it aimed to discuss the environment and development as one single issue. The report also contains the definition of *sustainable development* now considered as standard

**Bunker fuels** A term used to refer to fuels consumed for international marine and air transport

**Business as usual** A scenario used for projections of future emissions assuming no action, or no new action, is taken to mitigate the problem. Some countries are pledging not to reduce their emissions but to make reductions compared to a business as usual scenario. Their emissions, therefore, would increase but less than they would have done.

## C

**Capacity building** In the context of climate change, the process of developing the technical skills and institutional capability in developing countries and economies in transition to enable them to address effectively the causes and results of climate change.

**Carbon capture and storage** The collection and transport of concentrated carbon dioxide gas from large emission sources, such as power plants. The gases are then injected into deep underground reservoirs. Carbon capture is sometimes referred to as geological sequestration.

**Carbon dioxide (CO<sub>2</sub>)** Carbon dioxide is a gas in the Earth's atmosphere. It occurs naturally and is also a by-product of human activities such as burning fossil fuels. It is the principal greenhouse gas produced by human activity.

**Carbon dioxide equivalent (CO<sub>2</sub>e)** Six greenhouse gases are limited by the Kyoto Protocol and each has a different global warming potential. The overall warming effect of this cocktail of gases is often expressed in terms of carbon dioxide equivalent - the amount of CO<sub>2</sub> that would cause the same amount of warming.

**Carbon footprint** The amount of carbon emitted by an individual or organisation in a given period of time, or the amount of carbon emitted during the manufacture of a product. Typical elements of an organisation's carbon footprint are the fuels burnt for heating, power and transport which it controls, grid electricity it buys for power and lighting, business travel. We often talk about Scope 1,2 and 3 carbon emissions. Scope 1 are emissions from things which the business or organisation controls directly (like gas burnt for heating), Scope 2 are indirect emissions from purchased electricity and Scope 3 are indirect emissions (i.e. the result of doing business but not directly controlled by the organisation or business). This is a big group and includes supply chain emissions, business travel, employee commuting, use of materials etc. Quite a big subject and one we could have an entire podcast on!

**Carbon market** A popular (but misleading) term for a trading system through which countries may buy or sell units of greenhouse-gas emissions in an effort to meet their national limits on emissions, either under the Kyoto Protocol or under other agreements, such as that among member states of the European Union. The term comes from the fact that carbon dioxide is the predominant greenhouse gas, and other gases are measured in units called "carbon-dioxide equivalents."

**Carbon neutral** A process where there is no net release of CO<sub>2</sub>. For example, growing biomass takes CO<sub>2</sub> out of the atmosphere, while burning it releases the gas again. The process would be carbon neutral if the amount taken out and the amount released were identical. A company or country can also achieve carbon neutrality by means of carbon offsetting.

**Carbon offsetting** A way of compensating for emissions of CO<sub>2</sub> by participating in, or funding, efforts to take CO<sub>2</sub> out of the atmosphere. Offsetting often involves paying another party, somewhere else, to save emissions equivalent to those produced by your activity.

**Carbon sequestration** The process of storing carbon dioxide. This can happen naturally, as growing trees and plants turn CO<sub>2</sub> into biomass (wood, leaves, and so on). It can also refer to the capture and storage of CO<sub>2</sub> produced by industry – that's where CO<sub>2</sub> is captured from large emitters like power plants and permanently stored in deep underground reservoirs. We sometimes call this geological sequestration. Trees and other plants also lock up carbon as they grow – another form of sequestration. We sometimes refer to these as....

**Carbon sinks** - Any process, activity or mechanism that removes carbon from the atmosphere. The biggest carbon sinks are the world's oceans and forests, which absorb large amounts of carbon dioxide from the Earth's atmosphere.

**CCAC** Climate and Clean Air Coalition - a voluntary partnership of governments, intergovernmental organizations, businesses, scientific institutions and civil society organizations committed to improving air quality and protecting the climate through actions to reduce short-lived climate pollutants. CCAC's global network currently includes over 120 state and non-state partners, and hundreds of local actors carrying out activities across economic sectors. Read [more](#).

