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Briefing

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Briefing: The 2021 Glasgow Climate Pact: steps on the transition pathway towards a low carbon world

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This briefing reviews progress that was made at the 26th United Nations Climate Change Conference of the Parties (COP26) held in Glasgow, Scotland, UK over 1–12 November 2021. The context of the global climate change challenge is outlined, along with the aspirations of the major participating international groups. An overall balance sheet is provided that gives an assessment of the achievements and disappointments in the outcomes of COP26. This assessment sets a backdrop to what needs to be achieved when the Parties next meet at COP27 in Sharm El-Sheikh, Egypt in 2022 to address both immediate and longer-term climate change mitigation, adaptation and climate finance.

Keywords: climate change/energy/sustainability

1. The climate change challenge

The 26th United Nations (UN) Climate Change Conference of the Parties (COP26) held in Glasgow over 1–12 November 2021 was seen as a critically important staging post on the transition pathway towards stabilising the Earth's warming climate (Ares, 2021; Cohen, 2021; Hammond and Newborough, 2022). Organised by the UK Government in partnership with Italy (the UK–Italy Presidency), COP26 brought together governments from around the world to agree coordinated actions to tackle climate change: the components of which are illustrated in Figure 1 (Faghmous and Kumar, 2014; IPCC, 2001). The summit sought to build on the 2015 Paris Agreement on climate change (Ares and Hirst, 2015; IPCC, 2018), agreed at COP21. That climate accord aimed to keep temperatures well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels (Gao *et al.*, 2017; Hammond, 2021; IPCC, 2018). Otherwise, climate modellers believe that humanity will be subject to a greater frequency of extreme weather events (IPCC, 2021): life-threatening heatwaves and forest fires, more intense storms, devastating floods and serious droughts. Other looming threats include sea level rise due to melting ice sheets and glaciers, ocean acidification caused by carbon dioxide (CO₂) absorption and food shortages due to desertification. In their 'special report' on the impacts of global warming of 1.5°C above pre-industrial levels and the

implications for global 'greenhouse gas' (GHG) emission pathways, the Intergovernmental Panel on Climate Change (IPCC, 2021) argued that (a) global warming is likely to reach 1.5°C between 2030 and 2052 and (b) substantial carbon dioxide removal (i.e. 'negative emissions') technologies would need to be in place to return global warming to 1.5°C during the second half of this century. They would both be needed to compensate for residual GHG emissions (in order to be achieving net zero by 2050) and recover from a limited overshoot (IPCC, 2021). Climate modellers assert that this would require net-zero GHG emissions (or 'carbon neutrality') by 2050 together with a halving of these emissions by 2030 (IPCC, 2018; UNEP, 2021). However, bottom-up national pledges on GHG mitigation efforts – the so-called 'nationally determined contributions' (NDCs) under the UN Framework Convention on Climate Change (UNFCCC) (Gao *et al.*, 2017) – received ahead of COP26 were expected if implemented in full to only curtail global warming to around 2.7°C (Ares and Hirst, 2015; UNEP, 2021). Humanity will therefore be required to take actions (i.e. systems transition, including in the 'decarbonisation' of buildings (Norton *et al.*, 2021)) that are unprecedented in terms of urgency and scale in order to arrive at net negative global emissions between 2050 and 2070. The probability of passing beyond critical 'tipping points' – low-likelihood, high-impact outcomes (IPCC, 2021) – which could trigger feedback loops (see again Figure 1) that further exacerbate the effects of

