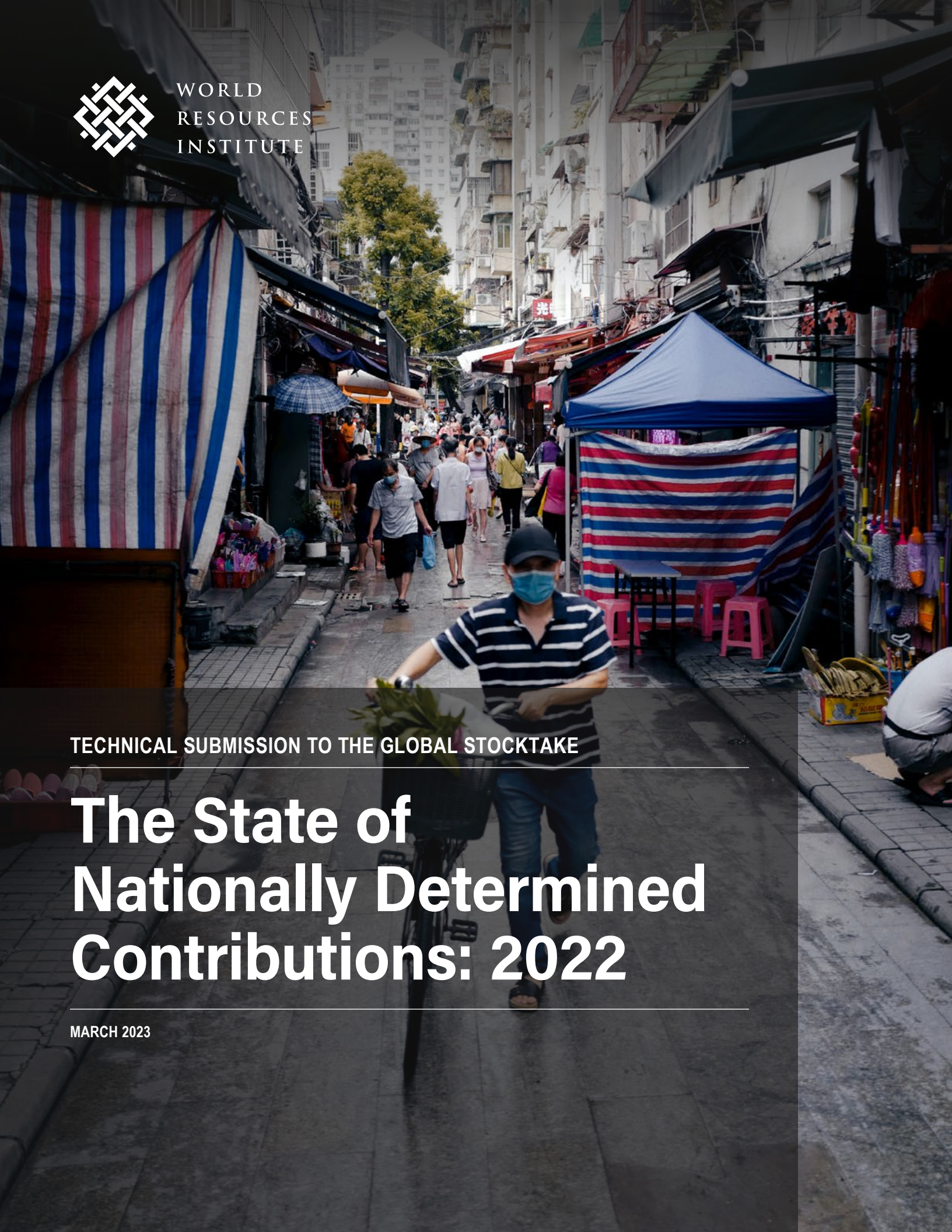


WORLD RESOURCES INSTITUTE

TECHNICAL SUBMISSION TO THE GLOBAL STOCKTAKE

The State of Nationally Determined Contributions: 2022

MARCH 2023

When the Paris Agreement was adopted in 2015, its foundation was incomplete. The nationally determined contributions (NDCs) from each country that underpinned the ambitious goals of the Paris Agreement—limiting climate change to 1.5 degrees C, promoting adaptation and resilience, and channeling funding toward low-carbon development—fell short on all three fronts.

The Paris Agreement intended for NDCs to be made more ambitious over time, establishing a five-year cycle for countries to submit enhanced commitments. Almost seven years have passed since the first round of commitments to the Paris Agreement, and 80% of NDCs have been updated. The question is: where are we now?

In short, the foundation is still emerging. While the Paris Agreement is enhancing global climate ambition, it is not doing so at a pace or scale consistent with achieving its goals. The latest NDCs aim to reduce 2030 emissions by an estimated 5.5 gigatons of carbon dioxide equivalent ($GtCO_2e$) more than the initial NDCs. This is nearly equivalent to eliminating the annual emissions of the United States, and represents a 7% reduction from 2019 levels. To keep the 1.5 degrees C goal within reach, however, countries must reduce emissions by at least 43%.

As a technical submission to the Global Stocktake, we offer key findings from our recent report, *State of NDCs: 2022*. This independent assessment, which confirms the key findings of UN analysis, draws on WRI's open-source Climate Watch platform. To unveil key observations into how NDCs are evolving, Climate Watch tracks approximately 200 granular indicators and empowers readers to dig into the data to generate their own insights. Together with Climate Watch, State of NDCs offers a new level of transparency and detail to our understanding of Paris Agreement implementation.

