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It is Unfair to Push Poor Countries to Reach Zero Carbon Emissions Too Early

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Abstract

In 2021, climate action was all about declaring dates for achieving net-zero carbon emissions. At the 2021 UN's climate change conference in Glasgow, COP26, India pledged that it would reach net-zero by 2070, a date just 10 years behind China, despite its per capita emissions being some 30 years behind China's and only half the present world average. COP27 is just days away, but this year many countries are distracted with energy security issues, instead of upping their game for more aggressive emissions cuts. This COP, the conversation must be shifted from futuristic net-zero ambitions toward practical and equitable emissions trajectories. The rich and overall high emitters have to reduce emissions aggressively, while the low-emissions poor must lower their growth rate of emissions on a credible path toward zero. Development from a very low base inevitably means the poor must increase their emissions in the short term. The good news is this should still fit within global emissions targets if high emitters reduce emissions quickly up front. Unfortunately, the push toward zero has been interpreted as a prohibition on public support for new unabated fossil fuel energy. This is both unfair and unviable.

Keywords: *Unfair, Push, Poor countries, Zero carbon emissions*

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Background to the Study

Developing Nations Need Energy, Which May Require a Little Fossil Fuel

Developing countries are being asked to "leapfrog" to renewable energy (RE). However, if we don't allow *any* new fossil fuel investments, then RE is difficult to scale because it's intermittent. How do you meet the evening peak electricity demand with solar power? Batteries are still very expensive. Today's optimal electricity grid design may maximize RE by relying on minimal fossil fuels for occasional peak needs. Batteries should soon be able to meet much or even most of the peaks cost-effectively, but if one designs for zero fossil fuel, then it's very expensive. The good news is that simply having some fossil fuel capacity doesn't mean it will get used much – the marginal cost of RE (and a battery) is virtually zero, once built. As my research group modeled for India in detail, an optimal design focuses on high RE first, without worrying about storage just yet. The cost savings from not over-ambitiously getting down to zero carbon can be spent on accelerating up-front decarbonization, which lowers cumulative emissions.

For the poorest of the poor, the real need is electricity access, regardless of fuel. Sub-Saharan Africa is where most people lacking modern energy services live. Giving 250 million homes electricity connectivity, with 35 kWh/month usage (enough for a TV, refrigerator, and fan), even entirely from coal, would only be 0.25% of global emissions. And most new builds don't rely on coal – solar is already far cheaper, at least for the daytime. A push towards RE-only has created pressure to not finance natural gas in poorer countries, despite them being told for decades that natural gas was a bridge fuel to a cleaner future, and one that would avoid the use of coal. This pressure hurts not just energy security but also food security. Recently, there was global pushback against a natural gas fertilizer plant planned in Bangladesh that would be three times more efficient than older designs. This isn't climate justice.

Developing regions want to minimize their use of fossil fuels, such as India's ambition to achieve 500 GW of non-fossil electricity capacity by 2030. This would quadruple India's current RE capacity (excluding hydropower), and more than double its current *total* installed capacity. But rising RE doesn't mean switching off coal prematurely before viable alternatives emerge, more so because India's cumulative emissions from all sources would still be modest. In reality, India's 2019 per capita coal consumption was only half the world average when we adjust India's tons consumed. This is because of its lower energy content per ton, which means lower emissions. In contrast, India used only about 22% of the world average of oil and gas per capita. Globally, total oil and gas emissions were 25% more than from coal, even after factoring in coal-based emissions from cement. Thus, it is inconsistent to focus disproportionally on lower coal use instead of lower total emissions. It is also inconsistent to focus on emissions created by new builds in developing regions, instead of emissions from already built infrastructure that is overwhelmingly in high-emissions regions.

The poor need more energy, and much of it will be clean energy which is already viable. It's the last fraction of energy that is hard to keep fossil-free. It can be done – at a cost. That cost should disproportionally be borne by the rich, first as they go full zero and pay the early adopter premium, and second, through financial support for developing nations. The premium is

important, not just to cover the cost of developing batteries, but also for green hydrogen to avoid industrial emissions. Such support should be part of promised aid or concessional finance and certainly not more traditional debt. At COP15 in 2009, there was a pledge to provide $100 billion of annual climate support for the poor by 2020, but the form such support would take was never specified. Sadly, the pledged funds haven't yet fully materialized, and the date has since been pushed back to 2023. Many developing countries are asking for funds due to climate-related "loss and damage." How much materializes remains to be seen. Regardless of what form it takes, all climate finance support should be flexible, allowing recipients to not just mitigate their emissions, but also pay towards adaptation and resilience.

Present Net-Zero Plans Are Not Just Unfair – They Are Insufficient

The focus on "net-zero" also brings with it many other problems, including of accounting and fairness. Today's offsets are often accounting tricks, whereby an entity helps avoid emissions elsewhere, often in a developing country, and claims that as negative for them. Financiers discussing offsets have repeatedly told me "All carbon is equal." John Kerry recently told African leaders "Mother nature does not care where those emissions come from.

