SOVEREIGN ESG INSIGHTS

JULY 2021

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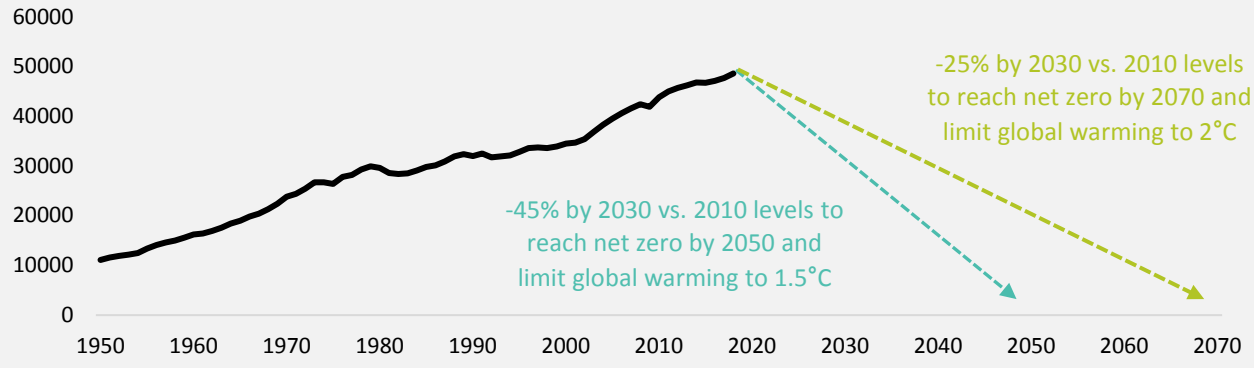
2021: A LANDMARK YEAR IN GLOBAL CLIMATE POLICY

The year 2021 constitutes a key phase in the fight against climate change and in the global efforts to meet emissions targets in the 2015 Paris Agreement. The agreement aims to limit global warming "ideally" to 1.5 degrees Celsius (°C), targeting a five-year cycle of climate action. Countries were required to update their climate strategies, known as nationally determined contributions (NDCs), by the end of 2020, which will be a focus at this year's 26th United Nations Climate Change Conference (COP26). Much is riding on the success of COP26, and the UN has called it "a make or break" event in the fight against climate change.

In an effort to strengthen global momentum ahead of November's COP26, US president Joe Biden held a virtual Leaders Summit on Climate in April. The US government wanted to reestablish its global leadership in the fight against climate change and, in conjunction with other countries, used the summit as a platform to announce new climate and greenhouse gas (GHG) emissions targets. Despite recent new promises, global efforts are far from achieving the Paris Agreement's ideal target of 1.5°C. According to the Intergovernmental Panel on Climate Change (IPCC), global emissions would have to decline by 45% in 2030 from 2010 levels to achieve net-zero emissions (NZE) by 2050 and limit global warming to around 1.5°C (see chart below). How close are countries globally to delivering on the IPCC recommendations? At the start of 2021, the UN Framework Convention on Climate Change (UNFCCC) estimated that year-end 2020 NDC submissions would likely lead to a 2.2% *increase* in global emissions by 2030 versus 2010 levels, falling significantly short of specified targets. Using data for the world's largest emitters (representing about 62% of global emissions), we estimated that the outcome of mid-2021 NDC submissions might lead to a GHG emissions decline of 0.1% by 2030 from 2010 levels.

So there is little doubt of a significant gap between rhetoric and climate-change actions globally. We dedicate this ESG publication to taking a deeper look at global emissions trends, seeking to identify the GHG emitters that will play the biggest role in determining the path of global pollution levels over the coming decades. We provide a top-down comparison of countries' GHG emissions targets and highlight relative leaders and laggards in the fight against climate change. In developed-market (DM) countries, the US and Europe—particularly the UK—are leading global efforts to reduce GHG emissions over the coming decades, but more has to be done. We'll also discuss how countries' climate strategies and commitments to increasing renewable energy fit into our proprietary ESG framework.

