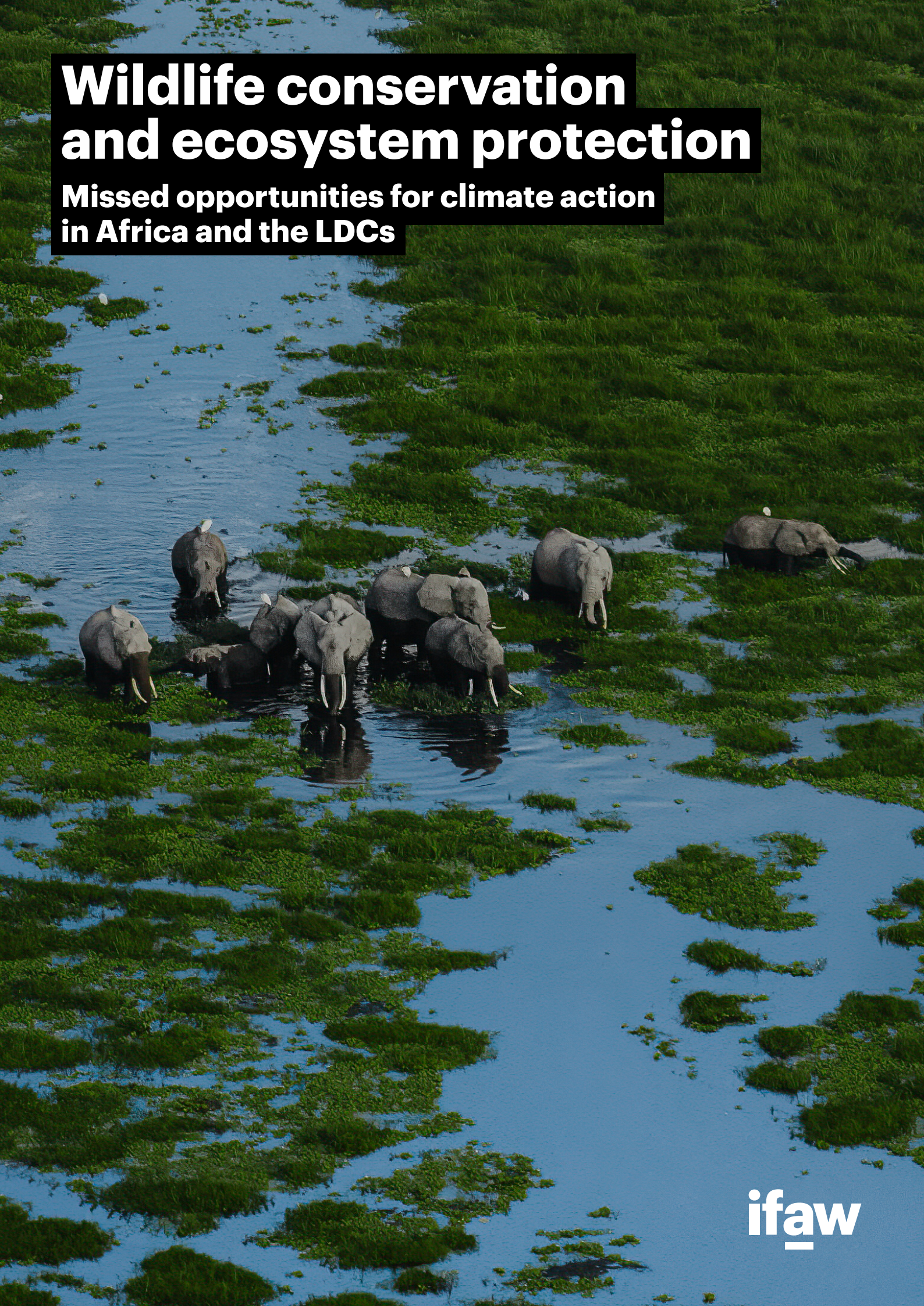
Wildlife conservation and ecosystem protection

Missed opportunities for climate action in Africa and the LDCs



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Missed opportunities for climate action in Africa and the LDCs

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Executive summary

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The global crises of climate change and biodiversity loss are deeply intertwined. While there has been rising interest in the use of nature-based solutions to address climate change in recent years, the critical role that can be played by wildlife conservation and ecosystem protection in addressing the climate crisis has so far been underappreciated, with more significant focus on landscape restoration.

But scientific research is increasingly showing that biodiversity, and wild animals in particular, play a vital role in carbon sequestration, while wildlife conservation can deliver climate adaptation and climate-resilient economic development at both local and national levels. It is therefore becoming clear that countries need to recognize the role that wildlife conservation and ecosystem protection can play in addressing the climate crisis, and to include them in their climate action plans.

The countries that can benefit the most from wildlife conservation and ecosystems protection as forms of climate action are the highly biodiverse but climate vulnerable developing countries of the Global South – such as the Least Developed Countries (LDCs), most of which are in Africa. To understand the extent to which these countries recognize wildlife conservation and ecosystem protection as legitimate forms of climate action, this report analyses the Nationally Determined Contributions (NDCs) of all African countries and all other LDCs to see whether and how national governments in these countries have integrated wildlife conservation and ecosystem protection into their climate action plans, and compares them to commitments to implement initiatives focused on landscape restoration.

The report shows that while that while the vast majority of African countries and other LDCs have made commitments related to ecosystem protection and landscape restoration in one way or another, only 40% have made NDC commitments related to wildlife conservation as a means of implementing their climate pledges. However, of the 580 commitments identified which related to wildlife, ecosystems and landscapes, less than 10% related to wildlife conservation, and only USD $1.66 billion (less than 3% of the total identified) has been costed for initiatives related to protecting endangered and threatened wildlife.

This represents a significant missed opportunity for climate action – one that could catalyze significant flows of finance to address the climate and biodiversity crises simultaneously, whilst also securing green climate-resilient economic development over the long term.

To take better advantage of this missed opportunity, the report recommends that African countries and LDCs can take the following actions:

1. **Better integrate wildlife conservation into climate actions plans, especially NDCs and National Adaptation Plans (NAPs)**, leveraging the potential for synergies between commitments to the Paris Agreement and other conventions, such as the Convention on Biological Diversity (CBD) and its Kunming-Montreal Global Biodiversity Framework, the Convention on International Trade in Endangered Species (CITES), the Convention on the Conservation of Migratory Species of Wild Animals (CMS), the International Convention for the Regulation of Whaling (IWC) and the Ramsar Convention on Wetlands of International Importance.

2. **More clearly specify the financial requirements of biodiversity related climate actions**, especially those associated with wildlife conservation and ecosystem protection, making use of their NDCs to attract finance to biodiversity related investments, and should prioritize making robust financial estimates of their wildlife conservation and ecosystem protection needs as a means of scaling up ambition and implementation of these kinds of nature-based solutions.

3. **Ensure that action to restore degraded landscapes is not prioritised at the expense of action to protect and conserve existing ecosystems and biodiversity**, and is not implemented without accounting for the importance of wildlife and wildlife conservation for carbon sequestration and climate adaptation.

Furthermore, the report recommends that international finance providers and other international agencies can take the following actions:

1. **Recognise the scientific evidence that shows the extent to which wildlife and wildlife conservation activities can contribute to climate mitigation and adaptation, and mobilise a significant increase in investment** into wildlife conservation as a nature-based solution to the both the climate and biodiversity crises, including through the creation of new and more innovative mechanisms for financing wildlife conservation as a form of climate action.

2. **Support African countries, LDCs and other nations to more effectively leverage wildlife and wildlife conservation for climate action** by developing better methodologies and frameworks to account for climate benefits of wildlife conservation and to guide countries on how to design, cost and implement wildlife conservation and ecosystem protection initiatives that contribute to climate action, including the establishment of robust national systems to monitor and verify the contribution of wildlife and wildlife conservation to climate change mitigation and adaptation.

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Introduction

1.1 Twin crises: Climate change and biodiversity loss

We live in the midst of two rapidly accelerating global crises, climate change (IPCC 2023) and biodiversity loss (IPBES 2019). Both are caused primarily by human actions.

On one hand, human emissions of greenhouse gases, such as carbon dioxide and methane, and the destruction of land and ocean ecosystems by human activities such as agriculture, mining and other forms of economic exploitation, have caused the Earth's atmosphere to warm to a level unprecedented in over 100,000 years (Kaufman and McKay 2022; NOAA 2023). On the other hand, the same human actions are causing rates of biodiversity loss that are thousands of times faster than normal and which threaten the extinction of up to one million species by the end of this century (Ceballos et al. 2015; IPBES 2019). Processes of land use change for agriculture and infrastructure, the logging of forests, overfishing of the ocean, hunting of wild animals, and chemical and plastic pollution, combined with human caused climate change, are undermining and destroying natural ecosystems so fast that many scientists believe that human beings have caused the world's sixth mass extinction event (UNEP 2023; Cowie et al. 2022).