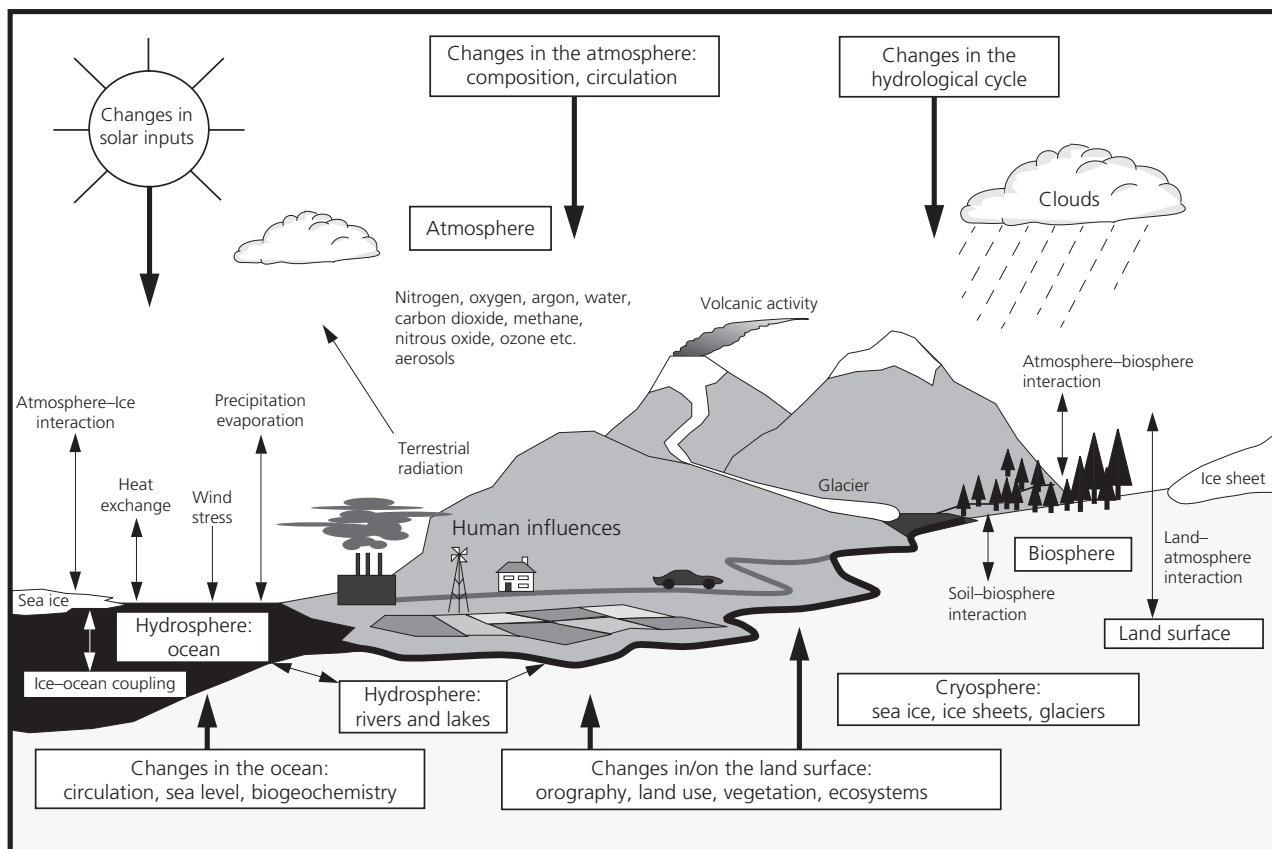


Figure 1. Schematic representation of the physical components within the global climate system (bold), their processes and interactions (thin arrows), and some aspects that might change due to global warming (bold arrows) (source: adapted by Faghmous and Kumar (2014) from IPCC (2001))

climate change is increased by delays in achieving net zero and consequent higher levels of global warming.

2. Aspirations of the main international groups at COP26

2.1 Major economies

In its *Emissions Gap Report 2021* (UNEP, 2021), the UN Environment Programme (UNEP) urged all nations to pursue efforts to cut GHG emissions. It called for a green Covid-19 pandemic recovery that required more ambitious, updated NDCs with new net-zero commitments. The implementation of pledges prior to COP26 would have only reduced predicted 2030 emissions by 7.5%; whereas reductions of 30% are needed to stay on the least-cost pathway for 2°C and 55% for 1.5°C. The UNEP (2021) has also noted that there had been limited progress in climate change mitigation among the G20 countries (see Figure 2), the world's major economies, accounting for more than 80% of economic wealth (as measured by GDP), 75% of global trade and 60% of the planet's

population. Few G20 member states had submitted long-term low-GHG development strategies to the UNFCCC ahead of COP26. The largest emissions reduction pledges came from the United States of America (USA), the European Union (EU-27), the UK and Argentina, while China and Japan had announced their intention to submit prior to the summit.