Global GHG Emissions Until 2018 (MtCO2e, ex LUFUC) & Net Zero 2050 & 2070 IPCC Targets

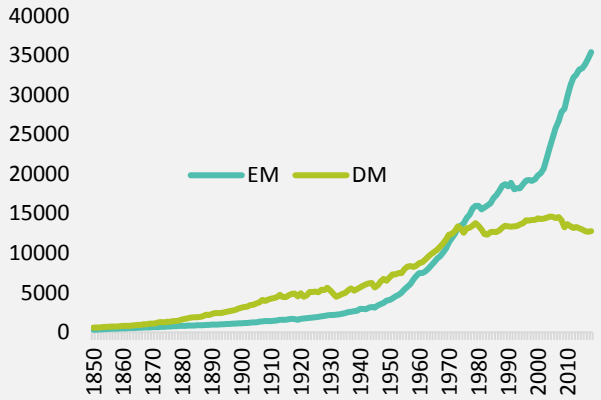


Source: J. Gütschow, J.; Günther, A.; Jeffery, L.; Gieseke, R., "The PRIMAP-Hist National Historical Emissions Time Series (1850–2018)," v2.2 (2021), Zenodo, IPCC and AB

Who Are the Largest Polluters That Need to Drive Climate-Change Policy?

In this section, we analyze global emissions trends and expose the largest polluters, both from a nominal and per capita perspective. After all, if the main culprits of global GHG emissions do not formulate (and eventually implement) effective reduction strategies, there will be little hope of containing global warming to the targets identified by the 2015 Paris Agreement. Looking at underlying trends, carbon data indicate that $C0_2$ emissions levels continued to increase through 2019, with the COVID-19-related dip in 2020 emissions likely to be reversed in 2021. The actual peak in global GHG emissions and ensuing decline over the coming years and decades remain uncertain and will heavily depend on countries' commitments to implement their future emissions targets.

Global GHG Emissions by Regions Until 2018 (MtCO2e)

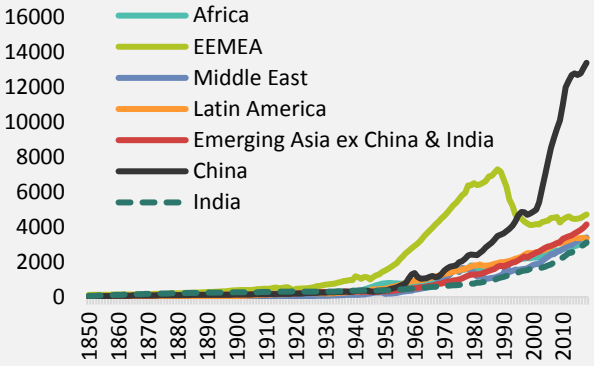


Source: "The PRIMAP-Hist National Historical Emissions Time Series (1850–2018)" and AB

The Paris Agreement marked an essential step toward global consensus for concerted GHG emissions reductions. That said, sharing the associated costs equitably among nations—according to the UN "fair share" concept—will remain controversial and may present challenges to GHG emissions reductions for some time. Part of the problem: while there is scientific guidance, there is no exact definition of what this equitable share should be, let alone assurances that countries will recognize and adhere to it.

Economic growth and rapid decarbonization efforts may be regarded as incompatible, from the perspective of vested (fossil fuel) business interests (in both DM and EM), as well as countries' developmental goals. Over the past two decades, EM countries—spearheaded by emerging Asia, especially China—have been driving the increase in GHG emissions (see charts). This trend has been closely correlated with the rapid increase in EM economic growth and national wealth over the same period. At this juncture, numerous EM countries continue to argue that their developmental levels are still far from those of DM and that it would be unfair to impose potentially costly decarbonization measures at key stages of their development and urbanization process.

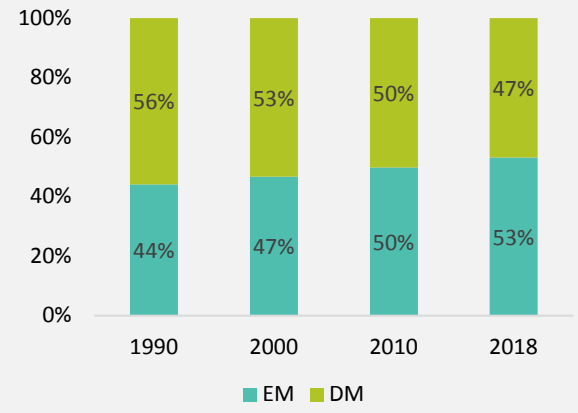
Global GHG Emissions by Regions Until 2018 (MtCO2e)



Source: "The PRIMAP-Hist National Historical Emissions Time Series (1850–2018)" and AB

