WHY NET ZERO?

WHY ‘NET ZERO EMISSIONS BY 2050’? AN EXPLAINER

What does ‘net zero’ mean and how does it relate to the Paris Agreement, climate change and Australia? Here’s an explanation along with a few key phrases to help it make sense.

WHAT IS CLIMATE CHANGE?

Climate change is a change in the pattern of weather, and related changes in oceans, land surfaces and ice sheets, occurring over time scales of decades or longer.

In our atmosphere there are close connections between temperature, water vapour, the extent of polar ice sheets and the concentrations of greenhouse gases (especially CO₂). Human activities – such as burning fossil fuels and deforestation – have caused an increase in the amounts of CO₂ (and other greenhouse gases) entering the atmosphere. This has meant that more heat from the sun is being trapped in our atmosphere. This is the greenhouse effect. As more heat is trapped in our atmosphere, the temperature rises. This is known as global warming and it is global warming that is leading to a climate change.

WHO ARE THE UNFCCC?

The global organiser tasked with seeking consensus on the global response to climate change is the United Nations Framework Convention on Climate Change (UNFCCC). They convene the annual international meetings - or Conferences of the Parties (abbreviated to COP, followed by the meeting number). The Paris Agreement was adopted at COP22, held in Paris in 2015.

The Paris Agreement was a critical turning point towards creating a climate-resilient world. In simplest terms, it requires countries to rapidly reduce their greenhouse gas emissions* and defines the objective as ‘holding the increase in the global average temperature to well below 2 degrees - pursuing efforts to limit it to 1.5 degrees above pre-industrial levels’.

PRE–INDUSTRIAL LEVELS REFER TO THE LEVEL OF GREENHOUSE GASES IN OUR ATMOSPHERE BEFORE THE ADVENT OF THE INDUSTRIAL REVOLUTION, WHICH OCCURRED FROM 1750 TO 1850.
WHY NET ZERO?

For the Paris Agreement to come into force, 55 parties that signed the Agreement in Paris, representing at least 55% of global emissions, needed to formally ratify or join the Agreement. This happened on November 4, 2016, with 94 countries covering 65.85% of global emissions having ratified the Paris Agreement. Other countries will continue to join. Importantly, any country that wants to remain part of this Agreement can’t go backwards in their commitments.

* WE OFTEN SEE THE TERMS ‘GREENHOUSE GAS EMISSIONS’, ‘CARBON EMISSIONS’ AND ‘CO₂ EMISSIONS’ USED INTERCHANGEABLY: WHAT’S THE DIFFERENCE?

**MANY TYPES OF GREENHOUSE GASES ARE CAUSING OUR CLIMATE TO CHANGE. EACH HAS DIFFERENT IMPACTS AND REMAINS IN THE ATMOSPHERE FOR DIFFERENT LENGTHS OF TIME. HOWEVER, WITH THE MOST COMMON GREENHOUSE GAS BEING CARBON DIOXIDE, SCIENTISTS OFTEN STANDARDISE THESE GASES INTO ‘CARBON DIOXIDE EQUIVALENTS’ — THOUGH THIS IS OFTEN ABBREVIATED TO ‘CARBON’ OR ‘CARBON EMISSIONS’.

**DIFFERENT TYPES OF GREENHOUSE GASES INCLUDE:

* **WATER VAPOUR** — THIS IS THE MOST ABUNDANT GREENHOUSE GAS, IT INCREASES AS THE EARTH’S ATMOSPHERE WARM.

* **CARBON DIOXIDE (CO₂)** — CO₂ IS THE GAS WE HEAR THE MOST ABOUT. NORMALLY THIS IS A MINOR — YET VERY IMPORTANT — COMPONENT OF THE ATMOSPHERE. CO₂ IS RELEASED THROUGH NATURAL PROCESSES LIKE RESPIRATION AND VOLCANO ERUPTIONS, BUT ALSO THROUGH HUMAN ACTIVITIES SUCH AS DEFORESTATION AND BURNING FOSSIL FUELS.