These twin crises are intimately linked (Malhi 2020; IPBES-IPCC 2021).

Destruction of ecosystems, and of the wild plant and animal species that inhabit them, drives climate change in important ways (IPCC 2019). Trees, plants, soils, animals and ocean waters are sinks and reservoirs of carbon dioxide and other greenhouse gases. So, when people clear forests, drain wetlands, plough virgin soils, hunt and kill animals, trawl and pollute the seas, and degrade the land, these activities dramatically reduce the capacity of natural ecosystems to absorb greenhouse gases and moderate atmospheric heating. Equally, given the vast quantities of carbon dioxide and other greenhouse gases that ecosystems naturally store, human activities that transform those ecosystems for economic purposes release those gases into the atmosphere, thereby driving global heating and climate change. Furthermore, scientific evidence is increasingly clear that both plants and animals play a critical roles in regulating the climate, especially through the roles they play in the water and carbon cycles (Makarieva and Gorshkov 2007; Schmitz et al 2023). Maintaining healthy biodiverse ecosystems globally is therefore necessary for maintaining a stable global climate.

Global heating is changing the climate in ways that are having devastating impacts upon people and nature (IPCC 2022). Storms, floods, droughts, and fires are becoming more frequent and more deadly as climatic systems are being supercharged by increasing atmospheric temperatures (Carrington 2022). These extreme weather events destroy homes and animal habitats, disrupt economies and ecosystems, and reduce the availability of food and water for people and animals alike. These impacts result in deaths, displacement and illness for people and wild animals, and undermine their ability to adapt to the rapidly evolving conditions they are living in.

Meanwhile, rising temperatures and more variable precipitation are also driving longer term processes of ecological and environmental change that will have serious impacts upon animal and plant species in the long run, as well as human communities:

- At sea, rising temperatures and ocean acidification are making ocean waters uninhabitable for some species, forcing fish and marine mammals to migrate into new territories, often with fatal results, causing mass die offs of species and killing coral reefs, or in the case of the critically endangered North Atlantic Right Whale, disrupting their feeding and reproductive cycles to threaten their ability to maintain a stable population (IPCC 2022; Findlay and Turley 2021; Chan et al 2019; Meyer-Gutbrod 2022).
- On land, heatwaves and droughts cause water scarcity, stressing animal populations and driving species such as elephants to move further each year in search of water and food, sometimes pushing them into conflict with human populations, causing disease and die offs among younger and older animals, and threatening the stability of species populations (Foley et al 2008; Hines et al 2023; Foggin et al. 2023).
- In some watersheds, rising temperatures and more frequent droughts are causing rivers—including parts of the Amazon—to run dry, with disastrous consequences for ecosystems and endangered species such as the pink and tucuxi river dolphin (Bodmer et al 2017; Kuta 2023); while in mountain regions rising temperatures are melting glaciers, impacting water availability and the health of ecosystems, human communities and wild animals species in both the mountains and downstream (IPCC 2022).

So, with every acre of natural ecosystem that is destroyed, polluted or lost to human action, and with every whale or elephant that is hunted and killed, or which dies due to pollution and habitat loss, global temperatures increase, driving climate change. And with every increment of global heating, the conditions of survival for the world's precious plants, animals and ecosystems will be degraded, driving further biodiversity loss and ultimately causing a vicious cycle of accelerating climate change and extinction.

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1.2 Nature-based solutions: A cause for hope

But there is cause for hope. The linked nature of these crises means that they can, and must, be tackled together. Happily, we now know that there are many potential solutions that can be used to address human caused climate change whilst ending biodiversity loss, restoring ecosystems, and protecting wild animal populations at the same time. Commonly referred to as 'nature-based solutions', such approaches put nature at the heart of climate action, and show that nature is not just a victim of climate change but a powerful ally in humanity's fight to heal the Earth.

Nature-based solutions use the power of functioning ecosystems as infrastructure to provide natural services to benefit society and the environment (IUCN 2020). They have been defined as, "actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems, which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services and resilience and biodiversity benefits" (UNEA 2022). Practically speaking nature-based solutions include a wide variety of interventions, such as: wetland and mangrove restoration, stopping deforestation, supporting reforestation, ecosystem protection, repair and restoration, rewilding or restoring degraded landscapes, use of regenerative or ecosystem-based agricultural practices, use of wetlands and trees to deliver natural flood protection, stream restoration, and more.

Thus, nature-based solutions have the potential to be implemented in almost any location, both rural and urban, and in any ecosystem. They also have the potential, if implemented effectively, to deliver multiple co-benefits for the climate and nature, and the sustainable development of communities and economies.

Importantly it is now widely agreed that nature-based solutions have the potential to deliver over 30% the climate change mitigation needed by 2030 to achieve the 2°C target set by the Paris Agreement (Griscom et al 2017; IPBES 2019). Furthermore, investment in nature-based solutions has the potential to address climate risks, build the resilience of ecosystems and communities, and support climate adaptation and sustainable development (Adaptation Fund 2020; Key et al 2022; Tye et al 2022; Woroniecki et al 2022; Turner et al 2022).

Given their potential to address climate change whilst arresting the biodiversity crisis, there is an urgent need to scale up the implementation of nature-based solutions globally to meet the targets of the Paris Agreement and the Global Biodiversity Framework. Unfortunately, levels of investment and action to implement nature-based solutions are falling well short of what is required to do so (UNEP 2022).

While over 80% of countries have made commitments to implement some kind of nature-based solution (Nature Based Solutions Initiative 2022), in 2019 the Climate Policy Initiative estimated that only 8% of public climate finance was being invested in the protection and restoration of ecosystems (Climate Policy Initiative 2019). More recently Nature4Climate's NbS Commitment Tracker has found that more than half of all commitments to implement nature-based solutions have published little to no evidence of progress so far (Nature4Climate 2023). We still have a long way to go.

1.3 Wild animals: Unsung climate heroes

As interest and investment in nature-based solutions has grown in recent years, the focus has tended to be upon *places*—especially forests, wetlands, peatlands, mangroves and seagrass beds that have high levels of potential to capture and store carbon dioxide through photosynthesis.

While these ecosystems, and the nature-based solutions applied in them, are critical for addressing climate change, interventions tend to approach them as if they are static – simple sinks of carbon or flood barriers that exist in isolation from their component parts: the diversity of living organisms that constitute them and which enable them to function and perform critical ecosystem services, such as absorbing and storing carbon from the atmosphere.

In particular, they tend to ignore wild animals. But scientific evidence is showing us increasingly that the animals that inhabit and engineer these ecosystems are some of our most powerful allies in combatting climate change. Recent research shows that wildlife has a remarkable but unrecognised way of driving ecosystem processes, including the carbon cycle, and that these can be harnessed as nature-based solutions to the climate crisis (Malhi et al 2022; Schmitz et al 2023; IFAW 2022).

Wild animals provide natural climate solutions in two main ways. First, they protect the carbon that is already stored in nature, preventing it from being released into the atmosphere. Second, they help nature soak up and store even more carbon. Through their critical interactions within the web of life, wild animals help to capture carbon in plants and, ultimately, in soils and sediments. From their foraging behaviour and seed dispersal, their cycling of nutrients, to the depositing of carbon and predator/prey interactions, all play crucial roles in enabling ecosystems to absorb and store more carbon. They also store carbon in their bodies, and return that carbon to the soils or the ocean when they die.

Research has shown that because animals perform key functions in the carbon cycle, the natural carbon capture and storage capacity of ecosystems could be significantly increased by protecting and enhancing populations of key wildlife species (Chami et al 2020; Pearson 2022; Malhi et al 2022; Schmitz et al 2023). In fact, it has been estimated that the protection and restoration of the populations of only nine species/species groups—marine fish, whales, sharks, grey wolf, wildebeest, sea otter, musk ox, African forest elephants, and American bison—could collectively facilitate the capture of more than 95% of the amount of CO_2 needed every year to meet the global target of removing 500 gigatonnes of CO_2 from the atmosphere by 2100 (Global Rewilding 2023), which would help keep global warming below the 1.5°C threshold.

This potential is staggering. And it is a far more cost-effective solution to climate change that many technological fixes being touted for removing carbon from the atmosphere.

We can therefore boost carbon sequestration by restoring wildlife to near historic levels by rewilding natural habitats and ecosystems all over the globe. Based on what we already know about the influential role wild animals, including fish and marine life, play in the carbon cycle, this would reduce CO_2 emissions in the atmosphere by billions of tonnes annually—an amount that rivals many of the top mitigation measures for climate change.