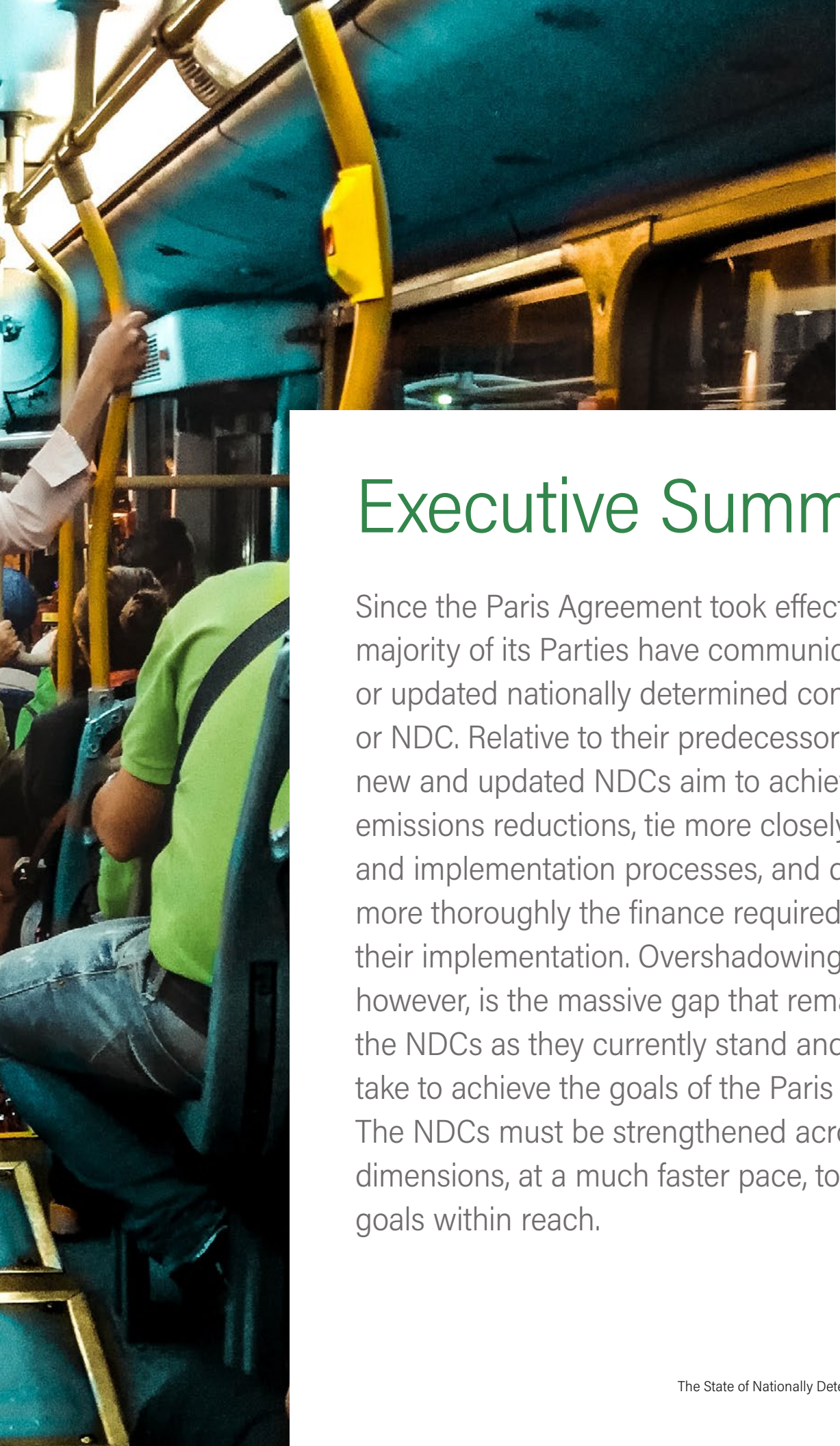
From this report, it is clear countries must do much better at connecting their NDCs to delivering concrete action on the ground. While most NDCs now contain sector-specific policies and measures for mitigation, there are notable gaps in many NDCs, including in key sectors like forests, power and transport. While most NDCs now also include an adaptation component, these can be further aligned with more comprehensive planning documents like National Adaptation Plans to advance implementation.

To support these commitments, there must also be a much greater understanding of the finance needed. Only half of NDCs report climate finance requirements, and these numbers already amount to almost $4.3 trillion, underscoring the need for developed countries to deliver the climate finance they have promised. Finance is a key enabler of climate action, and it must reach the scale of ambition needed.

These findings can steer investment in the next round of NDCs towards more ambition and effective implementation. Funders can provide resources to help countries fill gaps in critical sectors and topics. Meanwhile, researchers can continue to explore what factors motivate countries to increase their ambition and how NDCs can help drive more transformative action.

The next round of NDCs is due in 2025, and countries are also expected to update their NDCs ahead of the next climate summit. We must continue learning from this process to push countries onto the right pathway and complete the foundation underlying the Paris Agreement.

The full *State of NDCs* report on which this submission is based can be found at https://www.wri.org/research/state-nationally-determined-contributions-2022.



Executive Summary

Since the Paris Agreement took effect, the vast majority of its Parties have communicated a new or updated nationally determined contribution, or NDC. Relative to their predecessors, these new and updated NDCs aim to achieve deeper emissions reductions, tie more closely to planning and implementation processes, and document more thoroughly the finance required to support their implementation. Overshadowing this progress, however, is the massive gap that remains between the NDCs as they currently stand and what it will take to achieve the goals of the Paris Agreement. The NDCs must be strengthened across all dimensions, at a much faster pace, to keep these goals within reach.

HIGHLIGHTS

- Countries have communicated 139 new or updated nationally determined contributions (NDCs), outlining the actions they intend to take to help mitigate climate change and achieve the Paris Agreement goals.
- Drawing on newly available data from the open-source Climate Watch platform, this report captures a detailed snapshot of the NDCs following the latest updates and examines how they have evolved since the Paris Agreement entered into force.
- The analysis suggests that the Paris Agreement is enhancing global climate ambition—but not at a pace or scale consistent with achieving its goals. The latest NDCs aim to reduce 2030 emissions by an estimated 5.5 gigatons of carbon dioxide equivalent ($GtCO_2e$) more than the initial NDCs.
- Seventy-seven percent of NDCs include greenhouse gas (GHG) reduction targets, and 96 percent include sector-specific mitigation targets and other measures.
- Eighty-six percent of NDCs include an adaptation component, many with improved detail and sectoral coverage. Linking these to instruments such as national adaptation plans is a critical next step.
- Fifty-three percent of NDCs include estimates of climate finance requirements, which total US$4,282 billion: $2,740 billion for mitigation, $1,067 billion for adaptation, and $475 billion unspecified.

