

Impact of the Voluntary Carbon Market on Tropical Forest Countries — Implications for Corresponding Adjustments

Supplementary Report: Country Profiles and Preparedness



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MSCI Carbon Markets

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Acronyms and abbreviations

ARR: Afforestation, reforestation and revegetation

BUR: Biennial Update Report

COP: Conference of the Parties to the United Nations Framework Convention on Climate Change

CORSIA: Carbon Offsetting and Reduction Scheme for International Aviation

ETS: Emission Trading Scheme

FREL: Forest Reference Emissions Level

FRL: Forest Reference Level

GDP: Gross Domestic Product

GHG: Greenhouse gas

ITMO: Internationally transferred mitigation outcome

HFLD: High forest cover, low deforestation

Mha: Mega hectares

MtCO₂: Megatons of carbon dioxide

MtCO_{2e}: Megatons of carbon dioxide equivalent

NDC: Nationally determined contributions

NC: National communication

REDD+: Reduced emissions from deforestation and forest degradation, or more formally: 'reducing emissions from deforestation and forest degradation in developing countries, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries'

UNFCCC: United Nations Framework Convention on Climate Change

VCM: Voluntary carbon market

1. Introduction and scope

1.1 Background

This document supplements the main report ‘Impact of the Voluntary Carbon Market on Tropical Forest Countries — Implications for Corresponding Adjustments.’ The project has been funded by the Environmental Defense Fund.

This report assesses each of the 12 tropical forest countries in implementing national forestry policies, Nationally Determined Contribution (NDC) submissions and readiness to implement Article 6.

Each country is assessed in terms of: forest cover and deforestation, forest policy, climate policy including the country’s NDC submissions, existing forest-based carbon-credit project activity, accounting and monitoring capacity, and relevant national institutions.

This permits an assessment of how a country’s Paris Agreement commitments align with the potential need to apply corresponding adjustments, as well as the readiness of the country and its institutions to do so. This is presented as a preliminary study, given the ongoing discussions of the implementation of Article 6, ahead of COP27 later this year. How, when and if countries choose to engage in international market mechanisms towards their NDC pledges is likely to change.

Across the voluntary carbon market (VCM), REDD+ credits made up 33% of the total supply over the past five years.¹ As the countries in the study represent over 50% of the current REDD+ supply, understanding their climate and forest policies can contextualise the results of the main study. This is also the reason why analysis of the readiness of these countries to implement corresponding adjustments is beneficial.

In Section 2 (Country profiles) of this supplementary report, by exploring historical forestry emissions and other forestry targets, a fuller picture on NDC ambition is provided, placing the countries’ NDC commitments relating to forestry in context. Along with the assessment of readiness to apply corresponding adjustments, in some cases this provides a clearer picture of how, when and if the countries in question will apply corresponding adjustments.

After the finalization of Article 6 of the Paris Agreement, discussions have continued on whether corresponding adjustments should be applied to VCM transactions. However, the text of Article 6 establishes that the authorization of the host country is the key part of the process for determining if a corresponding adjustment will apply to a particular project, credit or emissions reduction.

Thus, in Section 3 (Article 6 preparedness), a number of factors are reviewed that may affect the application of corresponding adjustments, such as monitoring and accounting capacity, and stated interest in the use of market mechanisms towards NDC targets. This assessment of the content of NDC targets and of institutional capacity across national emissions accounting and forestry gives an assessment of preparedness to implement a system of

¹ Trove VCM supply data.

corresponding adjustments. In this context, ‘preparedness’ indicates both whether a country’s current NDC targets help or hinder the application of corresponding adjustments, and the country’s willingness and capacity to use international market mechanisms (and other methods that require corresponding adjustments) to reach these targets.

This provides valuable contextualization to the main final report, as ultimately each country will decide whether they utilize the VCM to achieve their NDC or if the potential requirements to apply corresponding adjustments impacts their decision to do so.

