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GLOBAL CLIMATE RESPONSIBILITY AND ENVIRONMENTAL INEQUALITY: PROTECTING DEVELOPING COUNTRIES FROM CLIMATE RISKS

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ABSTRACT

Climate change is often referred to as a global challenge, but it affects the world unevenly, with both exposure risks and the capacity to adapt and mitigate climate effects distributed unevenly. Developing countries are likely to be more exposed to floods, droughts, storms, heat, sea-level rise, ecosystem decline, and food insecurity than developed countries, but their greenhouse gas emissions are relatively low compared with those of developed countries because of lower levels of industrialization. Pakistan ranks among the top 10 most climate-vulnerable countries in the world, despite contributing less than 1% of global greenhouse gas emissions. This article argues that such inequality turns climate change from a technical environmental challenge into a justice issue. It addresses geographic, economic, social, and institutional factors that exacerbate risk; historical and structural factors that have led to unequal responsibility; and the implications for health, livelihoods, displacement, public finance, and development. It also explains why a disaster response needs to go beyond humanitarian aid and address climate justice. Protection means that the major emitters have to take immediate action to mitigate; grants should be predictable and based on finance; support for adaptation should be available to those affected; loss and damage should be compensated; technology should be shared fairly; there should be debt reform; and affected communities should have a meaningful role. The article frames vulnerable people in developing countries as rights holders, not just recipients of aid. It finds that a differentiated approach to obligations, based on historical contribution, capacity, and vulnerability to harm, is essential to achieve adequate international climate action. A fair system needs to link global responsibility to institutions that can provide security in an actionable way in the local context. Examples of unequal exposure to climate hazards show that climate vulnerability is not just a matter of physical exposure, but is shaped by political choices.

Keywords:
Climate Justice, Environmental Inequality, Climate Risks, Vulnerability, Adaptation

1.INTRODUCTION

Climate change is a global phenomenon but is not experienced, triggered, or impacted equally. Warmer temperatures change precipitation patterns, increase heat, disrupt ecosystems, drive sea-level rise, and are linked to extreme events. These changes are transnational, but not all

societies face them in the same way (Dang et al., 2026). A rich country can shore up coastlines, have insurance, diversify food sources, and rebuild public infrastructure. A low-income state could face the same physical hazard while also being burdened with debt and comparatively low fiscal capacity, a high proportion of informal settlements, a shortage of health care, and an economy that relies on climate-sensitive agriculture. Addressing both situations as the same obscures the political and economic factors that can create hazards into disasters. Climate justice is a solution to addressing that inequality. It raises questions about the distribution of benefits from "carbon-intensive development": who is causing emissions that are warming the planet, who is being impacted by the warming, and who controls what is proposed as a solution (Sultana, 2022b). These questions address climate policy and human rights, poverty, race, gender, colonial history, trade, debt, democracy and participation.

They also highlight the constraints of more traditional approaches based on aggregate emissions or national income frameworks. The policy can cut carbon and take away from Indigenous communities, add to energy prices for poor families, or shift mineral extraction to poorly regulated areas. Justice cannot be determined just from an environmental effectiveness perspective. Not all developing countries are the same (Andreucci & Zografos, 2022). Some have significant fossil fuel resources and/or rapidly growing emissions; others have very little impact on global emissions. They differ in governmental structures, administrative capacity, political accountability, exposure, population, and income. In addition, inequalities exist within countries themselves. Urban poor and informal workers, women, children, persons with disabilities, rural immigrants, and informal settlers may be more vulnerable and have less access to cooling, to insurance, and to savings, as well as to political access. A defensible argument should acknowledge these differences while also accounting for the disparity between states that have benefited most from historical industrialization and those facing dire climate challenges (DeBoom, 2022).

This article posits the dual principles of domestic reform and international differentiation as the basis to safeguard developing countries. Governments need to improve planning, transparency, land use, social protection, and public participation. But weak domestic performance cannot be used as an excuse for high emitters to avoid adequate action or to justify financial arrangements that add to debt (Chancel, 2022). The more warming occurs, the less adaptable major emitters will be, and they need to cut emissions quickly. They must also offer financing and technology on terms that expand, rather than limit, the policy space for vulnerable countries. Risk takes precedence over structure, consequences, principles, and action. It first elaborates on geographic, economic, and social-group inequalities in climate hazards. It then examines historical emissions, extraction, dependency, finance, and technology. The next sections consider impacts on basic needs, mobility, stability, and development. Lastly, it identifies the ethical, legal, and human rights principles of the climate justice movement and suggests an integrated approach to protecting them (Lau et al., 2021).

