COASTAL AND MARINE ECOSYSTEMS AS NATURE-BASED SOLUTIONS IN NEW OR UPDATED NATIONALLY DETERMINED CONTRIBUTIONS

Interim Analysis as of October 2021

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Wetlands INTERNATIONAL

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ACRONYMS

AFOLU: Agriculture, Forestry and Other Land Use

BTR: Biennial Transparency Report

CBD: Convention on Biological Diversity

COP: Conference of Parties

DESA: UN Department of Economic and Social Affairs

EbA: Ecosystem-based Adaptation

EEZ: Exclusive Economic Zone

G7: Group of Seven

GCA: Global Climate Action Agenda

GHG: Greenhouse Gas Emission

ICTU: Information to facilitate Clarity, Transparency and Understanding

IGO: Intergovernmental Organization

INDC: Intended Nationally Determined Contributions

IPCC: Intergovernmental Panel on Climate Change

IPLC: Indigenous People and Local Communities

IUCN: International Union for Conservation of Nature

LMMA: Locally Managed Marine Areas

LULUCF: Land Use, Land-Use Change and Forestry

MRV: Monitoring, Reporting and Verification

MSP: Marine Spatial Planning

MPA: Marine Protected Areas

NAP: National Adaptation Plans

NbS: Nature-based Solutions

NDC: Nationally Determined Contributions

OECM: Other effective area-based conservation measures

R&D: Research and Development

RCP: Representative Concentration Pathway

REDD: Reducing Emissions from Deforestation and Forest Degradation

SBSTA: Subsidiary Body of Scientific and Technological Advice

SDG: Sustainable Development Goal

SIDS: Small Island Developing States

SMA: Special Management Areas

SROCC: IPCC Special Report on the Ocean and Cryosphere in a Changing Climate

UN: United Nations

UNFCCC: UN Framework Convention on Climate Change

KEY TERMINOLOGY

Nature-based Solutions (NbS) are defined by the International Union for Conservation of Nature (IUCN) as "actions to protect, sustainably manage and restore natural and modified ecosystems in ways that address societal challenges effectively and adaptively, to provide both human well-being and biodiversity benefits[1]."

Applying the definition above to NbS specific to coastal and marine environments, **Nature-based Solutions in coastal and marine ecosystems** (coastal and marine NbS) are actions to protect, sustainably manage and restore coastal and marine ecosystems in ways that address societal challenges effectively and adaptively. Coastal and marine NbS are based on the ability of coastal and marine ecosystems to sequester CO_2 (i.e., blue carbon ecosystems), and/or their ability to foster adaptation and resilience of communities and ecosystems, by acting as buffers against climate change impacts while improving livelihoods.

Ocean-based solutions refer to the opportunities offered by - and related to - the global ocean to sustainably contribute to mitigate climate change and adapt to its impacts. It includes areas of focus such as restoring coastal blue carbon ecosystems, developing marine renewable energy, sustainable and climate-smart fisheries and aquaculture, and greening the shipping sector[2]. While coastal and marine NbS aim to achieve multiple socio-economic benefits, the sole objective of ocean-based solutions is climate mitigation and adaptation.

Blue carbon is "the carbon stored in coastal and marine ecosystems[3]." **Blue carbon ecosystems** (further defined as mangroves, seagrasses and saltmarshes) sequester and store large quantities of blue carbon. In addition to climate mitigation benefits, these ecosystems provide multiple services such as climate adaptation benefits, and resultant ecosystem services to local populations. The term "blue carbon" is also increasingly being applied to other ecosystems beyond mangrove, seagrass and saltmarshes and potential mitigation benefits that may be achieved by protection of these places. However, at this time, only mangrove, seagrass and saltmarsh have IPCC approved guidance (the 2013 Wetlands Supplement[4]) on the measurable extent to which these protections can contribute to a country's emission reduction efforts[5].

Ecosystem services are the beneficial interactions of ecosystems to human populations[6]. Coastal and marine ecosystem services include: provisioning services (e.g., fisheries, building materials); supporting services (e.g., life-cycle maintenance for both fauna and local communities, element and nutrient cycling); regulating services (e.g., carbon sequestration and storage, erosion prevention, waste-water treatment, moderation of extreme events); and cultural services (i.e., tourism, recreational, aesthetic, and spiritual benefits).

1/ IUCN (2020b). Defining Nature-based Solutions.

2/ World Resources Institute (2021). 4 Ocean-based Solutions to Advance Climate Action Through NDCs.

3/ The Blue Carbon Initiative (2021). Guidelines for Blue Carbon and Nationally Determined Contributions

4/ IPCC. (2014a). 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands, Hiraishi T, Krug T, Tanabe K, Srivastava N, Baasansuren J, Fukuda M, and Troxler TG. (eds). Published: IPCC, Switzerland.

5/ Pidgeon, E. et al. (2021). Blue Carbon Integrating Ocean Ecosystems in Global Climate Action. Conservation International. p1-12

6/ OCEAN AND CLIMATE (2015). Ecosystem Services and Marine Conservation, Ocean and Climate Platform.

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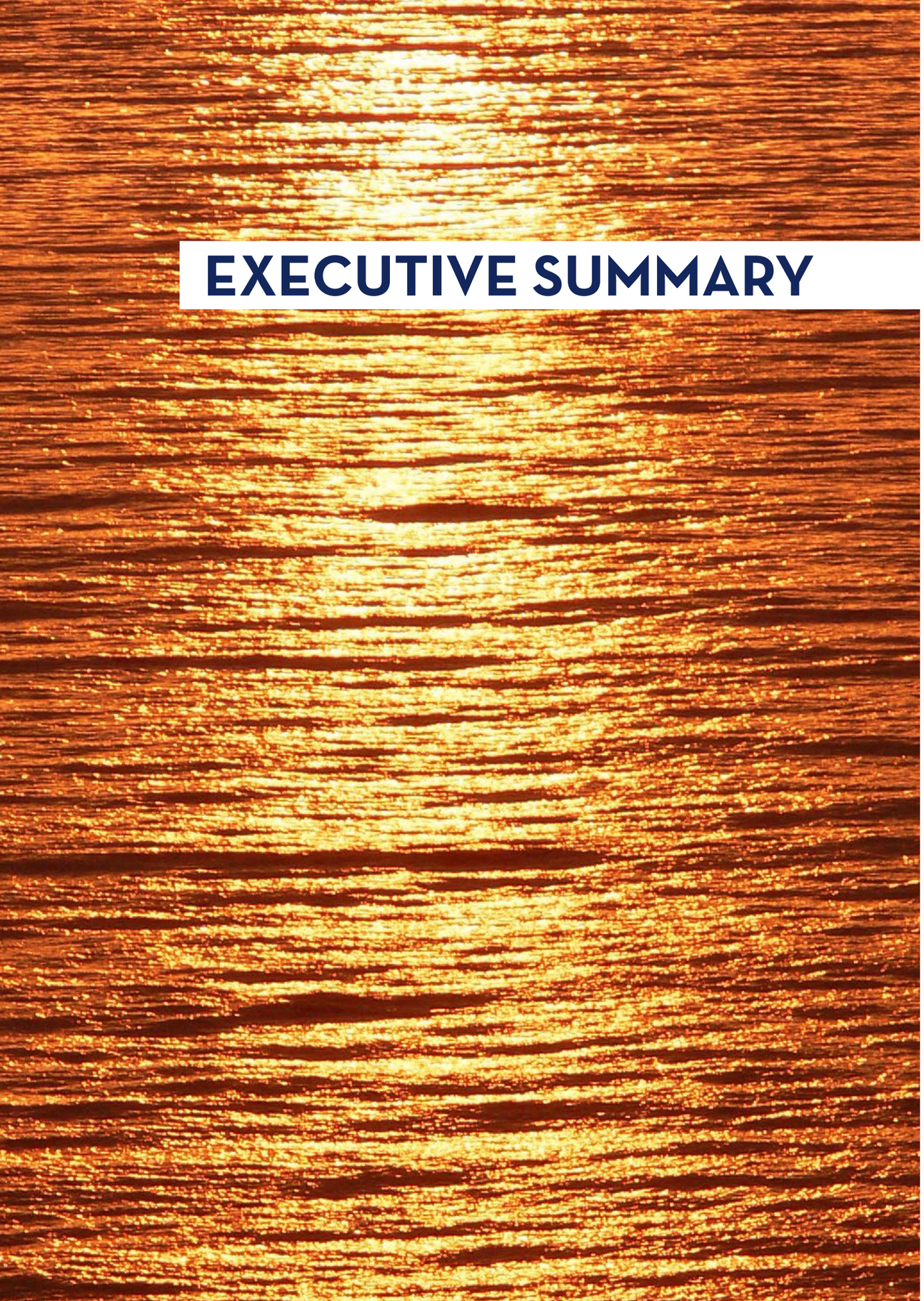

EXECUTIVE SUMMARY

In the context of growing attention to ocean-related measures in climate strategies, it is key to assess the inclusion of coastal and marine ecosystems as Nature-based Solutions (NbS) in new or updated Nationally Determined Contributions (NDCs). This report follows a three-step publication process: (1) the *provisional draft* published after the UNFCCC inter-sessions (June 2021), which reviewed new or updated NDCs submitted until 8 June 2021; (2) the *present and interim draft* being published at UNFCCC COP26 (November 2021), which contains a review of new or updated NDCs submitted by 21 October 2021; and (3) the *final report* that will include all new or updated NDCs submitted as part of the first NDC revision cycle.

The report examines 118 new or updated NDCs, submitted as part of the first revision cycle, with regard to the inclusion of efforts addressing coastal and marine Nature-based Solutions (NbS) for climate mitigation and/or adaptation:

- Out of 118 countries that have submitted their NDCs as of 21 October 2021, 71 have included coastal and marine NbS. Among these, 45 countries included coastal and marine NbS for both mitigation and adaptation purposes, 1 for mitigation only and 25 for adaptation only.

- As for the recognition of mitigation and adaptation co-benefits linked to the inclusion of coastal and marine NbS. 45 countries mentioned co-benefits in that regard, while 32 countries highlighted the resultant socioeconomic benefits for populations from coastal and marine NbS.

- In terms of means to effectively boost climate action by implementing ambitious and robust NDCs in relation to coastal and marine NbS, i.e. feasibility, societal engagement and transparency. In that regard, 46 countries are explicitly committed to creating enabling conditions for action - such as

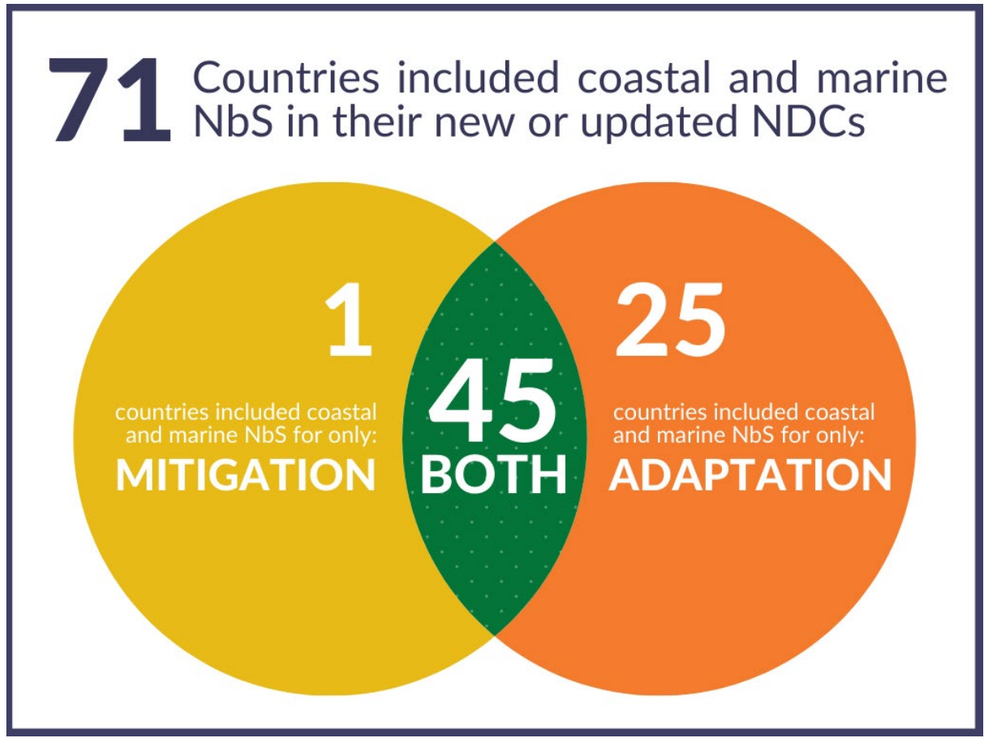

Fig.1: Overview of coastal and marine NbS as mitigation and/or adaptation measures in new or updated NDCs [temporary: out of 118 NDCs received to date, 21 October 2021]

Action Types	Countries (out of 118 submissions)
I. Coastal and marine NbS Countries that included coastal and marine NbS in their new or updated NDC	71 countries: Albania, Angola, Antigua and Barbuda, Argentina, Bahrain, Bangladesh, Barbados, Belize, Benin, Brunei Darussalam*, Cambodia, Cameroon, Canada, Cape Verde, Chile, Colombia, Congo, Costa Rica, Cuba, Dominican Republic, Ecuador*, Fiji, Gambia, Guinea, Guinea Bissau, Honduras, Iceland, Indonesia, Jordan, Kenya, Kuwait, Lebanon, Liberia, Malaysia, Maldives, Marshall Islands, Mauritania, Mauritius, Mexico, Morocco, Myanmar, Namibia, Nauru, Nicaragua, Nigeria, Pakistan, Panama, Papua New Guinea, Philippines*, Qatar, Saint Lucia, Samoa, Sao Tome and Principe, Senegal*, Seychelles, Sierra Leone, Singapore, Solomon Islands, Somalia, South Africa, Sri Lanka, Sudan, Suriname, Togo, Tonga, Tunisia, United Arab Emirates, United Kingdom, United Republic of Tanzania, United States, Vietnam
a. NbS for both Mitigation and Adaptation Countries that included coastal and marine NbS in both mitigation and adaptation efforts	45 countries: Angola, Antigua and Barbuda, Argentina, Bahrain, Bangladesh, Barbados, Belize, Benin, Brunei Darussalam*, Cambodia, Cape Verde, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Fiji, Guinea, Guinea Bissau, Honduras, Iceland, Indonesia, Kenya, Kuwait, Liberia, Maldives, Mauritius, Mexico, Myanmar, Namibia, Nigeria, Pakistan, Panama, Papua New Guinea, Saint Lucia, Senegal*, Seychelles, Sierra Leone, Singapore, Sri Lanka, Sudan, Suriname, Tonga, United Arab Emirates, United States
b. NbS only for Mitigation Countries that included only coastal and marine NbS in mitigation efforts	1 country: Nicaragua
c. NbS only for Adaptation Countries that included only coastal and marine NbS in adaptation efforts	25 countries: Albania, Canada, Cameroon, Congo, Ecuador*, Gambia, Jordan, Lebanon, Malaysia, Marshall Islands, Mauritania, Morocco, Nauru, Philippines*, Qatar, Samoa, Sao Tome and Principe, Solomon Islands, Somalia, South Africa, Togo, Tunisia, United Kingdom, United Republic of Tanzania, Vietnam
II. No coastal and marine NbS Countries that have submitted their new or updated NDCs but do not include coastal and marine NbS	46 countries and the European Union: Andorra, Armenia, Australia, Belarus, Bhutan, Bosnia Herzegovina, Brazil, Burkina Faso, Burundi, Chad, Democratic People's Republic of Korea (DPRK), Eswatini, Ethiopia, European Union (27 countries), France (non EU), Georgia, Grenada, Israel, Jamaica, Japan, Kyrgyzstan, Lao People's Democratic Republic, Malawi, Mali, Monaco, Mongolia, Montenegro, Nepal, New Zealand, Norway, Oman, Paraguay, Peru, Republic of Korea, Republic of Macedonia, Republic of Moldova, Rwanda, South Sudan*, State of Palestine, Switzerland, Tajikistan, Thailand, Uganda, Ukraine, Vanuatu, Zambia, Zimbabwe
III. NDCs not submitted yet Countries that have not submitted their new or updated NDCs as part of the first NDC revision cycle as of 21 October 2021	51 countries: Afghanistan, Algeria, Azerbaijan, Bahamas, Bolivia, Botswana, Central African Republic, China, Comoros, Cook Islands, Cote d'Ivoire, Djibouti, Dominica, Democratic Republic of the Congo, Egypt, El Savador, Equatorial Guinea, Eritrea, Gabon, Ghana, Guatemala, Guyana, Haiti, India, Iraq**, Iran, Kazakhstan, Kiribati, Lesotho, Liechtenstein, Madagascar, Micronesia, Mozambique, Niger, Niue, Palau, Russian Federation, Saint Kitts and Nevis, Saint Vincent and the Grenadines, San Marino, Saudi Arabia, Serbia, Syria, Timor-Leste, Trinidad and Tobago, Turkey, Turkmenistan, Tuvalu, Uruguay, Uzbekistan, Venezuela

Table 1. Coastal and marine NbS as part of new or updated NDCs [temporary: out of 118 NDCs received to date, 21 October 2021]

Countries marked with an asterisk in this analysis refer to countries that submitted a new NDC, i.e. initial NDC submitted between 29 March 2019 and 21 October 2021 (i.e. Brunei Darussalam, Ecuador*, Philippines*, Senegal* and South Sudan*).

**The Iraqi NDC will be analysed in the final version of this brief, once an English translation of the NDC is uploaded on the UNFCCC NDC Interim Registry.

Out of the 46 countries that did not include coastal and marine NbS in their new or updated NbS, 24 are landlocked countries. Such countries are highlighted in purple in Table 1.

In addition, the present report provides a robust comparison between first NDCs and updated NDCs, showcasing whether countries have increased, renewed, unchanged or decreased their ambition between first and second submissions. In first NDCs, 51 out of 113 countries[7] included coastal and marine NbS for mitigation and/or adaptation purposes. In comparison, 67 out of 113 countries included relevant coastal and marine NbS in their updated NDCs. The comparative analysis therefore suggests an overall increase, albeit modest, in recognition of the ocean's role in climate action, and in countries' level of ambition with regards to leveraging coastal and marine NbS for climate mitigation and adaptation, specifically:

- More references to the ocean in updated NDCs, i.e. countries further recognised ocean changes (e.g. acidification, coral bleaching) and/or climate-driven impacts on the ocean (e.g. sea-level rise, coastal erosion). Compared to the first NDCs, 19 out of 113 countries have added such references.

7/ 5 countries (i.e. Brunei Darussalam*, Ecuador*, Philippines*, Senegal*, South Sudan*) only have one submission, since they submitted their new NDC after 29 March 2019. These countries were therefore not considered in the comparative analysis, changing the total of 118 countries under study (i.e. having submitted both their first and updated NDCs) to 113 countries (i.e.having submitted their first NDC only).

- New measures for coastal and marine NbS as mitigation and/or adaptation measures in updated NDCs. Half of the countries that submitted their updated NDCs have increased their ambition in comparison to their first NDC, since 58 out of 113 countries added new coastal and marine NbS.

- Additional quantitative targets to support the implementation of coastal and marine NbS, since 26 countries have added these quantifiable targets (e.g. percentage of coastal wetlands to be protected, hectares of mangroves to be planted, emission reduction targets related to blue carbon).

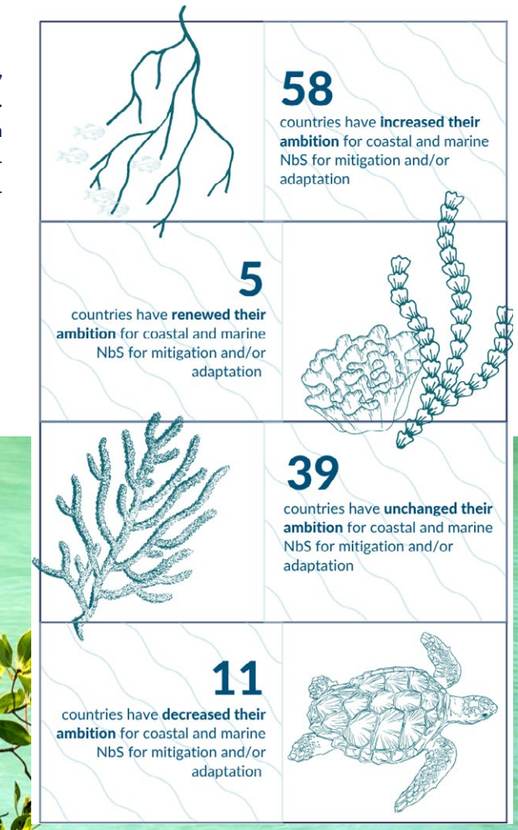

Fig. 2: Countries' level of ambition on the overall inclusion of coastal and marine NbS between their first and updated NDCs [temporary: out of 113 NDCs received to date, 21 October 2021]
Source: Ocean & Climate Platform

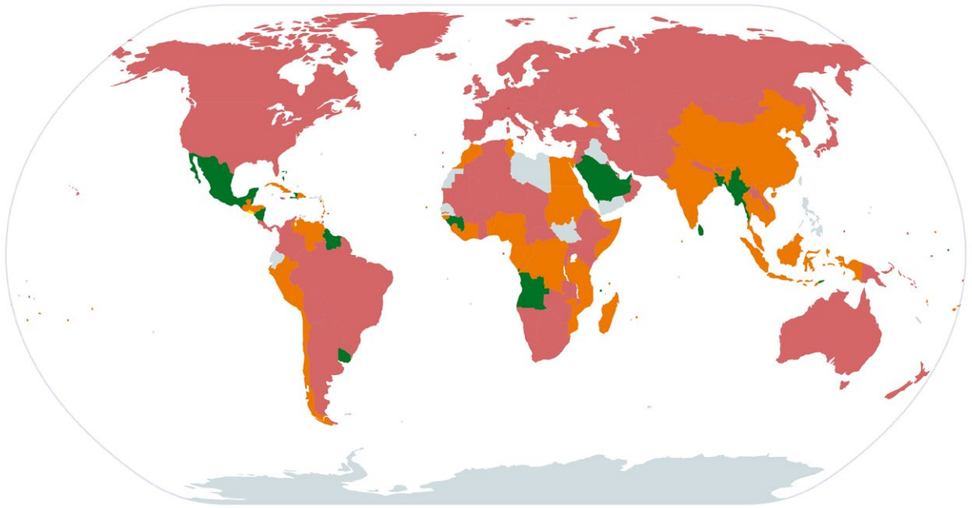

Fig. 3: Countries' inclusion of coastal and marine NbS for mitigation and/or adaptation in their first NDCs
[temporary: out of 113 NDCs received to date, 21 October 2021]
Source: Ocean & Climate Platform via Khartis

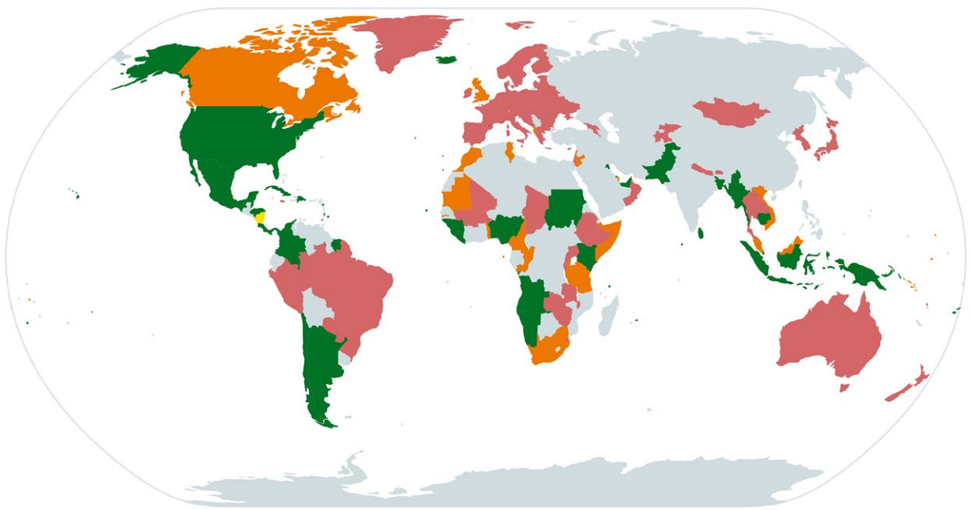

Fig. 4: Countries' inclusion of coastal and marine NbS for mitigation and/or adaptation in their updated NDCs
[temporary: out of 113 NDCs received to date, 21 October 2021]
Source: Ocean & Climate Platform via Khartis

Purpose of this report

The first revision cycle of NDCs offers an opportunity for Parties to make greater use of coastal and marine NbS in their national strategies and actions. In the context of growing attention given to ocean-related measures in climate strategies and actions over the last six years, the present report takes a deep dive into new or updated NDCs, looking at the extent to which Parties to the Paris Agreement have included NbS in coastal and marine ecosystems as part of their mitigation and/or adaptation measures. This report further considers whether Parties have increased, renewed, unchanged or decreased their ambition with regards to the inclusion of NbS in coastal and marine ecosystems between the first and updated NDCs.