BACKGROUND

Under the 2015 Paris Agreement, countries around the world adopted collective goals to pursue efforts to limit climate change to 1.5°C, promote adaptation and resilience, and align financial flows with low-emissions, climate-resilient development. These objectives are to be carried out "in the context of sustainable development and efforts to eradicate poverty," and in a way that reflects "equity and the principle of common but differentiated and respective capabilities, in the light of different national circumstances" (UNFCCC 2015).

NDCs serve as the country-specific building blocks that build towards these collective goals. Article 4 of the Paris Agreement requires each Party to the agreement to prepare and communicate a successive NDC every five years. Parties are required to pursue domestic mitigation (emissions reduction) measures with the aim of achieving the mitigation commitments in their NDCs. In addition, some countries also use NDCs to articulate their adaptation plans and finance requirements.

The decision accompanying the Paris Agreement asked Parties to submit new or updated NDCs by 2020. This was informally extended to 2021 due to the COVID-19 pandemic and related delay of the 26th Conference of the Parties (COP26). Countries with an NDC with a time frame up to 2025 were requested to communicate a new NDC, and countries with an NDC with a time frame up to 2030 were requested to communicate or update an existing NDC.

Countries had communicated 128 new or updated NDCs by December 31, 2021. By September 2022, this figure had risen to 139. It includes updated first NDCs and new second NDCs as well as first NDCs that were communicated after December 31, 2019, and it counts the NDC of the European Union and its 27 Member States as a single entity. In total, the new and updated NDCs represent 165 countries responsible for 91 per cent of global GHG emissions.

These NDCs will form a critical input to the global stocktake. The global stocktake is a process established under Article 14 of the Paris Agreement to periodically take stock of and assess the collective progress towards the implementation of the agreement and its long-term goals. It begins with an information collection and preparation phase, which is to include, inter alia, information on NDCs.

The 2021 Glasgow Climate Pact requests that countries "revisit and strengthen" their 2030 targets to align with the Paris Agreement's temperature goal by the end of 2022. In addition, the pact strengthens the relationship between NDCs and long-term objectives, urging countries to communicate long-term strategies "towards just transitions to net zero emissions by or around midcentury, taking into account different national circumstances," and noting "the importance of aligning" NDCs with these strategies. Finally, it establishes two work programs. One is "to urgently scale up mitigation ambition and implementation" through 2030. The other is the Glasgow–Sharm el-Sheikh work program on the Global Goal on Adaptation (UNFCCC 2021b).

Countries will communicate a successive round of NDCs in 2025. Each successive NDC must represent a progression beyond the Party's previous NDC and reflect its highest possible ambition. In 2025, countries are encouraged "to communicate a nationally determined contribution with an end date of 2035" (UNFCCC 2021a).

ABOUT THIS REPORT

This report aims to serve as a reference document on NDC content and how it has evolved since the Paris Agreement entered into force, to inform the global stocktake and the Glasgow work programs on mitigation ambition and adaptation, and to shape subsequent NDCs. It captures key insights from the Climate Watch platform of the World Resources Institute (WRI) and other data sources, and it raises questions stemming from these data that merit discussion by policymakers, donors, civil society, and researchers.

The report addresses mitigation, adaptation, and finance elements of NDCs. With regard to mitigation, Section 3 examines GHG reduction targets, their impacts, and the sector-specific mitigation measures that countries plan to implement to achieve them. Section 4 analyzes the adaptation elements of NDCs using nine qualitative assessment criteria. Section 5 quantifies the finance requirements that countries communicate in their NDCs—for mitigation, for adaptation, and overall.

The report is based primarily on data from WRI's Climate Watch platform. It examines NDCs communicated through December 31, 2021, except in the Emissions Impact and Finance sections, which use a later cut-off date of September 30, 2022. In addition to Climate Watch, the transport deep dive draws from the Tracker of Climate Strategies for Transport from the German Agency for International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit) and the Partnership on Sustainable, Low Carbon Transport. Measures announced but not formally communicated through an NDC are not considered.

Emissions impact

Of the new or updated NDCs, 74 (representing 100 countries[1]) increased mitigation ambition; they would result in demonstrably lower 2030 emissions than each country's previous NDC (Figure ES-1). Of the remainder, 23 would not reduce emissions relative to the initial NDC, and 42 cannot be compared to the previous NDC due to insufficient information. Of the NDCs that increased mitigation ambition, 18 (accounting for 14 percent of global GHG emissions) are still less ambitious than the country's business-as-usual trajectory, suggesting that, in practice, they will not help close the emissions gap despite being nominally better than their predecessors.[2]