Closely related to that point, there have been calls for DM countries to shoulder a greater burden of emissions reductions because of their greater historical contributions to GHG pollution. This case was easy to make until the turn of the 20th century. Emissions dynamics started to change more meaningfully in the 2000s, and more recent data suggest that the burden of historical emissions has shifted increasingly toward EM countries. While declining over the past decades, the contributions of the US and Europe continued to account for the largest share of emissions—24% and 16%, respectively—in 2018. In contrast, China has seen a steady increase in its GHG pollution and historical share during that time. As discussed in more detail in the next section, China has committed to a peak in its emissions

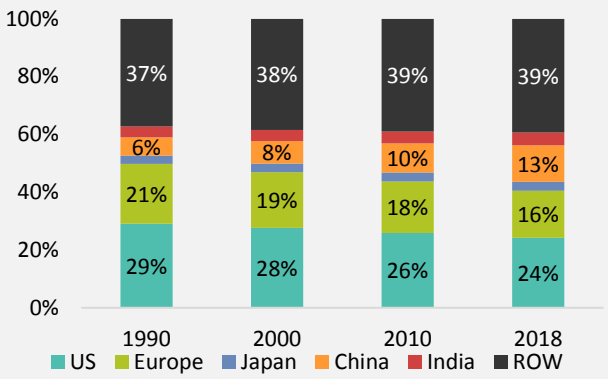
Global Share of Cumulative GHG Emissions Since 1850



Source: "The PRIMAP-Hist National Historical Emissions Time Series (1850–2018)" and AB

before 2030, at which point it would likely converge with historical pollution levels seen in Europe.

Global Share of Cumulative GHG Emissions Since 1850



Source: "The PRIMAP-Hist National Historical Emissions Time Series (1850–2018)" and AB

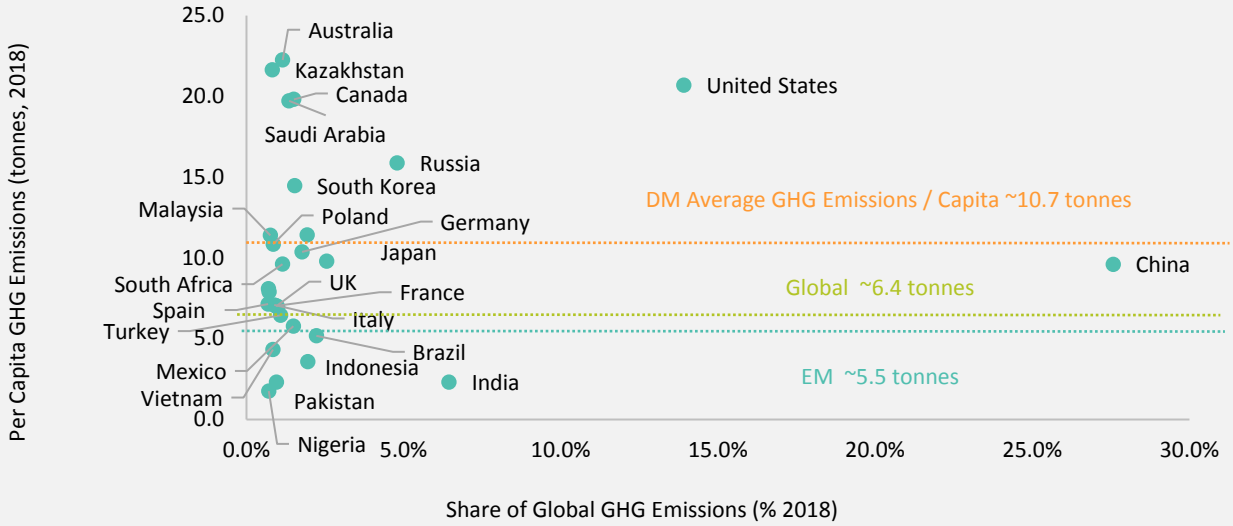
Historical contributions aside, the combination of nominal and per capita GHG emissions are, in our view, one of the best ways to compare countries and single out the world's largest polluters and countries that need urgent climate action. In the chart below, we depict the largest global GHG emitters in 2018, comparing their nominal share of GHG pollutions with per capita emissions levels. China (27.6%) and the US (13.9%) combined accounted for more than 40% of global GHG emissions in 2018, followed by India (6.4%), Russia (4.8%) and Japan (2.6%) as the top five largest GHG emitters. Without the commitment of these countries—particularly China and the US—the chances of a meaningful reduction in global GHS and the prevention of global warming would be significantly compromised.

