The State of Climate Finance in Africa:

Climate Finance Needs of African Countries

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CLIMATE POLICY INITIATIVE

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AUTHORS

Sandra Guzmán
sandra.guzman@cpiglobal.org

Greta Dobrovich

Anna Balm
anna.balm@cpiglobal.org

Chavi Meattle
chavi.meattle@cpiglobal.org

ABOUT CLIMATE POLICY INITIATIVE

CPI is an analysis and advisory organization with deep expertise in finance and policy. Our mission is to help governments, businesses, and financial institutions drive economic growth while addressing climate change.

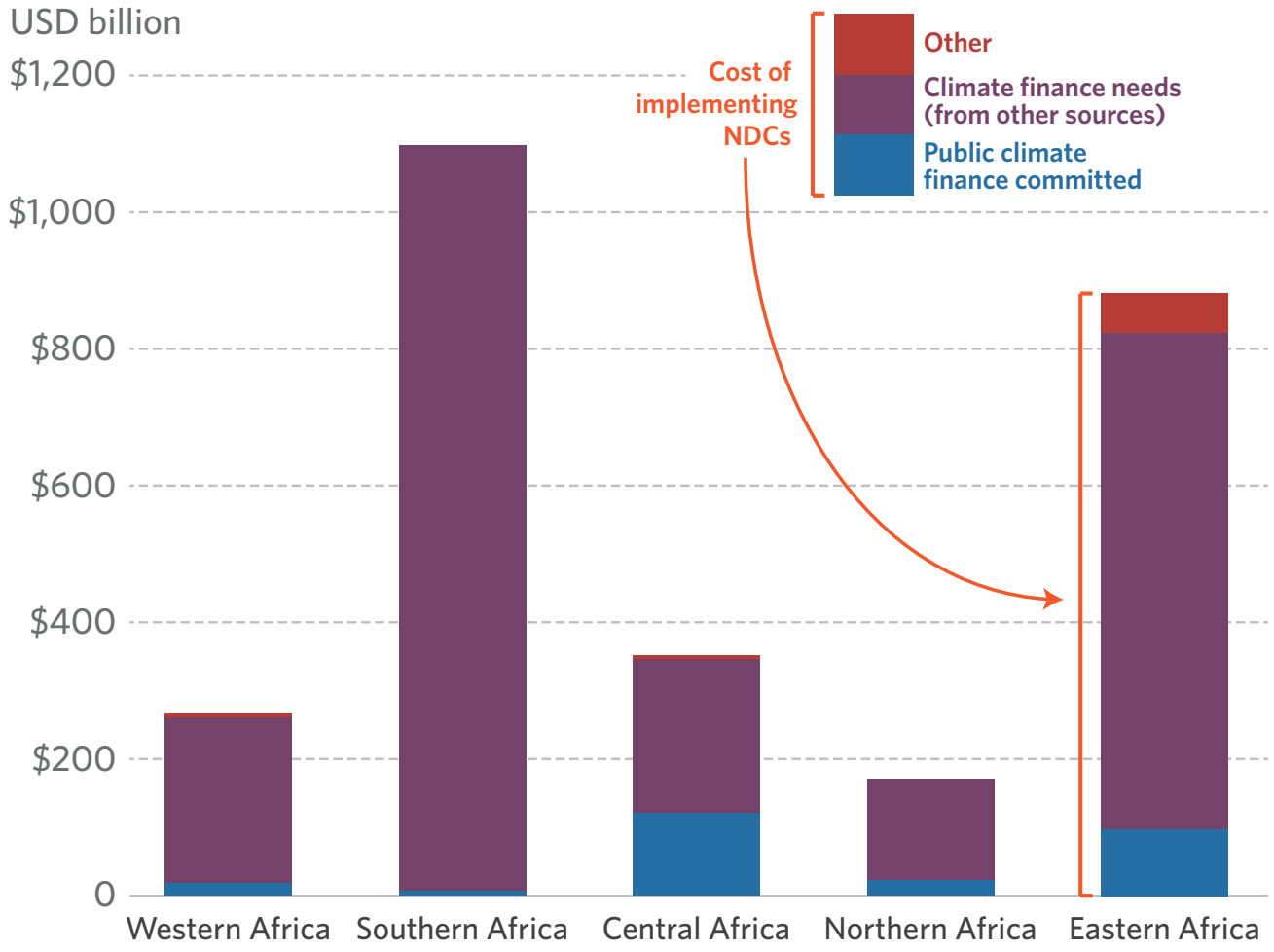
EXECUTIVE SUMMARY

Determining climate finance needs in developing economies is critical to identify financing gaps and opportunities to guide stakeholders to effectively access, allocate and mobilize climate finance. Such data supports international policy processes, like the determination and implementation of a new collective and quantified goal on climate finance and accelerates action. The process of estimating needs also helps in assessing the effectiveness of climate finance flows.

51 out of 53 African countries that submitted Nationally determined contributions have provided data on the costs of implementing their NDCs. Collectively, they represent more than 93% of Africa's GDP. **Based on this data, it will cost around USD 2.8 trillion between 2020 and 2030 to implement Africa's NDCs**.

African governments have committed USD 264 billion of domestic public resources, about 10% of the total cost. USD 2.5 trillion must come from international public sources and the domestic and international private sectors. This external financial support, required beyond domestic public sources, is defined as "climate finance need". While almost all African regions have expressed high needs (Figure 1), these could be underestimated due to a lack of capacity and guidance to make accurate assessments and a lack of data from subnational governments and vulnerable communities. Countries may not be able to provide as much domestic public finance as initially estimated given high debt levels amid unanticipated budgetary pressures — for example, from the COVID 19 crisis.

Figure 1. Estimated climate finance needs in Africa by region



Current levels of climate finance in Africa fall far short of needs. Africa's USD 2.5 trillion of climate finance needed between 2020 and 2030 requires, on average, USD 250 billion each year. Total annual climate finance flows in Africa for 2020, domestic and international, were only USD 30 billion (CPI forthcoming),[1] about 12% of the amount needed. The financing gap is significant: All African countries together have a GDP of USD 2.4 trillion (World Bank 2021), implying that 10% of Africa's current annual GDP needs to be mobilized above and beyond current flows every year for the next 10 years. By contrast, 4.95% of GDP was expended on health in Sub-Saharan Africa in 2019.[2]

Mitigation accounts for the largest share of reported needs in 2020-2030, at 66% of total climate finance needs. Mitigation needs are predominantly split across four sectors: transport (58%), energy (24%), industry (7%), and agriculture, forestry, and other land use (AFOLU) (9%). However, results are heavily weighted to a few countries, in particular South Africa, which accounts for most transport needs. Excluding South Africa, the composition of mitigation needs per sector is energy (39%), AFOLU (27%), industry (20%), and transport (10%).

Adaptation accounted for only 24% of total climate finance needs identified, despite Africa being highly vulnerable to climate change and calls for a better balance of finance between

1 While this number includes domestic national government sources when available, often this data is not readily available and therefore a comparison of total flows to needs is challenging. This number is an average of annual flows in 2019 and 2020.
2 https://data.worldbank.org/indicator/SH.XPD.CHEX.GD.ZS?locations=ZG

mitigation and adaptation. Adaptation needs are likely to be underestimated due to a lack of data and technical expertise to estimate the true cost of adaptation measures. There are social, economic, and political barriers at play — for example, the uncertainty of future emissions and how these will influence adaptation needs. In countries that provided sector-specific data, adaptation needs were mainly reported for agriculture (25%), water (17%), infrastructure and building (12%), disaster prevention and preparedness (10%), and health (8%). 10% of total climate finance was allocated to dual benefit actions which have both mitigation and adaptation actions.

The private sector has significant potential to meet Africa's climate finance needs, but NDCs rarely discuss its role. Public funding alone will not be sufficient, given the magnitude of investments needed, and current and future constraints on public domestic resources in Africa. However, most current climate financing in Africa is from public actors (87%, USD 20 billion) with limited finance from private actors (CPI 2021).

Some private investment can come from shifting existing flows towards climate action. For example, public and private sector financial institutions invested at least USD 130 billion into fossil fuel companies and projects in Africa between 2016 and 2021 (Geuskens and Butijn 2022). In the transport sector, infrastructure commitments totaled USD 32.5 billion in Africa in 2018, but only USD 100 million of that was tracked as adaptation finance, suggesting that most finance to the sector is not climate resilient (CPI 2021). Different types of investors can also be tapped. For example, African pension funds have USD 700 billion in assets under management, and sovereign wealth funds have USD 16.4 billion in assets under management (Soumaré 2020). Assets under management as a percentage of GDP for the five countries with the largest pension funds in Africa[3] varies between 8.4% (Nigeria) and 84.6% (Namibia) (Irving 2020).

To mobilize private finance, public actors need to improve policy frameworks and investment environments and deploy concessional financing to target investment barriers (CPI 2021). Investment barriers are typically context specific but can include technology-specific barriers such as uncertainty with respect to performance; policy barriers such as uncertain permitting processes; investment environment barriers such as lack of liquid financial markets; and bankability barriers such as off-taker creditworthiness and high debt costs (see, for example, CPI 2021 and CPI 2018).

The UNFCCC should develop guidance to support countries to determine their needs in a more comprehensive and robust way. Improving the quality of data on climate finance needs would support financing roadmaps that effectively target needs and mobilize capital. Although NDCs typically distinguish between mitigation and adaptation needs, many do not further disaggregate by economic sector and subsector. More granular information on the role and magnitude of external finance needed from different private and international sources would be useful. Needs as a percentage of GDP are highly variable across countries, indicating a lack of standardization of methodologies and uncertainty around what climate action will ultimately cost. Many estimates lack input from across government and non-governmental stakeholders, subnational actors, and vulnerable groups. NDCs tend not to consider or quantify the structural problems that many African countries are faced with, for instance, high debt vulnerability.

3 Nigeria, Kenya, Namibia, Botswana and Mauritius.

The 27th Conference of the Parties (COP 27) offers opportunities at the international, national, and regional levels to improve the determination of climate finance needs and accelerate implementation of NDCs. Countries need stronger guidelines, for example as part of the Enhanced Transparency Framework agreed at COP 26, as well as the capacity support — through direct technical assistance as well as knowledge sharing initiatives — to implement them. Guidelines should explain how to assess needs using bottom-up approaches based on sector and project plans, in addition to the top-down macroeconomic approaches often used to generate aggregated data.

Robust estimates of needs can be an important driver of financing and policy decisions. While most African countries have taken initial steps to understand their climate finance needs, there is significant scope to improve the quality of those estimates and translate them into clear financing roadmaps – both national and international – that can underpin NDCs and ultimately implementation of the Paris Agreement.

CONTENTS

1. INTRODUCTION

To achieve the goals of the Paris Agreement, climate investment must increase drastically (CPI 2021). Understanding the needs of developing economies is a critical element of getting climate finance to where it is needed most. Stakeholders need to identify financial gaps and opportunities to access, allocate and mobilize climate finance. This information also supports international policy processes like the determination and implementation of a new collective and quantified goal on climate finance. In 2020, domestic and international climate finance mobilized in Africa was around USD 30 billion (CPI forthcoming). But a comprehensive analysis of needs is critical to assess the extent to which these flows have addressed needs at a regional and country level.

Article 3 of the Paris Agreement invites all countries to include in their National Determined Contributions (NDCs) the actions required to achieve the goals of the Convention and the Agreement. Countries are requested to update their NDCs at least every five years in response to changing conditions and to keep ambition high. Between 2015 and 2021, all African countries apart from Libya submitted NDCs (53 in total) and 41 of these have submitted updated NDCs.[4] In addition, Article 13 of the Paris Agreement states that "developing country Parties should provide information on financial, technology transfer and capacity building support needed and received."

However, estimating such needs, particularly financial needs, has been challenging due to a lack of guidance and technical capacity. Countries identify their climate finance needs with varying levels of detail and using different methodologies and referring to different time periods. For example, some approaches base estimates on goals and future scenarios, while others use project-level estimations. Although comparative analyses remain challenging, the provision of information is important to close the gap between the climate finance flows and needs.

This brief, which is part of the State of Climate Finance in Africa series (2022), aims to draw attention to the amount of climate finance, in aggregate, that African countries report they need to implement their NDCs, based on the latest NDCs submitted by 53 countries in the region. Secondly, it provides a more detailed analysis of the funding gap that African countries are likely to face without more concerted and better targeted interventions by donors and investors. Thirdly, the brief highlights emerging best practice regarding needs assessment methods and processes. This brief is intended to provide an overview of today's state of play; more exhaustive assessments and analyses would be needed, especially at the national level, to provide a comprehensive financing roadmap for African countries.

