

# Mind the gap:

## An estimate of climate finance needs by developing countries to fund their NDC commitments





# Acknowledgements

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# Mind the NDC gap

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Anyone who has ever gotten off a train on the London Underground will be familiar with the phrase 'mind the gap'. These cautionary words are intended to alert passengers to the potential dangers lying in wait for them should they transition onto the platform without paying due care and attention.

Though the transition to net zero will be far more complex than simply stepping out onto a platform, it is still helpful to know how far we need to jump in order to land safely.

Those who know me well know I love data, systems and mathematics. It is only by analysing real-world data that we can model, estimate and plan. The fog starts to clear, and we can see a way through.

That being said, no-one should have any doubts as to what is at stake as we tackle the greatest challenge of our time: the climate crisis. As readers will know all too well, this is a crisis that knows no borders. The environmental, social and economic consequences on developing countries are already apparent, making it all the more imperative that state and non-state actors across the world bear the collective responsibility for ensuring a just transition.

This report makes a vital contribution in assessing the scale of the climate finance needed for developing countries to meet their Paris Agreement commitments. As the report highlights, in this decade alone, the aggregate cost for the 126 developing countries that have submitted Nationally Determined Contributions (NDCs) could be as high as \$13.6 trillion, a quite staggering number.

The funding requirement will not be achieved without a coherent financing plan or by national governments alone.

As such, the report is aligned to our call for the reform of the global financial system to ensure capital flows are aligned with the temperature and development goals envisioned by Article 2.1c of the Paris Agreement.

In turn, it aligns with our continued call for the creation of an International Platform for Climate Finance<sup>1</sup> to support countries in financing their commitments, providing technical assistance to establish investable capital-raising plans and creating a forum through which private investment appetite can be matched with the financing need of developing countries.

I hope the findings of this report inspire key stakeholders, from governments to regulators, and from financial institutions to industry groups, to take urgent action. We cannot allow the NDC gap to widen any further.

**Mark Versey**

*CEO, Aviva Investors*

If we are to deliver on the ambitions of the Paris Agreement and limit global warming to no more than 1.5°C by 2050, we must make significant headway in decarbonising the global economy and cutting emissions before the end of this decade.

One area we need to focus our efforts on is mobilising finance at scale to lower- and middle-income countries to fund their climate-aware, resilient development. Much of this financing will need to come from non-state actors, including the financial institutions within the Glasgow Financial Alliance for Net Zero. To shift finance to align with the temperature and development goals of the Paris Agreement, it is critical to understand the scale of the needs that require investment.

This report makes an important contribution to understanding those needs, assessing the investment requirements implied by 126 developing country Nationally Determined Contributions and the suitability of plans that support those to attract finance from the private sector. To meet the challenges of funding Paris-aligned development across the world, we need to promote consistent, comparable plans to finance climate mitigation but also resilience and adaptation.

I welcome this report for shining a spotlight on the collective challenges we face and hope we can draw on these insights to work together to find solutions with the urgency required.

**Nigel Topping**

*UK High Level Champion for Climate Action, COP2*

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1. 'Aviva Investors proposes revisions to International Financial Architecture to achieve sustainable transition', Aviva Investors, April 22, 2021.



# Executive summary

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*“Mind the Gap: An estimate of climate finance needs by developing countries to fund their NDC commitments”* provides a comprehensive overview and analysis of the costs of climate change mitigation and adaptation commitments under the Paris Agreement for 126 developing countries which submitted Nationally Determined Contributions (NDCs) as of September 15, 2021. This report provides insights about the gaps and underlying reasons behind them, the challenges facing developing countries in producing adequate estimates of their actual NDC cost and financing needs, and it also provides policy and institutional recommendations to close these gaps.

Based on the investigation conducted in this report, in order to achieve their commitments under the Paris Agreement for the period 2020-2030, the aggregate financing need of the NDCs of 126 countries as of September 15, 2021 is estimated at a range of US\$7.8-13.6 trillion. These include conditional and unconditional commitments by national governments. In interpreting these estimates, it should be noted that not all countries have submitted NDCs – even among those submitted, not all countries reported costing estimates, categorisation differs among countries, and estimates by each country may need to be updated as new facts become uncovered. It is especially important to note that, while some NDCs were constructed based on concrete pipelines of projects and costing estimates, many were built thematically around sectoral targets. This may reflect a lack of resources and technical skills on the ground among the government entities and project developers responsible for designing the projects and policies needed to achieve the country’s NDC commitments.

The natural follow-up step to developing an NDC document is to create an investment plan for capital mobilisation and implementation of the NDC. A harmonised approach and standardised methodology would need to be established so countries can follow the same processes, and measure and report impact. Further, standardisation of investment plans would facilitate capital mobilisation by governments from the private sector globally and may create scale for large investors willing to use wholesale approaches in certain regions where assets are not divisible. The fact that many NDCs do not provide information on pipeline of concrete projects also indicates the challenges which lies ahead at the country level. In many countries, development of credible pipelines of projects may require a significant technical assistance to help address these issues and accelerate the implementation of NDC-aligned activities. Given the gaps and barriers highlighted in this report, technical assistance specifically tailored to specific developing country needs with regards to the NDC implementation will be also crucial in reaching the targets and implementing a system of global support and partnership.

Resource mobilisation strategies will involve both public and private finance, as well as blended finance to leverage scarce public resources more effectively and help mobilise private capital. The nature of project pipelines under the NDCs indicate that some assets and projects could be funded by the private sector if adequately structured, while many others would require public sector funding, including financial assistance by developed countries and development finance institutions (DFIs). Lots of pledges were made by developed countries during COP26 to finance climate-related projects in developing countries and these are being channeled in a blended finance fashion alongside private sector sources (where the public finance is used to de-risk projects). However, collaboration between financial market participants, non-financial sector developers and operators to develop zero-emission, climate-resilient infrastructure and projects with governments remain a challenge to overcome in order to mobilise funding for NDC implementation. The modalities and venues of such collaboration are ambiguous and yet to be defined and put in place.

# 1. Introduction

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The objective of this report is to gain better understanding of the financial costs for developing countries to meet climate change mitigation and adaptation commitments under the 2015 Paris Climate Agreement. The assessment covers a substantial part of middle- and low-income countries, many of which have recently revised their Nationally Determined Contributions (NDCs) with more ambitious mitigation and adaptation targets ahead of COP26.

Furthermore, it supports the work of the Coalition for an International Platform for Climate Finance (IPCF), convened by Aviva Investors which brings the private sector's perspective – financial institutions, private and institutional investors, think tanks, and industry practitioners – with the aim of identifying optimum and synergetic ways to mobilise funding for mitigation and adaptation from public and private sources (including concessional and blended sources) and unlock investment opportunities in a holistic and integrated manner across the globe. This report confirms some of the barriers identified in the white paper released by IPCF<sup>2</sup>, including: (i) the lack of practical details in the NDC documents of countries, (ii) capacity constraints, (iii) extreme complexity of process and landscape of actors and processes, and insufficient expertise in certain cases, and (iv) lack of inclusion of financial institutions at sufficient scale.

Separately, the “Country Platforms Action Plan” by Mr. Mark Carney<sup>3</sup> highlighted a range of barriers and issues to be tackled in order to reach the scale of investment to achieve net zero consistent with 1.5 degrees, which was estimated in the report at US\$100-150 trillion over the next three decades, of which two thirds is required in emerging and developing countries. The Action Plan also highlighted a number of longstanding issues, including unfavorable domestic policy environments, blended finance instruments that are too small in scale and capable of mobilising only limited private capital, and the lack of viable pipeline of projects to serve long-term decarbonisation strategies. The “Climate Action Pathways” in the Marrakesh Partnership for Global Climate Action<sup>4</sup> proposed to align top-down and bottom-up approaches, whereas regulators send a strong signal to markets in support of a net-zero emissions and financial and fiscal incentives support regulators’ signal. The above referenced papers explicitly point out to the eminent need to address the current gaps and to explore new venues and larger scale efficient windows to channel capital to emerging and developing countries. The Paris Agreement’s 2030 milestone is a critical one that has concrete targets and political engagement and commitment by governments; and all support in this direction will enable action beyond 2050.

This report provides results of extensive research and database building work based on the NDC Registry of the UNFCCC. The Registry continues to receive updated NDC documents by countries. The need for a database that can be updated is critical to track the global needs for capital; it also provides insights as to the nature of the underlying assets constituting the NDCs; i.e. capital needs for the forestry sector globally, and also by region, the capital needs for agriculture adaptation action, climate resilient infrastructure capital requirements by region, country, and category of country, and so on.

This study comes at a critical juncture in the international movement to avert the most severe impacts of climate change: parties to the Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC) are expected to update and increase the ambition of their Nationally Determined Contributions on five-year cycles, the first of which concluded in 2020, and biennially<sup>5</sup> as claimed in COP26, starting 2022 onward (and noting the request in the Glasgow Climate Pact that Parties revisit and strengthen their Nationally Determined Contributions as necessary to align with the Paris Agreement temperature goal by the end of 2022).

As of 15 November 2021, a total of 151 countries (124 countries plus the 27 EU member states) have published updated NDCs, which collectively chart the international community's efforts to limit global average temperature increases to well below two degrees Celsius, covering the next five-year cycle and beyond. Therefore, estimates of the financial capital, technical assistance, and other forms of support that

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2. Steve Waygood, ‘Harnessing the international financial architecture to deliver a smooth and just transition: Sustainable finance proposals for the G7 & G20’, Aviva Investors, April 22, 2021.

3. Mark Carney, ‘Country platforms action plan’, Bloomberg, November 3, 2021.

4. ‘Finance - climate action pathway’, United Nations Climate Change, 2022.

5. In the new biennial transparency report, Parties will provide information on their national greenhouse gas emissions and removals, progress in implementing and achieving NDCs, financial resources, technology development and transfer as well as capacity building provided and received. See ‘COP26 outcomes: Transparency and reporting’, United Nations Climate Change, 2022.



developing countries need to fight climate change will help global leaders and decision makers steer such resources to the countries and initiatives that need them most.

Several previous studies have attempted to estimate the investment needed globally to achieve developing countries' climate change mitigation and adaptation commitments under the Paris Agreement. In 2021, the UNFCCC Standing Committee on Finance published the "First report on the determination of the needs of developing country Parties related to implementing the Convention and the Paris Agreement", which found that, of the NDCs submitted by 153 parties to the Paris Agreement as of 31 May 2021, 78 NDCs included cost estimates of activities totaling US\$5.82-5.89 trillion of investment needed by 2030. Due to inconsistencies in how these costs are reported in NDCs, that report does not provide a breakdown of investment required by sector. It is important to note these aggregated cost estimates are likely a significant undercount of actual global climate finance needs, given that they are drawn from the NDCs of just 78 out of the 197 parties to the UNFCCC, many of which submitted updated NDCs including more ambitious mitigation and adaptation targets in the weeks leading up to COP26 in late 2021.

