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CLIMATE AMBITION SUPPORT ALLIANCE

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Reframing transformational adaptation in the UNFCCC: lessons and pathways

This briefing examines the evolution of transformational adaptation (TA) within the scientific community and United Nations Framework Convention on Climate Change (UNFCCC), highlighting its contentious reception among developing nations. It explores both critiques and opportunities, advocating for a reframed approach that fosters global cooperation while addressing developing countries' concerns. Most countries do not reject TA outright but challenge, among other things, its definition, financing, implementation, equity and power imbalances. Without addressing these concerns, TA risks becoming another form of adaptation conditionality rather than a tool for resilience-building.

Key points

Reframe transformational adaptation (TA). The framing of TA must shift from a large-scale model to a flexible continuum of adaptation responses, recognising locally driven and incremental transformations.

Tie TA to equitable means of implementation. TA must be supported by predictable, grant-based finance, technology transfer and capacity-building, ensuring developing nations can pursue adaptation autonomously.

Integrate TA with just transition principles. TA must prioritise social equity, labour rights and cultural preservation to prevent displacement, economic instability or forced shifts in livelihoods, ensuring adaptation does not exacerbate existing vulnerabilities.

Embed locally led adaptation. Strategies must shift power to local actors, ensuring Indigenous knowledge, community governance and participatory adaptation become essential components of transformational resilience-building.

A scientific perspective

The Intergovernmental Panel on Climate Change (IPCC) defined adaptation to climate change as "adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities".[1] Incremental adaptation strategies involve small alterations to livelihood features, often supporting the preservation of the livelihood system as a whole,[2] whereas transformational strategies fundamentally change the livelihood system.[3]

The concept of TA has evolved from incremental and intermediary adaptation practices (see Figure 1), and was first introduced as a model based on the "notion of the quality of a solution to a problem", where quality denotes "some kind of appropriateness, utility, or degree of correctness".[4] An example of an incremental response might include adopting new species and varieties of crops, while a TA strategy might mean a complete change of livelihood activity. An intermediary response might be diversifying livelihood systems.[2]

By the 2010s, scholarly publications recognised that incremental changes would be insufficient to address deep-rooted vulnerabilities and high-end climate risks;[5] following the IPCC's explicit reference to TA[6] and its subsequent inclusion in the Global Goal on Adaptation (GGA), the concept became recognised within global climate policy frameworks.[7] Since then, TA practices in the agriculture sector, for instance, have been featured in both developed countries (for example, Australia[8] and Italy[9]) and developing countries (for example, in various countries in sub-Saharan Africa including Angola, Ethiopia and Mali).[10]

In 2014, the IPCC urged the consideration of transformational approaches if a solution could not be achieved using the adaptation solutions available at that time. It defined TA as actions aimed at adapting to climate change impacts and risks, that involve fundamental natural and human changes to system structure or function,

Integrating just transition into adaptation governance is about rebalancing power in climate finance

or attributes that go beyond adjusting existing practices, including shifts in values, governance reforms, new financial structures, economic systems, new technologies and ecosystem-based solutions.[7]

Key characteristics of TA include: the fundamental shifting, rather than the modification, of existing systems (depth); being large in scope and affecting multiple sectors and governance levels (scale); and requiring rapid implementation to be effective (speed).[11]

At the heart of TA are: the need to address the root causes of vulnerability, particularly in regions where existing governance, infrastructure or economic models cannot cope with projected climate change impacts;[5] the need to consider special requirements; and the need to integrate climate justice, social inclusion and protection to avoid maladaptation (equity). Some argue that adaptation to current and projected climate risks will require transformative development — meaning "development that takes everyone into account and places issues of equity and justice in the centre and adheres to principles of sustainability".[12]

The notion that TA is applied only in developed countries is misleading, despite their strong advocacy for its consideration. For instance, a global review of 210 studies[2] across 64 countries — 53 of them developing — documents 3,292 responses by Indigenous Peoples and local communities, showing that in half the cases, communities fully or partially transformed their livelihoods in response to climate impacts. These responses, especially in (semi-)arid climates, reflect the significance of local knowledge and practices in driving both incremental and transformational adaptation. Recognising and scaling such responses is key to effective climate strategies.