Perhaps more important, per capita GHG emissions reveal that several DM and EM countries have significantly higher pollution levels relative to their populations and a more urgent obligation to reduce pollution levels. In this context, the US stands out with not only a large nominal share of GHG emissions but also a significant GHG footprint of 20.7 tons per capita. This level is almost twice as large as the DM average of 10.7 tons and more than three times the global average of 6.4 tons. Hence, it is crucial that the US, under Biden's leadership, reestablishes itself as a leader in addressing GHG emissions and preventing climate change. Other DM countries, such as Canada and Australia, also screen as highly carbon-intensive, with an urgent need to address pollution levels.

In emerging markets, China's per capita emissions of 9.6 tons do not screen excessive on a global scale, especially when compared with other EM countries such as Kazakhstan, Saudi Arabia, Russia and South Korea. Yet, given China's share of total GHG pollution, it constitutes one of the most important countries in the world in determining the path of global GHG emissions over the coming decades.

On the other side of the spectrum, a number of major EM countries, such as Indonesia and India, maintain comparatively low GHG footprints. As mentioned above, India accounted for 6.4% of global GHG emissions in 2018, yet its per capita pollution levels stood at a relatively low 2.3 tons. The UK has one of the lowest per capita GHG footprints among DM nations and has seen some of the sharpest decreases in GHG emissions among major GHG emitters (see chart). As we detail in the next section, the UK has also made some of the most ambitious GHG emissions-reduction pledges for the decades ahead, putting it at the forefront of the global fight against climate change.

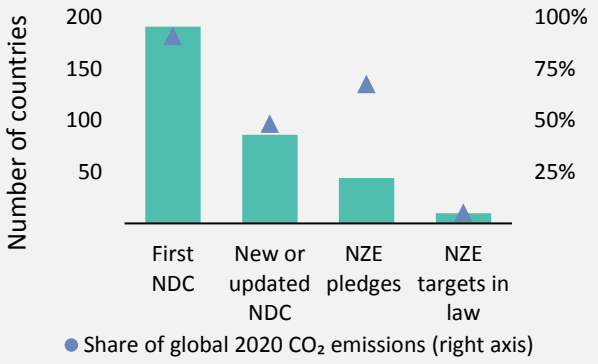
Largest GHG Emitters Globally (2018)



Source: "The PRIMAP-Hist National Historical Emissions Time Series (1850–2018)" and AB

Having identified the world's largest polluters in both nominal and per capita terms, we now evaluate what governments have actually promised to do over the next 10 years to reduce GHG emissions. As mandated by the 2015 Paris Agreement, many countries had updated their NDCs by the end of 2020. Some nations have continued to update NDCs in the run-up to Biden's climate summit and will likely continue to do so ahead of COP26 in Glasgow at the end of 2021.

Number of Country NDC and NZE Pledges, % of Global Emissions



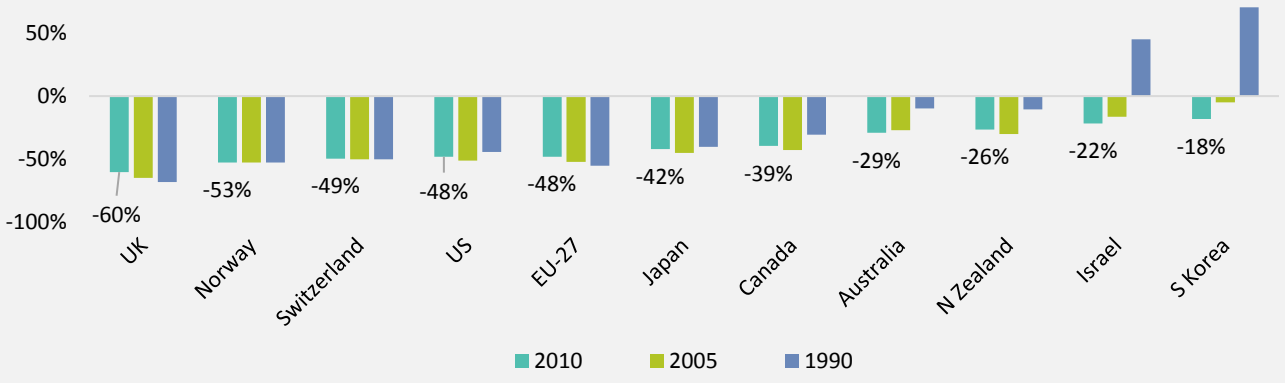
Source: Climate Action Tracker (CAT) and International Energy Agency

According to the International Energy Agency (IEA) and data collected by Climate Action Tracker (CAT), an independent scientific analysis, 59 countries and the EU27 (86 countries in total) had submitted new or updated NDCs by July 2021. That total accounts for just under half (45%) of the 191 signatories to the Paris Agreement and about 48% of global emissions. The COVID-19 pandemic has certainly contributed to NDC submission delays, but many countries have not yet revisited their NDC targets, as agreed to in 2015. The silver lining is that major global emitters have committed to NZE pledges by 2050–2060, which covers almost 75% of global emissions. A small number of countries, such as the UK, have encoded their NZE pledges into domestic law.