Since 29 March 2019, 118 Parties have officially submitted their new or updated NDCs (Table 1). This report analyses the 118 NDCs submitted up to 21 October 2021 to quantitatively and qualitatively assess whether and how coastal and marine NbS have been included within the new or updated NDCs. This report complements a provisional draft published in June 2021 to inform the UNFCCC inter-sessions, which included NDCs submitted up to 8 June 2021. Similarly, a final version of this report will be published once all countries have submitted their updated NDCs as part of the first NDC revision cycle. This whole analysis fits in with the ambition loop, informing and taking stock to support transformational change.

Disclaimer

The analysis in this report focuses exclusively on countries that have integrated coastal and marine NbS in their new or updated Nationally Determined Contributions (NDCs). As a result, countries that did not refer to coastal and marine NbS in their new or updated NDCs, despite mentioning such solutions in their initial NDCs (submitted in 2015), or including other ocean-based measures such as offshore renewable energy or emission-reduction measures for shipping, have not been included. In addition, this report complements a provisional draft and analyses the content of 118 new or updated NDCs submitted between 29 March 2019 and 21 October 2021. NDCs submitted past this date will be included in a revised version of this report, which will be published once all countries have submitted their updated NDCs as part of the first revision cycle. Some countries have expressed their intention to amend their NDCs in the upcoming months. Such additions will be integrated in the final version of this report.

INTRODUCTION

The Nationally Determined Contribution revision cycle under the Paris Agreement

The Paris Agreement adopted by all 196 Parties to the United Nations Framework Convention on Climate Change (UNFCCC) at the 21st Conference of the Parties (COP21), on 12 December 2015, commits to take action to limit global temperature rise to "well below" 2°C and pursue efforts to limit it to 1.5°C (Article 2).

The Nationally Determined Contributions (NDCs) are at the core of the Paris Agreement. As an innovative and bottom-up approach, NDCs combine voluntary and legally binding elements that enable governments to have the flexibility needed to detail and submit country-level plans to address climate change based on the country's context, capacity and flexibility. Communicated every five years, NDCs periodically demonstrate Parties' mitigation and adaptation intentions, while also describing how the NDCs will be achieved. The NDC cycle provides an opportunity for Parties to update[8], assess and review their national climate commitments, as each successive NDC is required to showcase increased ambition compared to the previous NDC (Article 4.3 of the Paris Agreement).

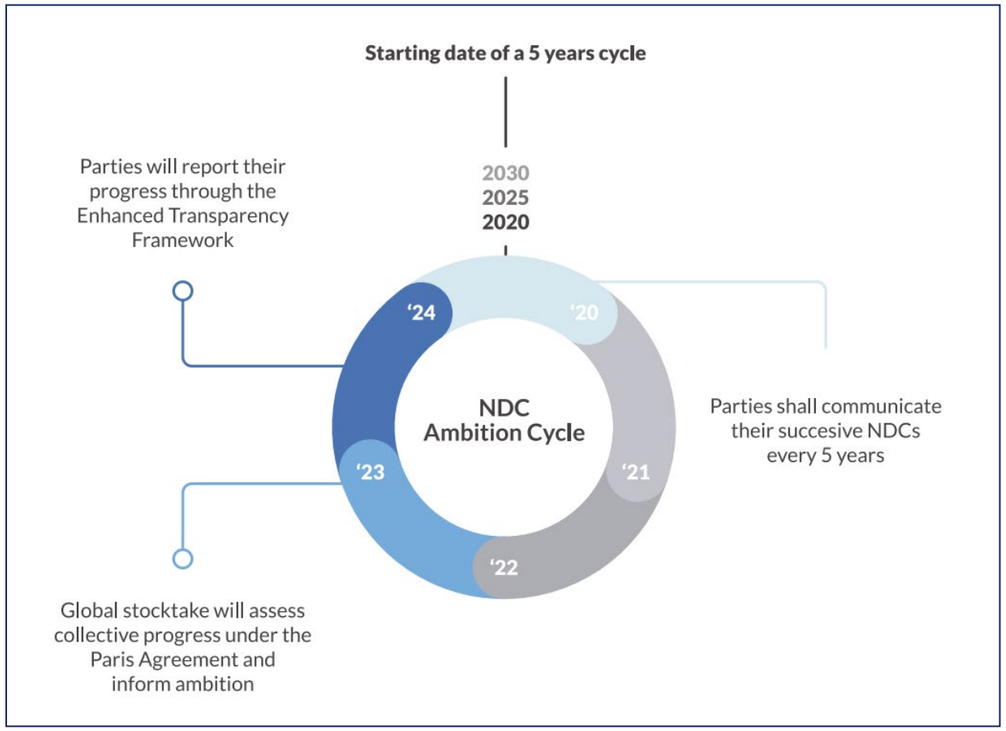

Fig. 5: The NDC ambition cycle (Source: Adapted from a presentation by Joanna Post, UNFCCC Secretariat, at the Because the Ocean workshops held in Madrid and Suva, April-May 2019)[9]

8/ Fransen, T., et al. (2019), Enhancing NDCs: A Guide to Strengthening National Climate Plans by 2020, Washington, DC: World Resources Institute.

9/Because the Ocean (2019), Ocean for Climate: Ocean-Related Measures in Climate Strategies

The growing inclusion of coastal and marine Nature-based Solutions in climate strategies

In 2015, when countries submitted their (I)NDCs, ahead of and immediately following the 2015 UNFCCC COP 21 in Paris[10], 112 out of 161 NDCs (i.e., 70%) [11] acknowledged climate change vulnerability of coastal and marine ecosystems and communities and the role of ocean-based solutions[12] for mitigation and adaptation - including coastal and marine NbS, as well as other ocean-based solutions such as marine renewable energy and shipping-related measures within the scope of the Paris Agreement[13]. However, despite the many ocean-inclusive NDCs, only 19% of Parties with coastal wetland ecosystems included them specifically in their 2015 NDC for mitigation, recognizing their carbon storage and sequestration values[14]. This NDC ambition gap[15] highlighted a need for improved communication around options for specific targets, actions and next steps to be taken around identified ocean-based solutions[16, 17].

Since then, the ocean has been receiving growing attention at the climate negotiations. A number of state-led initiatives (e.g., Because the Ocean initiative, Ocean Pathway Partnership, High-level Panel for a Sustainable Ocean Economy) and coalitions from civil society, UN agencies and IGOs (e.g., Ocean & Climate Platform) emerged to voice the important role of the ocean in regulating the global climate system[18] and advocate for a better inclusion of the ocean under the Paris Agreement and UNFCCC processes and mechanisms. For instance, since 2016 country signatories to the Because the Ocean initiative have paved the way by encouraging greater inclusion of ocean-related and ocean-based solutions and measures within the scope and implementation of NDCs[19] and other mechanisms, such as the National Adaptation Plans (NAPs) and Adaptation Communications[20]. Furthermore, significant progress has been achieved in terms of generating and compiling scientific knowledge (e.g., IPCC Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC), process of UN Decade of Ocean Science for Sustainable Development, IPCC AR6 Climate Change 2021: The Physical Science Basis), mobilising civil society under the UNFCCC Marrakesh Partnership (e.g., Global Climate Action Agenda (GCA)-Ocean and Coastal zones), and policy mainstreaming (e.g., Subsidiary Body of Scientific and Technological Advice (SBSTA) Dialogue on Ocean and Climate).

Identified as "low-regret options[21]", local coastal and marine NbS offer significant and cost-effective mitigation and adaptation measures, while providing multiple co-benefits to communities and ecosystems. For instance, services provided by mangrove habitats to human livelihoods are estimated to be worth at least $US 1.6 billion annually[22]. While contributing to climate change mitigation and adaptation, coastal and marine NbS also have the potential to contribute greatly to a suite of Sustainable Development Goals (SDGs) including SDG 14 to "sustainably manage and protect marine and coastal ecosystems," as well as other global goals (e.g. food security, clean energy, clean water, decent work and climate change)[23].

Adopting and scaling-up coastal and marine NbS can, for some countries, act as a multi-purpose solution for climate mitigation and adaptation[24]. They have the potential to enhance systemic integration, connecting across climate and biodiversity goals[25]. It is crucial to ensure that climate action is complementary to, rather than in conflict with, biodiversity conservation. Net-zero targets must be aligned to the goals of the Paris Agreement and be biodiversity-positive, or at least biodiversity-neutral[26].

10/Prior to and during UNFCCC COP 21, in 2015, 163 countries submitted their intended NDCs (INDCs), and 81 countries published their first NDC. In absence of such publication, INDCs were automatically counted as the country's first NDC at the ratification of the Paris Agreement.

11/ Gallo, N., Victor, D., & Levin, L. (2017)

12/ Northrop, E., et al. (2020). "Enhancing Nationally Determined Contributions: Opportunities for Ocean-Based Climate Action" Working Paper. Washington, DC: World Resources Institute.

13/Gallo, N., Victor, D., & Levin, L. (2017)

14/ Herr, D. & Landis, E. (2016). Coastal blue carbon ecosystems. Opportunities for Nationally Determined Contributions. Policy Brief. Gland, Switzerland: IUCN and Washington, DC, USA: TNC.

15/ UNEP (2018). Emissions Gap Report. United Nations Environment Programme, Nairobi.

16/ Von Unger, M., Herr, D., Seneviratne, T., & Castillo, G., (2020): Blue NbS in NDCs. A booklet for successful implementation (GIZ 2020)

17/ UNFCCC (2021). Synthesis Report. Nationally determined contributions under the Paris Agreement. FCCC/PA/CMA/2021/8. p1-42.

18/ OCEAN AND CLIMATE (2019a), Scientific Fact Sheets, Ocean and Climate Platform,p.1-130

19/ Because the Ocean (2016), Second Because the Ocean Declaration

20/ Because the Ocean (2019)

21/ Magnan, A.K. et al. (2018). Ocean-based measures for climate action. IDDRI, Policy Brief N°06/18.

22/ Ibid.

23/ IPBES-IPCC. (2021). IPBES-IPCC Co-Sponsored Workshop Report on Biodiversity and Climate Change.

24/ IUCN (2020a). Global Standard for Nature-based Solutions. A user-friendly framework for the verification, design and scaling up of NbS.

25/ Diz, D. et al. (2021). Blueprint for a Living Planet: Four Principles for Integrated Ocean-Climate Strategies.

26/ Deprez, A. et al. (2021). Aligning high climate and biodiversity ambitions in 2021 and beyond: why, what, and how? IDDRI, Study N°05/21.

COASTAL AND MARINE NATURE-BASED SOLUTIONS IN MITIGATION EFFORTS

Reducing greenhouse gas (GHG) emissions, in particular CO_2 emissions, and enhancing carbon sequestration is essential to maintain the health of marine life, as well as the climate regulating functions and ecosystem services provided by the ocean[27]. It is currently the only option to mitigate ocean warming, acidification, deoxygenation, sea level rise, impacts of extreme weather events and destruction of particularly sensitive ecosystems at a global scale[28].

Achieving climate change mitigation through the protection, restoration and conservation of "blue carbon" ecosystems - i.e. mangroves, saltmarshes, seagrasses - is particularly effective because they have a high capacity for CO_2 sequestration and storage[29].

Despite covering only 2% of the total ocean area, coastal ecosystems account for approximately 50% of the total carbon sequestered in ocean sediments[30]. Mangrove ecosystems alone store around 6.4 billion tons of carbon at a global scale[31]. Other coastal ecosystems (e.g., kelp forests, coastal peatlands, soft-bottom benthic habitats[32]) are also recognized for the role they play in the global carbon cycle, however the measurable amount by which they remove carbon from this cycle is still being assessed and not yet recognized by IPCC-approved methodologies[33].

Thus, achieving emissions reductions through coastal and marine NbS can be an important part of national climate action plans and meeting the goals of the Paris Agreement. Yet, despite the significant carbon sequestration and storage capacity of coastal and marine ecosystems, as well as the range of benefits they provide to help people to adapt to a changing climate, these ecosystems are disappearing globally at a high rate, as they are particularly vulnerable to the impacts of climate change and other anthropogenic pressures (e.g., pollution, coastal development, artificialisation, overexploitation). Furthermore, coastal and marine NbS can be further deployed in climate action, as blue carbon ecosystems are widely spread across the globe. Indeed, 151 countries around the world possess at least one of these three ecosystems, and 71 countries contain all three of them[34].

This section looks at the 46 countries which have included coastal and marine NbS for mitigation purposes in their new or updated NDCs (Figure 6). Table 2 outlines the protection and restoration of (a) coastal blue carbon ecosystems and (b) other coastal ecosystems (e.g., kelp forests, peatlands, plankton). 5 countries (i.e. Chile, Costa Rica, Fiji, Liberia and Pakistan) included the protection and restoration of both ecosystem types in their new or updated NDC. Additionally, frameworks and mechanisms related to the UNFCCC (i.e., the IPCC Wetland Supplement or LULUCF[35] accounting) were included in new or updated NDCs in relation to coastal and marine NbS, thereby giving additional substance to the commitments undertaken.

27/IPCC (2019). Summary for Policymakers. In: Special Report on the Ocean and Cryosphere in a Changing Climate. H.-O.Pörtner, D.C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Alegr a, M. Nicolai, A. Okem, J. Petzold, B. Rama, N. M. Weyer (eds.)).

28/ ibid

29/IPCC (2021). Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. MassonDelmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.). Cambridge University Press. In Press

30/The Blue Carbon Initiative (2021). Mitigating Climate Change through Coastal Ecosystem Management.

31/The Nature Conservancy (2020a). The carbon sequestration power of coastal wetlands, Mapping Ocean Wealth.

32/ Solan M, et al. (2020). Benthic-based contributions to climate change mitigation and adaptation.

33/Chapter IV of the 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands (i.e. IPCC Wetlands Supplement) provides scientific knowledge and guidelines on the inclusion of coastal wetlands (namely seagrasses, saltmarshes and mangroves) into national inventories and communications using a tiered approach allowing for flexibility around technical capacities

34/The Blue Carbon Initiative (2021). Guidelines for Blue Carbon and Nationally Determined Contributions.

35/Land Use, Land-Use Change and Forestry (LULUCF) is a GHG inventory sector for countries to quantify and account for the emissions and removals of GHGs from terrestrial lands.

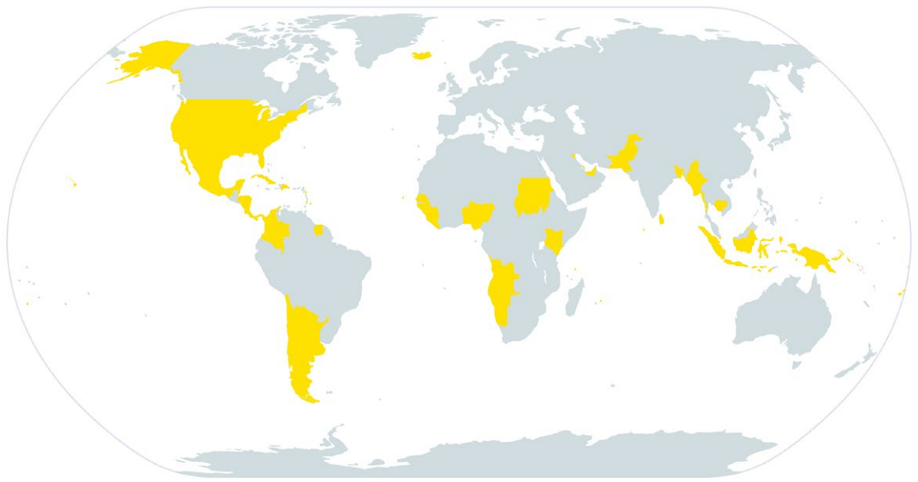

Fig. 6: Countries including coastal and marine NbS as mitigation components in their new or updated NDCs [temporary: out of 118 NDCs received to date, 21 October 2021]

Countries (46): Angola, Antigua and Barbuda, Argentina, Bahrain, Bangladesh, Barbados, Belize, Benin, Brunei Darussalam*, Cape Verde, Cambodia, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Fiji, Guinea, Guinea Bissau, Honduras, Iceland, Indonesia, Kenya, Kuwait, Liberia, Maldives, Mauritius, Mexico, Myanmar, Namibia, Nicaragua, Nigeria, Pakistan, Panama, Papua New Guinea, Saint Lucia, Senegal*, Seychelles, Sierra Leone, Singapore, Sri Lanka, Sudan, Suriname, Tonga, United Arab Emirates, United States

Source: Ocean & Climate Platform via Khartis

Types	Countries (out of 118 submissions)
I. Protecting and restoring marine and coastal ecosystems Countries that included coastal and marine NbS as mitigation components of their new or updated NDCs (i.e., conservation and restoration of mangroves, seagrasses, saltmarshes, and other coastal wetlands)	46 countries: Angola, Antigua and Barbuda, Argentina, Bahrain, Bangladesh, Barbados, Belize, Benin, Brunei Darussalam*, Cape Verde, Cambodia, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Fiji, Guinea, Guinea Bissau, Honduras, Iceland, Indonesia, Kenya, Kuwait, Liberia, Maldives, Mauritius, Mexico, Myanmar, Namibia, Nicaragua, Nigeria, Pakistan, Panama, Papua New Guinea, Saint Lucia, Senegal*, Seychelles, Sierra Leone, Singapore, Sri Lanka, Sudan, Suriname, Tonga, United Arab Emirates, United States
a. Coastal blue carbon ecosystems Countries that included the conservation or restoration of mangroves, seagrasses, and/or saltmarshes as mitigation components of their new or updated NDCs	45 countries: Angola, Antigua and Barbuda, Bahrain, Bangladesh, Barbados, Belize, Benin, Brunei Darussalam*, Cambodia, Cape Verde, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Fiji, Guinea, Guinea Bissau, Honduras, Iceland, Indonesia, Kenya, Kuwait, Liberia, Maldives, Mauritius, Mexico, Myanmar, Namibia, Nicaragua, Nigeria, Pakistan, Panama, Papua New Guinea, Saint Lucia, Senegal*, Seychelles, Sierra Leone, Singapore, Sri Lanka, Sudan, Suriname, Tonga, United Arab Emirates, United States
b. Other marine and coastal ecosystems Countries that included the protection or restoration of other coastal and marine ecosystems (e.g., algae, kelp forests, peatlands) as mitigation components of their new or updated NDCs	6 countries: Argentina, Chile, Costa Rica, Fiji, Liberia, Pakistan
II. Frameworks and mechanisms	
a. IPCC Wetlands Supplement Countries that included a reference to the IPCC 2013 Wetlands Supplement for coastal wetlands in their new or updated NDCs	10 countries: Barbados, Canada, Fiji, Lebanon, Malaysia, Mauritius, Panama, Seychelles, Singapore, United Kingdom
b. LULUCF and forest management policies Countries that included a reference to the Land-Use Change and Forestry (LULUCF) Framework, in relation to coastal and marine NbS, in their new or updated NDCs	7 countries: Chile, Honduras, Iceland, Guinea Bissau, Mauritius, Panama, Singapore, Vietnam

Table 2. Coastal and marine NbS as mitigation components of new or updated NDCs

Countries marked with an asterisk in this analysis refer to countries that submitted a new NDC, i.e. initial NDC submitted between 29 March 2019 and 21 October 2021 (i.e. Brunei Darussalam, Ecuador*, Philippines*, Senegal* and South Sudan*)

(a) Mitigation capacities of coastal blue carbon ecosystems

In total, 46 countries have included protection, conservation and restoration measures related to marine and coastal ecosystems (Table 2.I). Of these 46 countries, 45 new or updated NDCs mention mangroves, seagrasses and/or saltmarshes (see Table 2.I.a). Examples include:

- The ***United Arab Emirates*** has included mangrove protection and restoration measures. Its updated NDC mentions the planting of 30 million mangrove seedlings by 2030, as well as the inclusion of at least 20% of marine blue carbon ecosystems within its national protected areas. The United Arab Emirates is working towards incorporating the value of blue carbon stocks into national policies.

- ***Sudan*** directly referred to "blue carbon" ecosystems and committed to restore and conserve mangrove forests in Red Sea State in order to achieve its 2021-2030 GHG emission reduction targets.

- ***Senegal**** integrated the restoration of 4000 hectares of mangrove areas on an annual basis. More generally, the country has recognized the role of mangrove forests in sequestering carbon emissions.

- ***Costa Rica*** recognized the mitigation potential of coastal and marine habitats like mangroves, and directly referred to them as "blue carbon ecosystems". It has committed to restoring 80% of mangrove forests located in the Gulf of Nicoya by 2030, and expressed its intention to ensure that protected and restored coastal wetlands are effectively managed and monitored.

Chapter IV of the IPCC Wetlands Supplement provides scientific knowledge and guidelines on the inclusion of coastal wetlands, specifically seagrasses, saltmarshes and mangroves, into national inventories and communications using a tiered approach allowing for flexibility around technical capacities[36]. 10 countries included a reference to the IPCC Wetlands Supplement in their new or updated NDCs - in line with their strategy to implement coastal and marine NbS for mitigation purposes. For instance:

- ***Mauritius*** committed to massive planting of trees, including mangroves, to significantly enhance its mitigation ambition. It "estimates GHG emissions and removals in the LULUCF sector[37]", including in relation to mangroves, and plans to incorporate the IPCC Wetlands Supplement.

- ***Canada*** integrated the 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands in its updated NDC. Emissions and removals from wetlands were included, in line with Canada's measures to restore and protect nature.

Other coastal countries (e.g. Australia, Jamaica, Norway and the Republic of Korea) included the IPCC 2013 Wetlands Supplement, without specifically referring to any measures for blue carbon ecosystems, and were therefore not included in this report. However, these countries acknowledged that coastal and marine ecosystems are actionable and important to mitigation measures, and expressed their intention to integrate blue carbon ecosystems into their national GHG inventories - applying the IPCC guidance. This could lead to the upcoming identification and implementation of coastal and marine NbS for increased mitigation efforts. Conservation and restoration of blue carbon ecosystems offer an efficient pathway to avoid GHG emissions.

- ***Australia*** expressed its intention to apply the IPCC 2006 Guidelines, and to use nationally appropriate methods consistent with that guidance and informed inter alia by the IPCC 2013 Wetlands Supplement. In addition, Australia committed to continue updating its methodology across the GHG inventory, including for wetlands, to improve data accuracy. Since 2015, Australia further estimated its GHG and fugitive emissions, as well as emissions from forestry and wetlands.