There are five main sections:

- the methodology used to develop this brief (Section 2)
- findings of climate finance needs based on an analysis of the 53 NDCs submitted by African countries, analyzed by subregion, country, thematic area, and sector (Section 3)

4 36 of these countries updated their NDCs after May of 2021, that is after the submission deadline for the 1st Needs Report (UNFCCC 2021). A comprehensive list of the countries that submitted/updated NDCs is provided in Annex I.

- an analysis of the methodologies used by African countries to determine their climate finance needs, including challenges and best practice (Section 4)
- opportunities and recommendations to address climate finance needs at the national and international level in the run up to COP 27 (Section 5), and
- a summary of key findings and conclusions

2. METHODOLOGY

This brief identifies, presents, and discusses the quantitative climate finance needs reported by African countries in their NDCs (as of January 2022). It follows three steps to assess the information provided in the NDCs:

1. **Define climate finance needs:** While there is not yet a globally accepted, official definition of "climate finance needs", this brief identifies two differing approaches. Some countries refer to the cost of adaptation and mitigation activities as their climate finance needs while others refer to the amount of finance that cannot be covered by national governments. For the purpose of this brief, climate finance needs are defined as the difference between the total estimated cost stated in NDCs and the amount of finance that countries can cover with their own national government resources. These needs have to be covered by other private, national, and international (public and private) resources (see Annex II for more details).

2. **Build a methodological framework to identify and analyze quantitative climate finance needs:** The framework used in the brief builds on the methodology of the First Report on the Determination of the Needs of Developing Country Parties Related to Implementing the Convention and the Paris Agreement ("the Needs Report"), prepared by the Standing Committee on Finance of the United Nations Framework Convention on Climate Change (UNFCCC). While the Needs Report includes information about capacity building, technology transfer and finance needs, this brief focuses only on the quantitative information related to climate finance needs. The methodological framework incorporates data by country, subregion (Northern, Eastern, Western, Central, and Southern Africa), thematic area (mitigation, adaptation, loss and damage, and dual benefit), key sectors (energy, transport, etc.), cost of action, climate finance needs, climate finance received from international sources,[5] climate finance that will be mobilized by public domestic resources, and timeline (see Annex III).[6]

3. **Identify best practices in assessing and reporting needs:** To identify best practices, the level of information provided in the NDCs was assessed in relation to four variables:

    - available quantitative information related to climate finance needs in NDCs
    - needs assessment information detailed and disaggregated in other reports submitted to the UNFCCC besides the NDCs, such as national communications and biennial update reports
    - other climate finance information included in NDCs, national communications, and biennial update reports
    - available information about the methods used to determine needs

5 Information on climate finance received from international sources is presented in the forthcoming report from the State of Climate Finance in Africa series, the Africa Landscape of Climate Finance.
6 This report adopts a somewhat narrower methodological framework given the lack of reporting on some of the dimensions.

- Countries from different subregions were selected and analysed to identify best practices. Section 5 further describes these methods, and Annex IV includes the identified countries with the best practices based on these criteria.

The following data limitations hinder a comprehensive national and regional assessment:

1. **Limited availability of updated NDCs:** This report presents information based on the NDCs submitted by African countries. However, only 41 countries have presented updated NDCs since their first submission in 2016. When recent reports are not available, values estimated back in 2016 are compared with values updated in 2021. It is important to acknowledge that some progress has been made in these five years in terms of the provision of granular information about needs, in certain countries. The latest NDCs cover significantly more sectors and subsectors than earlier submissions. Most of the countries that updated their NDCs (38 countries) increased the total needs as well as their sector-specific coverage.

2. **Incomplete quantitative information by thematic area, sector and subsector, and by provider of climate finance:** Most African countries have reported climate finance needs in a quantitative format, however information is not always provided for all thematic areas (mitigation, adaptation, and dual benefit) and/or for different economic sectors. Therefore, the numbers included in this brief reflect information provided by 51 countries (out of 53 that submit NDCs) [7], which affects the completeness of subregional information. This lack of information can be due to capacity limitations, resources to develop these assessments, and/or other institutional constraints.

   Only 27 countries distinguished between unconditional needs (those covered by domestic public sources) and conditional needs (those requiring finance from private and international sources). Even when this distinction is made, no or limited information is provided on financing needs expected from various private and international actors.

   Furthermore, only 30 countries presented needs by sector and only 25 by subsector. Even among those that did analyze needs by subsector, there is no consistency in terms of definitions and classifications. Because of these data gaps, regional and subregional aggregates by sector are likely to be underestimated. Where analysis has been conducted by sector, this tends to focus on certain sectors, such as energy and transport. Nature-related or biodiversity financing are still hardly mentioned.

3. **Limited information about adaptation needs:** The lower reported needs for adaptation compared to mitigation may reflect a lack of data and technical experience to estimate and cost adaptation measures. This is because they are often not related to a single technological change or sector but are mainstreamed within other interventions and can take time to demonstrate results, which often cannot be measured in the short term. Furthermore, there are other social, economic, and political circumstances that might influence the determination of needs in relation to adaptation, such as rapid social and political changing conditions at the local level. Adaptation needs depend on future scenarios, in that the more emissions there are in the future, the worse the climate impacts and the higher the adaptation costs. However, future scenarios are highly uncertain, and there is no common agreement on what assumptions need to be made

7 Information was not provided by Gabon, Algeria and Côte d'Ivoire.

to estimate future needs. This makes these exercises extremely challenging, particularly for those countries with limited human and technical capacity to conduct these studies. To provide a comprehensive assessment of adaptation financing needs, it is critical to analyze and address constraints facing countries, which is outside the scope of this brief.

4. **Different methodologies and approaches**: Climate finance needs presented in NDCs differ in terms of the methodologies and approaches followed to determine needs. These approaches can include different definitions and timelines even within the same report. For instance, the majority of African countries (42 countries) provide estimates for the 2020-2030 time period, while the remaining nine for 2020-2050.[8]Four countries (Mozambique, Togo, Tanzania and Seychelles) calculate some needs per annum, three (Ghana, Burundi and Mozambique) use a five year range, while 10 (Ghana, Botswana, Guinea, Sao Tome and Principe, Senegal, Tanzania, Zambia, Egypt, Ethiopia, Kenya) do not clearly specify the time range for all the presented needs. In terms of methodology, 27 countries used a goal-based estimation method, 17 used a project-list method, and two countries used both approaches. For five countries, it was not possible to ascertain the method. The discussion on methodologies is further developed in Section 4. These inconsistencies can be related to a lack of guidance on developing these assessments.

8 This accounts for 51 countries out of 53; two countries, Algeria, and Gabon, did not provide any financial information.

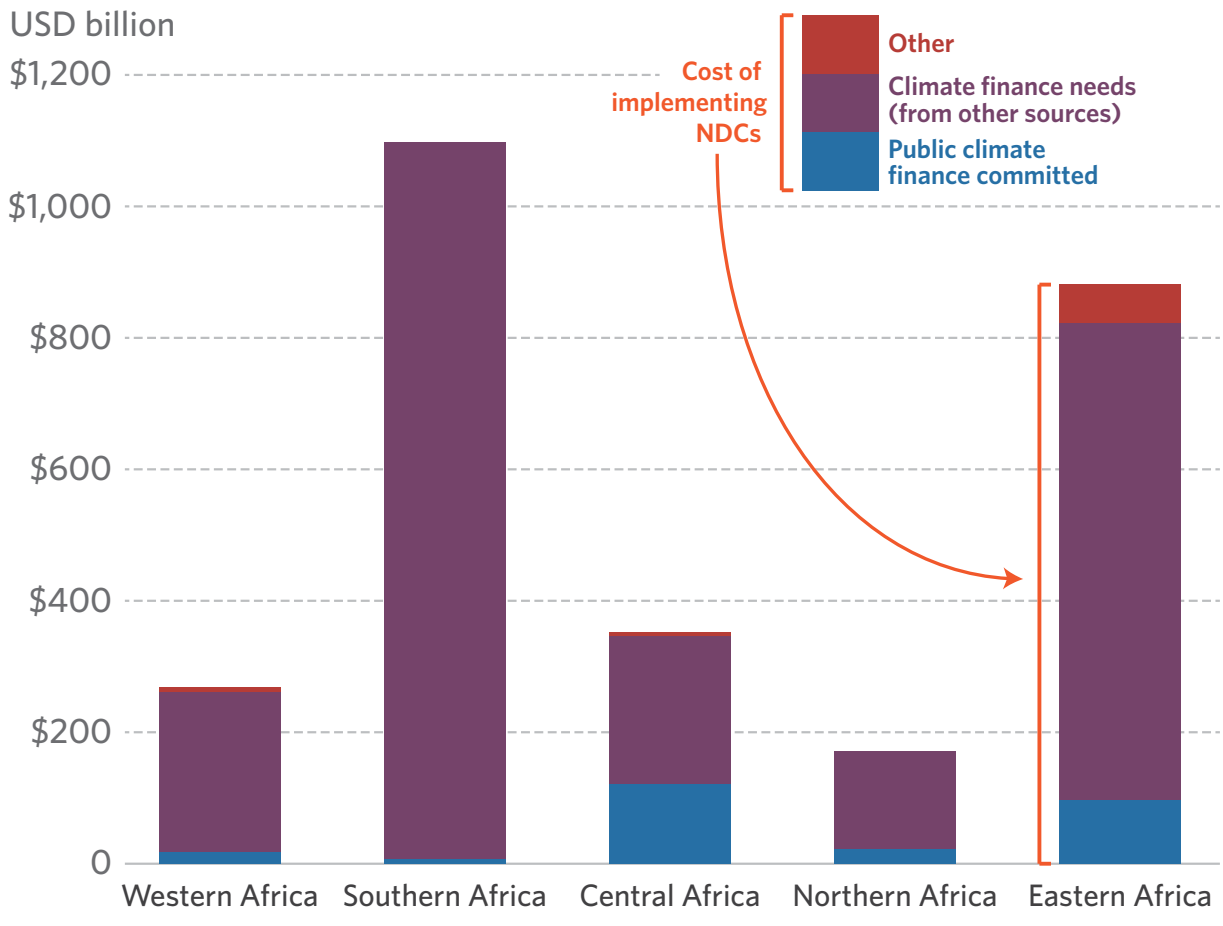
3. KEY FINDINGS

3.1 TOTAL CLIMATE ACTION COST AND NEEDS

The total cost of implementing NDCs in Africa is estimated at USD 2.8 trillion over 2020-2030. This includes the estimation of loss and damage when provided by countries.[9] Of this, national governments have committed to providing USD 264 billion (about 10%), with the remaining USD 2.5 trillion identified as climate finance needs.

Across all African regions, reported needs greatly exceed country allocations from national government budgets. Central Africa is the only subregion that plans to finance a significant share of costs through national public resources, more than 34% of the subregional total. Southern Africa reports the highest costs, accounting for almost USD 1.1 trillion, about 40% of the African total. However, it plans to allocate less than 1%, just under USD 7 billion, from national public budgets. National governments in Eastern Africa, Western Africa and Northern Africa aim to finance 11%, 7% and 13% of the relative subregional totals, respectively.