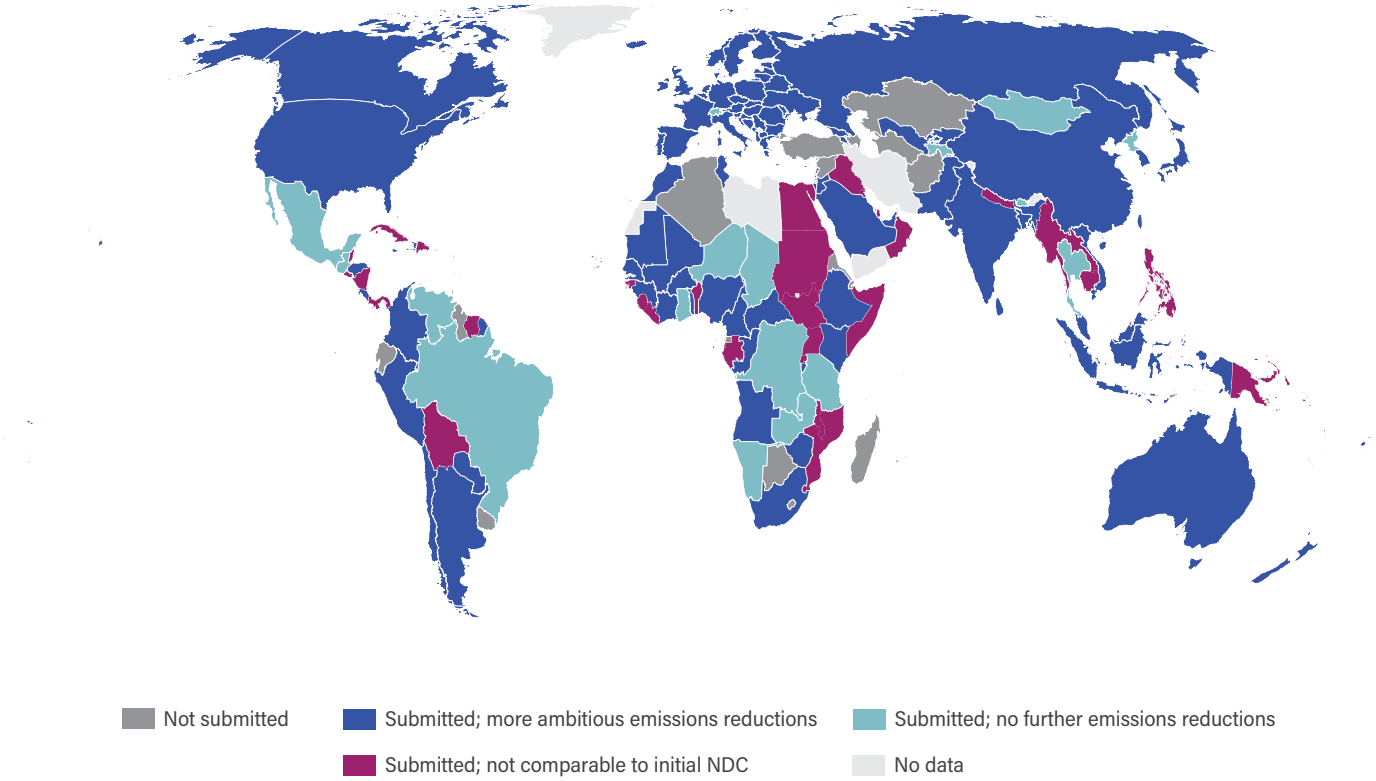
Collectively, the new and updated NDCs will reduce 2030 emissions by an estimated 5.5 $GtCO_2e$ relative to the initial NDCs. This represents a 7 percent reduction from 2019 levels. According to the IPCC (2022b), however, emissions must decline by at least 43 percent from 2019 levels to keep the 1.5°C goal within reach.

Key characteristics of mitigation measures

More countries have set GHG emissions reduction targets than before, and these targets are more likely to be framed as absolute reductions relative to a base year and to cover all sectors and all GHGs. The number of NDCs with GHG emissions reduction targets grew from 128 to 144. Of these targets, the number framed as an absolute reduction relative to a base year grew from 34 to 42. The number with complete sector coverage grew from 54 to 93, and the number with complete gas coverage grew from 20 to 23.

These improvements only modestly increase the share of global GHG emissions covered by GHG targets. GHG targets in the current NDCs cover approximately 2 percent more emissions than the initial NDCs. This can be explained

FIGURE ES-1 | Mitigation Ambition in New and Updated NDCs Relative to Initial NDCs



Note: NDC = nationally determined contribution. Includes NDCs submitted through September 2022.
Source: Authors' analysis based on WRI (2022).

by the fact that the countries expanding the scope and coverage of their targets collectively are responsible for only around 9 percent of global GHG emissions.

In their new and updated NDCs, more countries have included unconditional elements that do not depend on international finance or other factors. Many developing countries designate all or some of their NDC commitments as depending on international finance or other conditions, such as technology transfer or capacity building. Relative to the initial NDCs, however, more countries have included unconditional elements and finance in their new or updated NDCs. The number of NDCs with at least some unconditional element increased from 103 to 123, whereas the number that are completely conditional fell from 50 to 34.

More countries express openness to using international market mechanisms (i.e., Article 6) to achieve their NDCs. The number of NDCs indicating the possibility of employing international market mechanisms has increased from 99 to 120. Countries with NDCs that are now open to these mechanisms, however, account for only 40 percent of global GHG emissions.

The number of NDCs containing a long-term (midcentury) GHG reduction target—in addition to a near-term target—has doubled from 17 in the initial NDCs to 34 currently. Nevertheless, this number pales in comparison to the more than 90 countries that have announced a net-zero target outside their NDCs, suggesting that these ambitious, long-term targets are not yet being fully integrated into countries' near- and midterm plans.

Most new and updated NDCs are more transparent than the initial NDCs, but approximately 16 percent still lack crucial information to quantify emissions. Although the guidelines on clarity, transparency, and understanding adopted at Katowice in 2014 are mandatory only for second

NDCs and beyond, there is evidence that countries are starting to take them on board, with 117 of the new and updated NDCs improving transparency in some capacity. Nevertheless, 20 new and updated NDCs still lack the information necessary to estimate the countries' 2030 emissions.