By enlisting wild animals to help us, we can supercharge climate mitigation and meet our climate and biodiversity goals more quickly (Global Rewilding 2022).

Restoring wild animal populations offers an inspirational vision and practical action we can take to combat climate change today. This means moving towards a world where animal populations are not simply protected and enhanced for their intrinsic or iconic value, but for the role they play in helping to regulate climate too. It means restoring native populations of key wildlife species, such as elephants, whales, sharks, beavers, sea otters and wolves, so that they can fulfil their crucial role in shaping forests, grasslands, wetlands and oceans, enhancing the carbon cycle one paw, trunk and fin at a time.

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1.4 Wildlife conservation: Building resilience and supporting adaptation

The climate benefits of wildlife do not end with carbon capture and storage in the landscape. Wildlife conservation also offers a powerful means for supporting climate resilience, adaptation and climate resilient economic development for some of the world's most vulnerable communities and least developed countries (Addison 2023).

Globally, many of the regions that have the highest potential for carbon sequestration through wildlife conservation are relatively marginal rural areas with high levels of poverty that are also highly vulnerable to the effects of climate change (Fisher and Christopher 2007; Barrett et al. 2011). From the rainforests and cerrado of Latin America, to the Congo Basin and the savannas of Eastern and Southern Africa, to the rainforests of Southeast Asia, biodiversity hotspots are home to some of the poorest and most marginalized people in the world, including the Indigenous Peoples who are the customary stewards of much of the world's terrestrial biodiversity.[1]

In these regions, local communities often depend upon nature and biodiversity for their livelihoods, food and water security, which shape their ability to cope and adapt with the impacts of climate change, including extreme weather events. But the combined effects of climate change and biodiversity loss, which is often linked to economic exploitation of their natural resources by governments and private sector corporations, are undermining the ecosystems many Indigenous Peoples and Local Communities (IPLCs) rely on, leaving them poorer and more vulnerable. In turn, poverty, marginalisation and the loss of land and resource rights to powerful interests often also leave IPLCs with few options other than the exploitation of nature resources and biodiversity in their struggle to survive.

But there is growing evidence that wildlife conservation activities can transform the livelihoods of IPLCs if implemented effectively. By providing employment in conservation for community members, by securing their land and natural resource rights, and by supporting communities to establish wildlife conservancies and to manage their land regeneratively, by catalysing local business opportunities that are climate resilient, and by promoting ecologically appropriate, wildlife friendly and climate resilient agricultural practices, and the use of low carbon green energy sources that reduce deforestation, wildlife conservation initiatives can provide the foundation upon which the climate resilience, adaptive capacity and economic development of local communities can be achieved, whilst also reducing biodiversity loss and protecting, restoring and more effectively managing biodiverse landscapes that are more resilient to the impacts of climate change.

By linking these activities to national and international markets, by drawing in local and international tourists, and by leveraging the financial opportunities presented by carbon and biodiversity markets and other innovative financing mechanisms, wildlife conservation also has the power to generate significant levels of revenue that can be invested into wildlife conservation and management, and which can make a major contribution to the low-carbon, green economic development ambitions of developing countries.

[1] The territories of Indigenous peoples and local communities contain 80% of the world's remaining biodiversity and intersect about 40% of all terrestrial protected areas and ecologically intact landscapes (Garnett et al. 2018). The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) 2019 global assessment (IPBES 2022) stressed the important role of these communities in biodiversity conservation by noting that 35% of the areas formally protected and 35% of all remaining terrestrial areas with very low human intervention are traditionally owned, managed, used, or occupied by Indigenous peoples.

1.5 The state of play: Wildlife conservation in NDCs

The huge potential that nature offers for addressing climate change, will only truly be realised if we recognise that wild animals, and biodiversity more broadly, play a fundamental role in carbon sequestration and the maintenance of healthy ecosystems, and that wildlife conservation can play a transformative role in catalysing resilience, adaptation and climate resilient development, especially in the world's most biodiverse regions, many of which are located in the Last Developed Countries and in Africa in particular. We must put wildlife at the heart of climate action.

But delivering this vision requires that actors across the spectrum, from governments and multilateral agencies, to conservation managers, private sector companies, civil society organisations and local communities acknowledge the role wildlife plays in addressing climate change, and integrate wildlife and wildlife conservation into their climate action plans.

Of all the climate action plans currently used by governments Nationally Determined Contributions (NDCs) are the most important. Mandated by the Paris Agreement NDCs are the documents countries use to outline and communicate their plans to cut emissions and adapt to climate impacts. Each Party to the Paris Agreement is required to establish an NDC and to update it every five years. In these national climate action plans governments set their targets for climate change mitigation and adaptation, define how they intend to reach those targets and raise the finance to do so, and elaborate systems to monitor and verify their progress. Over 190 countries have submitted NDCs to the UNFCCC so far, while more than 150 have submitted updated or revised NDCs in recent years.

By reviewing NDCs we can understand the overarching ambition and strategy of countries for addressing the climate crisis, including the technical approaches that countries plan to use to address challenges, such as emissions reduction and carbon sequestration, and the amounts of finance that they think they will need to implement them.

Several studies have examined the extent to which countries are integrating nature-based solutions into their NDCs, and have presented encouraging results. In 2022 Oxford University's Nature Based Solutions Initiative reported that 102 nations – or 84% of all updated NDCs – made commitments to restoring or protecting ecosystems or implementing nature-based agriculture such as agroforestry. They also found that of the nations with revised NDCs that refer to nature-based solutions in their adaptation components, half (50%) referred to the protection or restoration of three or more types of ecosystem – most commonly terrestrial forests and woodland habitats (81%) and coastal and marine habitats (57%) – while references to grasslands or rangelands (26%) or montane habitats (11%) were less common.

While these insights are valuable for understanding the rising tide of commitments to nature-based solutions by countries around the world, they have not shed light on the extent to which wildlife and wildlife conservation are being recognized by countries as part of their climate solutions toolkit, and no systematic attempt has yet been made to review the inclusion of wildlife conservation in NDCs.

Given the important role that wild animals can play in addressing climate change, this is an important oversight that needs to be addressed – especially for those countries that stand to benefit most from the use of wildlife conservation as a tool for climate action, such as African countries and other Least Developed Countries (LDCs).[2] Many African countries and LDCs are highly vulnerable to climate change, due to their exposure to climate hazards, high levels of poverty and low levels of adaptive capacity. But many are also home to biodiversity hotspots of global importance that have huge potential for carbon sequestration, climate adaptation and green economic development, if managed effectively and equitably.

In this report we address this research gap by presenting analysis of the NDCs of African countries and other LDCs to determine the extent to which they have recognized and integrated wildlife conservation and ecosystem protection into their climate action plans. Since NDCs serve as a focal point for climate action, it is important to understand how biodiversity conservation – in terms of the conservation of wild species, the protection and conservation of ecosystems, and efforts to reduce degradation and restore degraded ecosystems – is reflected in them. This can help us measure progress and identify gaps for aligning the twin agendas of climate and biodiversity action.

To begin tracking whether countries are tackling the climate and biodiversity crises in parallel, this report presents an analysis of the 67 NDCs submitted by African countries and other LDCs. It analyses the extent to which these NDCs make tangible commitments to promoting (i) wildlife conservation, (ii) ecosystem protection, and (iii) landscape restoration.[3] The report highlights the lessons we can learn from the current round of NDCs at a critical juncture when parties are gathering at COP 28 in Dubai to conclude the first Global Stocktake of the implementation of the Paris Agreement, and to discuss how to scale-up climate ambition in the future – including a commitment by the current COP Presidency to put nature, people, lives and livelihoods at the heart of climate action (IISD 2023).

With countries having agreed on the Kunming-Montreal Global Biodiversity Framework (GBF) in December 2022, this report highlights the need, and the opportunity, for African countries and LDCs to align their climate commitments with the GBF by scaling-up wildlife and biodiversity-related commitments in the next version of their NDCs, and to better articulate the role that wildlife conservation and ecosystem protection can play in delivering climate action, backing these actions up with more tangible action plans and financing plans.

The report concludes by cautioning against the over-reliance on landscape restoration initiatives as a panacea for biodiversity-related action within NDCs. Although analysis has shown the importance of landscape restoration for biodiversity and climate action (FAO 2022), this report highlights the need to also protect and effectively manage existing wildlife populations and their habitats, and ecosystems that have not yet been degraded.