2.2 Least developed countries

In contrast to the G20, the 46 poorer nations in the least developed countries (LDC) Group on Climate Change are especially vulnerable to anthropogenic climate change but are least responsible for its cause. In a report produced in advance of COP26, the LDC Group (2021a) outlined five key issues it saw as critical for a successful outcome to COP26.

- Cutting GHG emissions. Rapid acceleration in the reduction of GHG emissions led by the G20 economies that are the biggest source of emissions, so thus have the largest capacity for change (i.e. China (28% of emissions),

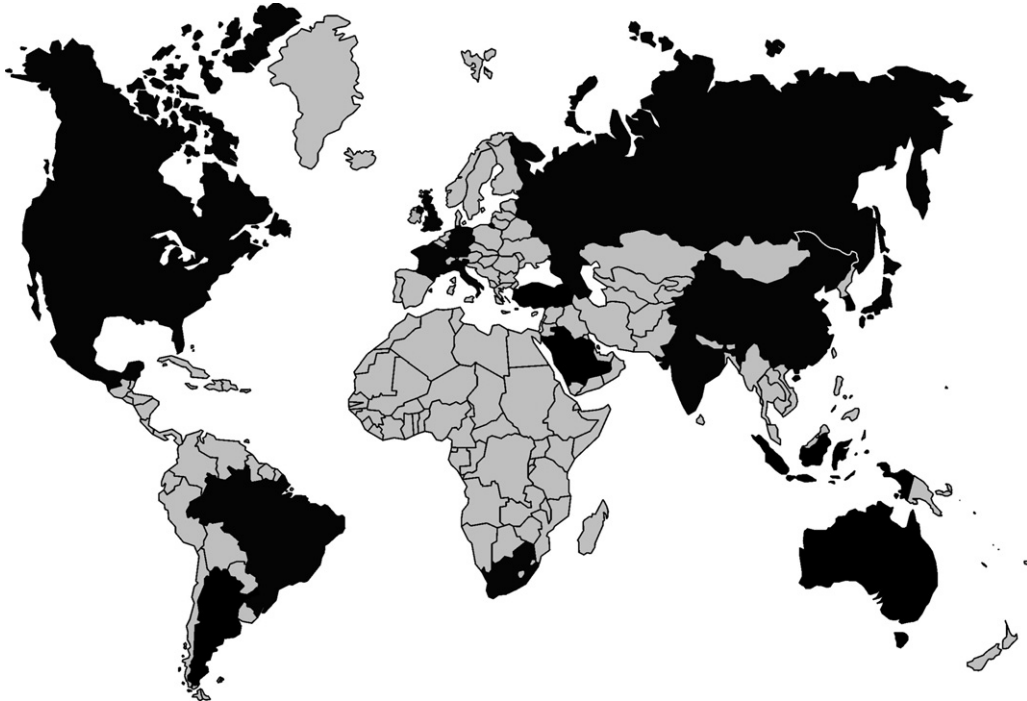


Figure 2. G20 grouping of nations (shaded black, from left to right: USA, Canada, Mexico, Argentina, Brazil, France, UK, Germany, Italy, South Africa, the Russian Federation, Turkey, Saudi Arabia, India, China, Indonesia, South Korea, Japan and Australia) (source: Cranston and Hammond (2012))

the EU-27 (19% of emissions), the USA (15% of emissions), India (7% of emissions), Japan (3% of emissions) and the Russian Federation (5% of emissions), based on 2019 emissions data (Friedlingstein *et al.*, 2020; UNEP, 2021)).