1.2 Scope

1.2.1 Study methods

The overall approach of the study covered both publicly available information from the countries in the study, and quantitative and spatial data from other sources to contextualize the information provided by countries. The data collected included NDC content and target types, documents submitted under different UN Framework Convention on Climate Change (UNFCCC) processes, stated interest in using international market mechanisms to achieve its NDC, amongst other areas.

These were collected primarily through desk-based research from:

- Documents submitted to the UNFCCC, including NDCs and other supporting documents such as National Communications.
- Documents submitted under other UNFCCC or international processes, such as Forest Reference Emission Levels (FRELs).
- These were supplemented with academic research (from peer-reviewed journals) and grey literature where necessary.
- Media references, where no other source was available.

Additional sources used included: forestry and emissions data from CAIT,² the Food and Agriculture Organisation (FAO)³ and Global Forest Watch.⁴ For VCM supply, Trove Research’s database provided historical data on issuances of forestry credits from each country, up to February 2022.

The preliminary analysis from the country profiles is the basis for two assessments in Section 3: NDC alignment with the application of corresponding adjustments and national institutional capacity.

As previously noted, any assessment of ‘readiness’ or ‘preparedness’ to implement corresponding adjustments is preliminary, given the ongoing negotiations on the implementation of Article 6, and because countries will be analyzing if the provisions under Article 6 have an impact on their current NDCs and climate strategies.

² Climate Watch (CAIT) - Country Greenhouse Gas Emissions Data, World Resources Institute. [Link](#)

³ Global Forest Resources Assessment 2020, FAO. [Link](#)

⁴ Global Forest Watch: World Resource Institute. [Link](#)

However, through the analysis in this supplementary report, we draw some initial findings on tropical forest countries' preparedness/willingness to implement corresponding adjustments and engage in market-based mechanisms to achieve NDCs, and any barriers to doing so.

1.2.2 Research questions

Key research questions of this study are:

- What differences exist between NDCs, particularly in relation to forestry?
- What are the current profiles of deforestation in the countries in the study?
- What characteristics would make countries more or less prepared to implement a system of corresponding adjustments?
- Which characteristics could be barriers to implementing a system of corresponding adjustments at the national level?

2. Country profiles

The first phase of the preparedness study presents profiles for the 12 countries in the study. The country profiles cover NDC content and targets, emissions and land use change from forestry, and existing VCM supply. Specifically, this covers:

- NDC content: this includes tracking any updates or changes the previous submissions when there have been updates, different sectoral targets, and overall observations on the NDC where relevant.
- Land use and emissions from forestry: this contextualizes the type/extent of forest cover, deforestation pressures and development patterns of each nation. This is also presented by drivers of human-caused forest loss.
- Existing VCM supply: this demonstrates both a prior ability and a willingness to interact with the VCM. This shows the current split between forestry reduction and removal credits, which has implications for future market behaviour.

Criteria and associated data sources include:

- Background information on NDCs: UNFCCC and Climate Watch⁵
- NDC targets: UNFCCC and Climate Watch⁶
- Sectoral coverage of NDCs: UNFCCC and Climate Watch⁷
- Willingness to participate in market mechanisms: Climate Watch⁸
- Forest cover and rates of deforestation: Global Forest Watch and FAO⁹
- Baseline emissions and emissions from deforestation: CAIT, FAO and Global Forest Watch
- Policies and regulations relevant to NDC implementation: Desk-based research
- Financing commitments and requirements: Desk-based research and Climate Watch¹⁰

These elements, in combination, present an overall picture of the institutional context, national climate and forest targets, and potential credit supply. By comparing the 12 country profiles, we can gain a better picture on applying corresponding adjustments in tropical countries.