By delivering on Target 3 of the GBF to protect at least 30% of terrestrial and inland ecosystems by 2030, countries can help prevent the release of greenhouse gases (e.g. release of CO_2 associated with deforestation or the release of methane from peatlands), and also preserve the ecosystem services that allow both human and natural systems to adapt to the impacts of climate change and which support climate-resilient economic development. Furthermore, by delivering on Target 4 of the GBF to halt human-induced extinction of threatened species and support the conservation and recovery of species, countries can further enhance the role of natural ecosystem as carbon sinks, while allowing the dynamism of natural ecosystems to play a regulatory role in helping nature to adapt to climate changes.

[2] Out of 46 Least Developed Countries, 33 are located in Africa: Angola, Benin, Burkina Faso, Burundi, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Djibouti, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Somalia, South Sudan, Sudan, Togo, Uganda, United Republic of Tanzania and Zambia (UNCTAD 2023).

[3] See section 2 for our definitions of these terms.

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Analytical framework

This report uses the following analytical framework to understand the extent to which the NDCs of all African countries and other LDCs include considerations of wildlife and ecosystem conservation, as key components for delivering their climate goals:

1. Wildlife conservation

The focus of this category is commitments that aim specifically to protect and/or conserve populations of wild animals and other species of endangered or threatened wildlife. This could include mammals, fish, amphibians, plants, etc. (where they are identified as being endemic or threatened) and must specifically mention wildlife or types of threatened species to be included in this category.

2. Ecosystem protection

The focus of this category is on the protection of existing but threatened biodiverse areas (e.g. protected areas and national parks) and the effective management of biodiverse areas. Overall, the emphasis in this category is on the ecosystem or landscape that is being protected rather than specific species of wildlife. While these commitments may contribute to the protection and management of wildlife populations, they will do so only indirectly.

3. Landscape restoration

The focus of this category is the restoration of ecosystems or landscapes that have been degraded. In general, this category focuses on the use of restorative or regenerative nature-based practices to restore ecosystem functions and environmental services associated with biodiversity and nature. This category of actions is most associated with reforestation, afforestation and regeneration of degraded ecosystems.

The NDCs of all 54 African countries and the remaining set of 9 LDCs were screened[4] against this analytical framework to collect data on the number of commitments they have made to wildlife conservation, ecosystem protection and landscape restoration. Additional data was collected to estimate the amount of finance that has been estimated or allocated to each of these commitments.

A detailed outline of the methodology used to analyze each NDC is can be found in Annex 1. A further list of keywords used to connect individual commitments with specific categories in the analytical framework is presented in Annex 2.

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[4] There are 54 African countries and 46 LDCs, with an overlap of 33 countries in both categories leading to a total of 67 countries in this analysis. However, neither Libya nor Yemen have submitted an NDC to the UNFCCC, meaning that data only includes 65 NDCs. Despite this, calculations in the report have been made using the total number of African countries and LDCs (i.e. 67).

Key findings

This section shows how African countries and LDCs have committed to conserve endangered and threatened species and to protect critical ecosystems as forms of climate action in their NDCs. It provides analysis from the Nationally Determined Contributions (NDCs) from these 67 countries—disaggregating the results to show high-level trends for the 54 African countries and 46 LDCs.

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3.1 Number of countries with NDC commitments

In total, 27 African countries and other LDCs – only 40% of the countries – have made NDC commitments related to wildlife conservation as a means of implementing their climate pledges, meaning that 60% of African countries and other LDCs have not included wildlife conservation in their climate action plans at all.

his finding showcases the fact that the conservation of endangered and threatened populations of wild animals are not being given significant treatment by a large majority of countries as a means of promoting climate change mitigation and adaptation, despite the significant potential of these actions. Conversely, the majority of countries have made commitments related to ecosystem protection (a total of 62 out of 67 countries) and landscape restoration (58 out of 67 countries).

60% of African countries and other LDCs have not included wildlife conservation in their climate action plans.

Figure 1: Number of countries with NDC commitments, by analysis category

Table 1: Wildlife, ecosystem protection and landscape restoration commitments in African and Least Develop Country NDCs, by number of commitment type

Country	Wildlife commitments	Ecosystem Protection commitments	Landscape Restoration commitments	Total commitments #
Afghanistan*	1	2	2	4
Algeria	0	1	2	3
Angola*	0	3	2	5
Bangladesh*	0	3	8	11
Benin*	1	10	18	26
Bhutan*	0	3	1	4
Botswana	0	0	0	0
Burkina Faso*	0	7	8	12
Burundi*	0	0	5	5
Cabo Verde	4	10	3	15
Cambodia*	1	17	9	20
Cameroon	0	2	3	5
Central African Republic*	0	5	2	7
Chad*	0	6	2	8
Comoros*	0	3	3	6
Congo, Republic of the (Brazzaville)	1	7	6	13
Cote d'Ivoire	0	5	4	8
Democratic Republic of Congo*	1	10	6	16
Djibouti*	0	1	3	3
Egypt	4	4	1	5
Equatorial Guinea	0	7	4	8
Eritrea*	0	2	4	6
Eswatini	1	6	3	8
Ethiopia*	1	5	5	10
Gabon	1	3	1	5
Gambia*	1	1	3	3
Ghana	0	2	2	3
Guinea*	0	6	4	8
Guinea-Bissau*	0	5	3	6
Haiti*	0	8	12	17
Kenya	0	7	5	9
Kiribati*	0	1	1	2
Lao People's Democratic Republic*	0	5	2	5
Lesotho*	2	9	7	14
Liberia*	1	10	5	14
Libya	0	0	0	0
Madagascar*	1	6	7	10
Malawi*	6	2	4	7
Mali*	1	5	3	7
Mauritania*	1	6	5	10
Mauritius	0	11	5	14
Morocco	1	7	9	16
Mozambique*	2	8	4	11
Myanmar*	2	18	7	22
Namibia	0	8	5	13
Nepal*	0	8	2	10
Niger*	0	2	4	6
Nigeria	0	4	2	5
Rwanda*	0	1	3	3
Sao Tome and Principe*	0	1	3	3
Senegal*	0	11	6	14
Seychelles	1	14	0	15
Sierra Leone*	1	14	4	15
Soloman Islands*	0	5	0	5
Somalia*	0	2	4	5
South Africa	0	1	0	1
South Sudan*	7	15	7	25
Sudan*	0	3	3	3
Tanzania*	1	5	1	6
Timor-Leste*	0	6	4	5
Togo*	0	2	4	5
Tunisia	3	23	7	28
Tuvalu*	0	2	0	2
Uganda*	2	10	9	14
Yemen*	0	0	0	0
Zambia*	1	2	0	3
Zimbabwe	0	0	2	2
	50	**378**	**260**	**580 #**

* Least Developed Countries

Some commitments are counted under multiple categories, for example, they may be both wildlife related and ecosystem protection, see methodology for detail.

3.2 Total number of NDC commitments

The finding that the majority of African countries and other LDCs have not included wildlife conservation in their NDCs is further nuanced by analysing the overall number of NDC commitments that have been made by the 67 African countries and LDCs against each of the three categories considered in our analysis typology (see Table 1 for a breakdown of the number of commitments by category and by country).

Commitments to wildlife conservation are significantly fewer than those made to ecosystem protection and landscape restoration

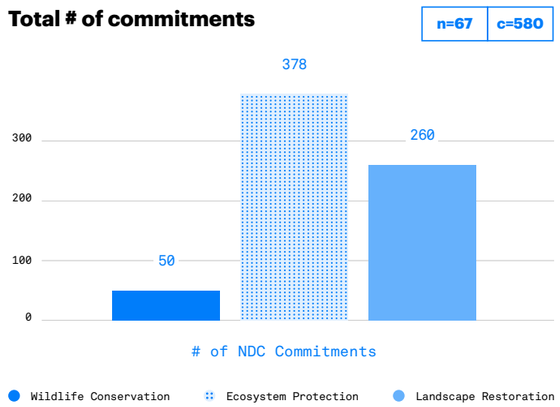
Some 580 commitments were identified which related to the three analysis categories.[5] Of these, only 50 commitments – less than 10% – relate to wildlife conservation. This finding provides more granular detail than the data above, showing that although 40% of countries have made some commitment to protecting wildlife in their NDC, on average these countries have only made a very small number of wildlife specific commitments – perhaps one or two per NDC are significantly outweighed by NDC commitments to ecosystem protection or landscape restoration.

