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Submission in response to the COP30 call for inputs on the roadmap for transitioning away from fossil fuels in a just, orderly and equitable manner

Just transition and differentiated pathways

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Contribution:

The transition away from fossil fuels is no longer optional but imperative, given its central role in tackling the climate crisis and protecting population health and economic stability¹. However, the pace and structure of this transition will determine whether it reduces or exacerbates existing social inequities and vulnerabilities. A just, orderly, and fair transition requires that decarbonization pathways are not only technically and economically feasible but also socially inclusive, ensuring equitable access to clean energy, safeguarding vulnerable populations, and supporting a well-managed transformation of the labor market.

Access to clean energy remains a central challenge in the transition to a low-carbon economy, particularly in Global South countries marked by deep socioeconomic and regional inequalities. From a distributive justice perspective, the benefits and burdens of decarbonization must be allocated in a manner that prioritizes the most vulnerable populations and avoids the persistence of existing disparities. In this context, energy poverty, defined as the lack of access to adequate, reliable, and affordable energy services, represents a critical form of structural inequality. Recent estimates indicate that nearly half of Brazilian households experience some level of energy deprivation, with substantially higher prevalence in rural areas compared with urban settings. Limited access to essential energy services, including thermal comfort, water heating, and basic household infrastructure, highlights the uneven distribution of energy benefits in a country with abundant energy resources. Without targeted policies to expand access to clean and affordable energy, the transition risks reinforcing patterns of exclusion, creating new “winners and losers” and compromising both its social legitimacy and long-term sustainability^{2,3}.

Beyond issues of access, the effectiveness of a just transition ultimately depends on how public resources are allocated and governed. Even in contexts where climate commitments are formally established, misalignment between policy goals and budgetary decisions can

undermine progress towards decarbonization. In Brazil, this tension is particularly evident, as investments in clean energy and social protection coexist with persistent support for carbon-intensive sectors⁴. Advancing towards climate objectives will therefore require greater intentionality in public spending, with a larger share of expenditures explicitly directed towards mitigation, adaptation, and climate risk management, alongside the integration of local-level capacities into multilevel governance systems.

The transformation of the labor market further illustrates how the transition redistributes not only environmental benefits but also economic opportunities and risks. While low-carbon pathways are frequently associated with job creation, these gains are unevenly distributed and may not compensate for losses in carbon-intensive sectors, particularly in contexts marked by structural inequalities. These dynamics reflect broader patterns observed across the Global South, where populations most vulnerable to climate impacts often have the least capacity to adapt to economic restructuring. Spatial, educational, and sectoral mismatches may limit the reallocation of workers, disproportionately affecting those in lower-skilled occupations and regions dependent on fossil-based activities^{5,6}.

Brazil holds significant potential to harness labor market gains from the transition to a low-carbon economy. Its relatively clean energy matrix, abundant renewable resources, and established bioenergy and industrial sectors create favorable conditions for job creation across multiple segments of the economy. The expansion of solar, wind, and bioenergy systems has the potential to generate employment across a broad range of skill levels, contributing to the decentralization of industrial activity. In addition, the strategic role of rare earth elements in low-carbon technologies creates further opportunities for economic diversification and industrial development⁷. However, the extent to which these opportunities translate into inclusive and equitable outcomes will depend on how effectively policies address existing structural inequalities, support workforce transitions, and ensure the quality and distribution of newly created jobs.

The health dimensions of the transition are closely linked to how resources are prioritized and deployed. Persisting fiscal support for carbon-intensive activities constrains investments in interventions that could reduce population exposure to environmental risks. Reorienting these resources towards clean energy, climate-resilient infrastructure, and low-emission transport systems has the potential to simultaneously reduce greenhouse gas emissions and improve health outcomes. Such shifts can lower exposure to air pollution, mitigate the health impacts of extreme heat, and reduce the burden of cardiovascular and respiratory diseases, while also alleviating pressure on health systems. In parallel, the distribution of these benefits depends on the capacity to protect vulnerable populations, particularly workers exposed to rising temperatures and hazardous environments¹.

It is essential to recognize that health and economic outcomes are fundamentally interconnected, and that dissociating them risks overlooking the economic losses and health impacts arising from climate-related exposures. Extreme heat and air pollution impose significant economic costs through increased mortality, reduced productivity, and pressure on health systems worldwide. These effects are particularly evident in Latin America and across the Global South, where high levels of exposure and structural inequalities amplify their impacts. Evidence consistently shows that both heat-related mortality and pollution-attributable deaths

translate into considerable financial losses, while improvements in air quality consistent with WHO guidelines could yield substantial economic benefits. In this context, reducing exposure to air pollution and climate extremes is not only a public health priority but also an economic goal^{8,9}.

Given these considerations, the success of the transition depends on how its core dimensions are brought into alignment. Energy access, labor markets, public spending, and health outcomes are interdependent, and progress in one domain cannot be sustained without advances in the others. Addressing its challenges requires coordinated policy action across sectors, aligning public spending with climate objectives, prioritizing investments in affordable, reliable, and safe energy access, supporting workforce transitions through reskilling and social protection, and reducing population exposure to climate risks while advancing public health. The energy transition is also expected to yield substantial co-benefits by reducing air pollution-related health burdens, which, in turn, can generate economic gains through lower healthcare costs and increased productivity. Over time, these improvements may also contribute to mitigating the economic impacts associated with climate extremes, reinforcing the broader societal benefits of a well-aligned transition.

Key Messages:

- (a) The transition away from fossil fuels is not only a climate imperative but a public health and economic one.
- (b) Health and economic outcomes are intrinsically linked and should not be addressed in isolation.
- (c) Impacts are unevenly distributed, with disproportionate effects in Latin America and across the Global South.
- (d) Misalignment between climate goals and public spending undermines progress.
- (e) Investments aligned with decarbonization can reduce emissions, improve population health, enhance economic resilience, and support inclusive development.

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