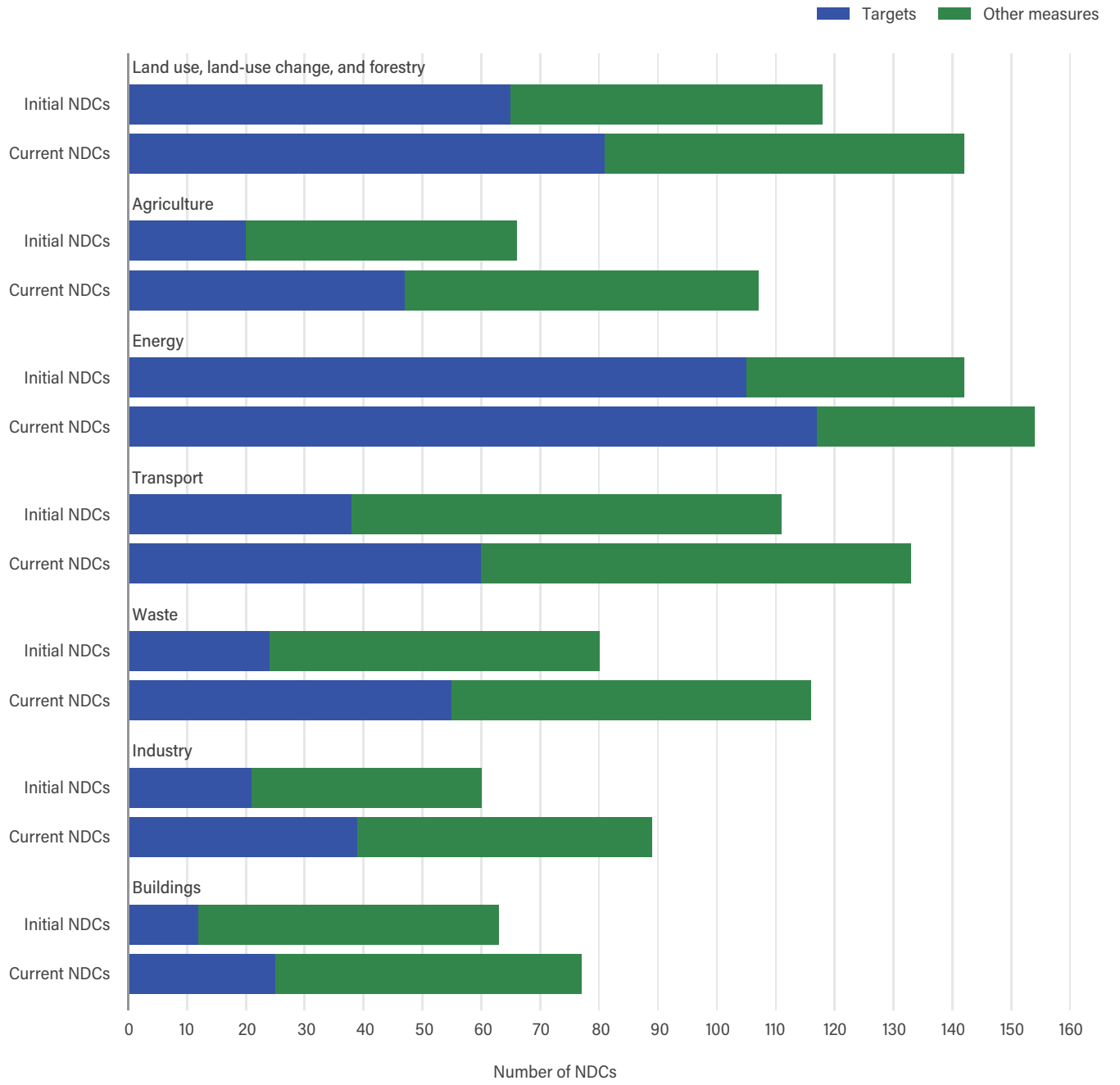
Sector-specific mitigation measures

The number of submissions including sector-specific measures has increased across all sectors from the initial to the current NDCs (Figure ES-2). Sector-specific measures can include sector-specific GHG targets and non-GHG targets (for example, targets to increase renewable energy or reduce deforestation) as well as other types of measures that are not framed as targets. A large majority of NDCs now include measures related to energy (154 NDCs); land use, land-use change, and forestry (LULUCF; 142 NDCs); and transport (133 NDCs). Although fewer NDCs have measures related to agriculture (107 NDCs) and waste (116 NDCs), the number of NDCs tackling these sectors grew significantly from the initial to the current NDCs. Roughly half of current NDCs have measures related to industry and buildings.

Over 20 NDCs included LULUCF sector measures in their new or updated NDCs for the first time, increasing the total number of NDCs with such measures to over 140. However, the specific targets, policies, and actions vary sharply in terms of their quantified metrics and implementation plans. Encouragingly, many countries are including measures related to protection, management, and restoration—all of which are needed to reach the goals of the Paris Agreement. Although these increased LULUCF measures can help improve global ambition, countries with some of the largest land sector emissions have some of the weakest commitments.

Many NDCs promote renewable energy generation, but fewer seek directly to limit fossil fuels. One hundred fifty current NDCs contain measures addressing the power sector. Targets and other measures promoting renewable energy are particularly widespread. Eighty NDCs address solar power, and many others address hydropower, wind energy, waste-to-energy, and other clean generation technologies. On the other hand, only 51 NDCs contain measures related to fossil fuel–fired generation. Only some of these would reduce absolute emissions; others would actually expand generation from fossil sources (particularly natural gas).

FIGURE ES-2 | Sector-Specific Mitigation Measures in Initial and Current NDCs



Note: NDC = nationally determined contribution.

Source: Authors' analysis based on WRI (2022).

New fossil fuel infrastructure is at odds with limiting warming to 1.5°C (IPCC 2022b), and the Glasgow Climate Pact calls on countries to accelerate efforts "towards the phase-down of unabated coal power," with "targeted support to the poorest and most vulnerable" (UNFCCC 2021b).

More countries are committing to electric mobility, but attention to other critical transport measures—such as demand management, modal shift, and freight—lags behind. The number of NDCs including electrification actions more than doubled, from 27 initial NDCs to 68 current NDCs, revealing a rapid surge of global attention, not just in developed nations. However, these actions will need to be coupled with transport demand management and a clean electrical grid to achieve the greatest emissions reductions. NDCs include limited focus on reducing dependence on private motorized transport, increasing the availability and use of public transit, or prioritizing active mobility where possible. Freight is responsible for 40 percent of emissions from the transport sector, but only 19 new and updated NDCs mention freight mitigation actions. More action is needed to address freight emissions or else they will continue to rise with increased global demand.

