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FOREWORD

With only nine years left until 2030, the sense of urgency to address climate change is increasing. The Intergovernmental Panel on Climate Change (IPCC), in its Sixth Assessment Report, confirms the *unequivocal, unprecedented, irreversible* trends of current and future climate risks the planet is facing at this historic turning point. Unless there are immediate, rapid, and large-scale reductions in greenhouse gas emissions, limiting warming to close to 1.5 °C or even 2 °C will be beyond our reach.

It is clear that climate change impacts on agriculture are increasingly affecting people's food security and livelihoods. The number of people in the world affected by hunger increased in 2020, and exacerbated by the COVID-19 pandemic, is calling for urgent transformation of our agri-food systems. Adapting to and mitigating the impacts of climate change on the natural resource base, agricultural production systems, agri-food value chains and rural livelihoods is more urgent than ever.

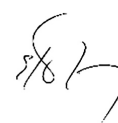
The nationally determined contributions (NDCs) in support of the Paris Agreement provide the foundations for pathways towards a low-emission and climate-resilient future. They represent a commitment to act at the national level to mitigate emissions and adapt to changes in climate, to report on progress made, and identify support where it is needed.

This report provides a unique, sector-specific synthesis of the new or updated NDCs by providing an overview of adaptation and mitigation priorities, vulnerabilities, and support needs in the agriculture, forestry, and fisheries sectors. It also demonstrates how ambition in these sectors has changed over time by comparing new or updated NDCs to the previous submissions reported in the FAO analysis of first-round NDCs published in 2016. The overall purpose is to improve knowledge on the role of the agricultural sectors in achieving national climate change goals and targets and, therefore, to inform decision-making processes of international and national development organizations, financial institutions, private sector, and other vested stakeholders for more targeted support on NDC implementation.

Although second generation NDCs represent progression beyond previous submissions, the flow of resources, technologies, and capacities to implement global climate commitments in agri-food systems must be ambitiously scaled up to achieve the goals of the Paris Agreement and the 2030 Agenda for Sustainable Development.

New or updated NDCs reflect an improvement towards effective cross-sectoral planning, stakeholder engagement, and inclusivity, especially towards women and other marginalized groups, including smallholders, Indigenous Peoples, and youth. These elements are key to fostering effective transformation towards climate-resilience considering the multitude of food system actors and institutions intrinsically involved. However, while non-state and sub-national actors are more frequently consulted in the overall NDC planning process, including private sector, women's organizations and civil society, there is less evidence of active engagement mechanisms in place when it comes to implementation of NDCs. Other critical gaps are also presented in the report. For example, only some countries articulate measurable goals and targets for climate action in the agricultural sectors; and there is often low specificity of finance, technology, and capacity needs.

The findings of this report will help member countries to reflect on their progress; whilst serving as a basis to FAO and other international actors, for the support that will be required to move on implementation of agricultural sector priorities in their NDCs. The analysis also helps to make clear the links between the NDCs and the ongoing work of the United Nations Framework Convention on Climate Change in support of the Koronivia Joint Work on Agriculture to which FAO is a key supporter.



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ACRONYMS AND ABBREVIATIONS

AFOLU	Agriculture, Forestry and Other Land Use
COP	Conference of the Parties
CCAFS	Research Program on Climate Change, Agriculture and Food Security
CGIAR	Consultative Group on International Agricultural Research
DRR	disaster risk reduction
FTA	Research Program on Forests, Trees and Agroforestry
GHG	greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
IPPU	Industrial Processes and Product Use
LULUCF	Land Use, Land Use Change and Forestry
M&E	monitoring and evaluation
MRV	measurement, reporting and verification
NAMA	nationally appropriate mitigation actions
NAP	National Adaptation Plans
NDC	nationally determined contributions
OCB	Office of Climate Change, Biodiversity and Environment
REDD+	reducing emissions from deforestation and forest degradation
SDG	Sustainable Development Goals
UNFCCC	United Nations Framework Convention on Climate Change
UNFCCCDD	United Nations Convention to Combat Desertification

EXECUTIVE SUMMARY

1.1 OVERVIEW

In response to the Paris Agreement's call for greater ambition, new or updated nationally determined contributions (NDC) show a steady improvement in both the coverage and quality of mitigation and adaptation in the agricultural, forestry and fisheries sectors ("agricultural sectors" for short) and tend to be aligned with longer-term low-emissions and climate-resilient goals and pathways. New/updated NDCs reflect more attributes of adequate and effective planning and implementation than previous NDC submissions, including participatory stakeholder engagement, cross-sectoral coordination mechanisms, alignment with National Adaptation Plans (NAP) and Sustainable Development Goals (SDG) and elements of enhanced transparency. They show significantly greater recognition of the vulnerabilities, needs and capacities of women and other marginalized groups, including smallholders, Indigenous Peoples and youth, to enhance the ambition and effectiveness of climate action. There are still gaps however in the specificity of finance, technology, and capacity needs, and only some countries articulate measurable goals and targets for climate action in the agricultural sectors. While non-state and sub-national actors are more frequently consulted in the overall NDC planning process, including private sector, women's organizations and civil society, there is less evidence of active engagement mechanisms in place when it comes to implementation.

AGRICULTURE, FORESTRY AND FISHERIES IN NATIONALLY DETERMINED CONTRIBUTIONS

Out of all new/updated NDCs submitted to date¹:

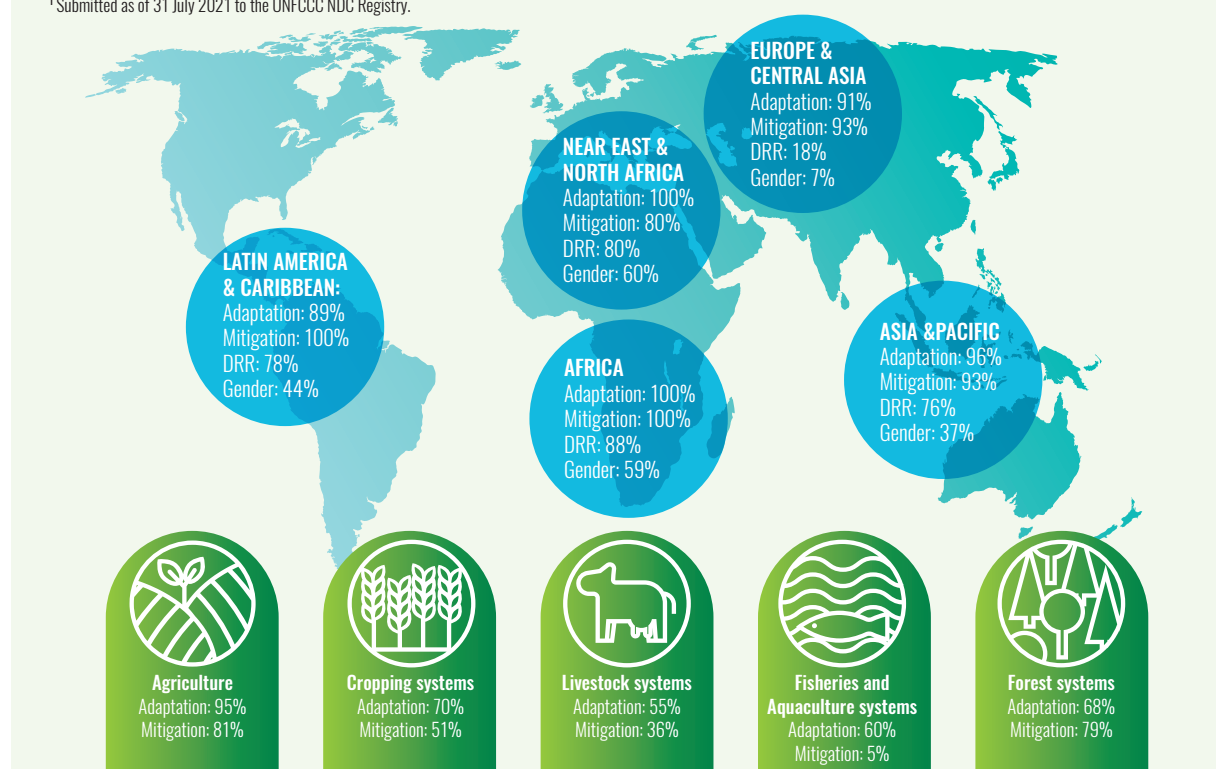
95% include adaptation in the agricultural sectors compared to previous NDCs (92%)

95% also include mitigation in the agriculture and/or Land Use, Land Use Change and Forestry (LULUCF) sectors compared to previous NDCs (82%)

70% include disaster risk reduction (DRR) and management compared to previous NDCs (59%)

38% reference women and/or other marginalized groups in the agricultural sectors—compared to previous NDCs (9%)

¹ Submitted as of 31 July 2021 to the UNFCCC NDC Registry.



1.2 MITIGATION

Mitigation ambition in the agricultural sectors has gone up across the board in coverage and quality across all regions (Figures 1–2). Almost all (95 percent) new/updated NDCs include mitigation in the agriculture and/or Land Use, Land Use Change and Forestry (LULUCF) sectors. After the energy sector, Agriculture, Forestry and Other Land Use (AFOLU) constitutes the greatest priority for mitigation in new/updated NDCs, particularly through the sector’s unique capacity to store and sequester carbon. Most (79 percent) mitigation contributions cover forestry, many cover the crops (51 percent) and livestock (36 percent) sub-sectors. Some cover energy in/from the agricultural sectors (35 percent), few countries cover fisheries and aquaculture (5 percent) and few cover waste (13 percent) from the agricultural sectors. With the increase in coverage came also greater inclusion of sector-specific greenhouse gas (GHG) targets (40 percent) and mitigation actions (80 percent) in the agricultural sectors. Around one-fourth of new/updated NDCs include a GHG target specific to the agriculture sector and one-third include LULUCF-specific GHG targets. Mitigation actions are geared towards carbon sequestration on forest lands and in coastal ecosystems and emission reductions from managed agricultural soils, croplands, enteric fermentation, and manure management. Only a few (5 percent) new/updated NDCs do not contain any mitigation contribution in the agricultural sectors. At the regional level, all new/updated NDCs in Africa, Latin America and Caribbean, almost all in Asia and Pacific and Europe and Central Asia and most in Near East and North Africa include mitigation in the agriculture and/or LULUCF sector.

FIGURE 1.

TYPOLGY OF MITIGATION CONTRIBUTIONS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs

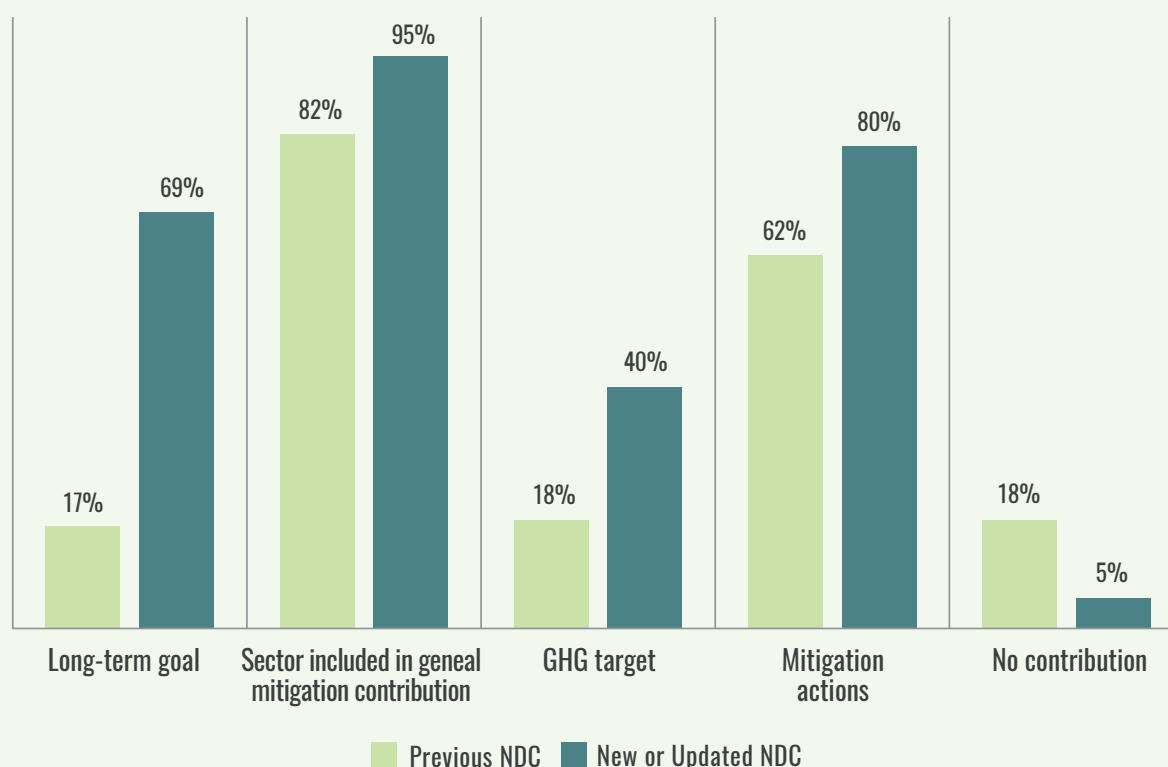
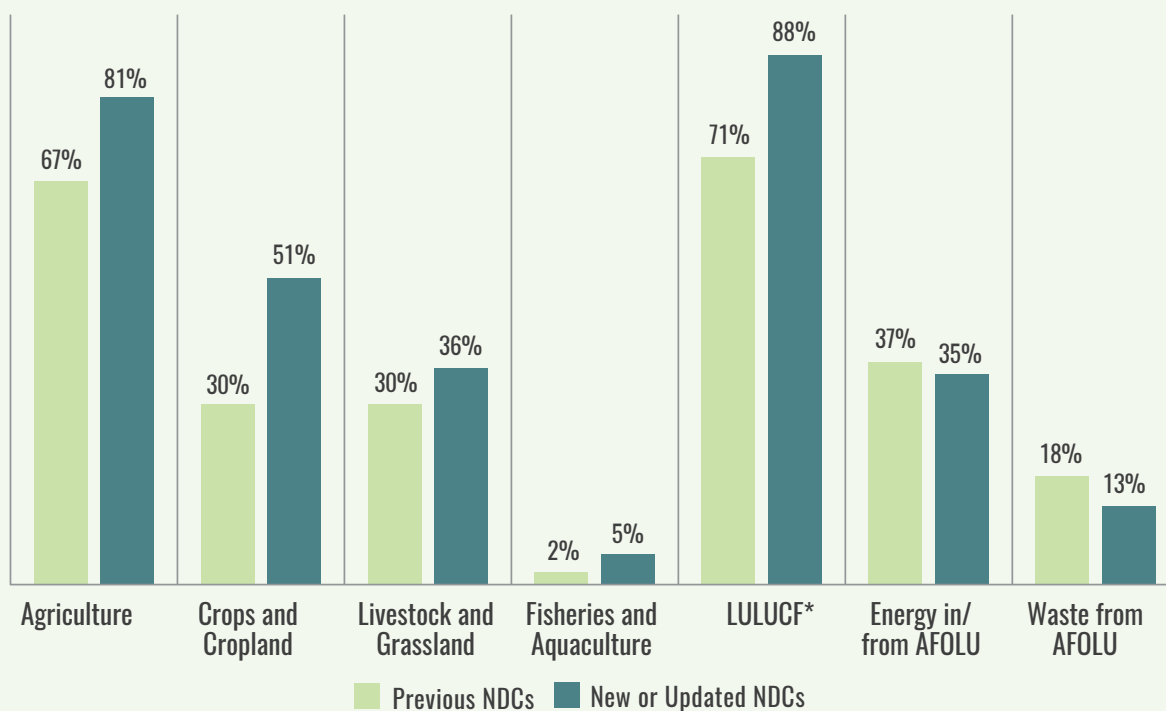


FIGURE 2.**COVERAGE OF MITIGATION CONTRIBUTIONS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs, BY SUB-SECTOR**

*LULUCF excludes cropland and grassland in this figure.

1.3 ADAPTATION

Adaptation components continue to reflect the extreme vulnerability and urgency of adaptation in the agricultural sectors, natural ecosystems, and rural livelihoods. Almost all adaptation components refer to key climate-related impacts, risks, and vulnerabilities in their new/updated NDCs. These include observed and projected climatological, meteorological, hydrological, and biological hazards, and key impacts and risks in natural and human systems, as well as social, economic, and environmental drivers of vulnerability. Many refer to the increased intensity and frequency of extreme and slow onset events, including floods, droughts, storms, extreme heat, sea-level rise, ocean acidification, soil and coastal erosion, and pests and diseases. These are considered to trigger climate-related impacts in natural systems, including biodiversity loss, water scarcity and land degradation, as well as in human systems, particularly agricultural loss and damage, loss of income and livelihoods, food insecurity, poverty and water and vector-borne human diseases. The underlying vulnerabilities of certain population groups, poor economies and territories compound the impacts of climate change currently experienced or expected in the future. Economic dependence on natural resources and the agricultural sectors, environmental degradation and competition for resources, civil conflict and migration are amongst some of the non-climatic drivers of vulnerability referenced in new/updated NDCs.

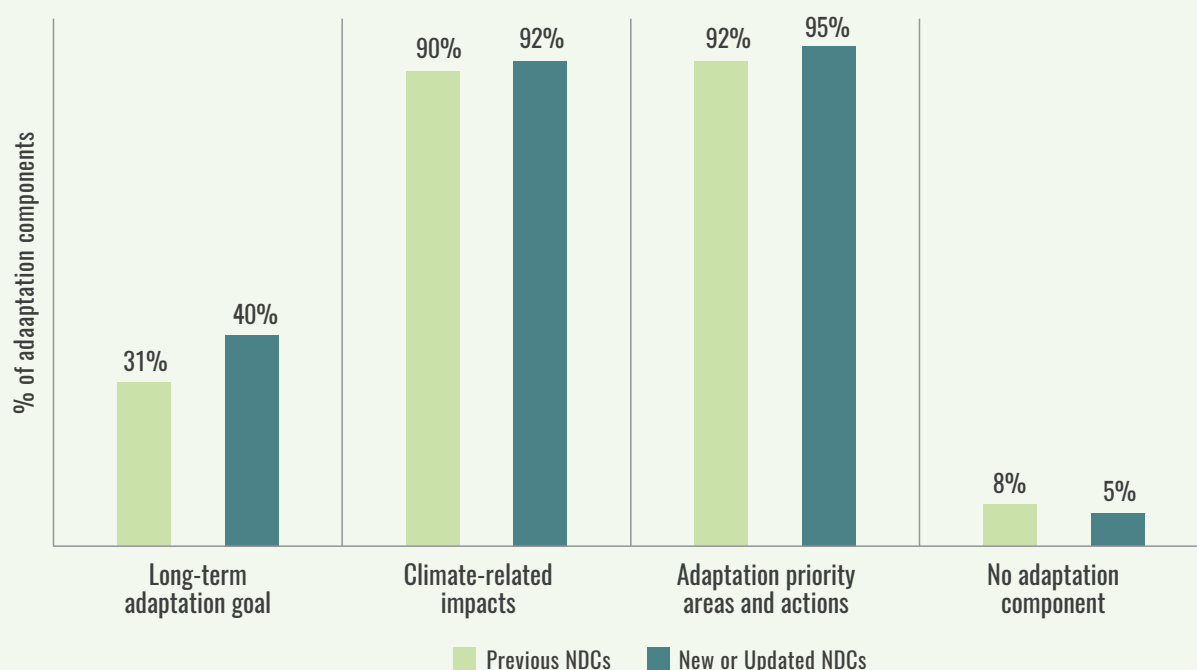
Adaptation ambition in the agricultural sectors has steadily grown in terms of coverage and quality across all regions (Figures 3–4). Almost all (95 percent) adaptation components include priority areas or actions in the agricultural sectors and most (78 percent) include priority areas or actions related to ecosystems and natural resources. Many adaptation components cover cropping, (70 percent), forest (68 percent), fisheries and aquaculture (60 percent) and livestock (55 percent) systems, as well as opportunities for adaptation along the agri-food value chain (51 percent). At the regional level, the agricultural sectors are prioritized in all adaptation components in the Near East and North Africa, almost all in Africa, Asia and Pacific and Europe and Central Asia, and most in Latin America and Caribbean.

Most adaptation components also consider terrestrial ecosystems (71 percent), freshwater resources and ecosystems, including wetlands (62 percent), coastal and low-lying areas (42 percent) and biodiversity (42 percent) as priority areas. At the regional level, most adaptation components in Africa, many in Latin America and Caribbean, and some in Asia and Pacific, Europe and Central Asia and Near East and North Africa include adaptation actions related to ecosystems and natural resources. Still, however, only some adaptation components contain a long-term goal or vision.

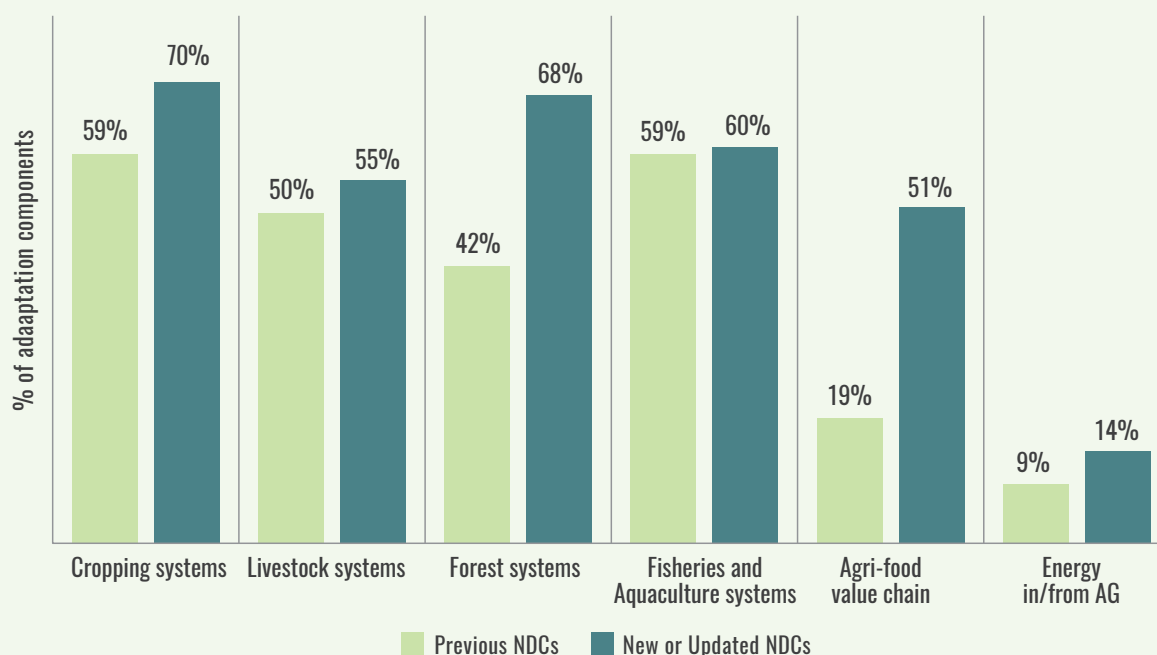
Many adaptation components include priority areas or specific actions to reduce and manage disaster risks in agriculture and cross-sectorally (71 percent). At the regional level, disaster risk reduction and management is included in adaptation components in Africa (88 percent), Asia and Pacific (80 percent), Latin America and Caribbean (78 percent) and Near East and North Africa (80 percent) and some in Europe and Central Asia (18 percent).

FIGURE 3.

TYPOLGY OF ADAPTATION COMPONENTS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs



The call for strengthening the capacity of livelihoods, health and/or economic systems to prepare for, cope with and bounce back from climate and other risks can be heard even more loudly in new/updated submissions (81 percent). Priority areas for adaptation include human health services (60 percent), gender equality and social inclusion (49 percent), food security and nutrition (31 percent) and climate-resilient infrastructure and critical services (25 percent), amongst others. Many (54 percent) adaptation components also include climate change planning and governance actions, such as climate information and advisory services (34 percent) and regulatory approaches (30 percent), such as marine protection areas. Few include monitoring strategies, such as spatial monitoring of coastal zones, and environmental-based market instruments, such as payments for ecosystem services. At the regional level, many adaptation components in Africa include adaptation actions related to livelihood, health and/or economic systems, while in all other regions only some adaptation components do.

FIGURE 4.**COVERAGE OF ADAPTATION COMPONENTS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs, BY SUB-SECTOR**

1.4 SUPPORT NEEDS

There are significant gaps in the specificity of finance needs for NDC implementation in the agricultural and natural resource sectors, as well as in support needs for rural livelihood protection and promotion. Almost all (92 percent) developing countries communicate qualitative finance needs; yet only half quantify the amount required for NDC implementation. Only some (22 percent) distinguish between the amount that will be financed domestically and the amount reliant on international support (Figure 5). Some (35 percent) developing countries distinguish between adaptation and mitigation finance needs and only some provide estimates at the sectoral or priority area level. Some (18 percent) developing countries estimate the cost of implementation in the agricultural sectors (Figure 6).

Most (77 percent) developing countries express technology development and transfer needs. Out of all technology needs mentioned, almost half relate to the agricultural sectors (Figure 7). Others relate to resilient infrastructure and natural resources management for adaptation and mitigation.

Most (71 percent) developing countries also identify capacity-building needs around the planning and implementation of NDCs. Out of all capacity needs mentioned, over half relate to the agricultural sectors (Figure 8). They point to gaps in technical capacity and skills, institutional capacity to coordinate and mobilize finance, education and public awareness, and research to improve the effectiveness of NDC planning and implementation in the agricultural sectors.

FIGURE 5.

INFORMATION ON FINANCE NEEDS FOR NDC IMPLEMENTATION IN DEVELOPING COUNTRIES COMMUNICATED, BY SHARE OF NEW/UPDATED NDCs

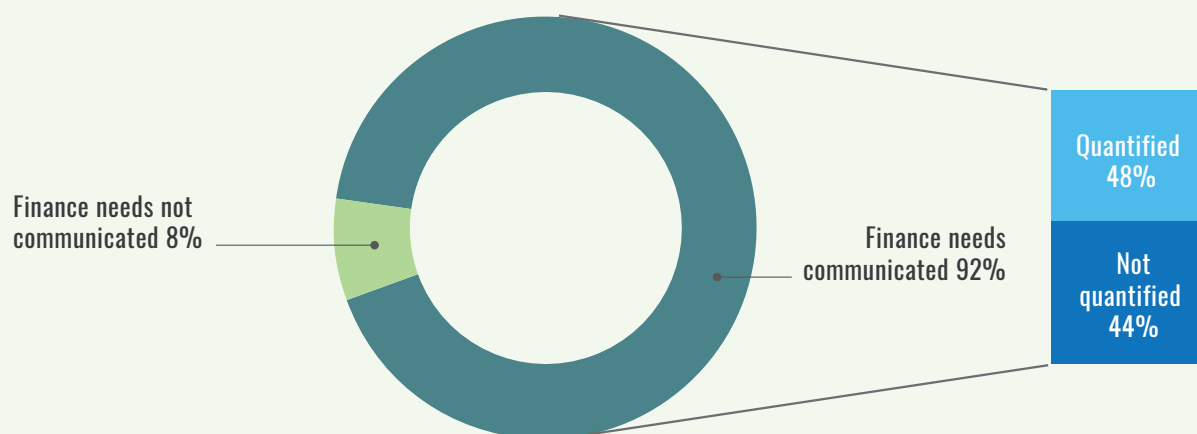


FIGURE 6.

QUANTITATIVE INFORMATION ON FINANCE NEEDS FOR NDC IMPLEMENTATION IN DEVELOPING COUNTRIES COMMUNICATED IN NEW/UPDATED NDCs, BY SECTOR OR PRIORITY AREA

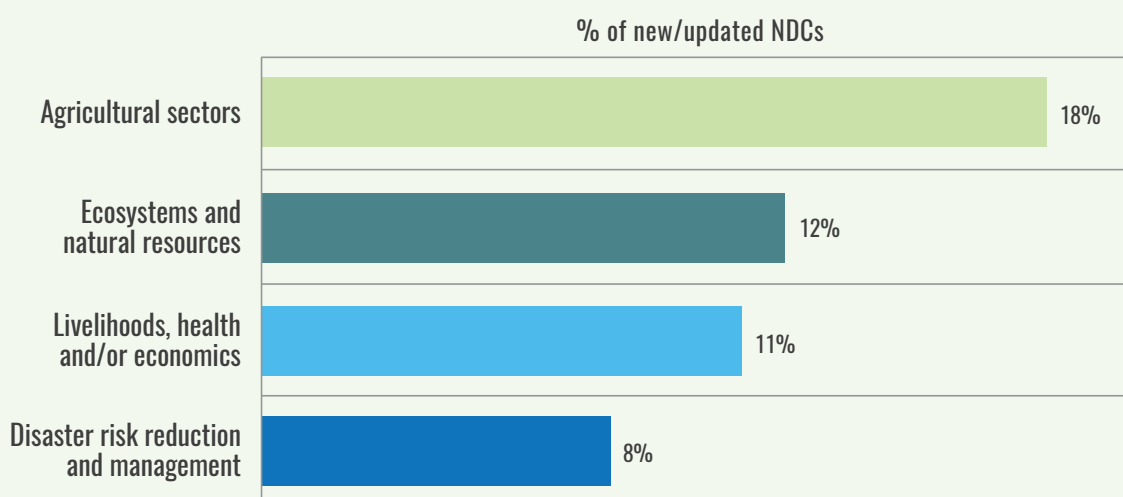


FIGURE 7.

INFORMATION ON TECHNOLOGY DEVELOPMENT AND TRANSFER NEEDS FOR NDC IMPLEMENTATION IN THE AGRICULTURAL SECTORS REFERENCED BY DEVELOPING COUNTRIES, BY SHARE OF NEW/UPDATED NDCs

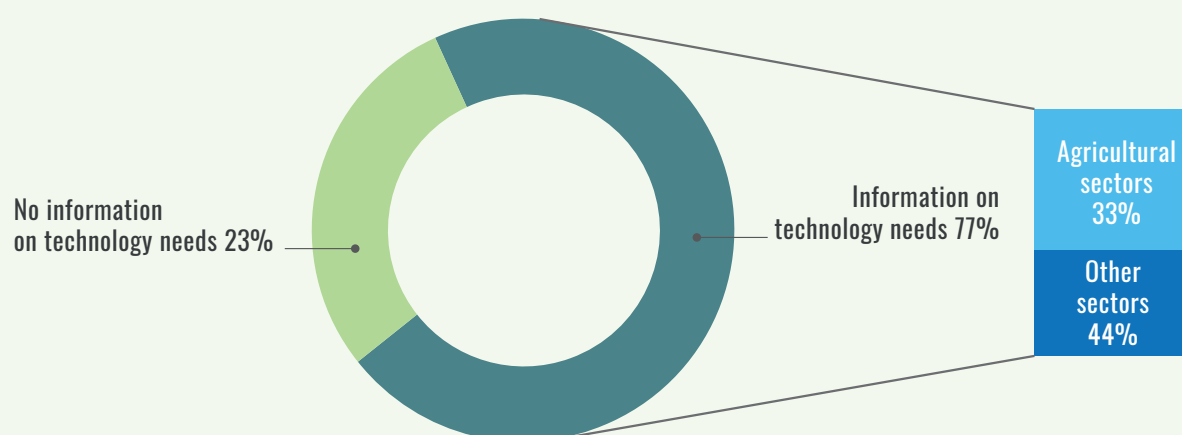
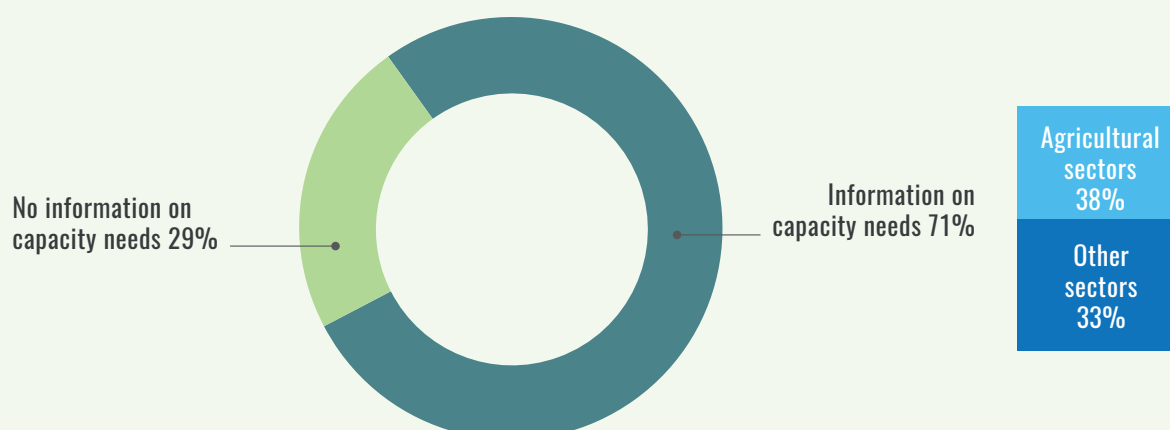


FIGURE 8.

INFORMATION ON CAPACITY BUILDING NEEDS FOR NDC IMPLEMENTATION IN THE AGRICULTURAL SECTORS REFERENCED BY DEVELOPING COUNTRIES, BY SHARE OF NEW/UPDATED NDCs



1.5 PLANNING AND IMPLEMENTATION PROCESSES

New/updated NDCs reflect more attributes of adequate and effective planning and implementation overall. Most (74 percent) refer to domestic institutional arrangements in place that are responsible for developing and coordinating the NDC at national and sub-national levels, including inter-institutional committees or working groups. Almost all describe regulatory frameworks that provide the legal basis for NDC implementation at the national level.