⁵ NDCs submissions obtained from the UNFCCC. [Link](#)

⁶ From UNFCCC and Climate Watch data platform. [Link](#)

⁷ Climate Watch: [Link](#)

⁸ Planned use of international market mechanisms, Climate Watch. [Link](#)

⁹ Global Forest Watch. [Link](#)

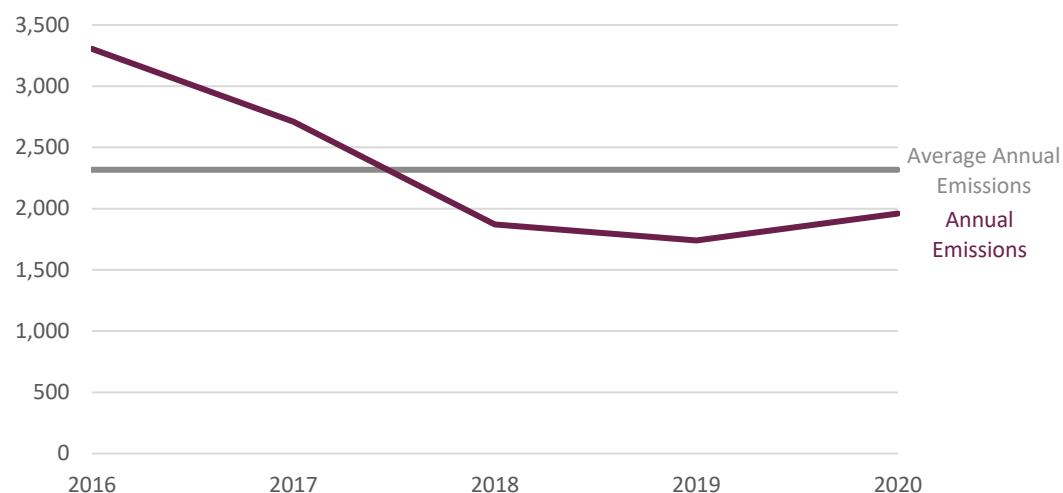
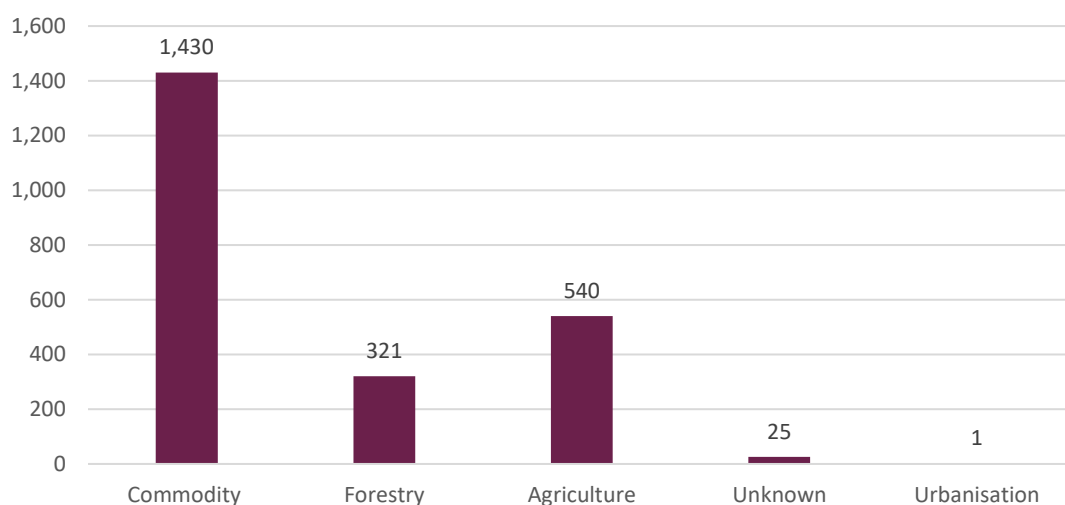
¹⁰ Climate Watch: [Link](#)

2.1 Brazil

NDC Context	
Summary	<ul style="list-style-type: none"> Updated NDC has less detail than previous submission under a different executive administration. Updated first NDC does not include sectoral targets from first NDC. The mitigation target of the new NDC will allow significantly more emissions in 2025 and 2030 than previously by a recalculation of the base year emissions. This was made less apparent by not communicating absolute emissions target in tonnes in revised NDC, only maintaining the same percentage target. Previously stated that Brazil is waiting for finalization of Article 6 before clarifying stance on market mechanisms.