The next round of NDC updates offers an opportunity for the 119 signatories of the Global Methane Pledge to spell out how they will contribute to the collectively promised 30 percent reduction in methane emissions by 2030. Although most signatories include methane within the scope of their NDCs' top-line GHG reduction target, the extent to which methane will contribute to those targets is typically unclear, and only 15 NDCs include a methane-specific emissions reduction target. Seventy-six signatories include sector-specific measures especially relevant to methane emissions in their NDCs, including 69 in the waste sector, 36 in the agriculture sector, and 47 in the energy sector.

The number of NDCs that explicitly address the concept of a just transition has increased from 1 initial NDC to 32 current NDCs. Grounded in the need to support workers and communities facing negative impacts in the shift away from fossil fuel–based societies, the concept of a just transition has been integrated into climate change negotiations, declarations, and agreements, including the preamble to the Paris Agreement and most recently the Glasgow Climate Pact. The NDCs are beginning to reflect this trend, though the level of detail they provide on just transition is highly uneven.

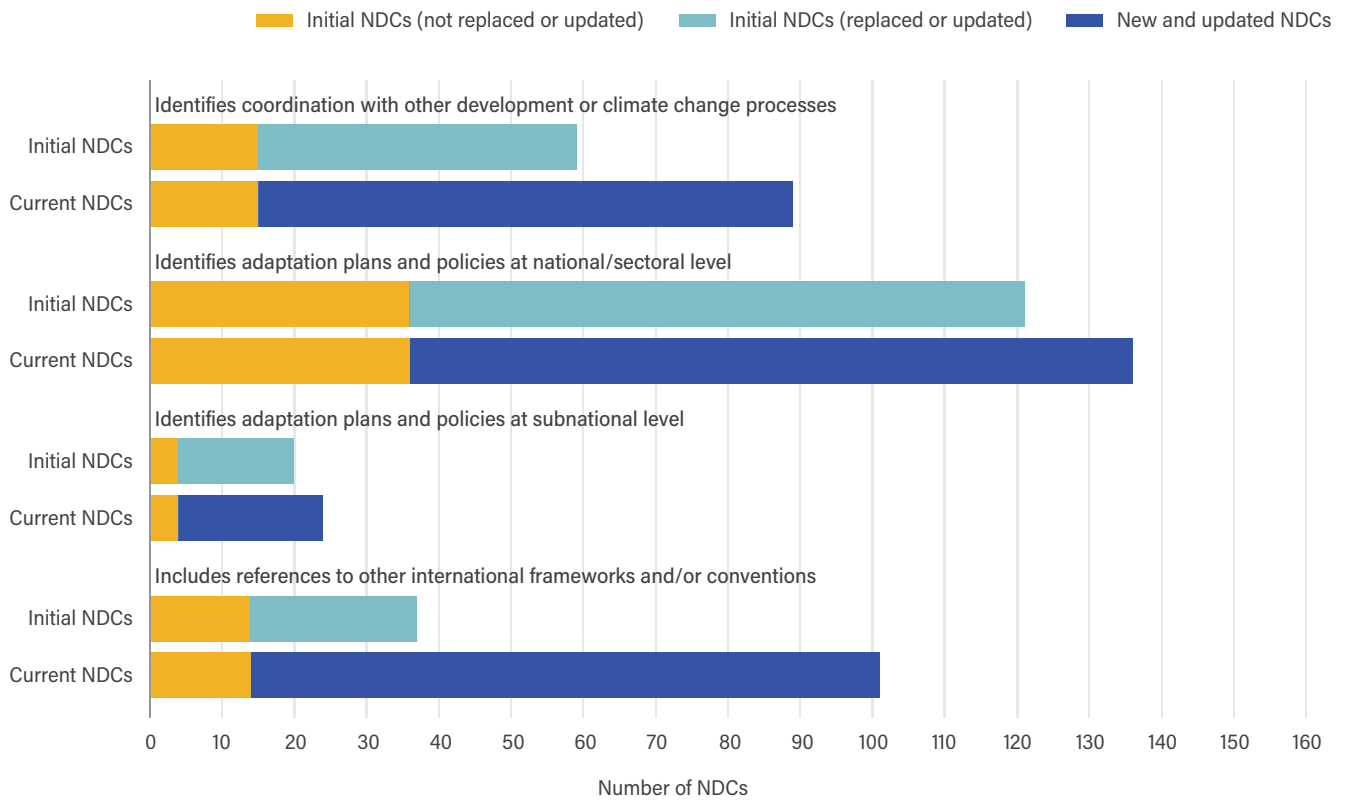
Elements of adaptation planning

An adaptation component is included in 144 current NDCs. Most (139) developing country NDCs include adaptation, but only 5 out of 16 developed country NDCs do. Countries may choose to communicate information on adaptation planning through separate instruments, such as adaptation communications.

The current NDCs demonstrate greater alignment than the initial NDCs with other adaptation plans and processes, including with the national adaptation plan (NAP) process. Of the current NDC adaptation components, 136 reference linkages to national and sectoral plans for adaptation (Figure ES-3). Countries are also demonstrating stronger linkages with ongoing or completed NAPs, which are much more comprehensive documents than NDCs for adaptation planning.

Countries are consistently including information on climate trends and impacts in their NDCs, with 104 current submissions providing this information. These trends are increasingly supported by the latest assessments and national communications, which serve as valuable context for adaptation.

FIGURE ES-3 | References to Other National Plans and International Frameworks



Note: NDC = nationally determined contribution.

Source: Authors' analysis based on WRI (2022).