This study aims to expand upon the findings of previous studies in several important ways; it delves into climate change adaptation finance needs in more granularity, which generally lags behind mitigation in terms of resource mobilisation and perceived importance. After COP26, High-Level Champions Nigel Topping and Gonzalo Muñoz highlighted this, saying:

*"The Glasgow Climate Pact has also called for doubling adaptation finance and acknowledged the importance of addressing loss and damage, an initial step forward for the most climate-vulnerable communities."*<sup>6</sup>

The primary sources of data for this report are the NDC documents of countries as registered on the UNFCCC NDC Registry. Secondary sources of data, such as National Adaptation Plans, National Communications, and sectoral policies were also consulted in cases where countries did not provide climate finance requirements estimates in their NDCs.

In contrast with other studies, this study also aims to quantify mitigation and adaptation investment needs by sector. Furthermore, a series of direct consultations were conducted with the government ministries and other organisations responsible for NDC development to gain a deeper understanding of the challenges and technical assistance needs that national governments faced when producing their NDCs and to assess the overall accuracy of the climate finance needs estimates included.

It is worth noting that while this report provides analysis and insights of the NDC costs for developing countries and within the 2020-2030 Paris Agreement time frame, whereas other studies provide insights from a global perspective (i.e., for both developed and developing countries) on net-zero targets (i.e., mitigation only). This suggests even greater climate finance flows will be needed to avoid the worst impacts of climate change. Most notable is the "Financing Roadmaps" published by the Glasgow Financial Alliance for Net Zero (GFANZ), which finds that over US\$125 trillion of investment<sup>7</sup> is required globally (by both developed and developing countries) to transform our economy and avoid the worst physical impacts of climate change by 2050, of which US\$32 trillion is needed for the period over 2021-2030, in six key sectors: electricity, transport, buildings, industry, AFOLU (agriculture, forestry and other land uses), and low emission fuels to finance the low-carbon energy transition globally and keep the world on track to achieve net-zero emissions by 2050<sup>8</sup>. Furthermore, based on GFANZ estimates, McKinsey Sustainability runs a few scenarios where it projects the financial need to attain net zero by 2050 to be as high as US\$275 trillion off spending on physical assets or US\$9.2 trillion per year.<sup>9</sup>

This report consists of six sections: (i) "Setting the scene" to provide background information with reference to the pool of countries surveyed under this assessment and other terminology to establish a common understanding; (ii) "Challenges" to provide the reader with insights on the complexity of this endeavor and the need to read it in a nuanced manner, and "Caveats" to manage expectations of the reader given the imperfect universe and reality of the NDCs; (iii) "an overview of developing countries' NDCs landscape" to gain a deeper understanding of the global portfolio composition of the NDCs in terms of regions, countries' income level, sectors and industries, and mitigation versus adaptation with the view of reflecting on sources of financing to be mobilized; (iv) "an estimate of developing countries NDCs' financing need, with a range of possibilities"; (v) "the NDCs implementation by developing countries – challenges, barriers and needs" which reports on consultations with 12 developing countries; and last (vi) "conclusions".

6. Gonzalo Muñoz and Nigel Topping, 'A COP26 message from the champions on a Glasgow pact for 1.5', Race to Resilience, November 14, 2021.

7. Investment refers to direct capital.

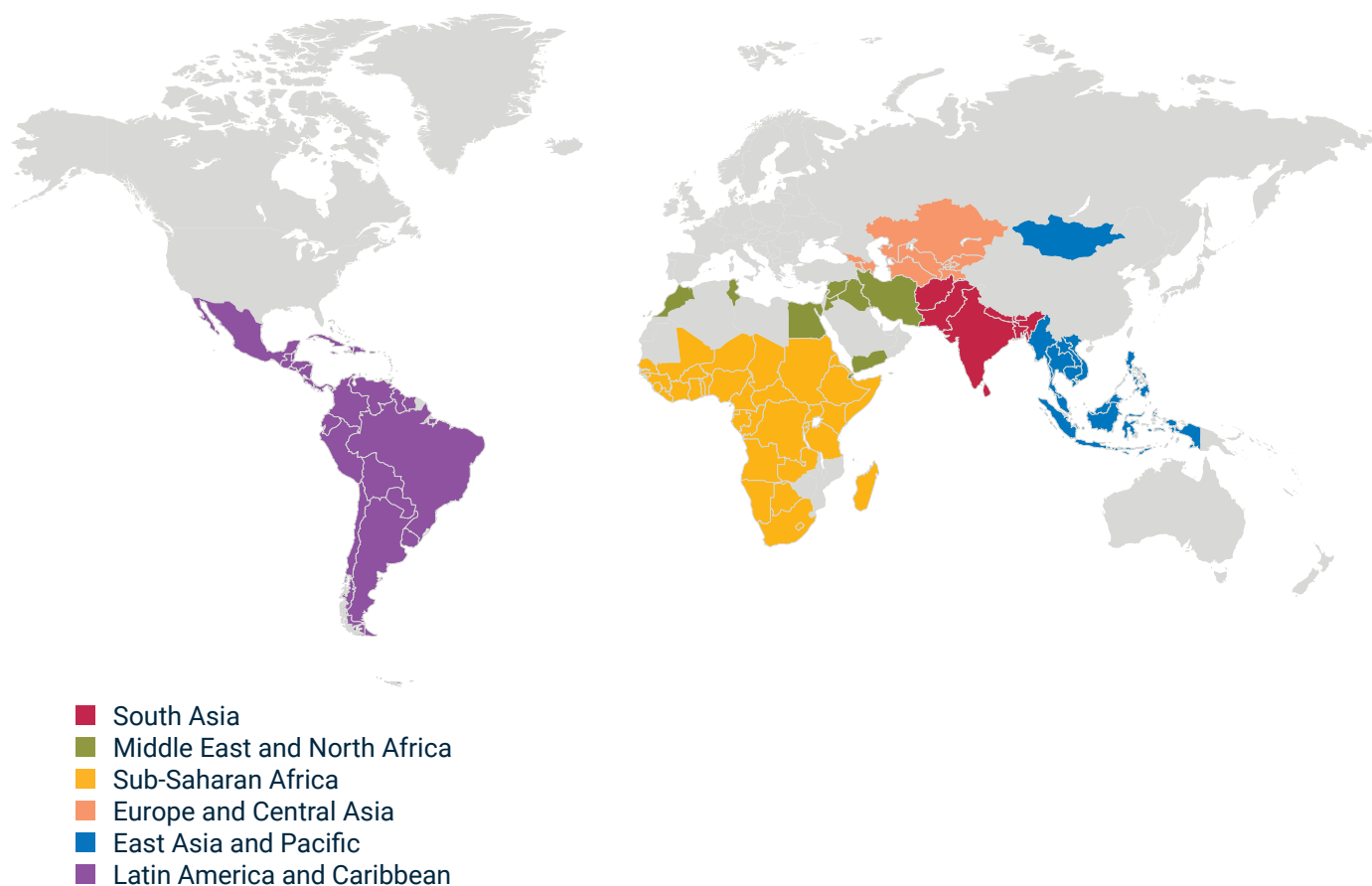
8. 'Our progress and plan towards a net-zero global economy', Glasgow Financial Alliance for Net Zero, November 2021.

9. Mekala Kris, et al., 'The economic transformation: What would change in the net-zero transition', McKinsey Sustainability, January 25, 2022.

## 2. Setting the scene – sources and parameters

The primary source of information is the NDC document of each of the 126 developing countries surveyed under this project, which the official source is the UNFCCC NDC Registry. Secondary sources were investigated, including most importantly the National Adaptation Plans (NAP) and National Communications by countries to complement and cross-check information. In addition, a literature review of previous NDC related research and analysis was also carried out, of which the majority was conducted right after the Paris Agreement.

**Figure 1. Countries analysed by region**



Another important source of information was numerous consultations conducted with national governments of a pool of developing countries. These consultations were focused on two aspects: (i) to investigate to what extent the NDC financial cost/need by countries as recorded in the NDC document is accurate and reflects the actual need, (ii) to assess what were the challenges facing countries in developing the NDC document in terms of mitigation and adaptation scope and particularly the associated cost of GHG reduction and climate adaptation.

**Table 1. Pool of NDC documents - six regions and 126 countries were surveyed**

Region	Countries Analysed
<b>East Asia and Pacific</b>	Cambodia; Cook Islands; Fiji; Indonesia; Kiribati; Lao People's Democratic Republic; Malaysia; Marshall Islands; Micronesia; Mongolia; Myanmar; Nauru; Niue; Palau; Philippines; Samoa; Thailand; Timor Leste; Tonga; Tuvalu; Vanuatu; Vietnam
<b>Europe and Central Asia</b>	Armenia; Azerbaijan; Georgia; Kazakhstan; Kyrgyzstan; Tajikistan; Turkmenistan; Uzbekistan
<b>Latin America and Caribbean</b>	Antigua and Barbuda; Argentina; Bahamas; Barbados; Belize; Bolivia; Brazil; Chile; Colombia; Costa Rica; Cuba; Dominica; Dominican Republic; Ecuador; El Salvador; Grenada; Guatemala; Guyana; Haiti; Honduras; Jamaica; Mexico; Nicaragua; Panama; Paraguay; Peru; Saint Kitts and Nevis; Saint Lucia; Saint Vincent and the Grenadines; Suriname; Trinidad and Tobago; Uruguay; Venezuela
<b>Middle East and North Africa</b>	Djibouti; Egypt; Iran; Iraq; Jordan; Lebanon; Morocco; Palestine; Syria; Tunisia; Yemen
<b>South Asia</b>	Afghanistan; Bangladesh; Bhutan; India; Maldives; Nepal; Pakistan; Sri Lanka
<b>Sub-Saharan Africa</b>	Angola; Benin; Botswana; Burkina Faso; Burundi; Cabo Verde; Cameroon; Central African Republic; Chad; Comoros; Republic of Congo; Côte D'Ivoire; Democratic Republic of Congo; Equatorial Guinea; Eritrea; Ethiopia; Gabon; Ghana; Guinea; Guinea Bissau; Kenya; Lesotho; Liberia; Madagascar; Mali; Mauritania; Mauritius; Namibia; Niger; Nigeria; Rwanda; São Tomé and Príncipe; Senegal; Seychelles; Sierra Leone; Somalia; South Africa; South Sudan; Sudan; Tanzania; Togo; Uganda; Zambia; Zimbabwe

Classification of sectors under adaptation and mitigation followed the Green Climate Fund's Results Framework as most developing countries are now following the same. Countries used numerous names and titles for similar sectors, requiring consolidation of activities and cost estimates within the GCF categorisation.

**Table 2. Sectoral categorisation**

Climate change action	Sector
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>- Energy generation</li> <li>- Transport</li> <li>- Industry and mining (IPPU)</li> <li>- Waste management</li> <li>- Agriculture and fisheries</li> <li>- Forests and land use</li> </ul>
<b>Adaptation</b>	<ul style="list-style-type: none"> <li>- Agriculture and fisheries</li> <li>- Forests and land use</li> <li>- Infrastructure and built environment</li> <li>- Health</li> <li>- Water</li> <li>- Oceans and coastal zones</li> <li>- Disaster risk management</li> </ul>

## 3. Challenges and caveats

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### 3.1 Challenges

#### 1. *Lack of harmonised methodology and a formal format for the NDC documents*

- NDC documents produced by developing countries used inconsistent methods.
- Some sort of technical assistance was provided to countries in producing their NDC documents from third-party independent consultants hired by UN agencies; there was no consistency in approaches.