Some countries—including the US under Biden's leadership, the UK and, to some degree, China—have made ambitious revisions to their NDCs and NZE policies. While it is straightforward to monitor the timing of countries' NDC updates, it is harder to analyze how countries' pledges compare across regions and globally. Part of the difficulty is governments' use of different base years for their GHG reduction targets. In EM, the analysis is also complicated by most countries' lack of absolute GHG reduction targets. By using historical GHG emissions data, we provide a relative comparison of advanced economy (AE) pollution-reduction pledges, highlighting the current leaders and laggards. With the help of third-party assessments, such as CAT, we also offer a relative assessment for the largest polluters among EM countries—particularly China—as well as an opinion on the sufficiency of countries' NDCs.

NDC Targets in Focus: When comparing DM NDCs, using the same base year for emissions, Europe and the US are currently leading efforts (at least on paper) to reduce GHG emissions. The US now pledges to reduce GHG emissions by 51% versus 2005 levels (its base year) by 2030, a revised 2021 NDC target that President Biden announced in the run-up to his April climate summit. Before that, the US 2016 NDC targeted a 27% reduction in GHG by 2025 versus 2005 levels. Assuming a linear interpolation in GHG emissions declines between 2019 (the latest available GHG emissions) and 2030, the 2021 NDC indicates a 34% reduction in GHG emissions by 2025, an improvement to the previous 27% commitment. Conversely, a linear extrapolation of the 2016 NDC pointed toward a 40% reduction by 2030, which would have put US climate ambitions below those of Japan. When using 2010 as the

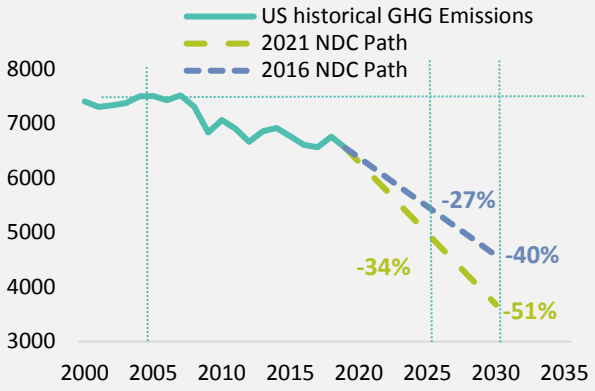
Latest NDC GHG Reduction Pledges by 2030 Versus 1990, 2005 and 2010 Base Years



Source: "The PRIMAP-Hist National Historical Emissions Time Series (1850–2018)", national NDCs, CAT and AB

base year (as referenced by the IPCC), US GHG emissions will be reduced by 48% by 2030.

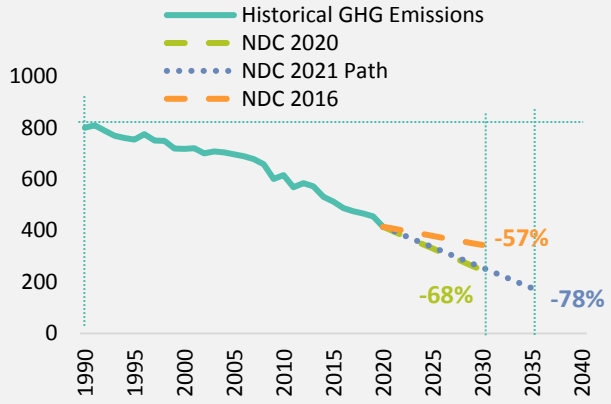
US GHG Emissions (MtCO2e), Current and Historical NDC Targets



Source: US Energy Information Administration, US NDC and AB

The UK increased its ambitions for GHG emissions reductions to 68% by 2030 versus 1990 levels in its 2020 NDC update, an improvement from 57% in the 2016 NDC. When compared with 2010 historical levels, planned pollution reductions stand at 60%, more than 10 percentage points higher than most DM climate pledges. During Biden's climate summit, the UK announced that it would further update its target to a 78% reduction in GHG emissions by 2035 (versus 1990 levels). This implies a linear extrapolation of the 2020 NDC targets (see chart below), making the UK's NDC commitment the longest—and legally binding—climate pledge in the world.

