

— STRATEGIC INTELLIGENCE BRIEFS: RESILIENCE SERIES —

— PART —  
**1**  
■ ■ ■

**RENEWABLES**

**FOR**

**CLIMATE RESILIENCE**



## STRENGTHENING RESILIENCE AND CLIMATE RESILIENCE

**Resilience** is the capacity to recover, adapt, and develop when faced with adversity, challenges, or stress. Resilience is about bouncing back from difficult situations, maintaining strength, and learning from experiences to emerge stronger. It is not about avoiding hardship but responding to it, drawing on strengths, support systems, and coping strategies to move forward. Resilience might be best conceptualised as an ability for stakeholders to cope with all kinds of risks and shocks, whether predicted or unforeseen<sup>1</sup>.

**Climate resilience** is the ability of communities, ecosystems, or systems to **anticipate, prepare for, and respond to climate-related threats**, including extreme weather events or long-term stresses induced by climate change. It entails adapting to these impacts while maintaining essential functions, minimising harm, and recovering quickly. Achieving climate resilience requires proactive strategies to **reduce risks and adapt** to evolving conditions.

### About the resilience series

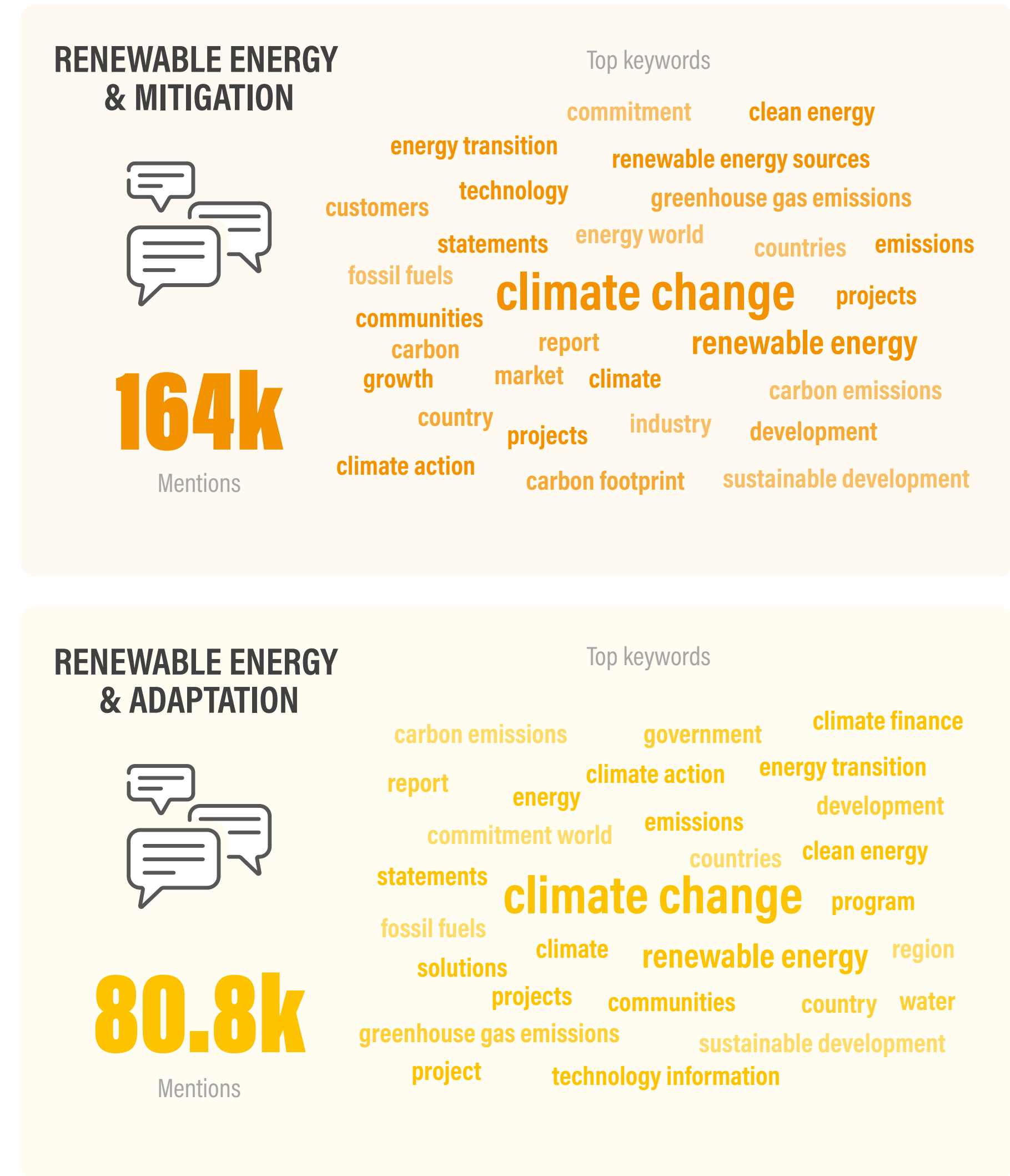
The impacts of climate change are escalating worldwide and building resilience is now inevitable. Strengthening **climate, economic, and social resilience** is crucial for adapting to climate change and limiting further harm. This series examines how renewable energy (RE) plays a pivotal role in strengthening these resilience aspects, supporting communities and economies as they confront climate disruptions.

REN21's Strategic Intelligence Briefs spotlight critical gaps in the energy landscape, providing data-driven insights to shape powerful renewable energy narratives, support informed debates among stakeholders, and foster collaborative global strategies within its community.

**A NEEDED PARADIGM SHIFT:  
RENEWABLE ENERGY FOR  
MITIGATION AND ADAPTATION**

In discussions on renewables and climate change, the focus is often on how **renewables contribute to climate change mitigation** (see Figure 1). However, renewable energy offers more than emission reductions — **it plays an equally important role in supporting climate change adaptation strategies that strengthen climate resilience.** Renewables help communities endure and adapt to climate impacts by fostering resilient, decentralised energy systems that stabilise infrastructure and support essential sectors like agriculture and healthcare.

**FIGURE 1:** Media analysis for renewable energy mentions with “Adaptation” and “Mitigation” over the past year (01/01/2024-25/10/2024)



► A NEEDED PARADIGM SHIFT

This gap is apparent in global climate strategies, where renewables are still largely viewed as a mitigation tool. Similarly, climate finance trends often exclude renewable energy from adaptation initiatives, limiting funding and reducing renewables' potential to serve as a comprehensive resilience-building resource, especially in climate-vulnerable areas.

Communities facing the most severe climate impacts — particularly in Africa — have yet to fully leverage renewables to address their vulnerabilities. **Global climate efforts must better align with regional disparities, recognising renewable energy as a vital resource for both immediate adaptation and long-term resilience, with the necessary funding to support it.**

The upcoming UNFCCC COP29 is an opportunity to address these gaps by scaling renewable energy investments to enhance global climate resilience. Climate finance is essential to reshape how we view renewable energy in climate action:

1

Renewables are central to both climate change mitigation AND adaptation,

2

Climate finance is needed to drive renewable energy uptake globally, reducing emissions and increasing resilience together.

## RENEWABLES

## FOR CLIMATE RESILIENCE:

## KEY TAKEAWAYS

### **Renewable Energy Is an Indisputable Entry Point for Climate Change Mitigation AND Adaptation**

Renewables are often viewed mainly as a clean energy solution for mitigation, yet they are equally vital for adaptation, enabling climate resilience. This narrow perception overlooks the broader role renewables play in helping communities adapt to climate impacts.

### **Renewables Underpin Stable, Secure, Resilient Economies and Societies**

Renewable energy fosters a more democratic energy landscape, reducing the monopoly of fossil fuel companies and empowering local communities. It keeps energy spending local, creating jobs and reducing pollution, which mitigates climate change impacts on marginalised populations while improving overall air quality.

### **Renewables Provide the Answer but Are “Invisible”**

Renewable energy is crucial for future-proofing energy systems while also reducing emissions. Renewables need to be integrated into both mitigation and adaptation strategies, and yet policy and implementation approach often prioritise one aspect over the other.

### **Need To Align RE-Focused Development Finance and Adaptation Finance**

Increased investment in adaptation is vital, especially in Africa, as renewable energy can enhance climate resilience and reduce fossil fuel reliance. Previous COPs have faced criticism for missing the USD 100 billion finance pledge, focusing too much on mitigation, and offering vague commitments to double adaptation funding by 2025.