#### 2. *Reference year – First NDC, updated/revised NDC dates*

- Some countries produced NDC documents in 2015-2016 for the period 2016 – 2030. Other countries produced a first or a second NDC document with a time horizon 2020/21 to 2030. A third category of countries produced NDC documents with a time horizon expanding beyond 2030.

#### 3. *Timeframe of NDC implementation*

- Given the variances in the reference year, cost of implementation of the NDC reflects a range of timeframes for implementation: 2015/2016 to 2030, 2020/21 to 2030, and a few countries 2020/21 to 2040 and beyond.

#### 4. *Cost of NDC implementation*

- Some countries produced detailed costing of their NDC document and included a sector specific pipeline of projects under each commitment in mitigation and adaptation.
- Some countries included a cost per sector for mitigation and per domain of activity for adaptation without an underlying pipeline of projects.
- Some countries accounted for a global cost to implement their mitigation and/or adaptation commitments without sectoral targets and a breakdown.
- Some countries have not provided any financial cost estimate in their NDC documents.

#### 5. *Funding allocation to mitigation, adaptation, and cross-cutting activities*

- Some countries included commitments to mitigation and/or adaptation, and cross-cutting areas. Some countries bundled all their commitments in cross-cutting areas for lack of precision and definition of projects.
- Some countries recorded cost of mitigation action per sector on annual basis without determining an expiration date. Others indicated the total cost of actions between the reference year and 2030, which was the approach that the majority of countries used.

#### 6. *Classification per sector under mitigation and adaptation*

- Review of NDCs of the 126 countries revealed that countries have used a wide range of names for sectors and industry categories, which required in-depth examination and a consolidation of sectors and sub-sectors in line with the Green Climate Fund definitions. Sectors' categories were also established under mitigation, adaptation, and cross-cutting areas.

## 3.2 Caveats

- With support from the NDC Partnership, the team of consultants held consultations with representatives of 14 countries across Asia, Africa and Latin America – the timing of consultations coincided with COP26, which made it difficult to secure more consultations. The feedback from consultations with governments' officials combined with insights shared informally by other sources evidenced a consistent set of the same challenges and capacity gaps among developing countries, as explained at length in Section 6 hereafter.
- The research covered 126 developing countries, of which 20 countries did not report a cost in relation to their NDC commitments, including some large emerging markets such as Mexico, Argentina, and Malaysia. Other large upper-middle income countries such as Turkey had not submitted an NDC to the UNFCCC Registry at the time the analysis was conducted, as well as China and the Russian Federation, which proved difficult to investigate due to a pervasive lack of climate finance data from official and accessible translated sources. Hence, we could assume that in order to achieve the Paris Agreement goals set for 2030, the outcome of our investigation presents an under-estimate of the actual need for climate finance by developing countries.
- Most of the countries reported a cost based on a best guess at the time of developing their NDC documents. Some countries built a pipeline of projects associated with each NDC commitment whether in mitigation, adaptation, or in cross-cutting areas. Other countries have run estimates on aggregate levels and sector by sector basis hence the accuracy of such estimates is questionable and most probably undervalued based on feedback from consultations with national governments.
- Countries who submitted a revised NDC document, have increased the cost associated with their commitments by 10 to 30 per cent. By the time the NDC review and research phase of the project closed in mid-October 2021, only 126 countries (63 per cent of parties) had submitted their revised document.

NDC document to the UNFCCC. As of 15 November 2021, 151 countries had updated their NDCs according to the [ClimateWatch NDC Enhancement Tracker](#), and new submissions continue to be received.

- NDC implementation time frames: The implementation time frames of the NDCs analysed for this study vary from country to country. As Table 3 shows, the vast majority of countries in the database (104) specify 2030 as the end date for the implementation of the mitigation, adaptation, and cross-cutting activities in their NDCs, while eleven countries have selected implementation end dates that vary by activity or extend to 2035, 2040, or even 2050. In addition, countries generally report climate finance needs as totals by target, cost type, or activity, rather than specifying how the costs associated with NDC commitments will be distributed from year to year within the implementation time period. Thus, it is difficult to specify a single global timeframe during which all the costs identified in this study will be realised. Nonetheless, Table 3 shows that over US\$5.7 trillion (74 per cent) of these total costs correspond to countries with NDC implementation timeframes ending in 2030 or before.

## 4. Overview of developing countries' NDCs cost

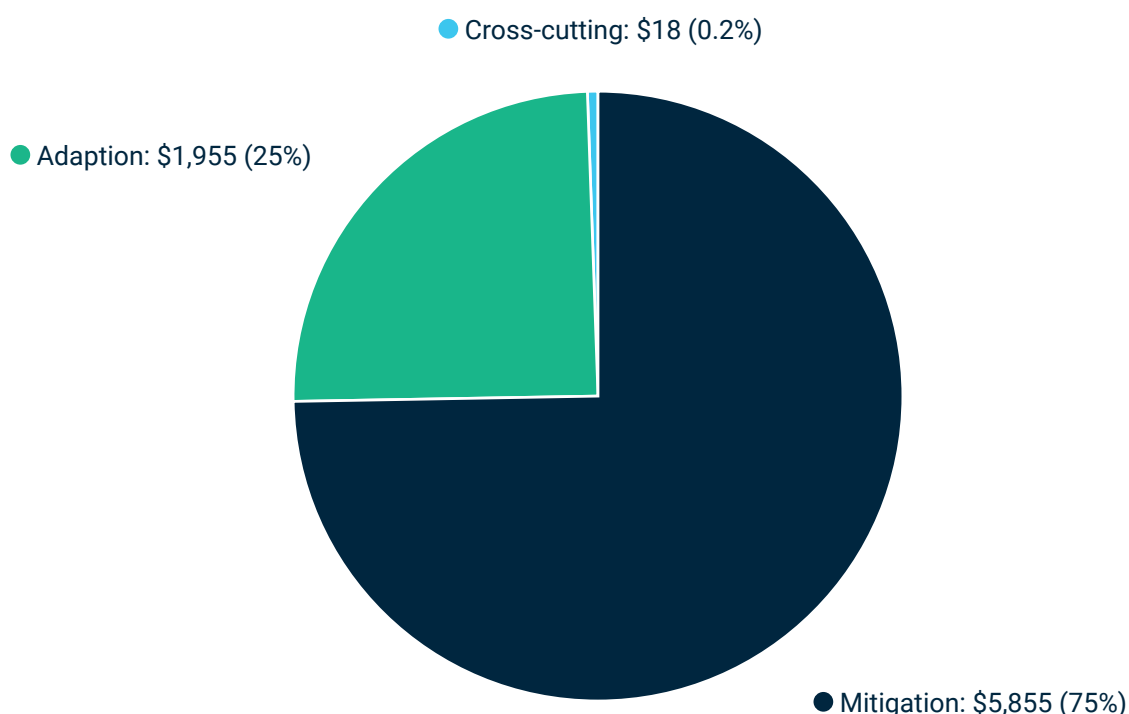
### 4.1 Global view

Based on the climate finance needs data compiled during the desk review, our analysis finds that a total of **US\$7,827 billion** is the level of implied needs by the current NDCs to fund mitigation, adaptation, and cross-cutting activities identified for the 126 countries included in the study.

This total is comprised of the following sub-totals per cost type:

- **US\$5,855 billion** (74.9 per cent of total) for mitigation
- **US\$1,955 billion** (24.9 per cent of total) for adaptation
- **US\$18 billion** (0.2 per cent of total) for activities with cross-cutting impacts

**Figure 2. Total climate finance needs identified by cost type (US\$ billions)**



**Table 3. Climate finance needs identified by countries' NDC implementation period end date**

NDC implementation period end date	No. of NDCs analysed	Total climate finance needs identified (US\$ billions)	% of total
2025	11	53	0.7%
2030	104	5,711	73.0%
2035	1	2	0.0%
2040	1	15	0.2%
2050	5	1,904	24.3%
Not specified/multiple time frames	4	142	1.8%
<b>Total</b>	<b>126</b>	<b>7,827</b>	<b>100%</b>

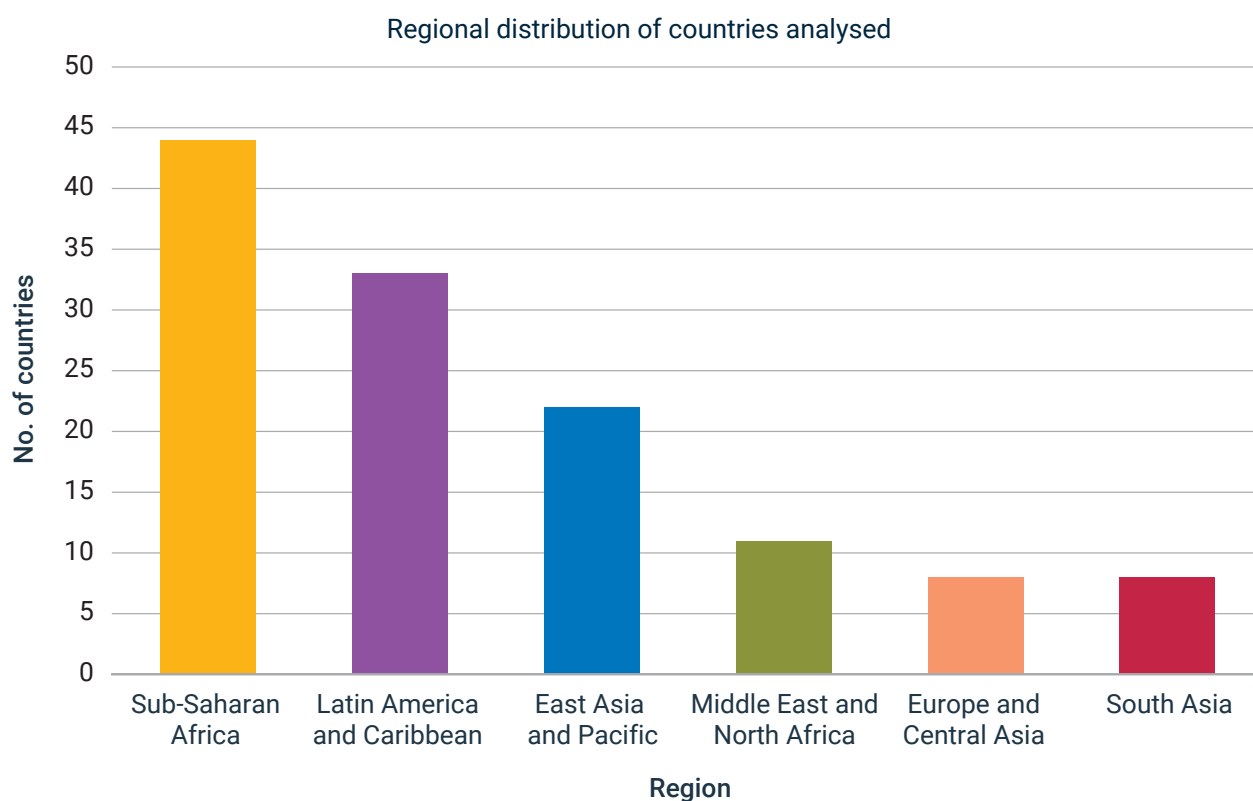


The following sections of this report describe the breakdown of the total climate finance needs identified by region, income level, and cost type for the pool of countries analysed.