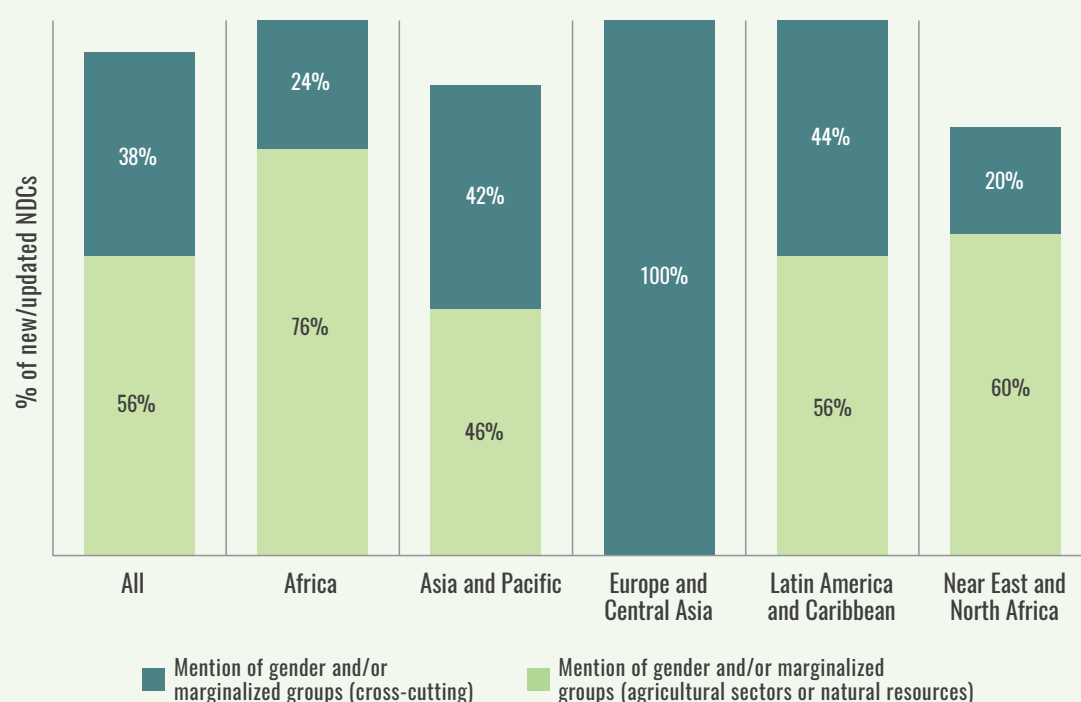
The latest round of new/updated NDCs were prepared with more consultative and participatory formulation processes. Most (75 percent) refer to multi-stakeholder engagement processes, compared to some (25 percent) in previous NDCs. However, whilst many include a list of generic stakeholder groups, such as government, private sector, and non-state actors, only some (39 percent) make explicit reference to the inclusion of marginalized groups, including smallholders, women, Indigenous Peoples, and youth. Few refer explicitly to the role of agricultural stakeholders in the NDC planning process.

New/updates NDCs show significantly greater recognition of the vulnerabilities, needs and capacities of women and other marginalized groups (82 and 78 percent, respectively), including Indigenous Peoples, smallholders, youth, elderly and disabled, to enhance the ambition and effectiveness of climate action. Almost all (94 percent) developing countries¹ mention gender and/or other marginalized groups as a cross-cutting issue or priority area in new/updated NDCs (Figure 9). At the regional level, most developing countries in Africa (76 percent), many in Asia and Pacific (46 percent), Latin America and Caribbean (56 percent) and Near East and North Africa (60 percent), and none in Europe and Central Asia reference gender and/or marginalized groups in the agricultural sectors as cross-cutting issue or priority area for climate action in new/updated NDCs.

More can be done to strengthen efforts to achieve gender equality and social inclusion in the context of climate change in the agricultural sectors. Whilst almost all (94 percent) developing countries submissions mention gender and/or other marginalized groups as a cross-cutting priority area, not nearly as many include concrete characteristics of gender-responsive NDC planning and implementation. For instance, many (41 percent) describe gender-responsive stakeholder engagement processes, some (36 percent) reference gender-responsive policies and budgets, and many (44 percent) outline gender-sensitive measures and indicators. Only some (14 percent) develop gender-responsive measures and indicators to support adaptation in the agricultural or natural resource sectors.

FIGURE 9.

GENDER AND/OR MARGINALIZED GROUPS REFERENCED IN THE AGRICULTURAL SECTORS BY DEVELOPING COUNTRIES IN NEW/UPDATED NDCs



Almost all new/updated NDCs describe efforts in achieving policy coherence and cross-sectoral coordination across climate change commitments in the NDCs and national and sub-national policies, plans and budgets, including COVID-19 green recovery plans (91 percent). Many (61 percent) developing countries make links between the planning and implementation of their NDCs with other national climate change, environment, and sustainable development agendas. Almost all (98 percent) adaptation components refer to the NAP, and some (22 percent) refer to the role of the NAP as an implementing

¹ In this section, “countries” is used interchangeably with “NDCs” for ease of communication. The analysis however is based on the NDC as the common denominator.

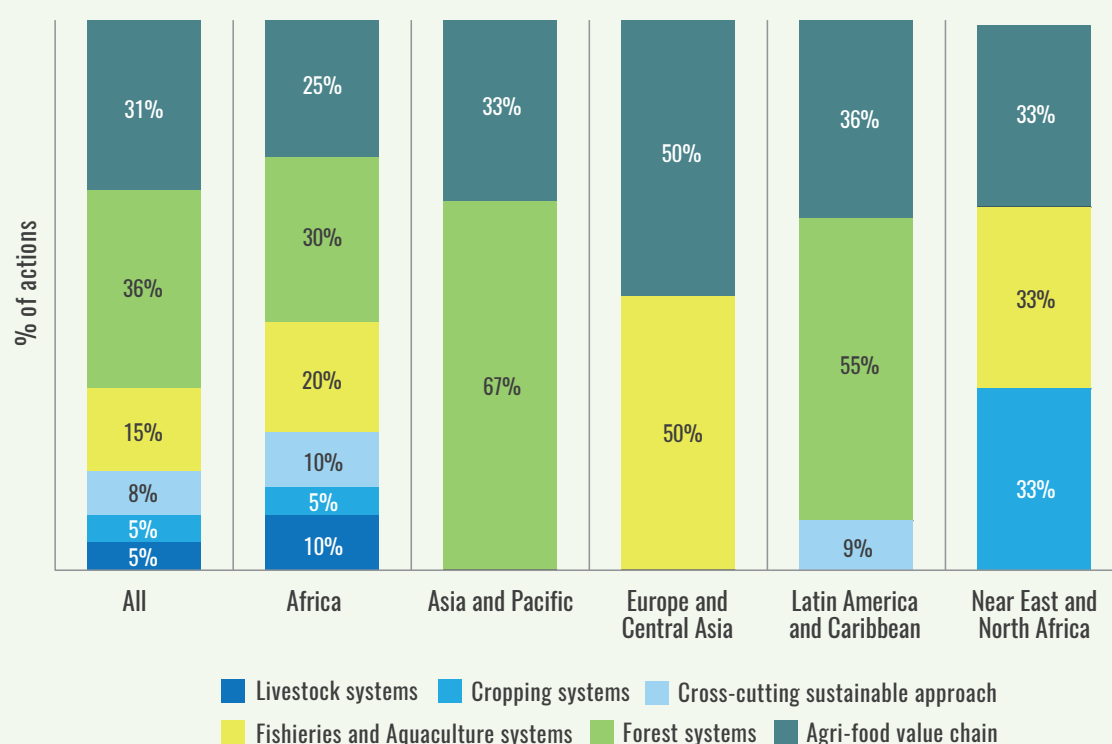
instrument of their NDC or a source of information for developing the NDC. Many (66 percent) new/updated NDCs reference the impacts of COVID-19 on the NDC development or implementation process and the need to further align NDCs with green recovery.

Many developing countries provide information on budget integration and finance mobilization efforts to support NDC implementation (66 percent). Some (23 percent) describe efforts to mainstream climate change into national and sectoral plans and budgets, and some (23 percent) refer to NDC investment plans, with only a few mentioning explicitly the agricultural sectors.

New/updated NDCs increasingly recognize the role of private sector actors in scaling up implementation, particularly in the agricultural sectors. For instance, many (41 percent) reference specific private sector engagement entry-points for climate action, with the majority oriented towards the agricultural sectors. Amongst those entry-points mentioned, mitigation and/or adaptation opportunities in forest systems and agri-food value chains hold the largest share (**Figure 10**).

FIGURE 10.

DISTRIBUTION OF PRIVATE SECTOR ENGAGEMENT ENTRY-POINTS REFERENCED IN NEW/UPDATED NDCs, BY SUB-SECTOR



Only some new/updated NDCs point to the evidence base or rationale for the selection of climate actions in the agricultural sectors. Some mention the use of cost-benefit or multi-criteria analysis for the selection of mitigation or adaptation actions. Some (36 percent) include estimated baseline emission scenarios in the agricultural sectors in new/updated NDCs compared to previous one (23 percent). Around half of adaptation components refer to climate risk and vulnerability assessments, including the agricultural and natural resources sectors.

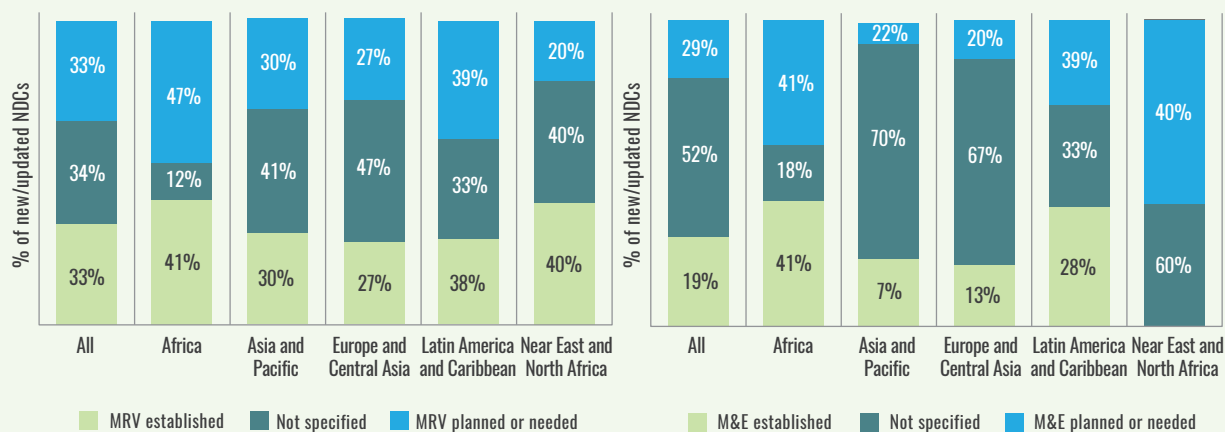
Some new/updated NDCs reference implementation plans either in the making or already developed (35 percent). However, only a few make clear reference to the agricultural sectors.

Domestic systems to transparently track adaptation and mitigation progress are often not yet in place. Many (67 percent) of new/updated submissions communicate that measurement, reporting and verification (MRV) systems to track mitigation progress are not yet in place, or no information is

provided (**Figure 11**). At the same time, most (81 percent) communicate that monitoring and evaluation (M&E) systems to track adaptation progress are not yet in place, or no information is provided.

FIGURE 11.

STATUS OF INSTITUTIONAL ARRANGEMENTS FOR MRV OF MITIGATION AND M&E OF ADAPTATION IN NEW/UPDATED NDCs, BY REGION



CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

In 2015, the Paris Agreement brought together 197 developed and developing countries to strengthen the global response to the threat of climate change. In the context of sustainable development and efforts to eradicate poverty, the Agreement lays out the collective goal of holding the increase in global average temperature to well below 2 °C above pre-industrial levels, whilst pursuing efforts to limit warming to 1.5°C by 2100. In order to achieve long-term stabilisation of the global climate system, the Agreement also calls upon Parties to reach net neutrality by mid-century, recognising that developing country Parties may take longer to reach peak greenhouse gas (GHG) emissions. To address the increasing climate impacts and risks of global warming, Parties have also set goals to increase adaptive capacity and climate resilience and align finance flows with low emission and climate-resilient development pathways articles.

Achieving these global goals will depend on the ability of countries to develop and implement national climate action plans, known as nationally determined contributions (NDCs). NDCs constitute each country's self-determined contribution to achieving the global climate mitigation and adaptation goals under the Paris Agreement. The NDC includes climate-related targets, policies, and measures which governments aim to implement in response to climate change.

The Paris Agreement is premised on the notion that NDCs will be enhanced over time. As part of a progressive cycle of ambition, Parties are requested to prepare, communicate, and maintain successive NDCs every five years. The twenty-first Conference of the Parties (COP) requested countries whose NDC timeframe ends in 2025 to submit an entirely new NDC by 2020, whereas those with a 2030 end date were requested to communicate or update their current NDC by 2020. This “ratchet mechanism” built into the Agreement serves to ensure that countries progressively enhance their climate change ambition in light of economic development, technological advancements, evolving institutional capacities and greater flows of support.

The agricultural sectors and food systems at large have a critical role to play in the response to climate change (FAO, 2016a). The adverse impacts of weather and climate extremes are projected to significantly affect the natural resources base and agricultural productivity in all future warming scenarios (IPCC, 2021), with cascading and potentially irreversible impacts on rural livelihoods and food security and nutrition. At the same time, containing global warming within the 1.5 °C threshold will not be possible without reducing the one-third contribution of agriculture and food systems to global GHG emissions (Crippa *et al.*, 2021).

1.2 OBJECTIVE

This report aims to illustrate how the agriculture, forestry, and fisheries sectors (hereafter “agricultural sectors”)² are represented in new or updated NDCs by providing an overview of adaptation and mitigation priorities, vulnerabilities, and support needs in the sector. It also demonstrates how ambition in the agricultural sectors has changed over time by comparing new or updated NDCs to previous submissions. As such, it provides an update to the (FAO 2016) global analysis of the NDCs. The overall purpose of this report and workstream is to improve knowledge on the role of the agricultural sectors in achieving national climate change goals and targets and, therefore, to inform decision-making of international and national development organizations, financial institutions, private sector and other vested stakeholders for more targeted support on NDC implementation. More broadly, this synthesis report may contribute to the assessment of collective progress towards achieving the goals of the Paris Agreement planned in the 2023 global stocktake by establishing a baseline of NDC commitments in the agricultural sectors.

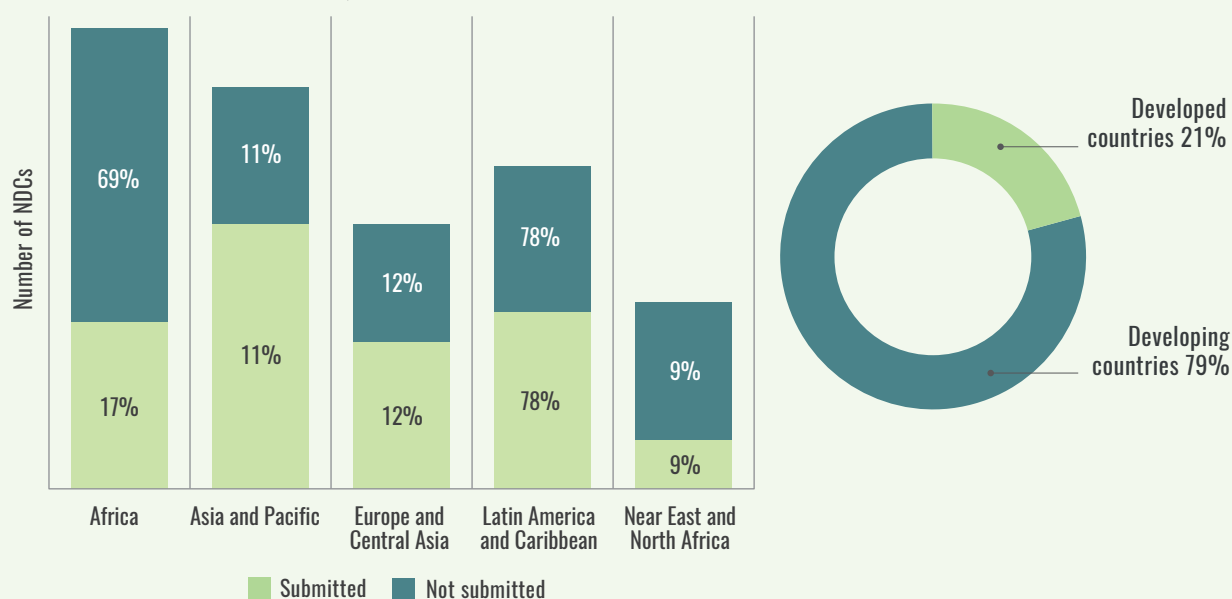
1.3 DATA AND GEOGRAPHIC SCOPE

The report synthesizes information found in 85 NDCs, representing 112 Parties to the Paris Agreement, submitted as of 31 July 2021 to the United Nations Framework Convention on Climate Change (UNFCCC) NDC Interim Registry as new or updated NDCs (referred to as “new/updated”) pursuant to decision 1/CP.21, as well as information from 159 first NDCs and 9 intended NDCs, representing 196 Parties, submitted prior to 2020 (referred to as “previous NDCs”). The European Union and its member States communicated one joint NDC, which is counted as one NDC in this report, representing 28 Parties (the European Union and its 27 member States). The new/updated NDC represent 59 percent of all Parties to the Paris Agreement and half (85 out of 170) of potential NDC submissions from Parties.

In this report, NDCs are grouped by FAO regional office (Africa, Asia and Pacific, Europe and Central Asia, Latin America and Caribbean and Near East and North Africa) and the NDCs from the European Union and North America are stand-alone groupings (FAO, undated). The assignment of countries or areas (UNSD, 2020) and economic status (UNCTADstat, undated) is for statistical convenience and does not imply any assumption regarding political or other affiliation of countries or territories by the UN.

To date, half of all new/updated NDCs have been submitted from existing Parties from all regions. At least half of all Parties in each region have submitted a new/updated NDC, with the exception of Africa and the Near East and North Africa (**Figure 12**). Most of the new/updated NDCs represent developing country Parties.

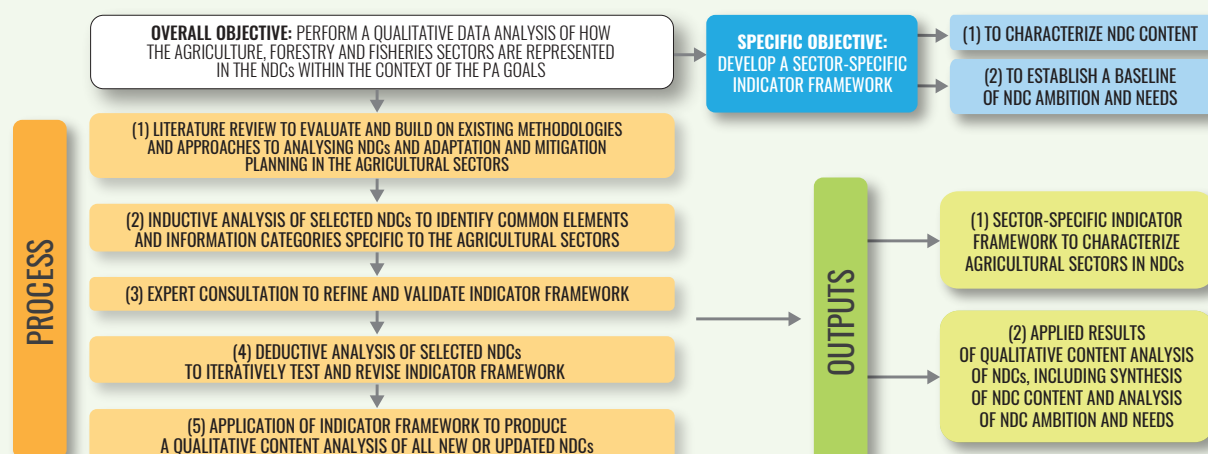
² In this report, the term “agricultural sectors” refers to all assets (natural, economic, social, and human) and activities (production, aggregation, processing, distribution, and consumption) related to crops, livestock, forestry and fisheries and aquaculture systems, and the outputs of those systems, including environmental and socio-economic outcomes at the individual, community, national and global level.

FIGURE 12.**NEW/UPDATED NDC SUBMISSIONS, BY REGION AND ECONOMIC DEVELOPMENT STATUS**

It should be noted that this report is an interim update to be presented at the twenty-sixth COP. However, a full update report, synthesizing information from all new or updated NDC submitted as of 31 December 2021 will be developed (and replace this interim report).

1.4 METHODS

To facilitate the qualitative data analysis, a sector-specific indicator framework was developed based on literature review, inductive and deductive evaluation of the NDCs and expert consultation (Figure 13). All NDCs were reviewed against the indicator framework and relevant information was captured in a database. The NDCs were reviewed in English, English translation or in original language. The results of the qualitative data analysis are presented in this report.

FIGURE 13.**METHODOLOGICAL APPROACH TO DEVELOPMENT OF NDC INDICATOR FRAMEWORK IN THE AGRICULTURAL SECTORS**

Statistical statements are made relative to the total number of NDCs analysed as opposed to the total number of Parties or countries. For sake of simplicity and ease of understanding, “number of NDCs” and “number of countries” are used interchangeably throughout the document. To ensure consistency with UNFCCC global synthesis report (UNFCCC, 2021), the subsequent terms are used to indicate the share of NDCs that contain specific information: “a few” for less than 10 percent; “some” for 10–40 percent; “many” for 41–70 percent; “most” for 71–90 percent; and “almost all” for more than 90 percent.

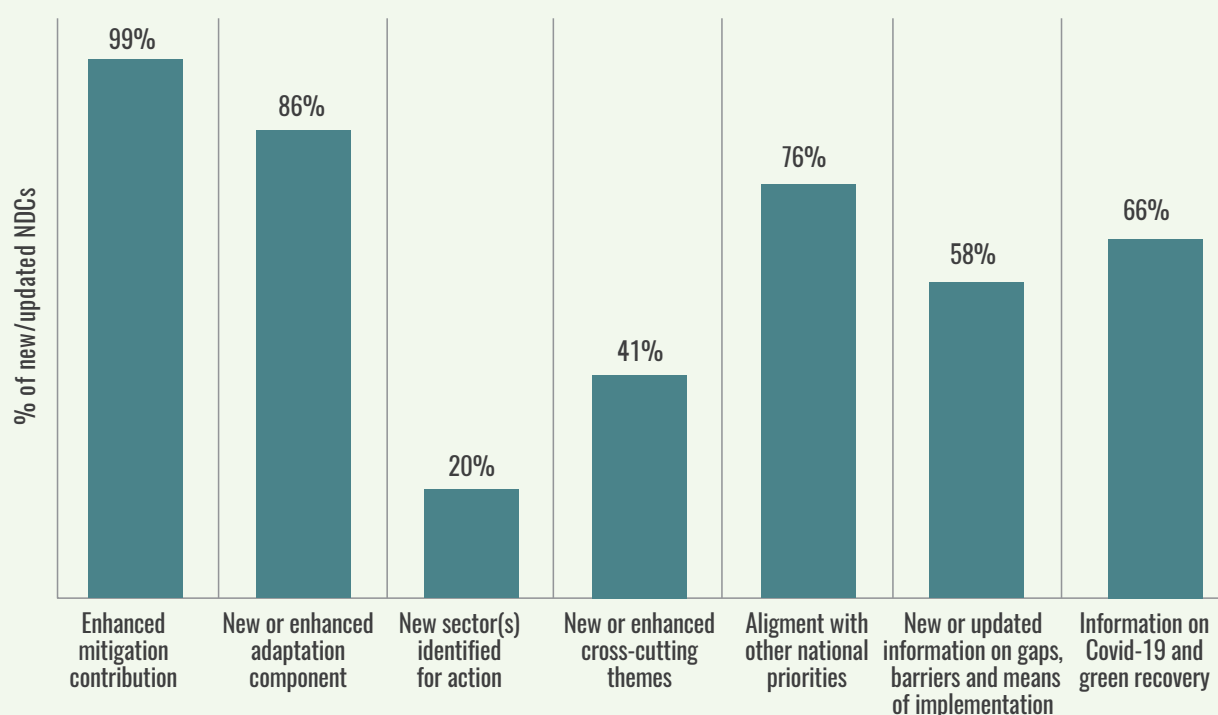
CHAPTER 2

MAIN FINDINGS

In response to the call for greater ambition in second generation NDCs, almost all countries included information on how their new/updated NDCs represents a progression beyond their first (Figure 14). For instance, almost all NDCs refer to a stronger mitigation contribution, such as the inclusion of an updated GHG target or additional mitigation actions. Most refer to a new or enhanced adaptation component and alignment with other national priorities, such as national development or green growth. Many also include more information on gaps, barriers and means of implementation, as well as a description of COVID-19 impacts and green recovery plans. New sectors are identified in many mitigation and adaptation components and some NDCs refer to new cross-cutting themes, such as gender. NDCs have also significantly grown in length, with many over 30 pages and few under 10.

FIGURE 14.

INFORMATION ON NDC ENHANCEMENT INCLUDED IN NEW/UPDATED NDCs, BY THEMATIC AREA



2.1 MITIGATION

2.1.1 Long-term goals or targets

The Paris Agreement requests countries to describe their long-term vision towards achieving climate resilience and net-zero GHG emissions by mid-century. Many of the new/updated NDCs include a long-term goal, target, or strategy up to or beyond 2050 (**Figure 15**). When compared to previous NDCs, this number has gone up significantly across all regions. Most refer to either a planned or already developed target or strategy for achieving net zero emissions or carbon neutrality by 2050 and a few by 2100 (**Figure 16**). Some new/updated NDCs still do not make any reference to a long-term mitigation goal.

FIGURE 15.

LONG-TERM MITIGATION GOALS, TARGETS OR STRATEGIES REFERENCED IN PREVIOUS VS. NEW/UPDATED NDCs, BY REGION

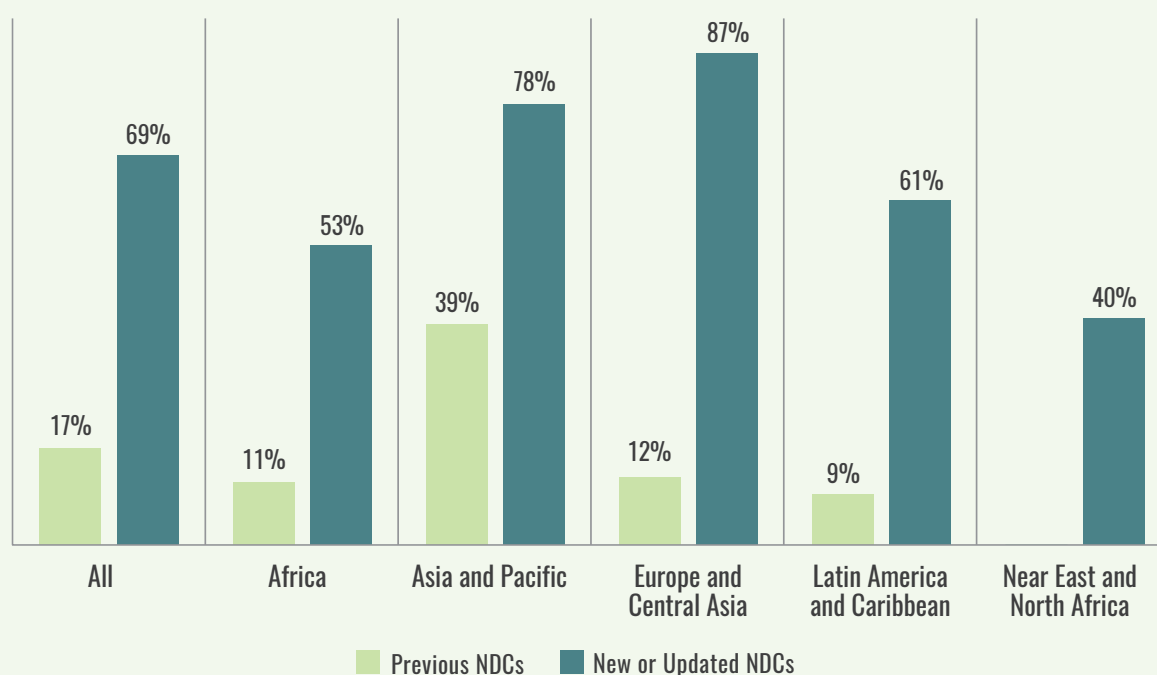
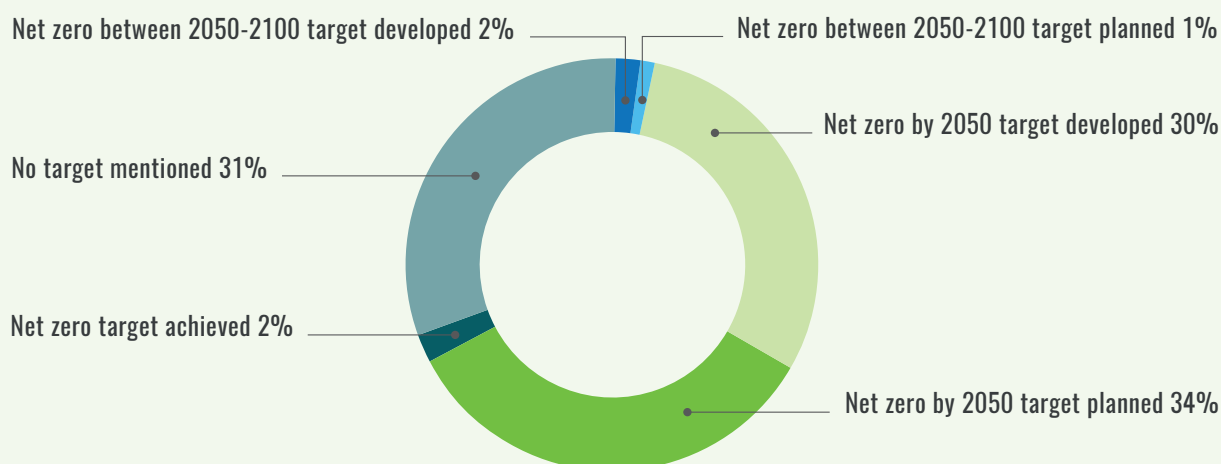


FIGURE 16.

TYPES OF LONG-TERM MITIGATION GOALS, TARGETS OR STRATEGIES REFERENCED, BY SHARE OF NEW/UPDATED NDCs

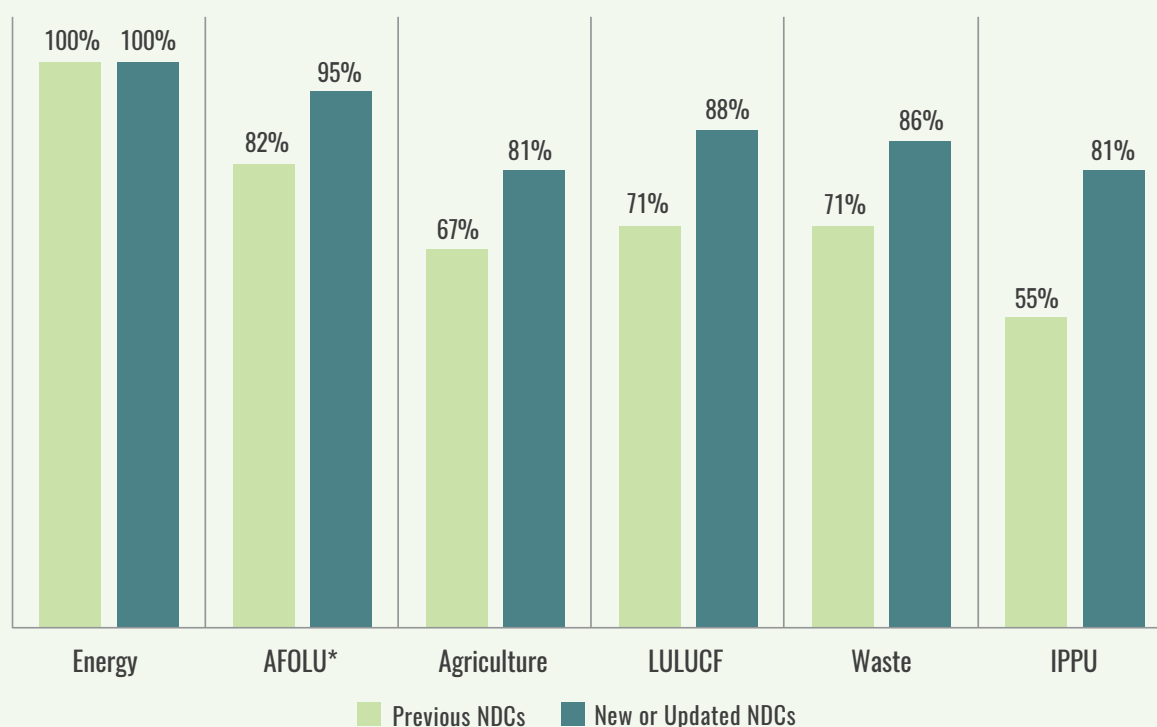


2.1.2 Sectors

All new/updated NDCs describe both their scope and coverage, including sectors and GHGs covered (**Figure 17**). Most new/updated NDCs present economy-wide mitigation contributions, spanning all 2006 Intergovernmental Panel on Climate Change (IPCC) sectors (UNFCCC, 2021). While all cover the energy sector, most cover agriculture, Land Use, Land Use Change and Forestry (LULUCF), waste and Industrial Processes and Product Use (IPPU). Taken together, almost all new/updated NDCs include mitigation in the agriculture and/or the LULUCF sector, which is referred to as the “Agriculture, Forestry and Other Land Use Sector” (AFOLU) in 2006 Intergovernmental Panel on Climate Change (IPCC) terminology. Compared to previous NDCs, the sectoral coverage of new/updated NDCs has increased across all sectors in all regions. All new/updated NDCs in Africa, Latin America and Caribbean, almost all in Asia and Pacific and Europe and Central Asia and most in Near East and North Africa include mitigation in the agriculture and/or LULUCF sector.

FIGURE 17.