**CCL** Climate change levy. A tax on energy delivered to non-domestic users in the UK. Its aim is to provide an incentive to increase energy efficiency and to reduce carbon emissions.

**CDM** Clean Development Mechanism. A mechanism under the Kyoto Protocol through which developed countries may finance greenhouse-gas emission reduction or removal projects in developing countries, and receive credits for doing so which they may apply towards meeting mandatory limits on their own emissions.

**Certified emission reductions (CER)** A Kyoto Protocol unit equal to 1 metric tonne of CO<sub>2</sub> equivalent. CERs are issued for emission reductions from CDM project activities. Two special types of CERs called temporary certified emission reduction (tCERs) and long-term certified emission reductions (lCERs) are issued for emission removals from afforestation and reforestation CDM projects.

**CFC** Chlorofluorocarbon. Many CFCs have been widely used as refrigerants, propellants (in aerosol applications), and solvents. Because CFCs contribute to ozone depletion in the upper atmosphere, the manufacture of such compounds has been phased out under the Montreal Protocol, and they are being replaced with other products such as hydrofluorocarbons

**CH<sub>4</sub>** - See Methane.

**CHP** Combined heat and power (also known as cogeneration). The use of a heat engine or power station to generate electricity and useful heat at the same time.

### **Circular Economy**

An alternative to a traditional linear economy (make, use, dispose) in which resources are kept in use for as long as possible, extracting the maximum value from them whilst in use, then recovering and regenerating products and materials at the end of each service life.

**Climate change** A pattern of change affecting global or regional climate, as measured by yardsticks such as average temperature and rainfall, or an alteration in frequency of extreme weather conditions. This variation may be caused by both natural processes and human activity.

**Climate Emergency** Something more and more individuals, organisations, local and national governments are acknowledging and realising that decisive action is needed now to prevent catastrophic global heating.

**Compliance** Fulfilment by countries/businesses/individuals of emission reduction and reporting commitments under the UNFCCC and the Kyoto Protocol.

**COP** Conference of the Parties. The supreme body of the Convention. It currently meets once a year to review the Convention's progress. The word "conference" is not used here in the sense of "meeting" but rather of "association". The "Conference" meets in sessional periods, for example, the "fourth session of the Conference of the Parties." More information [here](#).

**CRC Energy Efficiency Scheme** *(Now discontinued post 2018-19 reporting period – replaced by the Streamlined Energy and Carbon Reporting Framework (SECR))*. A scheme which aimed to incentivise energy efficiency and cut emissions in large energy users in the UK's public and private sectors.

## D

**Dangerous climate change** A term referring to severe climate change that will have a negative effect on societies, economies, and the environment as a whole. The phrase was introduced by the 1992 UN Framework Convention on Climate Change, which aims to prevent "dangerous" human interference with the climate system.

**DBEIS** The UK's Department for Business, Energy & Industrial Strategy – read [more](#)

**DECC** The UK's Department of Energy & Climate Change which became part of [Department for Business, Energy & Industrial Strategy](#) in July 2016

**Declaration of the Rights of Mother Earth** The call to action which came from World People's Conference on Climate Change and the Rights of Mother Earth Cochabamba, Bolivia April 2010 and calls on all peoples to recognise that "we are all part of Mother Earth, an indivisible, living community of interrelated and interdependent beings with a common destiny"

While the UN declared an International Mother Earth Day in 2009 now better known as Earth Day which this year will be on 22 April. The UN have yet to adopt the Declaration as a Universal Right. There is a petition and we would urge you to sign it ( at [www.rights of mother earth](http://www.rights of mother earth))

The Declaration has led to many countries taking action to enshrine in law the earth's rights in a process called earth's jurisprudence which leads to rivers, mountains and other natural places being recognised as personality in their own right in law and having the right to defend themselves in court. If you want to know more tune into the PP episode How Wild is our Law when we discuss this and other wild law issues with UKELA and leading international lawyers.

