A Real Mosaic of Solutions to Respond to Loss and Damage from Climate Change

Climate Change Adaptation

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Introduction

This publication is part of a series of briefs unpacking the pieces of a fit for purpose "mosaic of solutions" to respond to loss and damage from climate change. This series expands on our earlier work, which presented a five-year vision for Loss and Damage under the United Nations Framework Convention on Climate Change (UNFCCC) to look beyond the international climate regime at catalysing a wider mosaic of solutions.

In the flagship paper of the series, we unpack the pieces of the mosaic. In these thematic briefs, we dive deeper into existing solutions and how they can be strengthened. We also consider any reforms needed and explore emerging solutions.

This brief unpacks the relationship between climate change adaptation and Loss and Damage. It provides a short introduction to what climate change adaptation involves and how it intersects with Loss and Damage, highlights emerging and existing solutions and related implementation challenges, and how these challenges can be addressed.

What is climate change adaptation?

Climate change adaptation involves adjusting ecological, social and/or economic systems in response to actual or expected climate impacts, with the aim of reducing loss and damage and/or benefiting from climate change (e.g. through longer growing seasons).[1]

Examples of adaptation strategies include building flood defenses, using drought resistant crops, and upgrading infrastructure to withstand climate impacts. Studies show that on average, every 1 USD invested in adaptation has the potential to generate more than 10 USD in benefits over 10 years.[2]

Recognising that adaptation has limits, the Intergovernmental Panel on Climate Change (IPCC) refers to both "hard" and "soft" limits to adaptation[3]. Hard limits are where adaptation is not possible because of limitations such as total submergence of land due to sea level rise or exceeding human heat tolerance. Soft limits occur when an adaptation measure exists but is not implemented due to a lack of funding, a lack of political will, and/or ineffective policies. Understanding that there are limits to adaptation (i.e. that not all loss and damage can or will be reduced) is key to acknowledging why new and additional finance and support is needed to address unavoided or unavoidable loss and damage.

Adaptation, disaster risk reduction (DRR), and Loss and Damage actions are not always undertaken separately. On the ground, adaptation and DRR programmes may include activities that address loss and damage and vice versa[4] —something which may be reflected in countries' national planning.[5] Cases studies[6] have also shown that meeting the needs and priorities of communities often requires implementing adaptation and Loss and Damage activities together. However, it remains important to distinguish between them at the international level to ensure that there is adequate support and finance for DRR, adaptation, and Loss and Damage.[7] [8]

What are the existing solutions?

Global efforts to ensure that developing countries can undertake climate change adaptation are governed by the UNFCCC and its Paris Agreement. These efforts are supported by the commitment that developed countries will support developing countries in meeting the costs of adaptation.[9]

Key adaptation frameworks and workstreams include the Cancun Adaptation Framework, the Global Goal on Adaptation (GGA)[10], the UAE Framework for Global Climate Resilience (UAE Framework)[11], and the Baku Adaptation Road Map.[12] Implementation is supported by the Adaptation Fund[13] and Adaptation Committee (AC).

Countries formulate their adaptation plans through National Adaptation Plans (NAPs) and are expected to communicate information on their plans, progress, priorities, and support needs through Adaptation Communications (Adcoms). Technical guidance, support, and resources for the development and implementation of NAPs is provided by the Least Developed Countries Expert Group (LEG), the Adaptation Knowledge Portal of the Nairobi Work Programme, and the Lima Adaptation Knowledge Initiative (LAKI). Support to develop NAPs is also provided by the Green Climate Fund's (GCF) Readiness and Preparatory Support Programme (RPSP).

Recent work to advance the GGA has included the UAE–Belém Work Programme[14] on indicators for measuring progress towards the targets of the UAE Framework, and the subsequent adoption of the Belém Adaptation Indicators. The Belém–Addis vision on adaptation[15] launched a two year process focused on Parties (countries) testing the Belém Adaptation Indicators and integrating them into the national planning and reporting process (e.g. NAPs, AdComs, Nationally Determined Contributions (NDCs), and Biennial Transparency Reports (BTRs)).

On the ground, locally led adaptation (LLA)[16] has shown significant potential —if led and driven by affected communities— to develop and implement context specific adaptation solutions by harnessing local and Indigenous knowledge-based approaches.[17] Other approaches include ecosystem-based adaptation (EbA), which make use of biodiversity and ecosystem services to help people and communities adapt.[18]

When implementing adaptation, actions range from changes that are incremental (e.g. changing when crops are planted and/or harvested) to those that switch to another system altogether (e.g.replacing crops with fish ponds). Within UNFCCC negotiations, the latter has been referred to as a "transformational adaptation". However, deep controversies surround the use of this terminology. Box 1 unpacks why this is the case and what it means to be really transformational.