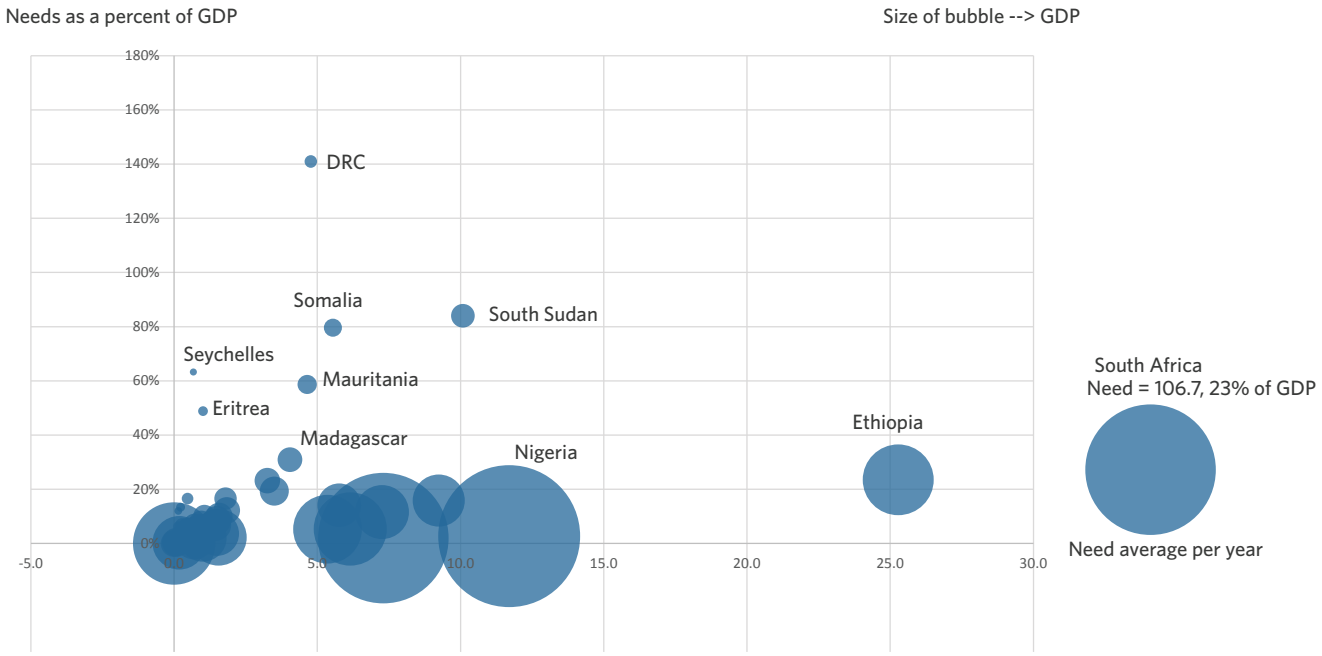
Figure 2: Estimated climate finance needs in Africa by region



9 Not all countries included information about loss and damage, so this cost is likely to be underestimated.

Comparing needs in absolute terms is challenging. Even when data is complete, estimates could be biased towards those countries covering wider geographical areas and with larger populations. Broadly speaking, South Africa will always face significantly higher costs than Togo. In this regard, it is interesting to compare needs per annum with figures for GDP. Although GDP is not the only lens through which we should assess a country's ability to finance projects from its own resources (the availability of technical capacity to implement projects is also an important factor), GDP is an informative metric. Figure 3 compares countries' needs as a percentage of GDP, while Annex V provides country-level data on costs and needs, in absolute terms and as a percentage of GDP. By contrast, 4.95% of GDP was expended on health in Sub-Saharan Africa in 2019.[10]

Figure 3: Annual needs and GDP



South Africa, Ethiopia, Nigeria, and Egypt have the highest needs per year, together representing almost USD 151 billion per year, but also the highest GDPs. Nigeria reports needs of almost USD 12 billion. However, these represent only 3% of the national GDP. Similarly, Egypt estimates needs of around USD 7.3 billion, less than 2% of its GDP. South Africa and Ethiopia have needs of 32% and 23% of their GDP, respectively.

The Democratic Republic of Congo, South Sudan, and Somalia have the highest needs as percentages of their GDPs, all above 80%.[11] This is a worrying figure as it implies that national resources are not enough to sustain national climate efforts, and significant external support (private and public) is required. Although the Democratic Republic of Congo plans to use 10% of its GDP to finance climate projects, it estimates remaining climate finance needs to be around 141% of its GDP.

According to the World Bank (2022), all African countries together have a GDP of USD 2.38 trillion. Based on what countries have reported in their NDCs, **Africa will need about USD**

10 See: https://data.worldbank.org/indicator/SH.XPD.CHEX.GD.ZS?locations=ZG

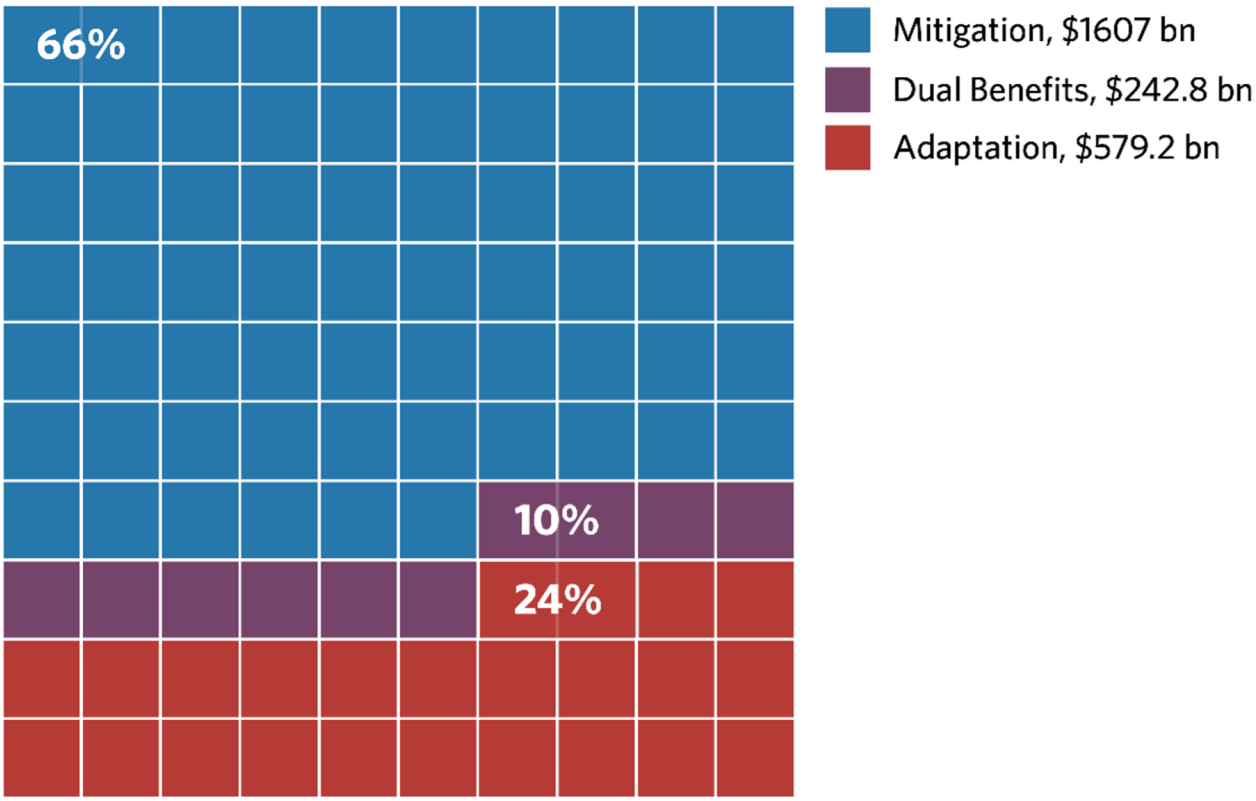
11 These countries with the highest needs as a percentage of GDP have provided disaggregated data and clear explanations of the estimation methods adopted.

250 billion per year to meet the 2030 country climate goals, more than 10% of its GDP. This is alarming, considering that only USD 22 billion flowed into climate investments in the region in 2020 (CPI 2021).

3.2 CLIMATE FINANCE NEEDS FOR MITIGATION AND ADAPTATION

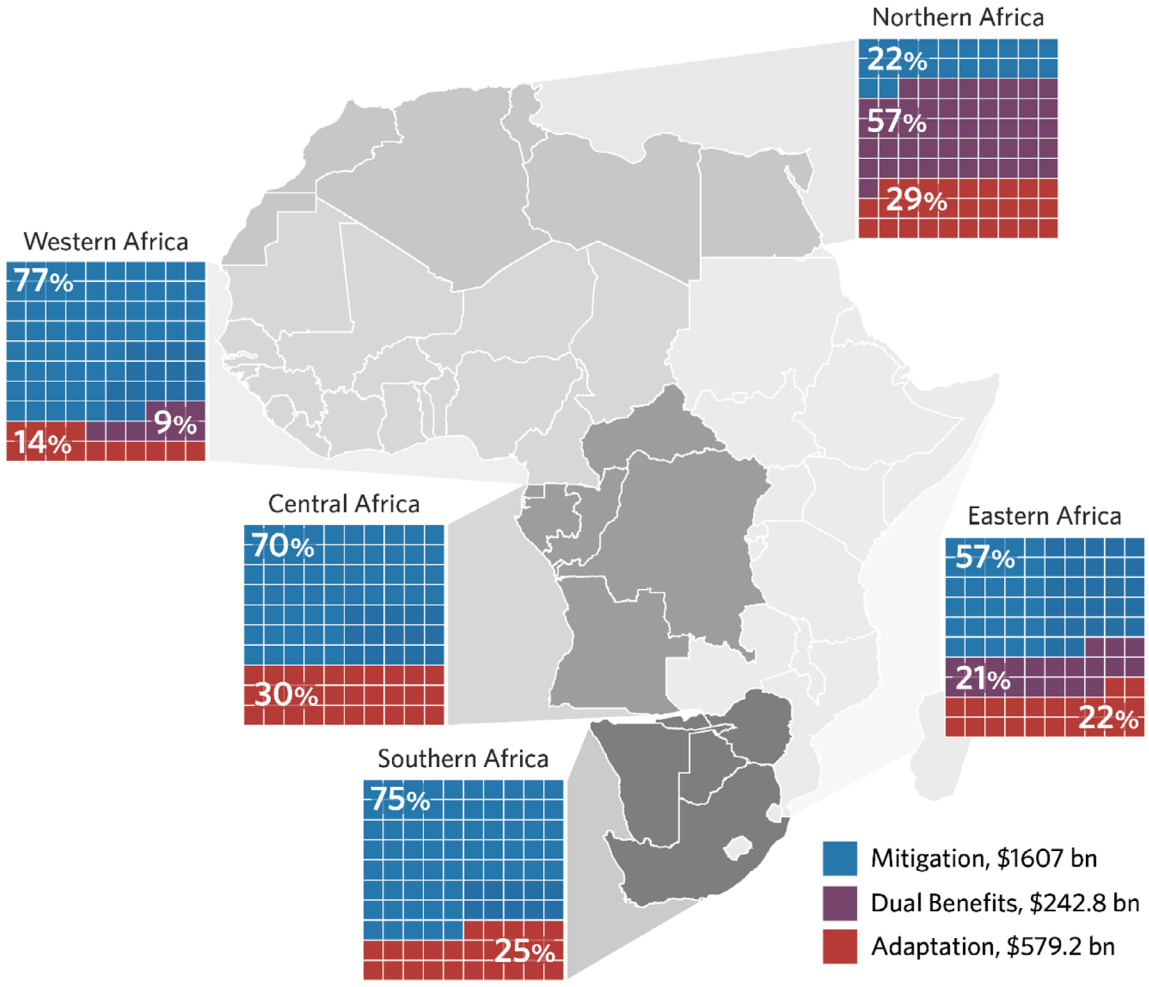
Although international climate negotiations are calling for a balanced allocation of finance between adaptation and mitigation, the identification of adaptation needs still falls far behind mitigation. Based on the NDCs, mitigation measures require the largest share of financial support, accounting for 66% (USD 1,607 billion). Adaptation needs are estimated to be USD 579 billion, only 24% of the total. The remaining 10% relates to dual benefit actions that have an impact on both mitigation and adaptation. This is illustrated in Figure 4.

Figure 4: Total climate finance needs in Africa by use (2020-2030), USD billion



Africa is extremely diverse, and subregions are expected to have different adaptation and mitigation needs depending on economic and demographic contexts as well as degree of vulnerability and dependence on high-emitting sectors.