There is also a great film on the Bar Council website on the Law as Superpower which includes a discussion of our very own Earths Jurisprudence petition – the rights of the river Frome in Somerset.

**Deforestation** The permanent removal of standing forests that can lead to significant levels of carbon dioxide emissions. Forests are the "lungs" of the planet, releasing oxygen into the atmosphere, as well as sequestering carbon. 31% of the landmass of the planet is covered by forest, but it is being destroyed at a rate of 18.7 million acres annually – about 27 soccer pitches every minute (source: [WWF](#)). Tropical rainforest are also home to much of the world's biodiversity – 17% of the Amazonian rain forest has been lost in the last 50 years.

**DEFRA** The UK's Department for Food, Environment and Rural Affairs – read [more](#)

**Divestment** The opposite of an investment. It simply means getting rid of stocks, bonds, or investment funds that are unethical or morally ambiguous. Fossil fuel divestment is about

- Immediately freezing any new investment in fossil fuel companies;
- Divesting from direct ownership and any commingled funds that include fossil fuel public equities and corporate bonds within 5 years
- Ending fossil fuel sponsorship

**DJSI** Dow Jones Sustainability Indices - a family of indices evaluating the sustainability performance of thousands of companies trading publicly. They are the longest-running global sustainability benchmarks worldwide and have become the key reference point in sustainability investing for investors and companies alike. The DJSI is based on an analysis of corporate economic, environmental and social performance, assessing issues such as corporate governance, risk management, branding, climate change mitigation, supply chain standards and labour practices.

## E

**Emissions Conversion Factor** Factors used to convert an organisation's activity data such as electricity purchased for power and lighting, fuel burned for heating, distance travelled on business or tonnes of waste disposed into carbon emissions. Conversion factor spreadsheets are published by DEFRA annually which also provide step by step guidance on how to use the factors.

**Emissions Gap** **Emissions Gap** – this the gap between the carbon dioxide which would be in the atmosphere by the end of the century if we did nothing, so resulting in a 4-6 degree C temperature rise, and how much we need to reduce by to limit temperature rise to below 2 degC – ideally 1.5 degC. That's about 1 trillion tonnes of carbon. National governments pledged through the Paris Agreement in 2015 to reduce this gap but there is still a lot businesses and individuals need to do to cut green house gas emissions.

**Emission Trading Scheme (ETS)** Also known as cap and trade, a market-based approach to controlling pollution by providing economic incentives for achieving reductions in the emissions of pollutants. ETS allows the trading of emissions permits between business and/or countries as part of a cap and trade approach to limiting greenhouse gas emissions. The best-developed example is the EU's trading scheme, launched in 2005 (see below).

**EU Emissions Trading Scheme** The EU ETS is the largest multi-country, multi-sector greenhouse gas emissions trading system in the world. The scheme works on a 'cap and trade' basis, so there is a 'cap' or limit set on the total greenhouse gas emissions allowed by all participants covered by the System and this cap is converted into tradable emission allowances. Tradable emission allowances are allocated to participants in the market; in the EU ETS this is done via a mixture of free allocation and auctions. One allowance gives the holder the right to emit 1 tonne of CO<sub>2</sub> (or its equivalent). Participants covered by the EU ETS must monitor and report their emissions each year and surrender enough emission allowances to cover their annual emissions. Participants who are likely to emit more than their allocation have a choice between taking measures to reduce their emissions or buying additional allowances; either from the secondary market – for example companies who hold allowances they do not need – or from Member State held auctions.

**EVs and Formula E** An exciting but possibly less well known form of motor sport using electric race vehicles and city circuits. Formula E has all the thrills and spills of Formula 1 but without the carbon footprint of the vehicles – and, it's a great proving ground for innovative EV technology.

## F

**Feedback loop** In a feedback loop, rising temperatures on the Earth change the environment in ways that affect the rate of warming. Feedback loops can be positive (adding to the rate of warming), or negative (reducing it). The melting of Arctic ice provides an example of a positive feedback process. As the ice on the surface of the Arctic Ocean melts away, there is a smaller area of white ice to reflect the Sun's heat back into space and more open, dark water to absorb it. The less ice there is, the more the water heats up, and the faster the remaining ice melts.