- ***The Republic of Korea*** is preparing to apply the IPCC 2013 Wetland Supplement to its national GHG inventory demonstrating how it will achieve its GHG emission reduction targets.

36/IPCC (2014a)

37/UNFCCC NDC Interim Registry. Mauritius' updated NDC (p7-8-16)

Many countries expressed an intention to reduce deforestation and forest degradation, and to enhance sustainable forest management in updated NDCs as part of a mitigation strategy[38]. Depending on a country's National Forest Definition, mangroves may be included in its overall forestry related activities, including REDD+, and in its GHG inventory under LULUCF. While many countries address LULUCF and REDD+ activities in their new or updated NDCs, this report does not include an analysis of the supporting documentation that may provide a clearer indication if mangroves are included. This report only includes countries which specifically referred to mangroves in their forestry management policies. Additionally, a few countries, such as Papua New Guinea, are in the process of exploring how a national REDD+ programme can further maintain forest cover, including mangroves, therefore strengthening their coastal NbS mitigation components. Table 2 shows that 7 countries specifically referred to LULUCF activities in line with protecting coastal ecosystems for mitigation purposes, and more specifically with mangrove-related NbS.

- ***Papua New Guinea*** aims to include blue carbon ecosystems in its GHG inventory and UNFCCC reporting, with international technical and capacity building support. This support covers the identification of pathways to incorporate blue carbon by building upon existing Agriculture, Forestry and Other Land Use (AFOLU), REDD+ efforts, monitoring, reporting and verification (MRV) capacity, and an enhanced consideration of mangroves and seagrasses in national climate policies.

- ***Vietnam*** committed to "implementing the target programme for sustainable forestry development for the 2016-2020 period; conserving and enhancing forest carbon stocks; protecting, restoring and planting mangrove and coastal protection forests aiming to exceed over 30% of the plan to 2020[39]". The ***Vietnamese*** NDC therefore contributes to preserving and sustaining such ecosystems in accordance with its forestry policies.

- ***Guinea-Bissau*** intends to focus on wetlands and mangroves: integrating forest conservation, ecosystem restoration and management of protected areas including through REDD+ programs.

(b) Mitigation capacities of other coastal and marine ecosystems

Beyond mangroves, salt marshes and seagrasses, other marine and coastal ecosystems (such as algae, soft bottom habitats and kelp forests) have potential mitigation benefits[40]. However, the measurable mitigation benefits of protecting these ecosystems still needs additional scientific evidence to be quantifiable and included in national GHG inventories[41]. It is interesting to note in that regard that peat is an exception, as it is already included in LULUCF inventories, as well as in some countries REDD+ strategies, but generally considered forests and a terrestrial ecosystem - rather than coastal wetlands[42]. Table 2 I.b. identifies countries which include the protection and restoration of other coastal and marine ecosystems as mitigation components. Only 6 countries have integrated such ecosystems within their revised NDCs.

- ***Argentina*** expressed its intention to implement ecosystem-based action plans to protect wetlands, peatlands and other ecosystems with significant carbon content to increase its mitigation capacities.

- ***Chile*** has announced that it will identify peatlands, as well as other categories of wetlands under a national inventory framework by 2025, recognizing and quantifying the mitigation value of such areas.

38/UNFCCC (2021). Nationally determined contributions under the Paris Agreement. Addendum to the Synthesis report by the Secretariat. UNFCCC. /PA/CMA/2021/2/Add.2.

39/UNFCCC NDC Interim Registry. Vietnam's updated NDC (p.19)

40/Taillardat P. et al. (2020). Climate change mitigation potential of wetlands and the cost-effectiveness of their restoration Interface Focus.

41/In that regard, the IPCC could develop a supplement to its 2006 guidelines for national inventories of anthropogenic emissions by sources and removals by sinks for other blue carbon ecosystems beyond those covered under the IPCC Wetlands Supplement. The guidelines should include blue carbon ecosystems such as macroalgae (e.g. kelp forests). This would promote the inclusion of such ecosystems into NDCs and NAPs, as well as ensure consistency and comparability among the information provided through the Enhanced Transparency Framework. For more information, please see: Diz, D., Merriman, P., de Vos, K., Sommerkorn, M., Walmsley, S., (2021). Blueprint for a Living Planet: Four Principles for Integrated Ocean-Climate Strategies. WWF International, Gland, Switzerland.

42/Thomson, A., Evans, C., Buys, G., Clilverd, H., (2020) Updated quantification of the impact of future land use scenarios to 2050 and beyond- Final report. UK Centre for Ecology and Hydrology p1-76.

COASTAL AND MARINE NATURE-BASED SOLUTIONS IN ADAPTATION EFFORTS

NDCs shall embody national efforts to reduce GHG, but Parties to the Convention decided at UNFCCC COP 20 (2014) that Parties should "consider communicating their undertakings in adaptation planning or consider including an adaptation component[43]" in NDCs. Article 7.11 of the Paris Agreement establishes that adaptation communication can be submitted as a component of or in conjunction with other communications or documents, including an NDC[44]. While the inclusion of adaptation measures remains optional, most countries have used their NDC to highlight adaptation objectives alongside mitigation components. Adaptation measures are crucial to protect goods, people and ecosystems from increasing climate risks and vulnerability[45].

Coastal regions and island states already face the destruction of coastal and marine ecosystems, as well as the degradation of the vital services they provide[46, 47]. The IPCC stated that, in a business-as-usual scenario, global sea level could rise by up to a meter by 2100[48]. Extreme events linked to sea level rise, which previously happened once in a century, could now occur much more frequently. For instance, extreme El Niño events are projected to occur about twice as often under a low-emission scenario (i.e., RCP2.6) in the 21st century when compared to the 20th century[49]. Meanwhile, populations living on the coasts, which are increasingly vulnerable, continue to densify. By 2025, more than 70% of the urban population is expected to be living in coastal cities[50].

In this context, coastal and marine NbS for adaptation have the potential to protect vulnerable coastal communities and ecosystems from the impacts of climate change (i.e. extreme weather events, coastal erosion, sea-level rise), increasing their resilience and providing key ecosystem services to local populations. For example, coral reefs significantly reduce wave heights during coastal storms and tsunamis by reducing wave energy by an average of 97 %, while providing a range of adaptation measures and helping communities to better cope with climate disasters[51]. This is among the reasons why several countries, such as Papua New Guinea and the Maldives, have included coral reefs in their NDCs.

This section focuses on the 70 countries that have included coastal and marine NbS for adaptation in their new or updated NDC, as illustrated in Figure 7. Table 3 outlines three types of solutions for adaptation: protecting and restoring coastal and marine ecosystems (I.a.); coastal zone management and protected areas (I.b.); and climate-ready fisheries and fishing communities (I.c.). 29 countries[52] included all three solutions types in their new or updated NDC, 24[53] included two and 17[54] only included one. Additionally, among 75 countries recognising the pressures weighing on the ocean and the threats coming from ocean changes induced by climate impacts, 12 NDCs mentioned the vulnerabilities facing coastal and marine ecosystems, as well as coastal communities, without including a coastal and marine NbS for adaptation in their NDC (Table 3. II).

43/ UNFCCC. (2015). Report of the Conference of the Parties on its twentieth session, held in Lima from 1 to 14 December 2014.

44/ Article 7.11 of the Paris Agreement: "The adaptation communication referred to in paragraph 10 of this Article shall be, as appropriate, submitted and updated periodically, as a component of or in conjunction with other communications or documents, including a national adaptation plan, a nationally determined contribution as referred to in Article 4, paragraph 2, and/or a national communication"

45/ OCEAN AND CLIMATE (2019b). Policy Recommendations: A healthy ocean, a protected climate.

46/ Nichols, C., Zinnert, J., & Young, D. (2019). Degradation of Coastal Ecosystems: Causes, Impacts and Mitigation Efforts.

47/ IPCC (2021). Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [MassonDelmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press. In Press

48/IPCC (2019)

49/ Ibid

50/ United Nations Human Settlements Programme. (2011). Global report on human settlement. Cities and Climate Change. Table 1.2.

50/ Ferrario, F. et al. (2014). The effectiveness of coral reefs for coastal hazard risk reduction and adaptation. Nature communications.

50/ Albania, Argentina, Bangladesh, Belize, Cape Verde, Cambodia, Congo, Costa Rica, Cuba, Fiji, Gambia, Lebanon, Liberia, Maldives, Mauritius, Myanmar, Nauru, Panama, Senegal*, Seychelles, Sierra Leone, Somalia, Sri Lanka, Sudan, Togo, Tunisia, United Arab Emirates, United Kingdom, Vietnam

50/ Angola, Bahrain, Barbados, Benin, Cameroon, Chile, Colombia, Dominican Republic, Guinea, Guinea-Bissau, Indonesia, Kenya, Kuwait, Malaysia, Morocco, Namibia, Pakistan, Papua New Guinea, Saint Lucia, Samoa, Sao Tome and Principe, Singapore, Suriname, United Republic of Tanzania

50/ Antigua and Barbuda, Brunei Darussalam*, Canada, Ecuador*, Honduras, Iceland, Jordan, Marshall Islands, Mauritania, Mexico, Nigeria, Philippines*, Qatar, Solomon Islands, South Africa, Tonga, United States

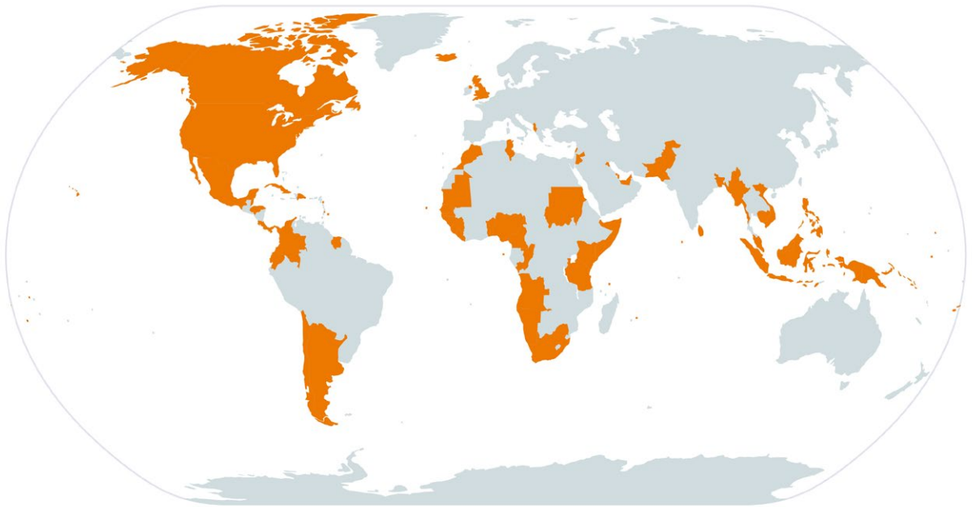

Fig. 7: Countries including coastal and marine NbS as adaptation components in their new or updated NDCs [temporary: out of 118 NDCs received to date, 21 October 2021]

Countries (70): Albania, Angola, Antigua and Barbuda, Argentina, Bahrain, Bangladesh, Barbados, Belize, Benin, Brunei Darussalam*, Cambodia, Cameroon, Cape Verde, Canada, Chile, Colombia, Congo, Costa Rica, Cuba, Dominican Republic, Ecuador*, Fiji, Gambia, Guinea, Guinea Bissau, Honduras, Iceland, Indonesia, Jordan, Kenya, Kuwait, Lebanon, Liberia, Malaysia, Maldives, Marshall Islands, Mauritania, Mauritius, Mexico, Morocco, Myanmar, Namibia, Nauru, Nigeria, Pakistan, Panama, Papua New Guinea, Philippines*, Qatar, Saint Lucia, Samoa, Sao Tome and Principe, Senegal*, Seychelles, Sierra Leone, Singapore, Solomon Islands, Somalia, South Africa, Sri Lanka, Sudan, Suriname, Togo, Tonga, Tunisia, United Arab Emirates, United Kingdom, United Republic of Tanzania, United States, Vietnam

Source: Ocean and Climate Platform via Khartis

Types	Countries (out of 118 submissions)
I. Nature-based solutions for adaptation Countries that included coastal and marine NbS as adaptation components of their new or updated NDCs (i.e., protecting and restoring coastal and marine ecosystems, coastal zone management and protected areas, and climate-ready fisheries)	70 countries: Albania, Angola, Antigua and Barbuda, Argentina, Bahrain, Bangladesh, Barbados, Belize, Benin, Brunei Darussalam*, Cambodia, Cameroon, Cape Verde, Canada, Chile, Colombia, Congo, Costa Rica, Cuba, Dominican Republic, Ecuador*, Fiji, Gambia, Guinea, Guinea Bissau, Honduras, Iceland, Indonesia, Jordan, Kenya, Kuwait, Lebanon, Liberia, Malaysia, Maldives, Marshall Islands, Mauritania, Mauritius, Mexico, Morocco, Myanmar, Namibia, Nauru, Nigeria, Pakistan, Panama, Papua New Guinea, Philippines*, Qatar, Saint Lucia, Samoa, Sao Tome and Principe, Senegal*, Seychelles, Sierra Leone, Singapore, Solomon Islands, Somalia, South Africa, Sri Lanka, Sudan, Suriname, Togo, Tonga, Tunisia, United Arab Emirates, United Kingdom, United Republic of Tanzania, United States, Vietnam
a. Protecting and restoring coastal and marine ecosystems Countries that included the protection, restoration and/or sustainable management of coastal wetlands as adaptation components of their new or updated NDCs	53 countries: Albania, Argentina, Bahrain, Bangladesh, Barbados, Belize, Benin, Brunei Darussalam*, Cambodia, Cape Verde, Chile, Colombia, Congo, Costa Rica, Cuba, Dominican Republic, Fiji, Gambia, Guinea, Guinea Bissau, Iceland, Indonesia, Kenya, Lebanon, Liberia, Malaysia, Maldives, Marshall Islands, Mauritius, Mexico, Myanmar, Namibia, Nauru, Pakistan, Panama, Papua New Guinea, Philippines*, Qatar, Saint Lucia, Samoa, Senegal*, Seychelles, Sierra Leone, Singapore, Somalia, Sri Lanka, Sudan, Suriname, Togo, Tunisia, United Arab Emirates, United Kingdom, Vietnam
b. Coastal zone management and marine protected areas Countries that included coastal zone management, marine spatial planning (MSP), marine protected areas (MPA) and/or other effective area-based conservation measures (OECM) as adaptation components of their new or updated NDCs	65 countries: Albania, Angola, Argentina, Bangladesh, Bahrain, Barbados, Belize, Benin, Cambodia, Cameroon, Cape Verde, Canada, Chile, Colombia, Congo, Costa Rica, Cuba, Dominican Republic, Ecuador*, Fiji, Gambia, Guinea, Guinea Bissau, Honduras, Indonesia, Kenya, Jordan, Kuwait, Lebanon, Liberia, Malaysia, Maldives, Mauritius, Mauritania, Morocco, Myanmar, Namibia, Nauru, Nigeria, Pakistan, Panama, Papua New Guinea, Saint Lucia, Samoa, Sao Tome and Principe, Senegal*, Seychelles, Sierra Leone, Singapore, Solomon Islands, Somalia, South Africa, Sri Lanka, Sudan, Suriname, Togo, Tonga, Tunisia, Uganda, United Arab Emirates, United Kingdom, United Republic of Tanzania, United States, Vietnam
c. Climate-ready fisheries and fishing communities Countries that included climate-ready management of fisheries and aquaculture, and/or small-scale, artisanal or local fisheries as adaptation components of their new or updated NDCs	36 countries: Albania, Angola, Antigua and Barbuda, Argentina, Bangladesh, Belize, Cambodia, Cameroon, Cape Verde, Congo, Costa Rica, Cuba, Fiji, Gambia, Kuwait, Lebanon, Liberia, Maldives, Mauritius, Morocco, Myanmar, Nauru, Panama, Sao Tome and Principe, Seychelles, Senegal*, Sierra Leone, Somalia, Sri Lanka, Sudan, Togo, Tunisia, United Arab Emirates, United Kingdom, United Republic of Tanzania, Vietnam
II. Acknowledging vulnerabilities without committing to the implementation of related NbS Countries that referred to the vulnerabilities facing coastal and marine ecosystems, as well as coastal communities, without including coastal and marine NbS for adaptation in their new or updated NDCs	12 countries: Bhutan, Bosnia-Herzegovina, Brazil, Georgia, Grenada, Jamaica, Monaco, Oman, Peru, Republic of Korea, State of Palestine, Vanuatu

* Countries marked with an asterisk in this analysis refer to countries that submitted a new NDC, i.e. initial NDC submitted between 29 March 2019 and 21 October 2021 (i.e. Brunei Darussalam*, Ecuador*, Philippines*, Senegal* and South Sudan*)

Table 3. Coastal and marine NbS as adaptation components of new or updated NDCs [temporary: out of 118 NDCs received to date, 21 October 2021]

(a) Protecting and restoring coastal and marine ecosystems

Many Parties included the protection and restoration of coastal and marine ecosystems as part of their adaptation strategy in their new or updated NDC, since 53 countries included coastal wetlands as adaptation measures in their NDC (Table 3. I. a.).

- ***Argentina*** recognized the importance of ecosystem-based management, and promoted its use to protect and restore coastal and marine ecosystems such as marshes and peatlands. It also aims to adopt an ecosystem approach to ensure the conservation and sustainable use of marine biodiversity, and strengthen applied research on adaptive management and protection of ecosystems.

- ***Colombia*** ecosystem-based plans for adaptation to conserve, protect and restore mangroves, seagrasses and other coastal ecosystems. It chose to focus on "strategic ecosystems", namely mangroves, wetlands, coral reefs and oceans to adapt to the effects of climate change.

- ***Dominican Republic*** to protect and restore coastal and marine ecosystems, including mangroves, corals and dunes, to reduce vulnerability and increase resilience in the face of climate change. It involves, for example, managing a fund for ecosystem restoration.

- ***Fiji*** notes "the need to sustainably manage and protect marine and coastal ecosystems, strengthen their resilience, and restore them when they are degraded. This includes conserving ocean reservoirs as carbon sinks through supporting the restoration, enhancement and conservation of coastal ecosystems such as mangroves, seagrasses and coral reefs[55]."

(b) Coastal zone management and protected areas

The competition for ocean space and resources requires the effective and coherent management of Parties' Exclusive Economic Zones (EEZ), and related activities, to ensure the sustainable and compatible use of such space and resources[56]. Coastal Zone Management and Marine Spatial Planning (MSP) are effective area-based tools to sustainably manage coastal and marine ecosystems, while maintaining a number of economic activities that are respectful to the environment. To date, 65 countries have included coastal zone management and MSP measures in their new or updated NDCs (Table 3. I.b.). Additionally, 9 countries mentioned the Sendai Framework for Disaster Risk Reduction directly in relation to their coastal management and MSP policies[57]. It is also worth noting that more countries have included measures to manage coastal zones (including protected areas), than similar measures to protect and restore coastal and marine ecosystems and enhance climate-ready fisheries and fishing communities.

- ***Kenya*** aims to develop MSP to boost sustainable management approaches. Local communities will be further involved in the process, thereby strengthening the governance of community structures in participatory resource management of coastal ecosystems. Kenya also recalled the need to integrate the use of NbS into local and national development plans.

- ***Vietnam*** plans to reduce disaster risks and minimise damage by increasing preparedness to respond to climate-induced hazards. To that end, it will develop community-based and ecosystem-based adaptation strategies and measures (e.g., to cope with saltwater intrusion). Vietnam's NDC also states that it will prevent erosion for coastal areas, and develop a system of coastal protection (e.g., bamboo forests).

Coastal management measures and tools also include Marine Protected Areas (MPA) and Other Effective area-based Conservation Measures (OECM). In these areas, uses and activities can be even further limited and regulated to protect ecosystems. A restricted number of activities (e.g., small-scale fishing practices and ecotourism) may be authorized to enhance local livelihoods and sustainable development of coastal communities, while enabling healthy ecosystems for coastal resilience. So far, 33 countries have included MPAs or OECMs in their new or updated NDCs[58] and of these all but Canada, Lebanon and Pakistan have also committed to coastal zone management and MSP measures. But the converse is less evident, some countries have an MSP strategy but have not designated MPAs or OECMs in their EEZ.

- ***Chile*** indicates that all MPAs created up to 2020 will develop a management or administration plan that considers climate adaptation components. Chile plans on deploying new MPAs in underrepresented marine ecoregions, which will be identified taking into consideration criteria related to the effects of climate change, among others. Chile aims to create a representative network of MPAs, that will include coastal wetlands.

- ***Albania*** aims to "strengthen the system of protected areas, including coastal and marine ecosystems, for effective conservation and sustainable use". It will therefore implement new MPAs "along the wetland and lagoon areas to support integrated efforts into developing adaptation measures[59]".

- ***Jordan*** expressed its intention to enhance the sustainable use of MPAs for climate change adaptation - including in the Aqaba marine reserve. It called for strengthened management structures and objectives of MPAs to improve resilience to climate change as an integral component of its management plans.

(c) Climate-ready fisheries and fishing communities

Climate-ready fisheries and aquaculture aim to reduce the vulnerability and increase the resilience of the aquatic food sector to the impacts of climate change[60]. Such practices include institutional adaptation (e.g., public policies, legal frameworks, management and planning), livelihoods adaptation, risk reduction and management for resilience (e.g., early warning, preparedness and responses). Climate-ready approaches in fisheries and aquaculture are very much connected to major cross-cutting global issues (e.g., food security, poverty reduction, decent work), and play a key role in sustainable development, as millions of people rely on productive fisheries as a source of protein and livelihoods[61,62]. Further, many of the activities listed in the above sections for coastal protection and restoration of coastal wetlands, including blue carbon ecosystems, are also vital for climate-ready fisheries as those ecosystems provide critical fish habitat.

Only 36 countries included sustainable management of fisheries (including small-scale, artisanal and local fisheries) in their new or updated NDCs as a climate adaptation strategy (Table 3.I.c). In addition, some of these countries also committed to increase their aquaculture and seaweed farming capacities, thereby potentially providing other benefits (e.g., food security, livelihoods, climate mitigation). Climate-ready fisheries management is the least used of all three types of coastal and marine NbS for adaptation.

- ***The Maldives*** aims to diversify the fishery sector to better respond to emerging climate-induced challenges and uncertainties (e.g., extreme events). The Maldives aims to strengthen insurance schemes to enhance resilience of small-scale fisheries to cover against losses due to extreme events and anomalies. Both measures will support local fishermen and secure their livelihoods.

- ***Cambodia*** promotes the sustainable use of fisheries resources, and highlights the need to increase the adaptation and resilience of this sector. For instance, Cambodia plans to reduce pressures on fishing resources, and to develop aquatic habitats, as well as climate-smart aquaculture production systems and practices. To achieve these objectives, Cambodia aims to involve the private sector, especially in capacity development, input supplies, technologies and marketing.

- ***Antigua and Barbuda*** committed to "strengthening the physical climate resilience of the fisheries [...] sectors to slow onset and extreme weather events through the identification and implementation of priority adaptation interventions with a focus on ecosystem-based adaptation[63]". It also undertook to work with fisherfolks to "build the resilience of their livelihood activities to extreme events.

55/UNFCCC NDC Interim Registry. Fiji's updated NDC (p6)

56/ Jouffray, J.-B., et al. (2020). The Blue Acceleration: The Trajectory of Human Expansion into the Ocean. One Earth. Volume 2, Issue 1, 24 January 2020, Pages 43-54.