Figure 5: Subregional climate finance needs in Africa by use (2020-2030), USD billion

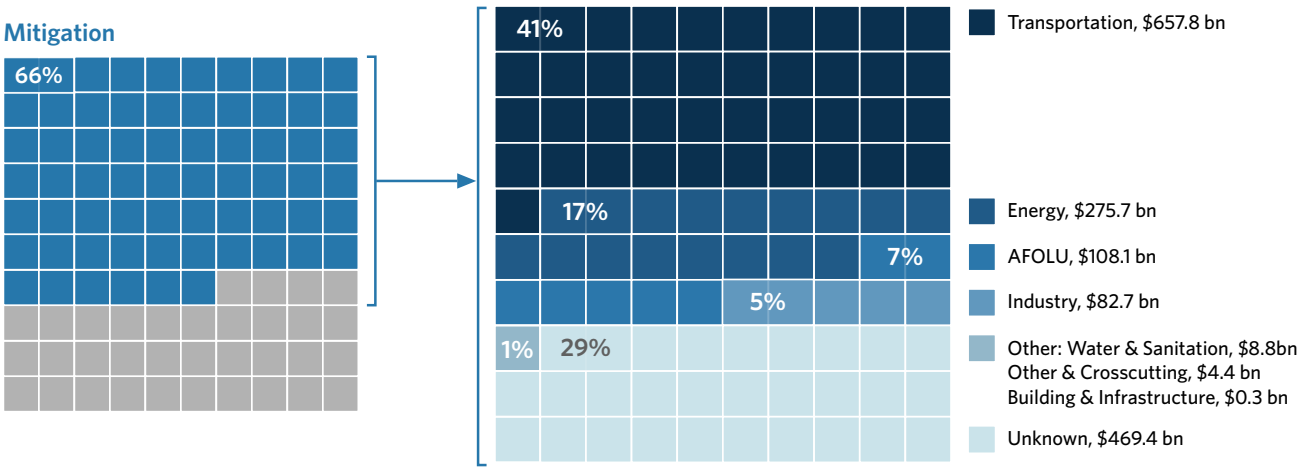


As with Africa overall, mitigation represents the highest share of financial support needed in four out of the five African subregions, with Northern Africa the notable exception: 77% in Western Africa, 75% in Southern Africa, 70% in Central Africa, and 57% in Eastern Africa, while dual benefit needs are the most reported in Northern Africa, accounting for about 57%. Northern Africa is the only subregion where adaptation and mitigation needs are almost equally distributed. According to the IPCC (2022), Northern Africa and the southwestern parts of Southern Africa will be, with "medium to high confidence", the most affected by climate change, and the most in need of investment in adaptation. Information on economic sectors is presented and discussed in the next section.

3.3 CLIMATE FINANCE MITIGATION NEEDS BY SECTOR

Most mitigation finance needs are in the transport sector (41%, USD 657 billion), followed by energy, agriculture, forestry, and other land use (AFOLU) and industry.

Figure 6: Climate finance mitigation needs by sector, USD billion



Transport needs almost solely relate to South Africa (94% of the transport total). Excluding South Africa, the composition of needs per sector would be:

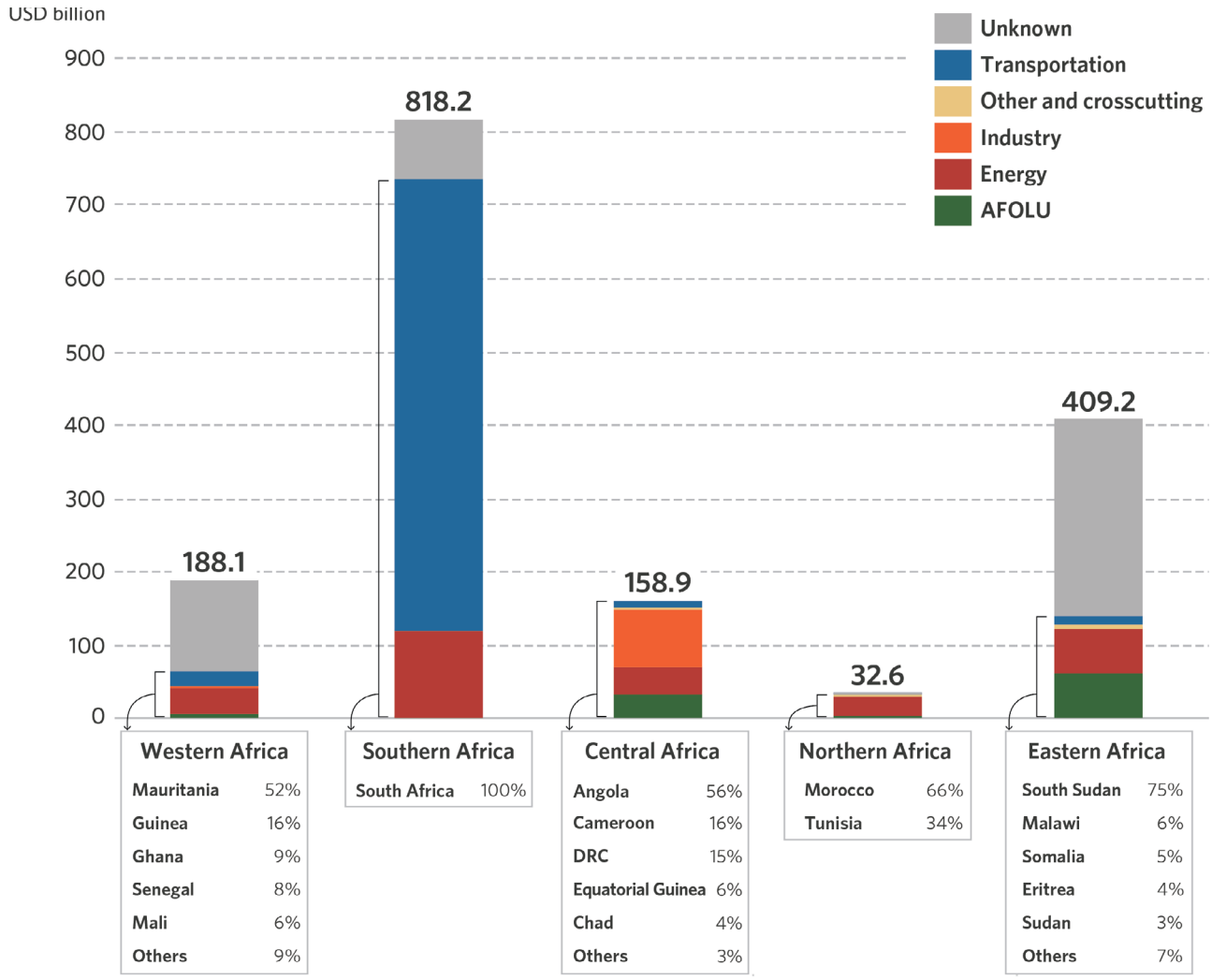
- Energy: 39% (USD 158 billion)
- AFOLU: 27% (USD 108 billion)
- Industry: 20% (USD 83 billion)
- Transport: 10% (USD 42 billion)

The main subsectors in transport are land transport, accounting for almost all the transport needs (about 97%, USD 35 billion), crosscutting (3%, USD 1 billion) and sea transport, (less than 1%, USD 0.1 billion). Unfortunately, South Africa did not disaggregate needs per sub-sectors so most of the financial needs for transport (USD 616 billion) have unknown subsector. The energy subsectors are renewable energy (88%, USD 135 billion), energy efficiency (10%, USD 15 billion), and crosscutting (2%, USD 3 billion). The AFOLU subsectors are soil management (62%, USD 67 billion), reforestation (19%, USD 20 billion), and crosscutting (12%, USD 9 billion).

Surprisingly, Africa's highest emitting sector, AFOLU, only accounts for 7% of total needs (USD 108 billion). According to AfDB (2021), the AFOLU sector contributed 57% of GHG emissions in Africa in 2016, while energy and transport combined only accounted for 35%. Arguably, this implies that the greatest mitigation efforts are required in the AFOLU sector. Still, this variance in cost could be attributed to the fact that AFOLU mitigation measures are often cheaper than energy and transport actions and/or to limited granular information reported by sector. Or it could be that the line between mitigation and adaptation in AFOLU is less clear than in other sectors. No information on economic sector was reported for 29% of the needs included in NDCs (USD 469 billion).

Only 30 countries presented needs by sector and only 25 by subsector. This is a key data gap. Due to the lack of disaggregated data in most of the NDCs, the results are heavily weighted to a few countries. Figure 7 presents the breakdown per subregion and highlights how much of the known subregional total is represented by each country.

Figure 7: Climate finance mitigation needs per subregion (by sector), USD billion



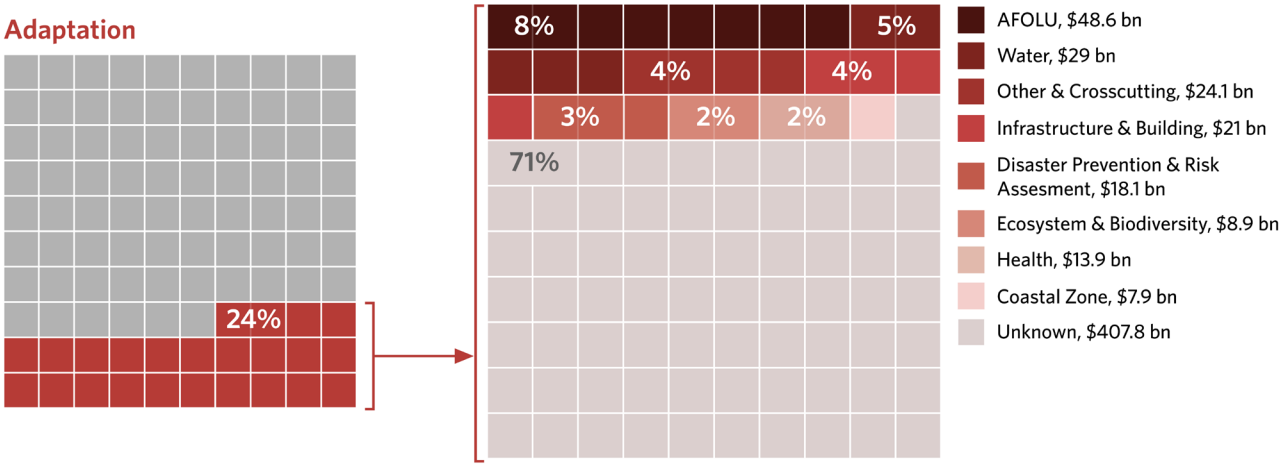
Central Africa reported the most complete information. The mitigation sector with the highest need is industry, representing 50% of the total. However, these needs are mainly a reflection of those countries that provided disaggregation by sector and have the highest absolute values, mainly Angola (56% of the total disaggregated data).

Information on needs by sector remains a huge gap in national reporting, and only a few countries, so far, provide this data. For instance, in Eastern Africa, the vast majority of needs by sector (75%) have been reported by South Sudan. This does not mean that climate finance needs of South Sudan are almost 20 times higher than the ones of Sudan, representing 3% of the disaggregated information. Rather, this graph highlights where the data gaps are and, by listing the countries that provided most of the sector-specific information, helps in understating how to read the disaggregation presented in Figure 6. Indeed, Sudan reports needs of USD 14.3 billion, but provides data at the sector level for USD 4.4 billion and only for four mitigation sectors, namely, energy, transport, forestry and waste and sanitation. South Sudan, instead, reports disaggregated information for all of its needs, USD 100.8 billion, covering six sectors and 13 subsectors in mitigation, and eight sectors and 15 subsectors in adaptation.

3.4 CLIMATE FINANCE ADAPTATION NEEDS BY SECTOR

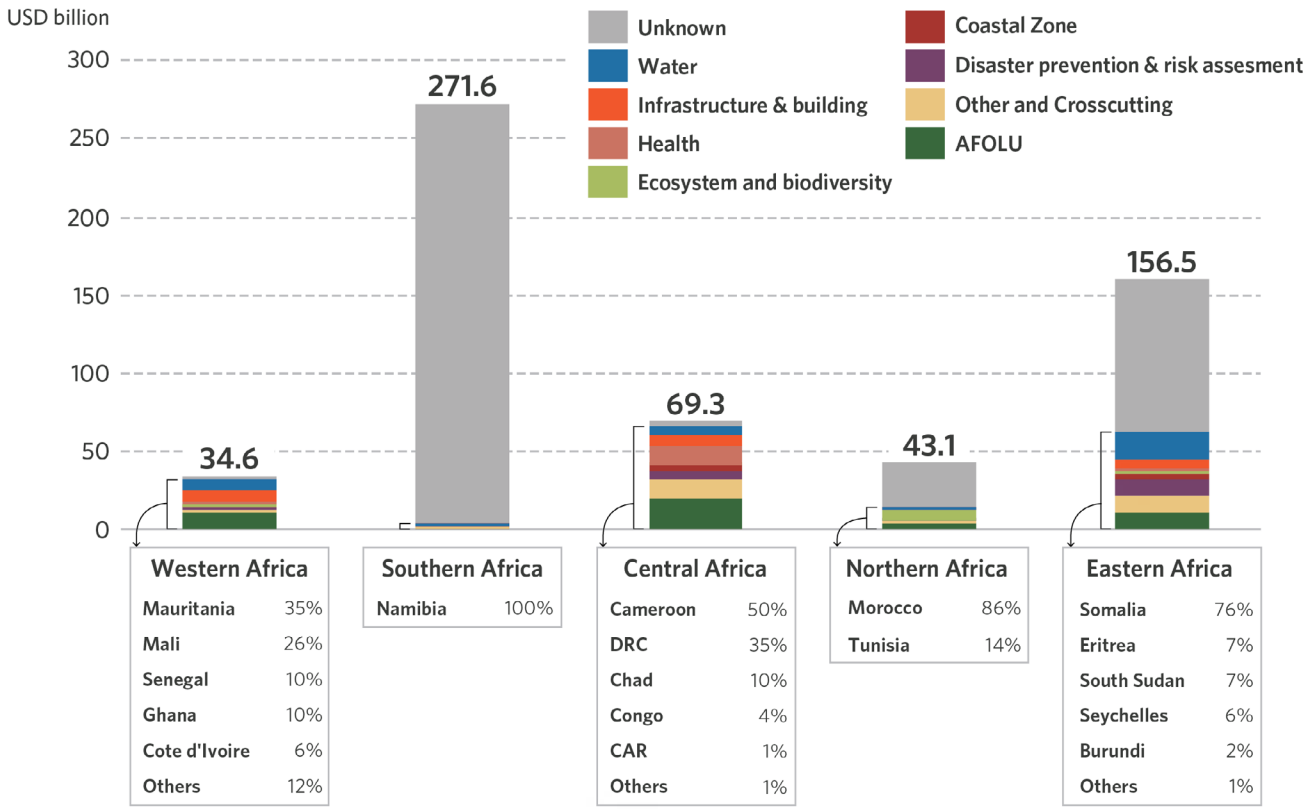
Sector breakdown of adaptation needs remain limited. Almost 71% of the total needs reported in NDCs (USD 408 billion) are not allocated to any adaptation sector. Although African countries have initiated planning processes for adaptation, a comprehensive integration with economic and development planning is still lacking. The IPCC (2022) noted with "*high confidence*" that additional funding is required not only to finance new adaptation projects, but also to assess needs and plan projects.