► RENEWABLES FOR CLIMATE RESILIENCE

**Need For a Multistakeholder Approach in Building Resilience by Renewables**

Building climate resilience through renewables requires a coordinated approach involving national governments, local authorities, MDBs, UN agencies, private companies, NGOs, foundations, and academia. Each is critical in providing policy, funding, advocacy, and research to drive renewable projects and climate adaptation efforts.

**Build On the Opportunities**

Future-proofing energy systems is central to adaptation efforts for climate-vulnerable regions like Africa. Renewable-based energy systems offer the chance to develop resilient economies and societies while supporting adaptation to changing climatic conditions and reducing emissions.

**Mitigation Is Taking the Lion's Share of Climate Finance for Renewables**

Global climate finance reached USD 1.3 trillion annually in 2021/2022, representing 1% of global GDP. Africa receives about 10% of the USD 277 billion needed yearly to implement its Nationally Determined Contributions (NDCs), with funding distributed unevenly across countries and favouring mitigation over adaptation.

**Africa's Climate Resilience Is in Dire Need of Stronger Financial Support**

Though Africa contributed only 3.2% of global emissions in 2022, over half (27) of the world's 40 most climate-vulnerable countries are on the continent. Climate-related disasters cost African nations 2-5% of their GDP annually revealing a significant gap between available climate finance and Africa's adaptation needs.





**RENEWABLE ENERGY IS  
AN INDISPUTABLE ENTRY POINT  
FOR CLIMATE CHANGE MITIGATION AND ADAPTATION**

Renewable energy provides various advantages for mitigating climate change...

### Mitigation

Lower carbon inputs

Low to zero emissions during operation

Electrification of key sectors reduces emissions across the economy

Low impact on indoor air quality with clean cooking solutions: biogas, solar cooking, and electric cooking powered by renewable electricity

Reduced transmission losses: Generation closer to demand centres, thanks to the decentralised nature of renewables, reduces energy losses that typically occur during long-distance electricity transmission.

► RENEWABLE ENERGY IS AN INDISPUTABLE ENTRY POINT

...and adapting to climate change impacts.

**Adaptation**

Independence from fuel costs and fuel distribution infrastructure (ships, roads, rail).

Diversity of accessible fuel inputs reduces dependence on one fuel source.

Modular systems to fit household/ community needs as they evolve.

Distributed systems improve grid resilience by providing localised power during grid outages or natural disasters.

Demand response: Balancing energy use, preventing overloading and ensuring stability during extreme weather conditions.

On-site energy storage reduces need for transmission lines and provides backup power during grid outages.

Decentralised renewable systems can provide reliable energy in remote areas, reducing vulnerability to power disruptions from extreme weather events.



Ian D. Keating via Flickr



**RENEWABLES  
ALSO INCREASE  
RESILIENCE**

Renewables underpin  
stable, secure, resilient  
economies and  
societies

**Democratisation of energy:** Reducing the monopoly of large fossil fuel companies, enabling diverse actors (cooperatives, municipalities, social enterprises) to participate.

**Local economic benefits:** Energy spending remains within communities, creating local jobs; “Prosumers” can both produce and consume energy, actively participating in the energy system.

**Environmental justice:** addresses historical inequities by reducing pollution in communities burdened by fossil fuel infrastructure and mitigating climate change impacts that disproportionately affect marginalised populations.

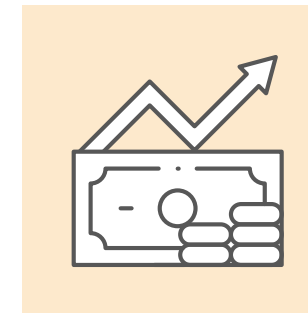


## CLIMATE FINANCE IS DIVERSE

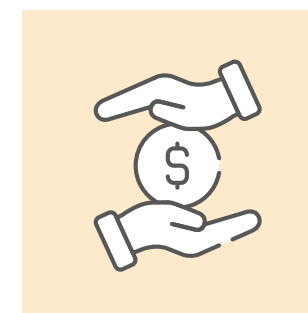
Climate finance can support climate adaptation and resilience, renewable energy development, energy efficiency, sustainable transport and more. It can come from several key sources:



**Public finance and government funding:** green bonds, subsidies and tax incentives, feed-in tariffs (FITs), grants and concessional loans.



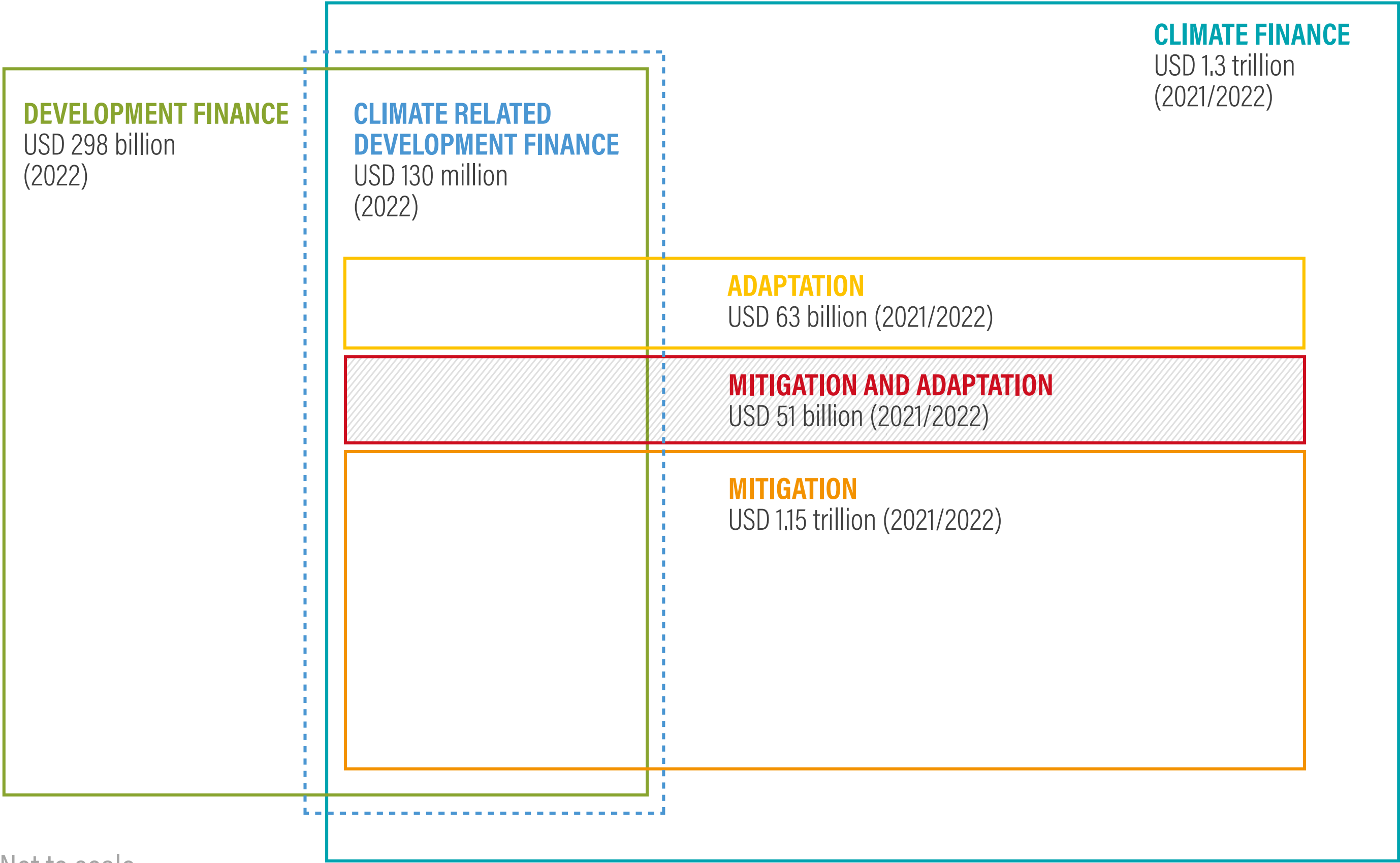
**Private sector finance:** private equity, venture capital, institutional investors, and corporate investments.



**Bilateral and Multilateral Development Banks (MDBs):** World Bank Group (WBG), the Asian Development Bank (ADB), the Africa Development Bank (AfDB), the Green Climate Fund (GCF) etc.

Climate-related development finance<sup>2</sup> refers to financial resources provided to support projects and initiatives in developing countries aimed at addressing climate change (See Figure 2). Donors can be OECD's Development Assistance Committee (DAC) members, Multilateral Development Banks (MDBs), private donors, etc.