* **METHANE** — THIS GAS IS PRODUCED BOTH NATURALLY AND THROUGH HUMAN BEHAVIOURS, SUCH AS WASTE BREAKDOWN IN LANDFILLS, AGRICULTURE, AND COWS BURPING! METHANE IS A MORE POTENT GREENHOUSE GAS THAN CO₂. HOWEVER, THERE IS OVER 200 TIMES MORE CO₂ IN THE ATMOSPHERE THAN METHANE.

* **NITROUS OXIDE** — THIS GREENHOUSE GAS IS PRODUCED THROUGH FARMING PRACTICES, SUCH AS THE USE OF COMMERCIAL AND ORGANIC FERTILISERS.

* **CHLOROFLUOROCARBONS (CFCs)** — KNOWN FOR THEIR CONTRIBUTION TO THE DESTRUCTION OF THE OZONE LAYER, THESE GREENHOUSE GASES HAVE LIMITED PRODUCTION DUE TO THE MONTREAL PROTOCOL ON SUBSTANCES THAT DEPLET THE OZONE LAYER.
WHY NET ZERO?

HOW CAN CHANGING EMISSIONS, CHANGE CLIMATE CHANGE?

In order to avoid the most serious impacts of climate change, scientists have estimated a physical limit on the amount of greenhouse gases that can be released into the atmosphere before the 1.5 or 2 degree average temperature increase is breached. The allowable amount of emissions under that threshold is termed the ‘carbon budget’. The carbon budget has profound implications for short-term emission reduction efforts, as the greater volume of emissions ‘spent’ now, the faster and deeper emissions reductions will need to be in the future, at greater cost and risk.

SO STAYING BELOW 2 DEGREES (AND AIMING FOR 1.5) IS THE OBJECTIVE: HOW DO WE GET THERE?

If we want to stay below 2 degrees, we need to put the carbon handbrake on.

We do this by reducing the volume of greenhouse gas emissions that human activity releases into the atmosphere until our total output is no greater than the emissions we remove, through activities like planting carbon forests, reducing deforestation and using technologies like carbon capture and storage. So no more goes out than goes in = net zero.

THE GOAL: NET ZERO EMISSIONS BY 2050

Given our estimated remaining carbon budget, we need global carbon emissions to reach net zero by around 2050 and all greenhouse gases to reach net zero by around 2070.

RISKS AND OPPORTUNITIES

It is critical that governments adopt the ‘net zero emissions by 2050’ target. While targets don’t directly reduce emissions, they clarify government intent and future direction, helping them link near-term decisions with longer-term timeframes, providing policy frameworks, and supporting the creation of programmes and legislation that assists the transition. Industries can implement net zero business plans with confidence. Investment in renewables and energy efficiency can grow and in turn, help make technology more affordable and advance research and development.

DECARBONISATION – TO REDUCE THE AMOUNT OF GREENHOUSE GASES RELEASED INTO THE ATMOSPHERE AS A RESULT OF HUMAN ACTIVITY.
WHY NET ZERO?

As the world begins moving towards net zero emissions, embracing the challenge of getting a wriggle on with ‘decarbonising’ Australia’s economy offers major benefits including:

• Giving a foot up to innovative technologies, practices, services and business models that attract investment and employment
• Actions like energy efficiency can improve the productivity of our economy
• Other benefits in areas like health, productivity, amenity and environment

Conversely, the risks of not setting a net zero emissions target (beyond the obvious ones) include:

• With the world on the move to net zero emissions, economies that remain relatively emissions-intensive could be at a disadvantage, facing challenges like regulatory constraints (here and overseas), reduced exports and reduced investment.
• If we delay action, we’ll still need to make it up at a later date - when reduction timeframes would be much sharper (ouch!)
• If we do nothing, our economy will be affected by the mitigation efforts of other countries, felt through things like reduced fossil fuel exports and the risk of stranded assets for fossil fuel based infrastructure.