Figure 8: Climate finance adaptation needs by sector, USD billion



According to the IPCC's latest report (2022), due to their dependence on seasonal climate variability, the AFOLU and water sectors are the most vulnerable in Africa, and adaptation measures are crucial to guarantee food security. For countries that reported adaptation needs by sector, food, and water security, as well as conservation of forests and ecosystems, are a priority. For countries providing a breakdown of adaptation data by sector, the largest share of adaptation needs is in the AFOLU sector (8%, USD 49 billion). Water 5% and other/ crosscutting measures for 4% of the total (USD 29 billion and USD 24 billion, respectively).

Figure 9: Climate finance adaptation needs per subregion (by sector), USD billion



Central Africa and Western Africa reported the most complete information on adaptation needs. In both subregions, the majority of needs are reported in the AFOLU sector. These mainly come from Cameroon (50% of the total disaggregated data in Central Africa), and Mauritania and Mali (35% and 26% of the total disaggregated data in Western Africa, respectively).

Southern African and Eastern Africa have high adaptation needs but current data does not specify where this finance is needed. All the adaptation finance without a specific sector in Southern Africa is attributed to Namibia. In Eastern Africa, unknown adaptation needs are split between Ethiopia (33%), Kenya (14%), Madagascar (28%), Rwanda (7%) and Mauritius (3%). None of these countries yet provide disaggregated financial data for adaptation.

4. METHODOLOGICAL APPROACHES TO ASSESSING CLIMATE FINANCE NEEDS

4.1 COMMON PRACTICES

Among the 53 submitted NDCs[12] analyzed in this brief, there is no consistency in the adopted methodologies used to determine needs among countries. Before COP 26, there was no mandate on how to present information on climate finance needs or guidelines on how these could be assessed and/or reported. Although most African countries do not explicitly disclose the approach adopted in determining their needs, this brief broadly classifies them in two main categories: goal-based estimation method and project-list estimation method. Both estimation methodologies have advantages and disadvantages. Out of 53 NDCs, 27 countries used a goal-based estimation method, 17 used a project-list method, and two countries used both approaches. For five countries, it was not possible to ascertain the method or identify any characteristics to allocate them in one of the estimation categories as no explanation was given on the financial values presented.[13]

- **The goal-based estimation method** calculates costs from global values and modeled scenarios, sometimes using proxy values to compare information at the regional level. More specifically, these NDCs typically start from climate objectives and/or possible mitigation and economic scenarios to draw inferences on what would be the cost of meeting a particular goal in a certain time period. In other words, they start from aggregated numbers which can be disaggregated by sector and subsector depending on economic assumptions.
- **The project-list estimation method** gathers data from the bottom up, assigning costs per expected project in a given time period (year or multi-year basis), and then calculates the overall values by adding up the individual projects. Rather than starting from a single national objective, this method looks at project/sector achievements and aggregates and prioritizes actions until the national climate goal is achieved. More information about these methods is included in Annex VI.

Countries that use the goal-based estimation method usually provide more general estimations, while project-list estimation countries present more granular information and share details on specific actions. All methodologies can offer valuable insights if well-defined. The choice depends on the scope of the analysis and the audience. Goal-estimation methods may be more suitable when dealing with different mitigation scenarios, while project-list methods might be helpful to describe actual projects and timelines. In addition, these two approaches are not mutually exclusive.

Annex VI includes information about the use of these methods and the underlying assumptions.

12 This number is 53 rather than 54 because Libya has never submitted an NDC.
13 The sum returns 51 as two countries, Algeria, and Gabon, did not provide financial information.

4.2 BEST PRACTICES IN NEEDS ESTIMATES

As a best practice example, South Africa's goal-based estimated methodology allows South Africa to provide different estimates distinguishing between low and moderate-high mitigation scenarios. For each of its adaptation goals, South Africa considers two different scenarios — low-mitigation scenario and high-moderate mitigation scenario[14] — and calculates two separate range values from the 10th to the 90th percentiles, also stating the median. On the one hand, linking adaptation to different mitigation scenarios is crucial as greater global mitigation efforts will reduce the adaptation cost curve. At the same time, reporting on the percentiles is essential as cost and needs depend on the occurrence of extreme events (the more extreme the expected weather events, the higher the costs). In this regard, it is worth specifying that the percentiles are representative of extreme years.

Providing this level of detail not only facilitates the interpretation of estimated costs by adding clarity on what the reported numbers represent, but also increases transparency by elucidating how the country has dealt with uncertain future outcomes. For example, South Africa's estimated adaptation needs vary in a range of 10 times depending on the percentile and/or the scenario. From a donor perspective, this helps show how representative the needs are of different realities with different likelihoods of materializing.

While adopting a goal-estimation method that calculates investment levels based on projected mitigation shares in each emitting sector, Togo also presents comprehensive data, disaggregating needs by sector and subsector. In its updated NDC (2021), Togo estimates, first, how much each sector would emit over 2020-2030 under a business-as-usual scenario and then calculates how much it would cost to move away from business as usual and meet the country's national climate goal by identifying activities to implement. As estimations are made by sector, the country is able to disaggregate information per sector and subsector providing a high level of detail. Moreover, as it collects information on national financial capacities, costs are broken down into their conditional and unconditional components.

Using a project-list method, Burkina Faso and Namibia present details and extensive descriptions of the projects, their timeline, and their GHG reductions. For instance, Burkina Faso lists 105 projects, 63 in adaptation and 42 in mitigation. Information spans from details on quantity, for example, "installing 15000 more LEDS," to location, for example, "building solar power plants in Koudougou (20 MWp) and Kaya (10 MW)", and "improving sustainable rural livelihoods in the Boucle du Mouhoun and Centre West regions". Strategies and projects are prioritized on the basis of cost-benefit analyses considering both the economy and the environment. Links are made between mitigation actions in sectors with potential GHG reductions and supporting adaptation measures in vulnerable sectors. As a result, there is a clear reference between national goals and climate finance needs. Similarly, Namibia classifies projects by goal, baseline, sector, GHG reduction potential, improvements from business as usual, and cost conditionality. Moreover, when addressing adaptation, it also mentions gender and youth implications as well as private sector possible engagements and references to sustainable development goals.

South Sudan and Tunisia have deployed both methods in their NDCs, allowing them to provide a more comprehensive picture of their national financial needs. In its updated NDC (2021), Tunisia adopts a project-list method to identify priority adaptation measures

14 The referenced mitigation scenarios are those calculated by the IPCC in its Assessment Reports.

and provide subsector information, and an estimation assessment to account for different mitigation scenarios and macroeconomic indicators. The rationale for this latter approach is to account for uncertainties on future mitigation pathways as well as on the speed of projected economic growth. When summarizing adaptation needs, Tunisia compares expected economic growth and projected GDP with estimated needs. Based on this information, it then calculates the share of needs with respect to GDP. It concludes that by 2050, adaptation needs could reach 4% of GDP, about USD 1 billion per year. Likewise, in its second NDC (2021), South Sudan adopts both estimation methods. It uses a project-list method to identify most mitigation measures, provides subsector information, and uses an estimation method, based on Gillingham and Stock's (2018) global Marginal Abatement Cost (MAC) curve, to better assess the cumulative emission reduction potential of three sectors.

Regardless of the adopted approach, the best practice should be to disclose information on methodologies and assumptions made during the estimation and to provide as much detail as possible on costs and related projects. In this way, it will be easier to understand what is behind the numbers, facilitate comparative analysis at the global and regional level, and ultimately inform financial flows.

4.3 ADDITIONAL METHODS AND APPROACHES

Although crucial for climate finance discussions, the lack of comprehensive and comparable data makes analyzing climate finance needs at the regional and subregional levels particularly challenging. Other studies have attempted to contribute to the literature, but they all encountered some limitations, including the **Needs of African Countries Related to Implementing the U.N. Framework Convention on Climate Change and the Paris Agreement** by the African Development Bank Group (AfDB 2021), the **Needs-Based Finance** project by the UNFCCC, and the **Net Zero Financing Roadmap** by Glasgow Financial Alliance for Net Zero (GFANZ 2021a).

The AfDB's 2021 report on the Needs of African Countries represents an attempt at the regional level to cover data gaps and inform international climate discussions. Referring to 2020-2030, it estimates needs for USD 715 billion mitigation, USD 259 to 407 billion adaptation, USD 307 to 353 billion dual benefits, and USD 289.2 to 440.5 billion loss and damage, making a total of USD 1.6 to 1.9 trillion. Similar to this brief, the AfDB defines climate finance need as the difference between the total cost of actions needed and national commitments and collects information from a wide range of regional reports including Africa's Ten-Year Strategy (TYS), AfDB Group's Climate Change Action Plan (CCAP), and the Africa NDC Hub Gap analysis report. Still, the report highlights likely underestimation due to data gaps and challenges, particularly in the context of adaptation and loss and damage. When the report was published in January 2021, most African countries had not yet made available quantitative needs assessments. Only 31 African NDCs contained quantitative data on mitigation and only 27 on adaptation. Moreover, many of the other reports analysed were not updated. The needs estimated in this brief (USD 2.5 trillion) are likely to be higher because this brief collects the latest data and covers more NDCs. In both cases, the main limitations concern the availability of information and the lack of a common format, which increase uncertainty and create comparability and completeness issues.

The Needs-Based Finance Project (UNFCCC 2021), using a similar approach to the one adopted in this brief, estimated needs until 2030 in the range of USD 198-853 billion for East Africa, and USD 294 billion in West Africa. This knowledge brief estimated a range of USD 727-881 billion and USD 243-268 billion for these regions respectively. As it aims to compare needs and mobilized resources at the country and subregional levels, it estimates climate finance needs by consulting national reports, such as NDCs, biennial update reports, national adaptation plans, national adaptation programs of action, national communications, technology needs assessments, technology action plans, and multilateral development bank country strategies, including those of the World Bank Group (WBG) and the African Development Bank (AfDB). To date, it has covered four subregions: South-East Asia (2022), Eastern Africa (2021), West Africa (2021), and Melanesia (2019), and two countries: Belize (2021), and Antigua and Barbuda (2020).

The needs-based finance East Africa project covers 10 different types of reports published between 1996 and 2020, while the West Africa project covers 12 types from 2003 to 2020. The main limitations of the needs-based finance study match the ones encountered in the preparation of this brief, plus additional concerns from aggregating numbers via different national reports. Indeed, because of the lack of a common format and harmonized definition of climate finance needs, it is particularly hard to aggregate estimates from different sources while avoiding double counting.

Lastly, the Net Zero Financing Roadmap estimates that Africa will need about USD 100 billion per annum from 2021 to 2025 and USD 200 billion per annum from 2026 to 2030 or will need about USD 1.5 trillion during the 2020-2030 period just for mitigation. With the aim of offering a global overview of future investment costs and possible financial sources, this project estimated the annual costs of decarbonization by main sectors and regions. The Roadmap's number is slightly lower than the estimate we provide in this brief, at USD 1.6 trillion. Unlike this brief, which follows a bottom-up approach of NDCs, the investment trajectory models adopted by GFANZ (2021a) implement a top-down analysis and gather information from the 'Sustainable Development Scenario' analysis conducted in the 2020 World Energy Outlook. Adjustments and assumptions were made to calculate investment flows in missing sectors and/or countries. Also, other resources were consulted to cover investment needs in the AFOLU sector as well as in the most vulnerable countries, mainly emerging market and developing economies (EMDEs) and small island developing states (SIDS). Although extremely informative, due to the global scope and the methodological approach adopted, the GFANZ (2021b) study does not allow for comparisons by subregion or subsector as findings are mostly presented as aggregates.