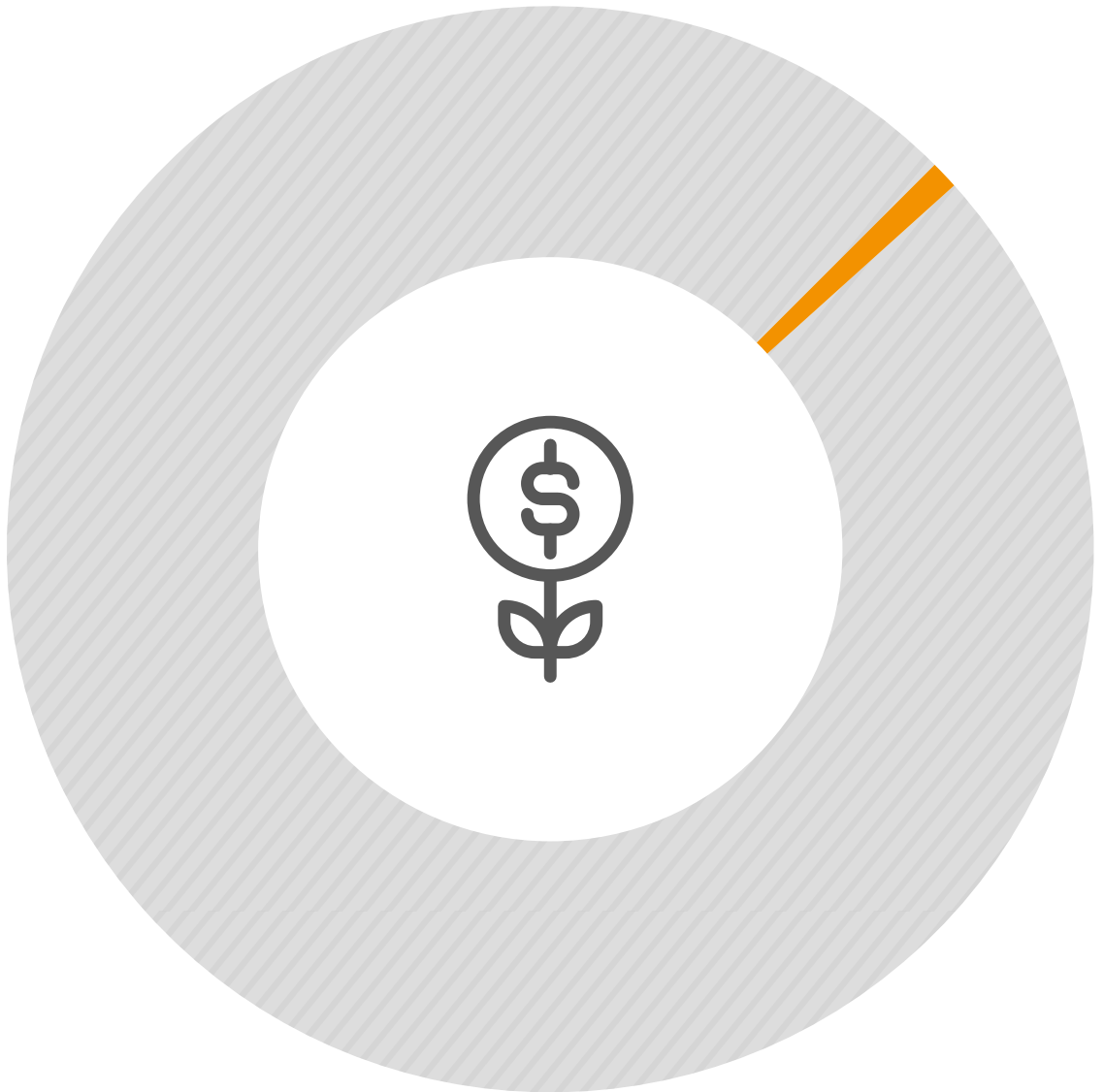
**FIGURE 2:** Snapshot of global *climate finance and development finance*.



Not to scale

# UNEVEN FUNDS TOWARDS CLIMATE FINANCE AND RENEWABLE ENERGY FINANCE

Despite a rise in renewable energy finance, there remains a lack compared to climate finance flows.



Total amount of global climate finance = **1%** of global GDP.

## GLOBAL CLIMATE FINANCE (IN 2021/2022):

The annual average for global climate finance nearly doubled to **USD 1.3 TRILLION<sup>3</sup>**.

Mitigation rose by USD 439 billion (from 2019/2020), totalling **USD 1.15 TRILLION.**

Adaptation reached **USD 63 BILLION.**

▶ UNEVEN FUNDS

RE FINANCE:

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In 2023, global new investment in renewable power and fuels<sup>4</sup> reached a record high of an estimated

**USD 622.5 BILLION<sup>5</sup>**.

A minimum of

**USD 104 BILLION**

is needed to achieve LDC's NDC target of installing an additional 58 GW of capacity by 2030<sup>6</sup>.

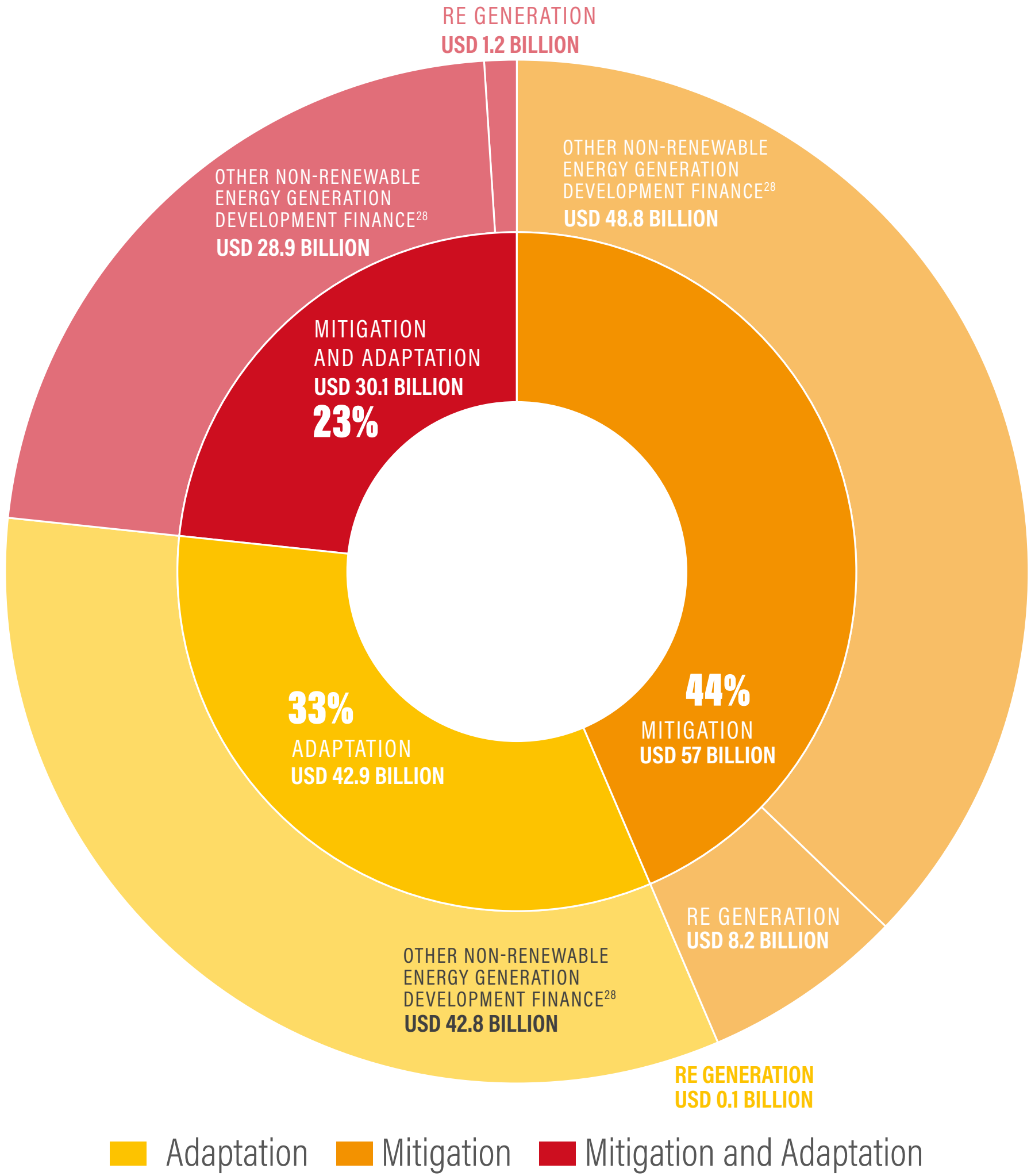


## MITIGATION VS. ADAPTATION

In 2022, global climate-related development finance (USD 130 billion) was evenly distributed between mitigation (44%), adaptation (33%), and overlapping projects (Mitigation and Adaptation, 23%) (see Figure 3).