57/ Argentina, Cape Verde, Colombia, Costa Rica, Dominican Republic, Indonesia, Mauritius, Philippines*, United Republic of Tanzania

58/ Albania, Argentina, Barbados, Belize, Cape Verde, Canada, Chile, Colombia, Congo, Costa Rica, Fiji, Guinea Bissau, Honduras, Indonesia, Jordan, Lebanon, Liberia, Mauritius, Morocco, Myanmar, Namibia, Pakistan, Panama, Papua New Guinea, Senegal*, Seychelles, Sierra Leone, Solomon Islands, Sri Lanka, Suriname, Tonga, United Arab Emirates, United Kingdom

59/UNFCCC NDC Interim Registry. Albania's updated NDC (p77)

60/ FAO (2020a) FAO's work on Climate Change, Fisheries & aquaculture.

61/ FAO (2020b). The State of World Fisheries and Aquaculture.

62/ Jouffray, J.B., Blasiak, R., Nyström M., Österblom, H., Tokunaga, K., Wabnitz, C., Norström, A. (2021). Report. Blue Acceleration: An Ocean of Risks and Opportunities. ORRAA. Stockholm Resilience Center. Global Resilience Partnership. p1-42.

63/ UNFCCC NDC Interim Registry. Antigua and Barbuda's updated NDC (p30)

MITIGATION AND ADAPTATION CO-BENEFITS IN COASTAL AND MARINE NATURE-BASED SOLUTIONS

The notion of co-benefits implies a win-win situation, addressing multiple goals with a single policy measure, to maximize synergies and reduce trade-offs between socioeconomic and environmental issues. The IPCC defines co-benefits as "the positive effects that a policy or measure aimed at one objective might have on other objectives, irrespective of the net effect on overall social welfare[64]." Co-benefits are intrinsic to NbS, which aim to address societal challenges and provide human well-being and biodiversity benefits.

Given the cross-cutting nature of coastal and marine NbS, mitigation and adaptation measures can be implemented in an integrated approach. NbS have the potential to create positive and cost-effective outcomes[65, 66], for both people and nature (i.e., relatively low-cost considering high benefits). For example, they can provide mitigation co-benefits from adaptation measures (e.g., protecting coastal and marine ecosystems to support a sustainable and productive small-scale fisheries sector – as an adaptation approach – while also enhancing the natural carbon sinks and reservoirs), as well as adaptation co-benefits from mitigation measures (e.g., protecting and accounting for the carbon storage in blue carbon ecosystems – as a mitigation approach – while also protecting coastal communities using natural infrastructures[67]). Mitigation co-benefits also have an additional reporting expectation in the Enhanced Transparency Framework, akin to the mitigation reporting requirements for the NDC's mitigation section[68].

The present section focuses on the 44 countries that mentioned the co-benefits of their mitigation and/or adaptation measures, in relation to the coastal and marine NbS included, in their new or updated NDC - as illustrated in Table 4. From this analysis, 16 countries have mentioned both mitigation and adaptation co-benefits of coastal and marine NbS in their new or updated NDCs (Table 4. I.).

- ***Cape Verde*** indicated that its "mitigation and adaptation commitments do not stand in isolation from each other and that they transcend the boundaries of climate change policymaking[69]." More specifically, Cape Verde notes that its "mitigation commitments directly yield a range of significant adaptation and resilience benefits", and that "many adaptation measures directly yield mitigation co-benefits." It further states that the national "coastal wetlands are important carbon stocks", as they "also maintain and improve the country's carbon sink capabilities".

- ***Bangladesh*** noted that mitigation and adaptation often coexist, and acknowledged mitigation co-benefits of their adaptation actions (i.e. coastal and marine protection and restoration, and coastal zones management) have mitigation co-benefits. It also indicated that its NAP "will identify the co-benefits so that the synergy between adaptation and mitigation can be fully achieved[70]".

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64/IPCC (2014b). Fifth Assessment Report (AR5). p. 14.

65/ Narayan, S. et al. (2016)

66/Seddon N, et al. (2020). Understanding the value and limits of nature-based solutions to climate change and other global challenges. Phil. Trans. R. Soc. B 375: 20190120.

67/ Thiele, T, al. (2020). Blue Infrastructure Finance: A new approach. integrating Nature-based Solutions for coastal resilience.

68/UNDP (2017). A guide to transparency under the UNFCCC and the Paris Agreement. Reporting and review: obligations and opportunities.

69/ UNFCCC NDC Interim Registry. Cape Verde's updated NDC (p17)

70/ UNFCCC NDC Interim Registry. Bangladesh's updated NDC (p19)

Types	Countries (out of 118 submissions)
I. Recognition of mitigation and/or adaptation co-benefits Countries that mentioned co-benefits of their mitigation and/or adaptation measures in relation to their coastal and marine NbS in their new or updated NDCs	45 countries: Albania, Argentina, Bahrain, Bangladesh, Belize, Benin, Cambodia, Cape Verde, Chile, Colombia, Congo, Costa Rica, Cuba, Dominican Republic, Fiji, Gambia, Guinea, Guinea Bissau, Indonesia, Kenya, Lebanon, Liberia, Maldives, Mauritius, Mexico, Myanmar, Namibia, Nauru, Pakistan, Panama, Papua New Guinea, Philippines*, Qatar, Saint Lucia, Samoa, Seychelles, Sierra Leone, Singapore, Solomon Islands, Sri Lanka, Suriname, Tonga, United Arab Emirates, United Kingdom, Vietnam
a. Recognition of both mitigation and adaptation co-benefits Countries that mentioned co-benefits of both their mitigation and adaptation measures in relation to their coastal and marine NbS in their new or updated NDCs	16 countries: Argentina, Belize, Cambodia, Cape Verde, Chile, Colombia, Fiji, Liberia, Namibia, Nauru, Panama, Papua New Guinea, Saint Lucia, Samoa, Sri Lanka, Vietnam
b. Recognition of mitigation co-benefits only Countries that mentioned only mitigation co-benefits of their adaptation measures in relation to their coastal and marine NbS in their new or updated NDCs (e.g., enhancing carbon sinks and reservoirs)	21 countries: Albania, Bahrain, Bangladesh, Congo, Costa Rica, Gambia, Guinea Bissau, Indonesia, Kenya, Lebanon, Mauritius, Mexico, Myanmar, Pakistan, Philippines*, Qatar, Seychelles, Sierra Leone, Suriname, United Arab Emirates, United Kingdom
c. Recognition of adaptation co-benefits only Countries that mentioned only adaptation co-benefits of their mitigation measures in relation to their coastal and marine NbS in their new or updated NDCs (i.e., countries that include one or several co-benefits related to coastal and marine ecosystem-based mitigation strategies)	8 countries: Benin, Cuba, Dominican Republic, Guinea, Maldives, Singapore, Solomon Islands, Tonga
II. Recognition of other socioeconomic benefits to local populations Countries that mentioned socioeconomic benefits to local populations resulting from mitigation and adaptation measures of coastal and marine NbS in their new or updated NDCs (e.g, economic opportunities, food and water security)	32 countries: Albania, Argentina, Bahrain, Bangladesh, Belize, Benin, Cambodia, Cape Verde, Chile, Congo, Cuba, Fiji, Indonesia, Kenya, Lebanon, Maldives, Mauritius, Mexico, Myanmar, Namibia, Pakistan, Panama, Papua New Guinea, Samoa, Senegal*, Seychelles, Sierra Leone, Singapore, Somalia, Sri Lanka, Suriname, United Republic of Tanzania

Countries marked with an asterisk in this analysis refer to countries that submitted a new NDC, i.e. initial NDC submitted between 29 March 2019 and 21 October 2021 (i.e. Brunei Darussalam, Ecuador*, Philippines*, Senegal* and South Sudan*)

Table 4. Co-benefits in coastal and marine NbS as part of new or updated NDCs
[temporary: out of 118 NDCs received to date, 21 October 2021]

(a) Mitigation co-benefits of adaptation measures: Enhancing carbon sinks and reservoirs

Adopting an Ecosystem-based Adaptation (EbA) approach can generate key mitigation co-benefits (i.e., enhancing carbon sink and reservoir capabilities). Out of the 45 countries that mentioned co-benefits, 37 explicitly recognized mitigation co-benefits from adaptation measures in coastal and marine NbS. Boosting carbon sink and reservoir capabilities was the main co-benefit mentioned by Parties in new or updated contributions. Notable observations include:

- ***Argentina*** recognized the mitigation co-benefits potential from the management and extension of protected areas (e.g., MPAs). It aims to sequester additional carbon by developing ecosystem conservation strategies, including coastal and marine ecosystems.

- ***Saint Lucia*** expressed its intention to solve the "die-back of the largest mangrove" in its national territory to "strengthen the country's climate resilience", specifying that this policy measure has expected mitigation co-benefits from such coastal wetlands.

- ***Fiji*** committed to work towards enhancing the ocean as a carbon sink. To that end, Fiji will be allocating 30% of its EEZ as Marine Protected Areas and work towards 100% management of its EEZ by 2030 - thereby complementing its NAP. It considered mitigation co-benefits, "conserving ocean reservoirs as carbon sinks" through supporting coastal ecosystems protection.

- ***Mauritius*** recognized the mitigation co-benefits of its measures to adapt the fisheries sector to the impacts of climate change. It stated that the development of climate-smart fishery and aquaculture based on sustainable and integrated management plans will contribute to the mitigation of GHG emissions during the fishing and production stages and throughout the entire value chain.

(b) Adaptation co-benefits of mitigation measures: Protecting coastal communities and infrastructure

Enhancement of coastal and marine carbon sinks also has critical adaptation co-benefits such as reducing storm surges and coastal flooding from sea level rise, and providing defense against salination resulting from sea water intrusion. Healthy and intact marine and coastal ecosystems represent effective natural buffers against climate change impacts. It is estimated that mangroves reduce risk to more than 15 million people across 59 countries, and prevent more than USD$65 billion in property damages every year, by blocking storm surges and dampening waves. In many places, protecting mangrove forests can therefore be an "extremely economically effective strategy for protecting coasts from tropical storm damages."

As outlined in Table 4, 24 countries acknowledged adaptation co-benefits from mitigation measures (i.e. the protection of coastal communities and infrastructure) in coastal and marine NbS (see I.b.).

- ***Papua New Guinea***'s updated NDC included some mangrove and seagrass planting and management measures, as well as coral reef rehabilitation plans, in order to benefit from other services that these natural habitats provide to communities and ecosystems. In particular, these actions will support Papua New Guinea's effort in addressing the issue of coral degradation, coastal flooding and sea level rise. Concretely, Papua New Guinea will establish MPAs, including Locally Managed Marine Areas (LMMA).

- In relation to its strategy to manage water and minimise floods, Singapore stated that the country will conserve and restore its mangrove forest, as "mangroves help to dissipate waves and trap sediment, potentially serving as a flexible form of coastal defense while reducing erosion[75]."

(c) Providing other socioeconomic benefits to local populations

Co-benefits from coastal and marine NbS are multiple and diverse, including cultural, aesthetic and socioeconomic values[76], and are therefore not restricted to mitigation and adaptation advantages. Coastal and marine NbS provide a wide range of other socioeconomic benefits - although quantifying the positive externalities generated can be challenging[77]. NbS can be highly beneficial to local biodiversity and ecosystems by enhancing fisheries productivity, improving water quality, and acting as nurseries for species. They are also profitable and welfare-enhancing for humans, as coastal and marine NbS support livelihoods, health, well-being, food systems, and the creation of jobs among others. As a result, coastal and marine NbS can greatly contribute to achieving Sustainable Development Goals

71/Scarano, F., (2017). Ecosystem-based adaptation to climate change: concept, scalability and a role for conservation science. Perspectives in Ecology and Conservation, Volume 15, Issue 2. Pages 65-73.

72/ UNFCCC NDC Interim Registry. Saint Lucia's updated NDC (p15)

73/ Beck, M., & Menendez, P. (2020). Protecting mangroves can prevent billions of dollars in global flooding damage every year.

74/ Ibid

75/ UNFCCC NDC Interim Registry. Singapore's updated NDC (p22)

76/Chausson, A., et al. (2020). Mapping the effectiveness of nature-based solutions for climate change adaptation. Global Change Biology. Volume 26, Issue 11.

77/ DESA. (2021). System of Environmental Economic Accounting (SEEA).

(SDGs), especially SDG 1 - No Poverty, SDG 2 - Zero Hunger, SDG 3 - Good Health, SDG 6 - Clean Water, SDG 8 - Decent Work, SDG 13 – Climate Change, and of course SDG 14 - Life below Water.

As outlined in Table 4, 32 new or updated NDCs refer to co-benefits related to other socioeconomic benefits provided to local populations (Section II). Notable observations from this include:

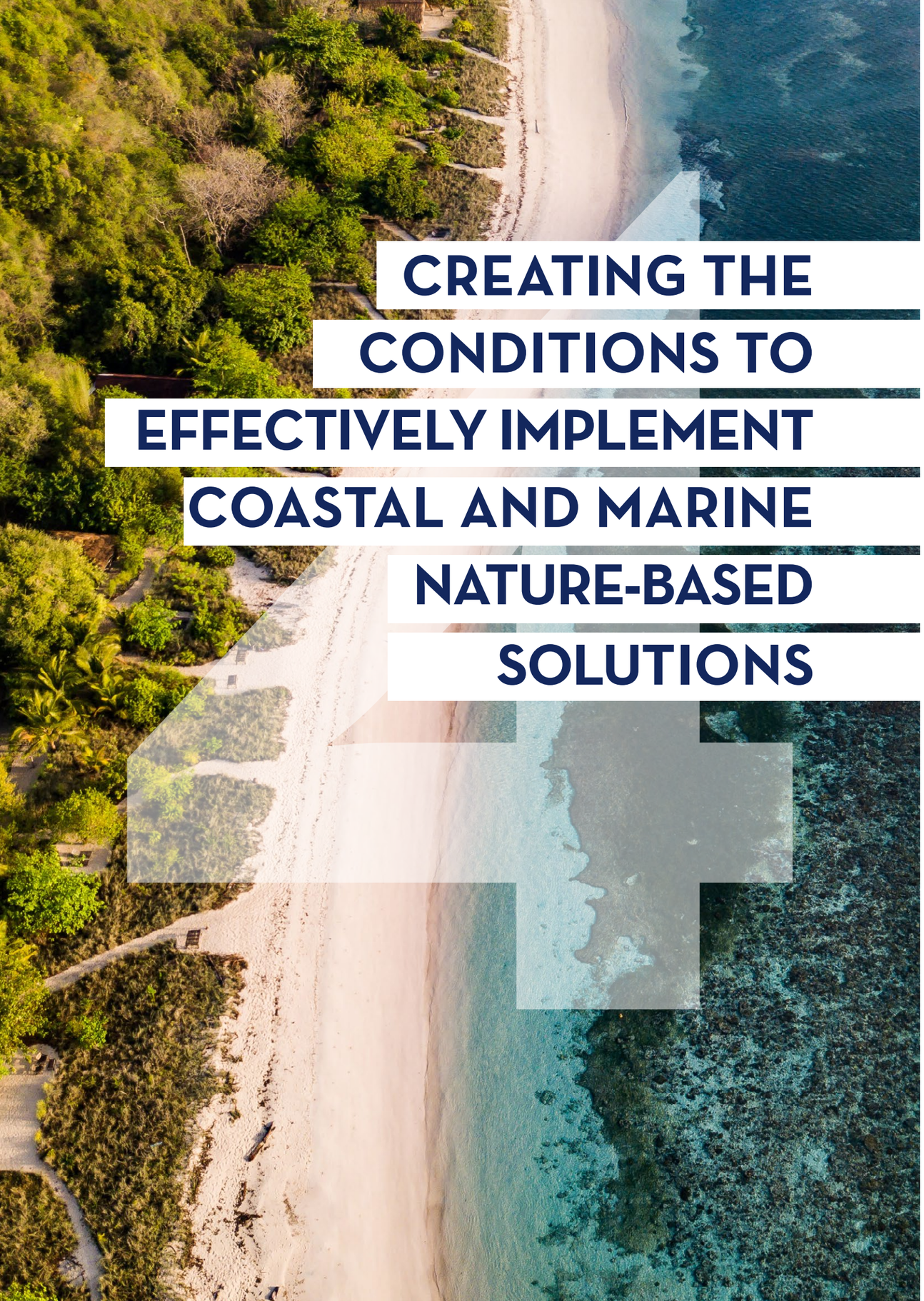
- ***The Maldives*** planned for mangrove conservation and restoration actions in its updated NDC, since it has acknowledged the numerous services that mangroves provide "to people and nature including livelihood of communities and its role as natural buffers or barriers for flood mitigation[78]."

- ***Cuba's*** updated NDC has integrated some preservation measures for mangroves and coral reefs, in order to maintain their role in enhancing soil and water quality, and the protection of beaches for recreational purposes, such as tourism.

- ***Pakistan*** highlighted socio-economic benefits resulting from its mitigation efforts, in relation to its REDD+ programme. It stated that "protecting critical mangrove forests in Sindh and Balochistan, and raising new plantations of mangroves over an area of 16,552 ha" will have benefits "for climate mitigation, biodiversity conservation, and strengthening local livelihoods of fisheries and eco-tourism[79]". Pakistan also highlighted opportunities of "non-market-based approaches like Blue bonds".

78/ UNFCCC NDC Interim Registry. Maldives' updated NDC (p14)

79/ UNFCCC NDC Interim Registry. Pakistan's updated NDC (p40-71)



CREATING THE CONDITIONS TO EFFECTIVELY IMPLEMENT COASTAL AND MARINE NATURE-BASED SOLUTIONS

Multiple opportunities exist to effectively boost climate action by raising ambition and implementing robust NDCs. For example, although it is not compulsory, considering other relevant international or UN governance frameworks in their NDCs can be a useful lever for countries to enhance climate action and build synergies to ensure coherence across national strategies[80]. The 2030 Agenda for Sustainable Development and SDG 14 "Life Below Water" were acknowledged in 22 submissions that included coastal and marine NbS. Additionally, 12 countries made a reference to other ocean-related frameworks and conventions, including the Convention on Biological Diversity or the Sendai Framework on Disaster Risk Reduction. It is worth pointing out that the UN Decade of Ocean Science for Sustainable Development (2021-2030), for instance, was not included in any new or updated NDCs, and the UN Decade of Ecosystem Restoration (2021-2030) was not mentioned in the context of coastal and marine NbS. When included, governance frameworks were mostly acknowledged outside the scope of coastal and marine NbS.

Meanwhile, three specific dimensions were identified as essential to implement ambitious and robust strategies: feasibility, societal engagement and transparency.

First, feasibility is key to move forward and effectively implement any aspect of the NDC, including for coastal and marine NbS. In that regard, 46 Parties expressed their intention to further create enabling conditions (e.g., research and development, technology transfer, capacity-building and finance mobilization) to translate their NDCs into concrete action regarding coastal and marine NbS (Table 5.I).

Second, in the process of enhancing capacity and inclusive participation, countries also noted the need and importance to engage society in the decision-making process of climate strategies and priorities, to create ownership and durability of outcomes. In addition to country ownership and inclusiveness, the vulnerability and role played by specific groups (e.g., Afro-descendants, youth, women, Indigenous communities) in implementing climate policies was also mentioned, including for coastal and marine NbS. Environmental rights (i.e., access to the unspoiled natural resources that enable survival) were also mentioned. In that regard, 31 countries explicitly referred to either/or the importance of knowledge from Indigenous People and Local Communities (IPLC) and horizontal governance approaches in relation to coastal and marine NbS (Table 5.II).

Third, the value of clarity, transparency, understanding and enhancement of key targets and measures was also outlined. 38 countries included a mention to either/or specific tracking or transparency measures and specific quantitative targets and indicators in relation to coastal and marine NbS (Table 5.III).

Countries are required to provide information on how mitigation (and co-mitigation) targets were developed and quantified through agreed reporting requirements under the Paris Agreement on the Information to facilitate clarity, transparency, and understanding (ICTU). The ICTU will promote comparability and common understanding of progress towards the goals of the Paris Agreement, and is required no later than the 2nd NDC. Many countries demonstrated their political commitment to addressing climate change and data comprehensiveness by including ICTU information in their updated first NDCs.

Additionally, countries can support each other in raising ambition and implementing robust NDCs. In that regard, some developed countries committed to support developing countries as part of their NDCs. In line with this, developing countries can present their capacity needs assessments, or indicate their intention to do so as part of conditional commitments[82, 83]. Some developing countries have therefore identified their resource needs for increasing their capacity on coastal and marine NbS. For instance, Panama

80/ Picourt, L., et al. (2021), Swimming the talk: How to strengthen collaboration and synergies between the Climate and Biodiversity Conventions?, Policy brief, May 2021, OCEAN & CLIMATE PLATFORM, p.1-14.

81/ Other ocean-related frameworks and processes referenced included in the analysis: Sendai Framework on Disaster Risk Reduction, Convention on Biological Diversity (CBD) and Post-2020 Global Biodiversity Framework, Food and Agriculture Organization (FAO), Ramsar Convention

82/ Liverman, D., Mills-Novoa, M. (2019). Nationally Determined Contributions: Material climate commitments and discursive positioning in the NDCs.

83/ Pickering, J., Pauw, P., Bhasin, S., Castro, P., (2019). Conditions (and risks) attached: unpacking developing countries' conditional contributions to the Paris Agreement.

Types	Countries (out of 118 submissions)
A.Feasibility: strengthening support for action Countries that explicitly committed to create enabling conditions for coastal and marine NbS in their new or updated NDCs	17 countries: Angola, Argentina, Australia, Cambodia, Cape Verde, Chile, Colombia, Costa Rica, Dominican Republic, Fiji, Honduras, Maldives, Panama, Papua New Guinea, Senegal*, Singapore, Vietnam
a. Research & development Countries that explicitly committed to increase research and development (R&D) for coastal and marine NbS in their new or updated NDCs	13 countries: Angola, Argentina, Cape Verde, Chile, Costa Rica, Dominican Republic, Honduras, Maldives, Panama, Papua New Guinea, Senegal*, Singapore, Vietnam
b. Capacity-building Countries that explicitly committed to increase capacity-building for coastal and marine NbS in their new or updated NDCs	9 countries: Argentina, Cape Verde, Chile, Colombia, Dominican Republic, Fiji, Maldives, Panama, Papua New Guinea
c. Resource mobilization Countries that explicitly committed to increase the financial resources allocated to coastal and marine NbS in their new or updated NDCs	11 countries: Argentina, Australia, Cape Verde, Cambodia, Chile, Colombia, Costa Rica, Dominican Republic, Panama, Papua New Guinea, Vietnam
B. Societal engagement: inclusiveness and participation Countries that explicitly referred to the importance of knowledge from Indigenous People and Local Communities (IPLC) and/or horizontal governance approaches in relation to coastal and marine NbS in their new or updated NDCs	16 countries: Argentina, Cambodia, Chile, Colombia, Costa Rica, Fiji, Honduras, Maldives, Nicaragua, Panama, Papua New Guinea, Philippines*, Saint Lucia, Senegal*, United States, Vietnam
a. Recognition of IPLC knowledge Countries that referred to the importance of knowledge from Indigenous People and Local Communities (IPLC) in relation to coastal and marine NbS in their new or updated NDCs	9 countries: Cambodia, Chile, Colombia, Costa Rica, Fiji, Honduras, Nicaragua, Panama, Papua New Guinea
b. Local level governance Countries that referred to the importance of a horizontal governance approach (i.e. wide participation of the society in policy-making) in relation to coastal and marine NbS in their new or updated NDCs	15 countries: Argentina, Cambodia, Chile, Colombia, Fiji, Honduras, Maldives, Nicaragua, Panama, Papua New Guinea, Philippines*, Saint Lucia, Senegal*, United States, Vietnam
C. Reporting, monitoring and transparency Countries that included a mention to specific tracking or transparency measures and/or specific quantitative targets and indicators in relation to coastal and marine NbS in their new or updated NDCs	20 countries: Angola, Australia, Cape Verde, Cambodia, Chile, Colombia, Costa Rica, Dominican Republic, Fiji, Honduras, Kenya, Lebanon, Maldives, Nicaragua, Panama, Papua New Guinea, Senegal*, Tonga, United Arab Emirates, Vietnam
a. Tracking process and transparency framework Countries that included a mention to specific tracking or transparency measures in their coastal and marine NbS in their new or updated NDCs	15 countries: Australia, Cape Verde, Cambodia, Chile, Colombia, Costa Rica, Dominican Republic, Fji, Honduras, Kenya, Maldives, Panama, Papua New Guinea, United Arab Emirates, Vietnam
b. Quantitative targets and indicators Countries that included specific quantitative targets and indicators in relation to their coastal and marine NbS in their new or updated NDCs	14 countries: Angola, Cape Verde, Cambodia, Costa Rica, Fiji, Lebanon, Maldives, Nicaragua, Panama, Papua New Guinea, Senegal*, Tonga, United Arab Emirates, Vietnam

Countries marked with an asterisk in this analysis refer to countries that submitted a new NDC (i.e., Brunei Darussalam, Ecuador*, Philippines* and Senegal*)

Table 5. Creating the conditions to effectively implement coastal and marine NbS
[temporary: out of 118 NDCs received to date, 21 October 2021]

indicated in its updated NDC that 8% of its total needs for capacity-building should be allocated to coastal and marine policies and measures (e.g., coastal management, protected areas, blue economy programs).