- Climate finance. Wealthier countries promised US\$100 billion per year in climate finance by 2020 at the COP15 summit in Copenhagen in 2009, together with increased annual sums from 2025. This funding was intended to assist lower-income countries in adapting to climate change and to mitigate their emissions. These promised financial resources have not been provided to-date. The LDC Group sought this to be urgently addressed.
- Climate change adaptation. The LDC Group called for at least 50% of this climate finance to be used to help the most vulnerable countries adapt to the effects of global warming.
- Loss and damage due to climate change. Since the start of the Industrial Revolution (in the UK *c.* 1760–1840) industrialised nations have continued to be the principal GHG emitters. However, it has been the most vulnerable (including small low-lying island nations) that are experiencing permanent loss and damage to their habitat. The LDC Group believes that this responsibility should be

acknowledged by the belated delivery of earlier promised measures on emissions reduction and climate finance.

- Implementation of the Paris Accord. The LDC Group wants to see issues, such as carbon trading transparency, resolved together with all countries agreeing common 5-year timeframes for their national climate plans (NDCs).

2.3 The organisers

The British COP26 President Alok Sharma (a Member of Parliament (MP) and UK Cabinet Minister) largely reiterated the major economies' and LDC's challenges in advance of the COP26 Glasgow Climate Summit. Priority was given to addressing the gaps in NDCs (identified by the UNEP (2021) and others), as well as strengthening the actions planned for 2030 (Ares, 2021). He added 'enabling ambition' by way of carbon markets, and agreeing a common timeframe for emissions reductions, as well as improved rules for transparent reporting of both actions and supports (known as the 'Paris Rulebook'). Boris Johnson MP (the UK Prime Minister) gave a forceful and pointed challenge; calling for 'action on coal, cars, cash and trees'. As UN Special Envoy for Climate Action and Finance, the former Governor of the Bank of England, Mark Carney, was charged at the beginning of 2020 with

building a private finance system to aid the achievement of the net-zero GHG target.

3. 'Balance sheet' of COP26 achievements and disappointments

The outcomes from 2 weeks of robust negotiations at COP26 were encapsulated in the Glasgow Climate Pact (UNFCCC, 2021b) that indicates that some positive commitments towards mid-century decarbonisation were achieved, along with some disappointments.

3.1 Achievements

In the credit column of the climate 'balance sheet' was a commitment by more than 40 countries, in a new Global Coal to Clean Power Transition Statement (GCTCPTS), to phase-down unabated coal power, scaling up clean energy technologies and ensuring a 'just transition' away from coal (Cohen, 2021; Hammond and Newborough, 2022). Eleven countries tackled the other fossil fuels by creating the Beyond Oil and Gas Alliance (BOGA). Ireland, France, Denmark and Costa Rica among others, as well as some subnational governments, launched this first-of-its-kind alliance to set an end date for national oil and gas exploration and extraction (Cohen, 2021). Likewise, an agreement – the Global Methane Pledge – was made by over 100 countries to cut methane emissions by 30% by 2030. Methane has a global warming potential (GWP) 28–36 times that of carbon dioxide over 100 years, but with a much shorter residence time in the atmosphere – a decade or two – before decaying to carbon dioxide (IPCC, 2021). This implies reductions from agriculture (particularly cattle grazing and rice paddies), gas flaring from oil installations, leaks from gas transportation infrastructure and major cuts in waste disposal at landfill sites. Over 140 leaders, including those from most G20 countries, also signed up to a Glasgow Leaders' Forests & Land Use Declaration to end, and then reverse, deforestation and land degradation by 2030. These included leaders from countries with major tropical forest reserves – Brazil, Democratic Republic of Congo and Indonesia – as well as those with vast expanses of boreal forests – in Canada, Russia and the USA (Alaska). A Breakthrough Agenda endorsed by over 40 nations plus the EU-27 was launched aimed at accelerating the development and deployment of clean technologies and sustainable solutions during this decade, intending to make climate change mitigation and adaptation affordable and accessible for all (Cohen, 2021; Hammond and Newborough, 2022). In addition, 28 industrial companies pledged to drive growth in the demand for, and supply of, hydrogen (Hammond and Newborough, 2022; WBCSD, 2021). Clearly this would need to be produced as so-called 'green hydrogen' in order to achieve net-zero GHG emissions (Newborough and Cooley, 2020). Reinforced global carbon market rules to avoid double counting of carbon off-