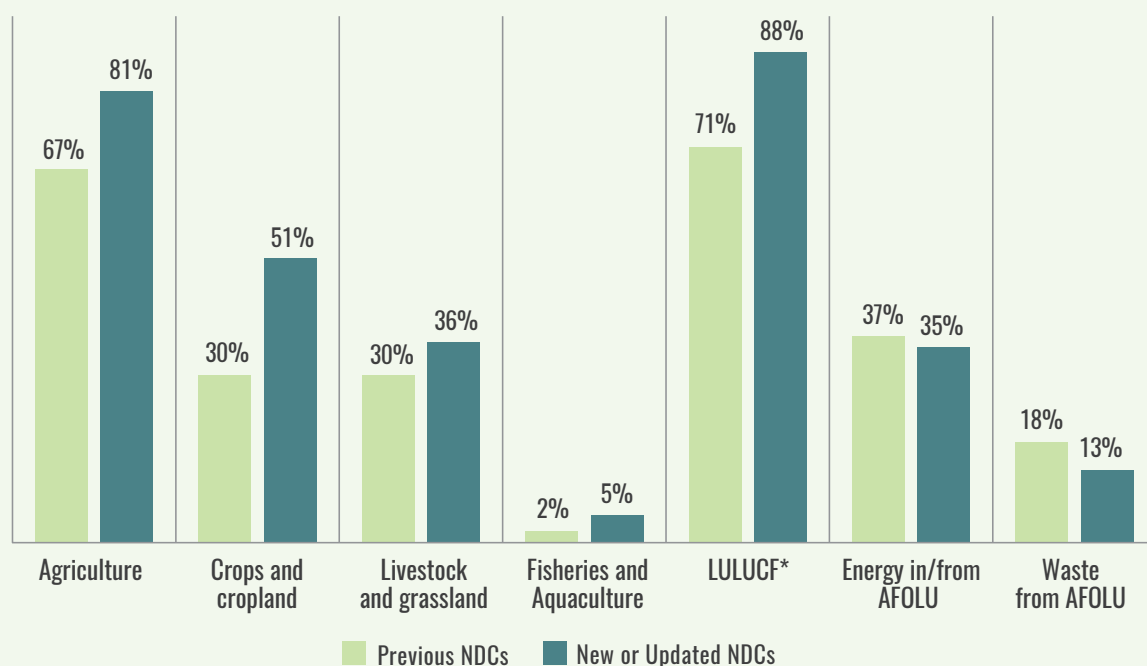
SECTORAL COVERAGE OF MITIGATION CONTRIBUTIONS IN PREVIOUS VS. NEW/UPDATED NDC, BY IPCC SECTOR



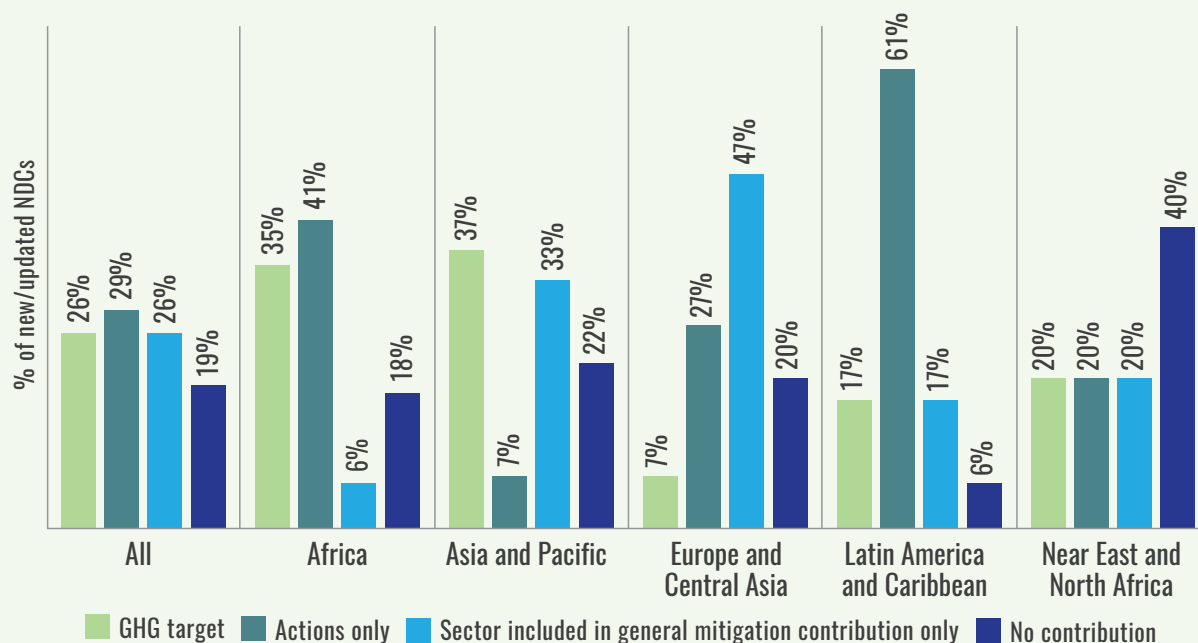
* AFOLU refers to the inclusion of the agriculture and/or LULUCF sector.

Mitigation contributions in new/updated NDCs have expanded their coverage across all agricultural sub-sectors (**Figure 18**). Most mitigation contributions cover agriculture and LULUCF, many cover crops and cropland systems, and some cover livestock and grasslands systems. Some cover energy use in and bioenergy generated from the agricultural sectors. Few mitigation contributions cover fisheries and aquaculture systems, and few cover waste generated from the agricultural sectors. This expansion in the overall coverage of mitigation across all agricultural sub-sectors is observed in all regions³.

³ There are minor exceptions to the general trend in a few regions, but the finding is not necessarily statistically representative of a reduction in mitigation ambition since not all countries in those regions have submitted a new/updated NDC.

FIGURE 18.**COVERAGE OF MITIGATION CONTRIBUTIONS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDC, BY SUB-SECTOR**

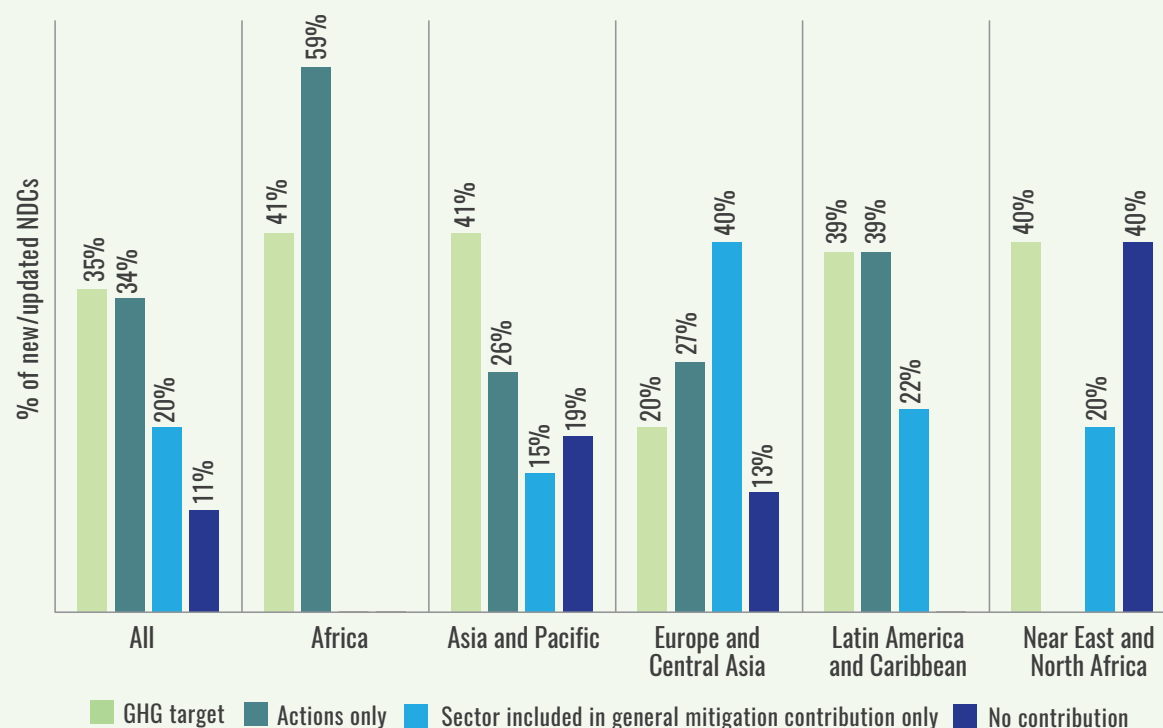
With the increase in coverage came also greater inclusion of sector-specific GHG targets and mitigation actions in the agricultural sectors (**Figures 19–20**). Around one-fourth of new/updated NDCs include a GHG target specific to the agriculture sector. Another one-third outline a list of mitigation actions in the sector (“action only”) and some simply list agriculture as one of the sectors covered in their mitigation contribution. One-fifth did not include any contribution in the sector.

FIGURE 19.**TYPOLGY OF MITIGATION CONTRIBUTIONS IN THE AGRICULTURE SECTOR IN NEW/UPDATED NDCs, BY REGION**

Around one-third of new/updated NDCs include a GHG target specific to the LULUCF sector. Another one-third include a list of mitigation actions in the sector (“action only”) and some simply list LULUCF as one of the sectors covered in their mitigation contribution. Few did not include any contribution in the sector.

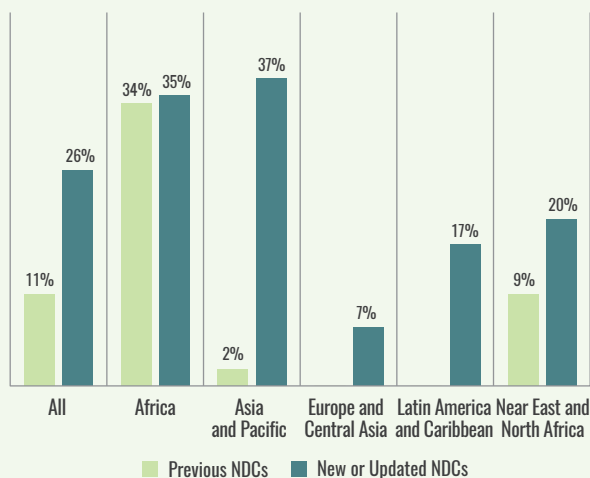
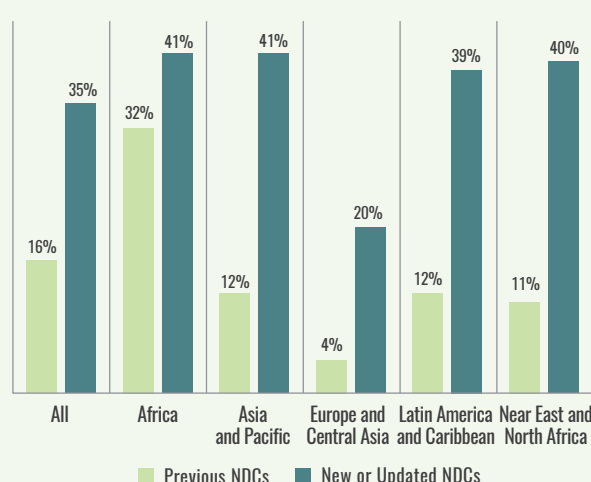
FIGURE 20.

TYPOLGY OF MITIGATION CONTRIBUTIONS IN THE LULUCF SECTOR IN NEW/UPDATED NDCs, BY REGION



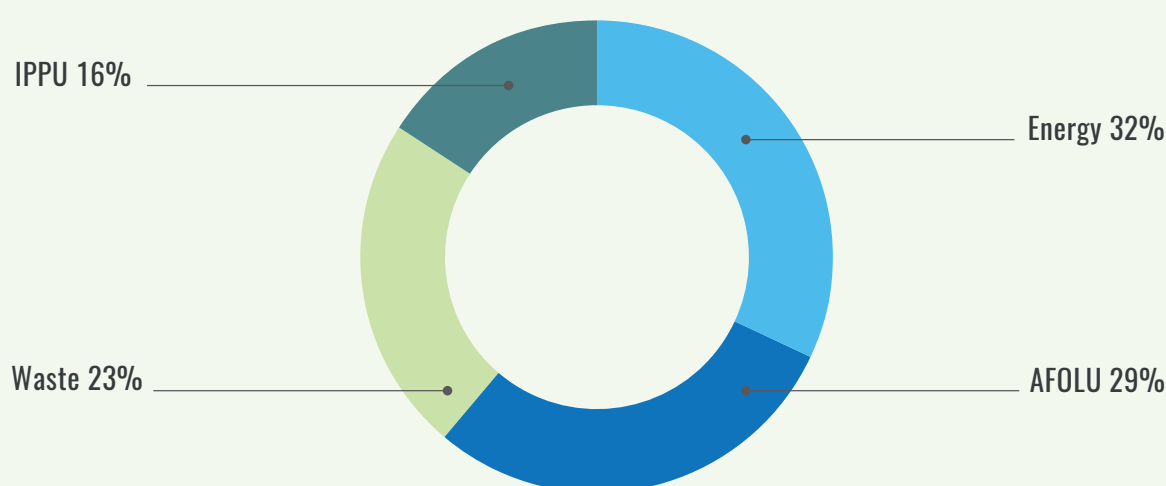
2.1.3 Targets

The number of sector-specific GHG targets in the agricultural sectors has doubled compared to previous NDCs. This growth is observed across all regions. In the agriculture sector (**Figure 21**), some new/updated NDCs in Africa, Asia and Pacific, Latin America and Caribbean, and Near East and North Africa include a sector-specific GHG target. Only a few in Europe and Central Asia include a sector-specific GHG target in agriculture. In the LULUCF sector (**Figure 22**), many new/updated NDCs in Africa and Asia Pacific and some in Europe and Central Asia, Latin America and Caribbean, and the Near East and North Africa include a sector-specific GHG target in LULUCF.

FIGURE 21.**SECTOR-SPECIFIC GHG TARGETS IN THE AGRICULTURE SECTOR COMMUNICATED IN PREVIOUS VS. NEW/UPDATED NDCs, BY REGION****FIGURE 22.****SECTOR-SPECIFIC GHG TARGETS IN THE LULUCF SECTOR COMMUNICATED IN PREVIOUS VS. NEW/UPDATED NDCs, BY REGION**

2.1.4 Actions

Most new/updated NDCs include mitigation actions in the agricultural sectors. Out of all mitigation actions formulated in new/updated NDCs (**Figure 23**), the agricultural sectors hold the second to largest share (after the energy sector). Most new/updated NDCs in Africa, Asia and Pacific, and Latin America and Caribbean and many in Europe and Central Asia and the Near East and North Africa communicate one or more mitigation actions in the agricultural sectors in their new/updated NDCs.

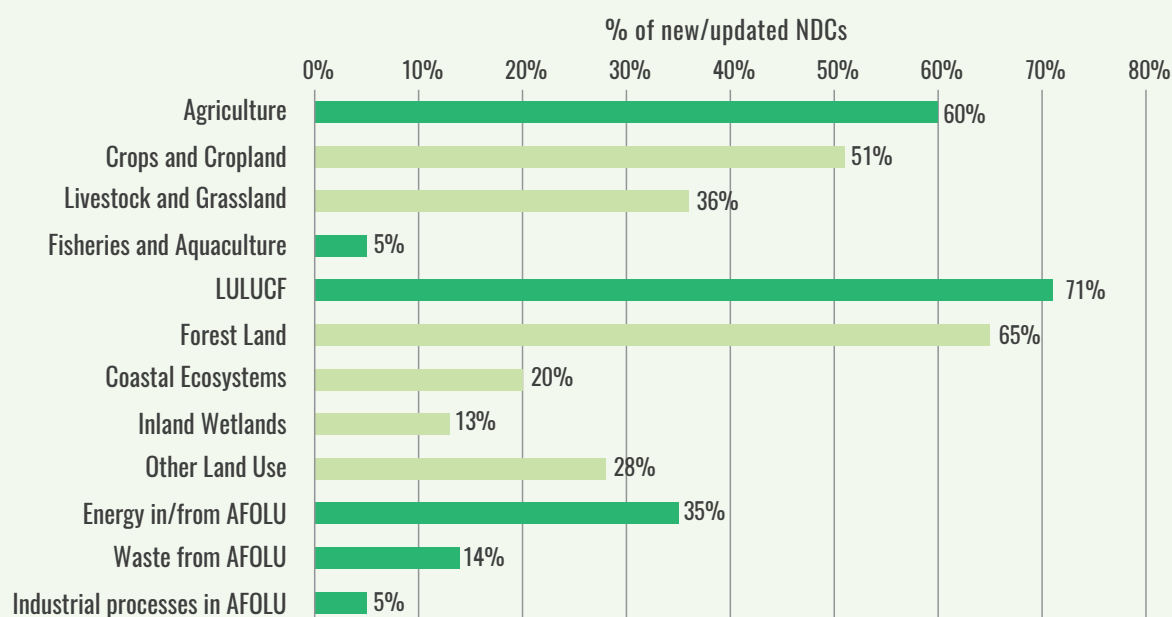
FIGURE 23.**DISTRIBUTION OF MITIGATION ACTIONS IN NEW/UPDATED NDCs, BY IPCC SECTOR**

Out of all mitigation actions in the agricultural sectors (**Figure 24**), forest-related measures are most frequently set forth. Most new/updated NDCs include actions in LULUCF and many are related to mitigation on forest land, such as afforestation, reforestation, and sustainable forest management. Half of new/updated NDCs include mitigation actions related to crops and croplands, such as the use of cover crops or reduced tillage. One-third include mitigation actions related to livestock and grasslands, ranging from improved feeding practices to pasture restoration. Another one-third promote mitigation

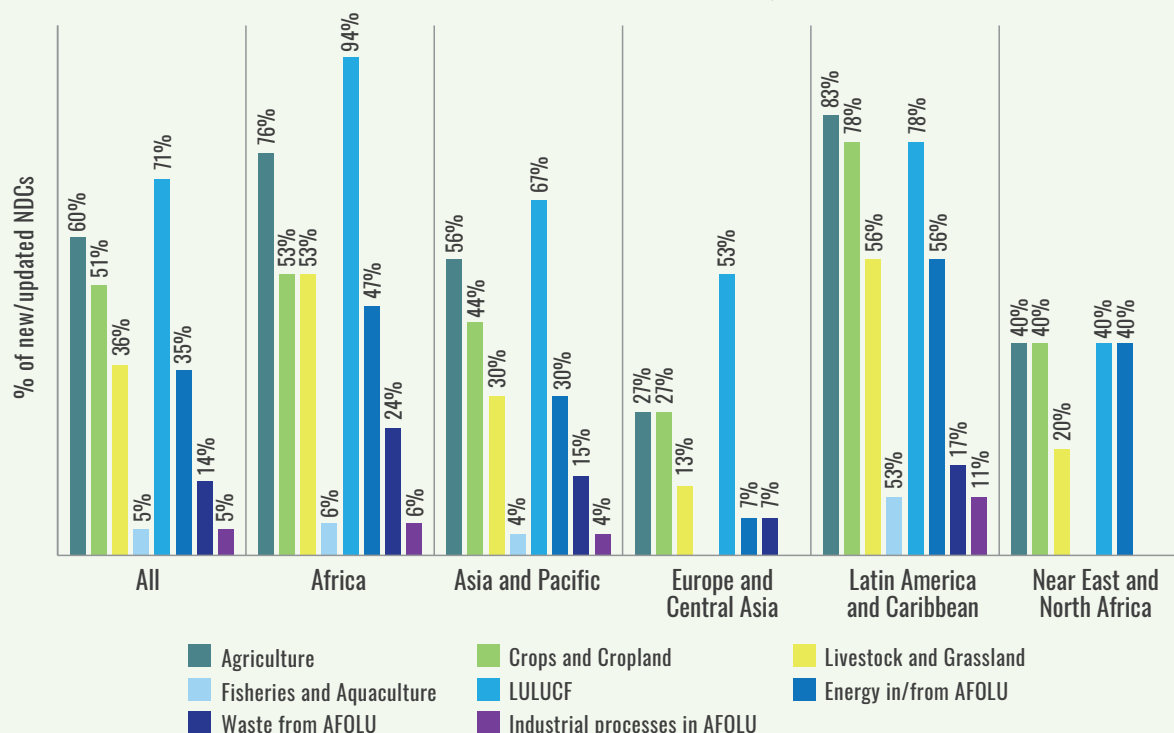
from improved energy efficiency in the agricultural sectors or the production of bioenergy from agricultural or forest biomass. Mitigation actions in coastal ecosystems and inland wetlands appear in some new/updated NDCs, such as mangrove restoration or the re-wetting of peatlands. A few include actions related to fisheries and aquaculture, such as improved feed use efficiency per unit of production.

FIGURE 24.

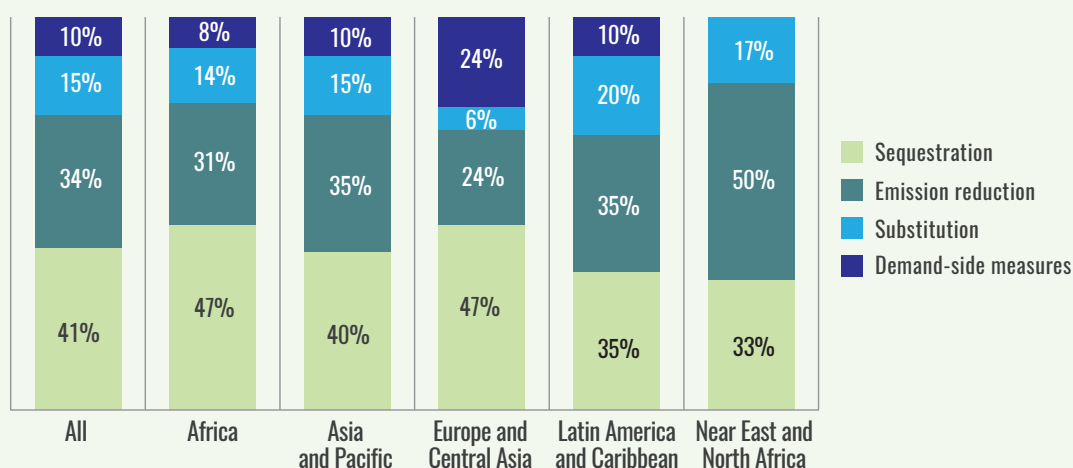
MITIGATION ACTIONS IN THE AGRICULTURAL SECTORS IN NEW/UPDATED NDCs, BY SUB-SECTOR



At the regional level, most new/updated NDCs in Africa and Latin America and Caribbean include mitigation actions in the agricultural sectors, while many in Asia and Pacific and some in Europe and Central Asia and Near East and North Africa do. The crops, livestock, LULUCF and energy sub-sector related measures are prominent in each region's set of new/updated NDCs, while fisheries and aquaculture, waste and industrial processing-related measures appear only in some regions and to a much smaller degree (Figure 25).

FIGURE 25.**MITIGATION ACTIONS IN THE AGRICULTURAL SECTORS IN NEW/UPDATED NDCs, BY REGION**

The IPCC outlines a suite of transformation pathways for achieving mitigation goals in the agricultural sectors, including GHG sequestration, emissions reduction, substitution and demand-side measures (IPCC, 2014a). In new/updated NDCs, many mitigation actions are geared towards achieving mitigation goals in the agricultural sectors mostly through carbon sequestration and some via emissions reductions (Figure 26). Some promote mitigation through substitution effects, such as the replacement of fossil fuels with bioenergy sources, and a few focus on the demand-side of mitigation, such as consumption of less GHG-intensive foods. This trend is generally observed across all regions to various degrees. However, mitigation actions in Near East and North Africa focus more on emissions reduction than sequestration options in the agricultural sectors.

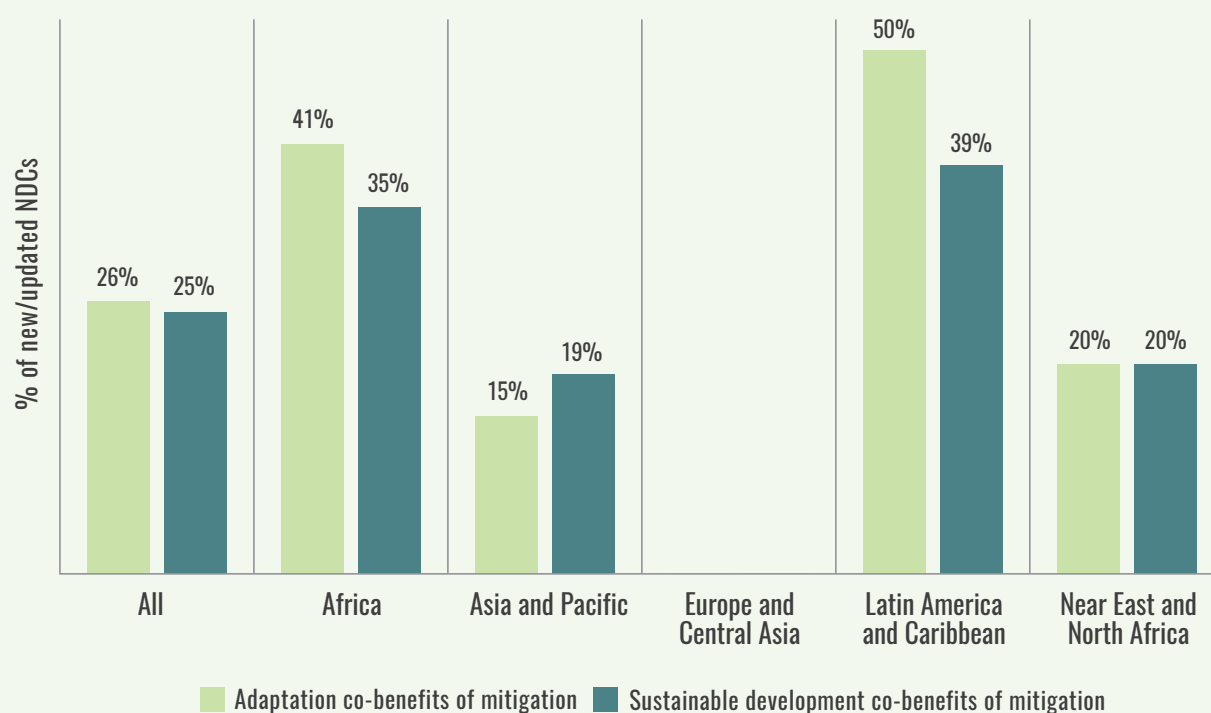
FIGURE 26.**EMISSIONS REDUCTION TRANSFORMATION PATHWAYS IN THE AGRICULTURAL SECTORS IN NEW/UPDATED NDCs, BY SHARE OF MITIGATION ACTIONS**

2.1.5 Co-benefits of mitigation

Particular to the agricultural sectors is the opportunity to generate multiple co-benefits from climate action (Crumpler and Meybeck, 2020). Many of the new/updated NDCs recognize the potential of mitigation in the agricultural sectors to co-deliver on adaptation or other sustainable development objectives (**Figure 27**). All regions, apart from Europe and Central Asia, recognize this opportunity within their new/updated NDCs, with the majority in Latin America and Caribbean and Africa. For instance, conservation agriculture and reduced tillage to minimize emissions from managed soils is associated with gains in food security and agricultural resilience through enhanced soil fertility, increased crop stability and reduced soil erosion, as well as cleaner water resources through reduced nutrient and soil runoff.⁴ Agroforestry represents an opportunity not only to enhance carbon reserves but also for risk management through income diversification and reduced vulnerability to erosion in mountainous areas.⁵

FIGURE 27.

CO-BENEFITS OF MITIGATION ACTIONS IN THE AGRICULTURAL SECTORS REFERENCED IN NEW/UPDATED NDCs, BY REGION

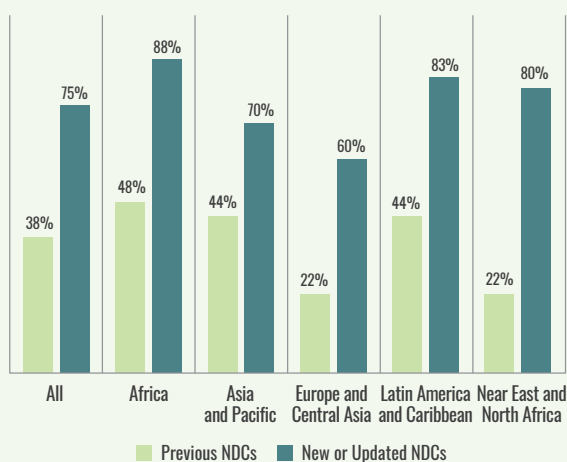
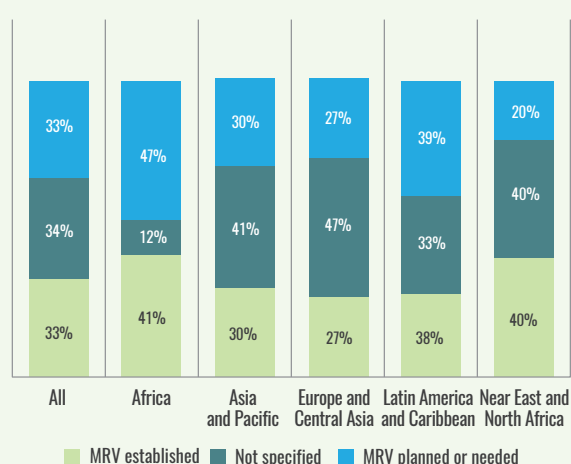


2.1.6 Transparency

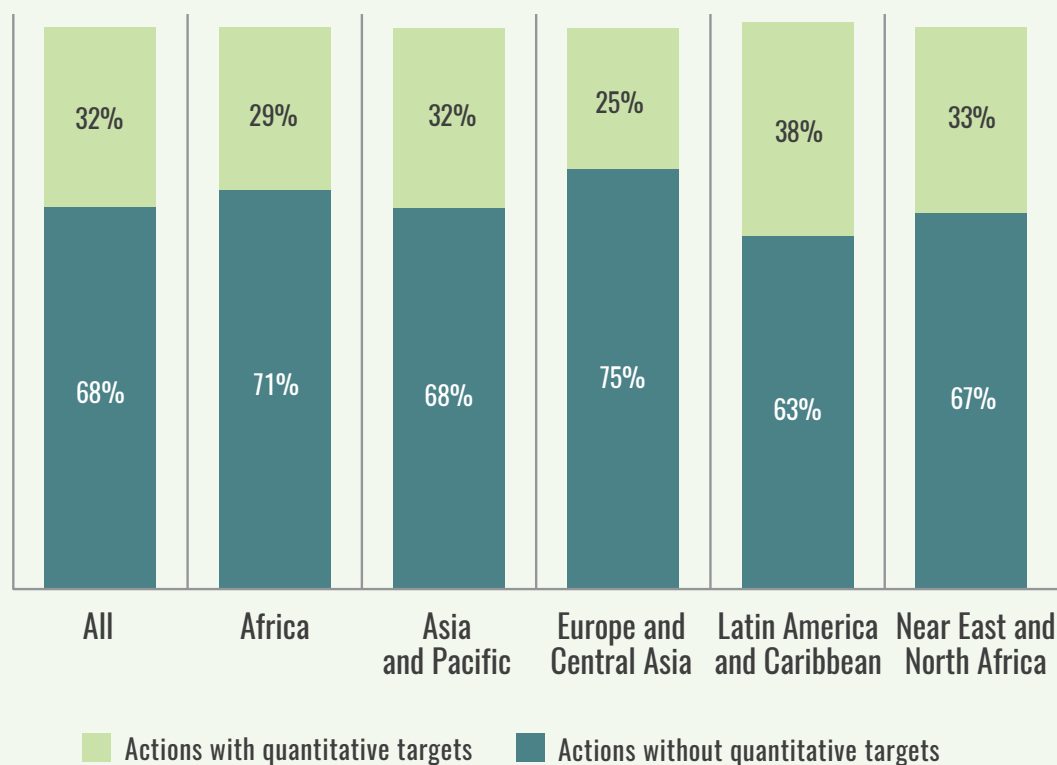
Most new/updated NDCs include information on measurement, reporting and verification (MRV) systems (**Figure 28**). Compared to previous NDCs, this number has doubled or tripled in all regions. However, while only some refer to a domestic MRV system in place, many communicate that an MRV system is yet to be established (planned or needed) or no mention is made (**Figures 29**).

⁴ Malawi.

⁵ Morocco.

FIGURE 28.**INFORMATION INCLUDED ON MRV SYSTEMS IN NEW/UPDATED NDCs, BY REGION****FIGURE 29.****STATUS OF INSTITUTIONAL ARRANGEMENTS FOR MRV IN NEW/UPDATED NDCs, BY REGION**

The specificity of mitigation actions in the agricultural sectors has also increased in new/updated NDCs. Two-thirds of all mitigation actions in the sector contain quantitative targets to facilitate implementation and track progress (Figure 30). This trend is observed across all regions.

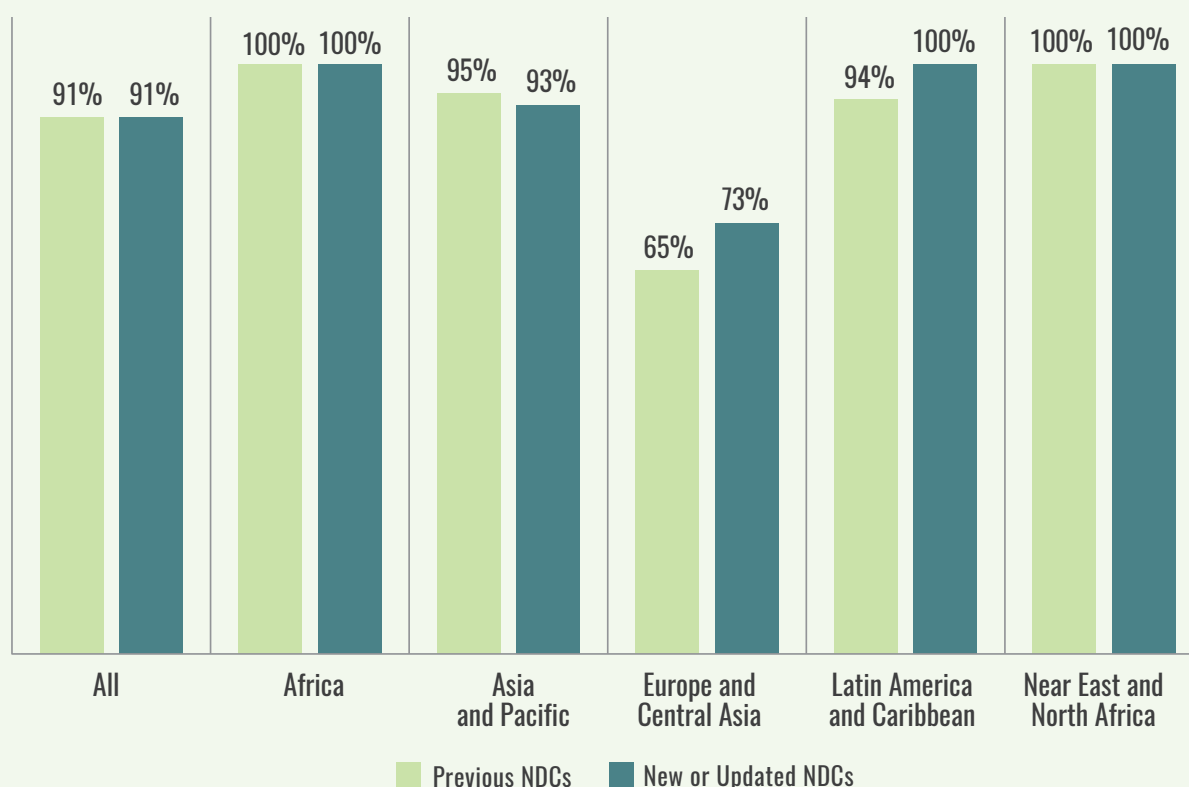
FIGURE 30.**MITIGATION ACTIONS IN THE AGRICULTURAL SECTORS WITH QUANTITATIVE TARGETS, BY REGION**

2.2 ADAPTATION

New/updated NDCs continue to highlight adaptation as a national priority. Almost all new/updated NDCs include an adaptation component, as did previous submissions (**Figure 31**). At the regional level, all new/updated NDCs in Africa, Latin America and Caribbean and Near East and North Africa, almost all in Asia and Pacific and most in Europe and Central Asia contain adaptation components.⁶

FIGURE 31.