It is not to attempt to place moral guilt as a goal alone. It is about linking responsibility to solutions that can stop harm, restore losses, and allow dignified development within a world of limited climate space. In practice, addressing adaptive capacity disparities requires reliable financing, local knowledge, transparent planning, and public responsibility that must be enforced. Any distributional impacts associated with hazard/disaster transformation are particularly pronounced at the point of poverty and limited service provision in anticipation and recovery. While technical solutions are important for addressing the distributional impacts of low-carbon transitions, participation, affordability, institutional trust, and attention to unequal power are essential for success (Budolfson et al., 2021).

Cooperation on governance at the domestic level and international responsibilities should strengthen states' capacity without imposing an undue debt or administrative burden on weak states. The long-term benefit of rights-based climate planning is safeguarding development gains and increasing options for future generations. Climate justice frames climate mitigation as a fight for rights, resources, and representation, which is not exclusively an

environmental issue (Eriksen et al., 2021). Adherence to policies on fair access to protective resources should be judged by measurable improvements in safety and opportunity, especially for those experiencing multiple disadvantages. Coordinating across ministries, local governments, communities, industry and with international partners is also essential to an effective approach to differences in adaptive capacity. The results still aren't equal. But for fairness to be acknowledged, it needs to be put into practice. Effective protection depends on responsible public institutions (Macours et al., 2022).

The Unequal Distribution Of Global Climate Risks

Geographic and Economic Exposure

The importance of geography on exposure cannot be underestimated; however, geography alone does not determine exposure. Small island states and low-lying deltas face sea level rise, saltwater intrusion, erosion, and increased coastal flooding (Wouterse et al., 2022). Rainfall is uncertain, drought is severe, and heat is extreme in arid and semi-arid regions. In the mountain countries, glaciers melt, slopes become unstable, rivers shift, and catastrophic floods occur. In the tropics, extreme storms, new disease patterns, and coral loss and forest damage are possible. Because of these conditions, even if developing countries themselves have relatively low emissions, they can reach physical thresholds more easily. Economic structures accentuate these hazards. In many developing countries, agriculture, fisheries and forestry, tourism, and other businesses closely linked to ecosystems and weather stability are crucial (Premand & Stoeffler, 2022).

A failed season can simultaneously affect household income, export earnings, tax revenues, and food availability. National governments and workers have few options when there is limited diversification. Access to insurance is also limited by informal employment, as are paid leave, savings, and legal protection, meaning that in the event of a heat wave or flood, it becomes an income crisis (Robinson et al., 2023). Infrastructure is what decides mass harm as a result of exposure. There are often poor drainage systems, roads, schools, hospitals, power lines, water systems, and communications systems, which are underdeveloped or poorly maintained in the better-off areas. Rapid urbanization may force low-income people into settlements on floodplains, on slopes that are steep and unstable, or in places that are too hot for living because they cannot acquire secure tenure and access to basic services. Rural isolation delays warnings and evacuation, medical care, and markets (Beck et al., 2023). Then, disasters strike again and have a negative impact on the same systems that are still weak.

Prevention and recovery are limited by fiscal constraints. Governments that are not experiencing a substantial budget surplus may be tempted to delay resilient infrastructure due to the fact that social needs are already not being met. Borrowing can finance reconstruction after a disaster, but it makes people more vulnerable because of debt service and austerity in the future. Sometimes, losses are predictable in a fashion where it is not possible to obtain or afford private insurance. This means that vulnerability to climate change traps people into a vicious circle: inadequate resources lead to inadequate protection, disaster wipes out productive assets, and recovery costs inhibit the resources for the next disaster (Nielsen et al., 2024). International cooperation about coastal/delta exposure should enhance the capacities of the affected countries without imposing undue debt or administrative burdens on these countries.

The long-term sustainability of climate-sensitive livelihood dependence will be achieved by investing in the gains of development and increasing future generations' options. From a climate justice perspective, urban drainage and housing issues are not just environmental problems, but also issues of rights, resources and representation. There is a need for a clear and measurable improvement in safety and opportunity, especially in the areas of multiple disadvantage, to evaluate policy regarding a fiscal space for prevention. Coordination between ministries, local authorities, communities, businesses and international partners is also essential for a successful strategy to address repetitive impacts on critical infrastructure. This distinction matters. The key to effective protection is to have responsible public

institutions. Solutions must be durable, such as redistribution of resources and influence (Emmerling et al., 2024).