While all new or updated NDCs outline countries' plans to raise ambition and boost climate action, a review of these submissions does not give a clear indication of how it applies to coastal and marine NbS, unless a country clearly specifies it. Only those countries specifically referring to action measures in their coastal and marine NbS were considered in the discussion below.

(a) Feasibility: strengthening support for action

RESEARCH & DEVELOPMENT:

Among the 75 countries that recognised the pressures weighing on the ocean and the threats coming from ocean changes due to climate impacts, 62 countries featuring one or more coastal and marine NbS explicitly highlighted the vulnerability of coastal and marine ecosystems. It was specified in the updated NDCs that implementing coastal and marine NbS required science-based policy-making, and therefore robust research, including IPCC reports and assessments. In that regard, only Fiji referred to the IPCC SROCC. It was also noted in the new or updated NDCs that policies and measures were based on the best available science, and declared that updates would be made considering new scientific knowledge. 40 countries specifically included an R&D component related to coastal and marine NbS in their updated NDC.

- In the context of national sea level rise protection plans (accompanying information on adaptation efforts), ***Singapore*** stated that it will continue researching coastal protection approaches. It clarified that the Centre for Climate Research Singapore will develop a National Sea Level Rise Programme to create better projections and improve understanding of long-term sea level rise.

- ***The United Arab Emirates*** plans to undertake "further field research to determine mangrove soil carbon sequestration rates using radiometric dating techniques[84]" to further inform coastal management.

- After noting the impacts of climate change on fisheries and fishermen (e.g., changing fish stock distribution), the ***Maldives*** committed to facilitate fisheries research and development initiatives to further study fish stock migration patterns and to adopt more efficient technologies.

- ***Belize*** expressed its intention to complete an in-situ assessment of the below ground carbon stock of mangroves by 2022, leading to the application of relevant IPCC methodologies to assess the feasibility of including seagrass in a wetlands component, alongside a comprehensive assessment of mangrove-based carbon stock, in the national GHG Inventory by 2025. Belize also undertook to conduct vulnerability assessments of the national coastal area to identify threats and trends, as well as a study of the impacts of ocean acidification on its coastal habitats and marine resources by 2025. Lastly, Belize will establish a national monitoring program for ocean acidification, and assess coral reef restoration potential.

- ***Sri Lanka*** will conduct fisheries and aquatic resources research to build resilience to climate change. Accordingly, it will identify adaptation measures in fisheries for ocean acidification relations impacts. Similarly, it will encourage research and studies on the most vulnerable species and habitats.

CAPACITY-BUILDING:

Countries expressed their intention to fulfill their goals by developing and strengthening the skills, abilities, processes and resources mobilized. Several countries, for example, specified how commitments will be translated into national policies and legal frameworks. In particular, 27 countries undertook capacity-building with regard to coastal and marine NbS, including the role of local communities, especially for coastal management.

- ***Colombia*** committed to strengthening the institutional capacity of local environmental authorities to facilitate the implantation of ecosystem-based

84/ UNFCCC NDC Interim Registry. United Arab Emirates' Second NDC (p12)

adaptation in the Unidades Ambientales Costeras (Coastal Environment Units). It also aims to develop local capacities through co-management, co-ownership and behavior change approaches for agriculture, as well as in blue carbon and ecosystem-based adaptation with legal frameworks related to coastal zones.

- ***Cape Verde*** expressed its intention from 2023 onwards to roll out specific training programmes and to create job opportunities for individuals and entrepreneurs interested in several fields in nature-based solutions, marine protection and technology, and sustainable aquaculture.

- ***Sierra Leone*** undertook to develop local institutional capacity to support coastal resources management, as well as to train relevant coastal institutions on climate change adaptation and mangrove conservation. This includes operationalizing a Coastal Chiefdoms Natural Resources Management Network.

RESOURCE MOBILIZATION:

Coastal and marine NbS require increased mobilization of finance to be implemented and scaled-up, as there is a significant ambition gap between actions needed and available financing for coastal and marine NbS. Innovative financial mechanisms and tools can be developed and implemented to increase funds for coastal and marine NbS[85] (e.g., blue bonds, carbon market) and existing financial products and tools can be tailored so they can be used when implementing NbS. Conversely, they can also be used to mobilize financial resources from public and private sources, as well as public-private partnerships. In other words, coastal and marine NbS provide key opportunities for finance mobilization, and therefore require a specific resource mobilization strategy. Yet, only 22 countries expressed their intention to increase funding for coastal and marine NbS.

- ***Costa Rica*** committed to develop innovative finance mechanisms for marine conservation and, more specifically, to protect blue carbon ecosystems. Costa Rica also plans to explore the potential of public-private investments to further conserve and restore mangroves, supporting the implementation of blue carbon strategies (e.g., expanding terrestrial models for the payment of ecosystem services).

- ***Antigua and Barbuda*** undertook to build a national climate resilient insurance scheme to increase protection of fishers. It will include financing mechanisms to catalyse resilient livelihood activities that are dependent on healthy ecosystems (including in and around protected areas) and the services they provide to small-scale fisheries. It will also de-risk climate-resilient development for the fisheries.

- In line with its blue economy strategy, ***Seychelles*** will support and enable ocean action by technology, financing and capacity building. It will identify financing mechanisms to support its NDC implementation, blue carbon credits and bonds, and other innovative conservation financing mechanisms.

(b) Societal engagement: inclusiveness and participation

Traditional practices and local knowledge from IPLCs have long been overlooked by political, economic and technological innovation and advances. However, Parties are increasingly recognizing the importance of these ancestral techniques and specific local knowledge for climate ambition and for sustaining the communities that hold this knowledge. Recognising and unlocking their potential for climate action plans can provide multiple opportunities. Some coastal and marine NbS included in the new or updated NDCs already reflect or integrate traditional and Indigenous knowledge and practices, especially in relation to coastal management and conservation.

Among countries that referred to specific knowledge or practices of IPLCs, the focus was largely on involvement in agriculture and forestry policies. For example, ***Colombia*** stated in its NDC that Indigenous peoples and Afro-Colombians are key actors to achieve the country's objectives to reduce deforestation. Coastal communities were sometimes acknowledged, but often in terms of vulnerability and threats. 16 countries recognized the importance of IPLC knowledge and practices in the context of coastal and marine NbS.

85/ Sumaila, UR et al. (2021). Financing a sustainable ocean economy. Nature Comms 2021.

- ***Costa Rica*** expressed its intention to effectively manage and monitor coastal wetlands, advancing strategies for the sustainable use and management of vital mangrove areas. In this context, Costa Rica indicated that the sustainable use and management of mangroves will be implemented by communities whose livelihoods depend on them. It explicitly referred to Afro-Costa Rican communities and indigenous people, by acknowledging their vulnerability and valuing their contribution in the implementation of coastal and marine NbS.

- ***Panama*** recognized the role of women in developing sustainable fishing practices in its updated NDC and related National Action Plan for Sustainable Fisheries.

- ***Indonesia*** committed to enhancing conservation education, including "engaging adat communities for indigenous knowledge and local wisdom[86]".

Restating traditional practices and local knowledge involves moving to a more horizontal governance approach, bringing in not only IPLCs but also other marginalized and disadvantaged groups that are disproportionately exposed to ocean risks[87, 88, 89]. Bottom-up governance is a key feature of effective coastal management and planning, as it informs policies and enhances participation in their implementation. To date, 29 countries mentioned the need for bottom-up governance in the implementation of their coastal and marine NbS (e.g. community-based restoration and/or conservation measures for coastal and marine ecosystems).

- ***The Maldives*** mentioned the importance of community resource-management and considering the livelihoods of local resource-users before establishing conservation programs among strategies to promote the conservation of marine and coastal biodiversity.

- ***The Solomon Islands*** undertook to implement community-based vulnerability mapping, adaptation planning and management approaches to community-based adaptation projects. These projects will be designed and implemented on a whole of island basis.

- ***Samoa*** identified consent from various stakeholders (including coastal villages) as one of the keys to the success of mangrove restoration and planting. They will help to determine the areas on which mangroves will be planted and how mangroves will be planted and monitored.

(c) Reporting, monitoring and transparency

"Robustness" of NDCs is evaluated based on the clarity and transparency of information communicated in relation to tracing mechanisms[90]. Countries are encouraged to strengthen their reporting and monitoring frameworks, as well as to include specific and measurable targets in their NDCs (e.g., quantity of carbon sequestered by coastal ecosystems, hectares of mangrove forests planted, percentage of EEZ included in MPAs).

- ***Tonga*** committed to the target of Special Management Areas (SMAs) to 30% of Tonga's EEZ to maintain the existing fish stocks.

- ***Angola*** mentioned different targets that can be used for coastal management in the context of sea level rise, including the percentage of coastline under marine protection.

While the NDCs are flexible in nature, the reporting requirements to the Paris Agreement represent some of the legally binding elements. For example, countries are required to submit their ICTU in the 2nd NDC, information on NDC progress in the first Biennial Transparency Report (BTR) for developed country Parties by the end of 2024, as well as continued reporting on carbon sinks, sources, and reservoirs in the national greenhouse gas inventory reporting,

86/ UNFCCC NDC Interim Registry. Indonesia's updated NDC (p32)

87/ Tokunaga, K., Blandon, A., Blasiak, R., Jouffray, J.B., Wabnitz, C., Norström, A. (2021). Report. Ocean Risks in SIDS and LDCS. ORRAA. Stockholm Resilience Center. Global Resilience Partnership. p1-32.

88/ Wabnitz, C., Blasiak, R., Harper, S., Jouffray, J.B., Tokunaga, K., Norström, A. (2021). Report. Gender Dimensions of Ocean Risk and Resilience in SIDS and Coastal LDCS. ORRAA. Stockholm Resilience Center. Global Resilience Partnership. p1-44.

89/Jouffray, J.B., Blasiak, R., Nyström M., Österblom, H., Tokunaga, K., Wabnitz, C., Norström, A. (2021). Report. Blue Acceleration: An Ocean of Risks and Opportunities. ORRAA. Stockholm Resilience Center. Global Resilience Partnership. p1-42.

90/ UNDP (2020). Climate Promise Quality Assurance Checklist. For Revising Nationally Determined Contributions

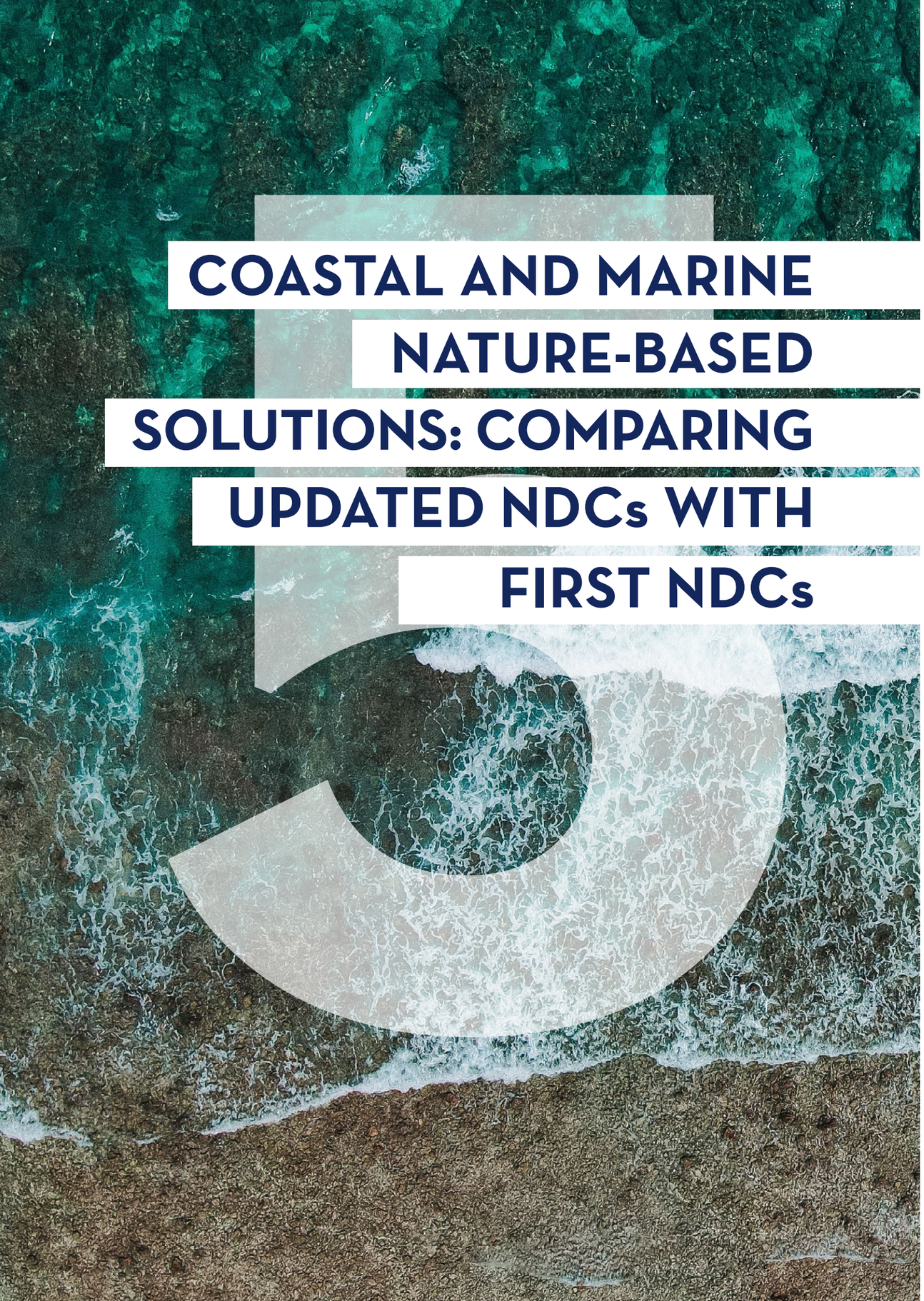
and progress made in implementing and achieving NDCs[91]. 17 countries have chosen to strengthen reporting and monitoring capacities in relation to coastal and marine NbS (e.g., commitments to further observe and record activities related to coastal and marine ecosystems, and/or to further integrate the gathered information in policy-making). Additionally, 33 countries used specific quantitative targets and indicators (e.g., hectares of mangrove forests under protection).

- ***Chile*** has expressed its intention for three MPAs to have standardized metrics to evaluate mitigation and adaptation capacities by 2025. Chile also committed to develop and implement management or administration plans for 100% of the MPAs created up to 2020, through monitoring, control, community links and threat control programs by 2030.

- While adopting national policies to develop MPAs, ***Cape Verde*** committed to implement monitoring mechanisms. It specifically aims to "incorporate a mechanism for monitoring and reviewing marine protected areas management plans involving local populations[92]."

91/ The Nature Conservancy (2020b). Practical Implications of the Katowice Climate Package for Developing Country Parties and Land Sector Reporting.

92/ UNFCCC NDC Interim Registry. Cape Verde's updated NDC (p39)



COASTAL AND MARINE NATURE-BASED SOLUTIONS: COMPARING UPDATED NDCs WITH FIRST NDCs

The Paris Agreement requests that Parties' updated NDCs reflect increased ambition compared to the previous submissions (Article 4.3). The following section looks at how countries have included coastal and marine NbS in their updated NDCs, compared to the (I)NDCs submitted ahead of and during COP21, in 2015 (Table 6). This comparative analysis covers 112 NDCs and the EU-27, hereafter 113 countries, that have submitted both their first and updated NDCs (i.e., in total 139 countries)[93].

For the purpose of this analysis, a country's level of ambition is solely based on the inclusion of additional coastal and marine NbS in updated NDCs compared to (I)NDCs or first NDCs, and is not based on quantitative CO_2 reduction targets, as follows:

- ***Increased level of ambition*** (↑): coastal and marine NbS included as mitigation and/or adaptation measures in updated NDCs, and not included in INDC or first NDC.

- ***Renewed level of ambition*** (+): coastal and marine NbS included as mitigation and/or adaptation measures in both updated NDCs and first NDCs/INDCs.

- ***Decreased level of ambition*** (↓): coastal and marine NbS not included as mitigation and/or adaptation measures in updated NDCs, but included in INDC or first NDC. In other words, if countries included coastal and marine NbS as part of their measures in their first NDC, but did not refer to their previous commitments in that regard or added complementary coastal and marine NbS in their updated NDCs, their ambition has been considered as "decreased".

- ***Unchanged level of ambition*** (-): coastal and marine NbS not included as mitigation and/or adaptation measures in neither the first NDCs nor the updated NDCs. Almost half of the countries that did not include coastal and marine NbS in their NDCs have room for improvement, with opportunities and untapped potential for future ambition. However, the other half are landlocked countries and do not have the possibility to implement coastal and marine NbS in their EEZ.

There is an overall increase in countries' level of ambition with regards to coastal and marine NbS for climate mitigation and adaptation between their first and updated NDCs. This is evidenced by a larger number of countries that recognise the pressures weighing on the ocean as well as threats coming from ocean changes in their updated NDCs. It has also resulted in new measures to implement coastal and marine NbS for mitigation and/or adaptation purposes in updated NDCs. Lastly, it is worth noting in that regard that countries also added specific and quantifiable targets to support the implementation of these measures in their updated NDCs.

Disclaimer

For the sake of consistency and comparability, first and updated NDCs were analysed following a common methodology (i.e. identical word search). It is also worth noting that while some countries clearly built their updated NDC on their first one, e.g. referencing their previous commitments and mentioning related advances, others chose not to refer to previous targets and/or measures in updated NDCs.

93/ Countries that submitted their first NDCs between 29 March 2021 and 21 October 2021 (i.e. Brunei Darussalam*, Ecuador*, Philippines*, Senegal*, South Sudan*) and countries that did not submit their updated NDC as of 21 October 2021 were not considered in this comparative analysis.

INCREASED RECOGNITION OF THE PRESSURES WEIGHING ON THE OCEAN AND/OR THREATS COMING FROM OCEAN CHANGES

In 2015, 65 out of 113 countries acknowledged the multiple pressures weighing on the ocean (e.g. ocean acidification, coral bleaching, ocean warming) and/or threats coming from ocean changes caused by climate impacts (e.g. sea-level rise, coastal erosion, marine species distribution changes) in their first NDCs. Among these 65 countries, 46 acted on their observations and included coastal and marine NbS. In 2020/2021, 75 countries recognised these ocean-related pressures and threats in their updated NDCs and, among these, 63 included coastal and marine NbS.

Compared to the first NDC submissions, 15 out of 113 countries have added references to ocean vulnerabilities and/or ocean threats in their updated NDC, while 4 countries have no longer mentioned such risks. In addition, 61 countries have highlighted ocean vulnerabilities and/or threats in both their first and updated submissions, while 33 countries have not mentioned the ocean in either of the two submissions. Lastly, it is also worth noting that 16 out of the 19 countries that mentioned ocean vulnerabilities but omitted coastal and marine NbS in their first NDCs have now included coastal and marine NbS in their updated NDCs.

INCREASED INCLUSION OF COASTAL AND MARINE NBS IN UPDATED NDCs

In first NDCs, 51 out of 113 included coastal and marine NbS. Among these, 12 countries included coastal and marine NbS for mitigation purposes, 50 included coastal and marine NbS for adaptation purposes, and 11 included both. In comparison, 67 out of 113 countries included coastal and marine NbS. Among these, 44 countries included coastal and marine NbS for mitigation purposes, 66 for adaptation purposes, and 43 included both in updated NDCs (Fig. 8). Figures show an increase in the level of ambition, as illustrated in Table 6 below.

Fig. 8: Coastal and marine NbS for mitigation and/or adaptation in their first and updated NDCs
[temporary: out of 113 NDCs received to date, 21 October 2021]
Source: : Ocean & Climate Platform

Tables 6 and 7 outline countries' increased, renewed, decreased or unchanged levels of ambition regarding the inclusion of coastal and marine NbS as part of their mitigation and/or adaptation measures between first and updated NDCs[94].

› Half of the countries have increased their ambition compared to their first submission, since 58 countries out of 113 have included new coastal and marine NbS for either mitigation or adaptation in their updated NDC. Among these, 25 countries have added coastal and marine NbS for both.

› Only a small minority of countries have renewed their ambition, since only 5 included coastal and marine NbS for mitigation and/or adaptation in both their first and updated NDCs.

› Few countries have decreased their ambition, since only 11 countries have no longer included coastal and marine NbS for either mitigation or adaptation when they did in their first NDCs.

› Lastly, 39 countries have unchanged their ambition, having no specific measure related to coastal and marine NbS in their first and updated NDCs. Among them, 24 are landlocked countries.

	Level of ambition			
Types	**Increased (↑)**	**Renewed (+)**	**Unchanged (-)**	**Decreased (↓)**
Coastal and marine Nature-based for mitigation and/or adaptation	58 countries: Albania, Angola, Antigua and Barbuda, Argentina, Bahrain, Bangladesh, Barbados, Belize, Benin, Cambodia, Canada, Cape Verde, Chile, Colombia, Congo, Costa Rica, Cuba, Dominican Republic, Fiji, Guinea-Bissau Honduras, Iceland, Indonesia, Jordan, Kenya, Kuwait, Lebanon, Liberia, Malaysia, Maldives, Mauritania, Mauritius, Myanmar, Namibia, Nauru, Nigeria, Pakistan, Panama, Papua New Guinea, Qatar, Saint Lucia, Samoa, Sao Tome and Principe, Singapore, Seychelles, Sierra Leone, Solomon Islands, Somalia, South Africa, Sri Lanka, Sudan, Suriname, Togo, Tonga, Tunisia, United Arab Emirates, United Kingdom, United States of America	5 countries: Gambia, Guinea, Marshall Islands, Mexico, Vietnam	39 countries: Andorra, Armenia, Australia, Belarus, Bhutan, Bosnia-Herzegovina, Brazil, Burkina Faso, Burundi, Chad, Ethiopia, Eswatini, European Union, Israel, Jamaica, Japan, Kyrgyzstan, Lao, Malawi, Mali, Monaco, Mongolia, Montenegro, Nepal, New Zealand, Norway, Oman, Paraguay, Republic of Korea, Republic of Macedonia, Republic of Moldova, Rwanda, State of Palestine, Switzerland, Tajikistan, Ukraine, Uganda, Zambia, Zimbabwe	11 countries: Cameroon, DPRK, France (non-EU), Georgia, Grenada, Morocco, Nicaragua, Peru, Thailand, United Republic of Tanzania, Vanuatu

Table 6. Countries' level of ambition on the overall inclusion of coastal and marine NbS in first and updated NDCs as part of mitigation and/or adaptation measures
[temporary: out of 113 NDCs received to date, 21 October 2021]

94/ Authors drew a specific table to aggregate the data and classify countries under the four categories of Table 6 (see above). Points were either allocated or deducted to countries, depending on whether they included or removed coastal and marine NbS for mitigation and/or adaptation.