TA is widely recognised as a necessary but not absolute criterion for addressing climate risks.[5]

Despite its increasing traction in global climate policy, TA remains challenging to implement due to financial, technical, technological, institutional and political barriers.[13] Studies show that TA is most effective in, and can serve as a catalyst for, enabling sustainable development when aligned with a country's vision, priorities and national circumstances. Relying solely on incremental changes within existing systems may increase costs, losses and missed opportunities.[7]

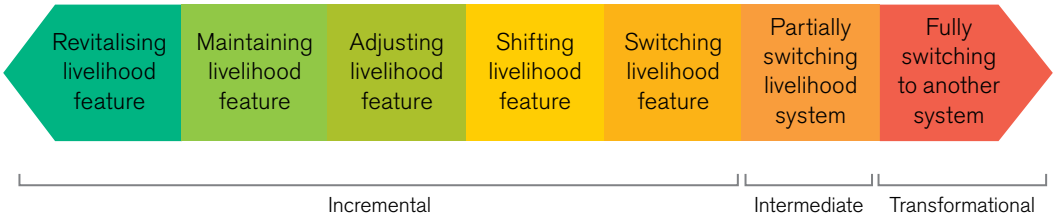
A political battleground

Adaptation has long been the quiet sibling of mitigation in global climate politics, lingering in the background while negotiations focused on cutting emissions. But as the impacts of climate change have intensified, the need to confront its realities head-on has pushed adaptation to the fore. At first, the global approach was to favour incremental measures, which were, for a time, enough to give the appearance of progress. However, as scientific evidence accumulated, it became evident that small-scale fixes could not match the pace or scale of climate disruption. In this context, the concept of TA began to take hold. (See Table 1.)

Seeking to elevate adaptation, the Paris Agreement established the GGA, in which countries committed to enhancing adaptive capacity, strengthening resilience and reducing vulnerability. This goal existed without a roadmap until COP28 in Dubai, nearly a decade later, where the international community agreed on the United Arab Emirates (UAE) Framework for Global Climate Resilience.[7] This established collective global targets across key sectors like water, food, health, ecosystems, infrastructure and livelihoods. It signalled the most significant institutional endorsement of adaptation to date.

While the UAE Framework asserts the necessity of "long-term transformational and incremental adaptation,"[7] it leaves the question of means open. The targets are expansive, but the guarantees of finance, technology and capacity-building for developing countries are hazy. This raises a familiar concern: grand declarations of

Figure 1. Adaptation response categories by magnitude of change entailed, left to right



Source: Recreated under Creative Commons BY 4.0 from IPCC (2022) *Climate Change 2022: Impacts, Adaptation and Vulnerability.* Cambridge University Press, Cambridge.

shared responsibility masking an unequal reality where the heaviest burdens fall on those with the fewest resources. There is a growing unease that TA, an approach championed by science as a pathway to climate justice and systemic change, is being institutionalised in ways that risk deepening existing divides. If countries are expected to overhaul entire sectors, protect vulnerable communities and safeguard ecosystems, how can they do so while grappling with debt, economic precarity and historical disadvantage?

The political evolution of TA has not been without cost. What began as a bold challenge to business-as-usual approaches risks becoming a burden disproportionately carried by developing countries, with global frameworks setting the terms while leaving the hardest work underfunded. COP28's embrace of TA may indeed mark a turning point, but whether it leads to greater equity or deeper divides remains to be seen.

Critiques of TA

Lack of clear definition: TA has received several criticisms, including that it lacks a clear definition and distinction from incremental adaptation, which complicates policy implementation and progress measurement. The notion that TA must be large-scale with rapid shifts is problematic and unrealistic, particularly in least developed countries (LDCs) with limited enablers and means of implementation. Some practitioners, particularly from Africa, argue that TA approaches can stem from the personal, household, micro, meso or macro level. They note that large-scale rapid solutions can be impactful but carry severe risk, which could cause irreversible damage and unintended consequences if proper precautions are missed. In fact, transforming societal development can be "messy and painful".[13]