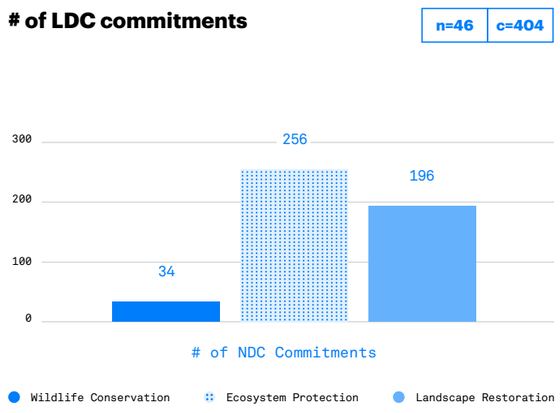
Even among the 50 wildlife-related commitments found in NDCs, a significant number relate to assisting wildlife adapt to climate change rather than a focus on the benefits of wildlife protection or recovery for enhancing an ecosystem's ability to capture and store carbon.

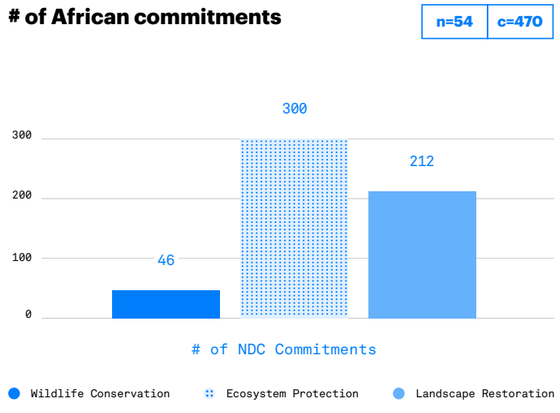
Table 2. provides select examples of the 50 wildlife commitments found in NDCs demonstrating the variety of commitments included, which range from recovery of threatened species to fisheries management or enhancing protected/conserved areas for wildlife.

Of the 580 commitments reviewed in the NDC analysis, the majority relate to ecosystem protection. A total of 378 commitments—65% of the total—relate to ecosystem protection. A further 260—or 45% of commitments—relate to landscape restoration. This large number of commitments highlights the importance many African countries and LDCs placed on reforestation and afforestation as key initiatives for achieving their mitigation objectives, compared to other forms of intervention.

Figure 2: Total number of NDC commitments by analysis category







[5] Note: Since some commitments have been categorised into multiple categories of the analysis typology, the overall number of commitments presented for each category in the graphs exceed the total number of commitments.

Table 2: Examples of wildlife conservation commitments included in NDCs

Country	Type of commitment	Summary
Benin	Species reintroduction	Enrich and preserve the natural ecosystem by introducing new species (Black rhinoceros, Derby eland) in Pendjari National Park.
Cabo Verde	Fisheries management	Safeguards for endangered and vulnerable species and habitats in fisheries to protect against overfishing and overexploitation, and to minimise collateral damage.
Congo, Republic of the (Brazzaville)	Species recovery	Implement conservation actions on 50% of threatened species.
Egypt	Protected areas	Expand Protected Area estate for marine and national wildlife areas.
Egypt	Fisheries management	Improve fisheries practices to protect marine life and ecosystems.
Gabon	Species recovery	Reduce human-elephant conflict.
Lesotho	Species adaptation	Enhance regulatory protections for species potentially at risk due to climate changes.
Malawi	Species recovery	Cooperation with regional/international institutions on conservation and managameent of wildlife.
Malawi	Species adaptation	Provision of watering points in national parks/game reserves.
Malawi	Species recovery	Elephant popluation management and disease control
Morocco	Species recovery	Development of two hatcheries for the restocking of five endangered coastal species.
Mozambique	Protected areas	Establish cross-border conservation areas to maintain ecosystem functions and allow wildlife migrations.
Myanmar	Species adaptation	Assessment of impacts of climate change on biodiversity and wildlife and take necessary adaptation measures.
South Sudan	Wildlife-based livelihoods	Promote sustainable community-based ecotourism services, including wildlife tourism, to provide improved or alternative livelihood opportunities to rural communities while also protecting biodiversity.
South Sudan	Species adaptation	Establish water points for wildlife in protected areas to reduce negative impacts on animals during dry season.
South Sudan	Protected areas	Establish wildlife conservancies and protected areas to prevent degradation of forest areas and conserve wildlife.
Tunisia	Species adaptation	Anticipate climate risks and assist the transformation of natural ecosystems and the migration of species to favourable areas (forests, rangelands and steppes).
Uganda	Species adaptation	Establish and protect existing wildlife corridors to strengthen the resilience of wildlife against climate risks and hazards.
Zambia	Species adaptation	Develop a National Wildlife Adaptation Strategy.

3.3 Number of countries with financial estimates for NDC commitments

In addition to understanding the number and type of commitments that countries have made to promote wildlife conservation, ecosystem protection and landscape restoration, it is important to understand the amount of finance that will be needed to implement these commitments. Having such an estimate can help governments, donors, multilateral development banks, philanthropic organisations, civil society, and the private sector allocate finance to effectively implement these priorities.

Each commitment was analyzed to understand whether countries had estimated the amount of finance it would require to implement the commitment, as well as to understand whether that finance had been allocated by national governments or was being requested by donors.

Only 24 countries out of 67 (36%) have made a financial estimate for at least one of the commitments in their NDC related to wildlife conservation, ecosystem protection, or landscape restoration. 22 countries have made a financial estimate for commitments related to landscape restoration, 21 countries have estimated finance related to ecosystem protection and only 6 countries – again less than 10% of the sample – have made financial estimates related to wildlife conservation.[6]

Only 6 countries have estimated the finance needed to implement at least one of their commitments to wildlife conservation

[6] Note: these figures show the number of countries that have made an estimate for at least one commitment related to the corresponding category. It does not mean that the country has made a financial estimate for all commitments in that category. For more granular information, see section 3.4.

Figure 3: Number of countries with financial estimates for NDC commitments, by analysis category

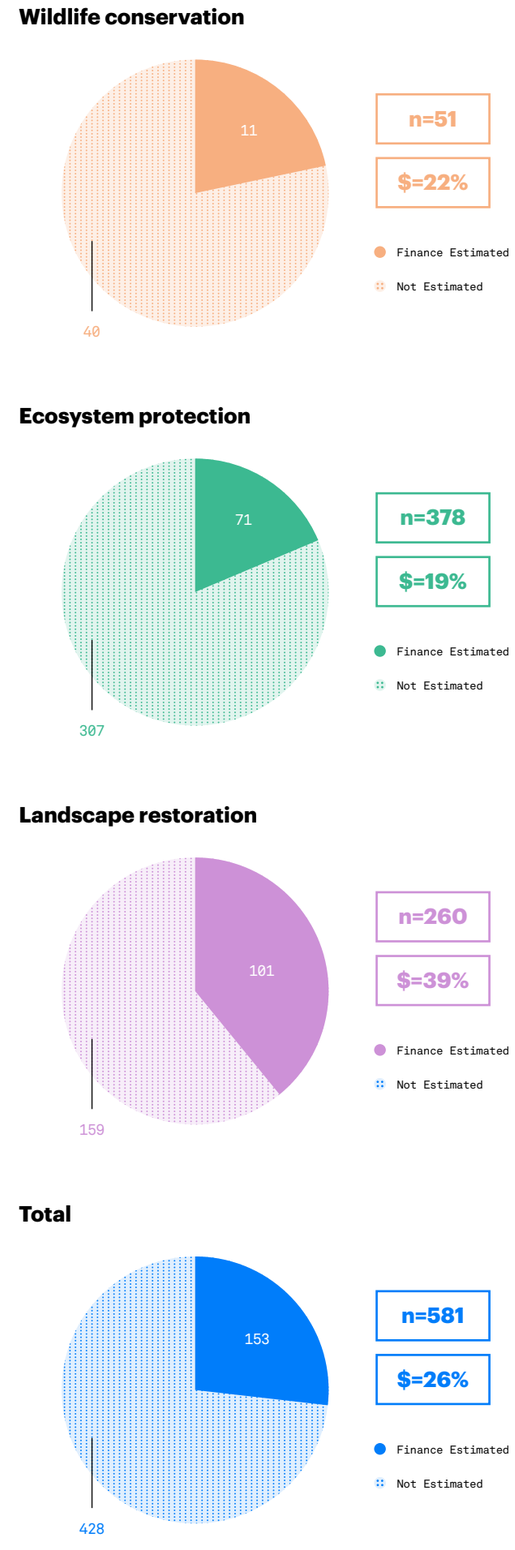
3.4 Total number of NDC commitments with finance estimates

A closer look at the data shows that of the identified 580 NDC commitments to wildlife conservation, ecosystem protection, or landscape restoration, only 153 of them—a total of 26%—included detailed cost estimates that outlined the amount of finance they would require to implement their commitments.