Between 2016 and 2022, finance for mitigation has mostly flowed towards projects in the energy and transport sectors. The most common recipient sector in adaptation is water supply and sanitation, followed by agriculture and forestry.

**FIGURE 3:** Global climate related development finance flows (2022).



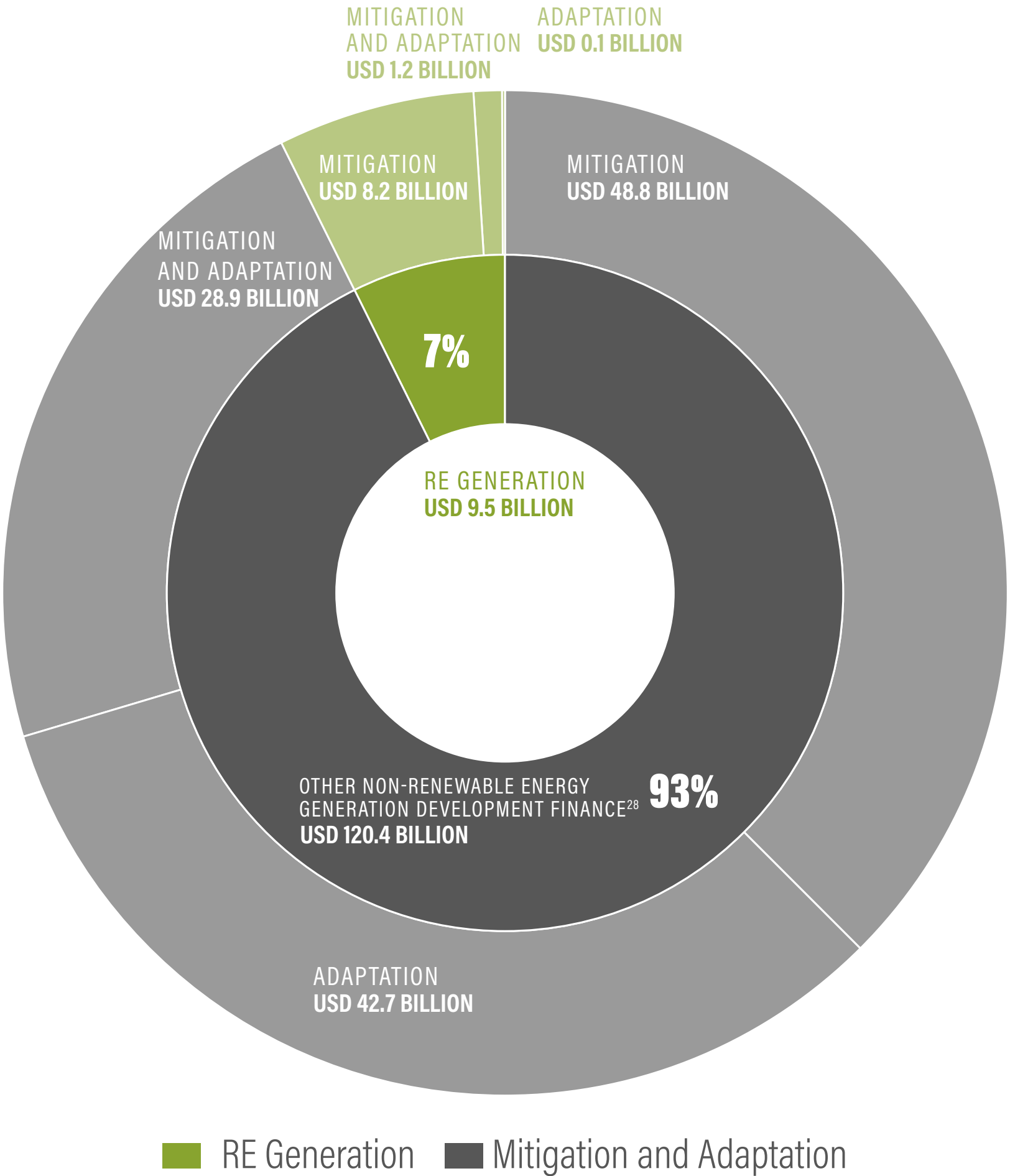
**NEED FOR GREATER INVESTMENT  
IN RENEWABLES  
FOR ADAPTATION MEASURES**

Renewables are invisible in the climate-related development finance landscape (see Figure 4).

In 2022, renewable energy projects received USD 9.5 billion globally, making up about 7% of total climate-related development finance, of which:

- About **86%** went to mitigation projects (USD 8.16 billion)
- About **13%** went to overlapping projects (both mitigation and adaptation, USD 1.2 billion)
- About **1%** went to adaptation efforts (USD 0.13 billion)

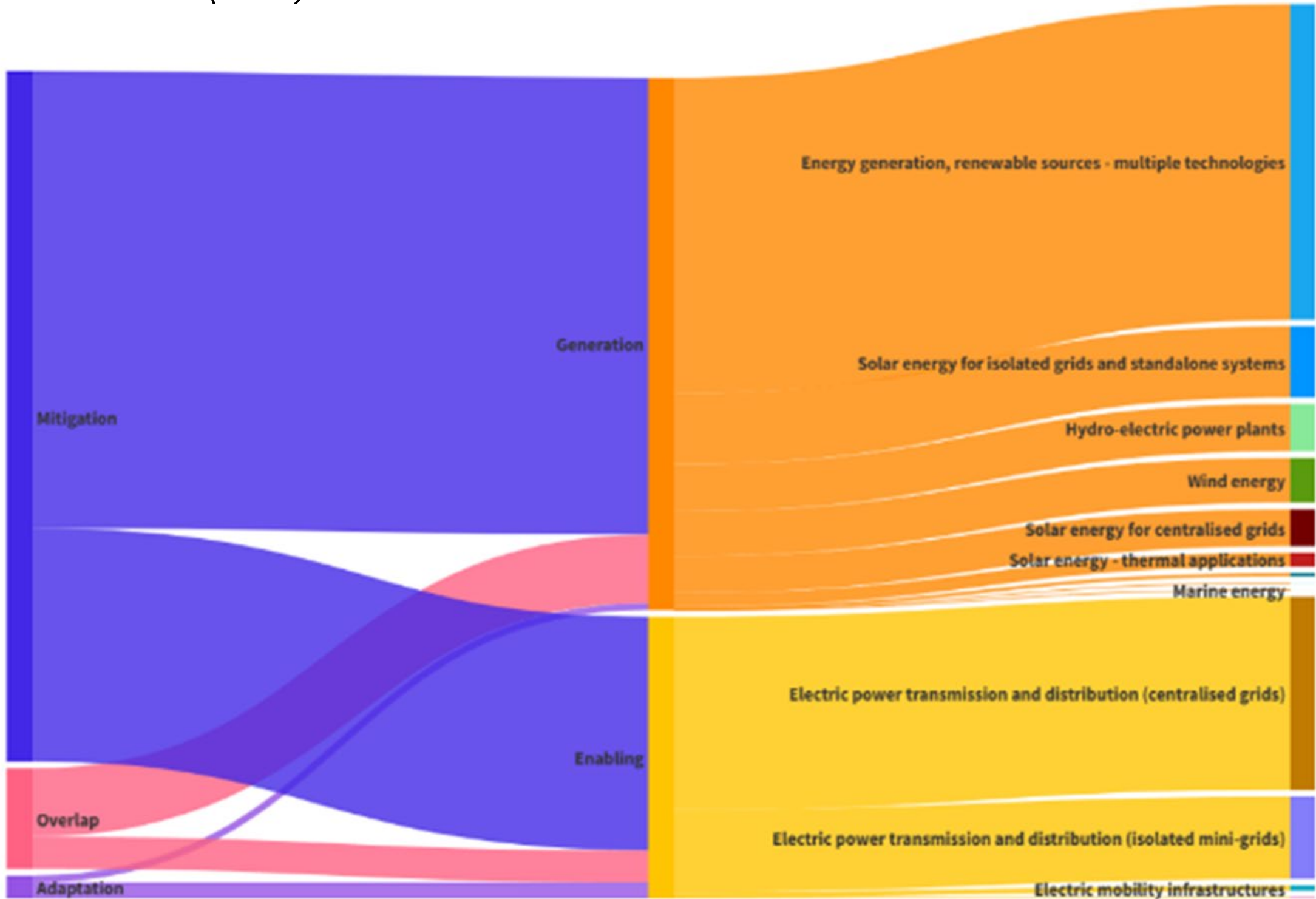
**FIGURE 4** Distribution of global climate related development finance flows for RE generation (2022).