UK GHG Emissions (MtCO2e), Current and Historical NDC Targets



Source: UK Department for Business, Energy & Industrial Strategy, UK NDC and AB

On the other side of the spectrum, Australia and New Zealand, as well as other AEs, including South Korea and Israel, still visibly trail international pollution-reduction efforts. Australia and South Korea stand out as particular negatives, in our view. Both countries are among the largest GHG emitters in nominal terms and have among the highest per capita GHG footprints for both DM and EM economies. At the same time, ambitions for GHG reductions remain comparatively limited. In this context, the US has probably seen some of the most important changes in DM climate policy: Biden's recommitment to international climate change places the US among the GHG reduction leaders, a necessary (but not sufficient) step for addressing its outsize nominal and per capita GHG pollution levels.

In EM, China does not yet have an absolute GHG emissions target level for 2030, but the Chinese government has set out a number of (recently updated) objectives that it will aim to achieve by 2030. This includes a CO_2 emissions peak "before 2030" ("around 2030," previously), as well as an NZE target by 2060. CAT estimates that, given China's range of objectives, a renewed increase in emissions over the coming years is likely, but a peak before 2030 is feasible. All in all, these would lead to a continued 26% (midpoint) increase in GHG emissions by 2030, compared with 2010 levels. China's large dependence on coal for domestic electricity production is one of its most significant challenges, so much so that battery-powered electric vehicles in China currently emit more CO_2 than vehicles with traditional internal combustion engines—a result of heavy coal usage in domestic electricity production. An increase in domestic coal capacity during 2020 suggests that the government could be backtracking on a significant opportunity to implement more ambitious coal and CO_2 reduction plans than currently envisaged.

But Are NDC Targets Sufficient? Having looked at countries' comparative GHG emissions strategies, two key questions immediately come to mind: 1) Will countries really implement their proposed plans? and 2) Are the plans sufficient to reach IPCC-proposed climate targets? First, countries' GHG reduction targets will undoubtedly face implementation risks, and there are no guarantees that they will be executed as currently set out (even if they are legally binding). It will be important over the coming year to monitor closely countries' emissions targets, as well as their implementation of key policy targets, such as the increase in renewable energy sources. A more detailed analysis of the feasibility of countries' NDC strategies will certainly be the subject of future publications.

Second, most countries' current GHG emissions reduction targets are not compatible with the Paris Agreement. According to CAT, the US and the EU27 would have to cut GHG emissions reductions by about 10 percentage points more than their current targets. The US would have to aim for GHG emissions reductions of 57%–63% by 2030 versus 2005 levels (roughly the same for 2010 levels), in order to be consistent with the Paris Agreement's stated goal and US fair-share responsibilities. The EU27 would have to reduce emissions by 58%–70% versus 1990 levels, or a midpoint reduction of 58% versus 2010 (compared with their current –48% target versus 2010 levels). At this stage, the UK is one of very few countries that comes close to

achieving 1.5°C with current policy promises, according to CAT analysis.

Given the sheer size of China's annual emissions, it will be a significant swing country in shaping the path of global GHG emissions. As highlighted at the beginning of this piece, the IPCC estimates that global emissions would have to decline by 45% in 2030 versus 2010 levels in order to achieve NZE by 2050 and limit global warming to about 1.5°C. Mid-2021 NDC submissions point toward a decrease of less than 1%. If China would anchor its NDC GHG emissions ambition to a 16% increase by 2030 versus 2010 levels, for instance (10 percentage points less than currently envisaged), global emissions would decrease by almost 4.5%. The same rationale applies to other major polluters such as the US and EU27: If they implemented the reductions necessary to meet the Paris Agreement's target (plus China's 16%), global emissions would decrease by more than 6% in 2030 versus 2010 levels, all else being equal. This would still be well short of the IPCC-recommended 25% or 45% declines for limiting global warming to 2°C or 1.5°C, respectively, but certainly better than current aggregate global pledges as of mid-2021.