## 4.2. Regional landscape

As indicated in Section 2 above, a pool of 126 countries from six regions formed the basis of the investigation and analysis of this report. The survey covered 44 countries from Sub-Saharan Africa, 33 countries from Latin America and the Caribbean, 22 countries from East Asia and the Pacific, 11 countries from the Middle East and North Africa, eight countries from Europe and Central Asia, and eight countries from South Asia.

**Figure 3. Regional distribution of countries included in NDC database**



Only 106 out of surveyed 126 countries reported a cost of their respective NDC and the financial needs. The following sections of this report describe the breakdown of the total climate finance needs identified by region, income level, and cost type for the 126 countries analysed.

**Table 4. Total climate finance needs identified by region**

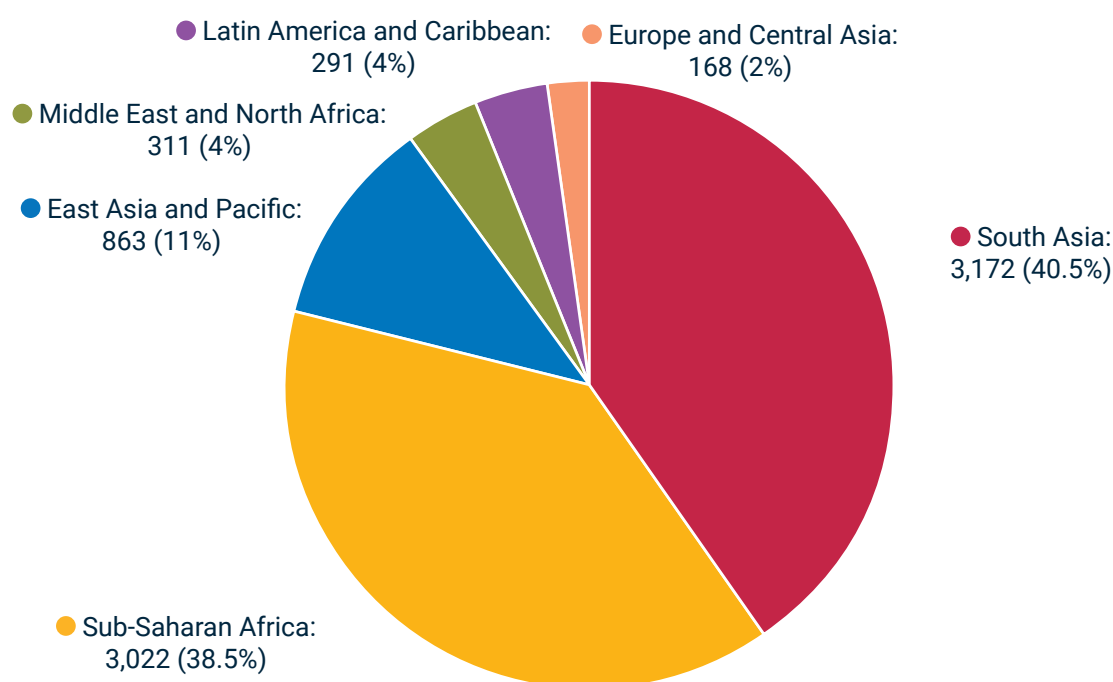
Region	Countries analysed	Countries with data available	Climate finance needs identified (US\$ billions)
South Asia	8	8	3,172
Sub-Saharan Africa	44	43	3,022
East Asia and Pacific	22	20	863
Middle East and North Africa	11	8	311
Latin America and Caribbean	33	20	291
Europe and Central Asia	8	7	168
<b>Total</b>	<b>126</b>	<b>106</b>	<b>7,827</b>

Table 4 and Figure 3 provide an overview of total climate finance needs identified per region. South Asia and Sub-Saharan Africa account for US\$3.172 trillion (41 per cent) and US\$3.022 trillion (39 per cent) of the total climate finance needs identified.

South Asia region has the largest share of climate finance needs and this is driven by India's US\$2.24 trillion NDC cost (US\$1.77 trillion for mitigation, US\$477 billion for adaptation). Bangladesh, another middle-income South Asian country on a rapid development trajectory, accounts for US\$231 billion (US\$189 billion for mitigation, US\$42 billion for adaptation, and US\$ 500 million in cross-cutting areas).

The high regional total for Sub-Saharan Africa is likely due to a combination of factors; 20 of the 44 Sub-Saharan African countries are low income countries (See Table 5), which could signal a higher need of funding for a wide range of climate-related projects and sustainable development across the region. In addition, 23 of the remaining 24 countries analysed are middle income countries, where hard-to-abate sectors such as oil and gas and mining remain important economic drivers in the region.

**Figure 4. Total climate finance needs identified by region (US\$ billions)**



**Table 5. Climate finance needs compared to GDP**

Region	Climate finance needs identified (US\$ billions)	2020 GDP of countries with climate finance needs identified (US\$ billions)	Ratio of climate finance needs to 2020 GDP per region
South Asia	3,172	3,386	94%
Sub-Saharan Africa	3,022	1,665	182%
East Asia and Pacific	863	1,839	47%
Middle East and North Africa	311	809	38%
Latin America and Caribbean	291	2,419	12%
Europe and Central Asia	168	321	52%

Table 5 further examines the differences in climate finance need per region by comparing the region's quantum needed relative to its economy, as a proxy for capacity to pay. It illustrates that the need from the Sub-Saharan Africa and South Asia regions is substantially higher in relative terms to their GDP than in the other regions. This could indicate a difficulty for Sub-Saharan Africa and South Asia to fund their NDCs. Latin America and the Caribbean's low climate finance needs is due to numerous countries' NDC being reported without costs.

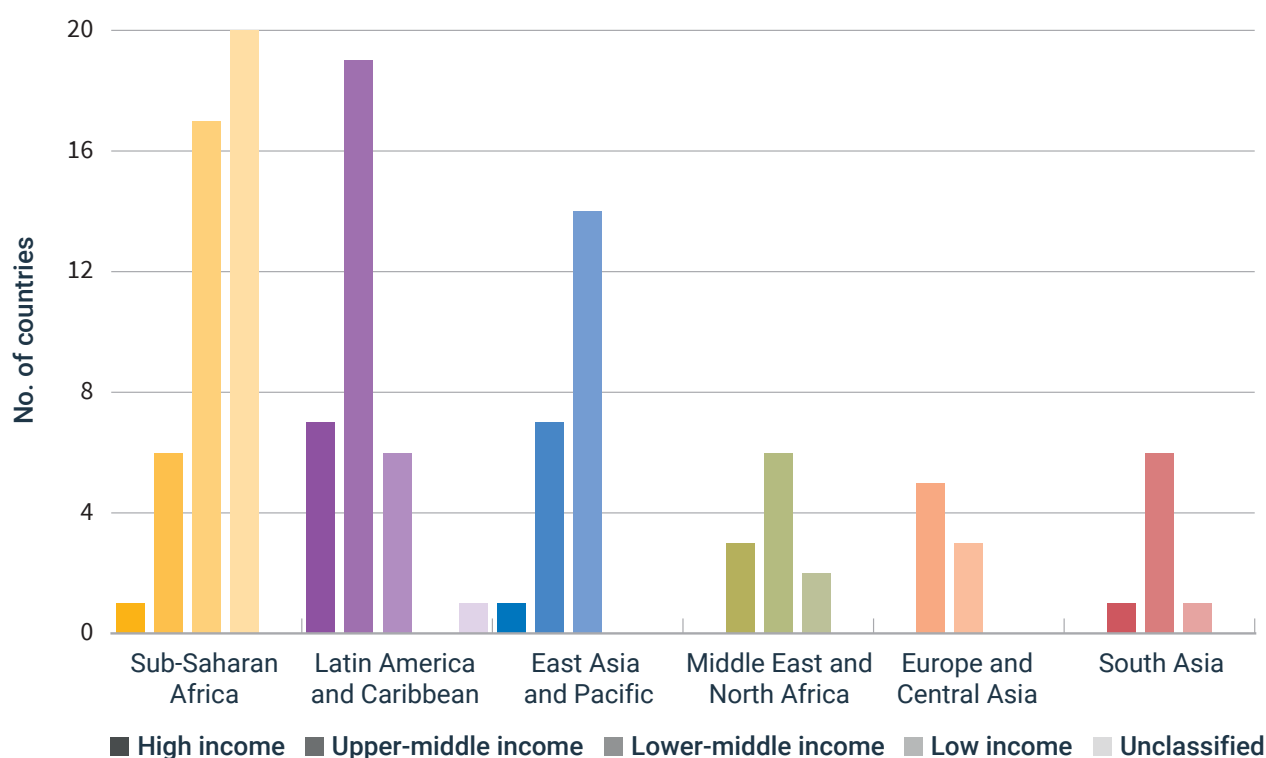
### 4.3 NDCs global financing needs viewed by countries' income level

Of the 126 countries, there were nine high-income countries, 41 middle-income countries, and 23 low-income countries. At the regional level, Latin America and the Caribbean accounts for the greatest number of high and upper-middle income countries, while 37 of the 44 countries analysed for the Sub-Saharan Africa region are classified as low or lower-middle income. Figure 5 illustrates the distribution of countries analysed by region and income level.

**Table 6. Income level distribution of countries included in NDC database**

Region	High income	Upper-middle income	Lower-middle income	Low income	Unclassified	Total
Sub-Saharan Africa	1	6	94%	17	20	44
Latin America and Caribbean	7	19	182%	6	-	33
East Asia and Pacific	1	7	47%	14	-	22
Middle East and North Africa	-	3	38%	6	2	11
Europe and Central Asia	-	5	12%	3	-	8
South Asia	-	1	52%	6	1	8
<b>Total</b>	<b>9</b>	<b>41</b>	<b>52</b>	<b>23</b>	<b>1</b>	<b>126</b>
% of total	7.1%	32.5%	41.3%	18.3%	0.8%	100%

**Figure 5. Distribution of countries analysed by region and income level**



Sub-Saharan Africa accounts for the greatest number of countries analysed with 44, followed by Latin America and the Caribbean (33) and East Asia and Pacific (22). In total, the pool of countries analysed is comprised of 7.1 per cent high-income countries, 73.8 per cent middle-income countries, and 18.3 per cent low-income countries. At the regional level, Latin America and the Caribbean accounts for the greatest number of high and upper-middle income countries, while 37 of the 44 countries analysed for the Sub-Saharan Africa region are classified as low or lower-middle income. Figure 5 above illustrates the distribution of countries analysed by region and income level.

Of the 126 countries analysed, 106 (84 per cent) provided an estimate of the costs or climate finance needs associated with some or all of their mitigation, adaptation, or cross-cutting activities in the resources consulted during this study. As Table 6 shows, 96 (76 per cent) countries provided the costs associated with climate change mitigation activities, while 91 (72 per cent) and 24 (19 per cent) countries recorded the cost of their adaptation and cross-cutting activities, respectively.