# DIFFERENCES IN GLOBAL FUNDING PRIORITIES FOR ADAPTATION AND MITIGATION

In 2022 and on a global scale, **most climate-related development finance flows for renewable energy generation and enabling technologies focused on mitigation.** Furthermore, the largest share of adaptation went to enabling technologies (centralised grids, isolated mini grids, etc.), while generation projects (such as solar energy, wind energy, etc.) represented more than half of the mitigation share (see Figure 5).

**FIGURE 5** Global climate related development finance flows for RE generation (2022).







# UNEVEN DISTRIBUTION OF CLIMATE FINANCE

Despite nearly doubling in 2021/2022, reaching USD 1.3 trillion, global climate finance is still not directed where it is most needed.

Climate finance in Africa accounts for just **3.36%** of global climate finance.

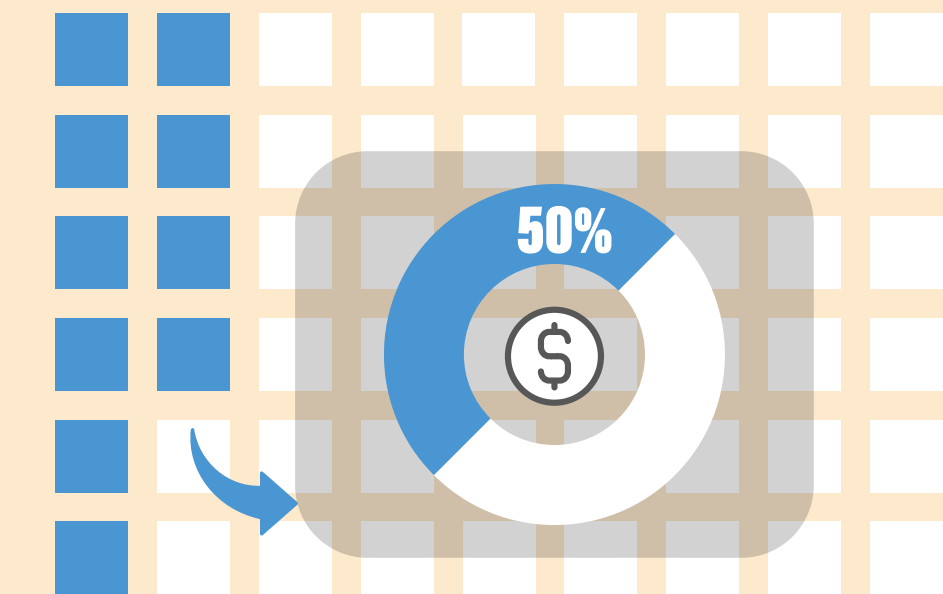
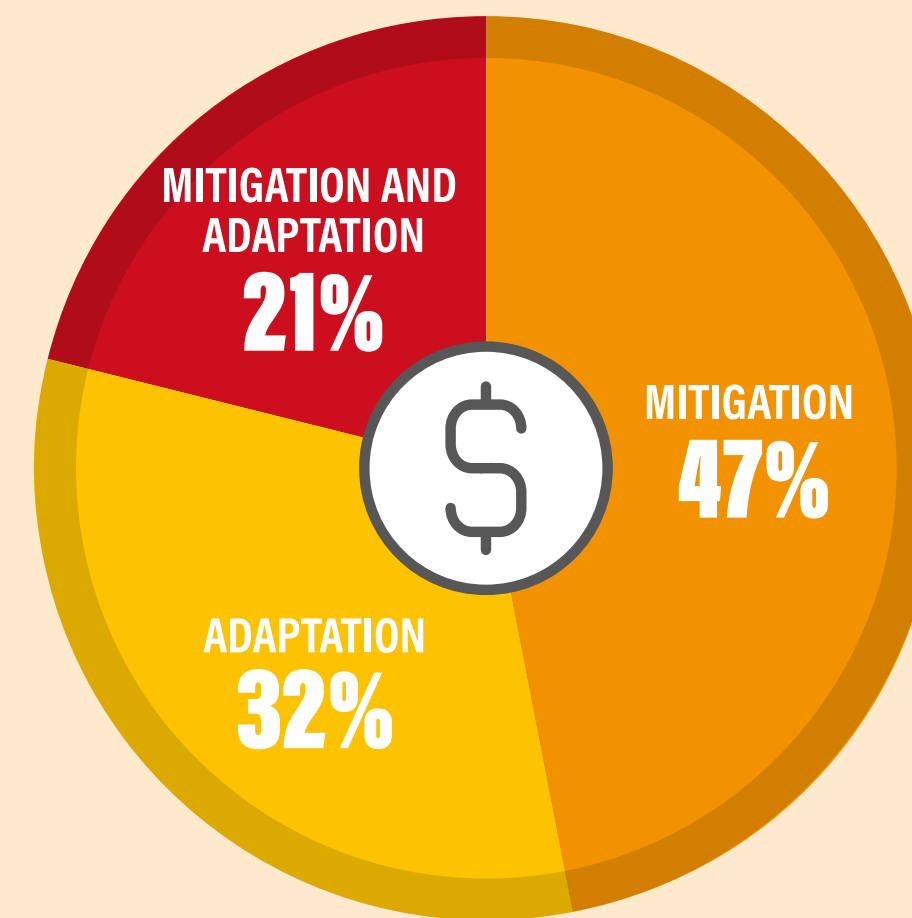


## CLIMATE FINANCE IN AFRICA (IN 2021/2022):

Annual climate finance = **USD 43.7 BILLION**<sup>7</sup>.

10 African countries (out of 54) accounted for half of the climate finance flows.

### Division of Finance flows:



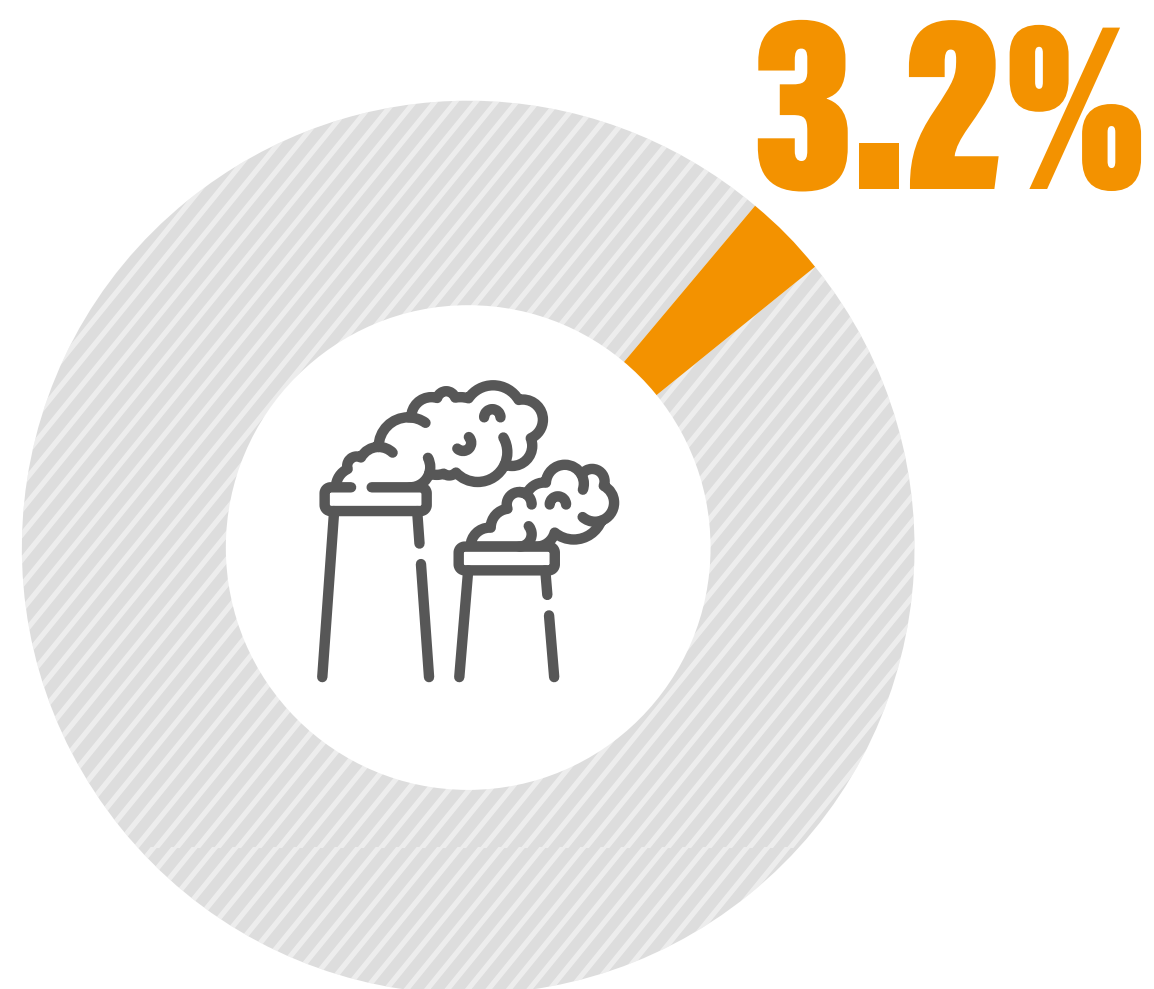
Needs estimated at **USD 190 BILLION** /year to implement its NDCs.