sets and to encourage private capital flowing to developing countries also came out of the COP26 process. This led to a surge in the EU Emissions Trading Scheme (ETS) carbon price which increased to a record high of €66 per tonne in the week following the meeting and rose to €90 by the end of January 2022. Mark Carney's strenuous efforts to secure private finance bore fruit: the Glasgow Finance Alliance for Net Zero (GFANZ) by way of 450 companies and financial institutions from 45 countries agreed to align \$130 trillion (Cohen, 2021; Hammond and Newborough, 2022) – some 40% of the world's financial assets – with the goals set out in the Paris Agreement, including limiting global warming to 1.5°C. One hundred national governments, cities, states and major car companies signed the Glasgow Declaration on Zero-Emission Cars and Vans to end the sale of internal combustion engines by 2035 in leading markets, and by 2040 worldwide. At least 13 nations also committed to end the sale of fossil fuel-powered heavy duty vehicles by 2040.

3.2 Disappointments

In the COP26 debit column, the move away from fossil fuels was hindered by the failure of the world's most coal-dependent states to sign the GCTCPTS, including Australia, China, India and the USA (Hammond and Newborough, 2022). Indeed, on the very last day of COP26, the G77 group of developing countries plus China – led by India's environment minister Bhupender Yadav – objected to the wording 'phase-out coal' in the final document and, after tense 'huddles', replaced that by 'phase-down coal'. The Alliance of Small Island States (AOSIS) and other LDCs expressed profound disappointment at this. Similarly, some big GHG emitters, such as China, India and Russia, declined to commit to the 30% cut in methane emissions by 2030. The GFANZ while providing, private finance support for LDCs, was criticised by some environmental campaigners for its lack of commitment to avoiding high-carbon investments (Hammond and Newborough, 2022). A proposed Glasgow Loss and Damage Facility on intergovernmental or public climate finance was not included in the final decision to the dismay of many developing nations (Hammond and Newborough, 2022). Thus, while acknowledging that discussions had 'come a long way in Glasgow', the LDC Group felt the Pact was 'far from enough to match the scale of the crisis and to meet the needs of our countries' (LDC Group, 2021b).

4. Concluding remarks

However, did COP26 'keep 1.5°C alive'? The NDCs submitted by the end of the meeting (according to the respected Climate Action Tracker website (CAT, 2021)), would result in a 2.4°C global warming by the end of the century; obviously some way short of the 1.5°C aspiration. However, if further pledges, for example, by India (of achieving net-zero emissions by 2070), were fully achieved, then global warming would peak at 1.9°C

before falling to 1.8°C by 2100 (CAT, 2021; Hammond and Newborough, 2022).

The Glasgow Climate Pact emphasised the short-term urgency of tackling the emissions overshoot currently predicted for 2030. The Energy Transitions Commission (ETC, 2021) – an international think tank based in London (effectively a global coalition of leaders) – has said that on a business-as-usual pathway global carbon dioxide emissions could reach ~43 GtCO₂ in 2030. To maintain a pathway consistent with limiting a temperature increase to 1.5°C, requires global emissions to fall by ~22 GtCO₂/year (51%) by 2030, alongside a ~150 Mt/year reduction in methane emissions. Of the 22 GtCO₂/year gap, only ~3.5 GtCO₂/year in reductions has been pledged in NDCs, but ETC estimated initiatives announced at COP26 could add a further ~6 GtCO₂/year of emissions reductions in 2030 beyond NDCs, together reducing emissions by 22%. This would leave the gap remaining at some 12.5 GtCO₂/year, requiring a further 29% decrease below the current projected pathway. On methane emissions, ETC identified some overlap between NDCs and the Global Methane Pledge, but together, if achieved, they would amount to a 55 Mt/year reduction in methane emissions leaving in excess of 95 Mt/year reductions required to ‘keep 1.5°C alive’. That is a major challenge, which reflects the absence from this agreement of some of the world’s largest methane emitters, including Russia, China and Iran.