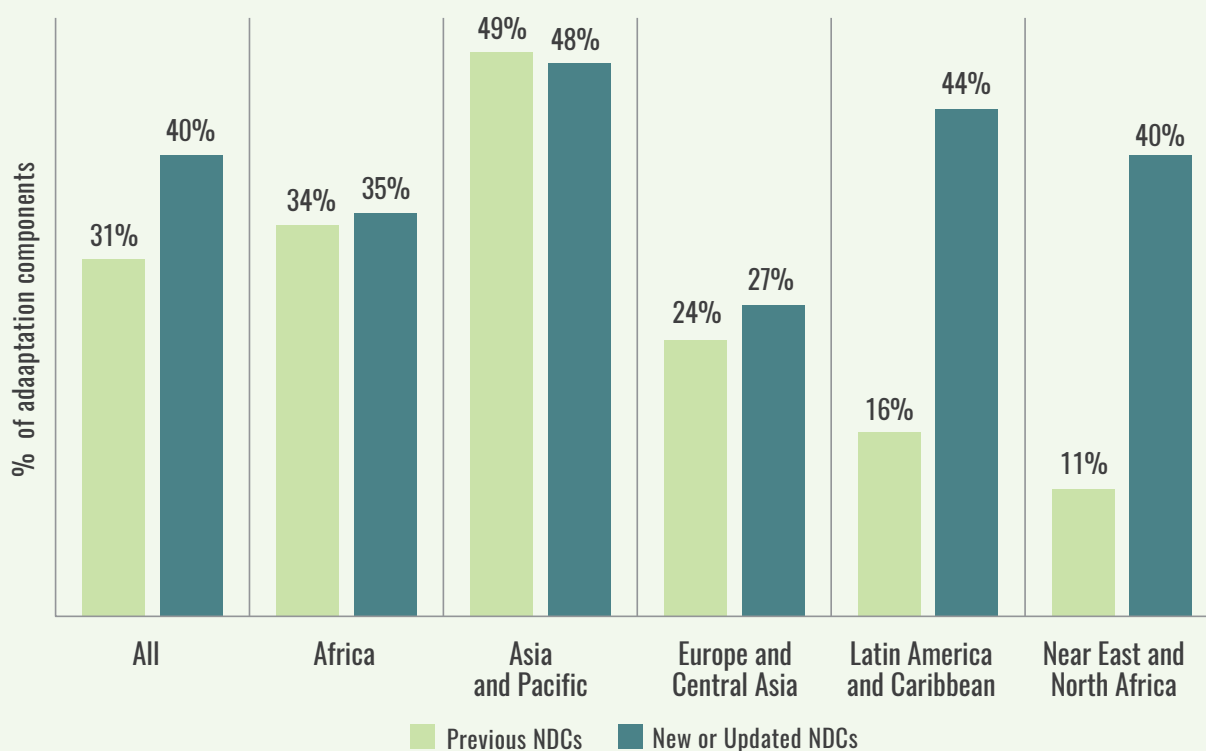
ADAPTATION COMPONENTS IN PREVIOUS VS. NEW/UPDATED NDCs, BY REGION



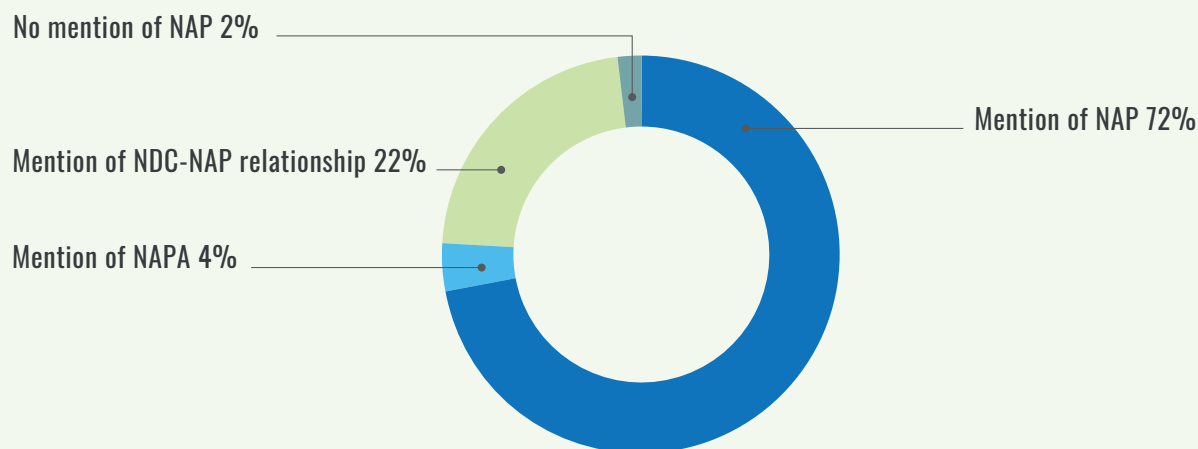
2.2.1 Long-term goals or visions

The Paris Agreement invites countries to share their long-term goal for reducing vulnerability and increasing the capacity to adapt to the impacts of climate change. Many adaptation components refer to a long-term adaptation goal or vision, compared to some in previous NDCs (**Figure 32**). At the regional level, many adaptation components in Asia and Pacific and LAC and some in Africa, Europe and Central Asia, and the Near East and North Africa communicate a long-term adaptation goal or vision.

⁶ Until all new/updated NDCs are submitted, the regional changes in share of NDCs with an adaptation component out of total NDCs are statistically inconclusive.

FIGURE 32.**LONG-TERM ADAPTATION GOALS OR VISIONS EXPRESSED IN THE ADAPTATION COMPONENTS OF NEW/UPDATED NDCs, BY REGION**

Almost all adaptation components make reference to National Adaptation Plans (NAP) that are either existing or under development, and some mention the relationship between their NAP and new/updated NDC (**Figure 33**). Only a few adaptation components do not make any reference to a NAP.

FIGURE 33.**RELATIONSHIP REFERENCED BETWEEN THE NDC AND NAP IN NEW/UPDATED NDCs, BY SHARE OF ADAPTATION COMPONENTS**

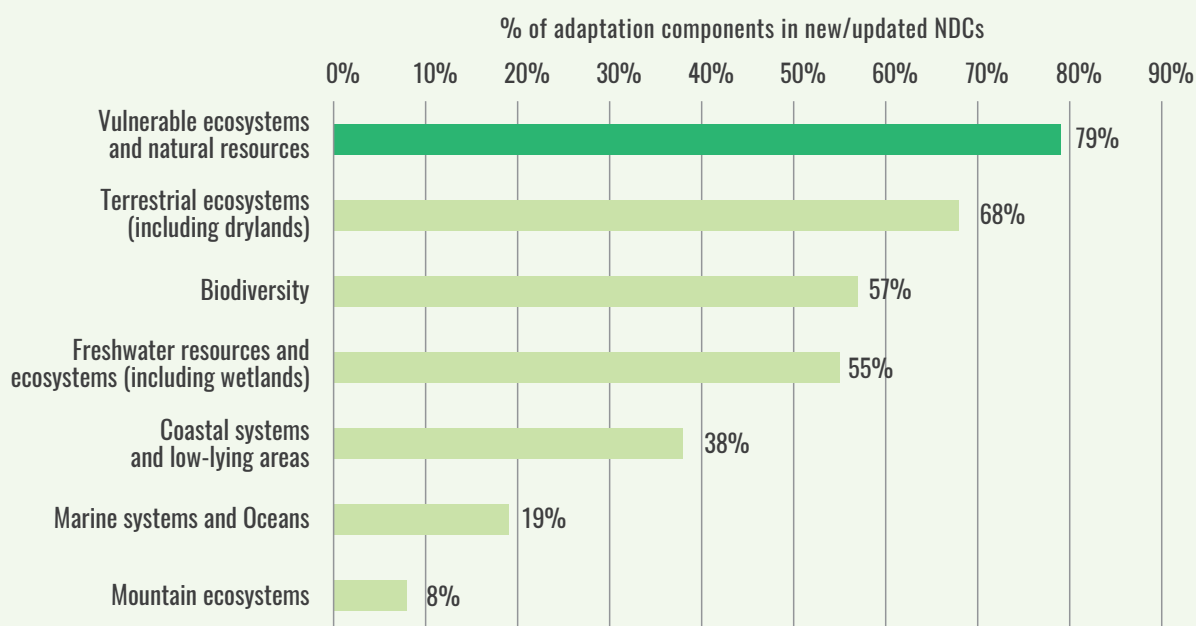
2.2.2 Climate-related impacts, risks and vulnerabilities

Almost all adaptation components refer to key climate-related impacts, risk, and vulnerabilities in their new/updated NDCs. These include observed and projected climatological, meteorological, hydrological, and biological hazards; as well as key impacts and risks in natural and human systems, including social, economic, and environmental drivers of vulnerability. Many refer to the increased intensity and frequency of extreme and slow onset events, including floods, droughts, storms, extreme heat, sea-level rise, ocean acidification, soil and coastal erosion, and pests and diseases. These are considered to trigger climate-related impacts in natural systems, including biodiversity loss, water scarcity and land degradation, as well as in human systems, particularly agricultural loss and damage, loss of income and livelihoods, food insecurity, poverty and water and vector-borne diseases. The underlying vulnerabilities of certain population groups, poor economies and territories compound the impacts of climate change currently experienced or expected in the future. Economic dependence on natural resources and the agricultural sectors, environmental degradation and competition for resources, civil conflict and migration are amongst some of the non-climatic drivers of vulnerability referenced in new/updated NDCs.

Most adaptation components refer to observed and/or projected climate-related impacts on ecosystems and natural resources (**Figure 34**). Many refer to terrestrial ecosystems, biodiversity and freshwater resources and ecosystems, including wetlands, as particularly impacted by climate change and variability. Some describe climate-related impacts in coastal and low-lying areas, marine ecosystems, and oceans, whereas few describe impacts in mountain ecosystems.

FIGURE 34.

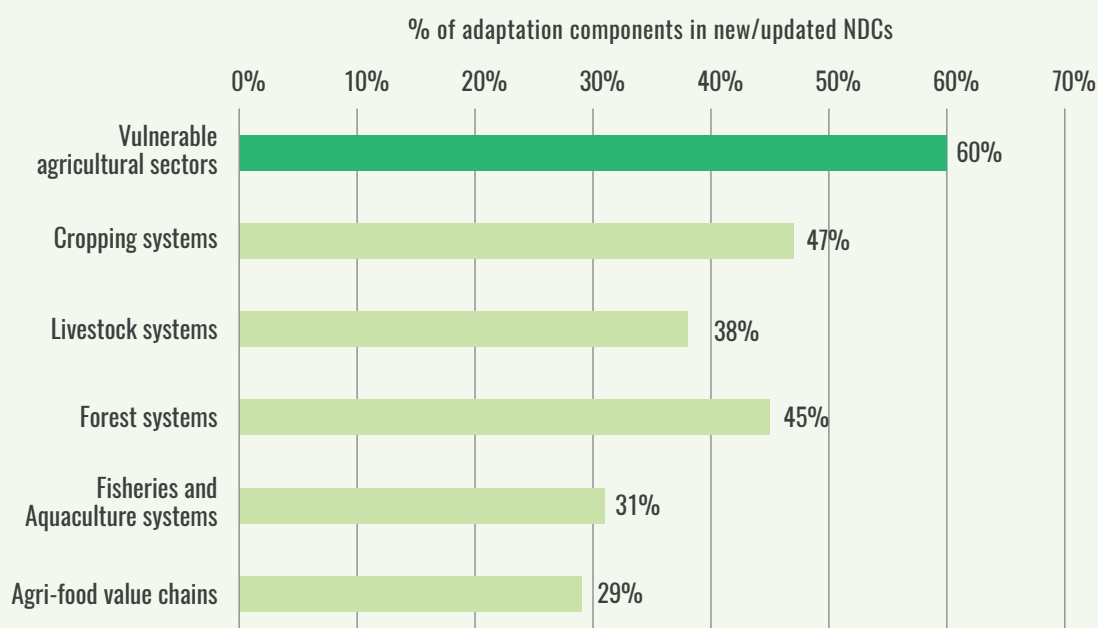
OBSERVED AND/OR PROJECTED CLIMATE-RELATED IMPACTS, RISKS AND VULNERABILITIES IN ECOSYSTEMS AND NATURAL RESOURCES REFERENCED IN NEW/UPDATED NDCs, BY ECOSYSTEM TYPE



Many adaptation components reference the agricultural sectors as particularly vulnerable to observed and/or projected climate-related-impacts, particularly in cropping and forest systems (**Figure 35**). Some adaptation components also refer to livestock, grassland and fisheries and aquaculture systems as vulnerable to climate change. Some also reference climate impacts in relation to agricultural value chains, such as the impacts of extreme events on food markets or heat stress on grain storage.

FIGURE 35.

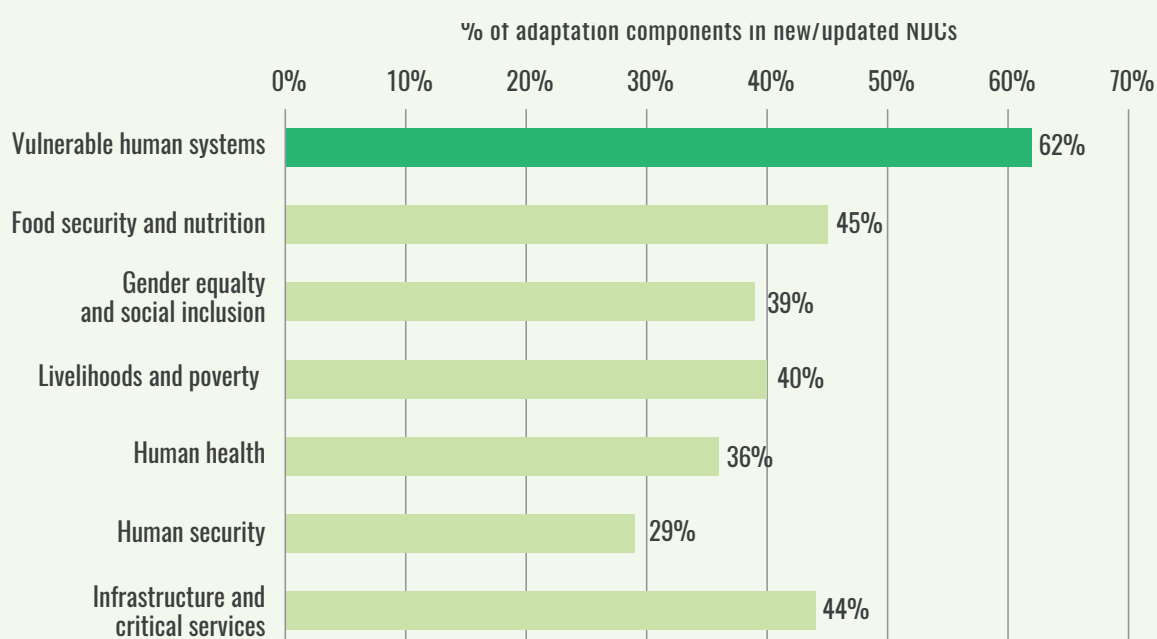
OBSERVED AND/OR PROJECTED CLIMATE-RELATED IMPACTS, RISKS AND VULNERABILITIES IN THE AGRICULTURAL SECTORS REFERENCED IN NEW/UPDATED NDCs, BY SUB-SECTOR



Many adaptation components also refer to observed and/or projected climate-related impacts in human systems, particularly losses of productive infrastructure and critical services and adverse food security and nutrition outcomes (Figure 36). Some indicate adverse climate-related impacts on livelihoods and the level and depth of poverty, gender equality and social inclusion, human health, and human security, including forced or voluntary displacement.

FIGURE 36.

OBSERVED AND/OR PROJECTED CLIMATE-RELATED IMPACTS, RISKS AND VULNERABILITIES IN HUMAN SYSTEMS REFERENCED IN NEW/UPDATED NDCs, BY HUMAN DIMENSION

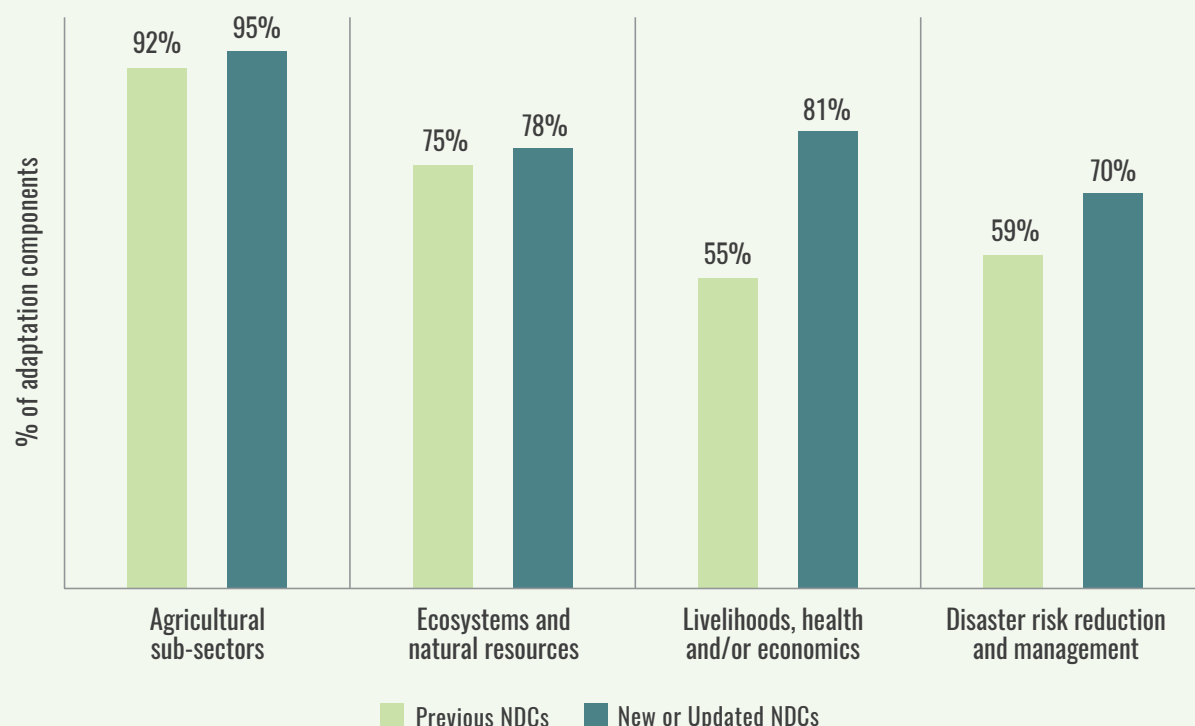


2.2.3 Priority areas

New/updated NDCs reflect gains in the coverage of adaptation components, compared to previous NDCs. There is an observed increase in the types of sectors and priority areas covered (**Figure 37**). Almost all adaptation components in new/updated NDCs, across all regions, prioritize⁷ the agricultural sectors. Most reference ecosystems and natural resources, as well as livelihoods, health and/or economic systems as priority areas for adaptation. Many adaptation components also include disaster risk reduction and management-related priority areas and actions.

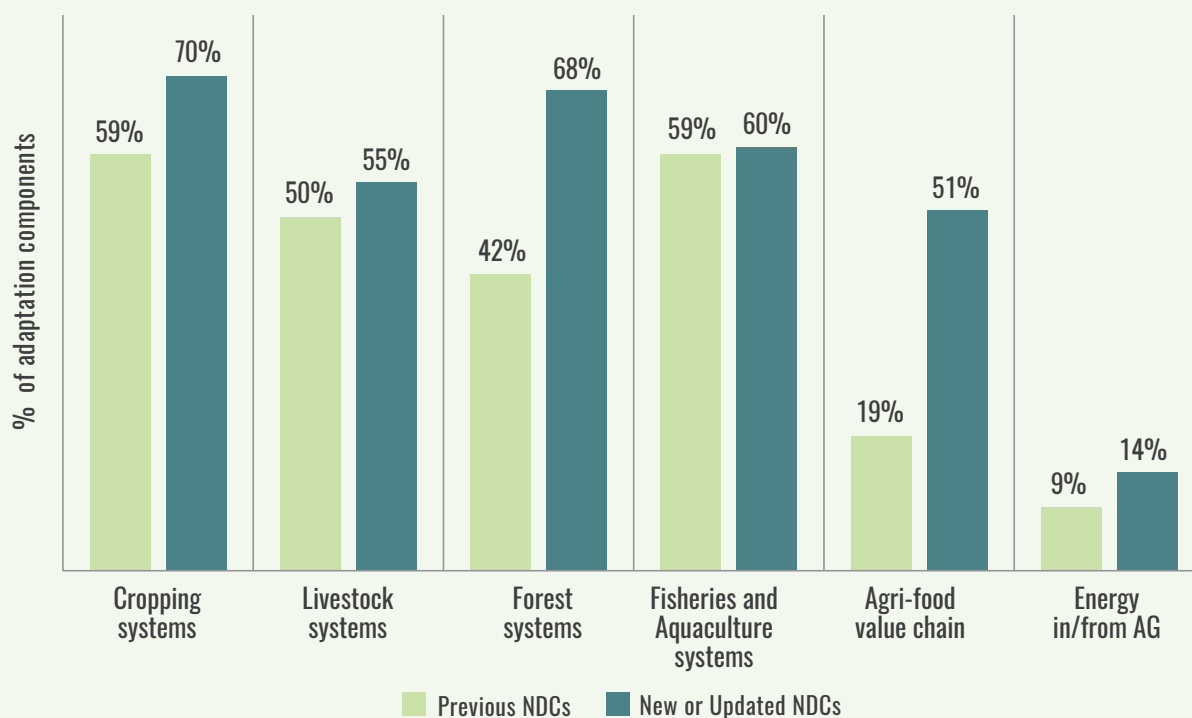
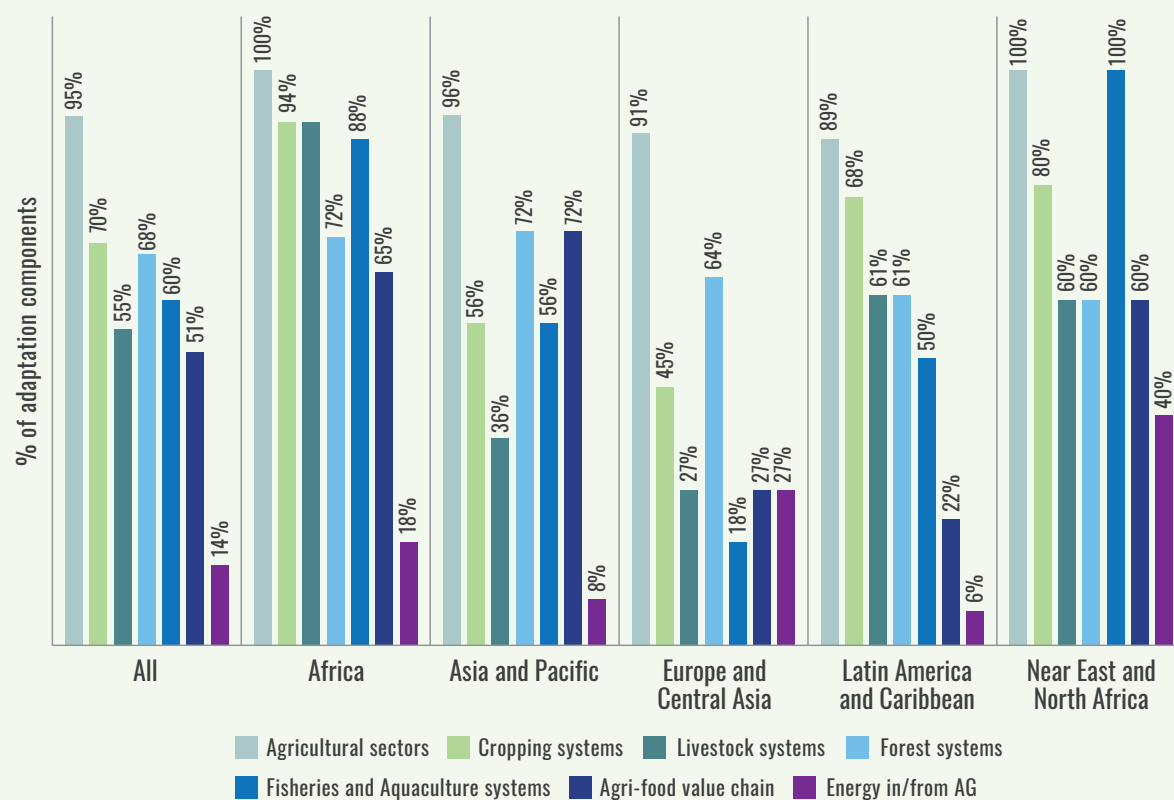
FIGURE 37.

PRIORITY AREAS FOR ADAPTATION REFERENCED IN PREVIOUS VS. NEW/UPDATED NDCs, BY SECTOR OR AREA



Almost all adaptation components include priority areas or actions in the agricultural sectors, representing a slight increase in coverage compared to previous NDCs. The coverage of adaptation at the sub-sectoral level has also expanded in new/updated NDCs compared to previous ones (**Figure 38**). Over two-thirds of adaptation components cover cropping and forest systems. Over half cover livestock and fisheries and aquaculture systems, as well as opportunities for adaptation along the agri-food value chain. Only some adaptation components identify energy in the agricultural sectors or bioenergy production as a priority for adaptation. At the regional level, the agricultural sectors are prioritized in all adaptation components in the Near East and North Africa, almost all in Africa, Asia and Pacific and Europe and Central Asia, and most in Latin America and Caribbean. Each agricultural sub-sector is covered in the adaptation components of all regions, with however varying degrees of prominence (**Figure 39**).

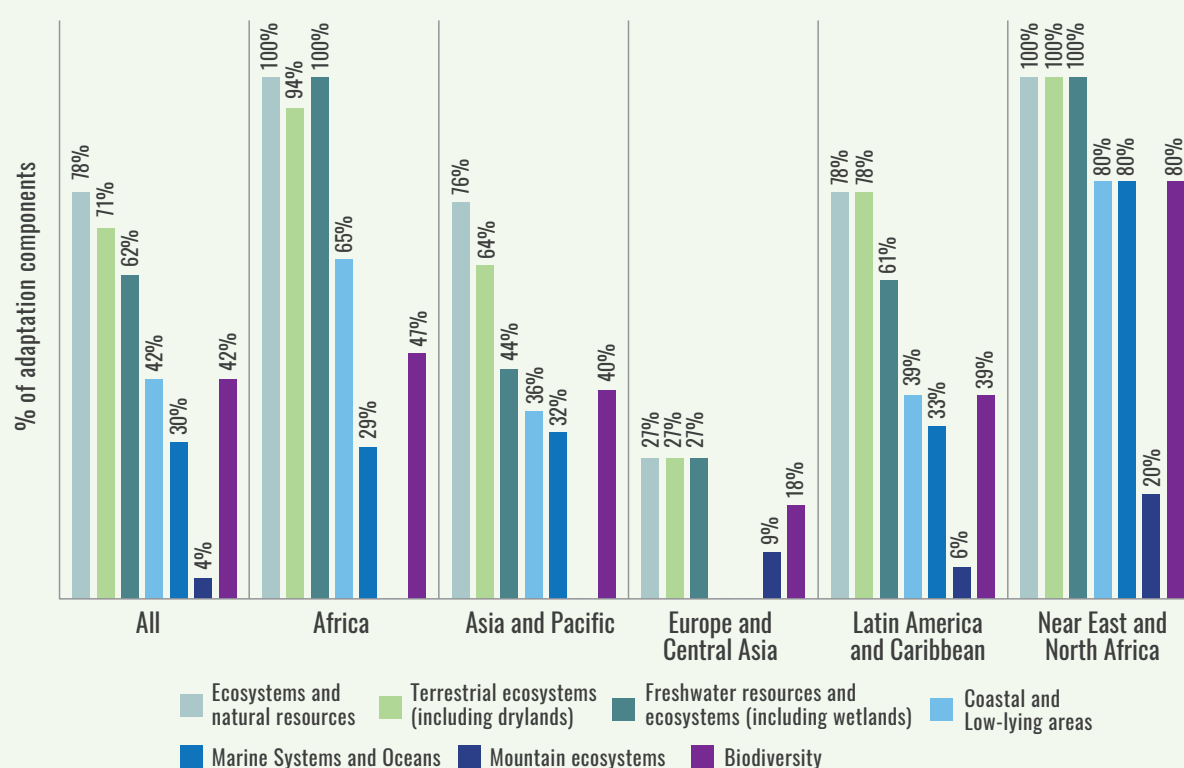
⁷ In this report, priority areas for adaptation refer to the mention of either priority sectors or areas and/or adaptation actions.

FIGURE 38.**PRIORITY AREAS IN THE AGRICULTURAL SECTORS COVERED IN PREVIOUS VS. NEW/UPDATED NDCs, BY SUB-SECTOR****FIGURE 39.****PRIORITY AREAS FOR ADAPTATION IN THE AGRICULTURAL SECTORS COVERED IN NEW/UPDATED NDCs, BY REGION**

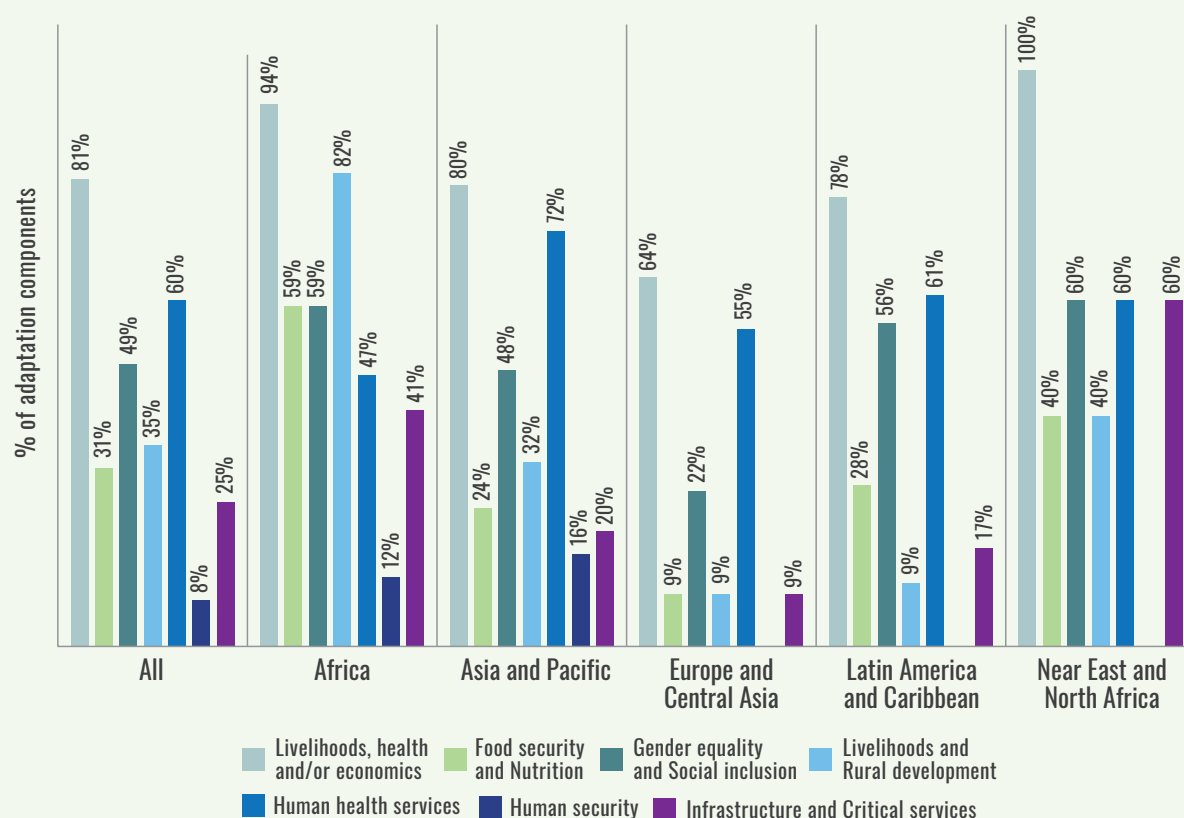
Most adaptation components include priority areas related to ecosystems and natural resources (Figure 40), reflecting a slight increase in coverage compared to previous NDCs. Specifically, most refer to terrestrial ecosystems and many refer to freshwater resources and ecosystems, coastal and low-lying areas, and biodiversity as priority areas. Some adaptation components feature marine systems and oceans and only a few prioritize adaptation in mountain ecosystems. At the regional level, adaptation in ecosystems and natural resources appear in all adaptation components in Africa and the Near East and North Africa, most in Asia and Pacific and Latin America and Caribbean, and some in Europe and Central Asia. Each ecosystem and natural resources type are covered in the adaptation components of all regions, with the exception of Europe and Central Asia, with however varying degrees of prominence.

FIGURE 40.

PRIORITY AREAS FOR ADAPTATION IN ECOSYSTEMS AND NATURAL RESOURCES COVERED IN NEW/UPDATED NDCs, BY REGION



Most adaptation components include priority areas related to livelihoods, health and/or economics in new/updated NDCs (Figure 41), representing a significant increase in coverage compared to previous NDCs. Many adaptation components refer to human health services and gender equality and social inclusion as adaptation priorities. Some also include food security and nutrition, livelihoods and rural development, and infrastructure and critical services, such as roads and clean water, amongst adaptation priority areas. At the regional level, all adaptation components in Near East and North Africa, almost all in Africa, most in Latin America and Caribbean and Asia and Pacific and some in Europe and Central Asia prioritize adaptation in livelihood, health and/or economic systems.