**Table 7. Countries with climate finance needs identified by region and cost type**

Region	Countries analysed	Countries with mitigation costs identified	Countries with adaptation costs identified	Countries with cross-cutting costs identified	Countries with climate finance needs identified (Any cost type)
Sub-Saharan Africa	44	41	37	12	43
East Asia and Pacific	22	18	19	1	20
Latin America and Caribbean	33	16	11	2	20
Middle East and North Africa	11	8	8	4	8
South Asia	8	8	8	3	8
Europe and Central Asia	8	5	8	2	7
<b>Total</b>	<b>126</b>	<b>96</b>	<b>91</b>	<b>24</b>	<b>106</b>
<i>% of total</i>	<i>100%</i>	<i>76%</i>	<i>72%</i>	<i>19%</i>	<i>84%</i>

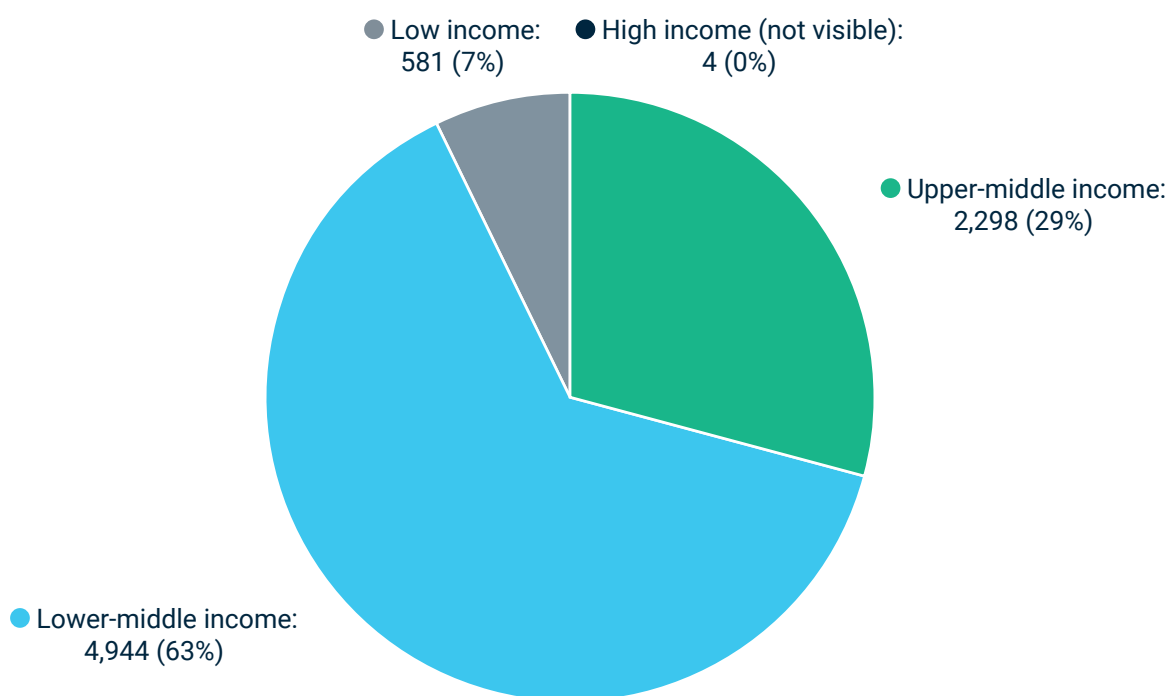
An overview of the distribution of climate finance needs by country income level demonstrates that 49 lower-middle income countries reported the highest total for climate finance needs of any income group at over US\$4.94 trillion, more than double the total for upper-middle income countries (US\$2.29 trillion). Together, the 93 middle income countries included in this study account for approximately US\$7.2 trillion (93 per cent) of the total climate finance needs identified.

**Table 8. Total climate finance needs identified by income level**

Income level	Countries analysed	Countries with climate finance needs data available	Total climate finance needs identified (US\$ billions)
High income	9	4	4
Upper-middle income	41	31	2,298
Lower-middle income	52	49	4,945
Low income	23	22	581
Unclassified	1	N/A	N/A
<b>Total</b>	<b>126</b>	<b>106</b>	<b>7,827</b>

In interpreting the distribution of climate financing needs by country income level, it should be noted that lower-middle income countries account for 52 (41.3 per cent) of the 126 countries in the database, the most of any income level. Also, while 49 of these 52 (94 per cent) lower-middle income countries had climate finance needs estimates available according to our analysis; by comparison, just 31 of 41 (76 per cent) of upper middle-income countries had climate finance needs information available.<sup>10</sup> In addition, lower-income countries accounted for 17 and 6 of the countries analysed for the Sub-Saharan Africa and South Asia regions, respectively. Given that these two regions collectively account for over US\$6.1 trillion (79 per cent) of the US\$7.8 trillion in total climate finance needs identified during this study, it is logical that middle income countries in these regions are among those with the highest financing needs at the national level.

**Figure 6. Total climate finance needs identified by country income level (US\$ billions)**



#### 4.4 NDCs' financing needs repartitioned between mitigation and adaptation

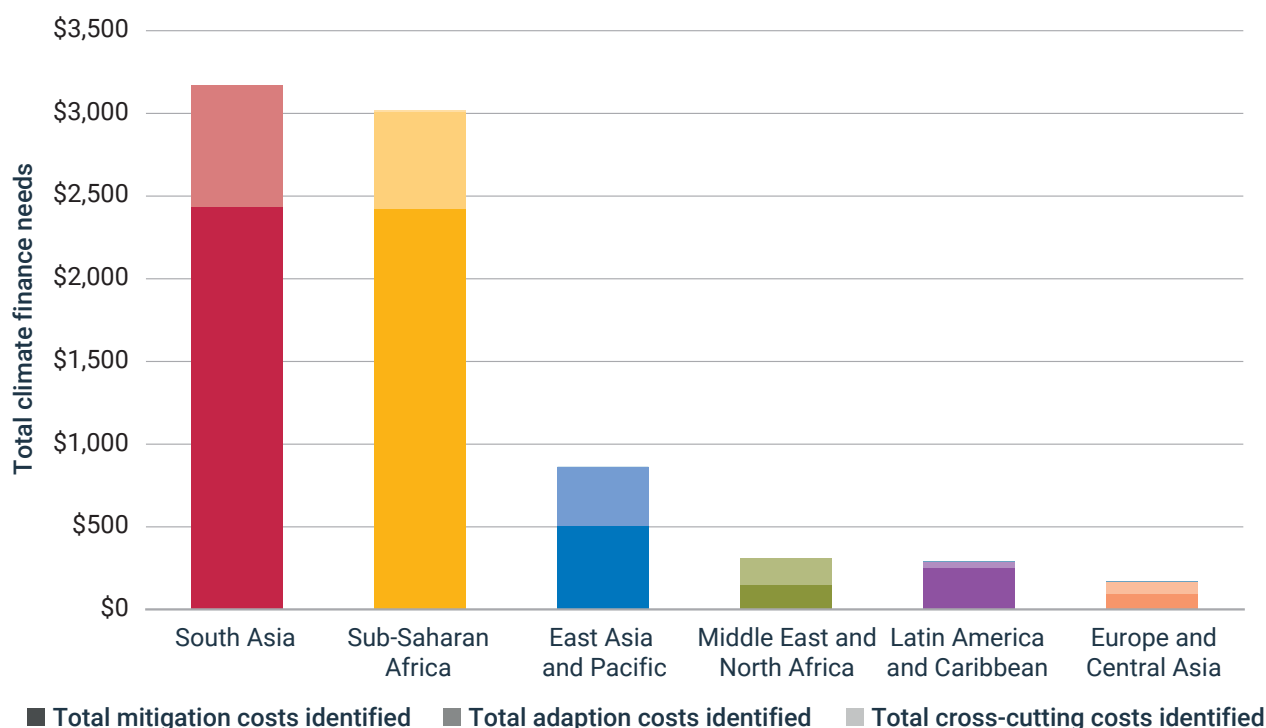
Table 8 and Figure 7 provide an overview of total climate finance needs identified by region and cost type (i.e., mitigation, adaptation, cross-cutting). Our analysis finds that the total climate finance needs associated with mitigation (US\$5.85 trillion) are nearly three times greater than those associated with adaptation (US\$1.95 trillion), with South Asia and Sub-Saharan Africa accounting for the highest regional totals for all mitigation and adaptation costs identified.

10. It is rather paradoxical that 49 out of 52 (94%) of the lower-middle income countries provided information on climate finance needs while only 31 out of 41 (76%) of the upper-middle income countries did so. Typically, the higher the income level, the stronger the institutional capacities to produce such estimates. Further study on this phenomenon may help us better understand difficulties countries face in projecting climate finance needs as well as the reliability of these estimates.

**Table 9. Total climate finance needs identified by region and cost type**

Region	South Asia	Sub-Saharan Africa	East Asia and Pacific	Middle East and North Africa	Latin America and Caribbean	Europe and Central Asia	Total
Countries analysed	8	44	22	11	33	8	126
Total mitigation costs identified (US\$ billions)	2,433	2,421	507	147	253	93	5,855
% of total (Mitigation)	41.6%	41.4%	8.7%	2.5%	4.3%	1.6%	100%
Total adaptation costs identified (US\$ billions)	738	587	356	163	36	74	1,955
% of total (Adaptation)	37.8%	30.0%	18.2%	8.3%	1.8%	3.8%	100%
Total cross-cutting costs identified (US\$ billions)	1	13	0	2	1	1	18
% of total (cross-cutting)	3.4%	75.5%	1.1%	8.6%	7.6%	3.7%	100%
<b>Total climate finance needs (US\$ billions)</b>	<b>3,172</b>	<b>3,022</b>	<b>863</b>	<b>311</b>	<b>291</b>	<b>168</b>	<b>7,827</b>
% of total (all cost types)	40.5%	38.6%	11.0%	4.0%	3.7%	2.1%	100%

**Figure 7. Total climate finance needs identified by region and cost type (US\$ billions)**





Mitigation and adaptation cost proportionality varies widely by region. For instance, as Table 9 shows, the estimated costs of mitigation are more than seven times greater than those of adaptation for Latin America and the Caribbean, which could be due in part to the higher costs of reducing emissions in some of the industrialised high- and upper-middle income countries in the region. For instance, Brazil, which is classified as upper-middle income, accounts for US\$100 billion (40 per cent) of the mitigation costs reported in the region alone. In Sub-Saharan Africa, on average, mitigation cost is four times higher than adaptation; and a closer look at individual countries NDCs reveals that a majority has reported a mitigation cost that is ten times higher than adaptation (Guinea, the Cote d'Ivoire, etc.). In some of the densely populated countries in Africa, where the energy deficit is significant, the focus of the NDC was placed on mitigation (access to energy being a priority). Nevertheless, the low adaptation costs relative to mitigation do not seem accurate, as seven of the ten countries that are most vulnerable to climate change are in Africa.<sup>11</sup> Section 5 will therefore illustrate additional climate cost scenarios with higher adaptation costs.