There could be a variety of reasons why such a large percentage of NDC commitments have not been costed, including a lack of human or financial resources to conduct detailed cost estimates and feasibility studies of proposed actions, a lack of appropriate methodologies to conduct financial estimates for specific types of actions, the inclusion of commitments that are political or aspirational but that have not yet been backed by implementation plans, and variations in terms of where each country is in the NDC process, with second and third versions of NDCs generally containing more details such as cost calculations.[7]

The data does show that landscape restoration initiatives are twice as likely to have financial estimates than others. 39% of landscape restoration initiatives have been costed compared to 22% for wildlife conservation and 19% for ecosystem protection. One possible explanation for this difference is that there are established methodologies for estimating the costs of reforestation and afforestation initiatives meaning that these are relatively easy to estimate in comparison to initiatives related to wildlife and ecosystem conservation.

However, it could also point to a trend where actions related to restoring degraded ecosystems are taking priority for financing rather than those that protect and expand existing wild ecosystems and their populations of wild animals.



3.5 Total amount of finance estimated for NDC commitments

In total, African countries and LDCs estimate that they will require USD $44.23 billion to implement the costed actions for promoting wildlife conservation, ecosystem protection and landscape restoration.

Figure 5: Total amount of finance estimated for NDC commitments, by analysis category

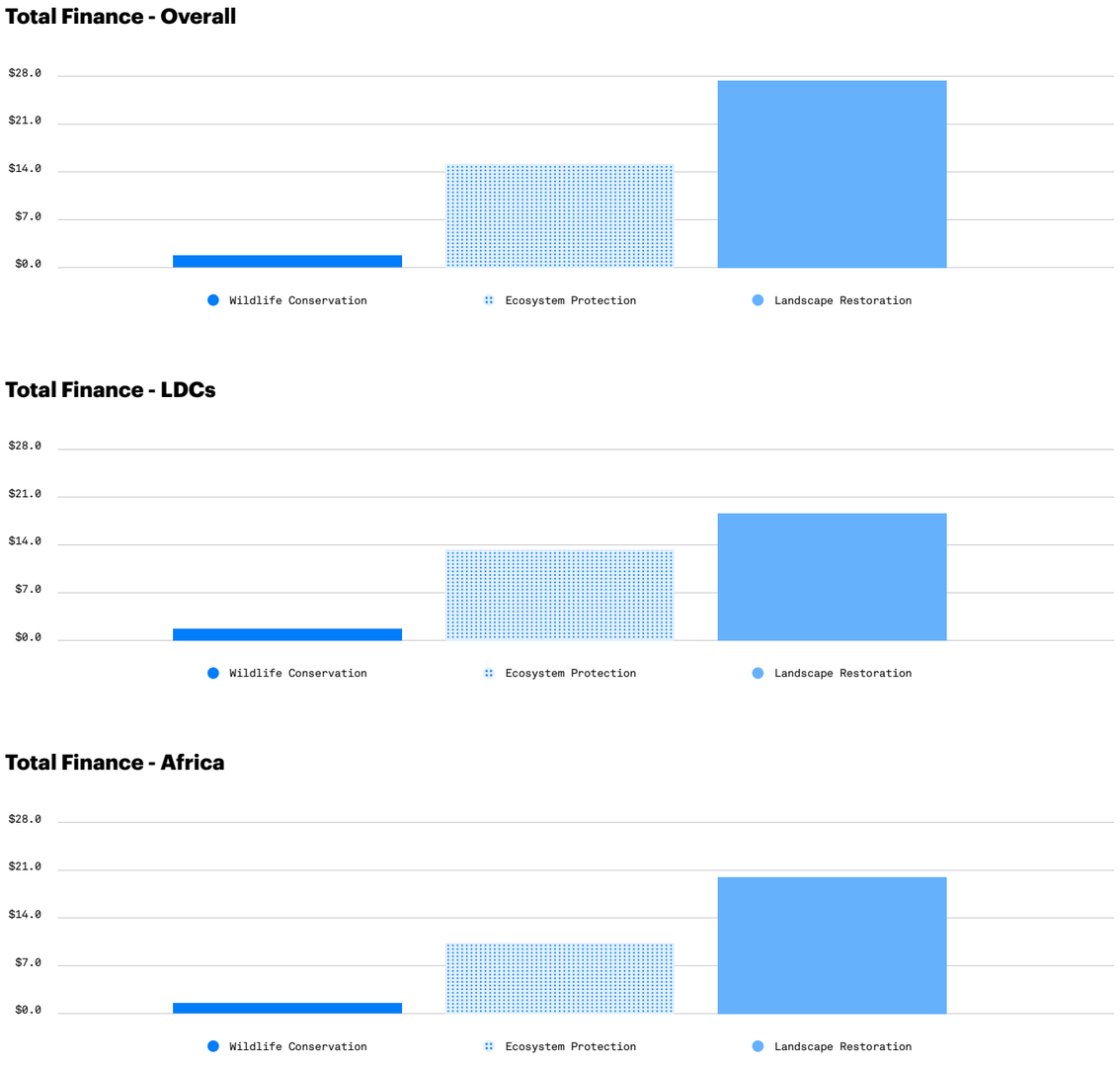


Table 3: Total amount of finance estimated for NDC commitments, by analysis category

Typology	Overall	LDCs	African countries
1. Wildlife conservation	$1.66	$1.51	$1.66
2. Ecosystem protection	$15.21	$10.16	$13.30
3. Landscape restoration	$27.36	$19.96	$18.59
Total:	**$44.23**	**$31.64**	**$33.55**

Two important findings are revealed by these financial estimates. First, as stated above, this overall figure of $44.23 billion only relates to a fraction (26%) of NDC commitments that all 67 countries have made to wildlife conservation, ecosystem protection and landscape restoration. As the vast majority of NDC commitments have not yet been costed, the true amount of finance required by African countries and LDCs to implement climate action pledges that support the conservation of wildlife populations and their habitats, as well as the restoration of degraded ecosystems, will be significantly higher. But even this figure of $44.23 billion equates to 40% of the total climate finance that developed countries agreed to provide per year to all developing countries in the Copenhagen Accords.[8]

Second, a more detailed analysis of the data shows that, of the 26% of NDC commitments that have been costed, the financial estimates are weighted heavily towards landscape restoration. USD $27.36 billion, or 61.8% of the financial estimates made by African countries and LDCs in their NDCs, is earmarked for landscape restoration initiatives.[9] A further USD $15.21 billion (34.4%) is required to implement ecosystem protection initiatives. **Critically, only USD $1.66 billion (3.6%) of the total amount of finance has been earmarked for commitments related to protecting endangered and threatened wildlife.**

Only USD $1.66 billion has been earmarked in African and LDC NCDs for commitments related to protecting endangered and threatened wildlife

What this analysis shows is that countries are seeking to attract large amounts of finance for restoring ecosystems *that have already been degraded*, but **are earmarking significantly less finance to protect existing high-biodiversity ecosystems – and the wildlife populations that inhabit them** – which are under threat from climate change, economic exploitation and land-use conversion.

To some extent this might be explained by the more readily available methodologies to cost large reforestation and afforestation projects and the ease with which these can be included in NDCs to attract international financing, and may highlight the need to develop frameworks and methodologies for financing wildlife conservation and ecosystem protection as means of climate action more effectively. It is also possible that more detailed NDC implementation plans that include sectoral strategies, feasibility studies, project plans, etc. could lead to additional NDC commitments to wildlife conservation and ecosystem protection being costed and implemented with finance from governments, donors and multilateral banks.

There is however a real risk of path dependency, given the current state of play. In a context where both domestic and international finance continues to fall short of the finance required to implement climate action (CPI 2021; CPI 2022), it is highly likely that only some NDC commitments will be able to attract finance while others remain unimplemented. In this scenario, initiatives that are relatively simple to implement, which have easy calculations for greenhouse gas mitigation to demonstrate results (as is the case for afforestation and reforestation) and which have existing cost estimates could be more likely to attract finance, at the expense of others that also have high potential for cost effective climate mitigation and adaptation, such as wildlife conservation.

This could result in a situation where NDC implementation ultimately favours the restoration of degraded landscapes over the preservation of existing biodiverse ecosystems and wildlife populations.

[8] In 2009 high-income countries agreed to provide $100 billion per year in climate finance to developing countries – a commitment that they are yet to deliver upon (Oxfam 2023).

[9] Note: this refers to the finance estimated for commitments related to the analysis typology in this report, not total finance estimated in NDCs.

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Conclusions and recommendations

This analysis of the NDCs that have been submitted to the UNFCCC by African countries and other LDCs provides an important insight into how highly vulnerable developing countries are recognising and plan to use wildlife conservation, ecosystem protection and landscape restoration as means for delivering climate action.