FIGURE 41.**PRIORITY AREAS FOR ADAPTATION IN LIVELIHOOD, HEALTH AND ECONOMIC SYSTEMS COVERED IN NEW/UPDATED NDCs, BY REGION**

2.2.4 Actions

Many adaptation components include actions in the agricultural sectors, particularly in cropping and forest systems (**Figure 42**), such as switching to drought-resistant cultivars or forest restoration. Some outline adaptation actions in livestock systems, such as the return to indigenous breeds, and some also include actions related to fisheries and aquaculture systems, such as repopulating depleted fish stocks. Some include actions oriented towards different stages in the agri-food value chain, including for instance dry post-harvest processing, as well as general cross-cutting approaches, such as climate smart agriculture. Few include adaptation actions related to energy use in or bioenergy production from the agricultural sectors. At the regional level, almost all adaptation components in Africa, many in Asia and Pacific and Latin America and Caribbean, and some in Europe and Central Asia and Near East and North Africa contain adaptation actions in the agricultural sectors.

Many adaptation components include adaptation actions related to ecosystems and natural resources, including those focused on terrestrial ecosystems and freshwater resources and ecosystems, including wetlands (**Figure 43**). Some refer to adaptation actions related to coastal and low-lying areas, marine systems and oceans and biodiversity, such as coastal wetland restoration. At the regional level, almost all adaptation components in Africa, many in Asia and Pacific and Latin America and Caribbean, and some in Europe and Central Asia and Near East and North Africa contain adaptation actions in the agricultural sectors.

FIGURE 42.

ADAPTATION ACTIONS IN THE AGRICULTURAL SECTORS REFERENCED IN NEW/UPDATED NDCs, BY REGION

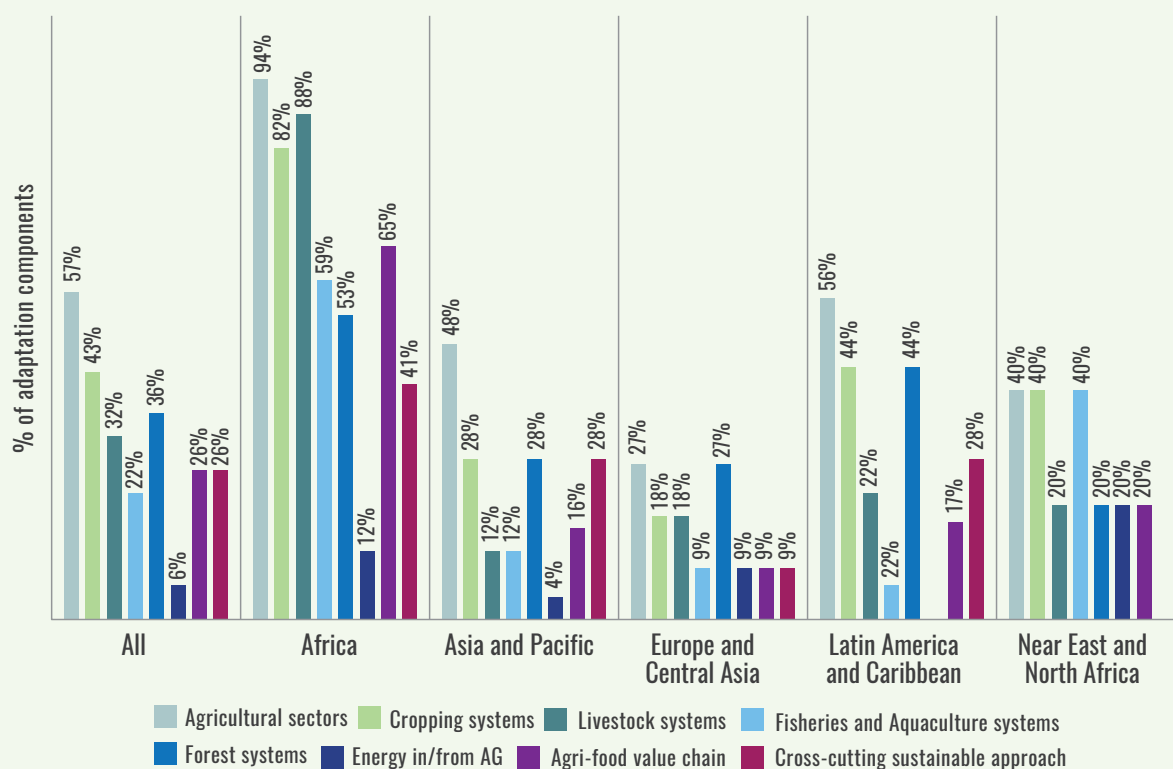
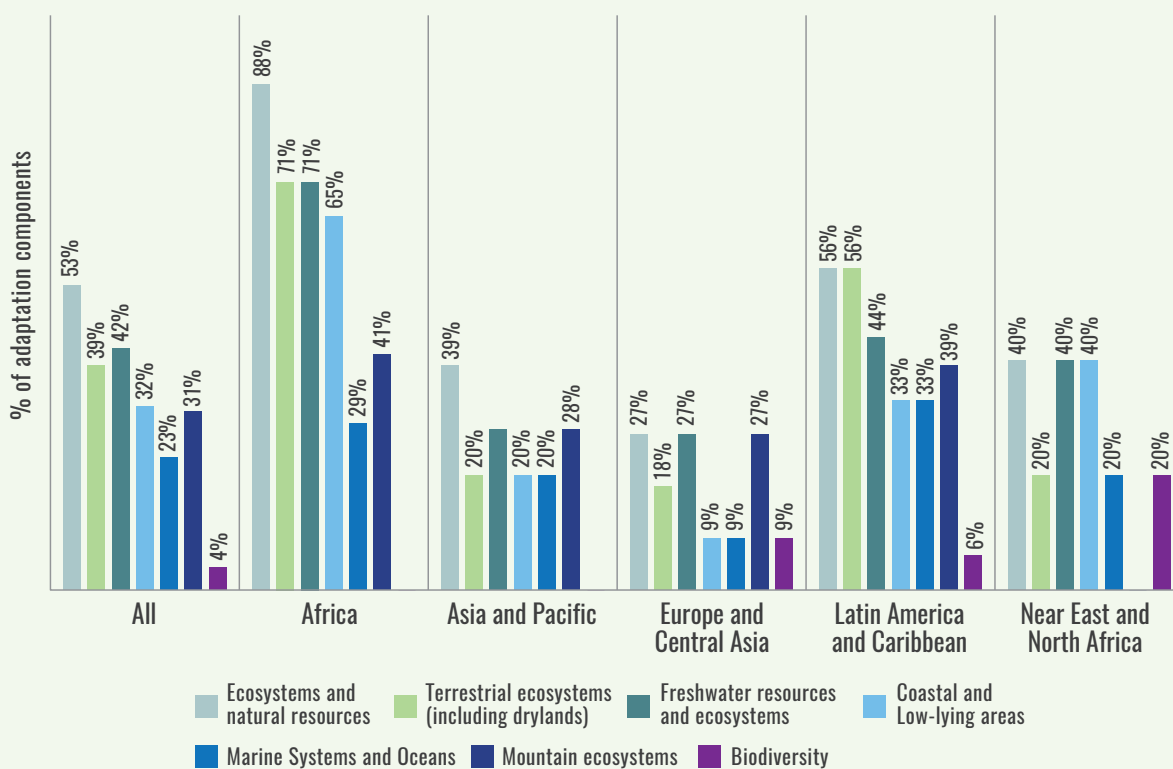
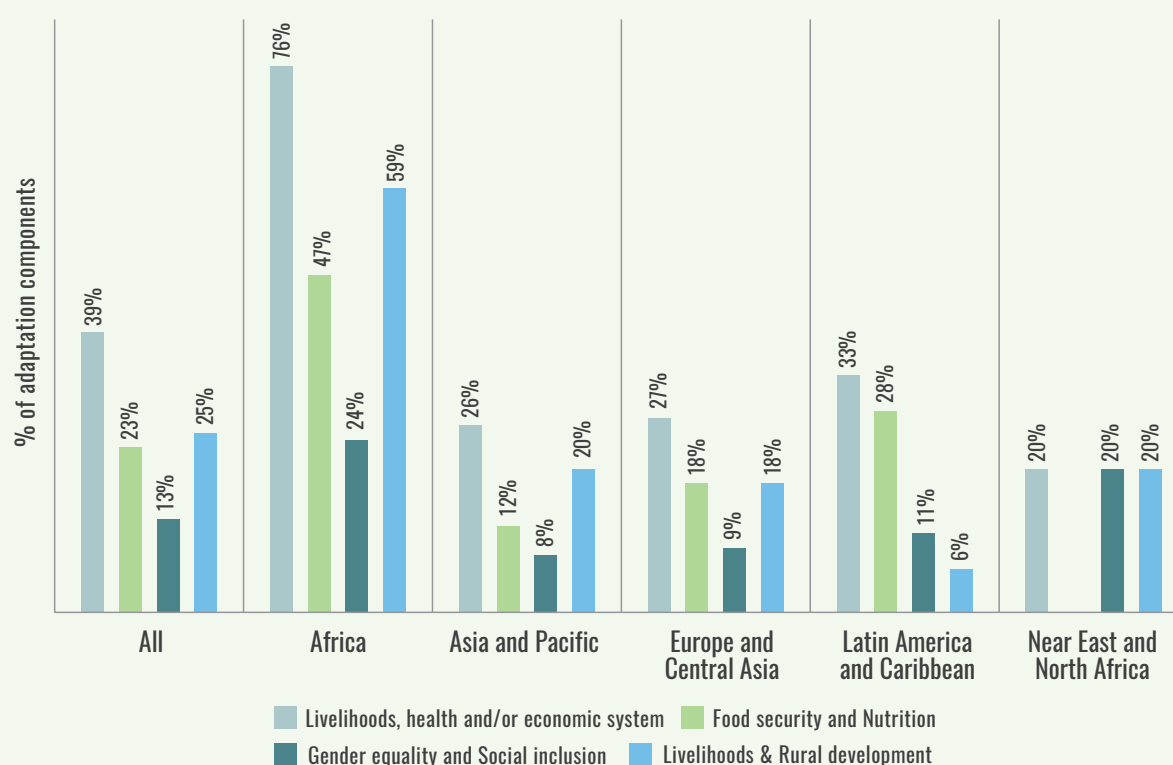


FIGURE 43.

ADAPTATION ACTIONS IN ECOSYSTEMS AND NATURAL RESOURCES REFERENCED IN NEW/UPDATED NDCs, BY REGION



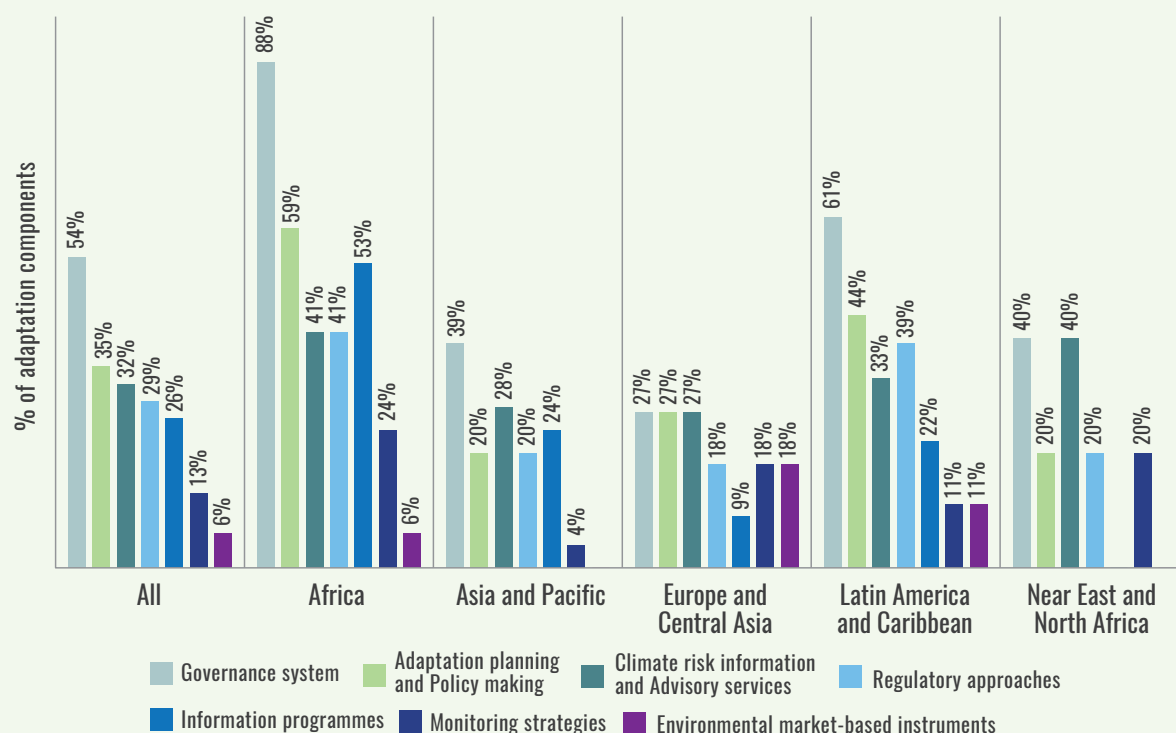
Some adaptation components include adaptation actions related to livelihood, health and/or economic systems (Figure 44), including actions aimed at improving food security and nutrition and livelihood and rural development outcomes. Examples include shock-responsive social protection and weather-based insurance. Few include adaptation actions specifically promoting gender equality and social inclusion, such as greater participation of women in decision-making or trainings. At the regional level, many adaptation components in Africa include adaptation actions related to livelihood, health and/or economic systems, while in all other regions only some adaptation components do.

FIGURE 44.**ADAPTATION ACTIONS IN LIVELIHOOD, HEALTH AND/OR ECONOMIC SYSTEMS REFERENCED IN NEW/UPDATED NDCs, BY REGION**

Many adaptation components include climate change governance related actions that are either specific to the agricultural sectors or cross-cutting (Figure 45). Some refer to adaptation planning and policymaking, such as developing local level adaptation guidelines in agriculture, and regulatory approaches, such as marine protection areas. Some adaptation components reference actions to establish or improve climate information and advisory services. Some also refer to information programmes, such as expanding research on the adaptive management of biodiversity or public awareness campaigns on climate change. Few include monitoring strategies, such as spatial data monitoring of coastal zones, and environmental-based market instruments, such as payments for ecosystem services. At the regional level, most adaptation components in Africa, many in Latin America and Caribbean and some in Asia and Pacific, Europe and Central Asia and Near East and North Africa include cross-cutting or agricultural specific climate change governance actions to improve adaptation planning and effectiveness.

FIGURE 45.

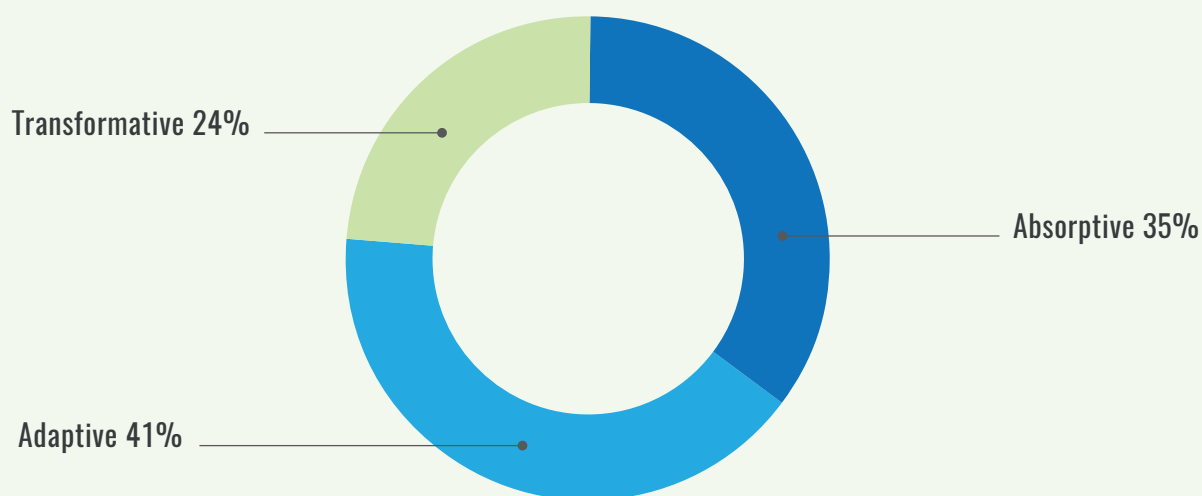
CROSS-CUTTING AND AGRICULTURAL CLIMATE CHANGE GOVERNANCE ACTIONS REFERENCED IN NEW/UPDATED NDCs, BY REGION



The IPCC describes that the pursuit of climate-resilient pathways requires a combination of incremental and transformative responses (IPCC, 2014b). Building resilience to the impacts of climate change in the agricultural sectors involves strengthening the capacity of individuals, households and communities to adapt to climate risks, the capacity to absorb the impact of an adverse event and the capacity to transform if the current system is no longer able to adapt to or recover from climate shocks (FAO *et al.*, 2018). In new/updated NDCs, many adaptation actions in the agricultural sectors seek to build absorptive and adaptive capacities, while some promote transformative capacity towards climate resilience in and beyond the agricultural sectors. For instance, some new/updated NDCs promote ecosystem restoration to improve capacity to absorb climatic shocks, others reference switching to drought-tolerant or shorter-cycle crop species as adaptive measures to adjust to longer-term changes in temperature and rainfall patterns, and some include more transformative approaches that reorganize existing ways of production, for instance by introducing agroforestry systems to provide shade to cash crops, diversify income sources and restore nitrogen in the soils.

FIGURE 46.

CLIMATE RESILIENCE PATHWAYS IN THE AGRICULTURAL SECTORS PROMOTED IN NEW/UPDATED NDCs, BY SHARE OF ADAPTATION ACTIONS



2.2.5 Co-benefits of adaptation

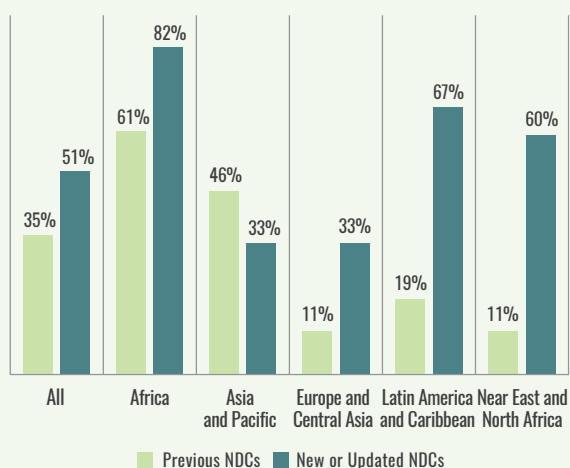
Some new/updated NDCs refer to the opportunity to generate mitigation and sustainable development co-benefits from the implementation of adaptation actions in the agricultural sectors. For instance, the recovery of native forests to restore biodiversity may generate mitigation co-benefits through enhanced forest biomass and carbon storage. Improvements in the post-harvest practices of horticulture may reduce storage losses whilst also providing agri-business opportunities for youth.

2.2.6 Transparency

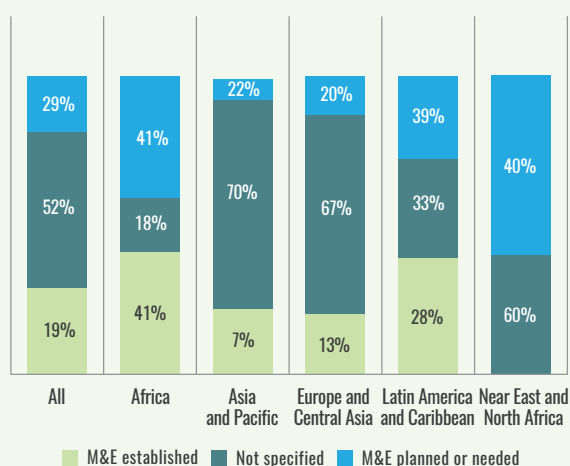
Many new/updated NDCs include information on monitoring and evaluation systems (M&E), compared to previous NDCs (Figure 47). However, while only some indicate that an M&E system is already in place, many communicate that M&E is planned or needed or do not include any information (Figure 48).

FIGURE 47.

INFORMATION INCLUDED ON M&E SYSTEMS IN PREVIOUS VS. NEW/UPDATED NDCs, BY REGION

**FIGURE 48.**

STATUS OF INSTITUTIONAL ARRANGEMENTS FOR M&E IN NEW UPDATED NDCs, BY REGION

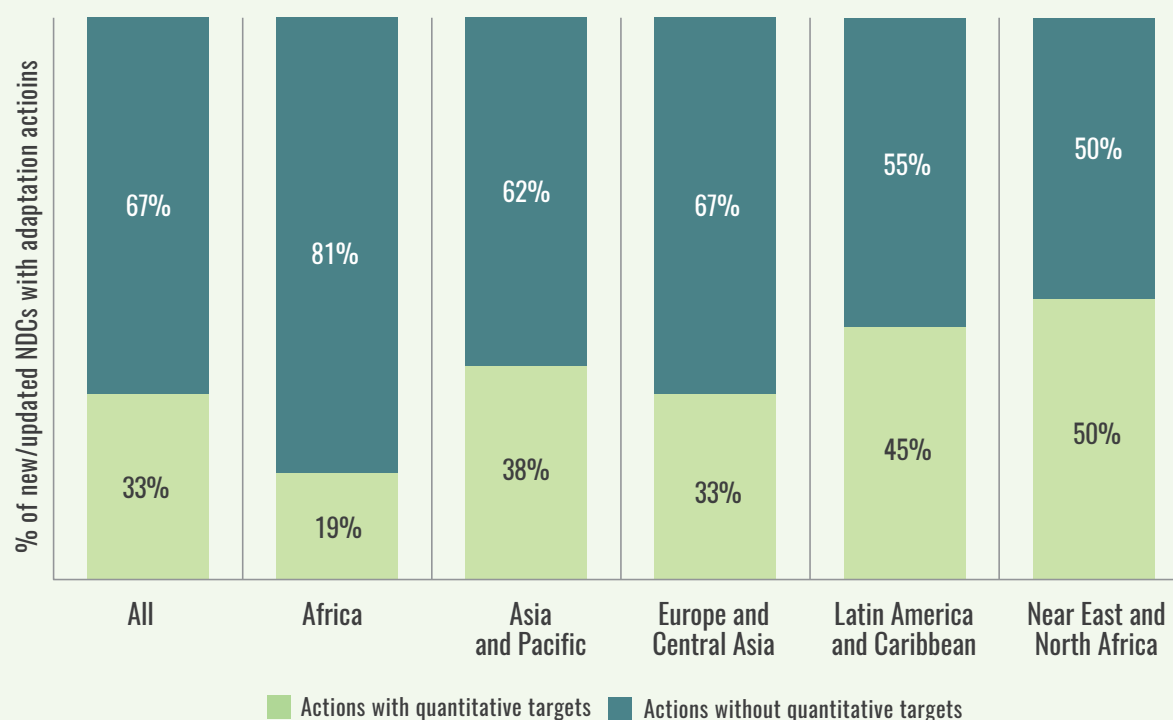


Tied to the transparency of NDCs is the inclusion of measurable indicators for tracking adaptation progress. Across all adaptation components in new/updated NDCs, only some include adaptation actions in the agricultural sectors with quantitative targets to facilitate planning, implementation, and reporting (**Figure 49**).

At the regional level, most adaptation actions in the agricultural sectors in Africa, and many in all other regions, do not contain measurable indicators.

FIGURE 49.

ADAPTATION ACTIONS IN THE AGRICULTURAL SECTORS WITH QUANTITATIVE TARGETS IN NEW/UPDATED NDCs, BY SHARE OF ACTIONS



2.3 SUPPORT NEEDS

Almost all countries⁸ refer to all or some means of implementation in their new/updated NDCs, with variety in structure and depth of information provided. While some include a specific section on means of implementation, many refer to finance, technology, and capacity building throughout the document (UNFCCC, 2021).

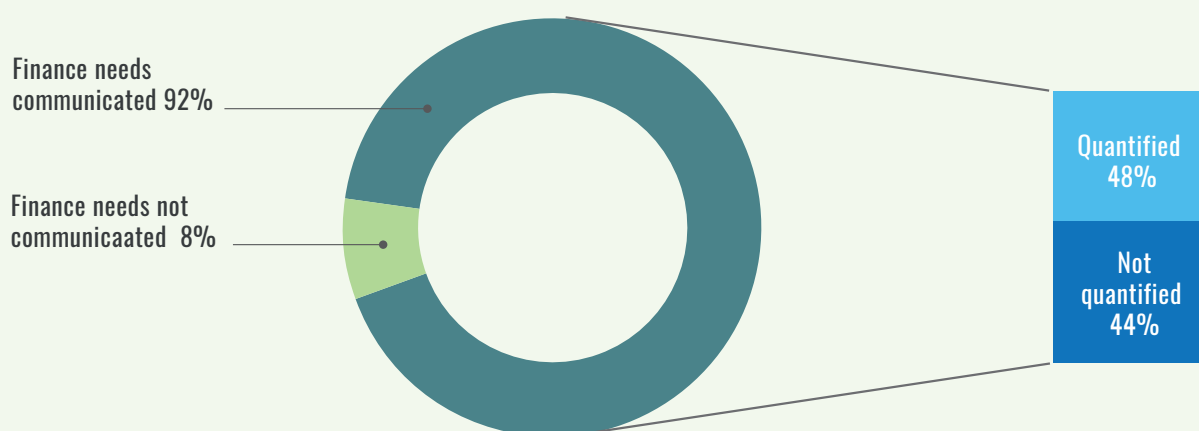
2.3.1 Finance

Most countries and almost all developing countries include qualitative information on financial resources that are either needed or already committed for NDC implementation. Only half of developing countries provide quantitative estimates of the amount required for NDC implementation (**Figure 50**) and only some differentiate between the amount that may be financed domestically and the amount estimated as reliant on international support (**Figure 51**). Some developing countries distinguish between the total amount required for adaptation and mitigation (**Figure 52**).

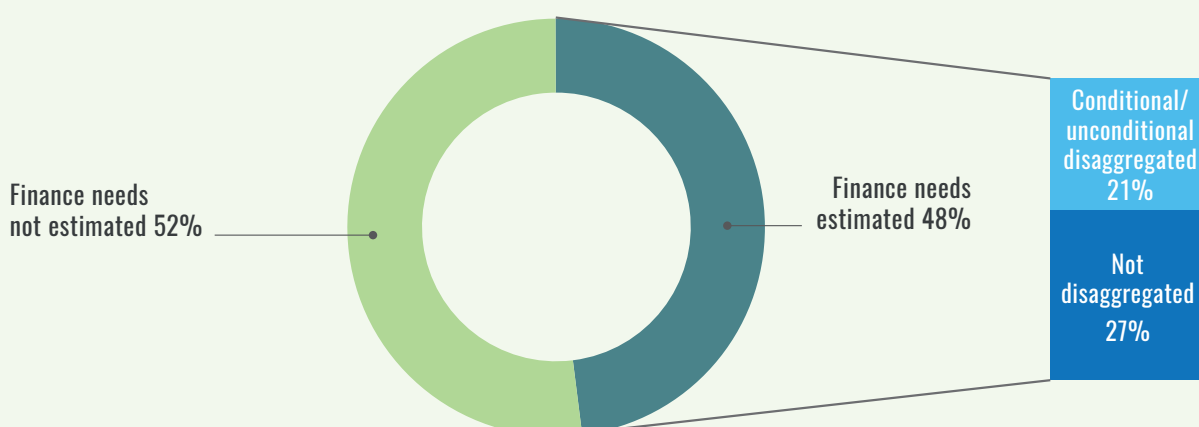
⁸ In this section, “countries” is used interchangeably with “NDCs” for ease of communication. The analysis however is based on the NDC as the common denominator.

FIGURE 50.

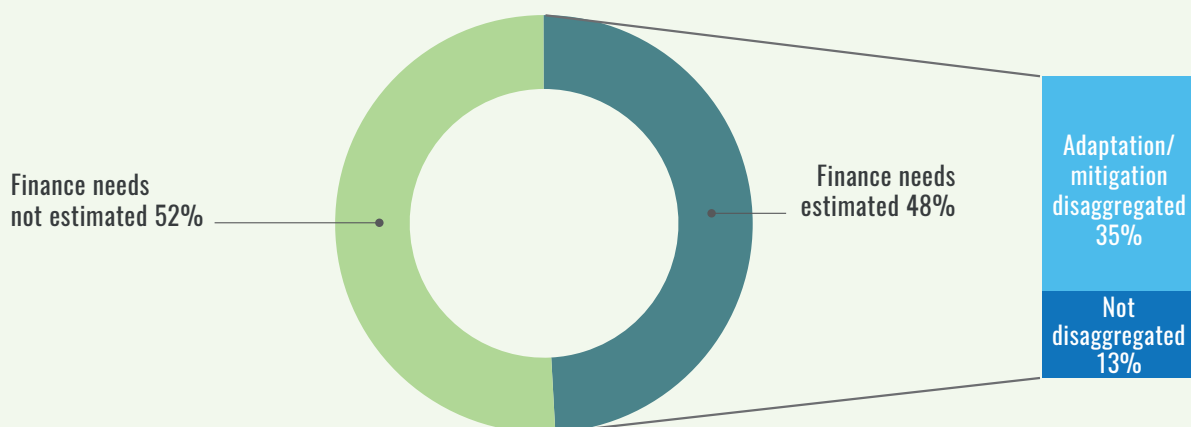
INFORMATION ON FINANCE NEEDS FOR NDC IMPLEMENTATION IN DEVELOPING COUNTRIES COMMUNICATED, BY SHARE OF NEW/UPDATED NDCs

**FIGURE 51.**

INFORMATION ON THE FINANCIAL CONDITIONALITY OF NDC IMPLEMENTATION IN DEVELOPING COUNTRIES COMMUNICATED, BY SHARE OF NEW/UPDATED NDCs

**FIGURE 52.**

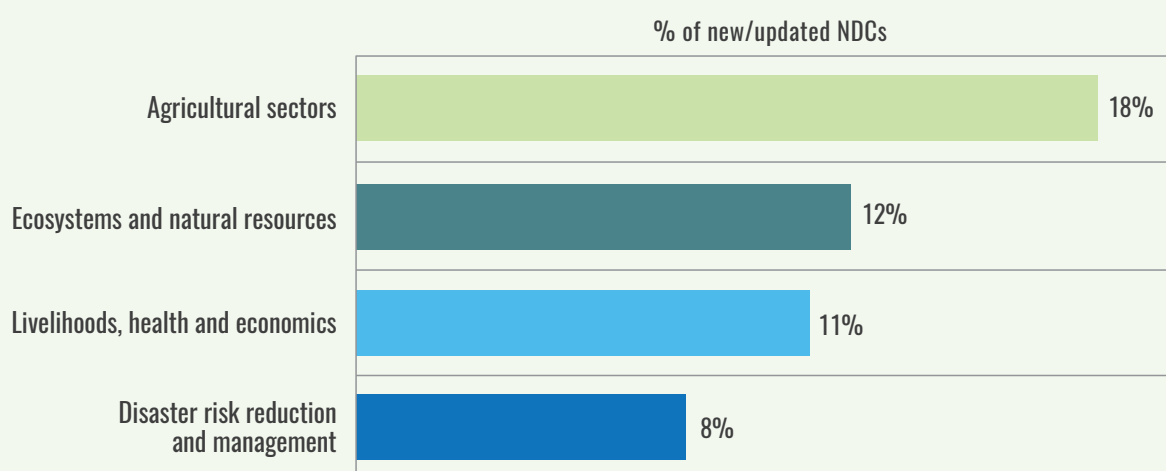
INFORMATION ON ADAPTATION AND MITIGATION FINANCE NEEDS FOR NDC IMPLEMENTATION IN DEVELOPING COUNTRIES COMMUNICATED, BY SHARE OF NEW/UPDATED NDCs



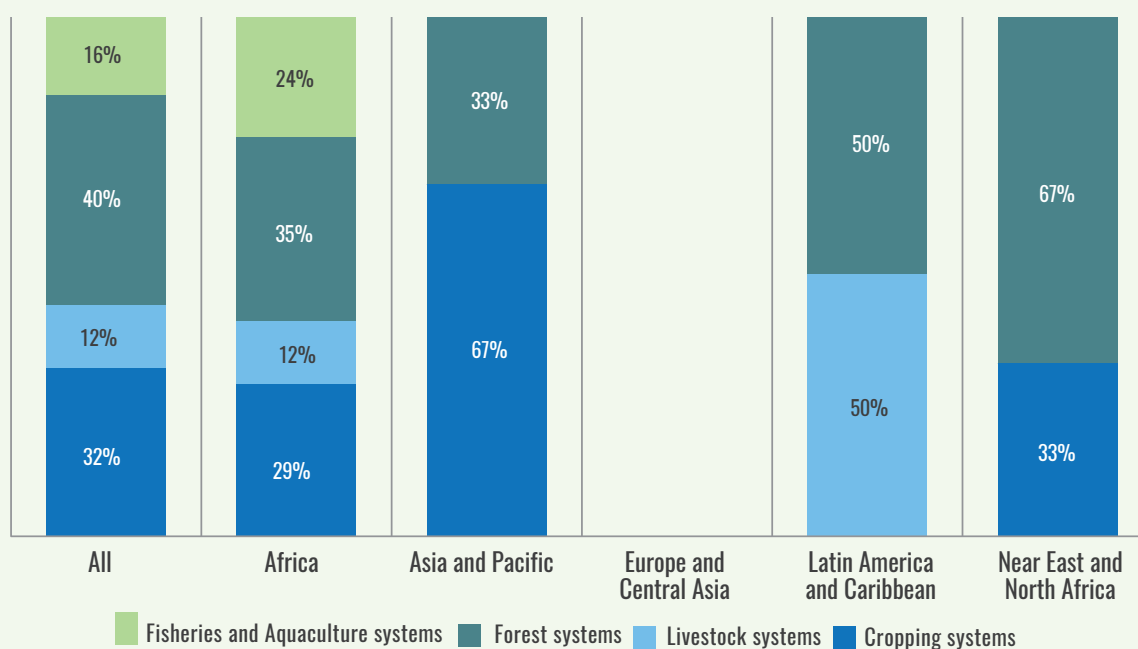
While many of the developing countries with finance needs estimated provide the total amount required, only some developing countries provide estimates at the sectoral or priority area level (**Figure 53**). For instance, only some include information on financial needs for NDC implementation in the agricultural sectors, ecosystems and natural resources, and livelihoods, health and/or economic systems. Few developing countries include financial need estimates specifically related to disaster risk reduction and management. It is likely that disaster risk reduction and management costs are integrated across a variety of sectors and priority areas. When information on finance needs is provided at the sub-sectoral level (**Figure 54**), the majority estimate needs related to climate action in cropping and forest systems, and only a few include estimates for livestock systems and for fisheries and aquaculture systems. Variation is observed at the regional level.