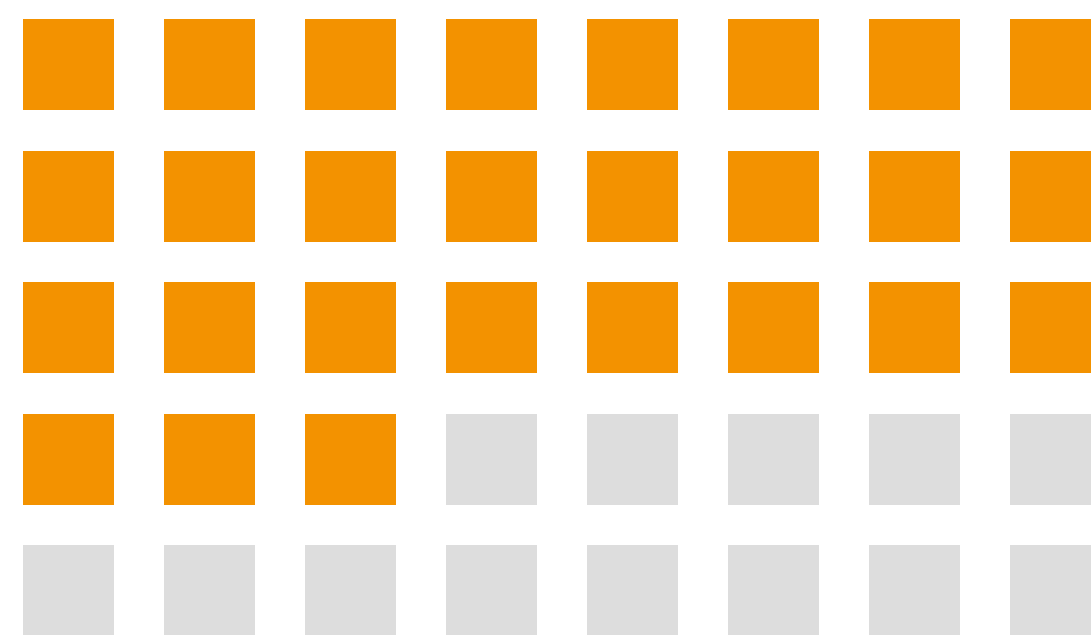
# AFRICA'S CLIMATE

## VULNERABILITY

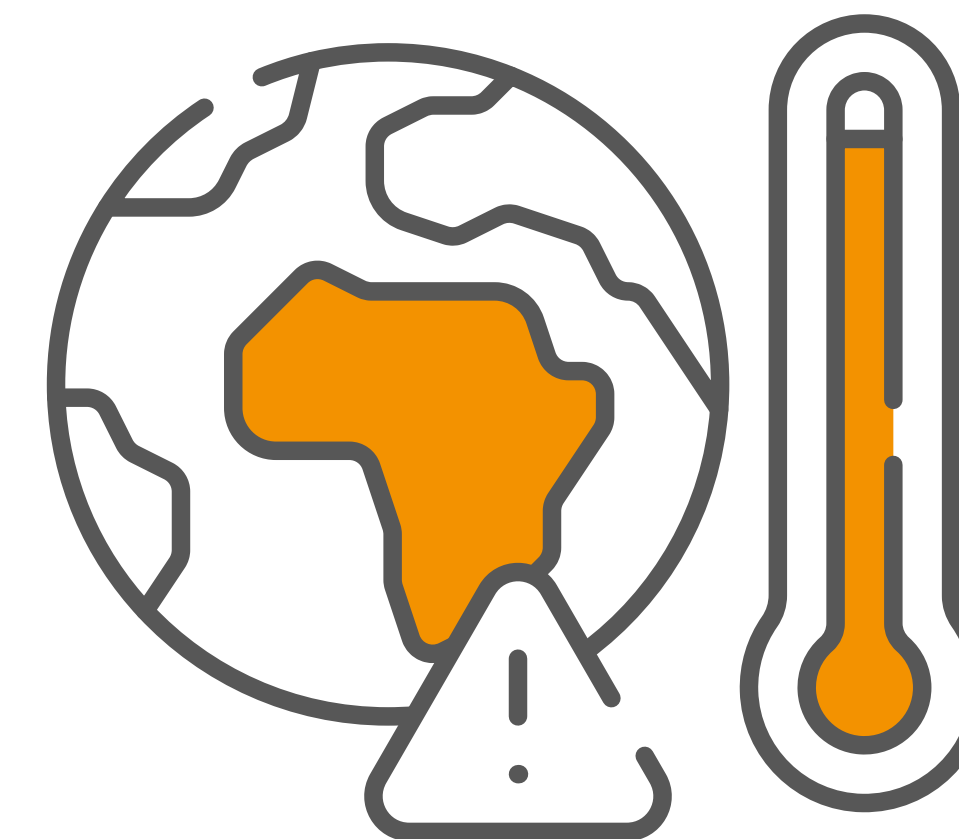
Africa "wins" the unfortunate prize of having the highest climate vulnerability.



**3.2 %**  
of global emissions  
in 2022<sup>8</sup>.



**27 OF THE WORLD'S 40**  
most climate-vulnerable countries<sup>9</sup>.



Warming faster than the global average,  
**+0.3°C PER DECADE**  
from 1991 to 2023<sup>10</sup>.



## DISASTER COSTS

## VS. INVESTMENT IN ADAPTATION

### Something is wrong:

The amount spent on responding to disasters equals that spent on adaptation.

Climate-related disasters cost African countries **2 TO 5% OF GDP ANNUALLY.**

Adaptation costs in sub-Saharan Africa are projected to reach

**USD 30 TO 50 BILLION PER YEAR**

(2 to 3% of regional GDP) over the next decade<sup>11</sup>.

Investment in long-term climate resilience strategies is insufficient<sup>12</sup> - from 2019-2021:

International funding for emergency response

**= USD 26 BILLION.**

Public adaptation finance

**= USD 28 BILLION.**

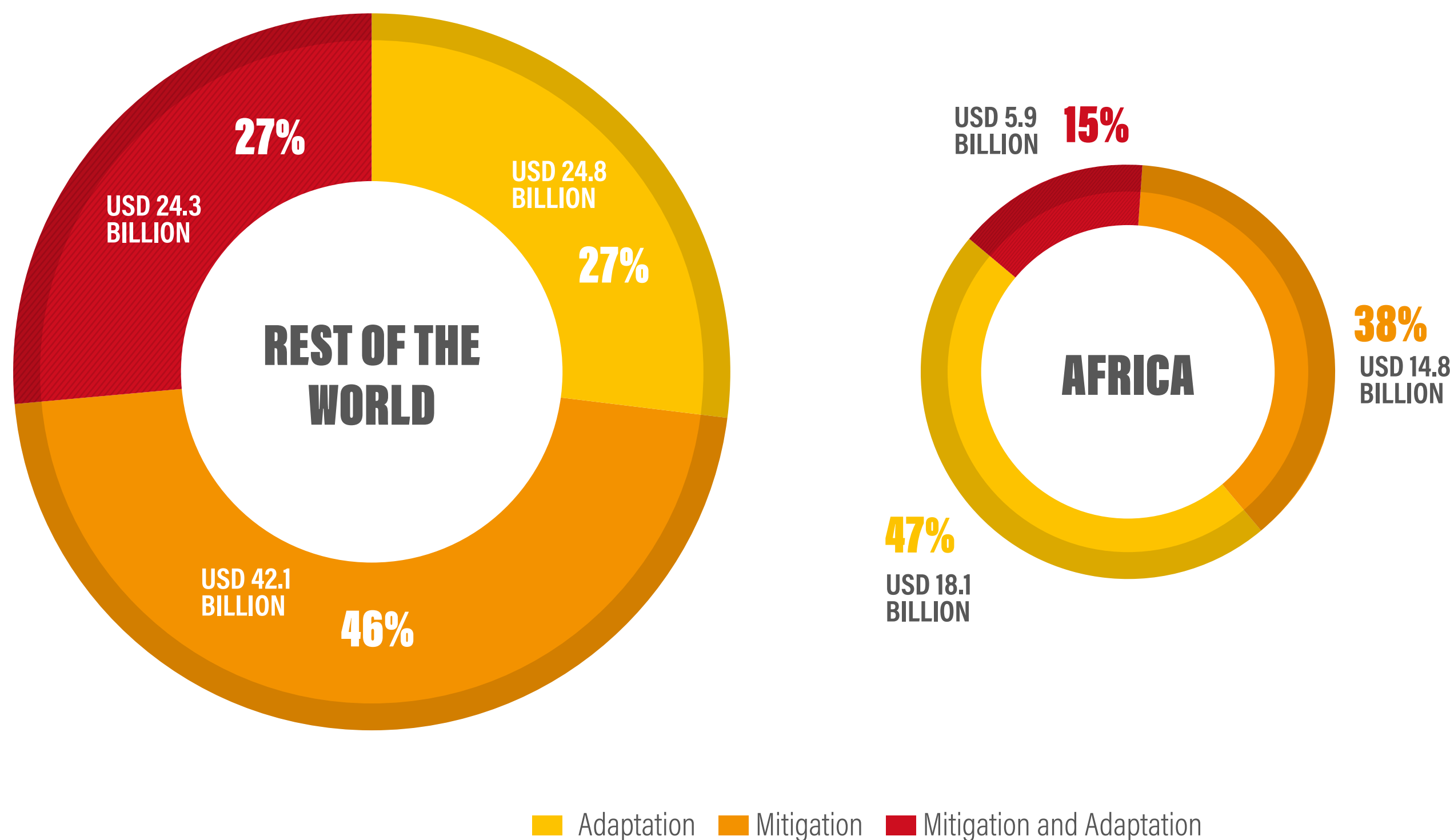


# MITIGATION VS. ADAPTATION

For climate-related development finance in Africa (USD 38.8 billion in 2022), adaptation gets the largest share (47%), followed by mitigation (38%) and overlapping projects (Mitigation and Adaptation, 15%) (see Figure 6).

In 2022, finance for mitigation in Africa has mostly flowed towards energy. In adaptation, the most common recipient sector is agriculture, forestry and fishing, followed by health, water supply and sanitation.

FIGURE 6 Distribution of climate related development finance in Africa (2022).





**NEED FOR GREATER INVESTMENT IN RENEWABLES FOR ADAPTATION MEASURES**

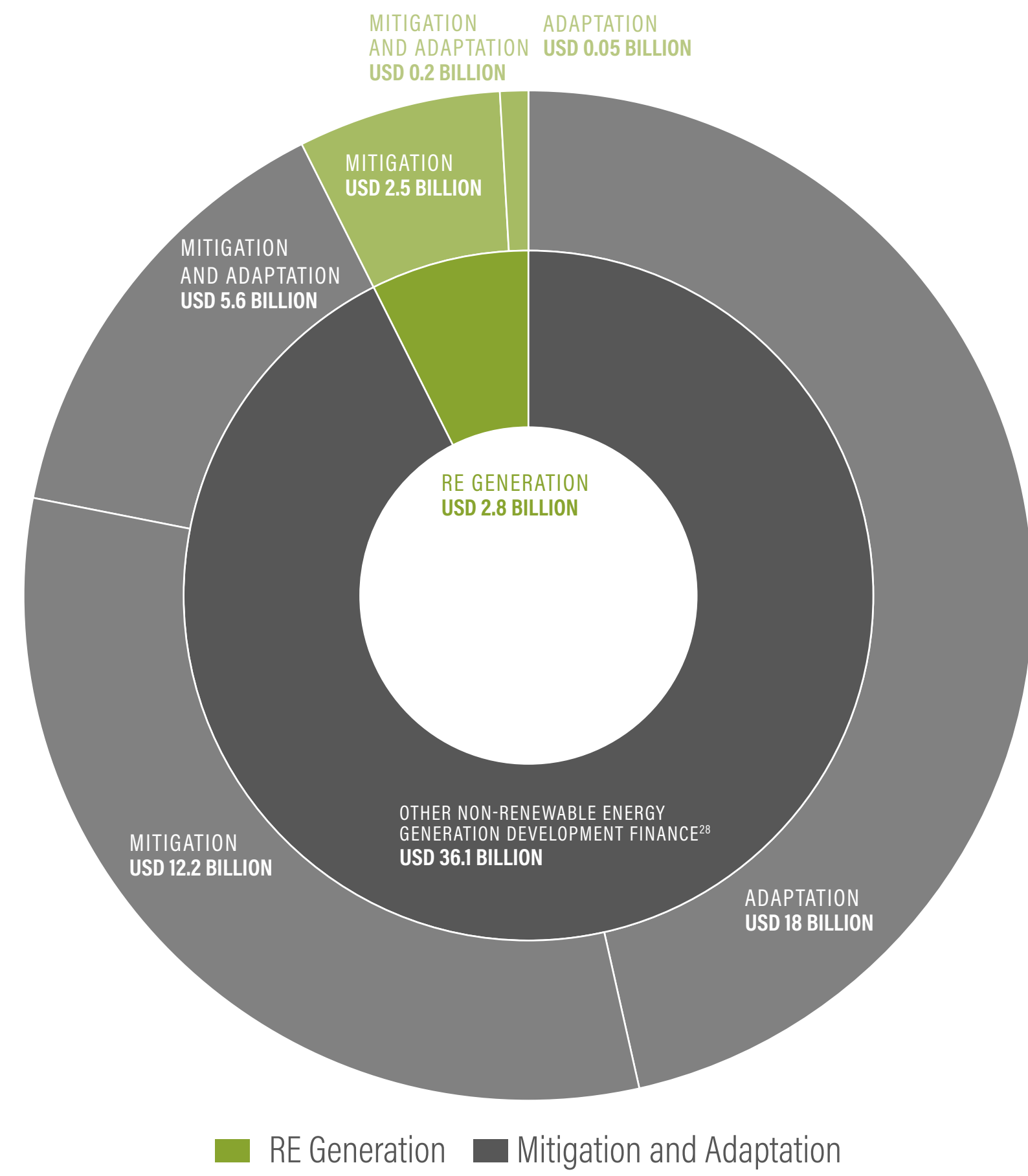
Renewable energy is mainly used as a mitigation lever in Africa (see Figure 7).

In 2022, renewable energy projects in Africa received USD 2.8 billion in climate-related development finance, of which:

- About **89%** went to mitigation projects.
- About **2%** went to adaptation efforts.

Especially in Africa, the adaptation financing gap can be reduced by financing initiatives like climate-smart agriculture, resilient infrastructure, etc., built on renewable energy<sup>13</sup>.

**FIGURE 7** Distribution of climate related development finance for RE generation in Africa (2022).





**CLIMATE RESILIENCE IS  
DRAWING SIGNIFICANT  
MEDIA ATTENTION ACROSS  
AFRICAN COUNTRIES**

**Media coverage heatmap -  
Climate resilience:**

South Africa, Nigeria, Egypt, Kenya and Morocco have received the most media attention on climate resilience.

Media about climate resilience was tracked via *Atium* (REN21's strategic intelligence tool) and covered the following issues: Critical Minerals, Biodiversity, Air Quality, Climate risks, Health, Land Use, Climate Change and Water Supply.

Time frame:  
01 April - 30 September 2024.

The insights' data reflect the total volume of media content (mentions and posts) related to the topic and do not indicate the regional stand towards a specific topic.





