CLIMATE CHANGE AND FOSSIL FUELS (CLIFF)
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FOSSIL FUEL: WHY LEAVE FOSSIL FUEL UNDERGROUND (LFFU) AND HOW MUCH SHOULD BE LEFT UNDERGROUND?

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KEY MESSAGES

1. Addressing climate change requires leaving fossil fuels underground (LFFU)
2. Market mechanisms will not autonomously displace fossil fuel
3. Investing in renewables will not automatically replace fossil fuel
4. Overshoot politics delays LFFU exacerbating impacts
5. Net zero politics delays LFFU exacerbating impacts

INTRODUCTION: WHY LEAVE FOSSIL FUEL UNDERGROUND?

Fossil fuels are responsible for 75% of the climate change problem cumulatively and 90 % of the annual CO_2 emissions, including local air pollution (Dyke et al., 2024). Addressing the climate change problem requires a phase out of fossil fuel. However, despite its significance and coverage in the assessment reports of the Intergovernmental Panel on Climate Change (IPCC) since the 1990s, a commitment to the 'phase down of fossil fuel' was only reached in the 28th Conference of the Parties in 2023 (UN, 2023).

Such a phase down is closely linked to the long-term objective of the Climate Convention. Despite evidence, the qualitative objective adopted in the 1992 Climate Convention was only quantified as a 2℃ and if possible, as low as 1.5℃ target as late as 2015 in the Paris Agreement. Subsequently, in response to small island states and the demand of others, IPCC was asked to prepare the 1.5℃ assessment report. Finally, in 2023, at the 28th Conference of the Parties, the temperature target of 1.5℃ was articulated as the key long-term objective of the climate Convention (UN, 2023). 1.5℃ (2.7℉) refers to the average global temperature over a few years above the temperature in 1850-1900 (IPCC baseline, not mentioned in Paris Agreement). For 1.5℃, there is 130 Gt CO_2 (at a 50% probability of achieving the target); we are using 40GtC annually, so in three years the budget is over. For a 66% probability, there is only 80 $GtCO_2$ left. This implies leaving fossil fuel underground as soon as possible. And yet we are talking about a long-term phase down (UNEP 2025).

WHY FOCUS ON LEAVING FOSSIL FUEL UNDERGROUND?

We argue that there are 8 reasons to focus on fossil fuel. First, fossil fuel is the most important cause of climate change. Second, there are huge deposits of fossil fuel still left most of which in Low-/Middle Income countries (LMICs). Third, contrary to many beliefs that investing in alternative energy through and by markets will close down the fossil fuel sector, one should remember that the fossil fuel sector is very powerful and rich (between USD 16 and 295 trillion; Linquiti and Cogswell 2016), it is embedded within a petro-culture, economy and nationalism, and that uses misinformation, malinformation and disinformation to manipulate people (see PB 15), and that requires regulating if the enterprise is to be shut down. Markets will be unable to close down this sector; even if some places experience discomfort, the fossil fuel sector is mobile and a survivor. Fourth, and linked to the above, alternative energy is likely to be additive and not substitutive for a range of reasons (see PB 2). Fifth, many of the initial Nationally Determined Contributions of countries scarcely mentioned fossil fuel; it is a major blind spot. Sixth, meeting the energy demand of the poorest for energy, food, water and infrastructure in LMICs will require increased and affordable energy inputs, which many argue can only be met with fossil fuel. Energy security worldwide is often cited as the reason for continued dependence on fossil fuel. Seventh, with the rise in military and AI investments, demand for fossil fuel is on the rise (see PB 11); and such demand, if allowed to grow, requires a heightened effort to reduce fossil fuel use in other sectors. Eighth, the cost of inaction is higher than the cost of action; and the gains of inaction fall on the few while the costs of impacts fall on the many and nature.

LEAVING FOSSIL FUEL UNDERGROUND: DELUSIONAL POLITICS?

The global community is on the verge of crossing the 1.5℃ threshold. This requires rapidly reducing fossil fuel use. "Rather than demand the immediate phase out of fossil fuels, the Paris Agreement proposed 22nd-century temperature targets which could be met by balancing the sources and sinks of carbon. Within that ambiguity net zero flourished" (Dyke et al. 2024). Two delusional narratives have emerged to pre-empt such a rapid phase out: (a) the overshoot narrative; and (b) the net zero narrative.

OVERSHOOT POLITICS

Since the start of negotiations on climate change, there has been recognition for the need to phase out fossil fuel, and this was countered by the 'realpolitik' of needing to use fossil fuel ('energy security'). This continues even today. Even as politicians talk of phasing out /down fossil fuel in the rich world, they continue to invest in new fossil fuel. Even as politicians in the Global South (e.g., Al Jabar) talks of phasing down fossil fuel, his own company Abu Dhabi National Oil Company is increasing production. To enable business-as-usual and postpone action, overshoot politics allows the global community, countries and companies to exceed their emission allowances, as long as they can somehow hope that in the future carbon dioxide can be removed from the atmosphere, and if not that, through geoengineering approaches