FIGURE 53.

QUANTITATIVE INFORMATION ON FINANCE NEEDS FOR NDC IMPLEMENTATION IN DEVELOPING COUNTRIES COMMUNICATED IN NEW/UPDATED NDCs, BY SECTOR OR PRIORITY AREA

**FIGURE 54.**

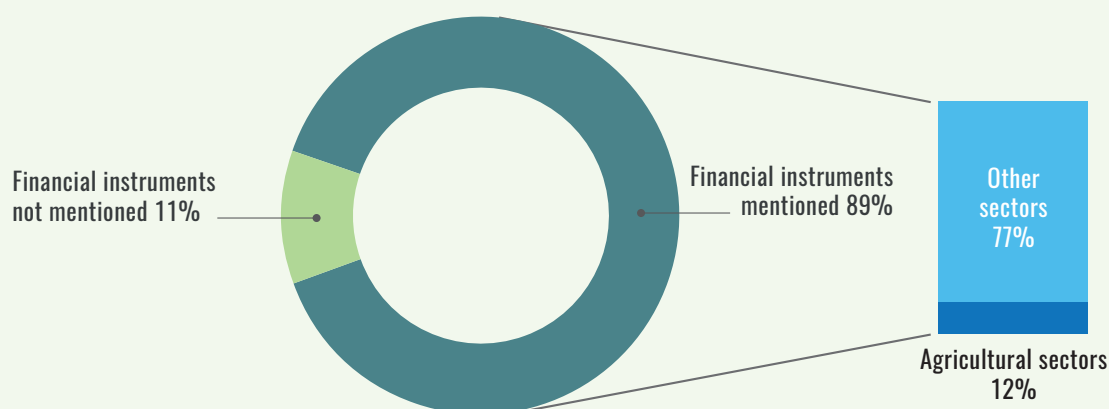
QUANTITATIVE INFORMATION ON FINANCE NEEDS FOR NDC IMPLEMENTATION IN THE AGRICULTURAL SECTORS IN DEVELOPING COUNTRIES COMMUNICATED IN NEW/UPDATED NDCs, BY REGION



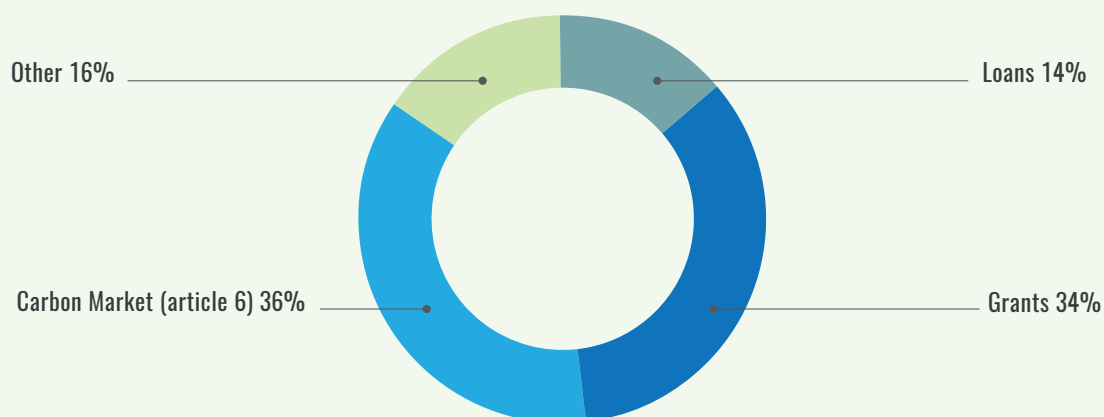
Most developing countries describe some of the opportunities to utilize financial instruments for NDC implementation, mostly grants and carbon market instruments (**Figure 55**). However, out of all financial instruments mentioned in new/updated NDCs, by developing countries, only some target the agricultural sectors (**Figure 56**).

FIGURE 55.

FINANCIAL INSTRUMENTS FOR NDC IMPLEMENTATION IN THE AGRICULTURAL SECTORS REFERENCED BY DEVELOPING COUNTRIES, BY SHARE OF NEW/UPDATED NDCs

**FIGURE 56.**

TYPES OF FINANCIAL INSTRUMENTS MENTIONED IN NEW/UPDATED NDCs BY DEVELOPING COUNTRIES, BY SHARE OF INSTRUMENTS



2.3.2 Technologies

Most countries and developing countries communicate information on technology development and transfer for NDC implementation (**Figure 57**). Out of those developing countries with technology needs referenced in new/updated NDCs, many relate to the agricultural sectors, including for instance drip-irrigation technologies or drought-tolerant crop varieties. At the regional level, many developing countries in Africa, Latin America and Caribbean and Europe and Central Asia express technology needs in the agricultural sectors, and some do in Asia and Pacific and Near East and North Africa (**Figure 58**). Some developing countries also mention the need for technology development and transfer around resilient infrastructure, such as climate-proofed dams in flood prone areas. Some also mention technology needs for natural resources management, such as integrated river basin management. Few developing countries, however, reference technology needs related to climate modeling and forecasting and to MRV and M&E systems.

FIGURE 57.

INFORMATION ON TECHNOLOGY DEVELOPMENT AND TRANSFER NEEDS FOR NDC IMPLEMENTATION IN THE AGRICULTURAL SECTORS REFERENCED BY DEVELOPING COUNTRIES, BY SHARE OF NEW/UPDATED NDCs

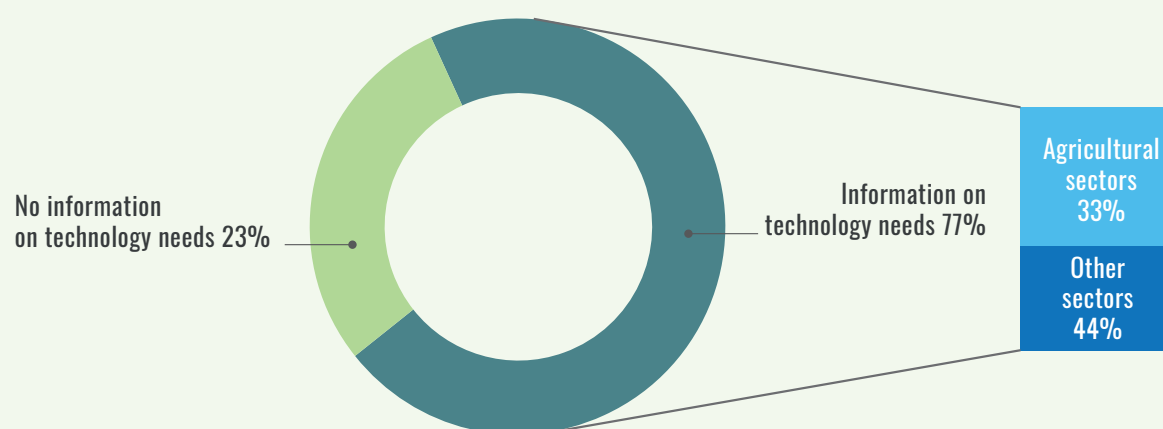
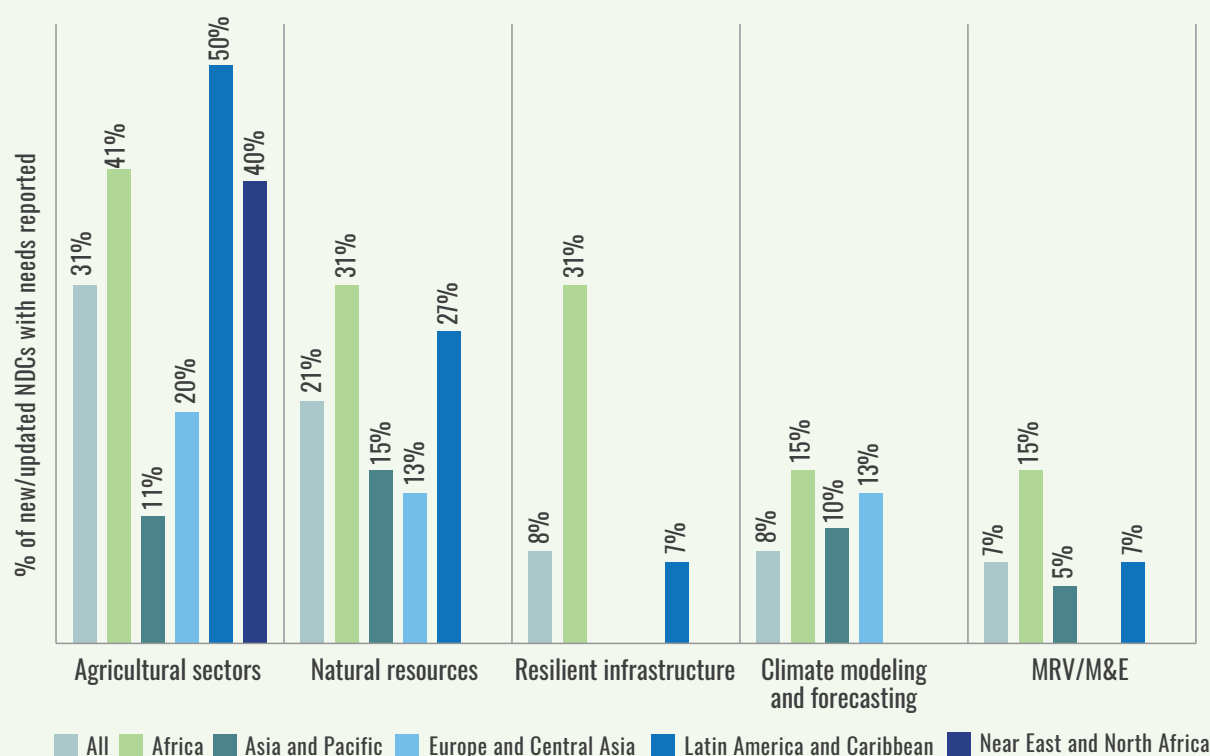


FIGURE 58.

TYPES OF TECHNOLOGY DEVELOPMENT AND TRANSFER NEEDS FOR NDC IMPLEMENTATION REFERENCED BY DEVELOPING COUNTRIES IN NEW/UPDATED NDCs, BY REGION



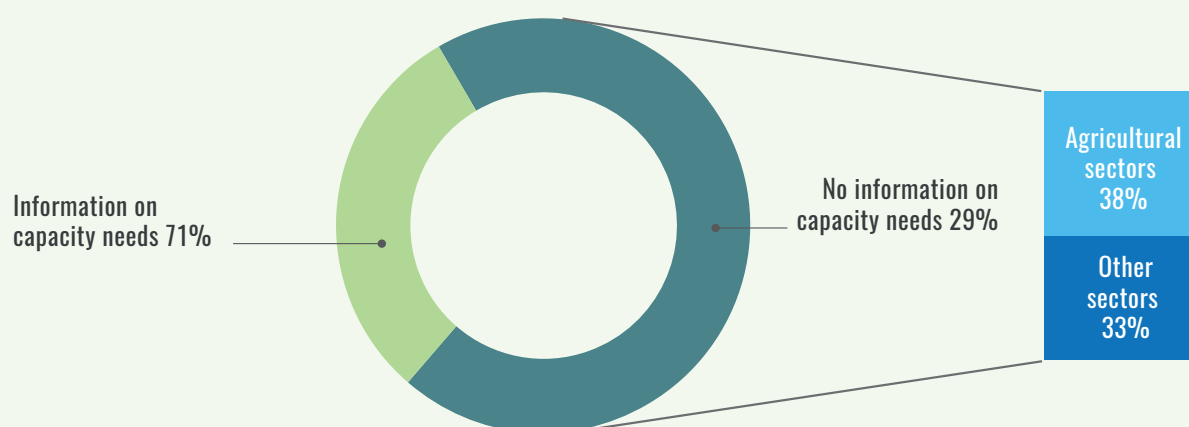
2.3.3 Capacities

Many countries and most developing countries identify capacity-building needs around the planning and implementation of NDCs. Out of those developing countries with capacity needs referenced in new/updated NDCs, over half relate to the agricultural sectors (Figure 59). In particular, many describe gaps in technical skills to implement the NDC effectively (Figure 60). Examples include capacity building on vulnerability analysis and climate risk assessments. Many developing countries also reference gaps in institutional capacity for NDC implementation in the agricultural sectors, such as inter-agency and

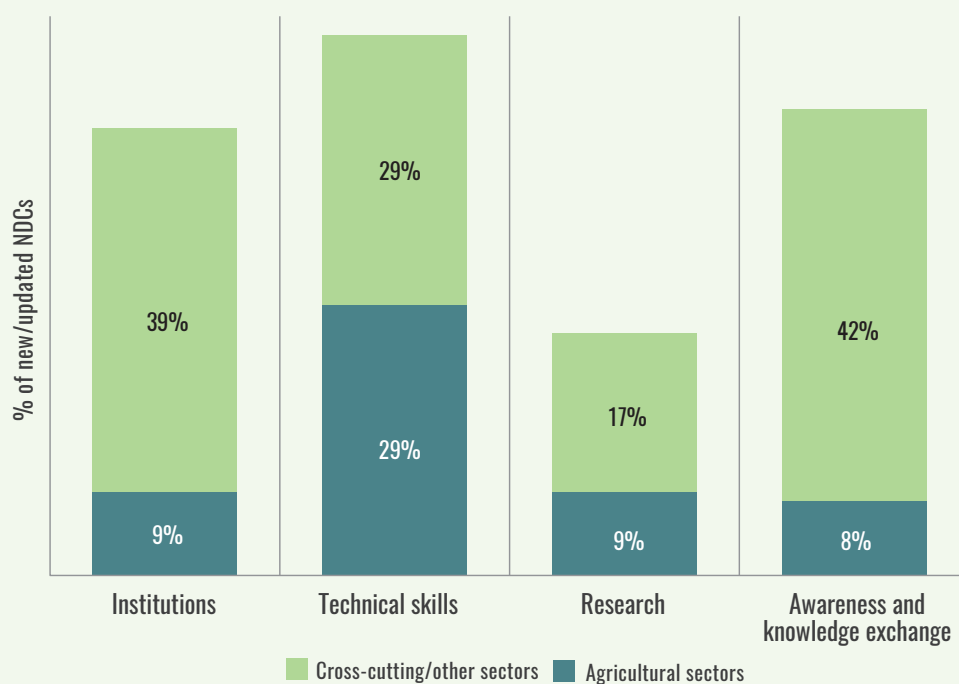
cross-sectoral coordination and the mainstreaming of climate change into policies and budgets. Many developing countries express the need for capacity building to foster greater awareness and knowledge on climate change impacts and action, such as behavioral change campaigns. Some developing country NDCs also mention the need for strengthened capacity through research activities, including research and development of climate-resilient crop varieties and breeds.

FIGURE 59.

INFORMATION ON CAPACITY BUILDING NEEDS FOR NDC IMPLEMENTATION IN THE AGRICULTURAL SECTORS REFERENCED BY DEVELOPING COUNTRIES, SHARE OF NEW/UPDATED NDCs

**FIGURE 60.**

INFORMATION ON CAPACITY BUILDING NEEDS FOR NDC IMPLEMENTATION IN THE AGRICULTURAL SECTORS REFERENCED BY DEVELOPING COUNTRIES IN NEW/UPDATED NDCs



2.4 PLANNING AND IMPLEMENTATION PROCESSES

2.4.1 Institutional arrangements

Most new/updated NDCs refer to domestic institutional arrangements in place to plan, implement and monitor the NDC at various levels (**Figure 61**). Many refer to a single institutional body that is charged with developing and coordinating the NDC at the national level, such as the Office of the Prime Minister, and some refer to a specific institutional mechanism in place for coordinating across sectors and at various levels, such as an inter-institutional committee or working group (**Figure 62**). Almost all describe regulatory frameworks that provide the legal basis for NDC implementation at the national level.

FIGURE 61.

DOMESTIC INSTITUTIONAL ARRANGEMENTS FOR NDC IMPLEMENTATION REFERENCED IN PREVIOUS VS. NEW/UPDATED NDCs, BY REGION

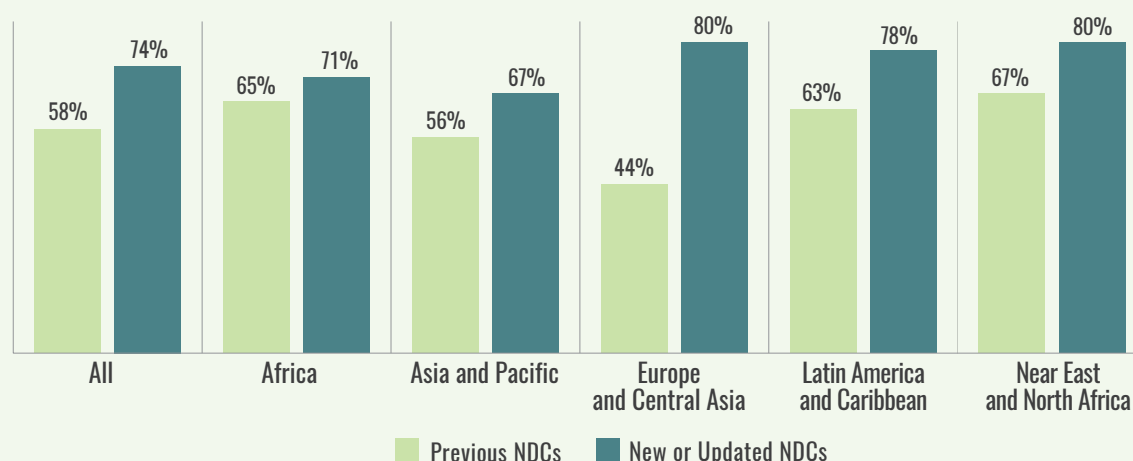
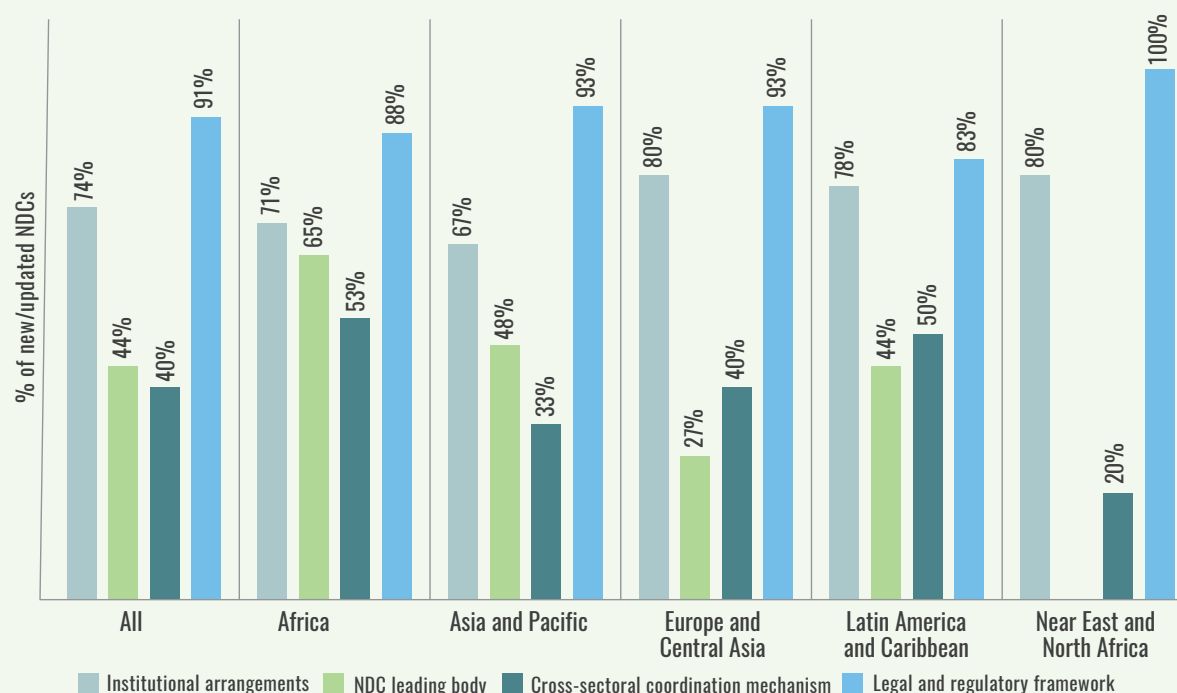


FIGURE 62.

TYPES OF DOMESTIC INSTITUTIONAL ARRANGEMENTS REFERENCED IN NEW/UPDATED NDCs, BY REGION

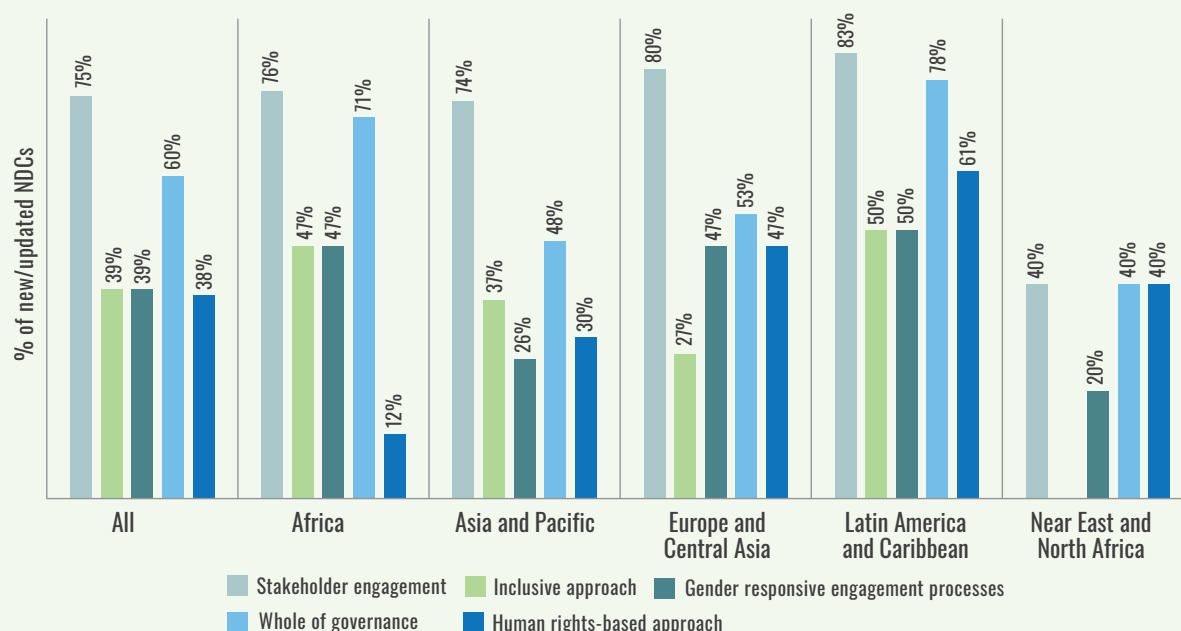


2.4.2 Engagement processes

Most new/updated NDCs refer to stakeholder engagement and consultations held to inform the formulation of the NDC (Figure 63). While many list a generic set of stakeholder groups, such as government, private sector, and non-state actors, some make explicit reference to the inclusive and participatory nature of consultations with specific involvement of marginalized groups, including women, Indigenous Peoples, and youth. Some new/updated NDCs refer specifically to gender-responsive engagement processes. Few make explicit reference to the role of agricultural stakeholders in the NDC planning process. Whole-of-governance models, centered around the participation of sub-national, sectoral, and central government bodies, were also described in many of the new/updated NDCs. Some refer to humans-rights based approaches to climate change governance. At the regional level, most new/updated NDCs in Africa, Asia and Pacific, Europe and Central Asia and Latin America and Caribbean and some in Near East and North Africa refer to stakeholder engagement processes.

FIGURE 63.

INFORMATION ON ENGAGEMENT PROCESSES IN NEW/UPDATED NDCs, BY REGION

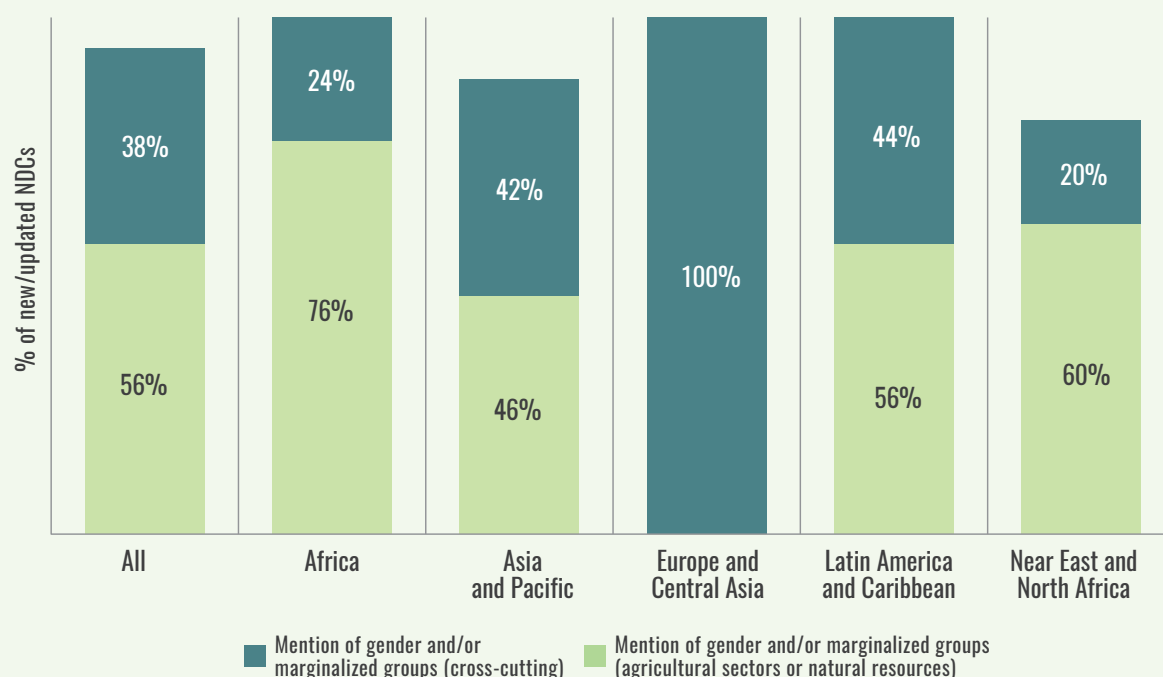


2.4.3 Gender-responsive and inclusive planning

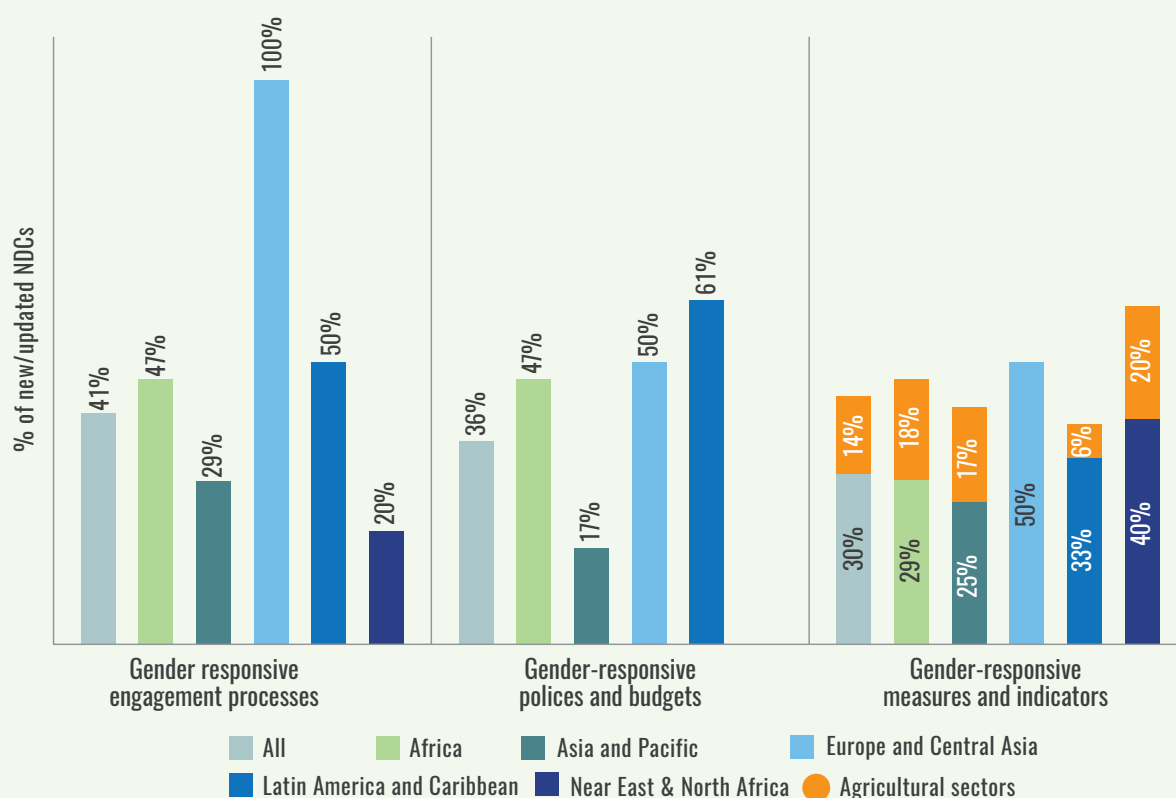
New/updates NDCs show significantly greater recognition of the vulnerabilities, needs and capacities of marginalized groups, including smallholders, women, Indigenous Peoples, youth, elderly and disabled, to enhance the ambition and effectiveness of climate action. Most countries and almost all developing countries mention gender and/or other marginalized group in new/updated NDCs (Figure 64), compared to only some countries in previous NDCs. Many developing countries draw particular attention to the disproportionate impacts of climate change on women or other marginalized groups due to their reliance on climate-sensitive natural resources as sources of sustenance and livelihoods. At the regional level, most developing countries in Africa, many in Latin America and Caribbean, Asia and Pacific and Near East and North Africa, and none in Europe and Central Asia reference women and/or marginalized groups in the agricultural sectors as a cross-cutting issue or priority areas for climate action in new/updated NDCs.

FIGURE 64.

GENDER AND/OR MARGINALIZED GROUPS REFERENCED IN THE AGRICULTURAL SECTORS IN NEW/UPDATED NDCs BY DEVELOPING COUNTRIES

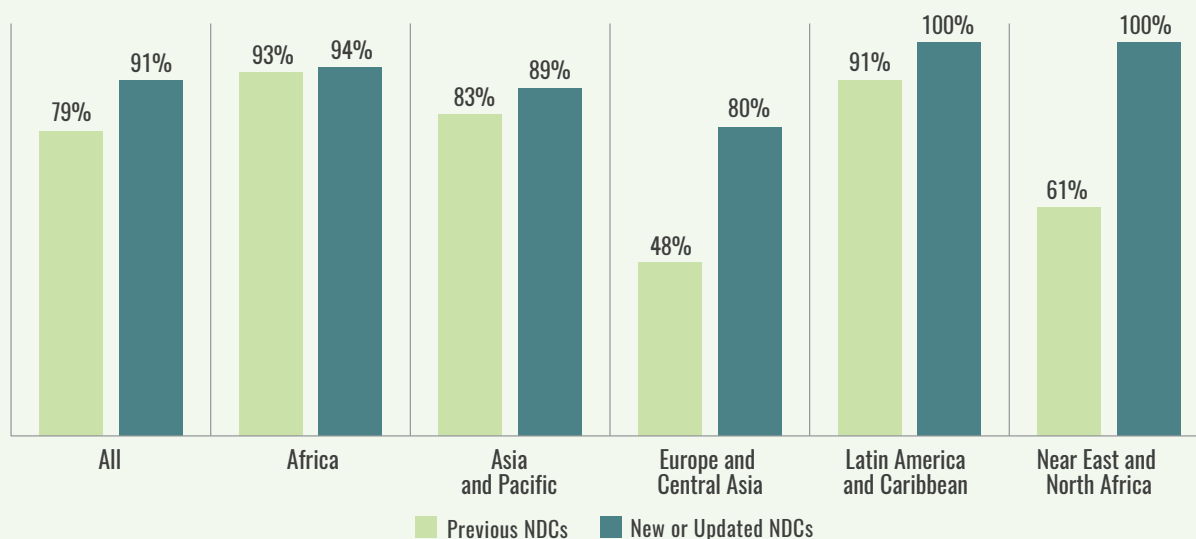


Whilst most developing country submissions mention gender and other marginalized groups as a cross-cutting issue, fewer include concrete characteristics of gender-responsive NDC planning and implementation (Figure 65). Many refer to gender-responsive engagement processes that were carried out with the objective of ensuring that gender-specific vulnerabilities and inequalities were considered and addressed in NDCs. Many also identify legislative, regulatory, planning, or budgeting processes that mainstream gender. Many formulate adaptation, mitigation or cross-cutting climate actions that specifically target gender issues and articulate gender-responsive targets. Only some develop gender-responsive actions and indicators specific to the agricultural sectors or natural resources, such as actions promoting women's leadership or capacity to access and control productive resources.