Climate Policies, Sustainability and ESG

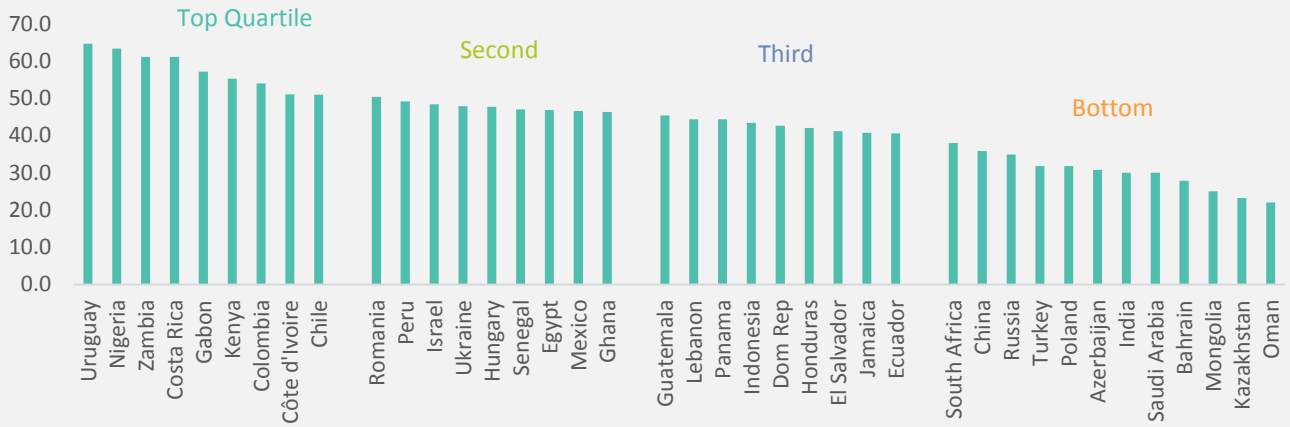
Having explored global emissions trends and countries' policy responses, in our last section we'll show how countries' climate policies form part of our sustainability, environmental and ESG assessments. Sustainability is one of two major subcomponents of our environmental (E) score, capturing our assessment of countries' policies toward biodiversity, environmental health and renewable energy policies. The last two categories take into account GHG emissions trends and governments' commitment toward more sustainable environmental strategies.

Countries with the weakest sustainability scores tend to coincide with high GHG per capita emissions, with limited signs of slowing pollution trends and no credible commitment to renewable energy diversification. The chart below shows select AB sustainability scores, with commodity exporters in Emerging Europe and the Middle East (EEME) and Asia exhibiting some of the poorest sustainability profiles.

As an example, Oman's GHG-per-capita emissions stood at 25 tons in 2018 (the global average is about 6.4 tons) and has continued to increase, according to available data. Currently, Oman has almost no renewable energy resources. While there are stated commitments to increase this share meaningfully toward 20% by 2030, the country's ability to do so remains questionable.

Oman plans to build the world's largest hydrogen plant as part of this renewable energy drive. However, construction will not begin until 2028, with completion earmarked for 2036, so the initial contribution is likely to be limited. Furthermore, through our engagement with the Omani finance ministry, we've found that the government is targeting a 6% reduction in emissions by 2030 versus 2015 levels. Using PIK GHG emissions data, this implies a 25% increase by 2030 versus 2010 levels, which we think is an unambitious target, given Oman's large carbon footprint. To varying degrees, similar dynamics apply to commodity

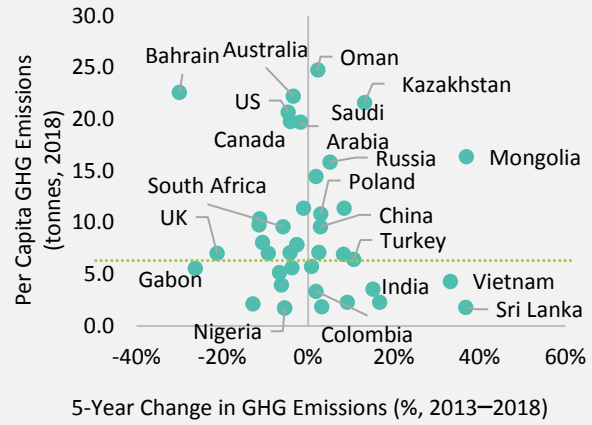
Selected AB Sustainability Scores



Source: AB

exporters such as Azerbaijan, Kazakhstan, Mongolia, Bahrain and Saudi Arabia.