These physical realities miss several issues. First, if all carbon is equal, then we cannot ignore historically accumulated carbon. Second, when considering offsets, paying to avoid future emissions elsewhere doesn't negate emissions – it simply avoids growth. Not to mention a lot of "carbon finance" is just a label. It's often not additional money and, even worse, is routinely debt funding for things like solar projects which would find funding anyways. Third, *avoiding* all carbon isn't equal. Cheaper low-hanging fruit like offsets in poorer countries must not absolve the rich from aggressively ending their emissions from hard-to-abate sectors like home heating, industry, and transportation. The recent U.S. Inflation Reduction Act was a step in this direction by focusing on increasing the supply and use of clean energy.

Keeping the world within 1.5°C maximum average temperature rise needs aggressive steps and while most countries are doing more than in the past, their targets don't add up to staying within 1.5°C. Even worse, their policies and actions don't match the targets. Countries like the UK and the United States tout lowered emissions, but that's from a very high base, and they also benefited from a one-time shift from coal to cheap gas, which isn't available to many poorer countries. Another issue is many developed nations import a large fraction of their emissions as embedded carbon, which doesn't show up in national emissions accounting. The UK imported 41% of domestic emissions as embedded carbon in 2019, growing from 11% in 1990.

The rich already have saturated development: the cars, refrigerators, roads, and homes they need to build are mostly replacement stock, although they will also need infrastructure to support the clean energy transition. However, poorer countries' growth needs are far more than just replacement of fossil fuels with zero-carbon infrastructure. Given such high growth can't be met easily by zero-carbon solutions, their emissions will need to rise in the short run. *But the poor's rise in emissions will be less than the likely failure in reduction by high emitters in the coming decade*.

Rich Countries Must Reduce Their Emissions Faster

Achieving net zero emissions by 2050 requires a 3.3% reduction each year from 2020, assuming a constant annual decline. However, the Intergovernmental Panel on Climate Change (IPCC)'s special report on staying within 1.5°C maximum average temperature rise stated we need a faster reduction up front: a 45% decline by 2030 from 2010 levels. Unfortunately, global fossil CO2 emissions grew by 10% from 2010 to 2019. Thus, in this decade, we need to accelerate the decline and also get to zero sooner to make up for the extra emissions in the previous decade. This means that to achieve the 1.5°C goal, the annual decline must be more than twice as fast as the IPCC report suggests. And the decline must be even greater from richer high-emitting countries.

Unfortunately, high emitters have collectively never reduced their emissions over a decadal timespan. The UK, the top performer out of the G7 countries, reduced its domestic CO2 emissions by 35% from 1990 to 2019. But this is only an 1.2% annual reduction, falling short by more than 2% annually compared to the 3.3% target. And this is ignoring imports of embedded carbon. Not only do we need high emitters to aggressively reduce emissions, but buried in the details of the IPCC report and far less publicized is IPCC's finding that virtually all pathways within a 1.5°C temperature rise or with limited overshoot also require significant Carbon Dioxide Removal (CDR). While planting trees is one technique, it doesn't scale well, more so for developing regions where land pressures are higher. Plus, we have the risk of trees and their stored carbon going up in smoke with forest fires.

Many CDR plans involve literally sucking carbon dioxide out of the air for long-term storage, an expensive prospect through direct air capture. The volumes that must be removed are enormous. Taking a mid-range IPCC estimate, 500 Gt of CO2 removal means 10 Gt/year for the second half the century, or about a quarter of present annual emissions every year. This burden must also not fall on the low emitters of today, the poor, even if they represent a high share of global emissions post-2050. This is because the need for CDR is overwhelmingly due to over-emissions by today's high emitters. Also, expectations of future CDR should not become a rationalization for not mitigating today.

What do Developing Regions Need?

RE is already viable at large scale, but its deployment in many developing regions lags its potential. This is where developed countries can help through improved finance (especially cheaper capital). While many cross-border projects carry risks, some of the risks could either be shared by developed countries or mitigated by multilateral agencies who can provide counter-guarantees or other risk-reduction mechanisms.

At COP26, a coalition of financiers announced $130 trillion was available for the transition, but this money is the gross total funding pool, and not necessarily incremental money available to pay a premium for becoming carbon-free. The good news is that financial help as climate support is only required for the incremental cost of going green, akin to viability gap funding, and not all the costs. In addition to finance, access to state-of-the-art technology is also important. While much of this may be owned by the private sector, government nudges

and incentives can help. As well as technology, countries need secure supply chains. Given many of the global minerals for clean energy are concentrated or controlled by a handful of countries, developing countries need help to ensure they aren't last in line or forced to pay a premium. COVID-19 and Russia's war in Ukraine showed how the poor became the last to get access to vaccines or global supply chains.

Growing RE is one part of the solution. But given existing fossil fuel plants in developing regions (especially new ones) aren't going away any time soon, we need to make them cleaner, more efficient, and flexible. Unfortunately, a global finance model of "don't touch any fossil fuel project" means a missed opportunity to reduce local air pollution and make the transition less expensive. COP27 is an opportunity for countries to not just ratchet up their ambitions, but also give credence to their ambitions. We need aggressive targets for all countries – but the targets won't be the same everywhere. Poorer countries already face the brunt of climate change, but they want to do their fair share of mitigation. They may even do some amount of unfair share. But this cannot mean climate absolutism.

Reference

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