Funding inadequacy: developing countries argue that TA is financially unrealistic amid persistent shortfalls in climate finance, especially for adaptation. While developed nations call for large-scale transformation, they have repeatedly failed to match ambition with adequate financial, technological and capacity support. The US$100 billion annual pledge, first made in 2009, was not met by its 2020 deadline. Progress toward doubling adaptation finance by 2025 is still uncertain, and even full delivery would close just 5% of the estimated US$187–359 billion annual adaptation finance gap.[14]

The private sector remains reluctant to invest in TA due to uncertain returns and high upfront costs, limiting financial flows to global South adaptation projects.[5] Consequently, despite their potential, most adaptation efforts remain incremental rather than transformational.[5] According to a recent study of 3,292 responses to climate change impacts, 89% were "incremental" (also referred to as "fragmented" and "small in scale"), 7% were "intermediate" and only 4% "transformational". Among the limited TA responses, nearly 60% required permanent relocation or the abandonment of nomadic lifestyles — highlighting the profoundly disruptive nature of these shifts. The remaining responses involved either complete income restructuring or transitions to nature-based livelihoods, underscoring the irreversible transformations inherent to TA.[2]

Table 1. The evolution of TA

Phase	Period	Main focus	Key contributions
1. Incremental adaptation pathways	Pre-2010s	Incremental adaptation limited	See notes 1 and 2
2. Transformational adaptation pathways	2010s–2020s	Moving beyond incremental to systemic shifts	See notes 6, 7 and 16
3. Institutionalisation of TA pathways	2020s onwards	TA featured in UNFCCC, IPCC reports, National Adaptation Plans, and debates on finance and just transitions	See notes 3 and 17

High cost and investment risk: TA requires massive investments in infrastructure, governance reform and economic restructuring — far beyond the financial capacity of most LDCs. Financing mechanisms such as the Green Climate Fund (GCF) already impose strict conditions that limit access to adaptation funding. If TA were to become an additional expectation or criterion for funding approval, it could make it even harder for developing countries to develop project proposals that align with funders' requirements. TA strategies like managed retreat from coastal areas, large-scale agricultural shifts or "giving up traditional livelihoods" can lead to forced displacement, increased food insecurity, and loss of social bonds and cultural identity.[2] Many vulnerable communities, particularly in LDCs, prefer incremental adaptation, which allows them to maintain their livelihoods and traditions rather than be forced into drastic changes dictated by external actors.[2]

Top-down imposition: many developing countries see TA as a donor-driven agenda, shaped by international institutions, multilateral banks and developed nations, rather than by local priorities with local agency. Many TA projects emphasise technocratic solutions but fail to incorporate Indigenous knowledge and traditional adaptation practices.[2] Developing countries have raised concerns that TA could justify adaptation finance conditionalities. Studies reveal[15] that

active involvement of marginalised communities is a requirement for improving the use of climate finance. Some scholars argue that TA is often resisted by governments due to its challenge to existing power structures and economic interests and because it requires long-term stable governance, which is difficult in politically fragile states. TA also faces financial and logistical barriers, requiring investments beyond typical adaptation budgets[6] and coordination across multiple stakeholders with differing priorities.[16]

Implementation challenges and equity concerns: many developing countries, and LDCs in particular, face practical barriers to sustaining large-scale, rapid transformations in urban planning, agriculture, and water and coastal management. TA demands long-term planning and policy coherence, which is difficult in nations experiencing political instability and economic crises. TA could lead to more funding constraints, inequitable access and practical difficulties of implementation. Distributional challenges further complicate its implementation, such as reconciling different visions (for example, economic growth vs low-carbon development) and addressing vested interests that introduce uncertainty and risk.

Opportunities within TA

TA presents as an opportunity for climate-vulnerable countries to address longstanding structural challenges while strengthening resilience and advancing sustainable development. Within the UNFCCC, this ambition could align with the GGA, which has become the central stage for negotiating what adaptation should achieve and how it will be supported and delivered. The GGA offers a platform to assess when and where transformational adaptation is effective — and how to shift from fragmented, donor-led efforts to more cohesive, country-driven approaches. However, without a structural shift in the means of implementation, TA risks becoming an aspirational concept disconnected from developing countries' realities.