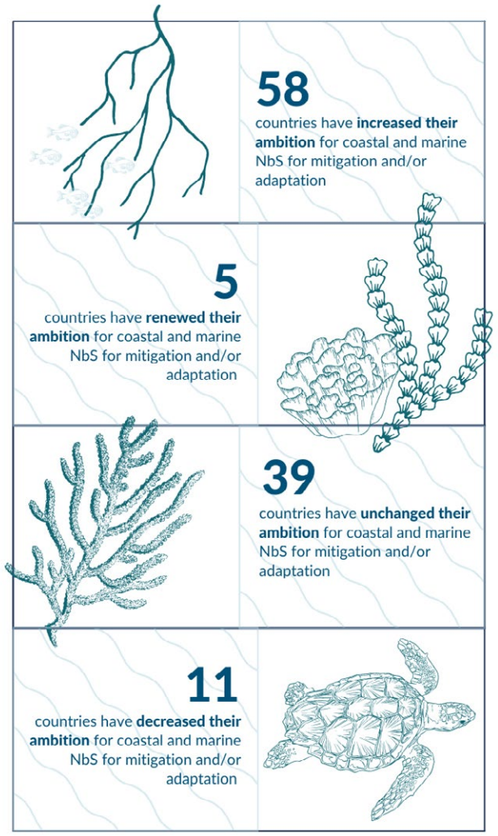


Fig. 9: Countries' level of ambition on the overall inclusion of coastal and marine NbS between their first and updated NDCs
[temporary: out of 113 NDCs received to date, 21 October 2021]
Source: : Ocean & Climate Platform

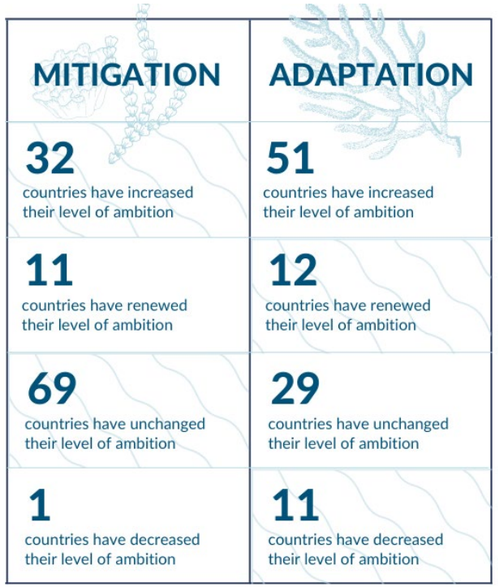
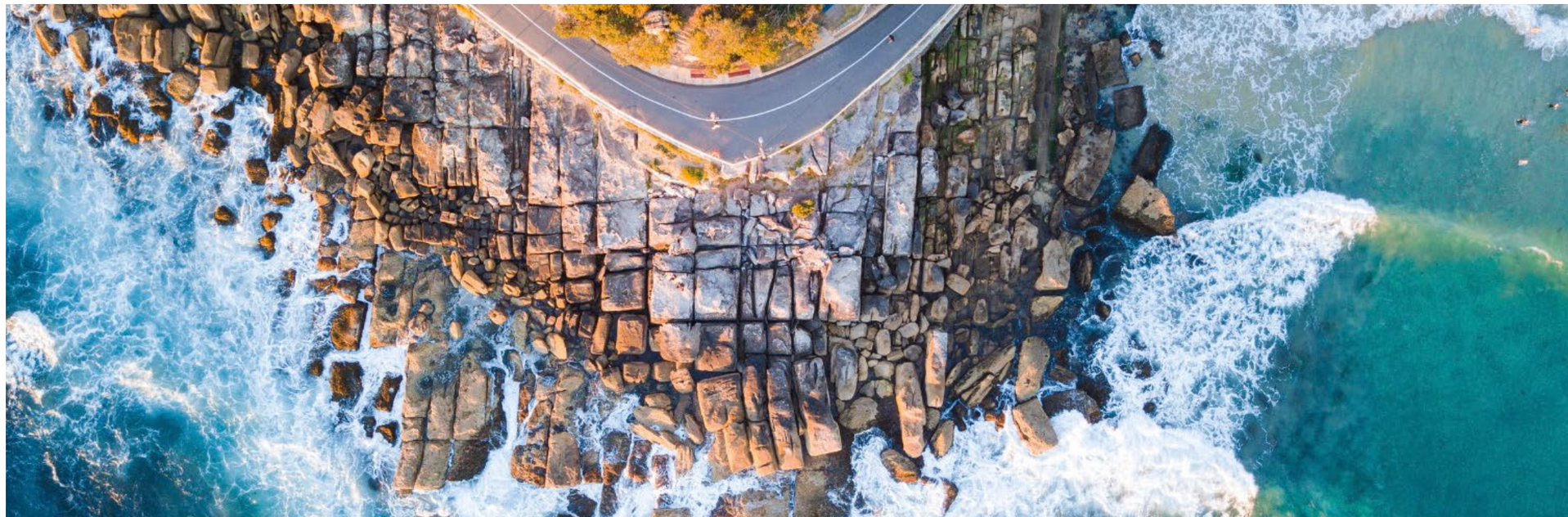


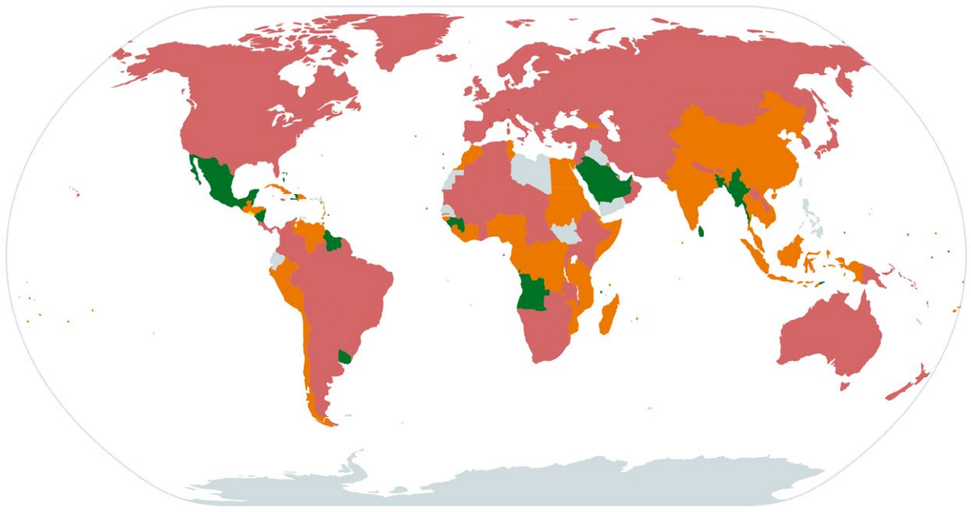
Fig. 10: Countries' level of ambition regarding coastal and marine NbS for mitigation and/or adaptation between their first and updated NDCs
[temporary: out of 113 NDCs received to date, 21 October 2021]
Source: : Ocean & Climate Platform

	Level of ambition			
Types	**Increased (↑)**	**Renewed (+)**	**Unchanged (-)**	**Decreased (↓)**
(1) Protecting and restoring marine and coastal ecosystems for mitigation purposes	32 countries: Argentina, Barbados, Benin, Cambodia, Cape Verde, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Fiji, Guinea Bissau, Honduras, Iceland, Indonesia, Kenya, Kuwait, Liberia, Maldives, Mauritius, Namibia, Nigeria, Pakistan, Panama, Papua New Guinea, Saint Lucia, Seychelles, Sierra Leone, Singapore, Sudan, Tonga, United States of America	11 countries: Angola, Antigua and Barbuda, Bahrain, Bangladesh, Belize, Guinea, Mexico, Myanmar, Nicaragua, Sri Lanka, Suriname	69 countries: Albania, Andorra, Armenia, Australia, Belarus, Bhutan, Bosnia-Herzegovina, Brazil, Burkina Faso, Burundi, Cameroon, Canada, Chad, Congo, DPRK, Eswatini, Ethiopia, European Union, France (non-EU), Gambia, Georgia, Grenada, Israel, Jamaica, Japan, Jordan, Kyrgyzstan, Lao, Lebanon, Malawi, Mali, Malaysia, Marshall Islands, Mauritania, Monaco, Mongolia, Montenegro, Morocco, Nauru, Nepal, New Zealand, Norway, Oman, Paraguay, Peru, Qatar, Republic of Korea, Republic of Macedonia, Republic of Moldova, Rwanda, Samoa, Sao Tome and Principe, Solomon Islands, Somalia, South Africa, State of Palestine, Switzerland, Tajikistan, Thailand, Togo, Tunisia, Uganda, Ukraine, United Kingdom, United Republic of Tanzania, Vanuatu, Vietnam, Zambia, Zimbabwe	1 country: United Arab Emirates
(2) Coastal and marine Nature-based solutions for adaptation	51 countries: Albania, Angola, Antigua and Barbuda, Argentina, Bahrain, Bangladesh, Barbados, Belize, Canada, Cape Verde, Chile, Colombia, Congo, Costa Rica, Dominican Republic, Fiji, Honduras, Iceland, Indonesia, Jordan, Kenya, Kuwait, Lebanon, Liberia, Malaysia, Maldives, Mauritania, Myanmar, Namibia, Nauru, Nigeria, Pakistan, Panama, Papua New Guinea, Qatar, Samoa, Sao Tome and Principe, Seychelles, Sierra Leone, Solomon Islands, Somalia, South Africa, Sri Lanka, Sudan, Suriname, Togo, Tonga, Tunisia, United Arab Emirates, United Kingdom, United States of America	12 countries: Benin, Cambodia, Cuba, Gambia, Guinea, Guinea Bissau, Marshall Islands, Mauritius, Mexico, Saint Lucia, Singapore, Vietnam	29 countries: Andorra, Armenia, Australia, Belarus, Bhutan, Bosnia-Herzegovina, Brazil, Burkina Faso, Burundi, Chad, Eswatini, Ethiopia, European Union, Israel, Jamaica, Japan, Kyrgyzstan, Lao, Malawi, Mali, Monaco, Mongolia, Montenegro, Nepal, New Zealand, Norway, Oman, Paraguay, Republic of Korea, Republic of Macedonia, Republic of Moldova, Rwanda, State of Palestine, Switzerland, Tajikistan, Uganda, Ukraine, Zambia, Zimbabwe	11 countries: Cameroon, DPRK, France (non EU), Georgia, Grenada, Morocco, Nicaragua, Peru, Thailand, United Republic of Tanzania, Vanuatu

Table 7. Countries' level of ambition for coastal and marine NbS in first and updated NDCs respectively for mitigation and adaptation measures
[temporary: out of 113 NDCs received to date, 21 October 2021]

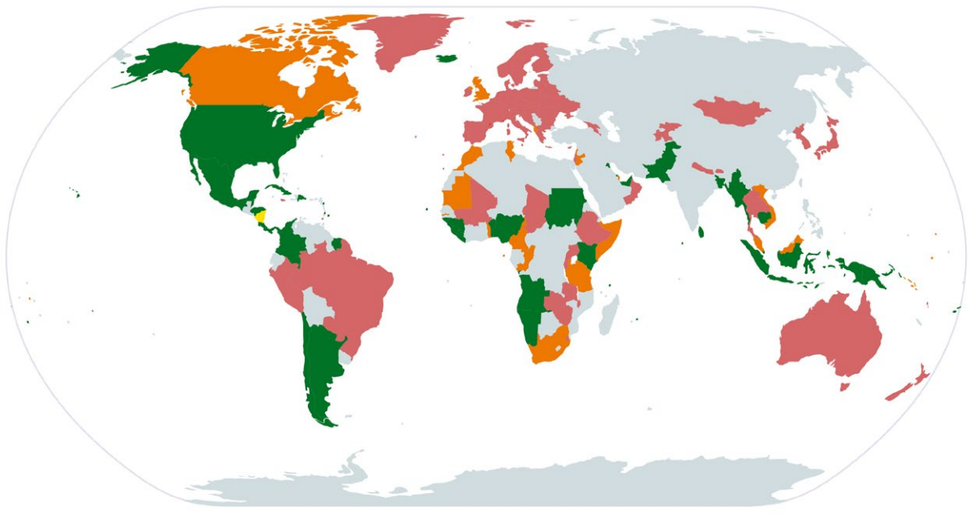
Overall, countries have prioritised the inclusion of new coastal and marine NbS for adaptation measures, with 51 countries having included additional coastal and marine NbS for adaptation - versus 32 countries adding mitigation measures. A similar number of countries, i.e. 11 and 12, have renewed their ambition for mitigation and adaptation measures, respectively. It is also worth noting that there is more room for improvement for coastal and marine NbS for mitigation, since 69 countries left out coastal and marine NbS for mitigation - versus 29 countries omitting coastal and marine NbS for adaptation.





basemap from Natural Earth (CC0) - Ocean & Climate Platform

Fig. 11: Countries' inclusion of coastal and marine NbS for mitigation and/or adaptation in their first NDCs
[temporary: out of 113 NDCs received to date, 21 October 2021]
Source: Ocean & Climate Platform via Khartis



basemap from Natural Earth (CC0) - Ocean & Climate Platform

Fig. 12: Countries' inclusion of coastal and marine NbS for mitigation and/or adaptation in their updated NDCs
Source: Ocean & Climate Platform via Khartis

ADDING QUANTIFIABLE TARGETS FOR COASTAL AND MARINE NATURE-BASED SOLUTIONS IN UPDATED NDCs

This report looks at how countries included coastal and marine NbS as part of their mitigation and/or adaptation strategies in their first and updated NDCs, considering both the mention of the ocean and the integration of specific measures based on coastal and marine ecosystems. Here, a country is said to have included coastal and marine NbS in its submission when it has included at least one specific measure in that regard. Some countries have opted for quantifiable measures, while others did not.

In 2015, 8 countries out of 113 included quantitative targets to support and implement their coastal and marine NbS as part of their mitigation and/or adaptation measures in their first NDC. In comparison, 32 countries included such targets in their updated NDCs. Among these, 5 countries have included quantitative targets for both their first and updated NDCs. Overall, 26 countries have increased their ambition in that regard, adding new targets to support the implementation of coastal and marine NbS for mitigation and/or adaptation. Additionally, 6 countries have renewed their ambition, having included quantitative targets in both their submissions. Only 4 countries decreased their ambition, omitting quantitative targets in their updated NDC, despite having included it in their first NDC. Lastly, 103 countries omitted quantitative targets in both first and updated NDCs.

Overall, despite a majority of countries omitting quantitative targets in the context of coastal and marine NbS, there is a growing number of countries that mentioned such targets. It is also interesting to note that a large number of these countries chose to integrate quantitative targets for the protection, conservation and restoration of coastal and marine ecosystems for mitigation and/or adaptation purposes, including through the design and implementation of MPAs. These targets were mainly expressed in hectares or percentages. Countries indicated for instance the quantity of mangrove forests (Ha) planted and/or protected.

Moreover, few countries included carbon reduction emission targets in relation to blue carbon ecosystems. It is worth noting in that regard that a handful of countries made a reference to the 2013 IPCC Wetlands Supplement. Therefore, although absent from first NDCs, 10 countries mentioned the IPCC-approved methodology to account for the sequestration capacity of coastal wetlands in their updated NDCs.

- ***Nigeria*** expressed its intention to protect and restore mangrove forest ecosystems in updated NDC. It committed to 13,012 ha of mangrove ecosystems across all the coastal states in the Niger Delta.

- ***The United Arab Emirates*** included specific targets for quantifiable measures with respect to coastal and marine NbS in updated NDC. For example it undertook to transplant 10 000 coral fragments in the next 10 years. Similarly, it also committed to planting 30 million mangrove seedlings by 2030.

- ***Sri Lanka*** expressed its intention to restore "at least 25% each of degraded terrestrial and wetland landscapes including coastal & marine habitats identified above and based on current extent and prioritized according to biodiversity value, ecosystem values and climate change vulnerability[95]".

95/ UNFCCC NDC Interim Registry. Sri Lanka's NDC (p40)

1/ COMPARING THE INCLUSION OF COASTAL AND MARINE ECOSYSTEMS AS PART OF MITIGATION MEASURES BETWEEN FIRST AND UPDATED NDCS

The present section focuses on mitigation measures and how countries have included coastal and marine NbS (i.e., protecting blue carbon ecosystems and/or other coastal ecosystems such as algae or kelp) in updated NDCs compared to first NDCs, as illustrated in Table 8.

In 2015, 12 countries had included coastal and marine NbS for mitigation purposes in their first NDCs, while 44 countries have included such measures in their updated NDCs. Among these, 12 countries have included coastal and marine NbS for mitigation in both their first and updated NDCs.

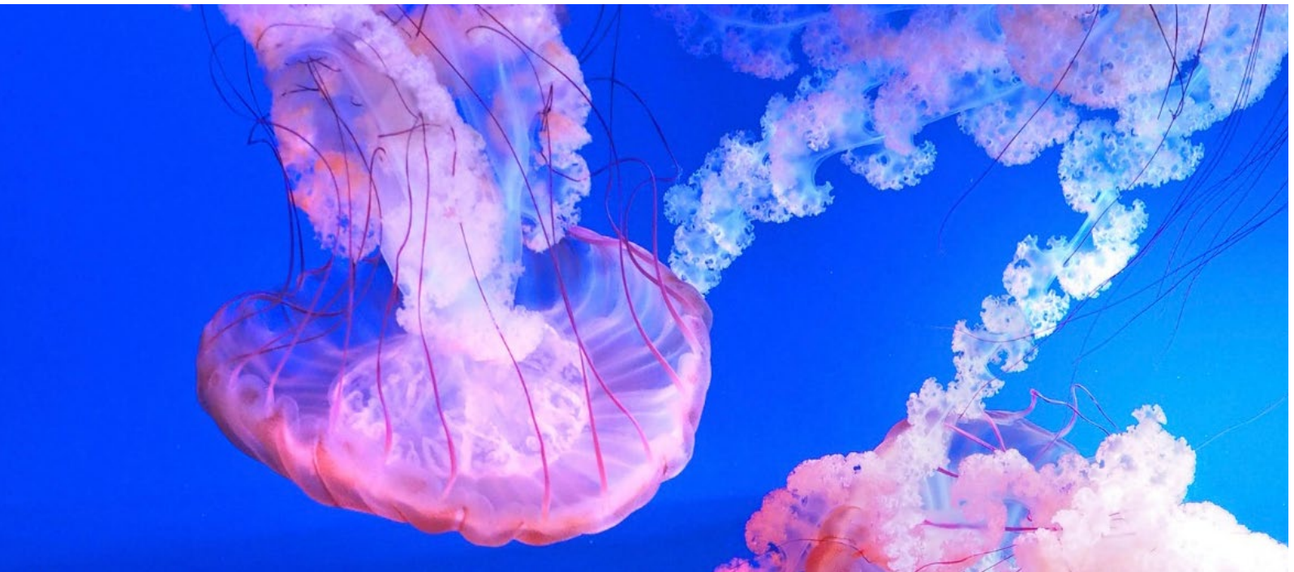
32 countries have added coastal and marine NbS for mitigation in their updated NDC[96] for the first time. 1 country (i.e. United Arab Emirates) has no longer included coastal and marine NbS. In addition, 11 countries have renewed their ambition, having included coastal and marine NbS for adaptation in both their first and updated NDCs. Lastly, the remaining 69 countries never included specific measures in that regard.

Overall, out of 113 countries, 51 have included coastal and marine NbS as part of their mitigation measures in either their first or updated NDC. While there is still little more than half of NDCs that do not include coastal and marine NbS as part of their mitigation efforts so far, figures show a substantial increase in countries' level of ambition to further include coastal and marine ecosystems in mitigation measures.

The majority of these countries undertook efforts to protect coastal blue carbon ecosystems (Table 8.1.a) as a matter of priority, in comparison to other marine and coastal ecosystems (Table 8.1.b). This is consistent with the fact that coastal blue carbon ecosystems (i.e. mangrove, seagrass and saltmarsh) are the three coastal ecosystems that have an IPCC-approved methodology to account for their sequestration capacity through the 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands (i.e. IPCC Wetlands supplement). However, it is interesting to note that some countries (see Table 8.1.b) have included other coastal and marine ecosystems[97], which can be perceived as a growing interest to better grasp the mitigation role of the ocean, beyond coastal wetlands.

96/ Among the 32 countries that added new coastal and marine NbS for mitigation purposes, 27 added one new type of coastal and marine NbS and 5 added two - thereby protecting a wide diversity of coastal wetlands.

97/ The expression "other coastal and marine ecosystems" encompasses here algae, kelp, sabkha, soft-bottom benthic habitats and coastal peatlands.