**Fossil fuels** Natural resources, such as coal, oil and natural gas, containing hydrocarbons. These fuels are formed in the Earth over millions of years and produce carbon dioxide when burnt.

**FTSE4Good Index Series** Series of benchmark and tradable indexes for Environmental, Social and Governance (ESG) investors, which was launched in 2001. The **FTSE4Good** criteria is applied to the FTSE Emerging Indexes, which covers over 20 emerging countries, and was launched in 2016.

**Fugitive emissions** Emissions of gases or vapours from pressurized equipment (e.g. refrigeration plant) due to leaks and other unintended or irregular releases of gases, mostly from industrial activities. As well as the economic cost of lost commodities, fugitive emissions contribute to air pollution and climate change.

### **Fugitive fuel emissions**

Greenhouse-gas emissions as by-products or waste or loss in the process of fuel production, storage, or transport, such as methane given off during oil and gas drilling and refining, or leakage of natural gas from pipelines.

## G

**GHG Protocol** The most widely used standard for emissions reporting developed by the World Resources Institute and the World Business Council for Sustainable Development. It provides a methodology for the calculation of a carbon footprint.

**Global Goals** See UN Sustainable Development Goals

**Global warming** The steady rise in global average temperature in recent decades, which experts believe is largely caused by man-made greenhouse gas emissions. The long-term trend continues upwards, they suggest, even though the warmest year on record, according to the UK's Met Office, is 1998. See also Heating (as in Global Heating)

**Global Warming Potential (GWP)** A measure of a greenhouse gas's ability to absorb heat and warm the atmosphere over a given time period. It is measured relative to a similar mass of carbon dioxide, which has a GWP of 1.0. So, for example, methane has a GWP of 25 over 100 years, the metric used in the Kyoto Protocol. It is important to know the timescale, as gases are removed from the atmosphere at different rates.

**Greenhouse gases (GHGs)** These are natural and industrial gases that trap heat from the Earth and warm the surface. There are six main greenhouse gases - carbon dioxide (or CO<sub>2</sub>), nitrous oxide, and methane, which all occur naturally as well as from industrial processes, and ones from purely industrial sources – these are perfluorocarbons, hydrofluorocarbons, and sulphur hexafluoride. These three are used in things like refrigerants and electrical circuits in relatively small quantities, but have an enormous Global Warming Potential.

**Greta** – Greta Tintin Eleonora Ernman Thunberg FRSGS is a Swedish environmental activist who has gained international recognition for promoting the view that humanity is facing an existential crisis arising from climate change

**GRI** Global Reporting Initiative. Network-based organization that has pioneered the development of the world's most widely used sustainability reporting framework.

## H

**Heating (as in Global Heating)** Many scientists are now using the term “global heating” as a more accurate term than “global warming” to describe the changes taking place to the world's climate, particularly amid growing evidence that rising temperatures have passed the comfort zone and are now bringing increased threats to humanity. Prof [Richard Betts](#), who leads the climate research arm of the UK [Met Office](#), Britain's meteorological monitoring organisation, told the recent UN climate summit in Katowice, Poland “Global heating is technically more correct because we are talking about changes in the energy balance of the planet. We should be talking about risk rather than uncertainty.”

**HFC** Hydrofluorocarbons. Organic compounds frequently used in air conditioning and as refrigerants in place of the older chlorofluorocarbons (CFCs) such as R-12 and hydrochlorofluorocarbons such as R-21. They do not harm the ozone layer as much as the compounds they replace, but they do contribute to global warming.

**Hockey stick** The name given to a graph published in 1998 plotting the average temperature in the Northern hemisphere over the last 1,000 years. The line remains roughly flat until the last 100 years, when it bends sharply upwards. The graph has been cited as evidence to support the idea that global warming is a man-made phenomenon, but some scientists have challenged the data and methodology used to estimate historical temperatures. (It is also known as MBH98 after its creators, Michael E. Mann, Raymond S. Bradley and Malcolm K. Hughes.)