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– all with their own side-effects (Henriques, 2024). But it is dangerous: (a) to assume that the climate system is like a thermostat and we can regulate it at will is reckless; (b) returning to 1.5℃ later in the century will risk the frontline communities and ecosystems (Armstrong McKay et al., 2022); every 0.1℃ rise creates problems; glaciers that melt may not return causing irreparable damage to ground and surface water systems they feed into; permafrost, sea levels and ocean acidity will take centuries to recover (Tandon, 2024); (c) these impacts could also reduce the ability of natural systems to absorb carbon dioxide thereby exacerbating the impacts of greenhouse gas emissions (e.g., the Amazon forests may become a net emitter (Gatti et al., 2021); the Arctic is warming at least four times faster than the global average (Rantanen et al., 2022); (d) current investments in fossil fuel will lock-in societies even further, making the return path even more difficult. History is evidence of that; (e) depending on future miracle technologies to address this problem is problematic and risky; (f) such technologies, should they become available, bring their own challenges – they may be more expensive, we don't know who will pay for them, what their side-effects are, who suffers from them, how soon they can work, and if they can really correct the problem or its symptoms – some technologies may take hundreds of years to correct; (g) this exacerbates injustice as it is very difficult to access correct information on how much and how quickly fossil fuel should be left underground as overshoot and net zero thinking appears to be implicitly embedded into the discussion. In fact, since the scenarios used by IPCC make place for carbon capture and storage (CCS) and biomass burning (BECCS), but both are expensive, unreliable options and the latter may exacerbate other problems including increasing emissions; (h) Overshoot politics doesn't just recognize the 'need' for fossil fuel; it makes fossil fuel investments profitable leading to a chain reaction in society. Pre-empting such overshoot would make fossil fuel investments overnight less profitable.

NET ZERO POLITICS

Zero emissions (reduce fossil fuel emissions to zero) and near zero (reduce to close to zero) have been sidelined by net zero emissions (compensate for emission increases through carbon capture and storage and planting trees; see PB 3). The latter allows companies to continue business-as-usual as long as they compensate in some way or other. It is an accounting narrative, postponing action, and allowing business-as-usual. The Science Based Target Initiative (SBTi) developed a Corporate Net Zero Standard and encouraged companies to join. The case of the Amazon company shows that, although it adopted a net zero target in 2040, it was removed four years later since it did not meet its own standard.

CONCLUSION

For leaving fossil fuel underground it is critical to know at what level to stabilize and when. If this is overshadowed by the politics of setting targets (Gupta et al. 2023), by overshoot and net zero politics, fighting fossil fuel becomes an uphill battle.

REFERENCES

Armstrong McKay, D. I., Staal, A., Abrams, J. F., Winkelmann, R., Sakschewski, B., Loriani, S., Fetzer, I., Cornell, S. E., Rockström, J., & Lenton, T. M. (2022). Exceeding 1.5°C global warming could trigger multiple climate tipping points. Science, 377(6611), eabn7950. https://doi.org/10.1126/science.abn7950

Dyke, J., Watson, R., & Knorr, W. (2024, August 20). The overshoot myth: You can't keep burning fossil fuels and expect scientists of the future to get us back to 1.5°C. The Conversation. https://doi.org/10.64628/AB.96v5fu7mf

Gatti, L. V., Basso, L. S., Miller, J. B., Gloor, M., Gatti Domingues, L., Cassol, H. L. G., Tejada, G., Aragão, L. E. O. C., Nobre, C., Peters, W., Marani, L., Arai, E., Sanches, A. H., Corrêa, S. M., Anderson, L., Von Randow, C., Correia, C. S. C., Crispim, S. P., & Neves, R. A. L. (2021). Amazonia as a carbon source linked to deforestation and climate change. Nature, 595(7867), 388–393. https://doi.org/10.1038/s41586-021-03629-6

Gupta, J., Hogenboom, B., Rempel, A., & Olofsson, M. (Eds). (2024). Leaving Fossil Fuels Underground: Actors, Arguments and Approaches in the Global South and Global North. Amsterdam University Press. https://doi.org/10.2307/jj.18377014

Gupta, J., Y. Chen, D. Armstrong McKay, P. Fezzigna, G. Gentile, A. Karg, L. van Vliet, S. Lade, L. Jacobson (2024). Applying Earth System Justice to phase out fossil fuels: Learning from the injustice of adopting 1.5°Cover 1°C, International Environmental Agreements: Politics, Law and Economics, https://link.springer.com/article/10.1007/s10784-024-09628-y

Henriques, M. (2024, February 8). Climate change: The 1.5C threshold explained. https://www.bbc.com/future/article/20231130-climate-crisis-the-15c-global-warming-threshold-explained

Linquiti, P., & Cogswell, N. (2016). The Carbon Ask: effects of climate policy on the value of fossil fuel resources and the implications for technological innovation. Journal of Environmental Studies and Sciences, 6(4), 662-676. https://doi.org/10.1007/s13412-016-0397-2

Rantanen, M., Karpechko, A. Y., Lipponen, A., Nordling, K., Hyvärinen, O., Ruosteenoja, K., Vihma, T., & Laaksonen, A. (2022). The Arctic has warmed nearly four times faster than the globe since 1979. Communications Earth & Environment, 3(1), 168. https://doi.org/10.1038/s43247-022-00498-3

Tandon, A. (2024, August 1). 'Every 0.1C' of overshoot above 1.5C increases risk of crossing tipping points. Carbon Brief. https://www.carbonbrief.org/every-0-1c-of-overshoot-above-1-5c-increases-risk-of-crossing-tipping-points/

UN. (2023). Unsdg | COP28 ends with call to 'transition away' from fossil fuels; UN Chief says phaseout is inevitable. https://unsdg.un.org/latest/stories/cop28-ends-call-%E2%80%98transition-away%E2%80%99-fossil-fuels-un-chief-says-phaseout-inevitable