Priority adaptation actions and implementation

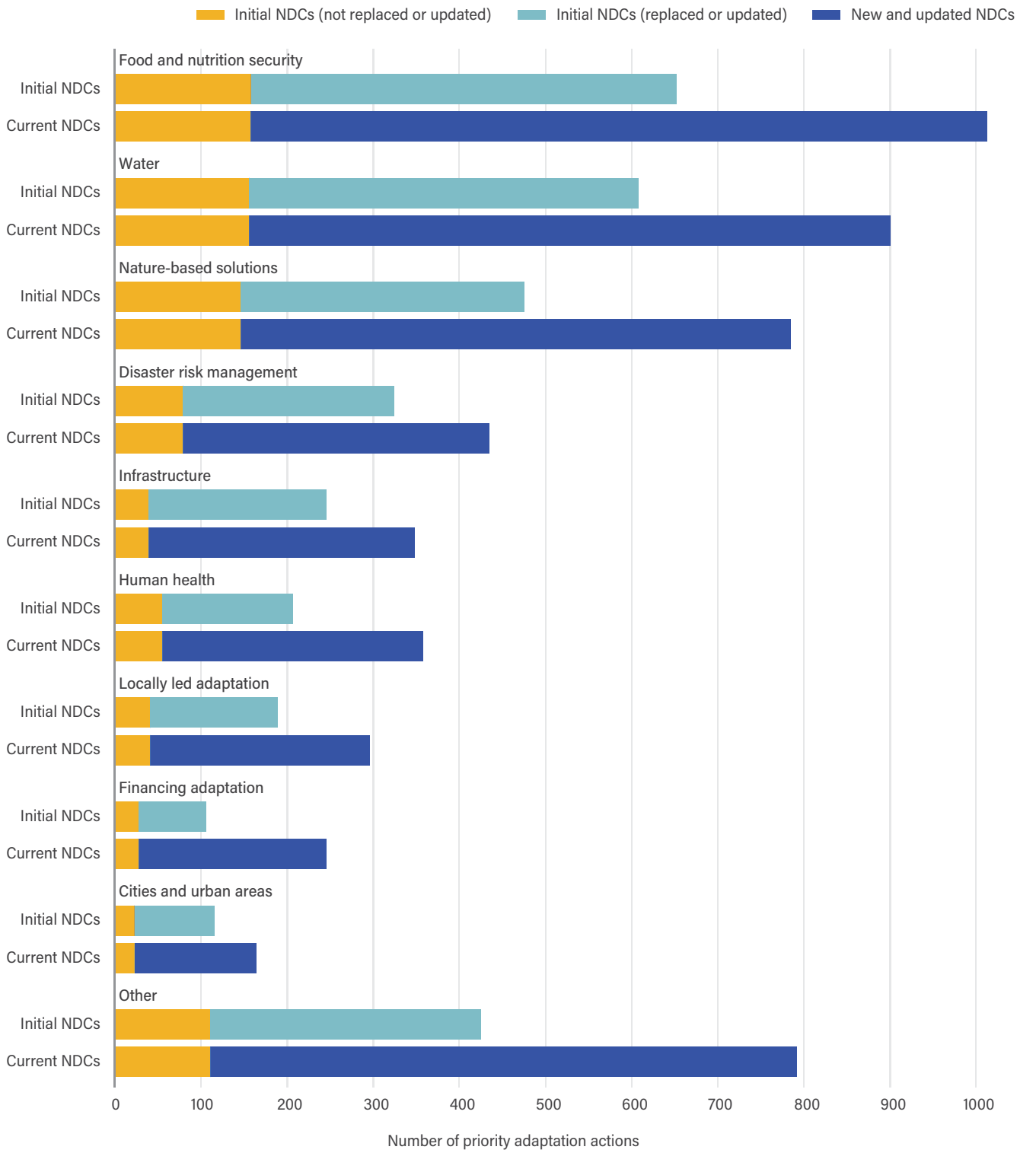
In 122 current NDCs, priority adaptation actions are identified to increase resilience and reduce vulnerability, and these priority actions cover more sectors and systems than the initial NDCs. Collectively, the current NDCs include 4,641 priority adaptation actions, compared to 2,850 actions in the initial NDCs. However, this increase is not uniform across NDCs and includes a high variance in the scope and detail of activities, suggesting that the number of actions alone does not adequately capture quality. Using a framework that identifies critical systems for adaptation based on Bapna et al. (2019), the authors found significantly increased sectoral coverage, with food and nutrition security, water, and nature-based solutions as the three most-prioritized systems in the NDC adaptation components (Figure ES-4).

Although the current NDCs include more priority adaptation actions than the initial submissions, only 1,826 of these priority actions (39 percent) include time frames for action and just 621 (13 percent) list targets or indicators. These additional details should be elaborated on through further action, such as NDC implementation plans or as elements of the NAP process, to ensure that NDC priority adaptation actions are implementation ready.

Only 57 current NDCs include information on monitoring, evaluation, and learning (MEL) for adaptation. Although this number has increased compared to the initial submissions, it represents less than half of total NDCs with adaptation components. Developing countries could benefit from improved guidance and tools on tracking adaptation MEL and linking with national MEL frameworks.

Only 11 current NDCs include references to transformative adaptation, yet 72 include priority adaptation actions with transformative elements. More NDCs are identifying priority actions with transformative elements, including an expansion in scale or systems change as well as innovation, but the lack of direct engagement with transformative adaptation (as defined in Chapter 2 of this report) suggests a gap in understanding of this emerging concept. Countries could benefit from further support to identify transformative adaptation pathways, map the transformative potential of adaptation actions, and link their NDC with long-term strategies.

FIGURE ES-4 | Breakdown of Priority Adaptation Actions in the NDCs Using Adapt Now Critical Systems



Notes: NDC = nationally determined contribution. These numbers exclude instances where sectors appear multiple times for the same adaptation action to avoid duplication for actions that were coded with multiple subsectors of the same category.

Source: Authors' analysis based on WRI (2022).

Equity considerations in adaptation

The current NDC adaptation components focus more on equity considerations than the initial submissions, both in terms of gender responsiveness and inclusion of Indigenous peoples. Seventy-nine current NDCs address gender differences in adaptation needs, and significantly more NDCs now discuss gender equity in participation and benefits than did so in initial NDCs. Countries are also increasingly referencing local and Indigenous knowledge in the current NDCs as well as supporting Indigenous rights and agency.