A major challenge lies in ensuring that TA does not exacerbate vulnerabilities by imposing disruptive economic and social shifts without adequate protections. This is where the Just Transition Work Programme, launched at COP27 and expanded at COP28, becomes essential. While initially focused on decarbonisation, its principles must also shape TA, ensuring adaptation strategies are socially just, inclusive, and protective of workers and communities. Embedding just transition within TA means prioritising social safeguards, labour rights and equitable economic opportunities, and preventing forced displacement or economic marginalisation.

However, finance remains the bottleneck. Developed nations pledged at least US$300 billion annually by 2035 for mitigation and adaptation, yet this remains far below what is actually needed. Without predictable, grant-based finance and scaled-up technology transfer, the burden of transformation will disproportionately fall on countries least equipped to implement it.

The GGA presents an opportunity to track how well transformational adaptation works, through indicators that tell a meaningful story. If properly resourced, it could elevate TA from rhetoric to action, enabling climate-vulnerable nations to define and implement adaptation on their own terms. Yet, without structural reforms in finance, governance and accountability, TA risks reinforcing existing inequalities rather than addressing them. Integrating just transition into adaptation governance is not just about policy coherence, it is about rebalancing power in climate finance, ensuring that those most affected by climate change retain agency. Without this shift, TA may ultimately perpetuate the very injustices it seeks to disrupt.

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Notes

[1] IPCC (2001) Climate Change 2001: Synthesis Report. Cambridge University Press, Cambridge. / [2] Zant, M, et al. (2023) Incremental and transformational adaptation to climate change among Indigenous Peoples and local communities: a global review, *Mitigation and Adaptation Strategies for Global Change*, 28, 57. / [3] IPCC (2022) Climate Change 2022: Impacts, Adaptation and Vulnerability. Cambridge University Press, Cambridge. / [4] Bergmann, R and Wilke, W (1998) Towards a new formal model of transformational adaptation in case-based reasoning, in Gierl, L and Lenz, M (eds.) 6th German Workshop on Case-Based Reasoning. University of Rostock, pp.43–52. / [5] Kates, RW, et al. (2012) Transformational adaptation when incremental adaptations to climate change are insufficient, *Proceedings of the National Academy of Sciences*, 109(19), pp.7,156–7,161. / [6] IPCC (2014) AR5 Synthesis Report: Climate Change 2014. Geneva. / [7] UNFCC (2023) Decision 2/CMA.5 Global goal on adaptation. / [8] Marshall, NA, et al. (2014) Transformational capacity in Australian peanut farmers for better climate adaptation, *Agronomy for Sustainable Development*, 34, pp.583–591. / [9] Zagaria, C, et al. (2021) Modelling transformational adaptation to climate change among crop farming systems in Romagna, Italy, *Agricultural Systems*, 188, 103024. / [10] Rippke, U, et al. (2016) Timescales of transformational climate change adaptation in sub-Saharan African agriculture, *Nature Climate Change*, 6, pp.605–609. / [11] UNFCCC (2024) Defining and understanding transformational adaptation at different spatial scales and sectors, and assessing progress in planning and implementing transformational adaptation approaches at the global level. Technical paper by the secretariat. / [12] IPCC (2018) Global Warming of 1.5°C: IPCC Special Report on the Impacts of Global Warming of 1.5°C. Geneva. / [13] Meadowcroft, J (2011) Engaging with the politics of sustainability transitions, *Environmental Innovation and Societal Transitions*, 1, pp.70–75. / [14] United Nations Environment Programme (2024) Adaptation Gap Report 2024: Come hell and high water. Nairobi. / [15] Eriksen, S, et al. (2021) Adaptation interventions and their effect on vulnerability in developing countries: Help, hindrance or irrelevance? *World Development*, 141, 105383. / [16] IPCC (2012) Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation: Special Report of the Intergovernmental Panel on Climate Change. / [17] Van der Plank, S (2024) Policy priorities to enable engaged and transformational adaptation on the coast: Learning from practitioner experiences in England, *Environmental Science & Policy*, 159, 103806.

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