Inequality between Developing Countries

There are real disparities within the population which are hidden behind national vulnerability statistics. Poverty is a major separator as it affects where households live, the quality of shelter, assets they can protect, and the length of time they can live off their earnings. If more desirable areas are not available for purchase, or jobs are close to their homes, poor families may stay in unsafe places (Andreoni et al., 2024). They often don't have any savings, insurance, documentation, transport, or political connections. If disaster assistance is delayed or formalized in terms of ownership, then those in need can be left out. Gender influences exposure by virtue of differential control of land, income, mobility, information and care. In times of food shortages, women may be last to eat, and violence may occur in shelters as they are overcrowded, or they might not be counted on the damage assessments list because they are not working. Children miss school, do not receive the nutrition they need, get sick, and experience the effects of the lost learning time on their long-term development (Gilli et al., 2024). Older adults and individuals with disabilities might not be able to evacuate in time and/or access warnings tailored without them in mind. These are not inevitable consequences of nature but rather a result of unplanned institutions for diverse needs. Rural communities are directly reliant on water, soil, and forests, and seasonal changes, while urban informal settlements suffer from heat, unsafe air, flooding, lack of secure tenure, and limited services. I/TCs may lose lands which support livelihoods and their cultural identity. Language barriers, discrimination, or fear of authorities may be faced by migrants and/or minority groups. During critical periods of heat, informal workers are hard-pressed not to continue working, and when markets close, they may not find any compensation (Dang et al., 2024).

With high levels of support, recovery can increase inequalities. Groups with better connections are more likely to be able to get compensation, credit, contracts, and rebuilt infrastructure first. Residential displacement is often permanent as a result of land acquisition, and reconstruction can be carried out without community input, displacing affordable housing and, in the process, creating jobs for investors (Dorninger et al., 2021). Climate justice requires disaggregated data, procedures that are accessible, social protection, as well as secure rights and direct representation. Protection should be assessed not on the amount of money invested but as to whether the people at greatest risk are actually expected to benefit from protection in terms of safety, voice and control over recovery. Policy that has an impact on poverty and insecure housing should be evaluated through the lenses of measurable improvements in safety and opportunity for those who are most marginalized, in particular.

Coordination across ministries, local authorities, communities, businesses and across international partners is needed to be able to implement an effective approach to gendered care and livelihood burdens. If barriers to disabled and older people are not tackled at an early stage, then the costs will continue to rise in the future, the losses will be avoidable, and emergency responses will replace planned development (Pörtner et al., 2022). Therefore, public discussion on the dependency of the rural population on ecosystems should not be limited to short-term promises and discussions of the allocation of protection in daily life. An informal analysis of labor during the 'dangerous heat' can provide an explanation for the divergent effects of apparently neutral policies at different income, gender, location, and legal status groups. This distinction matters. Effective protection depends on responsible public institutions. Distributing resources and influence must be part of durable solutions (Intergovernmental Panel on Climate, 2023).

Structural Causes Of Environmental Inequality

Historical Emissions And Unequal Responsibility

The atmosphere doesn't store emissions from the previous year; it stores emissions that have accumulated over time. In industrialized nations, the use of coal, oil, and gas has long supported the development of factories, transport systems, cities, military strength, and wealth. Their development contributed

significantly to the carbon budget constraint, which drives GHG emissions (United Nations Environment, 2024a). In many developing countries, the risks of industrialization came later and were met with more demanding low-carbon requirements. If everyone were treated equally under these inequitable circumstances, they would all be benefiting from previous emissions. This is not to say that current emissions from developing economies are irrelevant, as they are historically responsible. Developing countries must choose clean development, and no government should invest in high-carbon, wasteful, and corrupt projects (United Nations Environment, 2023a).

But the duty to justice must be based on two factors: contribution and capacity. A subsistence household's need for electricity is not a luxury use or a relic of old carbon-intensive infrastructure. Current national data only capture part of the story, and other metrics, such as per capita emissions, cumulative totals, consumption-based accounting, and development needs, shed light on other aspects. Responsibility also has a dimension about who reaped the benefits. The private enrichment from carbon consumption by rich nations created public wealth, technological capability, and infrastructure resilience, while much of the environmental cost was externalized to other nations or minority groups (United Nations Environment, 2022). Climate finance must thus be regarded as a duty, rather than as a charitable act, to be done in the nature of a benefit. This is also true of more resource-rich countries that can act more quickly to mitigate: they are helping less-resourceful countries to mitigate against hazards they can't afford to repair (United Nations Environment, 2024b).