Losses and Damages from Climate Change

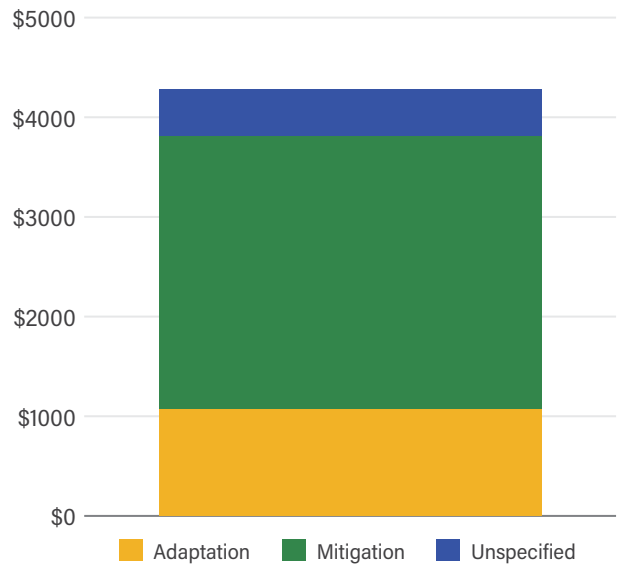
Climate-vulnerable countries are increasingly describing economic losses and damages (L&D) in their NDCs, and most countries are including more references to L&D topics. Sixty current NDCs include descriptions of economic L&D,[3] such as estimated financial costs from climate change impacts or extreme events. This is down from 63 such descriptions in the initial NDCs. But more countries are including information related to slow-onset events, human mobility (including migration, displacement, and planned relocation), and finance and capacity building to address L&D. Small island developing states, which are disproportionately vulnerable to climate change impacts, are the most likely to include information on economic L&D and L&D topics.

Finance

The number of NDCs estimating climate finance requirements has increased from 78 initial NDCs to 89 current NDCs. Countries are not required to report their climate finance requirements. Nevertheless, not only are more countries including NDC finance requirements, but they are also increasingly disaggregating their mitigation and adaptation needs for mitigation and adaptation (as opposed to providing only a lump sum). The number of NDCs reporting mitigation finance requirements increased from 62 to 70, and those reporting adaptation finance requirements from 51 to 62. In addition, the number of countries reporting conditional and unconditional finance has increased from 39 to 51 and from 25 to 39, respectively.

Eighty-nine of the current NDCs report climate finance requirements, which total $4,282 billion, including $2,740 billion for mitigation, $1,067 billion for adaptation, and $475 billion unspecified (Figures ES-5). When countries detail the conditional and unconditional finance requirements, conditional costs are almost three times the amount of unconditional finance reported by countries in their current NDCs. In the case of countries that disaggregated their adaptation and mitigation finance requirements between conditional and unconditional support, conditional finance requirements are between seven and two times the amount of unconditional finance, respectively.

FIGURE ES-5 | Total Stated Climate Finance Requirements in Current NDCs (US$, billions)



Note: NDC = nationally determined contribution. Includes NDCs submitted through September 2022.

Source: Authors' analysis based on UNFCCC (n.d.).

ENDNOTES

1. The European Union's NDC represents 27 countries and 28 Parties.

2. This determination is made following the method used by Meinshausen et al. (2022).

3. The authors identified current or expected economic costs listed in the NDCs, and incurred by countries as a result of climate change impacts or extreme events, as economic L&D. This information is not standardized across NDC submissions and may be explicitly presented as L&D, or it may be included alongside information on climate change trends and impacts.

REFERENCES

IPCC. 2022b. Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, edited P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, et al. Cambridge and New York: Cambridge University Press. https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_ WGIII_FinalDraft_FullReport.pdf.

UNFCCC. 2015. Paris Agreement. New York: United Nations. https://unfccc.int/sites/default/files/english_paris_agreement.pdf.

UNFCCC. 2021a. "Common Time Frames for Nationally Determined Contributions Referred to in Article 4, Paragraph 10, of the Paris Agreement." Subsidiary Body for Implementation, Glasgow Climate Change Conference, October 31–November 6, 2021. https://unfccc. int/sites/default/files/resource/cma3_auv_3b_CTF.pdf.

UNFCCC. 2021b. "Glasgow Climate Pact." In Report of the Conference of the Parties Serving as the Meeting of the Parties to the Paris Agreement on Its Third Session, Held in Glasgow from 31 October to 13 November 2021. Bonn, Germany: UNFCCC Secretariat. https://unfccc.int/sites/default/files/resource/cma2021_10_add1_adv.pdf.

ABOUT WRI

World Resources Institute is a global research organization that turns big ideas into action at the nexus of environment, economic opportunity, and human well-being.

OUR CHALLENGE

Natural resources are at the foundation of economic opportunity and human well-being. But today, we are depleting Earth's resources at rates that are not sustainable, endangering economies and people's lives. People depend on clean water, fertile land, healthy forests, and a stable climate. Livable cities and clean energy are essential for a sustainable planet. We must address these urgent, global challenges this decade.

OUR VISION

We envision an equitable and prosperous planet driven by the wise management of natural resources. We aspire to create a world where the actions of government, business, and communities combine to eliminate poverty and sustain the natural environment for all people.

OUR APPROACH

Count It

We start with data. We conduct independent research and draw on the latest technology to develop new insights and recommendations. Our rigorous analysis identifies risks, unveils opportunities, and informs smart strategies. We focus our efforts on influential and emerging economies where the future of sustainability will be determined.

Change It

We use our research to influence government policies, business strategies, and civil society action. We test projects with communities, companies, and government agencies to build a strong evidence base. Then, we work with partners to deliver change on the ground that alleviates poverty and strengthens society. We hold ourselves accountable to ensure our outcomes will be bold and enduring.

Scale It

We don't think small. Once tested, we work with partners to adopt and expand our efforts regionally and globally. We engage with decision-makers to carry out our ideas and elevate our impact. We measure success through government and business actions that improve people's lives and sustain a healthy environment.

WORLD
RESOURCES
INSTITUTE

10 G Street, NE
Washington, DC 20002
WRI.ORG