In general, wildlife conservation receives very limited attention in the NDCs. Of the 67 NDCs reviewed only 40% have made NDC commitments related to wildlife conservation as a means of implementing their climate pledges. Of the 580 commitments identified that related to wildlife, ecosystems and landscapes, less than 10% related to wildlife conservation and only USD $1.66 billion (less than 3%) has been costed for initiatives related to protecting endangered and threatened wildlife.

Given the high existential threat that biodiversity faces, both from the climate and human action, and given the untapped power of wildlife conservation to support climate mitigation and adaptation, this finding is concerning. It represents a significant missed opportunity for climate action by African countries and LDCs.

Ecosystem protection is addressed more comprehensively in the NDCs, with nearly all countries (93%) making at least one commitment to protecting ecosystems. While it is beyond the scope of this analysis to determine whether these commitments align with Target 3 of the GBF to conserve at least 30% of terrestrial and inland marine ecosystems, this does suggest a positive trend that countries are considering the role that ecosystems can play for both climate mitigation and adaptation.

Similarly, the restoration of degraded landscapes receives significant attention in the NDCs of African countries and LDCs, primarily through commitments to promoting reforestation and afforestation to support climate mitigation goals. 87% of countries made at least one commitment in their NDCs to implement landscape restoration.

That being said, there are still significant gaps in how countries are using NDCs to align the delivery of actions that can combat climate change and address biodiversity loss at the same time, particularly those focused on the protection and effective management of wildlife.

With this in mind, IFAW makes the following recommendations for the governments of African countries, LDCs and for providers of climate and biodiversity finance:

African countries and LDCs can better integrate wildlife conservation into their climate actions plans.

- The data from the analysis of all 67 African and LDC NDCs clearly indicates that wildlife conservation commitments are not adequately integrated into climate action plans and financing approaches despite the important role that wildlife conservation can play in delivering climate action.
- Of all 580 commitments related to wildlife conservation, ecosystem protection and landscape restoration, only 50 commitments (8.6%) focus on wildlife conservation.
- Countries that have high potential for wildlife conservation should therefore consider integrating wildlife conservation activities – especially the protection, restoration and effective management of large wild animal populations – into their climate action plans.
- They should consider the significant contributions that wildlife conservation can make to carbon sequestration, climate adaptation and climate-resilient development, and integrate wildlife conservation efforts more clearly and with much greater ambition in both their NDCs and their National Adaptation Plans.
- This should include consideration of how they can leverage the synergies between their NDCs and related commitments to climate and biodiversity conservation under other Conventions, particularly the Convention on Biological Diversity (CBD) and its Kunming-Montreal Global Biodiversity Framework, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on the Conservation of Migratory Species of Wild Animals (CMS), the International Convention for the Regulation of Whaling (ICRW) and the Ramsar Convention on Wetlands of International Importance.

African countries and LDCs can more clearly specify the financial requirements of biodiversity related climate actions, especially those associated with wildlife conservation and ecosystem protection.

- Of the 580 commitments made by African countries and LDCs to promote wildlife conservation, ecosystem protection and landscape restoration in their NDCs, only 22% of wildlife conservation commitments (11 in total) and 19% of ecosystem protection commitments (71 in total) have estimated the finance needed for their implementation.
- In comparison, 39% of landscape restoration initiatives (those focused on reforestation and afforestation of degraded ecosystems) have cost estimates. Without clear statement of financial needs and actionable financing strategies, both national and international finance providers will find it challenging to allocate finance for wildlife conservation and ecosystem protection.
- African countries and LDCs can use their NDCs to attract finance to biodiversity related investments and should prioritize making robust financial estimates of their wildlife conservation and ecosystem protection needs as a means of scaling up ambition and implementation of these kinds of nature-based solutions.


Photo: Michael Zorner / © IFAW

Action to promote landscape restoration in African countries and LDCs is important but should not be prioritized at the expense of action to protect and conserve existing ecosystems and biodiversity and should not be implemented without accounting for the importance of wildlife to carbon sequestration and climate adaptation.

- Landscape restoration commitments make up only 45% of the 580 commitments tracked in African and LDC NDCs for biodiversity-related action, but they account for 61.8% (USD $27.63 billion) of the finance that has been earmarked towards biodiversity related actions.
- Though landscape restoration can be an important driver of positive climate action, there is a risk that the restoration of previously degraded land will be prioritized over initiatives to protect and effectively manage existing biodiverse ecosystems and wildlife habitat that have not yet been degraded, which generally offer a more cost-effective and more immediate climate benefit.
- There is a risk that they will fail to factor in the importance of wildlife to landscape restoration efforts, if wildlife is not explicitly noted.
- Given the limited finance that is available for climate action, initiatives with existing cost-estimates, relatively simple implementation modalities (e.g. tree planting), and carbon accounting methodologies (e.g. CO_2 removal potential) could take precedence over initiatives that have more complex political economy considerations, multi-stakeholder implementation pathways and which lack frameworks and methodologies to guide implementation and monitoring, such as wildlife conservation and the protection of biodiverse ecosystems.
- Given continuing threats to biodiversity and natural ecosystems globally, and the positive contribution that wildlife can make to climate mitigation, this analysis suggests that wildlife conservation and ecosystem protection should be included as complementary priorities alongside landscape restoration initiatives so that countries can both deliver on their Paris commitments whilst also achieving the targets of the Global Biodiversity Framework, in particular Targets 3 and 4.

International finance providers and other international actors should provide significant financial and technical support to enable African countries, LDCs and other nations to implement wildlife conservation and ecosystem protection interventions at the scale and speed needed to meet Paris targets, especially as these are currently significantly underestimated in terms of financial needs.

- International finance providers and international agencies need to recognise the scientific evidence that shows the extent to which wildlife and wildlife conservation activities can contribute to climate mitigation and adaptation, and mobilise a significant increase in investment into wildlife conservation as a nature-based solution to the both the climate and biodiversity crises, including through the creation of new and more innovative mechanisms for financing wildlife conservation as a form of climate action.
- The NDCs of African countries and LDCs contain only small number of commitments to wildlife conservation (50), which lead correspondingly to a low estimate of the finance required (USD $1.66 billion) to implement these actions.
- Given the immense potential of wildlife conservation activities to contribute to climate outcomes, this is a missed opportunity – especially for countries where wildlife conservation and ecosystem protection have particularly high levels of potential.
- The failure to make explicit costed commitments on wildlife conservation and ecosystem protection results in climate action plans that exclude a significant sector that could attract significant finance and deliver high levels of impact. As a result these NDCs do not provide a clear representation of the needs and opportunities in these countries.
- More concerted efforts are needed to integrate climate action and biodiversity protection at the policy and implementation levels – a finding that is made clear by the fact that only 27 of 67 countries (40%) made any commitment to wildlife conservation in their NDC.
- Although the contrast is less stark, the fact that 65% of NDC commitments tracked in this analysis related to ecosystem protection but only 19% of these have any kind of financial costing suggests that the actual price tag for these kinds of actions will actually be significantly higher than the USD $15.21 billion outlined in the NDCs.


Photo: Naudé Heunis / © IFAW

International agencies should also mobilise significant technical support to enable African countries, LDCs and other nations to design and implement wildlife conservation and ecosystem protection interventions at the scale and speed required to meet Paris targets, and support climate-resilient development.

- UN agencies and/or other technical bodies need to develop better methodologies and frameworks to account for the climate benefits of wildlife conservation and to guide countries on how to design, cost and implement wildlife conservation and ecosystem protection initiatives that contribute to climate action, including the establishment of robust national systems to monitor and verify the contribution of wildlife and wildlife conservation to climate change mitigation and adaptation.

Annex 1:
Methodology

The overall aim of this report is to examine the extent to which African countries and LDCs (a total of 67 countries combined) have integrated considerations of wildlife and ecosystem conservation as key components for delivering their climate goals. The focal point of the analysis is on the Nationally Determined Contribution (NDC) submitted by each country to the UNFCCC, which outlines the country's climate goals and the roadmap it will take to implement these goals.

Step 1: Creation of an analysis typology

To begin, an analysis typology was developed to categorize how countries were approaching wildlife and ecosystem conservation in their NDCs. This analysis typology breaks down country commitments into three different categories:

1. **Wildlife conservation:** The focus of this category is commitments that aim specifically to protect and/or conserve populations of wild animals and other species of endangered or threatened wildlife. This could include mammals, fish, amphibians, plants, etc. (where they are identified as being endemic or threatened) and must specifically mention wildlife or types of threatened species to be included in this category.

2. **Ecosystem protection:** The focus of this category is on the protection of existing but threatened biodiverse areas (e.g. protected areas and national parks) and the effective management of biodiverse areas. Overall, the emphasis in this category is on the ecosystem or landscape that is being protected rather than specific species of wildlife.