Also in South Asia, mitigation cost is three times higher than adaptation cost. In the MENA region, adaptation cost is higher than mitigation, which could be attributed to an emphasis among NDCs in the region on water scarcity, desertification, and climate-related threats to agriculture. Last, East Asia and Pacific commitment to building climate change adaptation in its island states is reflected in the projected financing need in adaptation.

**Table 10. Ratio of mitigation costs to adaptation costs by region**

Region	Mitigation costs identified (US\$ billions)	Adaptation costs identified (US\$ billions)	Ratio (mitigation costs: Adaptation costs)
South Asia	2,433	738	3.30
Sub-Saharan Africa	2,421	587	4.12
East Asia and Pacific	507	356	1.42
Middle East and North Africa	147	163	0.90
Latin America and Caribbean	253	36	7.02
Europe and Central Asia	93	74	1.26
<b>Total</b>	<b>5,855</b>	<b>1,955</b>	

The costs of cross-cutting interventions account for US\$17.7 billion (0.23 per cent) of the total climate finance needs identified. This is unsurprising, given that only 24 of the 126 countries reported any form of cross-cutting costs. Sub-Saharan Africa has the highest regional total for cross-cutting costs at just under US\$ 13.4 billion (75.5 per cent of total cross-cutting costs identified). This may also reflect the tendency to report the costs associated with their NDC commitments as a single estimated value rather than specifying how funds will be allocated between mitigation and/or adaptation activities.

11. 'Climate change in Africa', African Development Bank Group, 2022.

## 4.5 NDCs' financing need by sector

### *Climate change mitigation and adaptation finance needs: Sectoral composition*

As noted above, analysis of the portfolio of NDCs globally indicates that mitigation receives higher budget programming than adaptation. On a global level, the ratio of mitigation to adaptation cost is 3 to 1. This may result from a lack of pipeline of concrete projects with financial estimates and of a lack of knowledge of the real cost associated with climate risks. Globally, as a minimum, climate change experts argue that climate adaptation cost should be equal to cost of mitigation if not more.<sup>12</sup> As mentioned, Section 5 will present alternative scenarios with higher adaptation costs to account for this.

When examining the NDCs, it shows some countries report only the total costs associated with their mitigation and adaptation commitments, while others have provided detailed estimates of the costs of mitigation and adaptation actions for individual sectors and activities. This variation in terms of the structure and level of detail of each country's costing estimates poses a challenge to estimating how the total climate finance needs identified will be allocated by sector. Table 10 and Figure 8 provide a breakdown of financing needs per mitigation sector for those countries that provided sectoral cost estimates.

### • *Sectoral composition of the NDCs climate mitigation portfolio*

Table 10 shows that energy generation (accounting for US\$2.2 trillion corresponding to 47.3 per cent of total mitigation portfolio) and transport (accounting for US\$1.7 trillion or 36.6 per cent) have the highest share. Energy generation and waste management were the most commonly reported sectoral cost types, with 54 and 37 countries reporting costs in each sector, respectively. Agriculture and fisheries and forests and land use collectively account for just US\$79.5 billion (1.7 per cent) of the total mitigation costs identified, which could reflect the difficulties countries face in developing project pipelines and estimating the costs of emissions reductions in these sectors that support the livelihoods and food supplies of large populations.

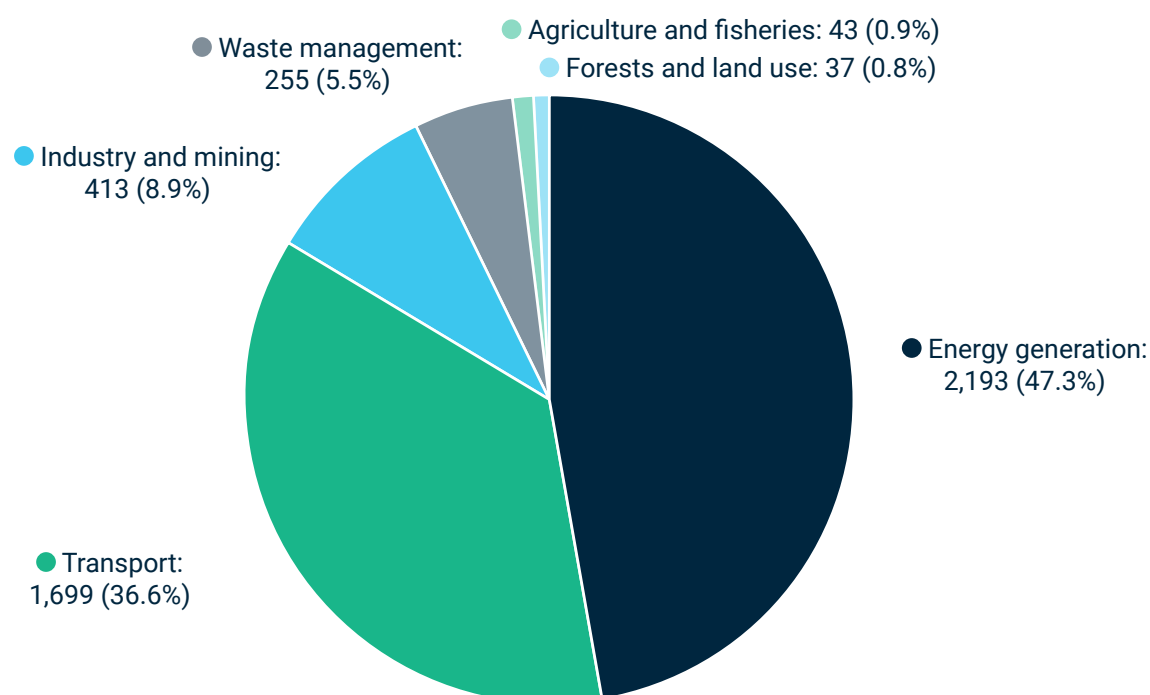
**Table 11. Mitigation finance needs identified by sector**

Mitigation sectors	Countries with sectoral costs available	% of total countries analysed	Total sectoral costs identified (US\$ billions)	% of total sectoral costs identified*
Energy generation	54	42.9%	<b>2,192.7</b>	47.3%
Transport	32	25.4%	<b>1,699.3</b>	36.6%
Industry and mining	26	20.6%	<b>413.2</b>	8.9%
Waste management	37	29.4%	<b>255.1</b>	5.5%
Agriculture and fisheries	25	19.8%	<b>42.7</b>	0.9%
Europe and Central Asia	29	23.0%	<b>36.8</b>	0.8%
<b>Grand total</b>			<b>4,639.8</b>	<b>100%</b>

*Note: \*As some countries submitted NDCs documents with global costs for mitigation and adaptation, the above table is based only on the portfolio of countries that submitted the sectoral breakdown of mitigation costs in their NDCs and other sources of information used in this study.*

12. 'Determination of the needs of developing country Parties', United Nations Climate Change, 2022.

**Figure 8. Mitigation finance needs identified by sector (US\$ billions)**



• **Sectoral climate mitigation costs: Regional distribution**

Table 11 shows the distribution of sector-level mitigation costs by region. South Asia and Sub-Saharan Africa collectively account for nearly US\$4.3 trillion (93 per cent) of the sectoral mitigation costs identified. Energy and transport-related mitigation costs are particularly large in these two regions. For instance, among the South Asian countries analysed, India and Bangladesh reported over US\$1.4 trillion of the energy-related mitigation costs identified, while Sri Lanka accounts for 326 billion in transport-related mitigation costs. In Sub-Saharan Africa, South Africa and Nigeria account for 474 billion in energy-related mitigation costs and over 1.47 trillion in transport-related mitigation costs. These high sectoral mitigation costs could be a result of the rapid population growth, urbanisation, and increasing demand for energy that are common among developing countries in these regions, all of which would increase the need for financing to decarbonise the emissions-intensive energy and transport sectors.

**Table 12. Mitigation finance needs identified by region and sector**

Mitigation sectoral costs (US\$ billions)	South Asia	Sub-Saharan Africa	Latin America and Caribbean	East Asia and Pacific	Middle East and North Africa	Europe and Central Asia	Total
Energy generation	1,500.8	546.7	43.6	62.7	8.5	30.4	2,192.7
Transport	519.3	1,047.2	51.3	62.9	18.3	0.4	1,699.3
Industry and mining	350.0	47.6	5.6	1.4	7.1	1.5	413.2
Waste management	12.3	217.4	17.7	4.9	0.6	2.2	255.1
Forests and land use	3.3	7.9	19.3	5.2	1.0	0.2	36.8
Agriculture and fisheries	7.9	29.3	3.4	1.2	1.0	0.0	42.7
<b>Total mitigation sectoral costs</b>	<b>2,393.6</b>	<b>1,896.1</b>	<b>140.9</b>	<b>138.3</b>	<b>36.4</b>	<b>34.6</b>	<b>4,639.8</b>

### • Sectoral composition of the NDCs climate adaptation portfolio

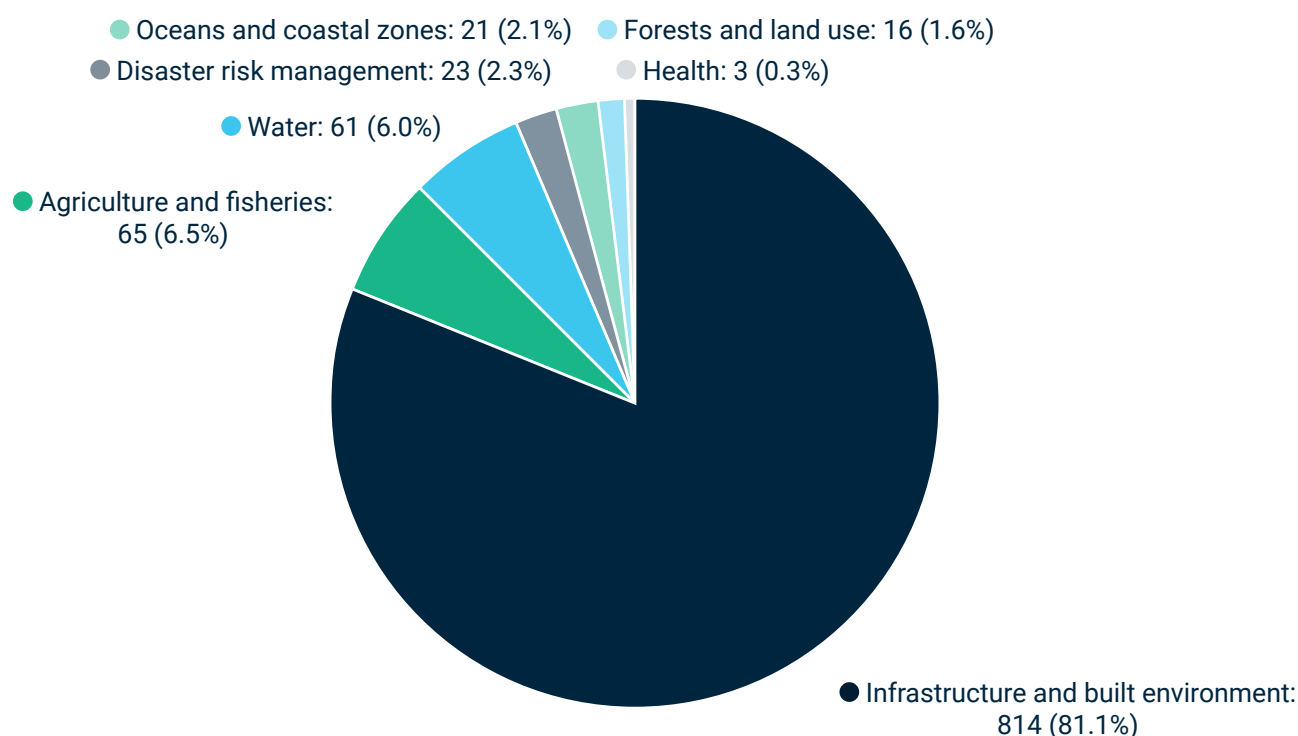
Agriculture and fisheries, water, and infrastructure and the built environment are the most commonly reported adaptation sector cost types, with approximately 25 per cent of countries reporting the costs of activities in these sectors (see Table 12). Of all the adaptation sectors, infrastructure and built environment accounts for by far the largest share of the adaptation finance needs identified at nearly US\$814 billion (81.1 per cent of total adaptation finance needs), signaling the common and increasingly urgent needs across countries to improve the climate resilience of the existing infrastructure stock and ensure that infrastructure projects are designed to withstand the future impacts of a changing climate.