Per Capita GHG Emissions and Changes over Time



Source: "The PRIMAP-Hist National Historical Emissions Time Series (1850–2018)" and AB

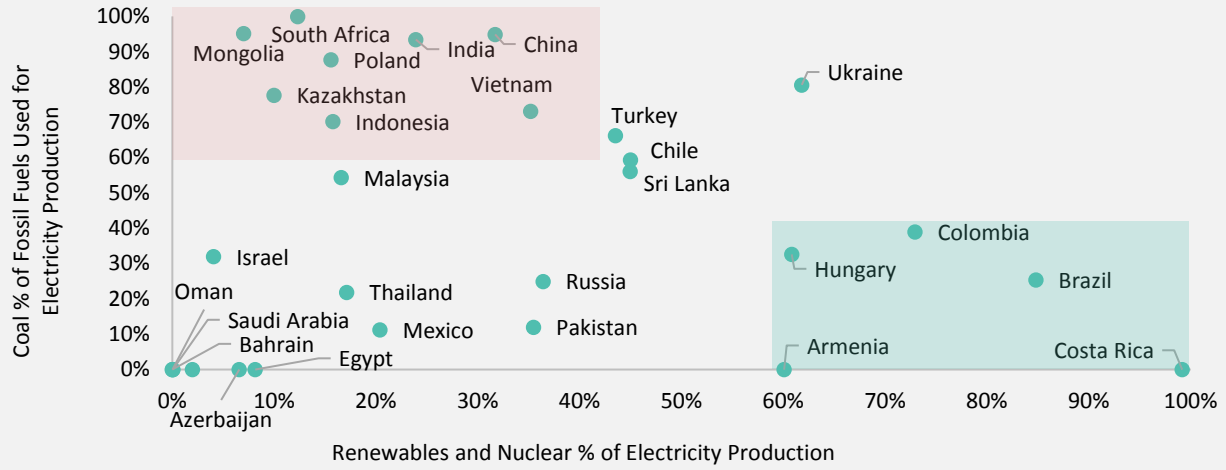
Some countries, such as China, India, Poland and Mongolia, have increased renewable energy resources over the past few years, but their fossil fuel baskets remain highly dependent on coal and thus highly pollutant. In the chart at the bottom of the page, we compare the share of renewables and nuclear energy in domestic electricity production with the percentage of coal in the fossil fuel basket. Countries in the top left corner screen as negative based on this perspective, given their relatively low shares of (clean) renewables and nuclear energy, combined with ongoing heavy coal usage.

Countries such as Turkey have increased their share of renewables more recently. But they have also stated that local coal resources will be developed further in an effort to reduce energy imports, such as oil and liquid natural gas, something we see playing out in other EM countries such as Pakistan. This may be positive from a balance-of-payments and domestic energy security perspective but not from an environmental and climate viewpoint. Turkey stands out negatively as the only OECD country that has not yet ratified the Paris Agreement domestically, effectively excluding it from AB's sustainable strategies.

In contrast to EEME, a number of EM oil exporters in Africa and Latin America (LatAm) have strong sustainability scores. Countries such as Nigeria and Gabon are at very different development stages; their GHG footprints on a per capita basis are comparatively low and have even seen decreases. In this context, Gabon was the first African country to receive UN results-based payments for reduced emissions from deforestation and forest degradation. Gabon has a relatively large share of renewables in domestic electricity production and does not depend on coal at all. As is the case with Nigeria, Gabon's share of renewables is even larger when looking at the economy-wide energy supply (rather than solely electricity production), thanks to the usage of biofuels—such as wood among rural households—deemed sustainable.

In LatAm, Costa Rica is a well-publicized sustainability success story—but in many respects, so is Colombia, especially in the context of being an oil exporter. Colombia has a strong renewable energy profile and a relatively low per capita GHG footprint. The government is also establishing a framework for issuing green bonds in local currency, with first issuance expected in the second half of 2021. Proceeds will be earmarked for water sanitation, alternative energy, adaptation to climate change and sustainable transportation, which will maintain Colombia's strong sustainability score.

EM Electricity Production by Source



Source: IEA and AB

In summary, countries' climate policies are a component of our sustainability score, which comprise our environmental and broader ESG analysis. Monitoring policy implementation—such as increases in renewable energies and future updates to NDC targets—will be key tools in assessing countries' success in executing their climate strategies. Regular engagement with government entities will enable us to access the latest data and policy objectives and communicate the importance of taking climate action and how this action informs our ESG framework.

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