Box 1. Is transformational adaptation really transformational?

According to the IPCC, "transformational adaptation" is adaptation that changes the fundamental attributes of a system in response to climate and its effects.[19] It involves, "actions aiming at adapting to climate change resulting in significant changes in structure or function that go beyond adjusting existing practices."[20]

Following the IPCC's explicit reference to transformational adaptation and its inclusion in the GGA, the concept has been recognised within global climate policy frameworks.[21] However, developing countries have challenged, among other things, its definition, financing, implementation, equity, and power imbalances, raising concerns that transformational adaptation risks becoming another form of adaptation conditionality rather than a tool for resilience-building.[22] For example, developing countries fear they will be expected to transform entire sectors and protect vulnerable communities and ecosystems while grappling with debt, economic precarity, and historical disadvantages (e.g. from colonialism and colonial continuity), when developed countries have repeatedly failed to meet adaptation finance obligations under the UNFCCC.[23]

Researchers have also pointed out that, what is referred to as transformational adaptation by developed countries, fails to address the root causes of vulnerability to the impacts of climate change, such as poverty and inequality, and thus should not be considered transformative.[24] They also highlight that transformational adaptation has been used in attempts to justify inaction on Loss and Damage.[25]

Therefore, to be truly transformative, transformative adaptation must not only address the root causes of vulnerability to loss and damage but also be accompanied by adaptation finance at the scale of the needs. It must be reframed from a large-scale model to a flexible continuum of adaptation responses, recognising locally driven and incremental transformations.[26] Lastly, it will require equipping local actors with the knowledge, skills, and relationships to help translate the concept of "transformative adaptation" into genuine transformative action on the ground.[27]

What is the problem?

Progress on adaptation under the UNFCCC has been woefully insufficient. Finance flows from developed to developing countries totaled just 26 billion USD in 2023[28] and in 2025 only 135 million USD was pledged to the Adaptation Fund.[29] Although developed countries have committed to tripling funding to approximately 120 billion USD per year by 2035 under the Global Goal on Adaptation (GGA), this is less than half of the estimated 365 billion USD developing countries need each year for adaptation.[30] This is severely impacting implementation. Since its operations began, the Adaptation Fund has only committed 1.5 billion USD to over 200 adaptation projects in 108 countries.[31] The GCF has only invested 15.9 billion USD in adaptation projects —a figure which includes co-financing.[32]

Developing countries also face challenges in developing and implementing NAPs, including a lack of capacity, data, and finance. As of late April 2026, only 76 developing countries had submitted NAPs.[33]

What do we need to see?

The adaptation finance gap must be closed so that developing countries can both develop and implement the full spectrum of policies, plans, and actions outlined in their NAPs. Capacity building, technical assistance, and readiness support, must also be significantly increased to meet the scale and scope of the needs.

LLA and EbA approaches must be centred in adaptation strategies. Communities must be resourced and equipped to develop and drive LLA and EbA to avoid maladaptation[34] and ensure more sustainable, equitable, and effective adaptation.[35] This requires simplified direct access to finance, technical assistance, and capacity building,particularly from financial institutions, such as the GCF, which have significant barriers to access.[36] Table 1 considers how to strengthen existing and emerging adaptation solutions.

Table 1 : **Strengthen existing and emerging adaptation solutions to reduce loss and damage.**

CURRENT SOLUTIONS	HOW DOES IT WORK?	WHAT ARE THE ISSUES?	WHAT NEEDS TO CHANGE?
National Adaptation Plans	NAPs are country-driven costed plans outlining national adaptation strategies. Technical guidance on developing NAPs is provided by the Adaptation Committee (AC). Additional support for Least Developed Countries (LDCs) to develop NAPs is available from the Least Developed Countries Expert Group (LEG). The Nairobi Work Programme's (NWP) online Adaptation Knowledge Portal (AKP) also provides adaptation knowledge for policymakers and practitioners.	Developing countries face challenges in developing NAPs, including a lack of capacity, data, and finance. As of late April 2026, only 76 developing countries had submitted NAPs.[37] There is no official UNFCCC guidance on including Loss and Damage in NAPs.	Support to developing countries to prepare NAPs, including capacity building, technical assistance, readiness and finance, must be increased by developed countries. UNFCCC guidance on including Loss and Damage in NAPs must be produced.
Adaptation Fund	The Adaptation Fund finances projects and programmes that help vulnerable communities in developing countries adapt to climate change.	The Adaptation Fund relies on voluntary contributions from developed countries. As a result, the Fund received only 135 million USD at COP 30 despite a resource mobilisation target of raising 300 million USD.[38] Since its operations began, the Adaptation Fund has only committed 1.5 billion USD to over 200 adaptation projects in 108 countries.[39]	The Adaptation Fund will receive 5 percent of every translation under the Paris Agreement Crediting Mechanism (PACM).[40] However, this should not be relied on to scale up funds. Developed countries must meet their adaptation finance obligations.