**Table 13. Adaptation finance needs identified by sector**

Adaptation sectors	Countries with sectoral costs available	% of total countries analysed	Total sectoral costs identified (US\$ billions)	% of total adaptation costs identified*
Infrastructure and built environment	32	25.4%	814.0	81.1%
Agriculture and fisheries	34	27.0%	64.9	6.5%
Water	33	26.2%	60.5	6.0%
Disaster risk management	15	11.9%	23.1	2.3%
Oceans and coastal zones	17	13.5%	21.3	2.1%
Forests and land use	23	18.3%	16.2	1.6%
Health	20	15.9%	3.1	0.3%
<b>Total</b>			<b>1,003.1</b>	<b>100%</b>

*Note: \*As some countries submitted NDCs documents with global costs for mitigation and adaptation, the above table is based only on the portfolio of countries that submitted the sectoral breakdown of adaptation costs in their NDCs and other sources of information used in this study.*

**Figure 9. Adaptation finance needs identified by sector**



• **Sectoral adaptation costs: Regional distribution**

Table 13 shows the distribution of sector-level adaptation costs by region. As is true with sectoral mitigation costs, South Asian countries account for the greatest share of all sectoral adaptation costs identified with approximately US\$511.7 billion (51 per cent). East Asia and Pacific has the second highest total of all regions, with over US\$271 billion in sectoral adaptation needs identified.

Infrastructure and built environment accounts for the majority of the sectoral adaptation costs identified in all regions except for Sub-Saharan Africa, Latin America and the Caribbean, and Middle East and North Africa. In Sub-Saharan Africa and Latin America and the Caribbean, agriculture and fisheries has the highest total sectoral cost, while the Water sector accounts for the highest total of any sector in Middle East and North Africa. In Sub-Saharan Africa, the high adaptation costs associated with agriculture and fisheries are driven in large part by the needs of low-income countries such as Chad and Somalia, which together account for US\$20.7 billion of the sectoral total for the region. The same is true for Latin America and the Caribbean, where the Dominican Republic, which is classified as upper-middle income, accounts for nearly all (US\$4.7 billion) of the agriculture and fisheries adaptation costs identified. In the Middle East and North Africa, high adaptation costs in the Water sector reflect the water scarcity issues facing countries across the region including Jordan and Egypt, which together account for nearly US\$12 billion of the Water sector costs identified.

**Table 14. Adaptation finance needs identified by region and sector**

Adaptation sectoral costs (US\$ billions)	South Asia	East Asia and Pacific	Sub-Saharan Africa	Europe and Central Asia	Middle East and North Africa	Latin America and Caribbean	Total
Agriculture and fisheries	15.8	1.1	37.3	4.2	1.6	4.9	<b>64.9</b>
Forests and land use	5.4	0.1	8.8	0.9	0.0	0.9	<b>16.2</b>
Infrastructure and built environment	470.4	267.3	26.3	45.9	0.5	3.6	<b>814.0</b>
Health	0.0	0.0	2.9	0.1	0.0	0.1	<b>3.1</b>
Water	6.1	2.5	26.6	10.4	13.5	1.5	<b>60.5</b>
Oceans and coastal zones	4.0	0.1	5.9	0.6	10.7	0.0	<b>21.3</b>
Disaster risk management	10.0	0.1	12.9	0.1	0.0	0.0	<b>23.1</b>
<b>Total adaptation sectoral costs</b>	<b>511.7</b>	<b>271.1</b>	<b>120.7</b>	<b>62.3</b>	<b>26.3</b>	<b>11.1</b>	<b>1,003.1</b>

## 5. Developing countries NDCs' financing needs – a range of scenarios

Acknowledging the complexity of process and divergence in approaches of developing the NDC documents by countries, and given the scope of investigation undertaken here, a cautious approach is required. Consequently, the data gathered above based on officially submitted NDCs documents is proposed as the "Base-case scenario" and two more scenarios are proposed as follows:

**Base-case Scenario:** The above analysis provided insights as to the scale and nature of the NDCs, on aggregate basis with information about their adaptation-mitigation composition and the underlying sectors for each. Also, insights were gained as to the global landscape and regional repartition. Hence, it is prudent to establish that the cost of aggregate NDCs for the surveyed pool of countries presents a credible estimate being based on the official NDC document and secondary sources (e.g. NAP, studies by IFC and other DFIs, etc.) of each of the 126 surveyed countries. Under the "Base case scenario", it is estimated that the total cost of NDCs is at about US\$7.8 trillion.

**Scenario 2:** Section 4 above demonstrates that most countries seem to have underestimated the cost of their climate adaptation action (for lack of a pipeline of quantifiable projects and lack of knowledge of the real cost associate with climate risks). As a minimum, climate change experts argue that climate adaptation cost should be equal to cost of mitigation if not more.

Under this scenario, it is estimated that that cost of adaptation will equal the cost of mitigation; i.e., US\$5.85 trillion (instead of US\$ 1.95 trillion).

**Scenario 3:** Out of 126 reviewed countries, 106 countries reported a cost and the other 20 countries (16 per cent of the pool) committed to certain actions in both mitigation and adaptation but did not specify the cost of such commitments. Assuming all things equal in the pool of countries, a 16 per cent increase in estimated cost could be factored to account for the 20 countries that have not yet produced a cost of their NDC.

Under this scenario, mitigation cost will be estimated at US\$ 585 trillion X 1.16 = US\$6.79 trillion and the same for adaptation.

To note, a cumulative progressive approach is used; i.e., Scenario 2 builds upon the Base-case Scenario, Scenario 3 incorporates assumptions of the Base-case and Scenario 2.

**Table 15. NDCs cost estimate**

NDCs aggregate cost for the 126 countries	Total mitigation cost (US\$ trillion)	Total adaptation cost (US\$ trillion)	Cross-cutting cost (US\$ trillion)	Total NDC (US\$ trillion)
Base case scenario	5.85	1.95	0.017	7.82
Scenario 2	5.85	5.85	0.017	11.72
Scenario 3	6.79	6.79	0.017	13.60

**Conclusion:** Based on the financing needs of 126 developing countries as implied by their official updated NDC submission as of September 15, 2021 is estimated at a range of US\$7.8 trillion and US\$13.6 trillion by 2030.<sup>13</sup> These estimates are not the cost of a net-zero transition as expressed in previously referenced reports here above; they are limited in scope to: (i) 126 developing countries' NDC commitments, (ii) a timeframe until 2030 (with the exception of seven countries out of 126 who introduced projections until 2035, 2040 and 2050), and (iii) they include cost of adaptation commitment as well as mitigation.

13. Out of the 126 countries, five countries provided cost projections until 2050, one country until 2040 and one country until 2035.



## 6. NDCs implementation by developing countries – barriers, capacity gap, and needs

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This section presents a brief summary of findings from consultations with national governments. The objective of the consultations was twofold: (i) To assess the accuracy of the NDC cost as reported by countries and the methods and processes of developing the NDC document and associated cost, and (ii) to assess the challenges, gaps in capacity and knowledge that countries faced in developing the NDC document and associated cost and form an understanding of needs in form of technical assistance if they were to be provided.

Consultations were conducted using a questionnaire (See Annex 1) that revolved around four themes:

1. NDC implementation and resource mobilisation
2. Institutional and political barriers
3. Private sector engagement
4. Technical assistance needs

### 6.1 NDC implementation and resource mobilisation

- Countries were not explicit about the degree of accuracy of the cost of their country's NDC commitment but responses indicated that the process of NDC development led to an overall underestimate of the actual NDC cost. The revised/updated NDC documents by countries have resulted in a significant increase in certain cases, confirming that the first NDC documents did not capture the actual cost at the time, and it is possible that the same is true for the current updated NDC versions.
- Most countries reported that they are planning to complete an NDC implementation plan, an investment plan, a national climate finance strategy, or another form of national policy to guide the country's future investments in NDC-related projects. However, according to the NDC Partnership, to date there are only 11 investment plans developed by developing countries. This confirms the challenges facing countries in implementation and resource mobilisation.
- Countries are facing a real challenge as to how to mobilise financing for their NDCs. Many expressed a desire to have international investors and private sector involved, but do not have an approach clearly articulated, which is compounded by weak institutional coordination within countries.
- One important challenge that countries face in creating strategies is developing the necessary monitoring, reporting, and verification (MRV) frameworks to track flows of climate finance in the country and verify that the key goals of the projects and the NDC are met, pointing to another potential area of NDC development and implementation where technical assistance could be useful.
- Countries mentioned that a key part of NDC implementation will be to ensure that the goals and strategies articulated in the revised NDC feed directly into future NAPs and other climate-related policies governing national priorities for mitigation and adaptation over the next five-year cycle, and that those policies in turn feed into future NDC revisions. In other words, coherence and cross referencing in terms of policies and programs is seen as key factor.
- Countries had difficulties developing a credible pipeline of projects in support of each NDC sectoral commitment. Lack of funding to undertake pre-feasibility and feasibility studies for projects and lack of technical expertise by national governments have resulted in weak estimates and inadequate plans.
- In some countries, technical and financial partners such as the UN agencies and bilaterals divided the NDC preparation work among themselves and conducted sectoral studies, one by one. An overview and a consolidated view was lacking in the final versions of NDC documents.