The Glasgow Climate Pact established a work programme that raises ambition by asking all countries to revisit their NDCs to ensure they align with the end of the twenty-first century goal of a 1.5°C temperature rise during the calendar year 2022. The

global GHG emissions trajectories under current policies and NDCs submitted just prior to COP26 are depicted in Figure 3 out to 2100 (adapted from CAT (2021)). The current policies instigated around the world are projected to result in about 2.7°C warming above pre-industrial levels by 2100 (or 2.7–2.9°C allowing for uncertainties). In contrast, national pledges or NDCs are anticipated to limit warming to 2.4°C (CAT, 2021), whereas when binding long-term or net-zero targets (UNFCCC, 2021a) are included this may lead to about 2.1°C warming above pre-industrial levels (see again Figure 3; adapted from CAT (2021)). These fall far short of the 2015 Paris Agreement aspiration of limiting global warming to a 1.5°C temperature rise above pre-industrial levels by the end of the century. The 2030 ‘ambitions gap’ in global GHG emissions is clearly identified in Figure 3.

The Glasgow Climate Pact also introduced an annual high-level ministerial round table to discuss pre-2030 ambition. This is a crucial mechanism for the prospects of achieving a maximum 1.5°C global temperature rise, which accelerates the previous 5-year cycle for raising ambition. As the Climate Summit ‘caravan’ moves on to COP27 in Sharm El-Sheikh, Egypt, scheduled for late 2022, it will need to encourage the ratcheting up of GHG emissions reduction by ending use of unabated coal, and minimising methane emissions, from big emitter nations and regional blocks (particularly China, USA, EU-27, India and the Russian Federation) (Hammond and Newborough, 2022). Only then will the GHG emissions gap be eliminated (UNEP, 2021). Countries will also have to deliver their various pledges made at COP26 on mitigation, adaptation and climate finance as these remain urgent priorities (Hammond and Newborough, 2022).

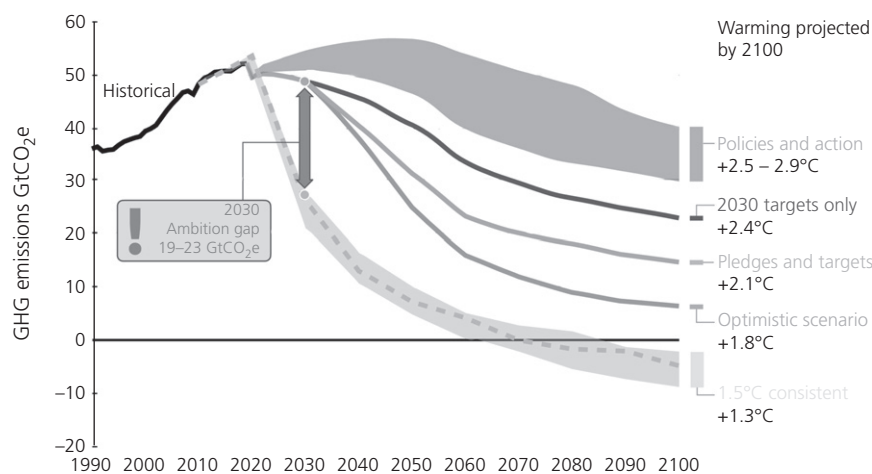


Figure 3. Historical and projected annual total global GHG emissions out to 2100 based on current policies and NDCs submitted by the parties prior to COP26. Units: CO_{2e} – carbon dioxide equivalents (source: adapted from CAT (2021))

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