FIGURE 65.**GENDER-RESPONSIVE PLANNING AND IMPLEMENTATION PROCESSES REFERENCED IN NEW/UPDATED NDCs BY DEVELOPING COUNTRIES**

2.4.4 Policy coherence and coordination

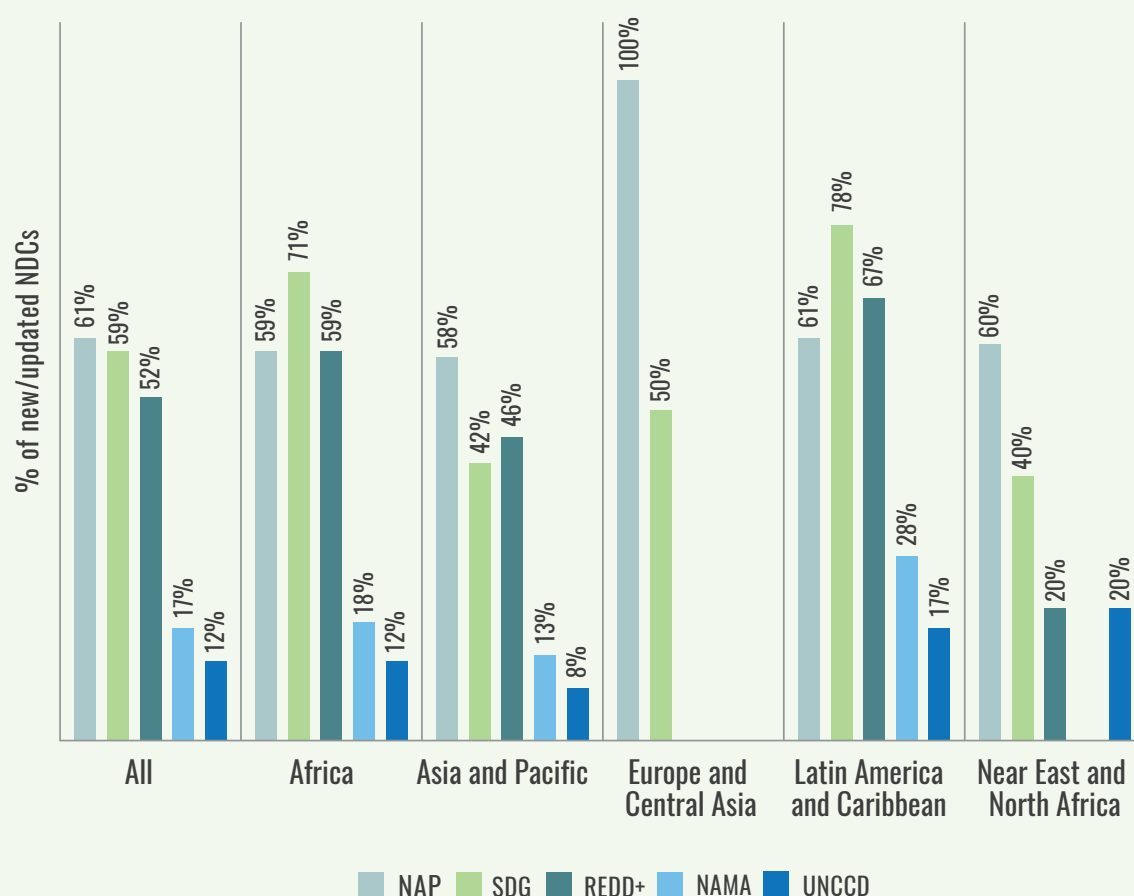
Almost all new/updated NDCs describe efforts in achieving policy coherence and cross-sectoral coordination across climate change commitments in the NDCs and national and sub-national policies, plans and budgets (**Figure 66**). At the regional level, all new/updated NDCs refer to policy coherence and coordination in Latin America and Caribbean and Near East and North Africa, most in Africa and many in Asia and Pacific and Europe and Central Asia do the same.

FIGURE 66.**INFORMATION ON POLICY COHERENCE AND CROSS-SECTORAL COORDINATION IN PREVIOUS VS. NEW/UPDATED NDCs, BY REGION**

Many developing country new/updated NDCs make links between the planning and implementation of their NDCs with other national climate change, environment, and sustainable development agendas (**Figure 67**). For instance, many make reference to the status of their NAP and some refer to the role of the NAP as an NDC implementing instrument or key source of information for the NDC. Many also reference the 2030 Agenda on Sustainable Development, and few even align adaptation and mitigation action indicator frameworks in the NDCs with Sustainable Development Goal (SDG) targets. Many developing countries also reference reducing emissions from deforestation and forest degradation (REDD+) and the role of sustainable management of forests, conservation and enhancement of forest carbon stocks in their overall planning section, as a regulatory framework or as a mitigation action. Some mention nationally appropriate mitigation actions (NAMA) and make links with the United Nations Convention to Combat Desertification (UNFCCCDD).

FIGURE 67.

ALIGNMENT OF NDC WITH OTHER NATIONAL AGENDAS REFERENCED BY DEVELOPING COUNTRIES IN NEW/UPDATED NDCs, BY REGION

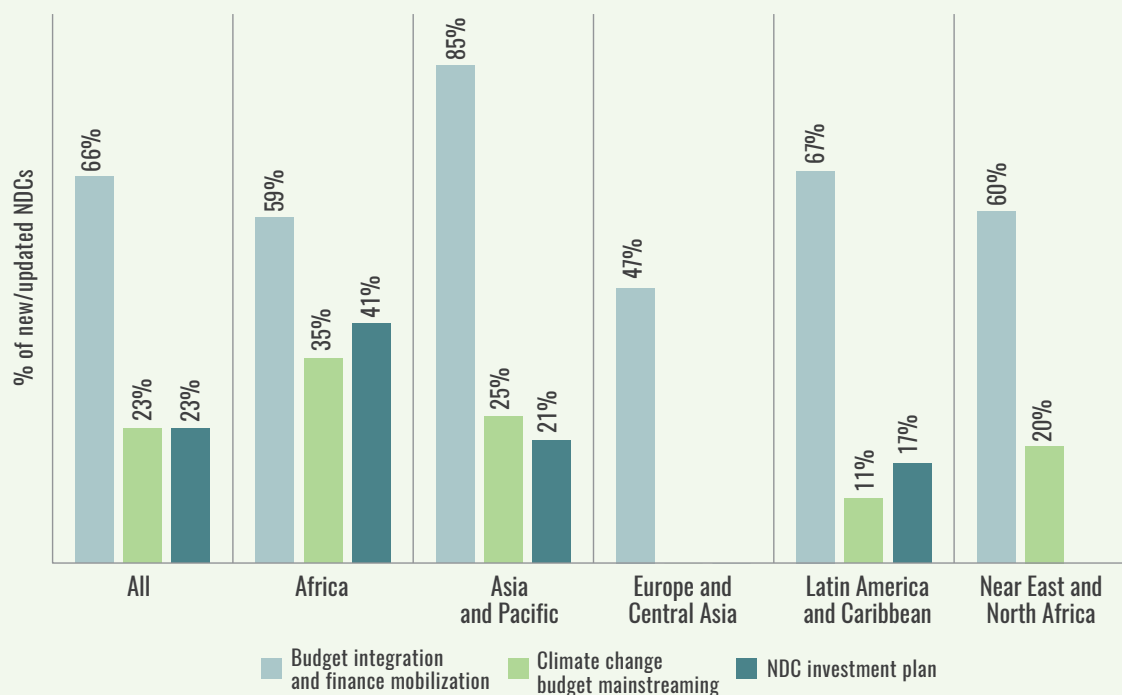


2.4.5 Budgeting and investment

Many new/updated NDCs and many developing country new/updated NDCs provide information on budget integration and finance mobilization to support NDC implementation, though few mention explicitly the agricultural sectors (**Figure 68**). Some developing countries make reference to efforts to mainstream climate change into national and sectoral plans budgets. Some refer to NDC investment plans, with only a few mentioning explicitly the agricultural sectors. At the regional level, most developing country new/updated NDCs in Asia and Pacific and many in Africa, Latin America and Caribbean, Europe and Central Asia and Near East and North Africa refer to budget integration and finance mobilization efforts for NDC implementation.

FIGURE 68.

INFORMATION ON BUDGET INTEGRATION AND FINANCE MOBILIZATION REFERENCED BY DEVELOPING COUNTRIES IN NEW UPDATED NDCs, BY REGION

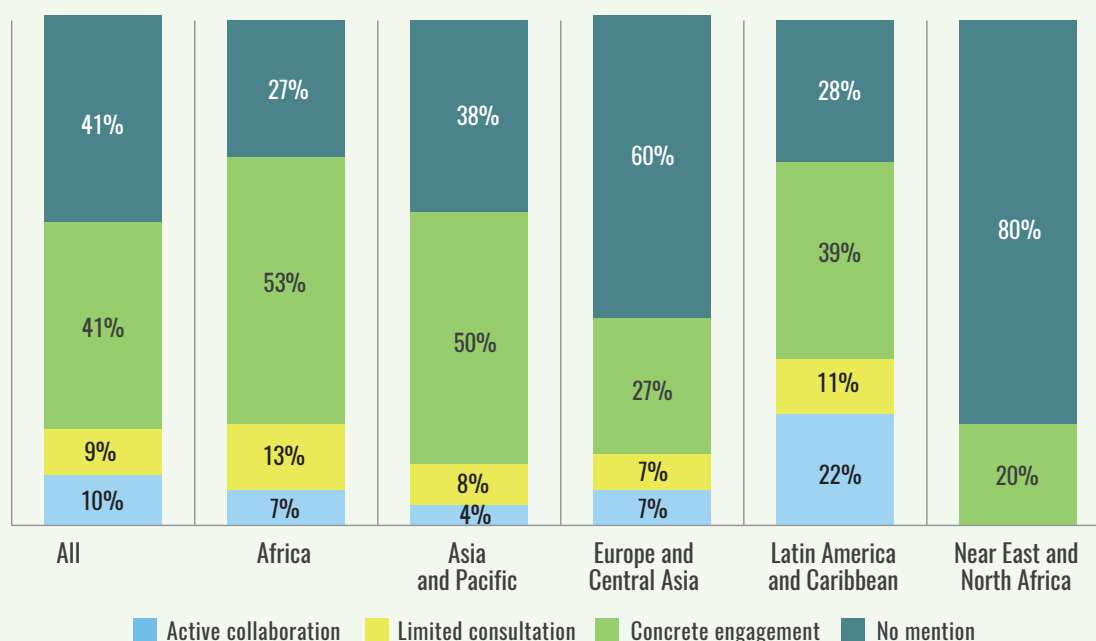


2.4.6 Private sector engagement

Many new/updated NDCs refer to consultation of the private sector in the planning process, with varying quality of engagement (**Figure 69**). Only some mention examples of concrete engagement or active collaboration. This trend is observed across all regions, though new/updated NDCs in Latin America and Caribbean communicate the greatest share of active collaboration with the private sector in NDC planning.

FIGURE 69.

INFORMATION ON PRIVATE SECTOR ENGAGEMENT PROCESSES IN NEW/UPDATED NDCs, BY REGION



Many new/updated NDCs reference specific private sector entry-points for climate action, activities, particularly in the agricultural sectors (Figure 70). Amongst those entry-points mentioned, the majority focus on mitigation and/or adaptation opportunities in forest systems and agri-food value chains (Figure 71).

FIGURE 70.

PRIVATE SECTOR ENTRY-POINTS FOR CLIMATE ACTION IN THE AGRICULTURAL SECTORS REFERENCED, BY SHARE OF NEW/UPDATED NDCs

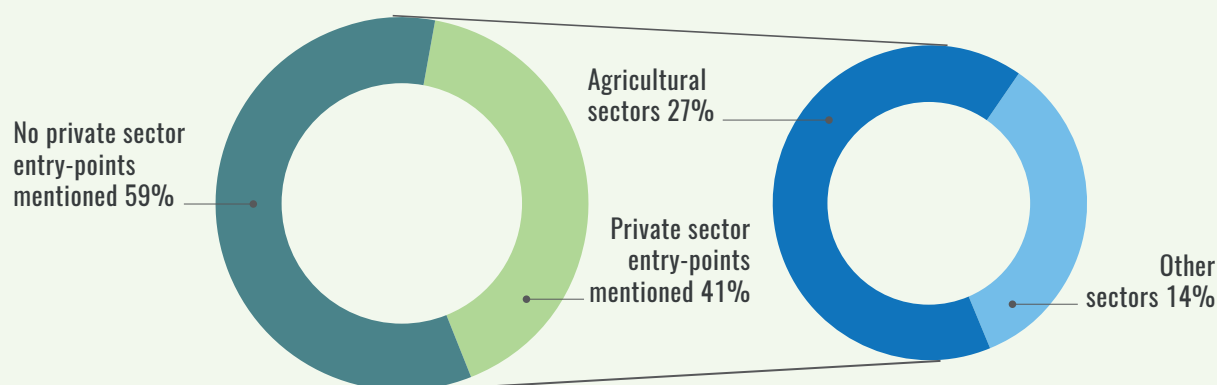
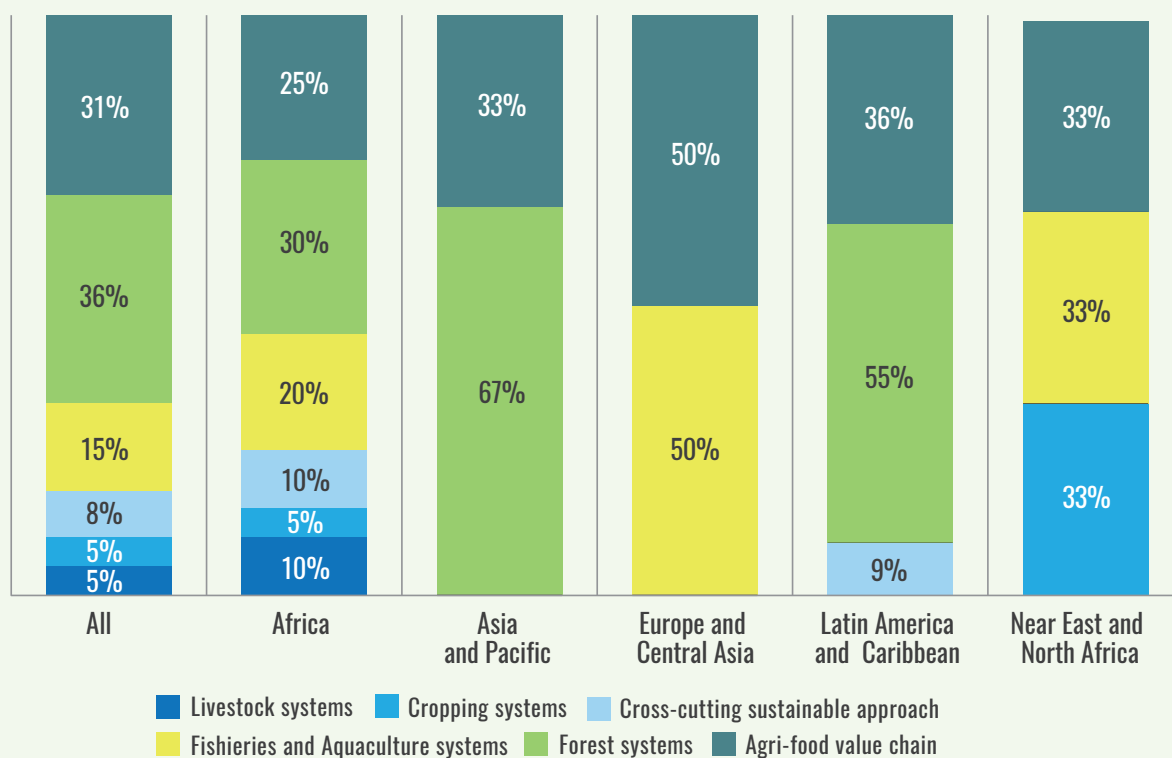


FIGURE 71.

DISTRIBUTION OF PRIVATE SECTOR ENTRY-POINTS IN THE AGRICULTURAL SECTORS REFERENCED IN NEW/UPDATED NDCs, BY SUB-SECTOR



2.4.7 Implementation plans

Some countries and some developing countries refer to NDC implementation plans that are either developed or under development in their new/updated NDCs (**Figure 72**). All region's new/updated NDCs contain some reference to NDC implementation plans in all regions (except for Near East and North Africa), and only some refer to the agricultural sectors (**Figure 73**).

FIGURE 72.

INFORMATION PROVIDED ON NDC IMPLEMENTATION PLANS DEVELOPED OR UNDER DEVELOPMENT IN NEW/UPDATED NDCs, BY REGION

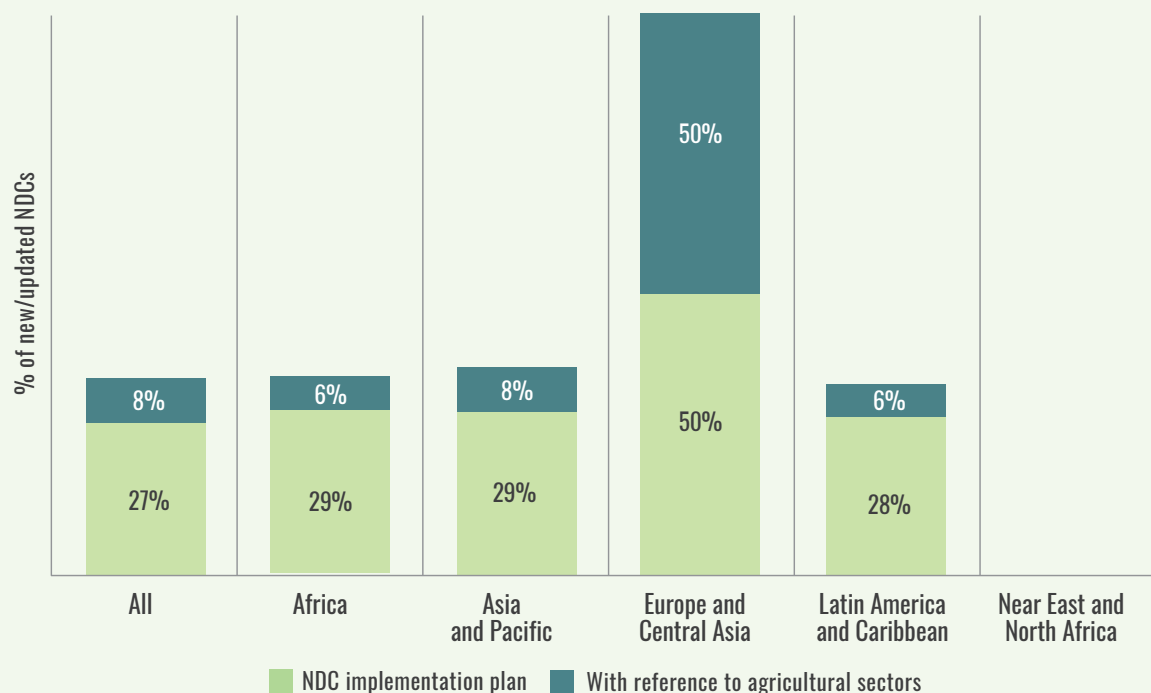
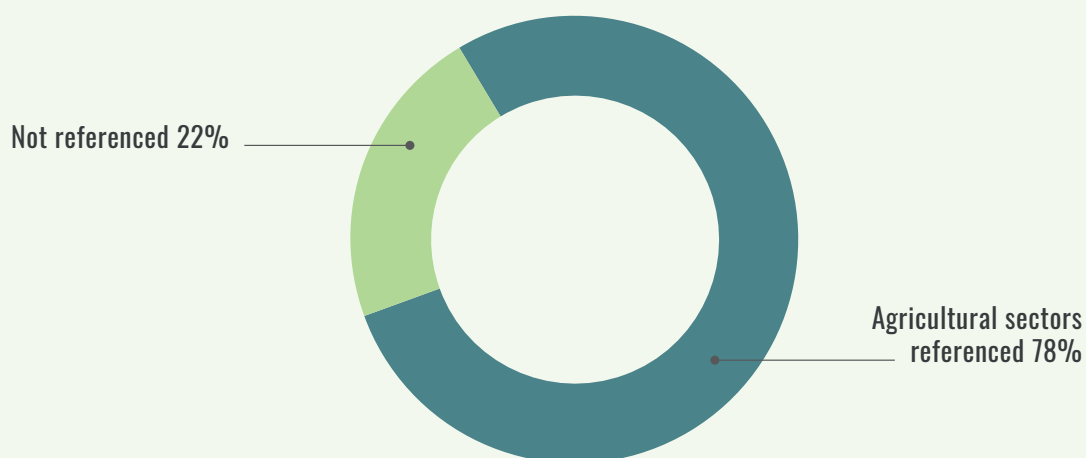


FIGURE 73.

NDC IMPLEMENTATION PLANS WITH REFERENCE TO THE AGRICULTURAL SECTORS MENTIONED, BY SHARE OF NEW/UPDATED NDCs



CHAPTER 3

CONCLUSIONS

New/updated NDCs submissions reaffirm the critical role of the agricultural sectors in the global response to climate change. Adapting to and slowing down the adverse and, at times, irreversible impacts of climate change on the natural resources base, agricultural production systems, agri-food value chains and rural livelihoods is more urgent than ever. At the same time, the clock is ticking on our capacity to reduce the GHG footprint of the overall agr-food system and build its resilience to climatic and other future risks. By providing a synthesis of agricultural priorities, vulnerabilities and needs for climate action in the agricultural sectors, this report aims to promote targeted financial, technological, and capacity-building support for NDC implementation.

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ANNEXES:

ANNEX 1: AFRICA

FIGURE 74.

TYPOLOGY OF MITIGATION CONTRIBUTIONS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs IN AFRICA

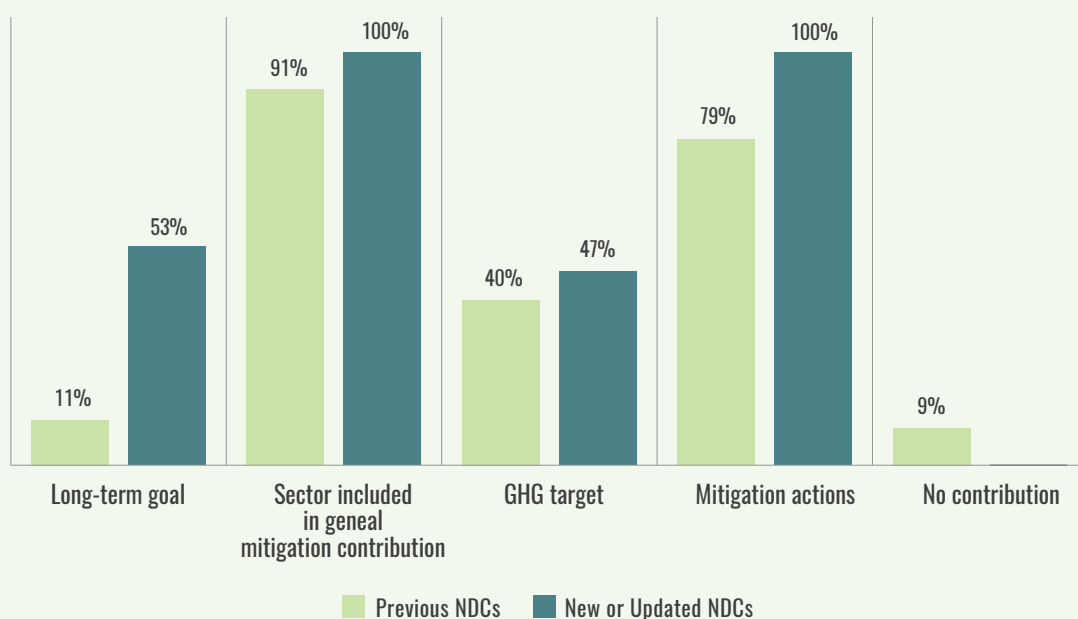
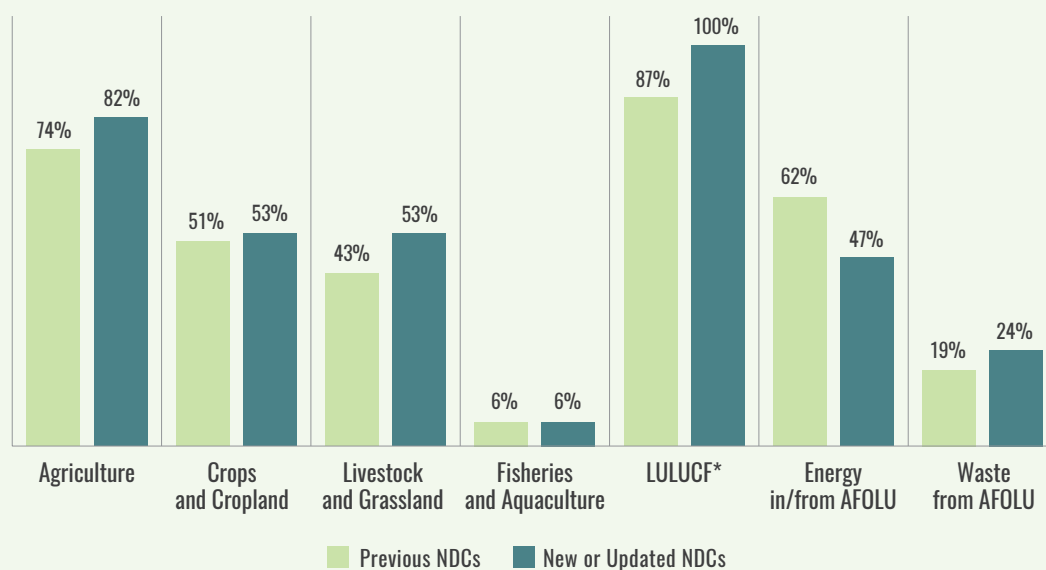
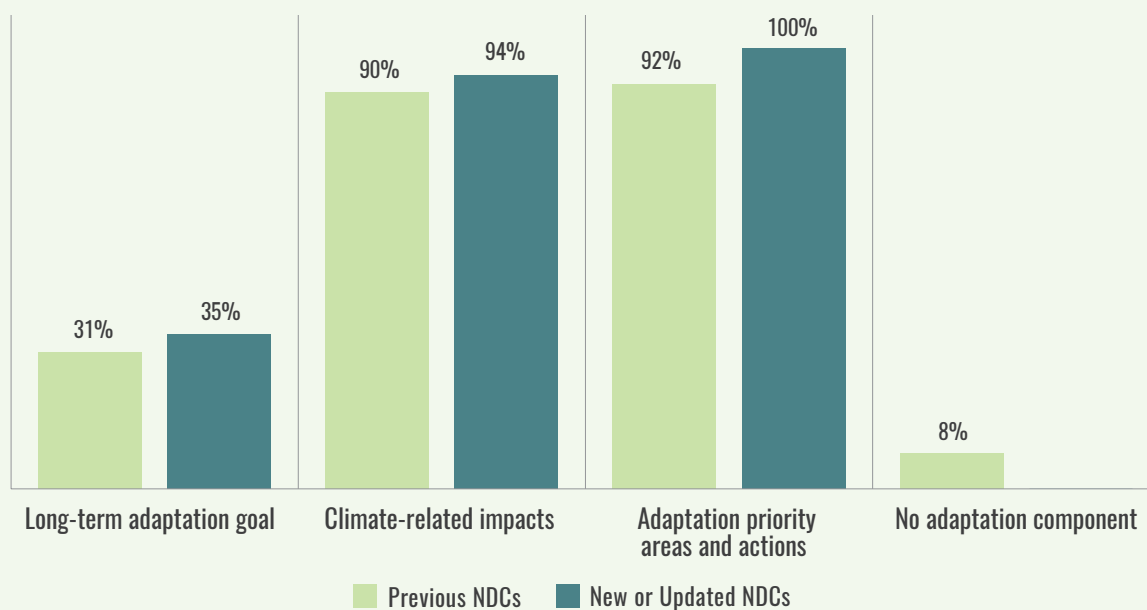
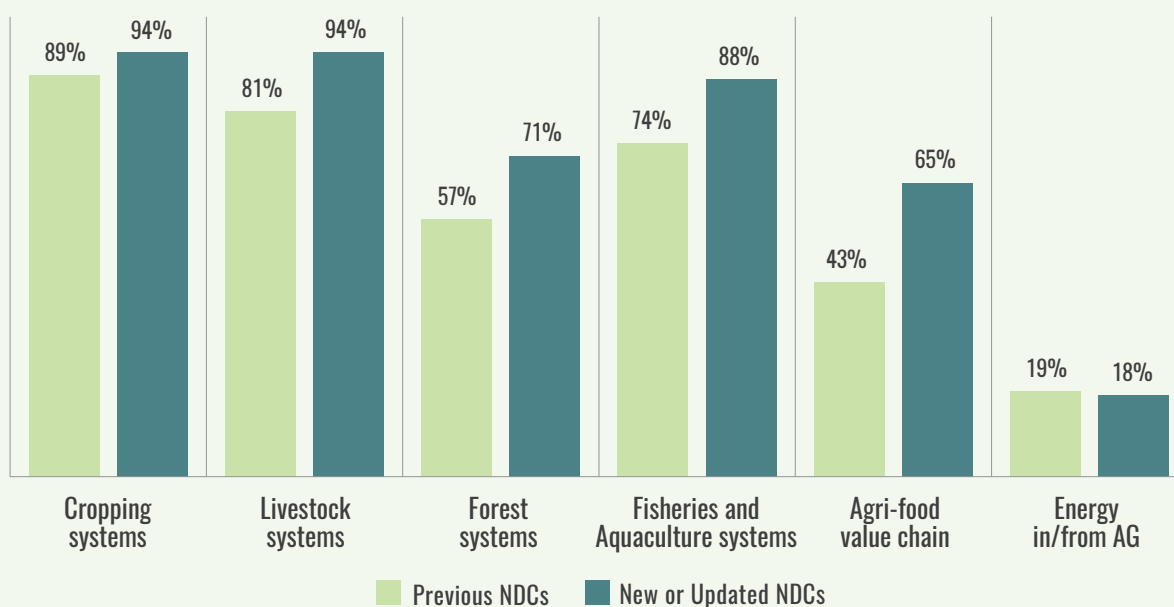


FIGURE 75.

COVERAGE OF MITIGATION CONTRIBUTIONS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs IN AFRICA, BY SUB-SECTOR



*LULUCF excludes cropland and grassland in this figure.

FIGURE 76.**TYPOLGY OF ADAPTATION COMPONENTS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs IN AFRICA****FIGURE 77.****COVERAGE OF ADAPTATION COMPONENTS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs IN AFRICA, BY SUB-SECTOR**

ANNEX 2: ASIA AND PACIFIC

FIGURE 78.

TYPOLGY OF MITIGATION CONTRIBUTIONS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs IN ASIA AND PACIFIC

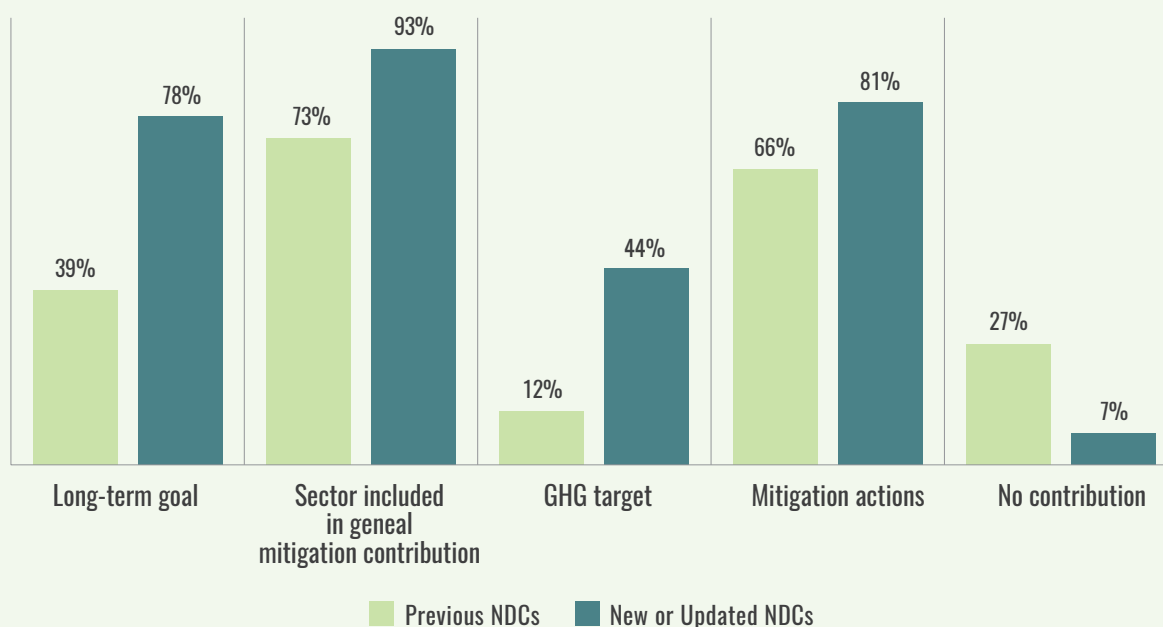
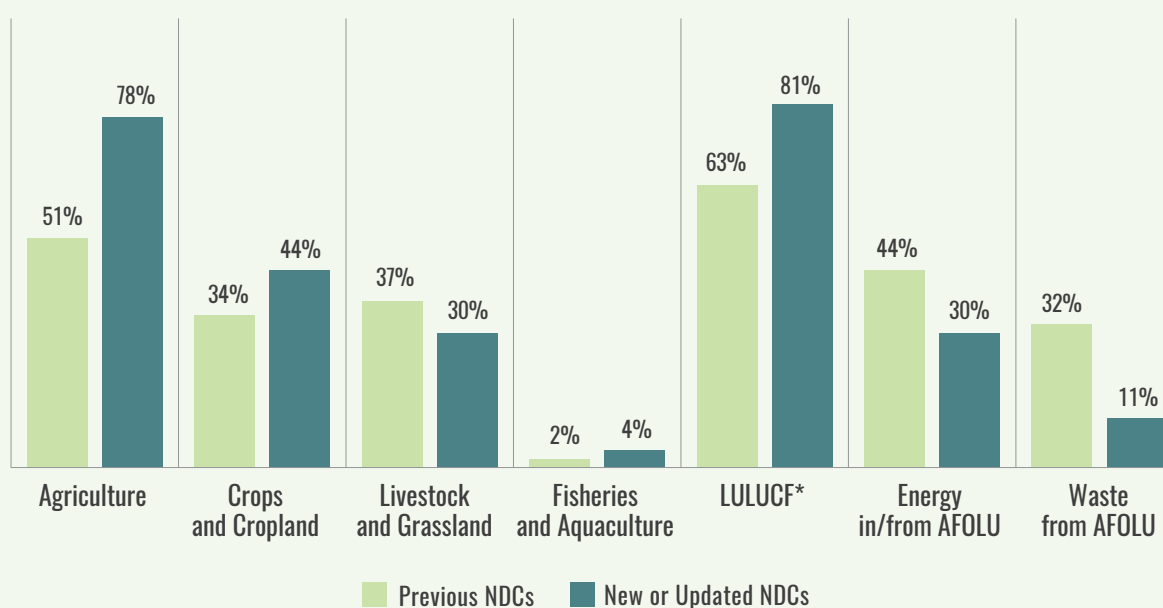


FIGURE 79.