5. RECOMMENDATIONS TO DETERMINE NEEDS AND ACCELERATE CLIMATE ACTION IN AFRICA

The determination of climate finance needs represents an opportunity for developing economies to identify the cost of climate action and gaps between the resources countries can mobilize from national governments and remaining needs to be covered by international, subnational, and private resources. It can also be an opportunity to create better investment strategies to mobilize more public and private resources, as well as other actions that can improve the implementation of national policies. This is particularly relevant in the context of the NDCs, which specify the actions countries will implement to comply with the Convention and the Paris Agreement.

The determination of climate finance needs will also be helpful in international debates, such as the development of the new collective and quantified goal, and to assess the extent to which the financial flows mobilized internationally are able to cover needs identified at the national level. Eventually, this process will help assess compliance to Article 2.1c of the Paris Agreement.

However, the determination of climate finance needs brings some challenges at the national level, such as technical capacity, time investment, and complex coordination processes, that are not always easy to fulfill. Therefore, developing economies, particularly the least developed economies, require support from the international community to conduct robust processes to make these assessments.

COP 27 represents an opportunity to discuss how the international community can deliver more and better support to assess needs at the national level. These assessments, and the processes undertaken to conduct them, need to be as robust and participatory as possible.

AT THE INTERNATIONAL LEVEL

1. **The UNFCCC should develop guidance to support countries to determine and estimate their needs in a more comprehensive and robust way:** While international initiatives such as the ones mentioned in the Section 4 can be relevant to determine needs in the aggregate, these top-down exercises do not always reflect the reality at the national level. For this reason, it is important that the guidance comes from the UNFCCC, which provides universal mandates and generates common ground for developing economies, who will conduct these processes at the national level through a bottom-up approach.

   Developing economies have been following guidance provided by the UNFCCC to develop and submit their national reports, such as NDCs, national communications, biennial update reports, and others. However, none of this guidance offers details on how to determine and estimate climate finance needs. Further guidance for the determination of needs, as part of the Enhanced Transparency Framework agreed at COP26, would be a good opportunity to strengthen the determination and the estimation of needs in developing economies.

International framework guidance can be at two levels:

- Guidance for the estimation of needs for mitigation and adaptation actions, with estimates updated every two years. This could include specifications about the detail of information that needs to be provided in a tabular format, methods used, and underlying assumptions. It is important to consider differences in the determination of mitigation and adaptation needs, and activities that are not easy to quantify related to adaptation.
- Guidance related to processes to determine such needs, which could include multi-sector and multi-stakeholder coordination processes. These can be systematized to formulate best practices that can be shared with other countries to facilitate their analysis.

Guidance should consider that estimations of cost and needs of NDCs might change over time, depending on scenarios, capacities, social and economic variables, and other factors that may limit accuracy. However, these numbers will work as guidance for the mobilization of climate finance flows and ideally need to be updated at least every two years to increase levels of certainty.

2. **Financial and non-financial support is needed to support countries in the process of determining their needs, particularly adaptation needs:** The determination of needs is a time-consuming process, which requires the international community's support to be conducted in an inclusive and participatory way at the national level. Needs assessment is more robust and comprehensive when it includes both the perspective of governments, including at the subnational level, and non-governmental stakeholders, including local communities. There are relevant programs supporting processes to strengthen capacities related to climate finance, including the readiness program of the Green Climate Fund or other multilateral and bilateral mechanisms. The Adaptation Fund could play an important role in supporting countries to determine needs related to adaptation, developing National Adaptation Plans (NAPs), and using Adaptation Communications to report this information.

   The Needs-Based Finance project is another initiative promoted by the UNFCCC that aims to support countries to determine their needs and access financial mechanisms to cover such needs. A few countries have been selected per region, aiming to work at the regional level. This and other initiatives can benefit from further technical, financial, and capacity building support for implementation in other regions and countries.

3. **Collaboration and knowledge sharing between developing economies through south-south cooperation schemes could improve the determination of needs at the national level:** While more support is needed, some developing economies have shown progress in assessing their climate finance needs in terms of both format and disaggregation of information, including many African countries. These experiences can be shared with other countries within the region, as well as with other regions to improve how they estimate and provide information for both national and international processes. In the NDCs, some African countries have expressed a need for technical support to cost actions related to mitigation and adaptation. While resources from multilateral mechanisms can help, at the technical level, south-south collaboration could be more

effective given that countries with developing economies share similar challenges and experiences, which can be shared in regional and multi-regional workshops in the context of the UNFCCC.

Estimating needs is relevant for developing economies. However, the actual determination of the cost of action and the quantitative needs is as relevant as the process to determine those needs. In this context, learning from the processes that countries have been following to do these assessments will be helpful for others to understand the conditions needed to successfully determine needs in a more robust and representative way. So far, there is no evidence that the reports related to needs reflect the voice of local and vulnerable communities.

The Needs Assessment conducted by the UNFCCC Standing Committee on Finance has shown some of the processes followed in the context of developing economies that can be a reference for others, but several areas of improvement were identified:

AT THE NATIONAL LEVEL

1. **The determination of needs can be done through national investment plans related to NDCs, as well as through national strategies on climate finance related to national policies:** Determining the cost of climate action should be related to each country's national policies and plans for specific economic sectors, which should be the base for NDCs. Actions included in NDCs could be accompanied by investment plans, where countries determine how much can be covered by the domestic budget to implement unconditional measures (in monetary values) and how much finance is needed from other sources (such as private and international) to cover conditional actions.

   While the NDCs are vehicles to provide information related to needs, NDCs may not reflect all the needs at the national level. This is because these instruments present some priorities that countries have on a sector level, but do not necessarily list all actions and needs, including local needs. NDCs are a vital reference but not the complete picture of climate finance needs for each country. Furthermore, NDCs have a different periodicity from climate policies at the domestic level. For this reason, national strategies on climate finance may be a way to identify needs in each period, depending on governmental periods, or can be adapted in a biennial format. These strategies can include climate finance needs and potential pathways to fulfill those needs. NDCs and national policies should always be interlinked.

   Determining needs may have some limitations, and they will change over time, but identifying these numbers can guide donors and private investors towards priorities and needs at the national level. This can help identify and close financial gaps and guide key stakeholders such as finance ministers in the future.

   Needs in developing economies are also related to structural problems that countries are encountering. For instance, high debt, deep dependency on the production of fossil fuels to generate revenue, and other factors that impose structural challenges have to be quantified.

2. **Identification, understanding and estimation of needs requires the participation of a vast number of governmental and non-governmental stakeholders to reflect the reality at the national level, including local actors, vulnerable groups, and the private sector:** Most of the information related to needs included in the NDCs currently refers to needs identified by central governments, while climate action is a multi-level issue. Conducting national and subnational multi-stakeholder consultations to assess mitigation and adaptation needs might be a way to generate more accurate information about what is needed at the central and subnational levels, including cities. This process should also include vulnerable populations such as indigenous communities, women, youth, and other groups.

   These multi-stakeholder consultations will be particularly relevant in assessing adaptation needs, which are often related to local populations and communities at the territorial level. This is particularly relevant in the context of the African region, where sectors such as water and agriculture need the participation of local actors whose traditional knowledge has to be considered to determine needs. Furthermore, as the IPCC reported in 2022, cities will play a major role in climate action, and their needs can only be assessed at the local level.

   The role of the private sector will be critical since public resources cannot cover all needs. There are major investment opportunities for the private sector to invest in the low-carbon, climate-resilient economy. The determination of needs should consider the role of the private sector as partners and as potential donors and investors. Currently, NDCs in Africa do not fully reflect this strategic role, but future processes need to ensure the engagement of the private sector, having the public sector as a catalyser.

3. **Creating an enabling environment at the national level involves strengthening institutions, regulations, policies and transparency frameworks to improve the generation and reporting of data about climate finance, including needs:** Article 13 of the Paris Agreement aims to create an international transparency framework to enhance climate action. This transparency framework recognizes that the provision and openness of information will be critical to improving the decision-making process related to climate change. However, to enhance data at the international level, it is highly relevant to produce quality information at the national level.

   Countries must create information systems that include climate finance information such as finance received from international sources, allocation of public budgets to tackle climate change and information about needs per sector. This transparency framework can help track to what extent financial flows cover needs at the national level and better understand the impact of this climate finance. The consolidation of monitoring, reporting and verifying mechanisms on climate finance can be the base for national transparency frameworks underpinning national strategies on climate finance and investment plans. Some countries in Africa have already started to enable the environment at the regulatory, institutional, and financial levels, but further work needs to be done to ensure that the determination of needs improves the decision-making process nationally, contributing to international processes.

4. **The private sector will need to meet much of the financing gap, but NDCs rarely discuss its role.** Currently, most of the climate finance in Africa is from public actors (87%, USD

20 billion) with limited finance from private actors (CPI 2021). Public funding alone will not be sufficient, given the magnitude of investments needed, and current and future constraints on public domestic resources in Africa. Some private investment can come from shifting existing flows towards climate action, but public actors need to improve policy frameworks to enable the environment to reduce investment barriers, particularly for adaptation.

Public and private sector financial institutions invested at least USD 130 billion into fossil fuel companies and projects in Africa between 2016 and 2021 (Geuskens and Butijn 2022). In the transport sector, infrastructure commitments totaled USD 32.5 billion in Africa in 2018, but only USD 100 million of that was tracked as adaptation finance, suggesting that most finance to the sector is not climate-resilient (CPI 2021). Different types of investors can also be tapped. For example, African pension funds have USD 700 billion in assets under management, and sovereign wealth funds have USD 16.4 billion in assets under management (Soumaré 2020). Assets under management as a percentage of GDP for the five countries with the largest pension funds in Africa varies between 8.4% (Nigeria) and 84.6% (Namibia) (Irving 2020).

Africa can unlock further investment to contribute to the implementation of NDCs, but it is necessary to create the right enabling environment to achieve this. Investment barriers are typically context-specific but can include technology-specific barriers such as uncertainty with respect to performance; policy barriers such as uncertain permitting processes; investment environment barriers such as lack of liquid financial markets; and bankability barriers such as off-taker creditworthiness and high debt costs (see, for example, CPI 2021 and CPI 2018). These gaps are particularly relevant in the case of adaptation interventions, where far more investment is needed.

6. CONCLUSIONS

Nationally Determined Contributions (NDCs) provide information about adaptation and mitigation actions that countries will implement to achieve the goals of the Paris Agreement. NDCs also contain information about the means of implementation, including quantified climate finance costs. No country can finance the entire cost of its NDC with national government resources. Other sources of funding — from international sources, subnational sources, and the private sector — are needed to design and implement them. The additional financial support required is defined as "climate finance need".

Based on available data, this brief calculates climate finance needs in Africa to be USD 2.5 trillion during 2020-2030 (or ~USD250 billion per year), and the total cost of implementing NDCs to be USD 2.8 trillion for the same period. Countries stated that they will be able to cover about USD 264 billion with national government resources, reflecting efforts to allocate national government funding. However, this would not be enough to cover all costs.

This brief has shown the importance of disaggregating the costs in the NDCs. African countries and others with developing economies need further support to assess and report their adaptation and mitigation needs comprehensively. This involves identifying, estimating, and reporting needs based on a bottom-up approach conducted at the national level. It requires more effective methods to estimate and provide disaggregated information on what is required by project, sector, and subsector. Comprehensive disaggregated data will provide a fuller picture of the needs of the continent and how these are split across various sectors. This is vital to properly understand financing gaps and allocate funding more effectively.

The upcoming COP 27, to be held in Egypt, Africa, offers opportunities to work at the national, regional, and international level to improve the determination of needs and accelerate the implementation of NDCs. It is crucial to define better guidelines to determine and estimate climate finance needs and improve the quality of information reported at the global level. This will also help inform the new collective quantified goal on climate finance.

At the national level, the determination of needs can be translated into the design of investment plans through national strategies on climate finance that can accompany the NDCs to determine the cost of these measures. These processes can be collective spaces where local and national governmental and non-governmental stakeholders participate.