	Level of ambition			
Types	**Increased (↑)**	**Renewed (+)**	**Unchanged (-)**	**Decreased (↓)**
(1) Protecting and restoring marine and coastal ecosystems for mitigation purposes	32 countries: Argentina, Barbados, Benin, Cambodia, Cape Verde, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Fiji, Guinea Bissau, Honduras, Iceland, Indonesia, Kenya, Kuwait, Liberia, Maldives, Mauritius, Namibia, Nigeria, Pakistan, Panama, Papua New Guinea, Saint Lucia, Seychelles, Sierra Leone, Singapore, Sudan, Tonga, United States of America	11 countries: Angola, Antigua and Barbuda, Bahrain, Bangladesh, Belize, Guinea, Mexico, Myanmar, Nicaragua, Sri Lanka, Suriname	69 countries: Albania, Andorra, Armenia, Australia, Belarus, Bhutan, Bosnia-Herzegovina, Brazil, Burkina Faso, Burundi, Cameroon, Canada, Chad, Congo, DPRK, Eswatini, Ethiopia, European Union, France (non-EU), Gambia, Georgia, Grenada, Israel, Jamaica, Japan, Jordan, Kyrgyzstan, Lao, Lebanon, Malawi, Mali, Malaysia, Marshall Islands, Mauritania, Monaco, Mongolia, Montenegro, Morocco, Nauru, Nepal, New Zealand, Norway, Oman, Paraguay, Peru, Qatar, Republic of Korea, Republic of Macedonia, Republic of Moldova, Rwanda, Samoa, Sao Tome and Principe, Solomon Islands, Somalia, South Africa, State of Palestine, Switzerland, Tajikistan, Thailand, Togo, Tunisia, Uganda, Ukraine, United Kingdom, United Republic of Tanzania, Vanuatu, Vietnam, Zambia, Zimbabwe	1 country: United Arab Emirates
(a) Coastal blue carbon ecosystems	31 countries: Barbados, Benin, Cambodia, Cape Verde, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Fiji, Guinea Bissau, Honduras, Iceland, Indonesia, Kenya, Kuwait, Liberia, Maldives, Mauritius, Namibia, Nigeria, Pakistan, Panama, Papua New Guinea, Saint Lucia, Seychelles, Sierra Leone, Singapore, Sudan, Tonga, United States of America	12 countries: Angola, Antigua and Barbuda, Bahrain, Bangladesh, Belize, Guinea, Mexico, Myanmar, Nicaragua, Sri Lanka, Suriname, United Arab Emirates	70 countries: Albania, Andorra, Argentina, Armenia, Australia, Belarus, Bhutan, Bosnia-Herzegovina, Brazil, Burkina Faso, Burundi, Cameroon, Canada, Chad, Congo, DPRK, Eswatini, Ethiopia, European Union, France (non-EU), Gambia, Georgia, Grenada, Israel, Jamaica, Japan, Jordan, Kyrgyzstan, Lao, Lebanon, Malawi, Malaysia, Mali, Marshall Islands, Mauritania, Monaco, Mongolia, Montenegro, Morocco, Nauru, Nepal, New Zealand, Norway, Oman, Paraguay, Peru, Qatar, Republic of Korea, Republic of Macedonia, Republic of Moldova, Rwanda, Samoa, Sao Tome and Principe, Solomon Islands, Somalia, South Africa, State of Palestine, Switzerland, Tajikistan, Thailand, Togo, Tunisia, Uganda, Ukraine, United Kingdom, United Republic of Tanzania, Vanuatu, Vietnam, Zambia, Zimbabwe	0 country
(b) Other marine and coastal ecosystems	6 countries: Argentina, Chile, Costa Rica, Fiji, Liberia, Pakistan	0 country	106 countries: Albania, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Australia, Bahrain, Bangladesh, Barbados, Belarus, Belize, Benin, Bhutan, Bosnia-Herzegovina, Brazil, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Cape Verde, Chad, Colombia, Congo, Cuba, Dominican Republic, DPRK, Eswatini, Ethiopia, European Union, France (non-EU), Gambia, Georgia, Grenada, Guinea, Guinea Bissau, Honduras, Iceland, Indonesia, Israel, Jamaica, Japan, Jordan, Kenya, Kuwait, Kyrgyzstan, Lao, Lebanon, Malawi, Malaysia, Maldives, Mali, Marshall Islands, Mauritania, Mauritius, Mexico, Monaco, Mongolia, Montenegro, Morocco, Myanmar, Namibia, Nauru, Nepal, New Zealand, Nicaragua, Nigeria, Norway, Oman, Panama, Paraguay, Papua New Guinea, Peru, Qatar, Republic of Korea, Republic of Macedonia, Republic of Moldova, Rwanda, Saint Lucia, Samoa, Sao Tome and Principe, Seychelles, Sierra Leone, Singapore, Solomon Islands, Somalia, Sri Lanka, South Africa, State of Palestine, Sudan, Suriname, Switzerland, Tajikistan, Thailand, Togo, Tunisia, Uganda, Ukraine, United Kingdom, United Republic of Tanzania, United States of America, Vanuatu, Vietnam, Zambia, Zimbabwe	1 country: United Arab Emirates

Table 8. Countries' level of ambition for coastal and marine NbS as part of mitigation measures between first and updated NDC
[temporary: out of 113 NDCs received to date, 21 October 2021]

(a) Coastal blue carbon ecosystems:

In total, 12 countries out of 113 have included blue carbon ecosystems as part of their mitigation measures in their first NDC, and 43 have included these ecosystems in their updated NDC - 3 times more. Therefore, 31 countries have increased their ambition in their updated NDC compared to their first one, and none decreased their ambition. In addition, 12 countries renewed their ambition, since they included coastal blue carbon ecosystems in both their first and updated NDCs. Lastly, the remaining 70 countries did not include blue carbon as part of their mitigation measures in either of their two submissions. Overall, 43 out of 113 countries have included the protection of coastal blue carbon ecosystems as part of their mitigation measures in either their first and/or updated NDCs.

Examples of increased ambition:

- In its first NDC, the ***United States of America*** expressed its intention to include all categories of emissions by sources and removals by sinks, without specifically mentioning blue carbon ecosystems. In its updated NDC, the ***USA*** committed to supporting "efforts to increase sequestration in waterways and oceans by pursuing 'blue carbon'".

- ***Panama*** did not include blue carbon or other coastal ecosystems for mitigation in its first NDC. It raised its level of ambition in its updated NDC, by including mangroves and coastal wetlands into its national strategy. More specifically, it designed projects to protect and restore mangroves for mitigation purposes. ***Panama*** also committed to integrating blue carbon in the national inventory, following the methodology outlined in the 2013 IPCC Wetland Supplement.

- Despite committing to the protection of coastal and marine ecosystems as part of its adaptation measures, Liberia did not include these ecosystems for mitigation purposes in its first NDC. Building on its adaptation strategy, ***Liberia*** further considered the mitigation benefits of coastal and marine ecosystems in its updated NDC. For instance, it committed to enhancing "coastal carbon stocks by restoring 35% of degraded coastal wetlands and mangrove ecosystems by 2030[98]".

Example of renewed ambition:

- In its first NDC, ***Guinea*** acknowledged the mitigation benefits of mangrove forests, and committed to slow down deforestation while developing reforestation plans and sustainably managing these forests. ***Guinea*** maintained its efforts in its updated NDC, as it undertook to significantly reduce pressures on forests and deforestation. ***Guinea*** continued to develop measures to sustainably manage mangrove forests and create new protected areas in affected areas.

A great number of countries acknowledged the mitigation role of the ocean, recognising blue carbon ecosystems as carbon sinks. Many countries committed to taking action and implementing coastal and marine NbS as part of their mitigation measures. However, few countries actually accounted for blue carbon ecosystems in their GHG inventories and/or mentioned the carbon offset potential of such ecosystems[99]. For example, Saint Lucia recalled in its updated NDC that "the value of S***aint Lucia***'s forest cover as a carbon sink is recognized, despite the fact that these values are not included in the projections". Only a limited number of countries have included quantitative targets associated with blue carbon accounting and offsetting. Only 4 countries mentioned LULUCF activities with regard to mangroves in first NDCs, and the figure rises to 7 in updated NDCs. Nonetheless, one could expect enhanced action in that regard, as some countries are currently paving the way for action. Such countries are currently assessing national opportunities to account for blue carbon ecosystems in their GHG inventory in the next round of NDC submissions.

- ***Liberia*** mentioned key quantitative measures and targets in relation to blue carbon accounting in updated NDC. It expressed its intention to "fully integrate GHG fluxes (emissions and removals) from mangroves ecosystems [...] into the next national GHG inventory by 2030[100]". In addition, Liberia undertook to reduce GHG emissions by a total of 1,800 $GgCO_2e$ through avoided conversion and draining of mangrove ecosystems by 2030. ***Liberia*** also committed to establishing a "Natural Capital Accounting system for coastal zones and forests by 2030", in relation to its National Wetlands Policy.

- In updated NDC, ***Belize*** undertook to maintain and enhance the carbon storage functions of natural carbon sinks, through the protection and restoration of mangrove forest and seagrass. ***Belize*** also committed to enhancing the capacity of the country's mangrove and seagrass ecosystems "to act as a carbon sink by 2030, through increased protection of mangroves and by removing a cumulative total of 381 $KtCO_2e$ between 2021 and 2030 through mangrove restoration[101]".

- ***Seychelles*** is currently mapping the full extent of the blue carbon seagrass and mangrove ecosystems within its EEZ, as well as measuring their carbon stock values. These assessments will inform Seychelles' goal to include these ecosystems in their GHG inventory by 2025. ***Seychelles*** will protect its blue carbon ecosystems, i.e. at least 50% of its seagrass and mangrove ecosystems by 2025, and 100% of seagrass and mangrove ecosystems by 2030
.

(b) Other coastal and marine ecosystems:

Only 1 country (i.e. United Arab Emirates) had integrated coastal ecosystems other than blue carbon (e.g. coastal peatlands, algae, kelp) as part of their mitigation measures in their first NDC, 6 versus countries in updated NDCs. 6 countries have added other coastal and marine ecosystems as part of their mitigation measures in their updated NDCs, thus increasing their level of ambition, while 1 country (i.e. ***United Arab Emirates***) no longer includes coastal ecosystems in its updated NDC. Other coastal and marine ecosystems remain largely absent from both first and updated NDCs, as 106 countries have not included these ecosystems in their submissions.

Overall, out of 113 countries, only 7 included the protection of coastal ecosystems other than blue carbon as part of their mitigation measures in either their first and/or updated NDC. Figures reflect a more unchanged ambition for the protection and restoration of other coastal ecosystems, as an overwhelming majority of countries omitted such measures in both their first and updated NDCs. Nonetheless, it is important to bear in mind here that unchanged ambition is not unexpected. It is no surprise that these ecosystems remain largely absent from mitigation measures, as they are not covered by the IPCC Wetlands Supplement. The carbon accounting uncertainties mean that it is not currently feasible to incorporate other coastal and marine ecosystems into mitigation measures that require carbon accountability.

Example of increased ambition:

- In its first NDC, ***Costa Rica*** did not commit to measures related to coastal and marine ecosystems. In its updated NDC, ***Costa Rica*** undertook to protect other coastal wetlands, in line with its blue carbon strategy. For instance, it expressed its intention to protect coastal peatlands and increase funding to conserve such ecosystems.

Example of decreased ambition:

- In their first NDC, the ***United Arab Emirates (UAE)*** recalled the diversity of their coastal and marine environments, including "mangrove forests, saltmarshes, sabkha, intertidal mudflats with cyanobacterial mats and extensive subtidal seagrass meadows[102]". However, these coastal and marine ecosystems were not specifically mentioned in UAE's updated NDC.

98/ UNFCCC NDC Interim Registry. Liberia's updated NDC (p16)

99/ Actual emission targets associated with coastal and marine ecosystems were not thoroughly specified in this report, as few countries addressed this issue and that it is not possible to have an accurate analysis of such emission targets. Language is often too vague and not specifically applied to blue carbon. For instance, there is often no distinction between emission targets associated with forests or mangroves.

100/ UNFCCC NDC Interim Registry. Liberia's updated NDC (p22)

101/ UNFCCC NDC Interim Registry. Belize's updated NDC (p16)

102/ UNFCCC NDC Interim Registry. United Arab Emirates' Second NDC (p4)

2/ COMPARING THE INCLUSION OF COASTAL AND MARINE ECOSYSTEMS AS PART OF ADAPTATION MEASURES BETWEEN FIRST AND UPDATED NDC

The present section focuses on countries' level of ambition regarding the inclusion of coastal and marine NbS for adaptation - such as protecting, conserving and restoring coastal and marine ecosystems; coastal zones management and protected areas; climate-ready fisheries and fishing communities - in updated NDCs compared to first NDCs, as illustrated in Table 9 below.

In 2015, 50 countries had included coastal and marine NbS for adaptation purposes in their first NDCs, while 66 countries have included coastal and marine NbS for adaptation purposes in their updated NDCs. Among these, 42 countries have included coastal and marine NbS for adaptation in both their NDCs.

Since the first NDC submissions, 51 countries added coastal and marine NbS for adaptation in their updated NDC[103], while 11 countries have no longer included coastal and marine NbS. Additionally, 12 countries have renewed their ambition, having included coastal and marine NbS for adaptation in both their first and updated NDCs. Lastly, the remaining 29 countries never had specific measures in that regard.

Overall, out of 113 countries, 84 have included coastal and marine NbS[104] for adaptation in their first and/or updated NDCs. Countries have prioritised measures to sustainably manage coastal zones and implement new MPAs, with 42 countries having added such measures (Table 9.2.b) - compared to 17 countries for coastal and marine ecosystem protection (Table 9.2.a) and 20 for climate-ready fisheries (Table 9.2.c).

Table 9. Countries' level of ambition for coastal and marine NbS as part of adaptation measures between first and updated NDC

[temporary: out of 113 NDCs received to date, 21 October 2021]

→

	Level of ambition			
Types	**Increased (↑)**	**Renewed (+)**	**Unchanged (-)**	**Decreased (↓)**
(2) Coastal and marine Nature-based solutions for adaptation	51 countries: Albania, Angola, Antigua and Barbuda, Argentina, Bahrain, Bangladesh, Barbados, Belize, Canada, Cape Verde, Chile, Colombia, Congo, Costa Rica, Dominican Republic, Fiji, Honduras, Iceland, Indonesia, Jordan, Kenya, Kuwait, Lebanon, Liberia, Malaysia, Maldives, Mauritania, Myanmar, Namibia, Nauru, Nigeria, Pakistan, Panama, Papua New Guinea, Qatar, Samoa, Sao Tome and Principe, Seychelles, Sierra Leone, Solomon Islands, Somalia, South Africa, Sri Lanka, Sudan, Suriname, Togo, Tonga, Tunisia, United Arab Emirates, United Kingdom, United States of America	12 countries: Benin, Cambodia, Cuba, Gambia, Guinea, Guinea Bissau, Marshall Islands, Mauritius, Mexico, Saint Lucia, Singapore, Vietnam	29 countries: Andorra, Armenia, Australia, Belarus, Bhutan, Bosnia-Herzegovina, Brazil, Burkina Faso, Burundi, Chad, Eswatini, Ethiopia, European Union, Israel, Jamaica, Japan, Kyrgyzstan, Lao, Malawi, Mali, Monaco, Mongolia, Montenegro, Nepal, New Zealand, Norway, Oman, Paraguay, Republic of Korea, Republic of Macedonia, Republic of Moldova, Rwanda, State of Palestine, Switzerland, Tajikistan, Uganda, Ukraine, Zambia, Zimbabwe	11 countries: Cameroon, DPRK, France (non EU), Georgia, Grenada, Morocco, Nicaragua, Peru, Thailand, United Republic of Tanzania, Vanuatu
(a) Protecting and restoring coastal and marine ecosystems	17 countries: Albania, Argentina, Barbados, Colombia, Costa Rica, Iceland, Kenya, Malaysia, Namibia, Nauru, Pakistan, Panama, Papua New Guinea, Qatar, Samoa, Sierra Leone, United Kingdom	33 countries: Bangladesh, Bahrain, Belize, Benin, Cambodia, Cape Verde, Chile, Congo, Cuba, Dominican Republic, Fiji, Gambia, Guinea, Guinea Bissau, Indonesia, Lebanon, Liberia, Maldives, Marshall Islands, Mauritius, Mexico, Myanmar, Saint Lucia, Seychelles, Singapore, Somalia, Sri Lanka, Sudan, Suriname, Togo, Tunisia, United Arab Emirates, Vietnam	55 countries: Andorra, Angola, Antigua and Barbuda, Armenia, Australia, Belarus, Bhutan, Bosnia-Herzegovina, Brazil, Burkina Faso, Burundi, Canada, Chad, DPRK, Eswatini, Ethiopia, European Union, Georgia, Israel, Jamaica, Japan, Jordan, Kuwait, Kyrgyzstan, Lao, Malawi, Mali, Mauritania, Monaco, Mongolia, Montenegro, Nepal, New Zealand, Nigeria, Norway, Oman, Paraguay, Peru, Republic of Korea, Republic of Macedonia, Republic of Moldova, Rwanda, Sao Tome and Principe, Solomon Islands, South Africa, State of Palestine, Switzerland, Tajikistan, Tonga, Uganda, Ukraine, United States of America, Vanuatu, Zambia, Zimbabwe	8 countries: Cameroon, France (non EU), Grenada, Honduras, Morocco, Nicaragua, Thailand, United Republic of Tanzania
(b) Coastal zone management and protected areas	42 countries: Albania, Argentina, Angola, Bahrain, Barbados, Belize, Canada, Cape Verde, Chile, Colombia, Congo, Costa Rica, Dominican Republic, Fiji, Honduras, Indonesia, Jordan, Kenya, Kuwait, Lebanon, Liberia, Mauritania, Myanmar, Namibia, Nauru, Nigeria, Pakistan, Panama, Papua New Guinea, Samoa, Sao Tome and Principe, Seychelles, Sierra Leone, Solomon Islands, South Africa, Suriname, Togo, Tonga, United Arab Emirates, United Kingdom, United States of America	20 countries: Bangladesh, Benin, Cambodia, Cameroon, Cuba, Gambia, Guinea, Guinea Bissau Malaysia, Maldives, Mauritius, Morocco, Saint Lucia, Singapore, Somalia, Sri Lanka, Sudan, Tunisia, United Republic of Tanzania, Vietnam	46 countries: Andorra, Antigua and Barbuda, Armenia, Australia, Belarus, Bhutan, Bosnia-Herzegovina, Brazil, Burkina Faso, Burundi, Chad, Eswatini, Ethiopia, European Union, Iceland, Israel, Jamaica, Japan, Kyrgyzstan, Lao, Malawi, Mali, Marshall Islands, Mexico, Monaco, Mongolia, Montenegro, Nepal, New Zealand, Nicaragua, Norway, Oman, Paraguay, Peru, Qatar, Republic of Korea, Republic of Macedonia, Republic of Moldova, Rwanda, State of Palestine, Switzerland, Tajikistan, Thailand, Ukraine, Uganda, Zambia, Zimbabwe	5 countries: DPRK, France (non-EU), Georgia, Grenada, Vanuatu
(c) Climate-ready fisheries and fishing communities	20 countries: Albania, Antigua and Barbuda, Argentina, Bangladesh, Congo, Fiji, Kuwait, Lebanon, Maldives, Myanmar, Nauru, Panama, Sao Tome and Principe, Somalia, Sri Lanka, Sudan, Togo, Tunisia, United Arab Emirates, United Kingdom	15 countries: Angola, Belize, Cambodia, Cameroon, Cape Verde, Costa Rica, Cuba, Gambia, Liberia, Mauritius, Morocco, Seychelles, Sierra Leone, United Republic of Tanzania, Vietnam	75 countries: Andorra, Armenia, Australia, Bahrain, Barbados, Belarus, Benin, Bhutan, Bosnia-Herzegovina, Brazil, Burkina Faso, Burundi, Canada, Chad, Chile, Colombia, Dominican Republic, DPRK, Eswatini, Ethiopia, European Union, Grenada, Georgia, Guinea, Guinea Bissau, Honduras, Iceland, Indonesia, Israel, Jamaica, Japan, Jordan, Kenya, Kyrgyzstan, Lao, Malawi, Mali, Malaysia, Marshall Islands, Mauritania, Mexico, Monaco, Mongolia, Montenegro, Namibia, Nepal, New Zealand, Nicaragua, Norway, Oman, Pakistan, Paraguay, Papua New Guinea, Qatar, Republic of Korea, Republic of Macedonia, Republic of Moldova, Rwanda, Samoa, Saint Lucia, Singapore, Solomon Islands, South Africa, State of Palestine, Suriname, Switzerland, Tajikistan, Thailand, Tonga, Uganda, Ukraine, United States of America, Vanuatu, Zambia, Zimbabwe	3 countries: France (non EU), Nigeria, Peru

103/ Out of 51 countries, 25 have committed to a new type of coastal and marine NbS, 12 to two new types and 14 to all the three types of coastal and marine NbS for adaptation identified in this report.

104/ Among these, 9 countries have no longer included one type of coastal and marine NbS for adaptation, 1 have no longer included two types and 1 has no longer included three (i.e. France non-EU territories).

(a) Protecting and restoring coastal and marine ecosystems:

In first NDCs, out of the 113 countries, 41 had specifically included measures to protect and restore coastal and marine ecosystems for adaptation purposes. In comparison, 50 countries included these measures in their updated NDCs. Among these, 33 countries included them in both NDCs.

Since the first NDC submissions, 17 countries have added measures to protect and restore coastal and marine ecosystems in their updated NDC, while 8 countries have no longer included such measures. Additionally, 33 countries renewed their ambition, including measures to protect and restore coastal and marine ecosystems for adaptation purposes in both their first and updated NDCs. Lastly, the remaining 55 countries did not include these measures in either of the two submissions.

Overall, 58 out of 113 countries have included the protection and restoration of coastal and marine ecosystems as part of their adaptation measures in either their first and/or updated NDC.

Figures show that a growing number of countries included the protection and restoration of coastal and marine ecosystems as part of their adaptation measures in their updated NDCs. It is also worth noting that a large number of countries included measures to protect and restore coastal and marine ecosystems in both their first and updated NDCs, in comparison with other coastal and marine NbS for adaptation.

Examples of increased ambition:

- ***Barbados*** highlighted in its first NDC that "sea levels are rising" and that "coral bleaching events are more frequent", in line with "climate change projections for the Caribbean region[105]". Despite mentioning the impacts of climate change on coastal ecosystems and communities, Barbados did not commit to specific coastal and marine NbS. However, it did increase its level of ambition, by integrating such solutions in its updated NDC. For instance, ***Barbados*** expressed its intention to "restore vulnerable coral reef ecosystems, particularly on the west and south coasts of the island" and to "help preserve for future generations the coastal ecosystems, shorelines and coral reefs" in relation to its new Water Protection and Land Use Policy (e.g. protecting coastal coral reefs[106], mangroves and seagrass beds using NbS).

- ***Argentina*** acknowledged the impacts of climate change on the shorelines (i.e. consequences of sea-level rise, changes in marine currents circulation and increase in water temperature) in its first NDC. In its updated NDC, ***Argentina*** decided to adopt an ecosystem-based approach for adaptation, as well as to strengthen the adaptive management of natural resources to conserve and sustainably manage coastal biodiversity.

Example of renewed ambition:

- its first NDC, ***Indonesia*** undertook to build climate resilience to "protect and sustain these environmental services by taking an integrated landscape-based approach[107]" in managing coastal and marine ecosystems. It worked towards ecosystem conservation and coastal zone protection at once. In its updated NDC, ***Indonesia*** undertook to develop "climate resilient coastal zone" and to restore "degraded coastal zone as essential ecosystem". Indonesia "has taken into account the Sustainable development Goals (SDGs) particularly on [...] conservation and sustainable use of the oceans, seas and marine resources[108]».

Example of decreased ambition:

- ***Nicaragua*** committed to the protection, conservation and sustainable use of wetlands and mangroves in its first NDC, recalling the strong adaptation benefits of such ecosystems. It expressed its intention to implement specific legislation on mangrove forests to enhance the development of mangrove habitats. In comparison, ***Nicaragua*** did not include these ecosystems in its updated NDC.

105/ UNFCCC NDC Interim Registry. Barbados' First NDC (p1)

106/ UNFCCC NDC Interim Registry. Barbados' Updated NDC (p25)

107/ UNFCCC NDC Interim Registry. Indonesia's First NDC (p11)

108/ UNFCCC NDC Interim Registry. Indonesia's Updated NDC (p11)

(b) Coastal zone management and protected areas:

Out of 113 countries, 32 had specifically included measures to sustainably manage coastal zones and implement MPAs for adaptation purposes in their first NDCs. In comparison, 61 countries included these measures in their updated NDCs. Among these, 4 countries (i.e. Guinea Bissau, Mauritius, Morocco and Sri Lanka) included measures to sustainably manage coastal zones and implement new MPAs in both their submissions.

Since the first NDC submissions, 42 countries added measures to sustainably manage coastal zones and implement new MPAs in their updated NDC, while 5 countries have no longer included these measures. Additionally, 20 countries renewed their ambition, including measures to manage coastal zones and/or implement MPAs for adaptation purposes in both their first and updated NDCs. Lastly, the remaining 46 countries did not include these measures in either of the two submissions.

Overall, out of 113 countries, 67 included the sustainable management of coastal zones and/or the implementation of new MPAs as part of their adaptation measures in either their first and/or updated NDC[109]. These figures show that a growing number of countries added measures for coastal zone management and protected areas in their updated NDCs. Almost half of the countries have included measures for coastal zone management and protected areas in their updated NDCs.

Examples of increased ambition:

- ***Liberia*** referred to coastal vulnerabilities in its first NDC, stating that "coastal areas in Liberia are the most populated and economically vibrant areas" and that "sea erosion continues to pose increasing threats to the shorelines of coastal cities including major infrastructures and investments[110]", but did not include any coastal and marine NbS for adaptation. In its updated NDC, ***Liberia*** included ecosystem-based adaptation measures in coastal zones to "increase the ability of coastal communities and ecosystems to adapt to the impacts of climate change[111]" (e.g. implement green-gray infrastructure approaches along the coastline).