## I

**IPCC** Intergovernmental Panel on Climate Change - Established in 1988 by the World Meteorological Organization and the UN Environment Programme, the IPCC surveys world-wide scientific and technical literature and publishes assessment reports that are widely recognized as the most credible existing sources of information on climate change. The IPCC also works on methodologies and responds to specific requests from the Convention's subsidiary bodies. The IPCC is independent of the Convention

**ISO14001** Internationally recognised standard for environmental management systems (EMS)

**ISO50001** Internationally recognised standard supporting organisations in all sectors to use energy more efficiently, through the development of an energy management system (EnMS).

**J**

**Justice (as in Climate Justice)** Justice is concerned with ensuring that people get what is due to them, setting out the moral or legal principles of *fairness* and *equity* in the way people are treated, often based on the *ethics* and values of society. Climate Justice links development and *human rights* to achieve a human-centred approach to addressing *climate change*, safeguarding the rights of the most vulnerable people and sharing the burdens and benefits of climate change and its impacts *equitably* and *fairly*. This definition builds upon the one used by the Mary Robinson Foundation – Climate Justice.

Climate Justice has led to the rise in support for mass movements like Extinction Rebellion (see XR) and Youth for Climate Justice.

**Joint implementation (JI)** An agreement between two parties whereby one party struggling to meet its emission reductions under the Kyoto Protocol earns emission reduction units from another party's emission removal project. The JI is a flexible and cost-efficient way of fulfilling Kyoto agreements while also encouraging foreign investment and technology transfer.

**K**

**Kyoto Protocol** This is a legally binding set of commitments made 1997 under the auspices of the UN Framework Convention on Climate Change in Kyoto, Japan by national governments to limit greenhouse gas emissions – you will remember, those are gases like CO<sub>2</sub> and methane which cause warming of the earth's atmosphere. The Kyoto Protocol was an important milestone in world governments tackling climate change. More information [here](#).

**Kyoto mechanisms** Three procedures established under the Kyoto Protocol to increase the flexibility and reduce the costs of making greenhouse-gas emissions cuts. They are the Clean Development Mechanism, Emissions Trading and Joint Implementation.

**L**

**Local** – shop and work locally support local trade cut carbon and food miles – something we are learning from Covid is that we have all have local shops and local suppliers on our doorsteps that we could use. In cities it is much more difficult and lots of us rely on outdoor markets for things we need so at the moment that isn't an option. One thing we can and should campaign for after COVID is more support for local suppliers from farmers to milkmen.

Also local is for **local community** and a sustainable life relies on local connections and being close to our local community

**Long-lived climate forcers (LLCF)** Might seem a bit academic, this one, but *Long-lived climate forcers* refer to a set of well-mixed *greenhouse gases* with long atmospheric lifetimes. This set of compounds includes *carbon dioxide (CO<sub>2</sub>)* and *nitrous oxide (N<sub>2</sub>O)*, together with some fluorinated gases. They have a warming effect on *climate*. These things build up for decades or even centuries and their effect on climate also persists for decades to centuries after their emission. So, for emissions that have

already happened of these long-lived climate forcers the only thing we can do is to remove them – by sequestration in some way.

## M

**Methane** Methane is the second most important man-made greenhouse gas. Methane is a colourless odourless gas that occurs abundantly in nature and as a product of certain human activities. Methane is the simplest member of the paraffin series of hydrocarbons and is among the most potent of the greenhouse gases. Sources include both the natural world (wetlands, termites, wildfires) and human activity (agriculture, waste dumps, leaks from coal mining).

**Migration** As parts of the world become less habitable due to increased drought, for example, we are likely to see mass migration to more comfortable parts of the world, causing severe strain on resources.

**Mitigation** In the context of climate change, a human intervention to reduce the sources or enhance the sinks of greenhouse gases. Examples include using fossil fuels more efficiently for industrial processes or electricity generation, switching to solar energy or wind power, improving the insulation of buildings, and expanding forests and other "sinks" to remove greater amounts of carbon dioxide from the atmosphere

**Montreal Protocol** The Montreal Protocol on Substances that Deplete the Ozone Layer, an international agreement adopted in Montreal in 1987.