It is therefore important that the discussion of cumulative emissions, and not annual emissions, is taken into the public sphere and not just the headlines, and the question of distribution of protection would need to be addressed in the day-to-day. A close examination of the unequal impact of industrialization can uncover why seemingly innocuous policies affect income, gender, location, and legal status differently. The remaining carbon budget constraints will remain fragile until decisions are made transparent, contested by affected communities, and accompanied by effective remedies. Immediate danger reduction, enhanced public services, and maintaining development options under future warming can be achieved through sustained efforts on luxury emissions and basic energy needs (United Nations Environment, 2023b). This distinction matters. The results still aren't equal. Effective protection depends on responsible public institutions. Resources and influence need to be redistributed to achieve durable solutions.

Colonialism, Resource Extraction, and Economic Dependence

Current climate vulnerability is linked to past colonial experiences and extraction. Colonial economies were often geared toward exporting minerals and timber, plantation crops, and other raw materials, rather than developing diversified local production or universal public services (Mahmood et al., 2025). Extraction was frequently the purpose of borders, land systems, transportation, and administrative structures. Formal independence did not mean that many countries were no longer dependent on a few commodities whose prices were decided elsewhere. Economies are now hit by climate shocks on top of challenges from external demand, fluctuating prices, and highly concentrated ownership. The value and cost of the environment and society continue to be unevenly distributed in the process of extracting resources. The benefits of clean technologies can be obtained in other parts of the world, and the fossil fuels, metals, agricultural products, and minerals required for clean tech could be produced in developing countries (Intergovernmental Panel on Climate, 2022).

Mines, plantations, dams, or oil fields can pollute and displace communities, and leave them without water and subject to repression. A transition that has a green label isn't just about whether it restores these relationships. Policy options are limited by trade rules and the functioning of global value chains. Countries dependent on commodity exports risk losing export revenue, and the impact may be even greater for countries that depend on imports for food and energy (Saleem et al., 2025). When debt and foreign exchange problems arise, extraction is hastened even if the ecological costs are high. Then, climate disasters lead to lower exports and higher, more expensive imports,

which further increases dependence. Economic transformation is needed, not just disaster projects, to achieve climate justice. Measures to safeguard against vulnerability include diversification, local processing, fair taxation, and respect for labor rights, land protection, and regional cooperation. Developing states should be allowed to pursue these changes under international measures.

In the absence of such an approach, however, adaptation finance can help to safeguard particular assets without changing the unequal exchange system itself. This work on colonial patterns of commodity production can simultaneously reduce immediate threats, boost public services, and maintain development options for future warming. Equality in global value chains highlights how politics, along with climate exposure, contributes to climate vulnerability. Failing to cover extraction costs at the local level increases household costs through lost income, health, education, and security (Saleem et al., 2026). The results still aren't equal. But for fairness to be acknowledged, it needs to be put into practice. Effective protection depends on responsible public institutions. Distributing resources and influence must be part of durable solutions.

Climate Finance and Technological Inequality

Finance can hinder climate plans and implementation. Developing countries need resources for resilient infrastructure, early warning, public health, agriculture, ecosystem protection, clean energy, and recovery. In many cases, domestic revenue is not enough, especially when poverty is prevalent and debt is high, consuming public funds. International finance has expanded, but access remains slow, fragmented, and unpredictable; it is still too burdensome to navigate (Romanello et al., 2022). Funds that are announced in global meetings are not protection unless they are "extra", "available," and disbursed. How financing occurs is as important as how much. To finance adaptation, countries may be required to pay for their own survival, with little contribution to the crisis they face. Even concessional loans add to liabilities and may promote projects with measurable financial benefits to poor communities over essential services. Debt relief can expand fiscal space, and it is particularly crucial to ensure space for adaptation and loss and damage (Friedlingstein et al., 2025). However, transparent safeguards are still needed to prevent elites from monopolizing public resources or using them for poorly designed projects. Another barrier is technological inequality. Limited technical skills, dependence on imported equipment, weak grids and water systems, limited access to resilient seeds and climate data, and patents and licensing costs can delay access to renewable energy and storage, efficient cooling, and resilient seeds and water systems. Transfer of the technology should involve know-how, capacity to maintain the technology, manufacture in the local country, and training, not just the sale of equipment (Romanello et al., 2023). A lack of institutional capacity should not be used as an excuse to not support. More complex applications can penalize less specialized countries. International institutions must make access easier, but also provide public systems to ensure it is delivered in an accountable way.