There is a significant gap in information from the private sector to determine needs and how they can be potential partners to cover them. While estimates of climate finance needs will vary over time, they help track progress, identify opportunities to close investment gaps and accelerate progress towards the goals of the Paris Agreement.

7. REFERENCES

AfDB. 2021. Needs of African Countries Related to Implementing the UN Framework Convention on Climate Change and the Paris Agreement. African Development Bank Group. Available at: https://unfccc.int/sites/default/files/resource/Needs%20Report_African%20counties_AfDB_FINAL.pdf

CPI. 2021. Global Landscape of Climate Finance 2021. Climate Policy Initiative. Available at: https://www.climatepolicyinitiative.org/wp-content/uploads/2021/10/Full-report-Global-Landscape-of-Climate-Finance-2021.pdf

CPI. Forthcoming (2022). The State of Climate Finance in Africa, Africa Landscape of Climate Finance Flows.

GFANZ. 2021a. Net Zero Financing Roadmaps. UN Climate Change Conference U.K. 2020. Available at: https://assets.bbhub.io/company/sites/63/2021/10/NZFRs-Key-Messages.pdf

GFANZ. 2021b. Net Zero Financing Roadmaps. Methodology. UN Climate Change Conference U.K. 2020. Available at: https://assets.bbhub.io/company/sites/63/2021/10/NZFRs-Methodology.pdf

Geuskens I (Milieudefensie), Butijn H (BankTrack). 2022. Locked out of a just transition: Fossil fuel financing in Africa. BankTrack, Milieudefensie, and Oil Change International. Available at: https://www.banktrack.org/download/locked_out_of_a_just_transition_fossil_fuel_financing_in_africa/07_md_banktrack_fossil_fuels_africa_rpt_hr_1.pdf

Gillingham K and Stock J. 2018. The Cost of Reducing Greenhouse Gas Emissions. Journal of Economic Perspectives. 32 (4): 53-72.

IFAD. 2019. Climate Action Report 2019. International Fund for Agricultural Development. Available at: https://www.ifad.org/documents/38714170/41461663/climate_action_report_2019.pdf

IPCC. 2022. Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press. Available at: https://www.ipcc.ch/report/ar6/wg2/

Irving J. 2020. How the COVID-19 crisis is impacting African pension fund approaches to portfolio management. International Finance Corporation. Available from: https://www.ifc.org/wps/wcm/connect/61e14b0d-b283-4f8f-8d17-4bce3f54d4a1/African+pension+funds_FINAL-10-9-20.pdf?MOD=AJPERES&CVID=nkeOGIJ

U.N. 2021. UN Operational Rates of Exchange. United Nations. Available at: https://treasury.un.org/operationalrates/OperationalRates.php

UNEP. 2016. Adaptation Gap Report 2016. United Nations Environment Program. Available at: https://www.ifad.org/documents/38714170/41461663/climate_action_report_2019.pdf

UNFCCC. 2015-2022. Adaptation Communications (AC). Available at: https://unfccc.int/topics/adaptation-and-resilience/workstreams/adaptation-communications

UNFCCC. 2015-2022. Biennial Update Reports (BUR). Available at: https://unfccc.int/BURs

UNFCCC. 2015-2022. Long-Term Strategies (LTSs). Available at: https://unfccc.int/process/the-paris-agreement/long-term-strategies

UNFCCC. 2015-2022. National Adaptation Plans (NAPs). Available at: https://www4.unfccc.int/sites/NAPC/Pages/national-adaptation-plans.aspx

UNFCCC. 2015-2022. National Communication (NC) submissions from Non-Annex Parties. Available at: https://unfccc.int/non-annex-I-NCs

UNFCCC. 2015-2022. Nationally Determined Contributions (NDCs). Available at: https://unfccc.int/NDCREG

UNFCCC. 2021. Needs-Based Finance Project. Available at: https://unfccc.int/NBF_Project

UNFCCC Standing Committee on Finance. 2021. First report on the determination of the needs of developing country Parties related to implementing the Convention and the Paris Agreement. Bonn, Germany. Available at: https://unfccc.int/sites/default/files/resource/54307_2%20-%20UNFCCC%20First%20NDR%20technical%20report%20-%20web%20%28004%29.pdf#page=96

World Bank. 2022. GDP (current $). Available at: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?end=2020&name_desc=false&start=2020

ANNEX I. REGIONAL CLASSIFICATION

Region	Country	NDC
Northern Africa	Algeria	NDC1 (2016)
	Egypt	NDC1 (2017)
	Libya	
	Morocco	Updated NDC1 (2021)
	Tunisia	Updated NDC1 (2021)
Western Africa	Benin	Updated NDC1 (2021)
	Burkina Faso	Updated NDC1 (2021)
	Cabo Verde	Updated NDC1 (2021)
	Cote d'Ivoire	NDC1 (2016)
	Gambia	NDC2 (2021)
	Ghana	Updated NDC1 (2021)
	Guinea	Updated NDC1 (2021)
	Guinea-Bissau	Updated NDC1 (2021)
	Liberia	Updated NDC1 (2021)
	Mali	Updated NDC1 (2021)
	Mauritania	Updated NDC1 (2021)
	Niger	Updated NDC1 (2021)
	Nigeria	Updated NDC1 (2021)
	Senegal	NDC1 (2020)
	Sierra Leone	Updated NDC1 (2021)
	Togo	Updated NDC1 (2021)

Region	Country	NDC
Central Africa	Angola	Updated NDC1 (2021)
	Cameroon	Updated NDC1 (2021)
	Central African Republic (CAR)	Updated NDC1 (2021)
	Chad	Updated NDC1 (2021)
	Congo, Democratic Republic	Updated NDC1 (2021)
	Congo, Rep	Updated NDC1 (2021)
	Equatorial Guinea	NDC1 (2018)
	Gabon	NDC1 (2016)
	Sao Tome and Principe	Updated NDC1 (2021)
Eastern Africa	Burundi	Updated NDC1 (2021)
	Comoros	Updated NDC1 (2021)
	Djibouti	NDC1 (2016)
	Eritrea	NDC1 (2018)
	Ethiopia	Updated NDC1 (2021)
	Kenya	Updated NDC1 (2021)
	Madagascar	NDC1 (2016)
	Malawi	Updated NDC1 (2021)
	Mauritius	Updated NDC1 (2021)
	Mozambique	Updated NDC1 (2021)
	Rwanda	Updated NDC1 (2020)
	Seychelles	Updated NDC1 (2021)
	Somalia	Updated NDC1 (2021)
	South Sudan	NDC2 (2021)
	Sudan	Updated NDC1 (2021)
	Tanzania	Updated NDC1 (2021)
	Uganda	NDC1 (2016)
	Zambia	Updated NDC1 (2021)
	Zimbabwe	Updated NDC1 (2021)
Southern Africa	Botswana	NDC1 (2016)
	Eswatini	Updated NDC1 (2021)
	Lesotho	NDC1 (2018)
	Namibia	Updated NDC1 (2021)
	South Africa	Updated NDC1 (2021)

ANNEX II. GLOSSARY

Climate finance: The recommended operational definition of the UNFCCC Standing Committee on Finance states: "Climate finance aims at reducing emissions and enhancing sinks of greenhouse gases and aims at reducing vulnerability of, and maintaining and increasing the resilience of, human and ecological systems to negative climate change impacts."

- **Climate finance cost**: total financial investment required to support the implementation of NDCs. This includes the unconditional, i.e., what can be financed through national resources, and conditional investments, i.e., what must come from other (public and private) financial resources.
- **Climate finance need**: refers to the conditional part of the cost, that is, to the part of the investment that a country is not able to finance with its resources and for which it requires support.

Mitigation finance: resources directed to activities:

- contributing to reducing or avoiding GHG emissions, including gases regulated by the Montreal Protocol; or
- maintaining or enhancing GHG sinks and reservoirs.

Adaptation finance: resources directed to activities aimed at reducing the vulnerability of human or natural systems to the impacts of climate change and climate-related risks, by maintaining or increasing adaptive capacity and resilience.

Dual benefits finance: resources directed to activities contributing to both "climate change mitigation" and "climate change adaptation" and meeting the respective criteria for each category.

Domestic finance: refers to climate finance that is raised and spent within the same country.

International finance: refers to climate finance flows that are raised in one country but spent in another. Climate finance from multilateral development financial institutions is categorized as international.

Private climate finance: in which the nature of financing is determined by the actors undertaking a given transaction. Examples of private investors are corporations, households (family-level economic entities), and commercial financial institutions (for example, providers of private debt capital and other instruments) including commercial and investment banks.

Public climate finance: includes Development Finance Institutions (DFIs), as well as Governments and their agencies.

ANNEX III. ANALYTICAL FRAMEWORK (BASED ON THE NEEDS REPORT OF THE UNFCCC)

Item	Description
Source	NDCs (and other national reports including biennial update Reports (BURs), national communications (NCs), national adaptation plans (NAPs), long-term strategies (LTSs), and adaptation communications (ACs)) published since 2016
Year of Submission	Year of submission of the report
Country	Country name
Region	Africa
Subregion	Subregion grouping according to World Bank classification
LDC group	LDC, Non-LDC
SIDS group	SIDS, non-SIDS
Thematic area	Mitigation, Adaptation, Loss and Damage, Dual Benefits, Unspecified
Sector	Adaptation agriculture Adaptation coastal zone Adaptation crosscutting Adaptation disaster prevention and preparedness Adaptation ecosystem and biodiversity Adaptation forestry Adaptation health Adaptation infrastructure and building Adaptation other Adaptation tourism Adaptation water Adaptation risk/vulnerability assessment Unspecified Crosscutting Loss and damage Mitigation building and infrastructure Mitigation crosscutting Mitigation energy Mitigation forestry Mitigation GHG inventory Mitigation land use Mitigation other Mitigation transportation Mitigation waste and sanitation Mitigation agriculture Mitigation industry

Item	Description
Subsector	Adaptation agriculture – crop diversification/resistant crops Adaptation agriculture – fisheries and aquaculture Adaptation agriculture – irrigation Adaptation agriculture – land and soil management Adaptation agriculture – agroforestry Adaptation agriculture – livestock Adaptation agriculture – rural development Adaptation agriculture – water conservation Adaptation coastal zone – early warning at coastal areas Adaptation crosscutting Adaptation disaster prevention and preparedness – household resilience Adaptation disaster prevention and preparedness – public sector resilience Adaptation ecosystem and biodiversity – natural resource management Adaptation ecosystem and biodiversity – coastal and marine ecosystem Adaptation ecosystem and biodiversity – high land ecosystems Adaptation ecosystem and biodiversity – wetland ecosystems Adaptation ecosystem and biodiversity – restoration Adaptation forestry – sustainable forest management Adaptation health – health and supply network Adaptation health – extreme temperature Adaptation health – medical staff capacity Adaptation infrastructure and building – resilient housing Adaptation other Adaptation tourism Adaptation water – water irrigation Adaptation water – water distribution infrastructure (clean water recycling waste) Adaptation water – water harvesting Adaptation risk/vulnerability assessment Crosscutting general Crosscutting institutional arrangement Crosscutting monitoring and evaluation and learning Crosscutting reporting Loss and damage Unspecified Mitigation building and infrastructure Mitigation crosscutting Mitigation energy – energy efficiency Mitigation energy – renewable energy Mitigation forestry - protected areas Mitigation forestry - rural communities Mitigation forestry - agroforestry Mitigation forestry - reforestation Mitigation forestry - wetland ecosystems Mitigation forestry – research Mitigation GHG inventory Mitigation land use - livestock Mitigation other Mitigation transportation – land transport Mitigation transportation – sea transport Mitigation waste and sanitation – landfill Mitigation waste and sanitation – waste management Mitigation agriculture - soil management Mitigation agriculture - irrigation Mitigation agriculture – rural development Mitigation agriculture – urban/alternative agriculture Mitigation industry
Cost of the action / project in billion USD	The nominal cost of climate actions/projects expressed in USD billion. National currency has been converted following the U.N. operational rates of exchange https://treasury.un.org/operationalrates/OperationalRates.php The cost of the action/project refer to the total amount needed to implement the action/project. It includes both what will be financed nationally and what will be need from international support. It covers all thematic areas: mitigation, adaptation, crosscutting and loss and damage.