CURRENT SOLUTIONS	HOW DOES IT WORK?	WHAT ARE THE ISSUES?	WHAT NEEDS TO CHANGE?
Global Goal on Adaptation (GGA)	The GGA aims to enhance adaptive capacity, strengthen resilience and reduce vulnerability to climate change with a view to contributing to sustainable development. Operationalisation of the GGA began with the two-year Glasgow-Sharm el-Sheikh work programme launched in 2021. It continued with the adoption of the UAE Framework for Global Climate Resilience in 2023 and the UAE Belém work programme 2024-2025 on indicators for measuring progress towards the targets of the UAE framework.	In 2025, countries only agreed to triple adaptation finance by 2035 to approximately 120 billion USD a year.[41] The 40 billion USD baseline is also not mentioned so there is a risk that the amount could change. The GGA indicators were meant to be finished in 2025, but only 59 were adopted. Last minute changes mean next steps are vague and their credibility has been compromised, making them harder to operationalise.[42] The indicators are voluntary, with no commitment or milestones to increase finance. Another two year work plan has been set up, the Belém-Addis vision, which further delays implementation.	Developed countries must meet the actual needs of developing countries. The Belém-Addis vision should not further delay the GGA. Instead, commitments made at COP 30 must be translated into measurable progress on adaptation finance and the implementation of NAPs.[43]
Locally led adaptation (LLA)	LLA is meant to ensure communities are driving adaptation decision making at the local level. It ideally shifts power from top-down, external approaches to local actors and equips them to design and implement adaptation strategies, thereby ensuring it is more sustainable, equitable, and effective.[44] Eight principles have been developed that have been endorsed by over 130 governments, leading global institutions, and local and international NGOs.[45]	LLA faces significant challenges, including overcoming top-down decision making, accessing finance, and low technical capacity.[46,47]	LLA in theory is often different from LLA in practice. It must be genuinely led and driven by local actors to meet the needs on the ground as expressed by communities. Communities need to be able to easily and directly access scaled up adaptation finance, technical assistance, and capacity building. Networks such UNEP's Global Adaptation Network (GAN) and weADAPT should help scale up capacity building and promote best practices and knowledge shared by communities.

CURRENT SOLUTIONS	HOW DOES IT WORK?	WHAT ARE THE ISSUES?	WHAT NEEDS TO CHANGE?
Green Climate Fund (GCF)	The GCF is the world's largest climate fund. The GCF supports adaptation by providing financial and technical assistance to developing countries. It also provides up to 3 million USD per country to support the development of NAPs.	The GCF faces significant challenges, including slow bureaucratic accreditation and project approval processes, high transaction costs, and difficulties in balancing mitigation and adaptation funding. As of April 2026, the GCF has only invested 15.9 billion USD in adaptation projects, a figure which includes co-financing.[48]	Developed countries must significantly increase contributions to the GCF. The GCF should be reformed to make it faster and more accessible. Support for NAPs must go beyond development to implementation.
Global EbA Fund	The Global EbA Fund is a fast-start, catalytic funding mechanism implemented by the International Union for Conservation of Nature and Natural Resources (IUCN) and UNEP to support innovative EbA approaches. It provides grants from 50 to 250 thousand USD.	The Global EbA Fund has only supported 54 projects, out of over 2000 applications. The total amount disbursed is only 7.9 million USD.[49] The fund was launched with only a €20 million commitment from Germany.[50]	Funding for EbA in developing countries needs to be significantly scaled up. Like LLA, EbA must be informed by needs and knowledge and driven by local actors, including Indigenous Peoples. Proper planning must be in place to avoid maladaptation, which can further exacerbate loss and damage.

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