The four elements of money, knowledge, local authority and long-term capability are all essential to fair cooperation. Who caused the risk, who benefits from the existing arrangements, and who can shape the change should be considered for a justice-based response to grants for adaptation and loss? In doing so, debt-financed climate finance must be reliable, local, transparent, and publicly accountable (Saleem et al., 2025). The consequences of unequal access to these benefits grow particularly pronounced in settings with high poverty rates and limited services to support anticipation and recovery. This distinction matters. The results still aren't equal. But for fairness to be acknowledged, it needs to be put into practice. Effective protection depends on responsible public institutions. Ensuring protection is the ultimate goal of climate justice (Romanello et al., 2024).

Consequences For Developing Countries

Food, Water, And Public Health Insecurity

Systems that support everyday life are at risk due to climate change. Temperature, rainfall, soil moisture, pollinators, and regular seasons are all critical to agriculture. Pakistan, for instance, contributes less than 1% (roughly 0.9%) to global greenhouse gas emissions, yet it

consistently ranks among the **top 10 most climate-vulnerable countries in the world** (Ministry of Climate Change and Environmental Coordination, 2025)**. Insufficient** rainfall, drought, heat, salinity, pests, and changing rainfall patterns can reduce yields or cause lost harvests (OECD, 2024). Small farmers and pastoralists are particularly vulnerable because they rarely have access to improved information, veterinary services, insurance, and credit, and they rarely irrigate or store feed or water for their animals. Food prices are affected by production losses, which reduce rural producers' incomes, limit the nation's import capacity, and pose risks to urban consumers. Water insecurity affects rural residents' lives, agricultural production, energy, industry, and ecosystems (Yasin, Munir, Shehzadi, & Saleem, 2026). Changes in rainfall and glacier melt can create destructive floods followed by shortages. In some cases, groundwater extraction increases in response to reduced surface supplies, further decreasing groundwater supplies and inequality. Unreliable or unsafe water services are often more expensive for poor communities (Saleem et al., 2026).

The greater users' power to capture supply, the vaguer the allocation rules, and the more competition increases. Disaster impacts on health last long after the disaster. In high temperatures, exhaustion and cardiovascular stress, kidney problems, and reduced labor capacity occur. Flooding spreads water-borne diseases, and some disease vectors can spread over greater distances in warmer weather. Respiratory illness is exacerbated by smoke, dust, and air pollution (Ngcamu, 2023). The situation of food shortages contributes to malnutrition, particularly in children and pregnant women. Emotional stress resulting from anxiety, grief, displacement and repeated loss is a detriment to emotional health. There is a need to plan integrated public health protection. Hospital, disease surveillance, water management, urban design, and agricultural support should all be based on climate information. Marginalized groups need access to cooling, shade, safe housing, nutrition programs, clean water, and primary care. Addressing individual emergencies without considering the interconnectedness of food, water, and food insecurity is not enough (Gain et al., 2022).

Technical solutions must be accompanied by participation, cost-effectiveness, institutional trust, and consideration of power imbalances in order to be effective in achieving climate-resilient agriculture by smallholders. Cooperation between nations on sharing limited water resources should be deepened while also boosting these countries' capacity, without burdening them with excessive debt or administrative tasks. The long-term benefits of working on HRI and labor loss are to ensure that development gains are not lost and more options are available to future generations (Resnik, 2022). Considering disease surveillance in the wake of flooding through climate justice is not just an environmental issue but a battle for rights, resources, and representation. This distinction matters. The results still aren't equal. But for fairness to be acknowledged, it needs to be put into practice.

Displacement, Livelihood Loss, and Social Instability

Climate-related mobility can be temporary evacuation or permanent displacement. Homes can be wiped out in just a few days by floods and storms, and places can become increasingly inhospitable over time due to sea-level rise, erosion, drought, and ecosystem loss. Most people relocate within their home countries, sometimes to towns already struggling with shortages of affordable housing and services. Others get stuck because they need money, documents, information, and social networks to move. Such movement cannot be termed as voluntary migration (Wilkens & Datchoua-Tirvaudey, 2022). Often, displacement is driven by the loss of livelihood. Farmers lose land and livelihoods, fish stocks decline for those working in fish and shellfish, and income is lost for those in the tourism sector as ecosystems degrade. Workers in urban areas are also affected by reduced safe working hours in the heat and by disaster-related closures of markets and factories. Cultural losses can be great when communities lose their homeland, sacred sites, language, and social norms. These relations can't be replaced with monetary compensation. Climate change does not inevitably lead to conflict, but can exacerbate conditions that increase the likelihood of conflict. Lack of resources, price volatility, unequal services, conflicts over land,

and exclusion can exacerbate mistrust among populations, especially in situations of weak governance. Displacement can be used as a tool for political exploitation and/or to shift responsibility for failure to solve a problem onto a minority group (Amorim-Maia et al., 2022). On the other hand, the risk of hazards leading to violence can be reduced through fair institutions, social protection, mediation, and inclusive planning. Rights need to be in place before, during, and after movement for protection. Governments should provide planned relocation norms, secure tenure to people who need to relocate, livelihood assistance, access to education and health care, and protection from forced evictions. Investment in host communities is also needed so they do not compete for assistance while services remain inadequate (Hasan, 2022).