3. **Landscape restoration:** The focus of this category is the restoration of ecosystems or landscapes that have been degraded. In general, this category focuses on the use of restorative or regenerative nature-based practices to restore ecosystem functions and environmental services associated with biodiversity and nature. This category of actions is most associated with reforestation, afforestation and regeneration of degraded ecosystems.

Step 2: Review of NDCs against the analysis typology

Each country's NDC was then analysed using this typology. The review of each NDC involved two steps:

- A detailed reading of each NDC document to source information on NDC adaptation commitments, NDC mitigation commitments, and financial estimates for each NDC commitment.

- A second review of each NDC using a list of keywords to ensure that no key NDC commitments had been missed. The keywords corresponded to the three categories in our analysis typology. They are listed in Annex 2.

Once an NDC had been reviewed, each of the commitments identified in the NDC were entered into a database. The commitments were screened against the analysis typology and coded based on whether it corresponded to (i) wildlife conservation, (ii) ecosystem protection, and/or (iii) landscape restoration. An individual NDC commitment could be coded as being linked to one specific category in the typology, or to multiple categories in the typology. If the data was available in the NDC, each NDC commitment entered into the database included information on the cost estimate for the commitment. Additional meta-data was added to each NDC commitment to enable filtering and disaggregation.

Step 3: Categorising NDC commitments

In order to minimize the subjectivity of which NDC commitments to include in the database and which category in the analysis typology to code them, a series of coding protocols were followed so that each entry was coded accurately and consistently across all 67 countries. These 'rules' for the data coding are outlined in more detail below:

- In order for an NDC commitment to be coded as '**wildlife conservation**' the entry must have a specific mention of the word 'wildlife', 'species', or the name of a specific species. For the most part, this resulted in entries that referred to the protection of mammals and fish species (i.e., in the case of coastal conservation). There are a few limited mentions of 'indigenous species' related to plant biodiversity that have been included in this category since they use the word 'species', 'threatened', etc.

- Entries related to fisheries and marine conservation / marine management posed a challenge. Depending on the context, fisheries could be considered 'wildlife conservation' in the sense of coral reef ecosystems protecting wild species of fish for biodiversity, tourism, etc. But they can also be viewed as an agricultural resource & source of livelihood for communities which could have them coded as 'ecosystem protection' or 'landscape restoration'—or not coded at all in the case of aquaculture & fish farming. It is often not clear whether protection and management of fisheries is referred to for the purpose of conservation vs agriculture. Each fisheries entry was coded based on supporting information in the text of the commitment.

- In order for an entry to be coded as '**ecosystem protection**' the entry had to have specific words that linked to conservation purposes. These included 'conservation', 'protect', 'protection', 'biodiversity', 'management', etc., or they needed to reference a specific type of ecosystem that was being safeguarded. These included 'national parks', 'conservation areas', 'mangroves', 'marine ecosystems', 'coral reefs', etc.

- If an NDC commitment referred to biodiversity in a general sense (e.g., a commitment to 'protect biodiversity') then the NDC commitment was coded as 'ecosystem protection'—since it is not possible to know whether these commitments refer to protecting specific species of wildlife or not (even if that ecosystem referred to a national park or protected area).

- In order for an entry to be coded as '**landscape restoration**' the entry had to have specific words that linked to restoration. These include: 'reforestation', 'rehabilitation', 'planting', 'regeneration', 'degraded', etc.

- Where a country has a policy on reducing emissions from deforestation and forest degradation (REDD+) with limited detail of what the actual policy entails, these have been coded as both ecosystem protection and landscape restoration since REDD+ covers reduced deforestation rates (i.e. more likely to be linked with ecosystem protection) and reduced levels of forest degradation (i.e. more likely to be linked to landscape restoration).

- For the most part, NDC commitments related to charcoal production, fuel efficient stoves, etc. were not included in the database. These measures could in theory be linked to 'ecosystem protection' because efforts to reduce the use of wild forest products can lead to improved protection of forest ecosystems. However, most NDC commitments do not make an explicit link between fuel efficient stoves and improved ecosystem or biodiversity protection. If the NDC commitment did not make a link between the two, then it was not included in the database. If the NDC commitment did make a specific link (e.g. the creation of community forests for fuelwood use to reduce use of wood from protected areas) then it was included in the database.

- Overall, measures related to agriculture were not included in the database. Although 'biodiversity' can be extended to a wider range of categories beyond 'wild' biodiversity—including genetic diversity of crops, fruit-bearing trees, livestock breeds, pastureland, rangelands, etc.—it was decided to limit the focus of biodiversity protection (i.e. 'ecosystem protection' in our typology) to non-agricultural species and ecosystems. The following decisions were therefore taken:

    - NDC commitments on agroforestry were not included in the database. These could be considered 'landscape restoration' since they involve planting trees which can improve soils and restore degraded farmland. But since these measures involve restoration of agricultural land for the purpose of agriculture, they were excluded. The only inclusion of agroforestry in the database is for NDC commitments that include both reforestation **and** agroforestry in a measure that cannot be disaggregated.

    - There are many NDC commitments that focus on reforestation and the creation of community forestry plantations. Where these plantations do not specify that they are agroforestry, they were included in the database as 'landscape restoration'.

    - NDC commitments on integrated water management (IWM) and other water-aligned measures were also not included in the database. These could be considered 'ecosystem protection' since they involve stewardship of waterways and river basins to improve water use. However, IWM in its generic application (i.e. without supporting explanatory text in the NDCs) was deemed to be linked more specifically to water management for agricultural use rather than for the conservation of specific wild ecosystems—and these NDC commitments were therefore excluded from the database. Where specific measures were outlined related to the protection or rehabilitation of wetlands or other specific ecosystems, these were coded as either '*ecosystem protection*' or '*landscape restoration*' depending on the nature of the commitment and supporting explanatory text.

    - NDC commitments on rangeland management (e.g., restoration of rangelands) were also not included in the database. Like IWM, the exception to this rule is where NDC related to rangelands have explanatory text which links them specifically to one of the three analysis categories (e.g. forest restoration).

- Several NDCs lack specific mitigation / adaptation measures in the documents themselves, but cross-link to other policies and documents (some of which were being drafted at the time of writing the NDC) to highlight how the NDC will be implemented. As the scope of this review was limited to an analysis of NDC documents themselves, measures, actions, targets, etc. from other documents have not been included in the database. The risk of omitting relevant targets needs to be balanced against the risk of giving favourable treatment to specific countries by diving into more detail in a wider range of policy documents. The decision was taken to focus exclusively on what was included in the NDCs themselves, so as to ensure equal treatment across all countries.

Step 4: Data analysis of key research questions

Once the NDC document for each country had been analyzed and the commitments had been coded into the database, the data was analysed to answer the following key research questions:

1. How many countries have made NDC commitments related to (i) wildlife conservation, (ii) ecosystem protection, and (iii) landscape restoration?
2. How many commitments have been made by African countries & LDCs to support (i) wildlife conservation, (ii) ecosystem protection, and (iii) landscape restoration?
3. How many countries have made financial estimates for commitments related to (i) wildlife conservation, (ii) ecosystem protection, and (iii) landscape restoration?
4. What percentage of the NDC commitments related to (i) wildlife conservation, (ii) ecosystem protection, and (iii) landscape restoration have financial estimates?
5. What is the total amount of finance estimates contained in NDCs related to (i) wildlife conservation, (ii) ecosystem protection, and (iii) landscape restoration?

Photo: © IFAW

Annex 2:

List of keywords used for NDC coding

1. Wildlife conservation	2. Ecosystem protection	3. Landscape restoration
Wildlife	Ecosystem	Restoration
Conservation *	Landscape	Restore
Biodiversity †	Protection	Rehabilitation
Species	Preservation	Rehabilitate
Endangered	Protected area	Degraded
Animal	Park	Degradation
Bird	Reserve	Regenerate
Fish	Effective management	Regeneration
Plan	Coastal management	Reforest
Mammal	Forestry management	Reforestation
Flora	Conservation *	Afforestation
Fauna	Wilderness	Rangeland management
Marine	Biodiversity †	Pasture
Bushmeat	Ecotourism	
Habitat	Watershed	
Rangers	Mangroves	
Trafficking	Wetlands	
	Coral reefs	

Note * †: The terms 'conservation' and 'biodiversity' appear in both the wildlife conservation and ecosystem protection category given the significant overlap between these two thematic areas (i.e. biodiversity can refer to both wild animals or to ecosystems more broadly). In the case where a commitment was identified using these keywords, supplementary text in the document was used to determine which category the commitment should be classified under, or in some cases whether both categories applied. When using the explanatory text, the rules outlined in Annex 1 were used to guide the coding process.

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