- In its first NDC, ***Sierra Leone*** acknowledged its vulnerability to the adverse effects of climate change and expressed its willingness to maintain resilience of marine ecosystems, without committing to the implementation of protected areas to enhance the resilience and sustainably manage the resources of these ecosystems. In its updated NDC, ***Sierra Leone*** proposed to support the scaling of Marine Protected Areas (MPAs) in its national waters.

Example of renewed ambition:

- In its first NDC, the ***United Republic of Tanzania*** undertook to strengthen management of coastal resources and beach erosion/sea-level rise control systems. In addition, it expressed its intention to improve monitoring and early warning systems of both sea-level rise impacts and extreme weather events for building adaptive capacity. In comparison, the ***United Republic of Tanzania*** maintained its efforts in its updated NDC, which also included measures to strengthen the management of coastal and marine resources and improve coastal adaptation to the adverse impacts of climate change.

Example of decreased ambition:

- As a Pacific island nation, ***Vanuatu*** recognised its vulnerability and expressed its intention to implement an integrated coastal management strategy in its first NDC. However, it did not mention any measure related to the sustainable management of coastal zones in its updated NDC.

109/ More precisely, 32 countries added measures to sustainably manage coastal zones, versus 27 to implement new MPAs. Countries have prioritised measures to manage coastal zones over measures to implement and manage MPAs.

110/ UNFCCC NDC Interim Registry. Liberia's first NDC (p13)

111/ UNFCCC NDC Interim Registry. Liberia's updated NDC (p32)

(c) Climate-ready fisheries and small-scale fishing communities:

Out of 113 countries, 18 had specifically included climate-ready fishing measures for adaptation purposes in their first NDCs, compared to 35 countries including them in their updated NDCs. Among these, 15 countries have included such measures in both their first and updated NDCs.

Since the first NDC submissions, 20 countries added climate-ready fishing measures for adaptation in their updated NDC, while 3 countries have no longer included these measures. In addition, 15 countries renewed their ambition, having included climate-ready fishing measures for adaptation in both their first and updated NDCs. Lastly, the remaining 75 countries did not include such measures in their NDCs.

Overall, out of 113 countries, 38 included climate-ready fisheries as part of their adaptation measures in either their first and/or updated NDC.

Despite being relatively low, there is a slight increase in overall ambition, as 20 countries that did not include climate-ready fishing measures in their initial NDC, did so in their updated one. This increase remains less important than those of the two other types of coastal and marine NbS for adaptation.

Examples of increased ambition:

- ***Sao Tome and Principe*** acknowledged in its first NDC its vulnerability and fragility as a developing small island state, recognizing "the negative impacts of climate change [...] in all sectors of the national economy[112]" including fishing and coastal zone management - but did not include any measures in relation to climate-ready fisheries. However, ***Sao Tome and Principe*** increased its level of ambition in its updated NDC, as it expressed its commitment to strengthening infrastructure, equipment, and shifting to sustainable techniques for the fisheries sector.

- S***omalia*** highlighted the vulnerability of its fishing stocks in its first NDC, mentioning for example how sea-level rise threatens coastal communities through "affecting fish nesting and fishing ground, e.g. wetlands, and coral reefs, mangrove forests and marshes[113]". However, it built on these observations in its updated NDC, and committed to enhancing the resilience of the fisheries value chains by promoting climate-smart fisheries development and to strengthening the management of the fishery sector for resilience creation.

Example of renewed ambition:

- In its first NDC, ***Gambia*** detailed the implementation of its Fisheries Strategy and Action Plan. This plan was identified "as one of the adaptation activities to address the adverse impacts of climate change on the sector and the national economy[114]". It included measures such as the maximization of yields through fish farming and the protection of fish landing sites and facilities from floodings. In its updated NDC, ***Gambia*** further promoted resilient fisheries' value chains and markets. It also committed to supporting the planning, rehabilitation and management of buffering coastal ecosystems to build the resilience of fisheries.

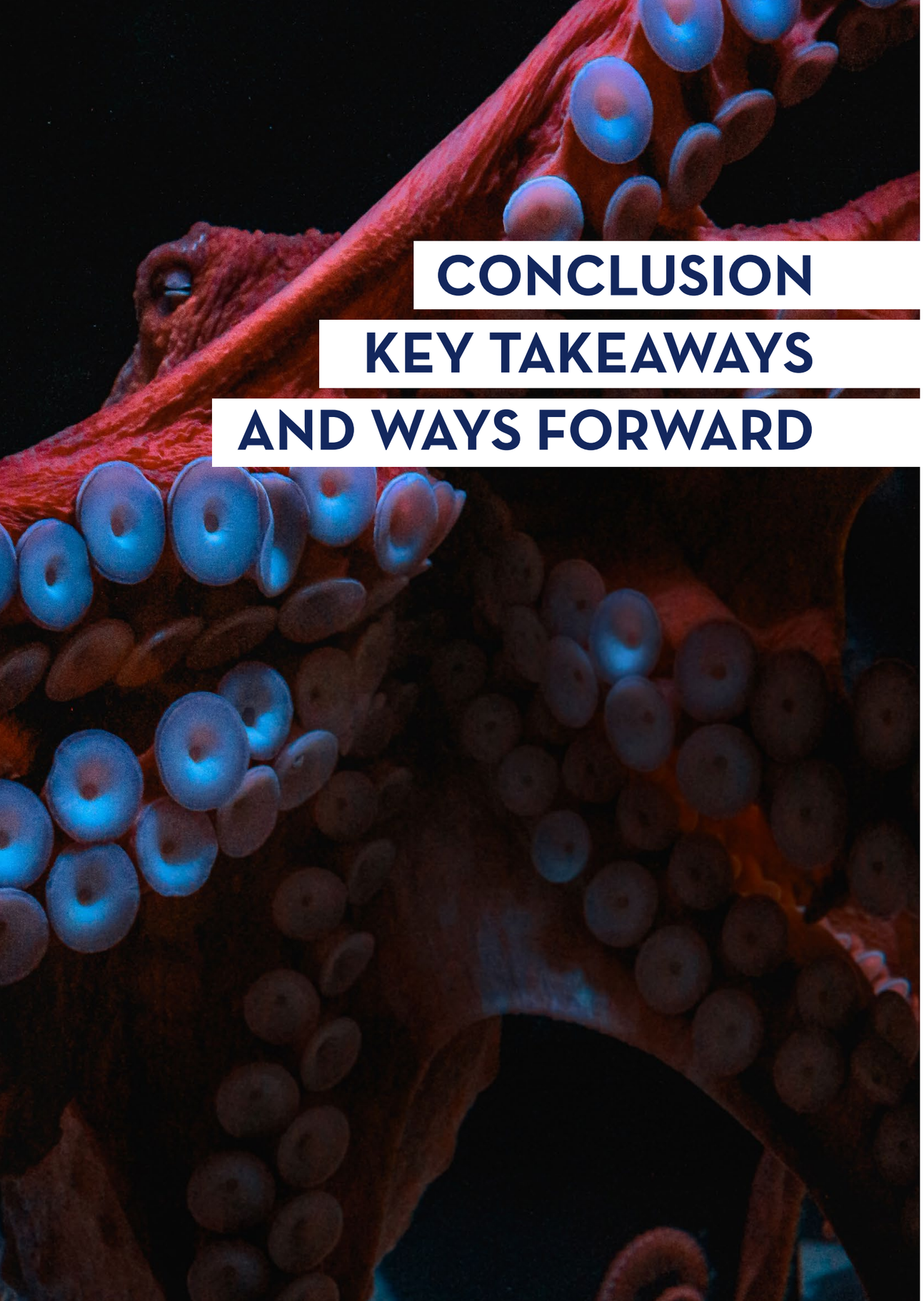
Example of decreased ambition:

- In its first NDC, ***Nigeria*** developed a strategy for freshwater resources, coastal water resources and fisheries. In line with this strategy, it committed to enhancing artisanal fisheries and encouraging sustainable aquaculture as adaptation options for fishing communities. In comparison, ***Nigeria*** did not include measures related to climate-resilience fisheries and aquaculture in its updated NDC.

112/ UNFCCC NDC Interim Registry. Sao Tome and Principe's first NDC (p3)

113/UNFCCC NDC Interim Registry. Somalia's first NDC (p45)

114/ UNFCCC NDC Interim Registry. Gambia's first NDC (p13)



CONCLUSION
KEY TAKEAWAYS
AND WAYS FORWARD

Disclaimer

The conclusion will be updated to reflect anticipated integrated data provided by the additional new and updated NDCs submitted past 21 October 2021 as part of the first revision cycle.

Coastal and marine ecosystems have significant carbon sequestration and storage capacity[115], and provide a wide range of benefits in helping coastal populations adapt to a changing climate[116]. The protection, restoration and conservation of these vital ecosystems represent an effective ocean-based climate solution to contribute to achieving emission reduction plans and building resilience in line with the Paris Agreement.

In that regard, coastal and marine Nature-based Solutions (NbS) (i.e. actions to protect, sustainably manage and restore coastal and marine ecosystems in ways that address societal challenges effectively and adaptively) provide significant opportunities in terms of climate mitigation, adaptation and resilience, both for nature and people[117]. For instance, services provided by mangrove habitats to human livelihoods are estimated to be worth at least $US 1.6 billion annually[118].

The first revision cycle of Nationally Determined Contributions (NDCs) offers a great opportunity for Parties to the Paris Agreement to update, assess and review their national climate commitments, as each successive NDC is required to showcase increased ambition relative to the previous submission (Article 4.3 of the Paris Agreement[119]). Therefore, this revision cycle also presents an opportunity for Parties to make greater use of coastal and marine NbS in their strategies and actions to effectively ratchet up ambition.

In a context of growing attention to the ocean in climate strategies, the present report takes a deep dive into new and updated NDCs, looking at the extent to which Parties to the Paris Agreement have included NbS in coastal and marine ecosystems as part of their mitigation and/or adaptation measures. In line with the ambition loop, this report further considers whether Parties have increased, renewed, unchanged or decreased their ambition with regards to the inclusion of NbS in coastal and marine ecosystems between first and updated NDCs. It will therefore contribute to the exercise of stocktaking (i.e., starting after UNFCCC COP26) to inform the second revision cycle of NDCs and support related national climate commitments.

Out of 118 countries that have submitted their new or updated NDCs, as of 21 October 2021, 71 countries have included coastal and marine NbS, with 45 countries including coastal and marine NbS for both mitigation and adaptation purposes, 1 for only mitigation, and 25 for only adaptation. Overall, this analysis suggests that countries identified coastal and marine NbS as multi-purpose solutions, with the potential to jointly achieve climate mitigation and adaptation objectives. The recognition of mitigation and adaptation co-benefits, as well as resultant socioeconomic benefits, by 48 countries in total further supports this conclusion.

Another trend emerging from these figures is that countries favour the integration of coastal and marine NbS for adaptation purposes, rather than for mitigation purposes, since 59% of all countries included coastal and marine NbS for adaptation, versus 39% for mitigation.

115/ IPCC (2019). Summary for Policymakers. In: Special Report on the Ocean and Cryosphere in a Changing Climate

116/ Ibid

117/ Narayan, S., et al. (2016). The Effectiveness, Costs and Coastal Protection Benefits of Natural and Nature-Based Defences.

118/Magnan, A.K. et al. (2018). Ocean-based measures for climate action. IDDRI, Policy Brief N°06/18.

119/Fransen, T., et al. (2019), Enhancing NDCs: A Guide to Strengthening National Climate Plans by 2020, Washington, DC: World Resources Institute.

Regarding mitigation efforts, it is interesting to note that blue carbon ecosystems were clearly favoured since 45 countries included mangroves, seagrasses and saltmarshes in their strategies, whereas only 6 countries have integrated other coastal ecosystems for mitigation purposes in their updated NDCs. This suggests that more in-depth understanding of the sequestration potential of other blue carbon ecosystems is needed to ensure adequate policy guidance building on sound scientific data is developed, while at the same time accounting windfalls are avoided. Indeed, strong ocean-based climate action should not be used as a substitute for rapidly phasing-out high emission activities on land and at sea.

For adaptation, most countries favoured measures to sustainably manage coastal zones and/or implement protected areas (MPAs and/or OECMs), with 65 countries committing to such measures (i.e. 94% of countries with coastal and marine NbS for adaptation). These are followed by coastal and marine ecosystem protection and restoration (53 countries) and climate-ready fisheries and fishing communities (36 countries). The latter received considerably less attention than the first two types of NbS, it may be inferred that countries generally focus their efforts on sustainably managing fish stocks rather than adapting fisheries to climate impacts - although, it is important to note that both actions go hand in hand.

Overall, figures from updated NDCs suggest that there is a greater recognition and appreciation of the role played by coastal and marine NbS in achieving climate objectives in line with the Paris Agreement, and the comparison to INDCs or first NDCs only confirms this assumption. In first NDCs, 51 out of 113 countries[120] included coastal and marine NbS for mitigation and/or adaptation, versus 67 in updated NDCs (i.e. an increase of 14%).

Moreover, there is an overall increase in countries' level of ambition with regards to coastal and marine NbS for climate mitigation and adaptation[121]. Half of the countries that submitted their updated NDCs have increased their ambition in comparison to their first NDCs. Out of 113 countries, 58 added new coastal and marine NbS for either mitigation or adaptation purposes between their two submissions.

This increase in ambition is clear in updated NDCs, where countries have further mentioned ocean vulnerabilities, i.e. further recognising ocean changes (e.g. acidification) and/or related climate impacts (e.g. sea-level rise)[122]. In first NDCs, 65 countries had included references to such changes and impacts - versus 75 having done so in updated NDCs. Among the former 65 countries, 19 mentioned ocean vulnerabilities while not including coastal and marine NbS (e.g. Kuwait, Mauritania and Namibia). However, it is interesting to note that 16 out of the 19 countries built on these observations and included coastal and marine NbS in their updated NDCs

In addition, this increase in ambition is evidenced by the new coastal and marine NbS included in the mitigation and/or adaptation measures reflected in updated NDCs. 71 countries have included coastal and marine NbS in their updated NDCs. Overall, countries have added more coastal and marine NbS in their adaptation measures (i.e. 51 countries) than in their mitigation measures (i.e. 32 countries), favouring the addition of new measures for adaptation rather than mitigation in updated NDCs.

It is worth noting that countries also added specific and quantifiable targets to support the implementation of these measures in their updated NDCs. Overall, 26 countries have increased their ambition, adding new quantitative targets to support the implementation of coastal and marine NbS for mitigation and/or adaptation (e.g. quantifying a percentage of coastal wetlands under protection). The growing number of countries adding carbon emission reduction targets in relation to coastal wetlands (e.g. mentioning LULUCF activities or including blue carbon ecosystems in GHG inventory) supports this conclusion.

Through conservation, restoration and sustainable management of coastal and marine ecosystems, countries have the opportunity to increase ambition towards achieving the Paris Agreement's long-term goals, while building resilience along their coastlines, and securing a future for coastal biodiversity, food security and livelihoods - thereby also meeting global sustainable development and biodiversity goals.

While an increasing number of countries are including coastal and marine NbS in their NDCs, countries have also recognized the challenges they face in implementing their commitments, especially in light of the current situation with the COVID-19 pandemic and resulting economic crisis. There are however, viable and immediate opportunities for all 151 blue carbon countries to act and include coastal wetlands in their NDCs - even countries[123] with limited technical knowledge of the ecosystems scale or carbon value[124, 125].

From the mitigation benefits of seagrass, to the coastal protection value of coral reefs, NbS are cost-effective solutions[126, 127] that can be used as a lever to expand climate action, financing and policy. In that regard, the Group of Seven (G7) recently committed "to further enhance synergies between finance for climate and biodiversity and to promote funding that has co-benefits for climate and nature and are working intensively towards increasing the quantity of finance to nature and nature-based solutions[128]".

In conclusion, this report shows that countries have further recognised the ability of coastal and marine NbS to contribute to mitigating and adapting to the impacts of climate change. While strong ocean-based climate action should not substitute drastic measures to reduce GHG emissions in other determinant sectors, these solutions offer numerous opportunities for countries to raise their ambition, and contribute to achieving the long-term goals of the Paris Agreement. The Paris Agreement indeed relies on the ambition mechanism, and the international political agenda provides multiple options to "ratchet up". In this perspective, the first Global Stocktake (2023) will provide a global checkpoint between the long-term goals of the Paris Agreement and the short-term climate actions and commitments presented in NDCs[129]. It will be an important step ahead of the second NDC revision cycle (2025) for countries to further include and strengthen their commitments to marine and coastal NbS in their national climate strategies.

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120/ As of 21 October 2021, the comparative analysis covers the 112 countries and the EU-27, hereafter 113 countries, that have submitted both their first and updated NDCs (i.e., in total 139 countries).

121/ A country is considered to have increased its ambition when it added new coastal and marine NbS, i.e. when it included coastal and marine NbS as part of their mitigation and/or adaptation measures in updated NDCs, but did not include it in INDC or first NDC.

122/ Ocean-related vulnerabilities are defined in this report as the multiple pressures weighing on the ocean (e.g. ocean acidification, coral bleaching) and/or threats coming from ocean changes caused by climate impacts (e.g. sea-level rise, coastal erosion, marine species distribution changes)

123/ The Blue Carbon Initiative (2021). Guidelines for Blue Carbon and Nationally Determined Contributions

124/ Ibid

125/ UNFCCC. (2020) Scaling up adaptation actions and cooperation to build climate resilience of the ocean, coastal areas and ecosystems. Policy Brief. Nairobi Work Programme.

126/ Narayan, S. et al. (2016)

127/ Seddon N, et al. (2020)

128/ G7 SUMMIT COMMUNIQUÉ (2021). Our Shared Agenda for Global Action to Build Back Better.

129/ Schindler Murray, L., Romero, V. and Herr, D. (2021): Unpacking the UNFCCC Global Stocktake for Ocean-Climate Action. IUCN, Rare, Conservation International, WWF, and Ocean & Climate Platform

METHODOLOGY:

A three-step evaluation to assess the inclusion of coastal and marine Nature-based Solutions in new or updated Nationally Determined Contributions

The objective of the present report is to summarise a quantitative and qualitative assessment of whether and how coastal and marine NbS have been included within new or updated NDCs (submitted up to 21 October 2021). As a result, countries that included ocean-based measures such as offshore renewable energy or emission reduction measures for shipping, without referring to coastal and marine NbS, were not included in the analysis.

To that end, the analysis comprised a three-step process:

1 / In accordance with Gallo's (2017) quantitative marine focus factor (MMF)[130], we carried out an initial word search composed of widely used coastal and marine vocabulary[131], in order to primarily identify all ocean-related NDCs - submitted on the UNFCCC NDC Interim Registry.

2 / With the identified list of ocean-inclusive NDCs, we furthered our analysis by applying a refined and more thorough wordsearch, exclusively related to coastal and marine NbS, in order to better assess the extent to which these solutions were integrated into the first cycle of NDCs. It is important to note that since each Party uses its specific wording when referring to marine issues, the word search remained flexible to a certain degree, as long as the meaning of the text remained relevant to the purpose of this analysis.

3 / Building on the refined wordsearch, we empirically evaluated the main trends occurring in updated NDCs, in terms of coastal and marine NbS. Specifically, we conducted another thorough individual review of each NDC to better assess the context in which NbS wordings appeared into NDCs and how they were included and accounted for. This third review enabled us to define the categories of the analysis, by developing an assessment table to sort through the keywords and define a set of action types[132;133]. Each defined action type includes one or several keyword(s). Additionally, we have compiled the specific quotes from all NDCs that have allowed for their inclusion in the analysis.

As a result, the present report differentiates between *references* to the ocean and *commitments* to implement coastal and marine NbS as part of countries' climate strategy. Hence, the report further analyses how and to what extent coastal and marine NbS were included as measures (i.e. concrete action) to mitigate and/or adapt to the impacts of climate change. Countries that did not explicitly (i.e. according to the word search) commit to specific measures related to coastal and marine NbS (e.g. Australia and the Republic of Korea) were therefore not included in the analysis - which does not necessarily mean that countries do not have any measures and/or ambition in that regard.

130/ Gallo N. D., Victor D. G. & Levin L. A. (2017). "Ocean commitments under the Paris Agreement", Nat. Clim. Change 7:833-838.

131/ Initial wordsearch: blue carbon, coastal, fisheries, marine, sea, ocean, wetlands, maritime.

132/ Mitigation: Protecting and restoring blue carbon ecosystems; Protecting and restoring other coastal and marine ecosystems

133/ Adaptation: Protecting and restoring coastal and marine ecosystems; Sustainably managing coastal zones and/or implementing MPAs and/or OECMs; Developing climate-ready fisheries and fishing communities

A comparative analysis to assess countries' level of ambition with regard to coastal and marine Nature-based Solutions

The present report also includes a comparative analysis to track countries' progress in integrating coastal and marine NbS since 2015, by identifying their degree of ambition. First and updated NDCs were analysed using the same methodology and wordsearch for the sake of consistency and comparability. It is worth noting that while some countries clearly built their updated NDC on their first one, (e.g. mentioning their previous commitments and related advances), others did not refer to first NDCs in their updated one - which does not necessarily mean that they do not have ongoing efforts related to coastal and marine NbS.

Therefore, the comparative analysis is based on the inclusion of additional coastal and marine NbS in updated NDCs compared to first NDCs/(I)NDCs. A country's level of ambition was described as follows:

- ***Increased level of ambition:*** countries have added new coastal and marine NbS in their updated NDCs;
- ***Renewed level of ambition:*** countries included coastal and marine NbS in their first and updated NDCs;
- ***Decreased level of ambition:*** countries did not mention coastal and marine NbS in their updated NDCs, despite including coastal and marine NbS in their first NDC;
- ***Unchanged level of ambition:*** countries omitted coastal and marine NbS in their first and updated NDCs.

	Inclusion of coastal and marine NbS as mitigation and/or adaptation measures	
Level of ambition	First NDCs	Updated NDCs
Increased (↑)	No	Yes
Renewed (+)	Yes	Yes
Unchanged (-)	Yes	No
Decreased (↓)	No	No

Coastal countries with an unchanged level of ambition, i.e. that did not include coastal and marine NbS in both their first and updated submissions, have an untapped potential for future ambition. However, landlocked countries do not have the possibility to implement coastal and marine NbS. The latter countries were therefore addressed differently in the present report, e.g. highlighted in purple in tables.

Scope of the analysis

Overall, the present analysis includes all countries which submitted both their first and updated NDCs as of 21 October 2021. It covers 118 submissions (i.e. NDCs submitted by 117 countries and the EU-27[124]), referred to as 118 countries in the report. Remaining countries, i.e. which have not submitted their updated NDCs yet, will be included in the final version of this report.

Five countries (i.e. Brunei Darussalam*, Ecuador*, Philippines*, Senegal*, South Sudan*) submitted their first NDCs between 29 March 2019 and 21 October 2021. These countries, marked with an asterisk in the report, were listed under "new" NDCs in the present report, and included in the first section of this report. Given they only submitted their first NDC, the latter countries were not included in the comparative analysis, which therefore covers 113 NDCs (i.e. 112 countries and the EU-27).

The analysis results are presented using the following qualifiers, which are applied to denote the percentage of the submitted NDCs that mention coastal and marine NbS: "a few" for less than 10 per cent; "some" for 10-40 per cent; "several" for 40-70 per cent; "many" for 70-90 per cent; and "most" for 90 per cent and above.

134/ Austria, Belgium, Bulgaria, Croatia, Republic of Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden. France's commitments were distributed between two separate NDCs according to the region concerned (i.e. mainland and oversea territories). The French Supplement to the EU NDC, which focuses on French oversea territories, was addressed separately and counted as one country (i.e. France non EU) in this report.

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