**South Africa** - South Africa's **coal dependency** and **limited renewable investment** jeopardise its 2030 climate targets, while intensifying heatwaves, droughts, and floods worsen inequality. While only a third of required funds are allocated for **emission cuts** and **adaptation**, public support for the energy transition is driven more by hopes for **reduced power outages** than environmental concerns<sup>19</sup>.

**Nigeria** - Nigeria needs \$20.5 billion annually for **renewable energy** and **resilience efforts**, requiring robust private sector investment. Effective fund management, transparency, and public awareness are essential to attract financing and drive climate resilience, highlighting renewables as a **core strategy** to meet the country's emissions goals<sup>20</sup>.

**Egypt** - Egypt and Turkey discussed strengthening cooperation on **renewable energy** and **climate action**, emphasising the need for **international collaboration** to combat **climate change**. Egypt's Minister Al-Mashat stressed supporting **multilateral climate initiatives, just financing**, and aligning positions in global forums to advance sustainable development goals (SDGs) and **climate resilience**<sup>21</sup>.

**Kenya** - Ahead of COP29, African negotiators called for sustainable climate financing that prioritises **grants** and **concessional finance**, emphasising **renewable energy** investments<sup>22</sup>. Kenya, facing severe climate impacts, now needs **\$65 billion** by 2030 for **adaptation** and **mitigation**. While private investments in renewables contribute 41%, the country must improve **finance transparency** and prioritise **adaptation** to build resilience and achieve its climate goals<sup>23</sup>.

**Morocco** - Morocco and Germany have formed a climate and energy alliance to expand **renewable energy** and **green hydrogen** production. The alliance was formalised during the first session of the German-Moroccan Strategic Dialogue. The partnership focuses on **climate adaptation**, sustainable energy transition, and **hydrogen imports**. With over €1 billion in investment, it supports Morocco's renewable projects, including a major solar thermal plant in Ouarzazate, fostering regional stability<sup>24</sup>.



Kusile Power Station South Africa  
Gulshan Khan / Climate Visuals

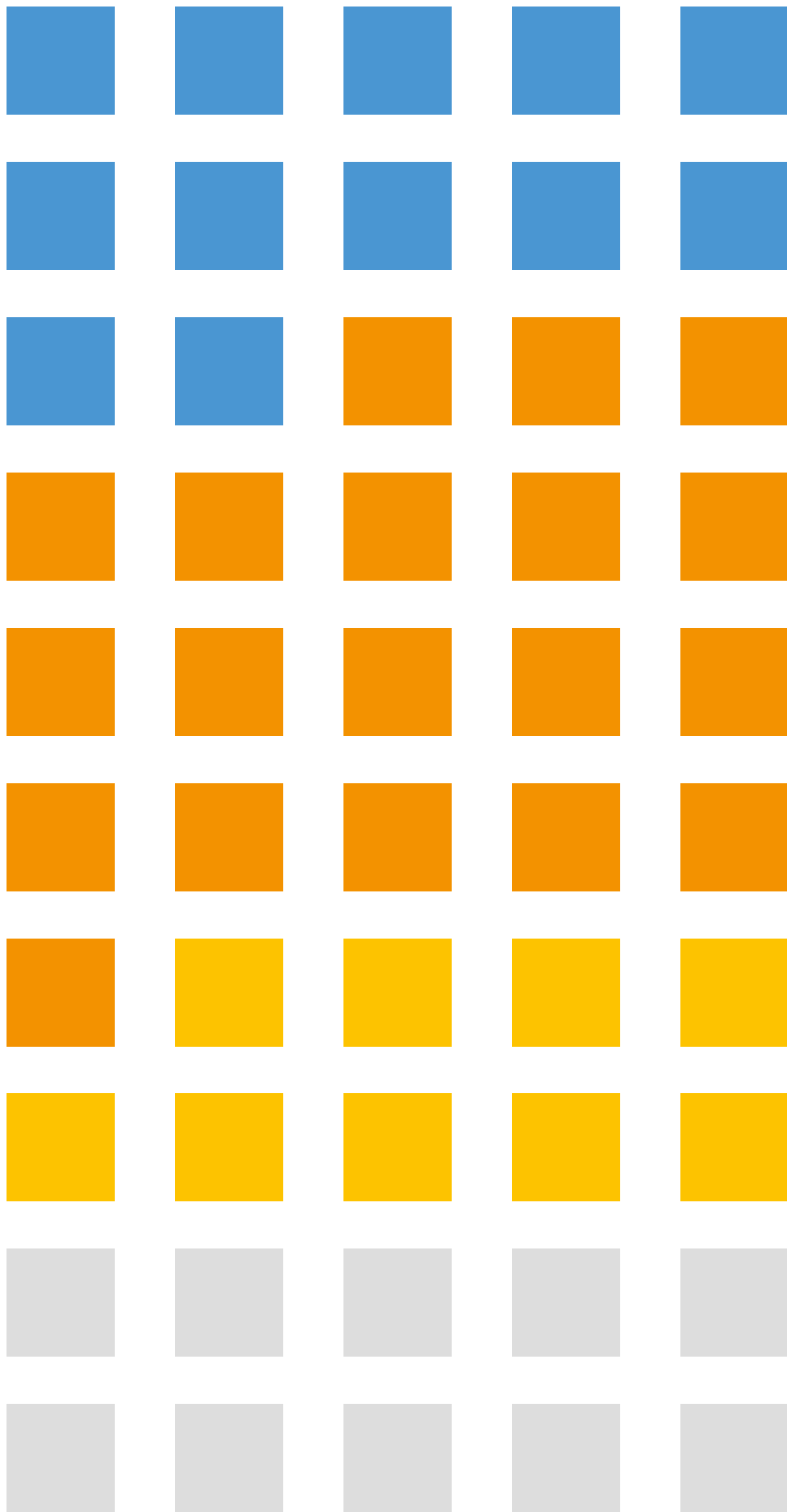
# MISSED OPPORTUNITY

Renewable energy’s role in supporting climate adaptation and resilience is still largely overlooked in policymaking<sup>25</sup>.

Local contexts (environment, social and economic realities, etc.) require a mix of solutions; one size does not fit all.

Renewable energy offers scalability, diverse fuel inputs and lower operating costs, allowing for tailored solutions.

However, research on the effectiveness of renewables-based adaptation policies, both in NDCs and at the local level, remains limited.



**50** countries mention renewables for climate adaptation in their NDCs<sup>26</sup>.

**12** are Small Island Developing States (SIDS) in regions like the Caribbean and Pacific.

**19** are in Africa.

**9** are in the Middle East<sup>27</sup>.



# SEIZE THE OPPORTUNITY

The next NDC update (2025) allows countries to reassess their strategies and integrate renewable energy to boost climate resilience.

Investing in renewables as an adaptation response will:



Enhance energy access.



Support equitable and resilient economies and societies.



Reduce the need for reliance on fossil fuels.



Furthermore, a **multistakeholder approach is crucial to fund renewable energy and tackle climate change.** Governments, banks, UN agencies, businesses, NGOs, and universities must all collaborate, contributing policies, funding, advocacy, and research to advance renewable energy projects and climate adaptation efforts.

## CALL TO ACTION

It is time to leverage renewables for climate resilience fully:

**Support** mitigation-adaptation synergies in terms of policies and finance

**Integrate** renewables into national and local adaptation plans

**Increase** investment in renewable energy infrastructure, especially in vulnerable regions

**Develop** policies that support the transition to renewable energy

**Consolidate** data on how renewables can enhance adaptation and resilience

**Encourage** cross-sectoral, multi-stakeholder, and multi-level collaboration

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- 26 Nationally Determined Contributions (NDCs) are climate action plans submitted by countries every five years under the Paris Agreement, outlining their commitments to reduce greenhouse gas emissions and adapt to the impacts of climate change. The data presented here draws from both the NDC 2021 updates and the original 2016 versions, as some countries have not yet made revisions.
- 27 REN21, "REN21 Policy Database", 2024.
- 28 Other non-renewable energy generation development finance includes: General Environment Protection, Industry, Mining, Construction, General Environment Protection, Transport & Storage, Energy (non-renewable), Other Multisector, Business & Other Services, Other Social Infrastructure & Services, Agriculture, Forestry, Fishing, Water Supply & Sanitation, Government & Civil Society, Emergency Response, Education, Health, Population Policies/Programmes & Reproductive Health, Banking & Financial Services, Communications, Tourism, Disaster Prevention & Preparedness, Development Food Assistance, Trade Policies & Regulations, Reconstruction Relief & Rehabilitation, Unallocated / Unspecified.

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