International cooperation needs to consider cross-border aspects and not view vulnerable persons as security risks. From a climate justice perspective, rights-based planned relocation is not about the environment alone, but part of a battle over rights, resources, and representation. Measurable improvements in safety and opportunity, especially for multiple groups of disadvantaged people, should be the standard for evaluating policy on livelihood recovery following displacement (Paglialunga et al., 2022). Furthermore, support efforts must be coordinated across ministries, local authorities, communities, businesses, and international partners to be effective for receiving communities. This distinction matters. But for fairness to be acknowledged, it needs to be put into practice. The key to effective protection is to have responsible public institutions. Solutions must be durable - meaning they need to redistribute resources and influence. The ultimate demands of climate justice are responsibility for a measurable level of protection (Chaudhry, 2023).

Economic Losses and Developmental Setbacks

Climate disasters affect more than physical assets. Roads and bridges, schools and clinics, power systems, farms, and businesses are damaged, disrupting the networks on which development relies. Producers cannot access markets when transport fails, and patients cannot access care. School closures lead to lost learning, and damage to water and sanitation systems leads to disease. These indirect losses can go on long after the floodwaters have subsided or the storm has passed (Sultana, 2022a). Now is a challenging fiscal year for governments. Governments need to spend on emergency relief/reconstruction as tax revenues drop. Funds for education, health, housing, and poverty reduction can be shifted. Funds for education, health, housing, or poverty reduction can be diverted. The borrowing fills the gap, but increases debt service, depresses credit, and limits subsequent investment. Frequent shocks can make structural changes permanent, and reconstruction may not shift from old to safe.

The private losses are also unequal. Large companies can insure their assets, move to another location, or even borrow money. Often, small businesses and informal workers lose tools, stock, and customers without replacement, and they lose income too. Families can sell livestock, pull children out of school, cut back on their food intake, or borrow money. These coping mechanisms are vital for survival now but harmful in the long term, as they deprive people of opportunity. Resilience must also be evaluated as a measure of development, in addition to growth (Hasan, 2023). It is necessary to screen public investment decisions for climate risks, provide transparent information on climate risks, fund maintenance and use standards appropriate for future climate. Social protection can help prevent asset liquidation, and contingency financing can help speed response. But resilience should not be a reason to pass the full responsibility onto vulnerable states. If no action is taken at the global level and no support is provided, even a well-managed adaptation system would not be able to cope with increasing losses.

If not tackled early, costs will escalate, losses will grow, and emergency responses will replace planned development as the need for screening increases with climate change. Debate on fiscal shocks and rising debt service needs must therefore go beyond the headlines and into how protection is applied in practice. Deeply understanding the uninsured losses of small businesses can help explain why seemingly neutral policies yield different results for businesses of varying income, gender, location, and legal status. The results still aren't equal. To

achieve equality, action is needed (Ngcamu, 2023). Effective protection requires accountable public institutions. Solutions must redistribute both resources and influence. Progress will be sustained if promises made at the international level are matched with available public support.

Ethical, Legal, And Human-Rights Foundations Of Climate Justice

Climate justice is based on multiple principles that must be combined to form a whole, but none is sufficient on its own. To promote equity, attention must be given to unequal starting points, contributions, capabilities, and needs. The substantive equality question asks what different actors can reasonably be expected to do and what support is needed for comparable protection, while the formal equality question asks whether the burden is the same for each country or person (Pearson et al., 2024). This is because the same responsibilities may have unequal consequences for the rich and the poor. Historical responsibility is responsibility based on past emissions and accrued benefits. The polluter pays principle also applies to the prevention and repair of pollution; namely, the costs of prevention and repair must fall on the polluter, not on the victims. Responsibility is a complex issue in climate politics because emissions were generated over generations, by governments, companies, and consumers (Newell et al., 2021).