## 6.2 Institutional and political barriers

- Institutional and political barriers (i.e., structural issues at the governmental level facing the entities responsible for NDC development and implementation) were common points of discussion in almost every consultation.
- Several countries described the difficulties of working on climate policy under shifting political circumstances, explaining how the government entities charged with developing a country's NDC are often reorganised, moved between ministries or offices, or find themselves under new sets of political directives and priorities in the administrative reshuffle following national elections.
- Countries reiterated several challenges related to technical assistance needs, including chronic staff shortages and the lack of budget for training and developing internal technical capacity to perform the economic analysis and modelling needed to estimate the costs and benefits of priority mitigation and adaptation activities.
- Countries pointed to inefficiencies and weak coordination during NDC development that arose due to friction during collaboration between the government agencies whose input and expertise were required.
- One common problem was a lack of access to the information required to determine the projected costs and effects of mitigation and adaptation activities, as government ministries tend to be highly siloed in the ways they collect and manage their data. Countries expressed frustration at delays and technical difficulties when attempting to compile and analyse data in different formats from different government sources, which was also a concern as countries worked to align their revised NDCs with existing strategies such as NAPs and Nationally Appropriate Mitigation Actions (NAMA).
- Countries mentioned that having a centralised digital platform for the storage and management of NDC- and climate-related data from across government agencies would go a long way towards alleviating some of these challenges and help streamline budgetary and project planning processes to facilitate access to international sources of climate finance.

## 6.3 Private sector engagement

- Consultations explored the role of private sector engagement in NDC development and implementation. Many countries reported consulting with private sector actors (e.g., utility companies, banks) during the NDC development phase through events such as business roundtables, although many stakeholder engagement efforts were disrupted by the pandemic, which struck many countries just as they were preparing to finalise their revised NDCs.
- Countries acknowledged the potential of public-private partnerships to deliver the funding and technical capacity needed to implement NDC-related projects, but they recognise the limitation in terms of engagement and participation by the private sector in the process of development of NDC documents. They described barriers to climate action in the private sector, as well as potential solutions to these challenges:
  - High levels of (real and perceived) financial risk in “green” investments in mitigation and adaptation activities prohibit investment by the private sector in climate related projects.
  - Lack of enabling regulatory frameworks to facilitate private sector investment in NDC-related projects.
  - Lack of clarity and structured consultations with the private sector during the preparation of the NDC document.
  - Lack of fiscal, financial, and regulatory incentives (e.g., carbon pricing and emissions trading) to promote investment in decarbonisation and climate resilience of key sectors.
  - Public sector agencies tend to focus on pipeline of public sector projects only, hence don't engage enough with the private sector.

- Lack of awareness by the private sector of the Paris Agreement and the national-level commitments in terms of sectors and how this relates to its activities.
- Improve financial and regulatory frameworks for green/blue bonds and green credit lines with environmental and social safeguards could stimulate further participation by the private sector in contributing to the NDC targets by their national governments.
- High levels of financial risk remain a key barrier to greater private sector participation in climate-related projects, particularly in emerging market settings with less-developed capital markets and regulatory environments that are not conducive to the mobilisation of private sector resources for NDC implementation.
- Countries suggested a range of potential policy solutions that could help address these challenges, including economic incentives and regulatory measures to accelerate the decarbonisation of key sectors, regulatory frameworks for innovative financing mechanisms such as green bonds and lending facilities, and new emissions trading schemes created within the auspices of the Paris Agreement and the UNFCCC pending ongoing negotiations. In the short term, concessional development financing from bilateral and multilateral sources will continue to play an important role in de-risking and mobilising private sector investment for mitigation and adaptation projects.

## 6.4 Technical assistance needs

A range of issues were raised by the consulted parties that can be qualified as NDC-specific issues and others that are related to the overall lack of capacity within developing countries. It is worth noting that developing countries do not present a homogeneous landscape and the reading of this section should be nuanced. The pool of countries includes sophisticated and quite developed countries and others with low baseline, and that is the case of the majority of countries in Africa and the Middle East, and Small Island Development States (SIDS).

### Key themes that emerged include:

- The need to have a unified approach for developing the NDC document, and the need to have standardised methodology to construct investment plans in support of the NDCs' capital mobilisation and implementation.
- An overall lack of capacity in terms of technical skills in climate change, knowledge of the underlying industries and sectors, climate finance technique and finance in general, project development and project management.
- Lack of structure and systems for planning and budgetary processes for climate mitigation and adaptation projects, as countries strive to improve the accuracy and level of detail of budgets for the activities required to deliver on their NDC commitments.
- Specific challenges in conceiving systems for data collection, analysis, and economic modelling required to produce accurate estimates of the investments needed to meet NDC commitments.
- Lack of standardised approaches. Countries used a variety of costing methodologies and frameworks, such as the UNDP Investment and Financial Flows methodology (I&FF) and the Low Emissions Analysis Platform (LEAP) model, but the government entities responsible for NDCs often lack the necessary data and technical skills to implement them effectively, relying in some cases on the assistance of consultants from development institutions (NDC Partnership, UNDP, and the Global Green Growth Institute (GGGI), and others).
- Developing countries' financial institutions are not well equipped to engage effectively with international sources of climate finance such as the Green Climate Fund, given the rules and regulations that govern the disbursement of grants and concessional climate finance and complexity of processes of accessing international climate finance sources.
- Countries highlighted the need for assistance with mapping past years' climate-related expenditures and existing national-level climate finance flows, using methodologies such as the UNDP Public and Private Climate Expenditure and Institutional Review (CPEIR) assessments. Such exercises are particularly salient with regards to estimating levels of spending on adaptation projects, which tend to be more integrated in government budgets than those focused on mitigation.

## 7. Conclusions and “Food for Thought”

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1. **The financing gap:** To implement the NDCs, based on a diverse pool of 126 developing countries, the financial needs are estimated at US\$7.8 trillion to US\$13.6 trillion. This includes conditional and unconditional commitments by national governments. Whether governments can and intend to honor their unconditional commitments or not, the above estimate is the global cost that countries need to address collectively. The above range is projected to increase when: (i) all countries produce an updated NDC with an adequate cost; and (ii) all countries report a costing, which is still not the case.
2. **Supporting national pipelines development:** Some of the NDCs are constructed based on a concrete pipeline of projects (and costing). Others are built thematically around sectoral targets. The latter reflect lack of capacity on the ground as a result of lack of resources to develop projects (feasibility studies, financial projections, market scoping, etc.) and lack of technical skills among governments' teams. Development of credible pipeline of projects would require technical assistance that targets the above issues and can accelerate implementation of NDC targets.

Also, establish a global pipeline with expert groups per sector, with technical experts in climate change, in industry (technology and market), and finance.

3. **Standardised investment plans for the NDC:** The follow up step to developing an NDC document is development of an investment plan for implementation of the NDC. In fact, with the increased focus on country platforms, an investment plan for the implementation of the NDC should be a standard requirement of a country, or regionalised platform. A standardised methodology and template should be put in place so that countries can follow the same processes and tracking indicators. Further, standardisation of investment plans would facilitate capital mobilisation by governments from the private sector globally and may create scale for large investors willing to use wholesales approaches in certain regions where assets are not divisible (e.g., the Niger Basin encompasses ten African countries and any climate adaptation solutions will have to be holistic, and will require investment at scale).
4. **Adaptation specifics:** The adaptation costs outlined in the countries' NDCs seem to be severely underestimated. This is due to a lack of pipeline of quantifiable projects and of a lack of knowledge of the real cost associated with climate risks. In particular, Sub-Saharan African countries seem to have underestimated their adaptation cost given their climate change vulnerabilities.
5. **Fundraising based on clustering projects in the pipeline according to their risk profile:** Resource mobilisation should explore public finance, private finance, and blended finance sources. The nature of pipelines of projects under the NDCs demonstrate that some assets/projects could be funded by the private sector if adequately structured, while others bear high risks and would not attract international investors; hence, the public sector will have to fund such categories of projects. And last but not least, many pledges have been made by developed countries to finance climate-related projects in developing countries through the bilateral agencies of the funder countries, the multilateral development banks (MDBs), the Climate Investment Funds (Green Climate Fund, Climate Investment Fund, Adaptation Fund, Global Environmental Facility, etc.), and UN agencies that provide technical assistance and capacity building in developing countries. These funds can be structured in a blended finance fashion alongside private sector sources where the public finance is used to de-risk private investments.  
  
Also, examine the possibility of funding regional and cross countries projects and fundraise raise for portfolio of projects rather than on project-by-project basis.
6. **Institutional arrangements:** Institutional arrangements and coordination within countries, lack of climate change tracking systems, and lack of monitoring and reporting frameworks could be addressed through technical assistance targeted programs that produce harmonised methods.
7. **Inter-agency coordination:** Encourage coordination among donor countries, MDBs, bilaterals and UN agencies. Inefficiencies are evidenced in some developing countries; duplication, excess of supply in certain areas and under investment in others.

8. ***Involve and leverage initiatives by the private sector:*** Alignment with other initiatives and schools of thought would leverage synergies and consolidate efforts efficiently. For example, the ICPF white paper proposes venues for resource mobilisation and active engagement by private and institutional investors, IFIs, and other key stakeholders (on both the demand and supply sides) in support of developing countries' action towards the execution of a plan for financing the Paris Agreement. The paper explores options for example, for design and operationalisation of a platform dedicated to functions such as: (i) Technical assistance to support national Capital Raising Plans to deliver the Paris Agreement, (ii) advising and monitoring large and global financial institutions' pledging support to the Paris Agreement by inviting them to produce "Institutionally Determined Contributions", acting as a match-maker between governments and private investors on climate finance, and (iv) sharing best practice on market-based policies for climate finance across countries. A well thought and optimal institutional structure could address the above requirements and accelerate resource mobilisation needed to attain the NDCs' target by 2030, and beyond.

# Annex 1: Consultation questionnaire

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## Questions for countries with NDC documents that include costs/investment needs of priority sectors' commitments in mitigation and adaptation:

1. Please describe the methodology you followed in preparing your country's NDC document?
2. Have you used information from previous national plans such as NAP, NAMA , National Communication, etc. to feed in the NDC? If yes, how did you handle the time elapsed between the dates of these document and time of producing the NDC, to update the data?
3. What were the challenges and barriers faced in producing the costing associated with sectoral commitments of the NDC in your country?
4. Regarding the cost of mitigation and adaptation reported in the NDC, could you comment on the level of confidence and/or uncertainty in estimates, potential range of investment needs, etc.
5. What has been the engagement with the private sector (commercial banks, private equity, private project developers and companies) to include any potential pipeline of projects for mitigation and adaptation?
6. Do you have an investment/implementation plan tailored to funding the NDC in the short (1-5 years), medium (5-10 years) and long term (10-15 years)?
7. Does the NDC have a Resource Mobilisation Strategy or Plan to implement its commitments? Please elaborate, what plans has the NDC put in place.
8. Do you think there is enough support and funding available within the country and from external sources to assist countries in preparing their NDC documents and investment plans?

## Additional questions for countries that have an NDC document but no cost associated:

9. Please elaborate as to why the NDC document does not include the cost associated with actions to which your government committed in terms of climate change mitigation and adaptation? Is this going to be produced afterwards?
10. What were the primary gaps and barriers to estimating costs and investment needs for climate change mitigation and adaptation (e.g., lack of precise project or a pipeline of projects across the NDC, technical expertise, funding to prepare feasibility studies, etc.)?
11. What are the areas and specific technical skills (financial, sectoral, technical, engineering, coordination, governance, etc.) where the NDC document would have benefited from technical assistance during its preparation?



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