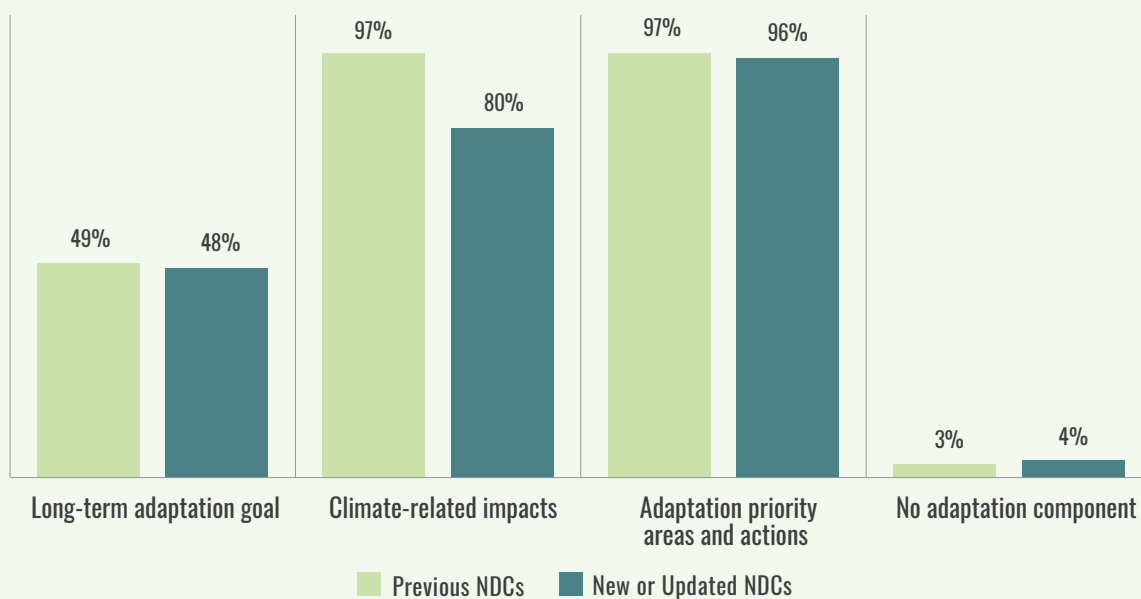
COVERAGE OF MITIGATION CONTRIBUTIONS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs IN ASIA AND PACIFIC, BY SUB-SECTOR



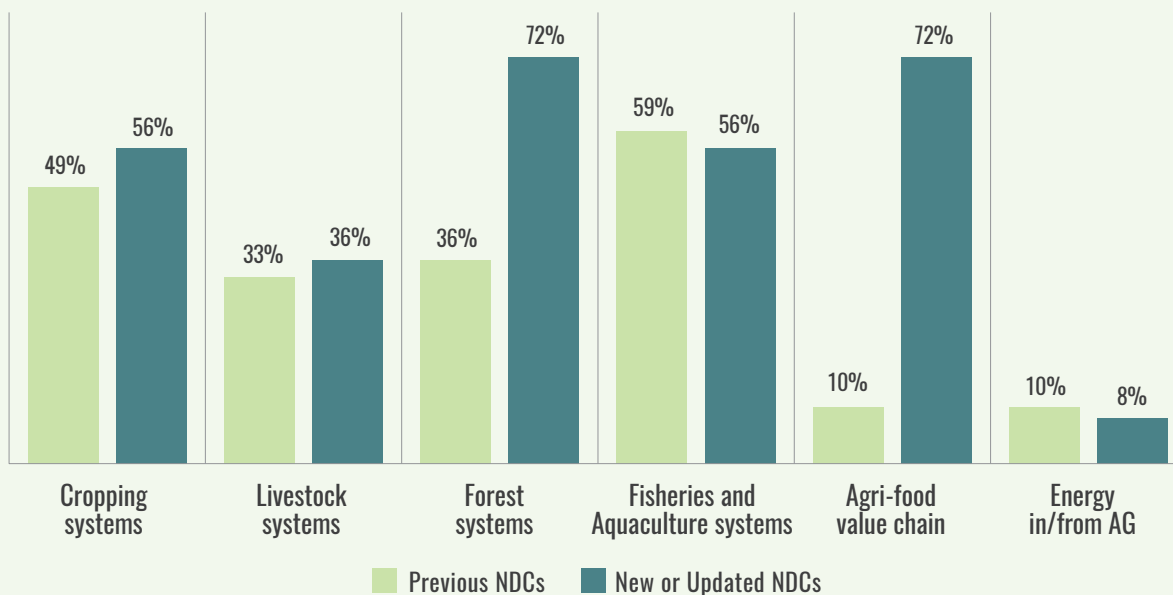
*LULUCF excludes cropland and grassland in this figure.

FIGURE 80.

TYPOLGY OF ADAPTATION COMPONENTS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs IN ASIA AND PACIFIC

**FIGURE 81.**

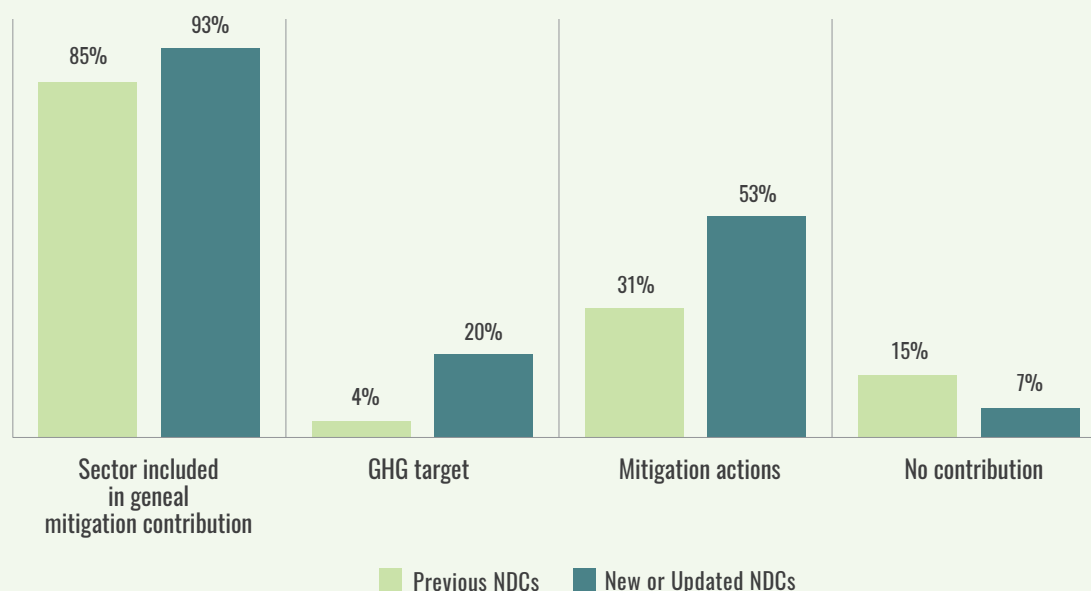
COVERAGE OF ADAPTATION COMPONENTS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs IN ASIA AND PACIFIC, BY SUB-SECTOR



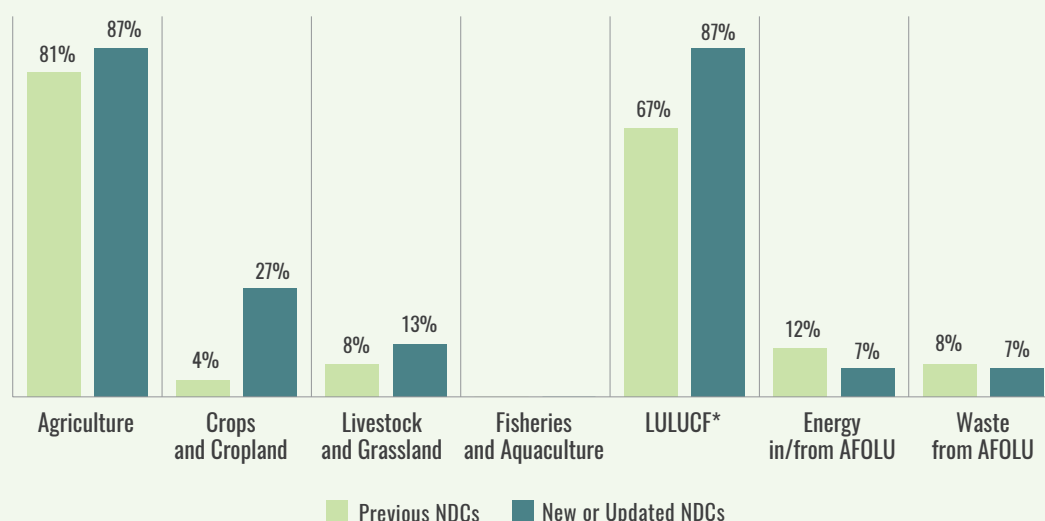
ANNEX 3: EUROPE AND CENTRAL ASIA

FIGURE 82.

TYPOLOGY OF MITIGATION CONTRIBUTIONS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs IN EUROPE AND CENTRAL ASIA


FIGURE 83.

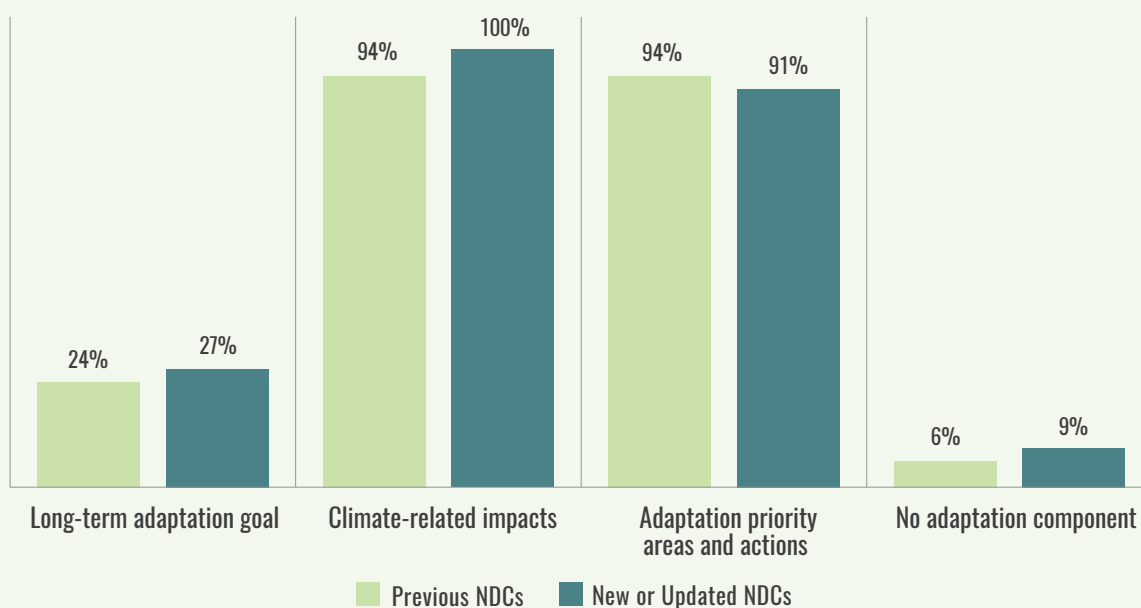
COVERAGE OF MITIGATION CONTRIBUTIONS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs IN EUROPE AND CENTRAL ASIA, BY SUB-SECTOR



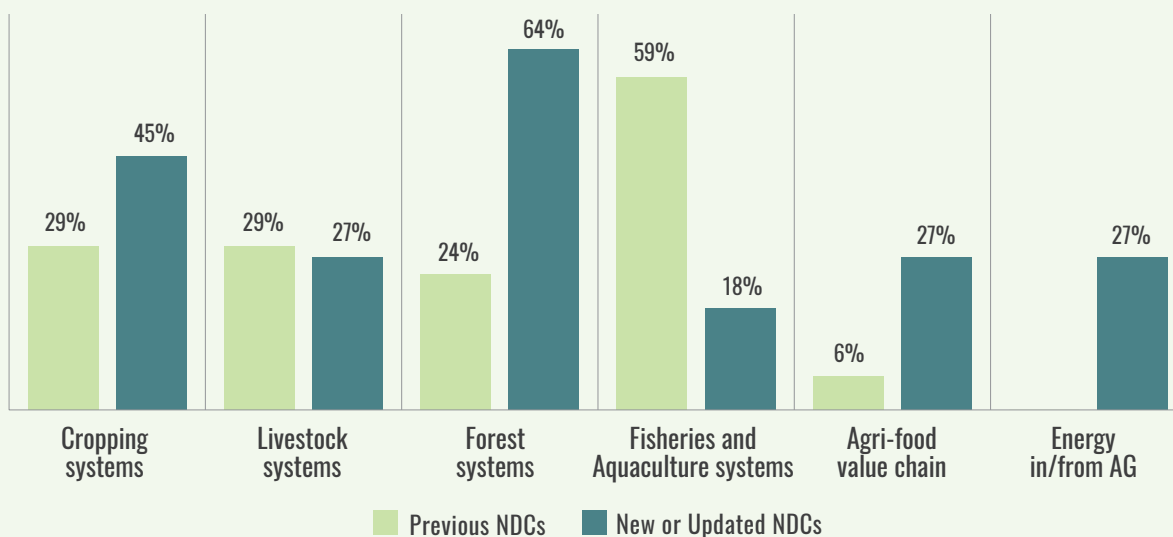
*LULUCF excludes cropland and grassland in this figure.

FIGURE 84.

TYPOLGY OF ADAPTATION COMPONENTS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs IN EUROPE AND CENTRAL ASIA

**FIGURE 85.**

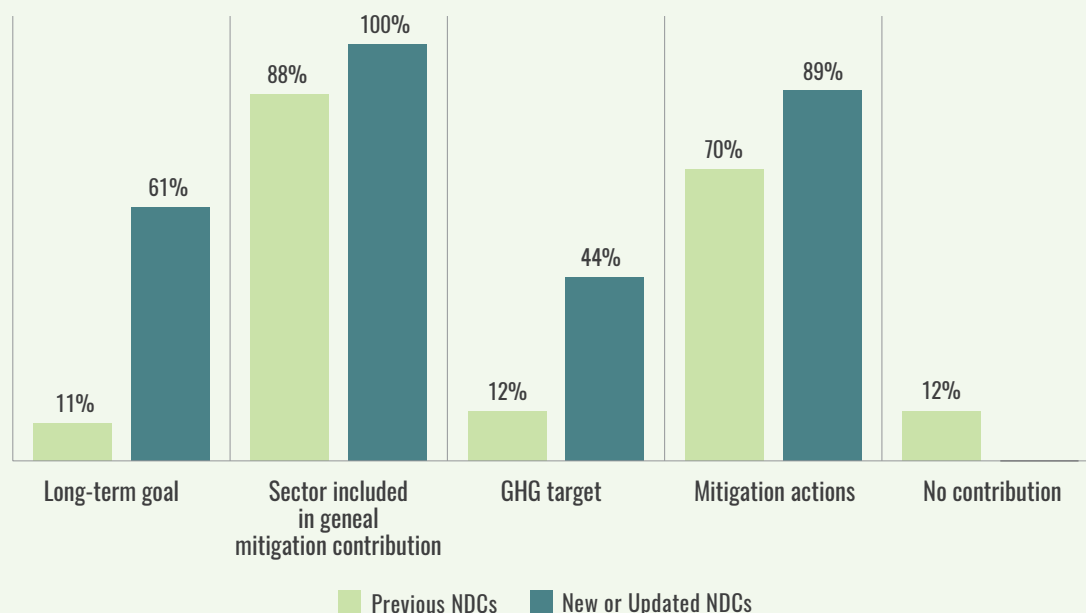
COVERAGE OF ADAPTATION COMPONENTS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs IN EUROPE AND CENTRAL ASIA, BY SUB-SECTOR



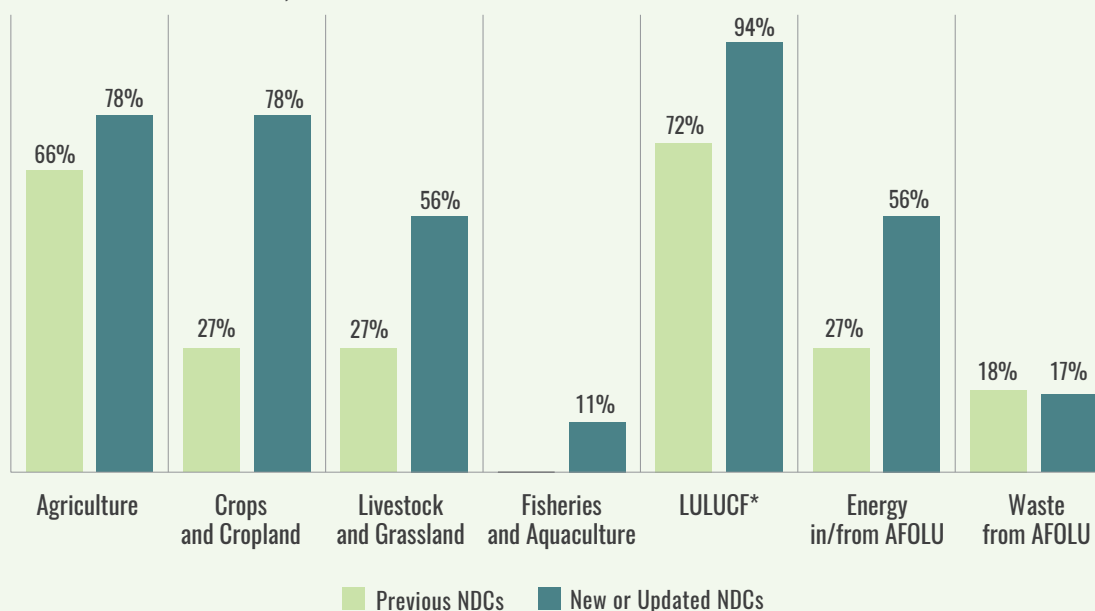
ANNEX 4: LATIN AMERICA AND CARIBBEAN

FIGURE 86.

TYPOLGY OF MITIGATION CONTRIBUTIONS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs IN LATIN AMERICA AND CARIBBEAN


FIGURE 87.

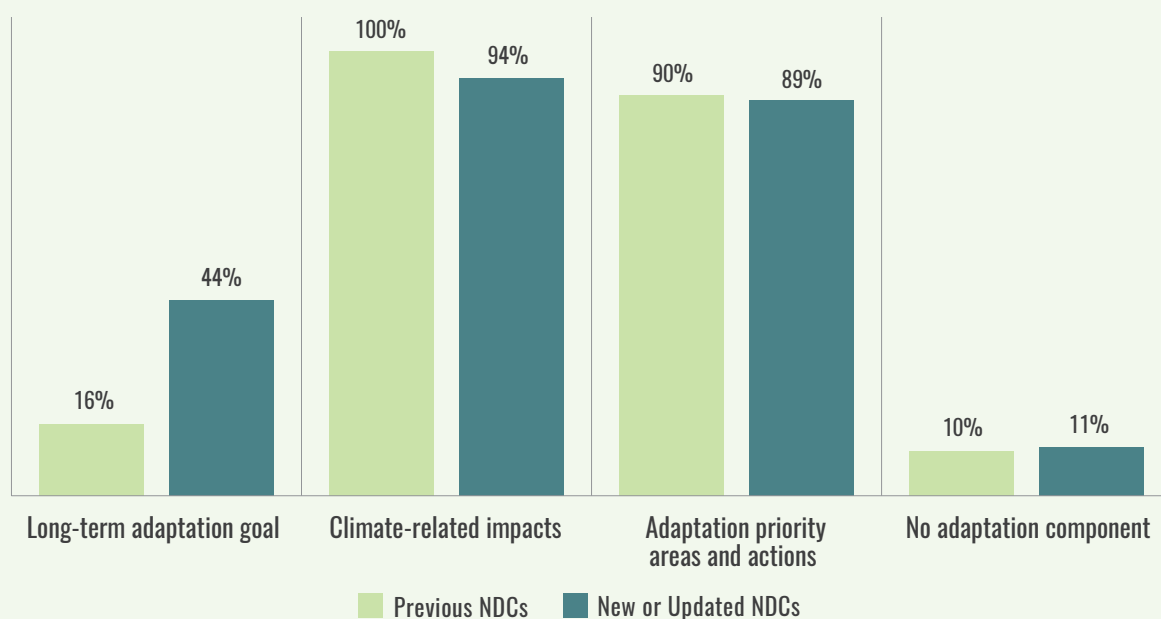
COVERAGE OF MITIGATION CONTRIBUTIONS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs IN LATIN AMERICA AND CARIBBEAN, BY SUB-SECTOR



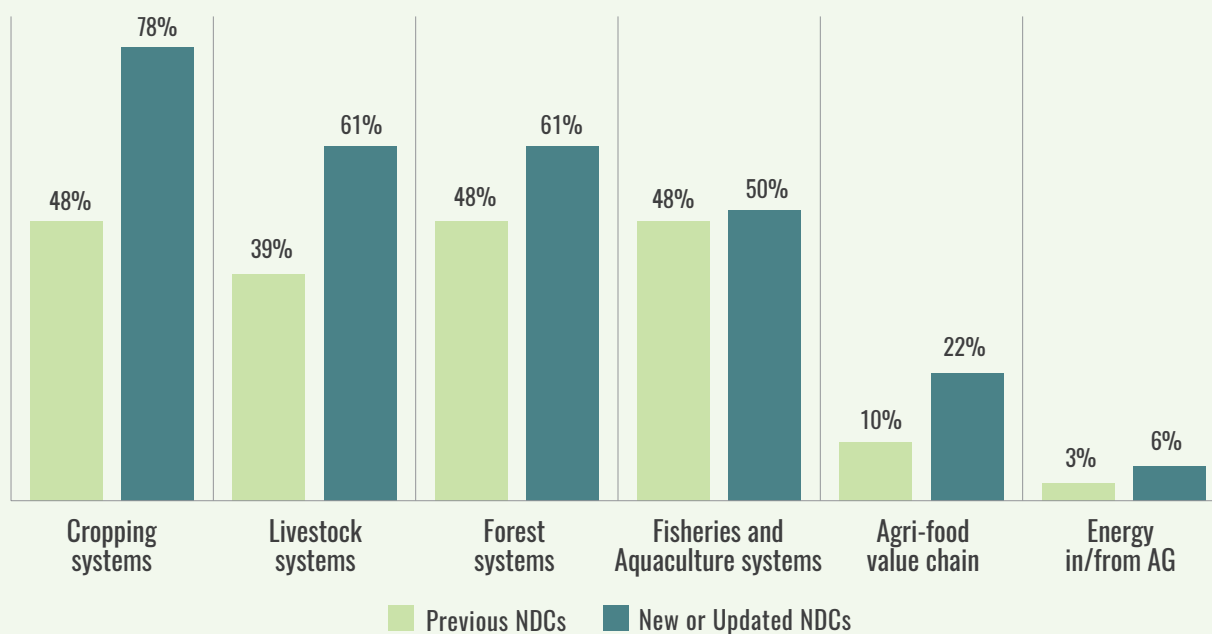
*LULUCF excludes cropland and grassland in this figure.

FIGURE 88.

TYPOLGY OF ADAPTATION COMPONENTS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs IN LATIN AMERICA AND CARIBBEAN

**FIGURE 89.**

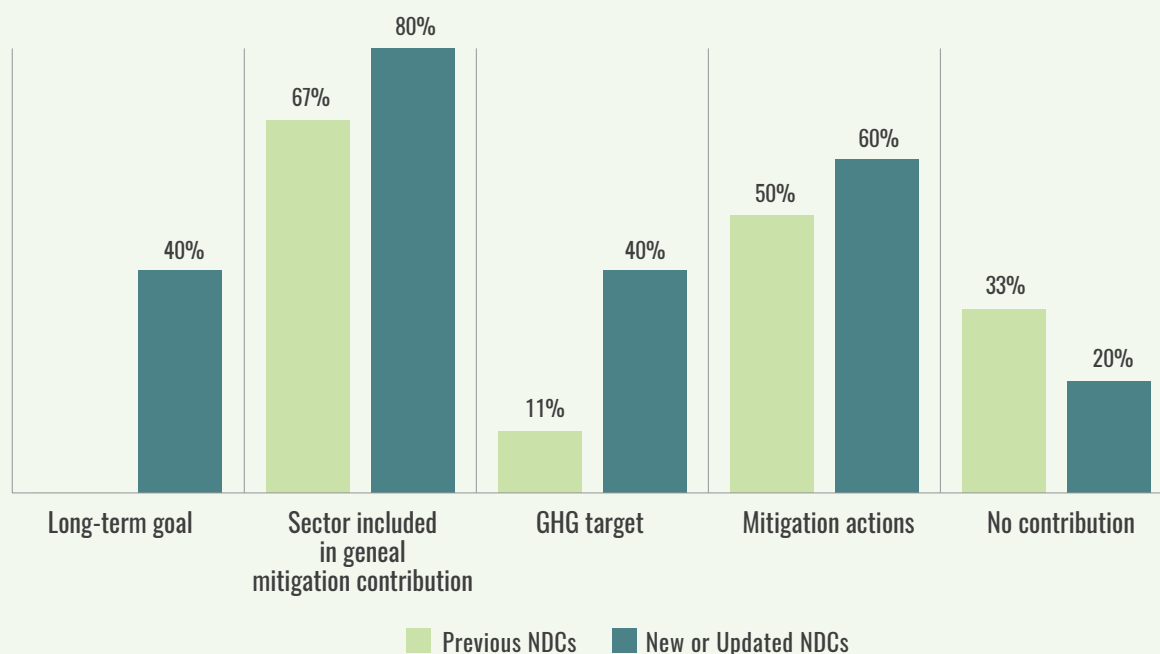
COVERAGE OF ADAPTATION COMPONENTS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs IN LATIN AMERICA AND CARIBBEAN, BY SUB-SECTOR



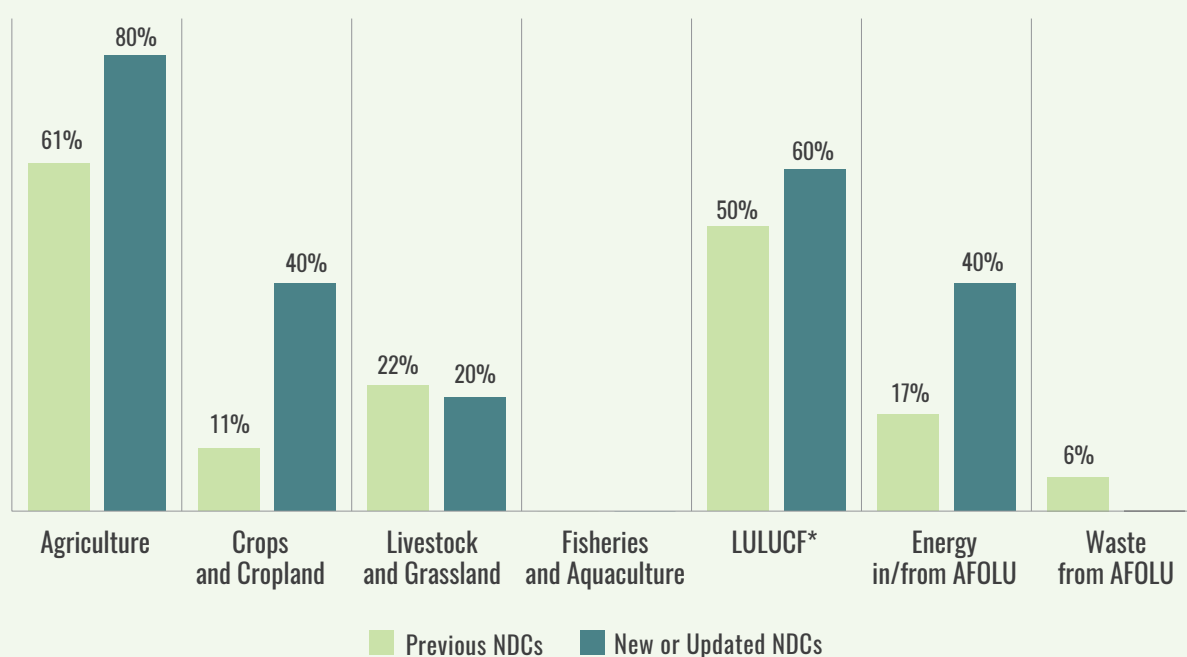
ANNEX 5: NEAR EAST AND NORTH AFRICA

FIGURE 90.

TYPOLOGY OF MITIGATION CONTRIBUTIONS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs IN NEAR EAST AND NORTH AFRICA


FIGURE 91.

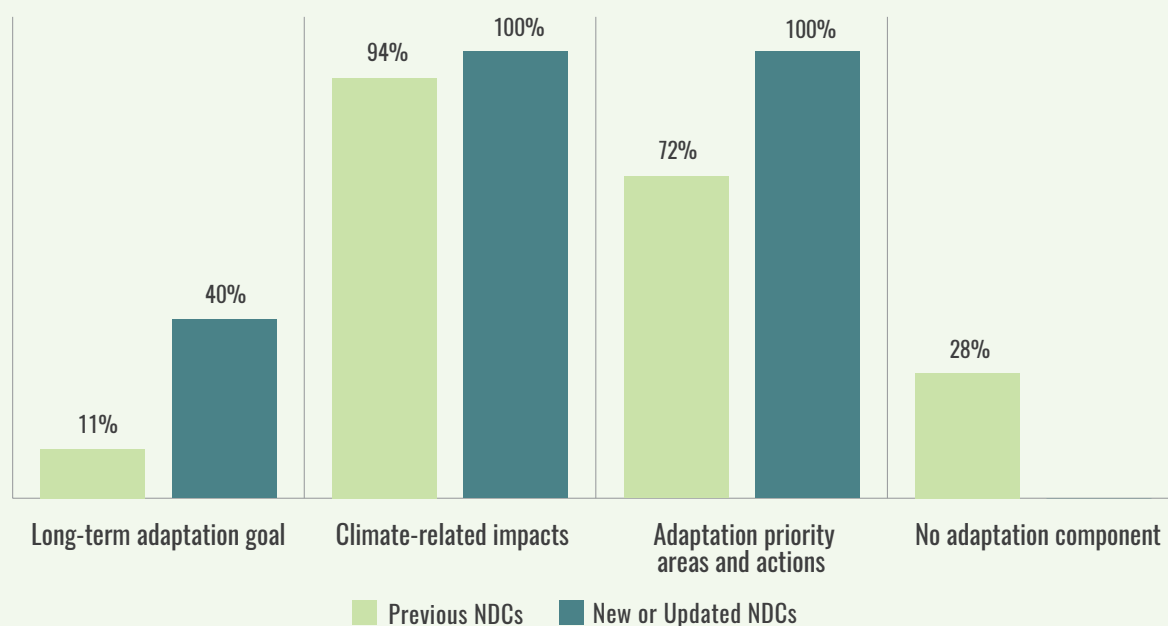
COVERAGE OF MITIGATION CONTRIBUTIONS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs IN NEAR EAST AND NORTH AFRICA, BY SUB-SECTOR



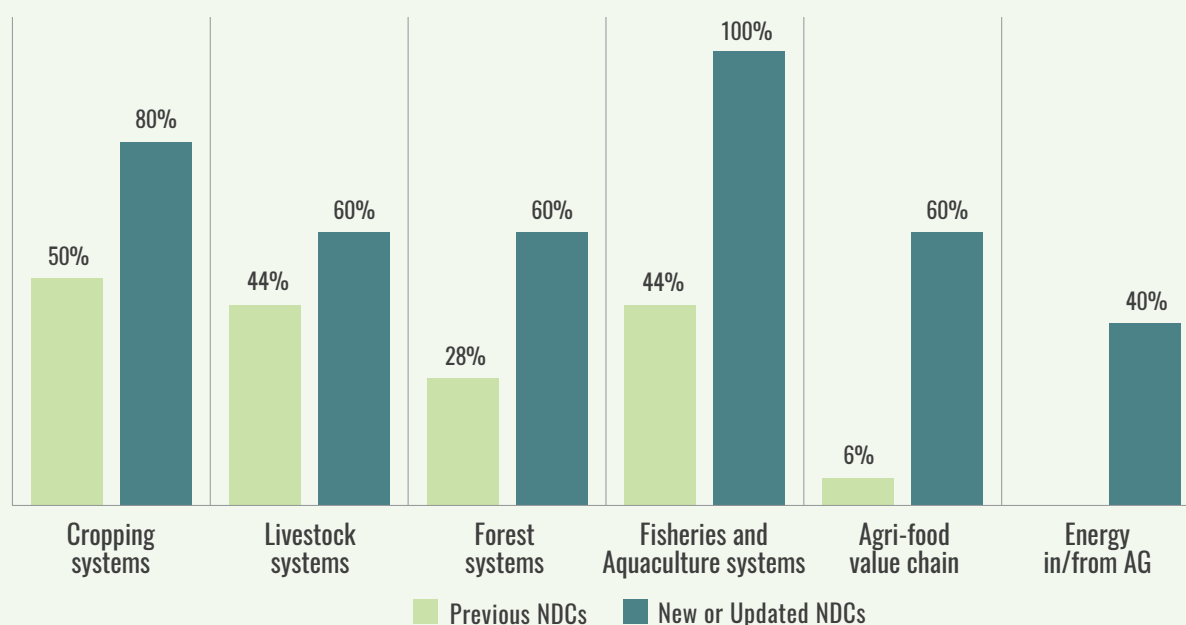
*LULUCF excludes cropland and grassland in this figure.

FIGURE 92.

TYPOLOGY OF ADAPTATION COMPONENTS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs IN NEAR EAST AND NORTH AFRICA

**FIGURE 93.**

COVERAGE OF ADAPTATION COMPONENTS IN THE AGRICULTURAL SECTORS IN PREVIOUS VS. NEW/UPDATED NDCs IN NEAR EAST AND NORTH AFRICA, BY SUB-SECTOR



This report aims to illustrate how the agriculture, forestry, and fisheries sectors (“agricultural sectors”) are represented in new or updated nationally determined contributions (NDCs) by providing an overview of adaptation and mitigation priorities, vulnerabilities, and support needs in the sector. It also demonstrates how ambition in the agricultural sectors has changed over time by comparing new or updated NDCs to previous submissions. The overall purpose is to improve knowledge on the role of the agricultural sectors in achieving national climate change

goals and targets and, therefore, to inform decision-making processes of international and national development organizations, financial institutions, civil society, private sector and other vested stakeholders for more targeted support on NDC implementation. More broadly, this synthesis report may contribute to the assessment of collective progress towards achieving the goals of the Paris Agreement planned in the 2023 global stocktake by establishing a baseline of NDC commitments in the agricultural sectors.

Office of Climate Change, Biodiversity and Environment (OCB)

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