The principle can still be applied even with imperfect attribution. It fosters differentiated obligations, corporate accountability, and financial contributions in accordance with our contribution and capacity. This logic is then applied to international climate cooperation through common but differentiated responsibilities and respective capabilities. All states have a responsibility to solve the problem, but different states bear different responsibilities (Cohen et al., 2023). Developing countries need climate-compatible policies; however, high-emitting countries need to change faster, receive support, and avoid restrictions that are unfair. Differentiation is not an excuse not to act, but a way to allocate action fairly. Intergenerational justice concerns those who haven't given consent to present-day risks and cannot help make present-day decisions. If mitigation is delayed, it will consume the final carbon budget and reduce future options (Morello-Frosch & Obasogie, 2023).

Societies can be "locked in" to emissions or exposures by emission infrastructure built now. This long-term safety, in turn, should be considered when formulating responsible policies that do not impose regressive and abrupt transition costs on current low-income groups. Procedural justice is related to decision-making. Informing and giving voices to communities that are impacted by relocation, conservation, energy projects, and/or mining or adaptation. After decisions are made, it is not good enough. All women, indigenous people, youth, persons with disabilities, workers, and marginalized groups must be able to participate. It should include provisions for challenging decisions, providing reasons and actions to rectify them (Siddiqi et al., 2023). These are embodied in human rights. Human rights provide practical expression to these principles. Climate harm can impact life, health, food, water, shelter, culture, education, employment, equality and self-determination.

States have obligations to respect rights in their actions, safeguard individuals against harmful private actions, and ensure rights are met through policy and resources. In addition, climate action has to respect rights. Violent evictions are not acceptable for conservation; unsafe labor and uncompensated land seizures are not acceptable for renewable energy. International responsibility is complex; not all pledges are enforceable and instead depend on reporting, reviewing, diplomatic efforts, and pressure (Souissi & Tiba, 2024). However, transparency frameworks, domestic courts, human rights institutions, corporate regulations, and public engagement can help to improve accountability. Stakes, budgets, timelines and disclosure make it difficult to get away with any promises that are “far down the road”. Remedies must be for preventable harm and unavoidable loss, including non-economic harm to culture, territory, and identity. These foundations are towards a practical standard.

Climate policy is just when it lowers overall risk while allocating responsibility and capacity to manage it, prioritizing those most exposed, safeguarding participation and rights, and establishing effective means to redress harm when it happens. Formal ethical language is not enough, unless it is followed up by action. The

intent of principle is to provide measurable security and dignity by guiding budgets, laws, projects, and international transfers. Reform, as substantive equality, will remain fragile if affected communities cannot monitor decisions, if there is no effective remedy to challenge exclusion, or if the remedy is ineffective (Falzon, 2024). Consistent efforts toward a polluter pays principle can have multiple short- and long-term benefits, including immediate safety improvements, better public services, and continued development capacity amid future warming. The differentiated national obligations illustrate that climate vulnerability is not just a function of physical vulnerability, but of political choices as well (Furlan, 2024).

Failing to include the rights of future generations demands sacrifice from households in terms of income, health, education, and security. A justice-based approach to meaningful participation in climate decisions must consider who created the risk, who benefits from the situation, and who has the power to change it. In practice, human rights protections for green projects require not only steady funding, but also a local understanding and openness to planning, and an obligation to public action ("Climate change and income inequality: Does renewable energy matter?," 2024). The results still aren't equal. But for fairness to be acknowledged, it needs to be put into practice. Effective protection depends on responsible public institutions. Durable solutions require both resource and influence transfer processes. Making good progress requires pledges to match public support that is within reach.

Protecting Developing Countries: A Global Action Framework

The first step to protection is to quickly reduce the emissions of the largest emitters. Adaptation is possible within a certain budget, physical and financial, and certain ecosystems, territories, and cultural losses can't be recovered. Wealthy states need to boost their near-term targets, phase out unabated fossil fuels, cut unnecessary consumption, and link public funding to low-carbon development (Pearson et al., 2024). In addition to the credible transitions still needed for emerging emitters, steps toward climate action should not be taken at the expense of basic energy access or poverty alleviation in the absence of international support. Climate finance needs to be more predictable, adequate and readily available. Adaptation and loss and damage should be prioritized in grant allocation, with no debt accumulation for vulnerable countries to address harm caused by external factors. Funding requires multi-year commitments, transparency, easy access, and direct access for local institutions.