## N

**Natural greenhouse effect** The natural level of greenhouse gases in our atmosphere, which keeps the planet about 30C warmer than it would otherwise be - essential for life as we know it. Water vapour is the most important component of the natural greenhouse effect.

**N<sub>2</sub>O** Nitrous oxide. Greenhouse gas emitted during agricultural and industrial activities, combustion of fossil fuels and solid waste, as well as during treatment of wastewater.

**NO<sub>x</sub>** Generic term for the nitrogen oxides that are most relevant for air pollution, namely nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>). These gases contribute to the formation of smog and acid rain, as well as affecting tropospheric ozone.

## O

**Ocean acidification** The ocean absorbs approximately one-fourth of man-made CO<sub>2</sub> from the atmosphere, which helps to reduce adverse climate change effects. However, when the CO<sub>2</sub> dissolves in seawater, carbonic acid is formed. Carbon emissions in the industrial era have already lowered the pH of seawater by 0.1. Ocean acidification can decrease the ability of marine organisms to build their shells and skeletal structures and kill off coral reefs, with serious effects for people who rely on them as fishing grounds.

**Offset** An emissions reduction, usually a result of a project in the developing world, which has been sold to compensate for emissions elsewhere.

## P

**Per-capita emissions** The total amount of greenhouse gas emitted by a country per unit of population.

**Parts per million** – usually abbreviated to ppm or ppmv (parts per million by volume). This is the measure used for the concentration of greenhouse gases in the atmosphere. We usually refer to the ppm level of carbon dioxide equivalent or CO<sub>2</sub>e – the concentration of all the greenhouse gases related to carbon. The Intergovernmental Panel on Climate Change (or IPCC) suggested in 2007 that the world should aim to stabilise greenhouse gas levels at 450 ppm CO<sub>2</sub> equivalent in order to avert dangerous climate change. Some scientists, and many of the countries most vulnerable to climate change, argue that the safe upper limit is 350ppm. Current levels of CO<sub>2</sub> are around 414ppm – 4ppm higher than the same time last year & continuing to rise.

**Pre-industrial levels of carbon dioxide** The levels of carbon dioxide in the atmosphere prior to the start of the Industrial Revolution. These levels are estimated to be about 280 parts per million (by volume). The current level is around 414ppm.

**Pliocene era** A period in the earth's history between 5.3 million and 2.6 million years ago. This was the last time the concentration of CO<sub>2</sub> in the atmosphere was around 400ppm for a long period and can teach us a lot about what conditions on the planet could be like if we stay at these levels now. We can learn a lot from ice core samples – an exciting Planet Pod Grantham Institute podcast on this with Prof Martin Siegert coming out soon.

## R

**Renewable energy** Renewable energy is energy created from sources that can be replenished in a short period of time. The five renewable sources used most often are: biomass (such as wood and biogas), the movement of water, geothermal (heat from within the earth), wind, and solar.

**REDD** Reducing Emissions from Deforestation and forest Degradation, a concept that would provide developing countries with a financial incentive to preserve forests.

**Rewilding** Large-scale conservation aimed at restoring and protecting natural processes and core wilderness areas, providing connectivity between such areas, and protecting or reintroducing apex predators and keystone species. Listen to several Planet Pod podcasts on rewilding.

## S

**Science Based Target** Targets adopted by companies to reduce greenhouse gas (GHG) emissions are considered “science-based” if they are in line with what the latest climate science says is necessary to meet the goals of the Paris Agreement – to limit global warming to well-below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C. There is an “emissions gap” of about 1

trillion tonnes between the national commitments to cut GHG emissions countries made under the Paris Agreement of 2015 and what is needed to achieve net zero and limit global temperature rise to below 1.5 degC. Each sector, and potentially each business, will have a different Science Based Target depending on what they do and the carbon intensity of their operations.