Item	Description
Cost of the action / project in national currency	The nominal cost of climate action expressed in national currency
Climate finance received from international sources (in billion USD)	the nominal amount received or expected to be covered by international government and non-government support expressed in USD billion
Climate finance allocated at the national level (public) (in billion USD)	The nominal amount covered or to be covered by national efforts in billion USD. This is often described as the unconditional part of the cost.
Time frame	<5 years 5–10 years > 10 years Unspecified
Time scale	Before 2020 2020-2030 Beyond 2030
Climate finance needed (in billion USD)	The nominal amount of financial needs expressed in USD billion. This is often described as the conditional part of the cost as it refers to the amount of financial resources that would be needed from international support to implement the project/action.
Description of needs	the description of projects/actions to be financed
Time frame	<5 years 5–10 years > 10 years Unspecified
Time scale	Before 2020 2020-2030 Beyond 2030
Aggregate/Specific value	Aggregate, Specific value to avoid double counting. Specific values are subcategory of aggregates
Method used to determine financial needs (name)	Estimation method (top-down), Project-list method (bottom-up), other, unspecified
Method used to determine financial needs (description	Description of the method used to estimate costs and needs
Underlying assumptions	Further assumptions and comments on the estimations

ANNEX IV. SELECTION OF BEST PRACTICES

Country	Quantitative information about climate finance in NDCs	Needs assessment detailed / desegregated (in reports submitted to the UNFCCC, including NDCs)	Other climate finance information (in reports submitted to the UNFCCC)	Information about methods used to determine needs	Subregion
Togo (updated NDC, 2021)	✓	✓	✓	✓	Western Africa
Burkina Faso (updated NDC, 2021)	✓	✓	✓	✓	Western Africa
Morocco (updated NDC, 2021)	✓	✓	✓	✓	Northern Africa
Tunisia (updated NDC, 2021)	✓	✓		✓	Northern Africa
Burundi (updated NDC, 2021)	✓	✓		✓	Eastern Africa
South Sudan (NDC2, 2021)	✓	✓		✓	Eastern Africa
Mauritius (updated NDC, 2021)			✓		Southern Africa
South Africa (updated NDC, 2021)			✓		Southern Africa
Namibia (updated NDC, 2021)	✓	✓		✓	Southern Africa
Malawi (updated NDC, 2021)	✓	✓		✓	Southern Africa
Angola (updated NDC, 2021)	✓	✓		✓	Central Africa
Democratic Republic of the Congo (updated NDC, 2021)	✓	✓	✓	✓	Central Africa

NDC registry available at https://unfccc.int/NDCREG

ANNEX V. COUNTRY-LEVEL DATA (USD BILLION)

Country	Cost of	% Total (Cost)	Cost average per year	Climate finance needed	% Total (Needs)	Need average per year	GDP	Needs as %GDP
Algeria	NA	NA	NA	NA	NA	NA	145.0	0%
Angola	210.4	7%	21.0	92.4	4%	9.2	58.4	16%
Benin	11.2	0%	1.1	4.9	0%	0.5	15.7	3%
Botswana	18.4	1%	1.8	18.4	1%	1.8	15.1	12%
Burkina Faso	1.4	0%	0.1	0.8	0%	0.1	17.9	0%
Burundi	5.1	0%	0.5	4.7	0%	0.5	2.8	17%
Cabo Verde	2.3	0%	0.2	2.3	0%	0.2	1.7	13%
Cameroon	57.6	2%	5.8	57.6	2%	5.8	40.8	14%
Central African Republic (CAR)	1.8	0%	0.2	1.5	0%	0.1	2.4	6%
Chad	21.3	1%	2.1	18.0	1%	1.8	10.8	17%
Comoros	6.0	0%	0.6	1.5	0%	0.1	1.2	12%
Congo, Democratic Republic	48.7	2%	4.9	47.7	2%	4.8	3.4	141%
Congo, Rep	8.2	0%	0.8	7.1	0%	0.7	10.2	7%
Cote d'Ivoire	2.1	0%	0.2	1.8	0%	0.2	61.3	0%
Djibouti	50.0	2%	5.0	10.0	0%	1.0	48.7	2%
Egypt	73.0	3%	7.3	73.0	3%	7.3	365.3	2%
Equatorial Guinea	3.9	0%	0.4	3.9	0%	0.4	10.0	4%
Eritrea	11.2	0%	1.1	10.1	0%	1.0	2.1	49%
Eswatini	1.5	0%	0.2	1.5	0%	0.2	4.0	4%
Ethiopia	316.0	11%	31.6	252.8	10%	25.3	107.6	23%
Gabon	NA	NA	NA	NA	NA	NA	15.3	0%
Gambia	0.3	0%	0.0	0.3	0%	0.0	1.9	2%
Ghana	21.8	1%	2.2	15.5	1%	1.6	68.5	2%
Guinea	15.7	1%	1.6	15.7	1%	1.6	15.7	10%
Guinea-Bissau	0.7	0%	0.1	0.6	0%	0.1	1.4	4%

Country	Cost of	% Total (Cost)	Cost average per year	Climate finance needed	% Total (Needs)	Need average per year	GDP	Needs as %GDP
Kenya	61.7	2%	6.2	53.5	2%	5.4	101.0	5%
Lesotho	0.6	0%	0.1	0.3	0%	0.0	1.9	2%
Liberia	0.0	0%	0.0	0.0	0%	0.0	3.2	0%
Libya	NA	NA	NA	NA	NA	NA	3.2	0%
Madagascar	42.1	2%	4.2	40.4	2%	4.0	13.1	31%
Malawi	14.3	1%	1.4	9.4	0%	0.9	12.2	8%
Mali	14.9	1%	1.5	14.9	1%	1.5	17.5	9%
Mauritania	48.2	2%	4.8	46.4	2%	4.6	7.9	59%
Mauritius	7.4	0%	0.7	4.2	0%	0.4	10.9	4%
Morocco	78.8	3%	7.9	61.5	3%	6.2	114.7	5%
Mozambique	32.5	1%	3.3	32.5	1%	3.3	14.0	23%
Namibia	6.8	0%	0.7	4.5	0%	0.4	10.6	4%
Niger	9.9	0%	1.0	7.3	0%	0.7	13.7	5%
Nigeria	177.0	6%	17.7	177.0	7%	17.7	432.3	3%
Rwanda	16.7	1%	1.7	10.6	0%	1.1	10.3	10%
Sao Tome and Principe	0.2	0%	0.0	0.2	0%	0.0	0.5	3%
Senegal	13.2	0%	1.3	8.4	0%	0.8	24.6	3%
Seychelle	6.7	0%	0.7	6.7	0%	0.7	1.1	63%
Sierra Leone	2.8	0%	0.3	2.8	0%	0.3	4.1	7%
Somalia	55.5	2%	5.5	55.5	2%	5.5	7.0	80%
South Africa	1070.7	38%	107.1	1066.7	43%	106.7	335.4	32%
South Sudan	107.9	4%	10.8	100.8	4%	10.1	12.0	84%
Sudan	14.4	1%	1.4	14.4	1%	1.4	21.3	7%
Tanzania	72.6	3%	7.3	72.6	3%	7.3	62.4	12%
Togo	6.9	0%	0.7	4.6	0%	0.5	7.6	6%
Tunisia	19.4	1%	1.9	15.0	1%	1.5	41.6	4%
Uganda	7.0	0%	0.7	7.0	0%	0.7	37.6	2%
Zambia	48.8	2%	4.9	35.0	1%	3.5	18.1	19%
Zimbabwe	4.8	0%	0.5	4.8	0%	0.5	18.1	3%
Grand Total	**2770.3**	**100%**	**277.0**	**2439.0**	**100%**	**243.9**	**2221.6**	

ANNEX VI. NEEDS ASSESSMENT: METHODOLOGY

To date, there is no agreed methodology on how to estimate climate finance needs. As a result, the following table represents an attempt to group methodologies adopted by African countries in their NDCs. The presented classification is based not only on the way climate finance needs are estimated, but it also refers to how information is collected and presented.

Methodology	Description	Main Assumptions	Best Practices
Goal-based estimation method	Goal-based estimation methods make inferences on what would be the cost of meeting a particular goal in a certain period based on assumptions on future economic and mitigation scenarios. Accordingly, these methods estimate general costs that then can be disaggregated by sector and subsectors depending on assumptions made on the mitigation share per each emitting sector.	Future emissions and economic trends are highly uncertain. Scenarios are based on technological changes, social development, and future policies. The IPCC provides information on different mitigation scenarios that should be considered for climate economics. The United Nations Environment Program (UNEP) published the Low Emissions Development Strategy describing a Greenhouse Gas Abatement Cost Model (GACMO).	South Africa (NDC1, 2016); Togo (updated NDC, 2021)
Project-list estimation method	Project-list estimation methods assign costs per project in a given moment of time (year or multi-year basis), and then calculates the overall values by adding up the costs of individual projects. Projects are selected until the national climate goal is achieved. As a result, these methods present granular information and share details on specific actions.	Cost-Benefit-Analysis (CBA) is used to prioritize one project or set of projects over another. Different guidelines and tools can be used depending on the sector under evaluation. The IEA estimates Marginal Abatement Cost curves per selected policies and energy subsectors. FAO provides the EXACT tool to conduct environmental assessments for the AFOLU sector.	Burkina Faso (updated NDC, 2021); Namibia (updated NDC, 2021)
Mixed: goal-based and project-list estimation methods	Goal-based and project-list estimation methods calculates and prioritizes costs depending on different information and assumptions. Therefore, these methods are not mutually exclusive.	Costs can be estimated using one of the other approaches depending on the available information; or same costs can be estimated using both approaches to verify consistency of results.	South Sudan (NDC2, 2021); Tunisia (updated NDC, 2021)

ANNEX VII. EXISTING LITERATURE (SUMMARY TABLE)

Title	Author	Method used	Key findings	Comments
Global Assessments				
1st NDR	(UNFCCC Standing Committee on Finance 2021)	**Bottom-up** from national reports and party submissions.	USD 8.9 trillion 2020-2030 (needs in Non-Annex I countries), of which **USD 2.5 trillion 2020-2030 in Africa.**	Not limited to climate finance **needs**. It assesses all means of implementation. Focus just on **Non-Annex I countries.**
Climate Action Report 2019	(IFAD 2019)	**Bottom-up** from NDCs.	90% of NDCs refer to agricultural sectors, but are highly heterogeneous, both in quality and detail. East and Southern Africa (ESA) and Near East, North Africa and Europe (NEN) countries **prioritize adaptation over mitigation measures.**	**Qualitative** assessment only. Focus on **agriculture sector.**
Adaptation Gap Report 2016	(UNEP 2016)	**Top-down** estimates and information from sectoral and regional studies.	The costs of adaptation could range from US$140 billion to US$300 billion by 2030, and between US$280 billion and US$500 billion by 2050. The study concluded that (i) the East Asia and Pacific region is likely to bear the highest overall costs, but the **sub-Saharan Africa region would bear the highest costs per unit of gross domestic product (GDP).**	Focus on **adaptation costs only.** Ch. 2: The Cost of Adaptation
Net Zero Financing Roadmaps	(GFANZ 2021a)	**Top-down** estimates and information from sectoral and regional studies.	USD 2.6 trillion annually 2021-2025, of which **Africa represents USD 0.1 trillion annually.** USD 3.8 trillion annually 2026-2030, of which Africa **represents USD 0.2 trillion annually.**	Decarbonization investment **costs**. Focus on **mitigation only.**
Global Landscape on Climate Finance 2021	(CPI 2021)	**Top-down** estimates and information from sectoral and regional studies.	USD 4.5 – 5 trillion annually.	Climate finance investment **costs**.

Title	Author	Method used	Key findings	Comments
Regional Assessments				
NBF project	(UNFCCC ongoing)	**Bottom-up** from national reports and party submissions.	It estimates needs until 2030 in the range of **USD 198-853 billion for East Africa,** and of **USD 294 billion in West Africa.**	Ways and means to assist developing country Parties in assessing their **climate finance needs** and priorities.
Needs of African Countries Related to Implementing the U.N. Framework Convention on Climate Change and the Paris Agreement	(AfDB 2021)	**Bottom-up** from a wide range of regional reports including Africa's Ten-Year Strategy (TYS), AfDB Group's Climate Change Action Plan (CCAP), Africa NDC Hub Gap.	2020-2030, USD 715 billion mitigation, USD 259 to 407 billion adaptation, USD 307 to 353 billion dual benefits, USD 289.2 to 440.5 billion loss and damage, **that is about USD 1.6 to 1.9 trillion total.**	Focus on Africa as a region and aims at covering data gaps and informing the international climate discussions.
National Assessments				
National reports (NDCs, BURs, NCs, etc)	National governments	**No harmonized methodology.** Countries follow project-list or goal-based methods depending on national capacities and technical expertise.		COP 26 approved a new workstream: the Enhanced Transparency Framework with the aim of guiding needs assessments. Countries will be required to submit the Biennial Transparency Report (BTR).

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