National governments should have allocation criteria, audit allocations, and avoid elite capture. There's an obligation of accountability to those who promise money and to those who receive it and use it. Systems, not single projects, should be adapted. Resilient roads, schools, hospitals, water networks, housing, grids, and communications can mitigate multiple risks (Cohen et al., 2023). Early warning systems need trusted messages, evacuation routes, shelters, health response, and last-mile access; they don't need forecasts. Agriculture needs water management, extension services, seed variety and collection, storage, credit, and social protection. Nature-based solutions can be effective if they respect land rights and are in combination with required infrastructure. Loss and damage arrangements should deliver prompt assistance for impacts beyond the scope of adaptation and mitigation.

Economic losses (loss of assets) and non-economic losses (health, culture, biodiversity, territory and community cohesion) should be funded. Procedures should be easily accessible in emergency situations and not be too time-consuming. Disaster can be avoided by setting the stage for a prolonged fiscal crisis through debt relief, suspension clauses and/or concessional restructuring. The cooperation in technology should lay the foundation for long-term capacity development at the local level. Availability of open knowledge, fair licensing, training, research partnerships, interoperable data, and support for local manufacturing can help to decrease dependency (Morello-Frosch & Obasogie, 2023). Maintenance, repair, and workforce development need to be part of the procurement. Developing countries must also have a right to a say in setting standards, including the regulation of carbon markets, trade regimes, critical minerals, and green investment, to ensure that climate policy does not create new opportunities for 'carbon

extraction'. Local-led adaptation is necessary because communities have knowledge and understanding of hazards, as well as social dynamics and practical constraints, that central agencies may not be aware of (Siddiqi et al., 2023).

Involvement gives priority to and affects budgets and should be given explicit access for women, youth, Indigenous people, persons with disabilities and informal workers. Local knowledge should be used alongside scientific forecasting, not as a showy consultancy. Last but not least, institutions must link pledges around the world to tangible results. Countries should publicize risk assessments and financing flows, project results, and distributional effects. Independent oversight, courts, parliaments, civil society, and the media can hold failures to light, and learning can improve. The success of partnerships should be measured by decreased death rates, secure homes, stable service provision, sustainable living, and increased public participation (Souissi & Tiba, 2024). The framework will only be successful if, alongside daily security, some of the most vulnerable populations affected by climate risks experience international responsibility in their daily lives. If major emitters do not act quickly to mitigate losses, households will bear them through reduced income, deteriorating health, missed school, and a compromised sense of security.

An equitable and just solution to 'predictable grants based' climate finance should look at who is creating the risk, who is benefiting from the current system, and who can shape the change. To build resilient public infrastructure, we need reliable financing, local knowledge, clear planning, and public accountability. Timely loss and damage assistance can have particularly harsh distributed consequences in poor countries with limited capacity to anticipate and recover from losses (Falzon, 2024). While technical solutions can support fair technology cooperation, their effectiveness depends on actors' willingness, cost, trust in institutions, and the capacity to account for unequal power. These effects continue to be disproportionate. Practical enforcement is thus required in order to implement a level playing field. Public institutions must be accountable to ensure effective protection. Balancing resources and influence will be needed to ensure durable solutions (Furlan, 2024). The key to making sustainable progress is bringing international commitments to life by making public finance available.

Conclusion

Increased inequalities as a result of generations of inequality are being exposed and exacerbated by climate change. Developing countries frequently face high risk due to limited fiscal capacity, climate-sensitive economies, low equity protection among social groups, and poor infrastructure. Geography alone does not make them vulnerable. Historical emissions, colonial extraction, unequal trade and debt, limited technology, and unequal political power determine who is at risk and who can recover. Climate justice is a new metric for evaluation of action. Success is not just overall emissions reduction or commitments to hefty financial promises. It is about avoiding avoidable harm, equitably allocating burdens, active engagement, protecting human rights, and ensuring justice for losses that can't be prevented. Transparency of government institutions, inclusive planning, and prudent investment are the responsibility of developing country governments (Khan, Munir, & Ahmed, 2020). However, these responsibilities are not an excuse for the greater responsibility of rich, high-emitting countries. A sufficient response should include swift mitigation, grant-based adaptation finance, loss-and-damage support, access to technology, technology cooperation, and locally led decision-making. These measures should reinforce development choices and not create new dependency. Money and promises from international negotiations must be followed by results in community and national budgets. If the climate crisis is not tackled equitably, vulnerable societies will have to sacrifice development or endure ever-growing losses from a climate state to which they have only partially contributed. Protection is credible only if a redistribution of responsibility, resources, and decision-making power is implemented in favor of the highest-risk groups. The results are still skewed. Practical enforcement is thus required in order to implement a level playing field.

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