**Scope 1,2 & 3 emissions** Scope 1 covers direct GHG emissions from owned or controlled sources. Scope 2 covers indirect GHG emissions from the generation of purchased electricity, steam, heating and cooling consumed by the reporting company. Scope 3 includes all other indirect GHG emissions that occur in a company's value chain.

**Stern review** A report on the economics of climate change led by Lord Nicholas Stern, a former World Bank economist. It was published on 30 October 2006 and argued that the cost of dealing with the consequences of climate change in the future would be higher than taking action to mitigate the problem now.

**Sustainability** - being able to live in a way which meets the needs of today without screwing things up for future generations.

## T

**Technology transfer** The process whereby technological advances are shared between different countries. Developed countries could, for example, share up-to-date renewable energy technologies with developing countries, in an effort to lower global greenhouse gas emissions.

**Tipping point** A tipping point is a threshold for change, which, when reached, results in a process that is difficult to reverse. Scientists say it is urgent that policy makers halve global carbon dioxide emissions over the next 50 years or risk triggering changes that could be irreversible.

**Ten years** - how long we have got to sort this all out!

## U

**UNEP** United Nations Environment Programme.

**UNFCCC** The United Nations Framework Convention on Climate Change is one of a series of international agreements on global environmental issues adopted at the 1992 Earth Summit in Rio de Janeiro. The UNFCCC aims to prevent "dangerous" human interference with the climate system. It entered into force on 21 March 1994 and has been ratified by 192 countries.

**UN Sustainable Development Goals (SDGs)** Otherwise known as the Global Goals, SDGs are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. The 17 Goals build on the successes of the Millennium Development Goals, while including new areas such as climate change, economic inequality, innovation, sustainable consumption, peace and justice, among other priorities. The goals are interconnected – often the key to success on one will involve tackling issues more commonly associated with another.

## V

**Vegetarian and Vegan** – lifestyle choices which many more people are taking up and which can help reduce your personal; carbon footprint and eat more healthily. A quarter of global CO2 emissions comes from food, with over a half of these coming from animal products. Beef and lamb are the major contributors. Switching to a plant-based diet and avoiding meat and dairy products is one of the biggest ways to reduce your environmental impact and help tackle climate change.

## W

**Waste** (or living waste free). Trying to do all we can to avoid waste in the first place (so, using reusable shopping bags, avoiding unnecessary packaging, reusing or repurposing something rather than throwing it away, recycling wherever possible). Breaking out of the linear “take, make, use, waste” way of thinking and shifting to a circular economy model where waste is a valuable resource to be reused or recycled if we can’t avoid it.

**Weather** The state of the atmosphere with regard to temperature, cloudiness, rainfall, wind and other meteorological conditions. It is not the same as climate which is the average weather over a much longer period.

## X

**XR (Extinction Rebellion)** An important mass protest movement which has had dramatic impact in the short time it has been going. Listen to Planet Pod podcasts with founders and activists – ordinary people like us.

**Xtreme weather patterns (!)** We are likely to see more severe weather as a result of climate change – more droughts, fiercer storms, increased flooding.

## Y

**Youth Justice Movement** Started by Greta Thunberg but now a global movement of young people committed to making their voices heard and holding our generation to account for the impact of Climate Change. In the UK we have the UK Student Climate Network – catch our podcast *Youth Climate Strikes - What Next?* for a fascinating discussion with students on their hopes and fears for the planet and their agenda for change.

## Z

**Zero (as in “Net Zero”)** "Net zero" refers to achieving an overall balance between emissions produced and emissions taken out of the atmosphere. Like a bath with the taps on, an approach to achieving this balance can be either to turn down the taps (the emissions) or to drain an equal amount down the plug (removals of emissions from the atmosphere, including storage for the emissions such as "carbon sinks").

In June 2019 the UK became the first major economy in the world to pass laws to end its contribution to global warming by 2050. The target will require the UK to bring all greenhouse gas emissions to net zero by 2050, compared with the previous target of at least 80% reduction from 1990 levels. Listen to PP’s series on Net Zero in collaboration with the Grantham Institute.