Forestry Profile	
Deforestation Rate	The deforestation rate in the Brazilian Amazon reduced by 82% between 2004 and 2014.
Forest Cover Loss	2010: 492 million hectares (Mha) of natural forest cover, 59% of land area. 2020: lost 3.20 Mha of natural forest, equivalent to 1.77 GtCO ₂ e ¹
Primary Forest	From 2002 to 2020, Brazil lost 26.2 Mha of primary forest, a loss of 7.7% of total primary forest cover.
FAO Data	In FAO data, forest area was 496.6 Mha (59.4% of total area) in 2020, with 30% of forest area within protected areas, and 43.5% of forest area being primary forest.

NDC Targets	
Climate Action Tracker Rating	Insufficient
NDC Target	Reduce emissions by 37% by 2025 (from 2005 base year) and by 43% by 2030. Climate neutrality by 2060.
International Market Mechanisms	“Any transfer of units from mitigation results obtained in the Brazilian territory within the framework of the UNFCCC, the Kyoto Protocol or the Paris Agreement will be contingent on prior and formal consent by the Brazilian Federal Government.”
Mitigation Sectors	Economy-wide, target sectors include agricultural and animal husbandry sector; water security; biodiversity; energy; biofuel.
Relevant Policy	Renovabo Program for biofuels for transport. Low Carbon Agriculture Plan (ABC). Floresta+ Program (payment for ecosystem services).

Figure 1: Historical emissions from deforestation: Brazil (MtCO₂/year)**Figure 2: Annual average deforestation emissions by driver, 2016-20: Brazil (MtCO₂/year)****Table 1: Forest-based credits in the VCM: Brazil**

	Credits Issued (2010-2022)		Estimated Annual Issuances (Jan 22 pipeline)	
	No. of projects	Volume (tCO ₂)	No. of projects	Volume (tCO ₂)
REDD+	19	58,000,000	13	8,000,000
ARR ¹¹	4	601,000	2	150,000

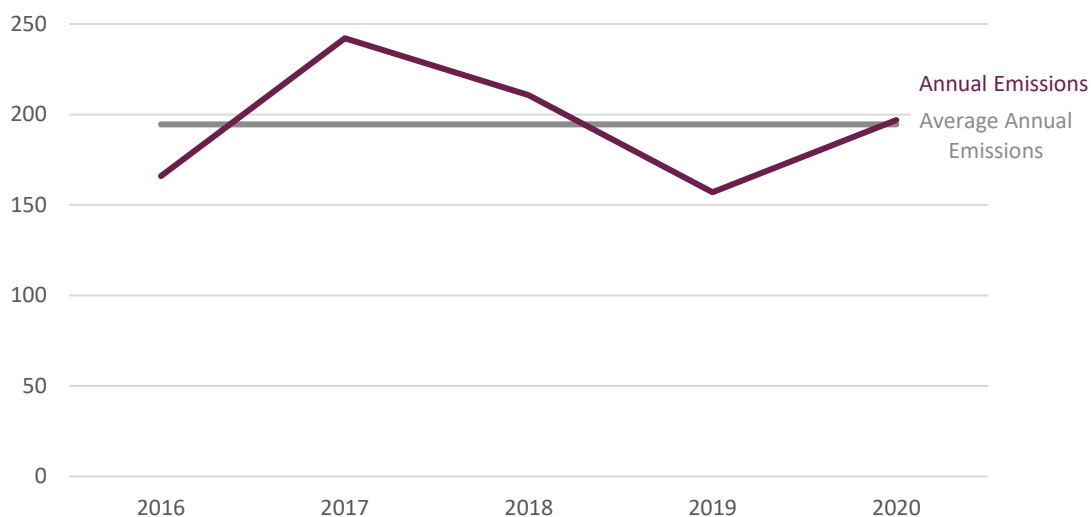
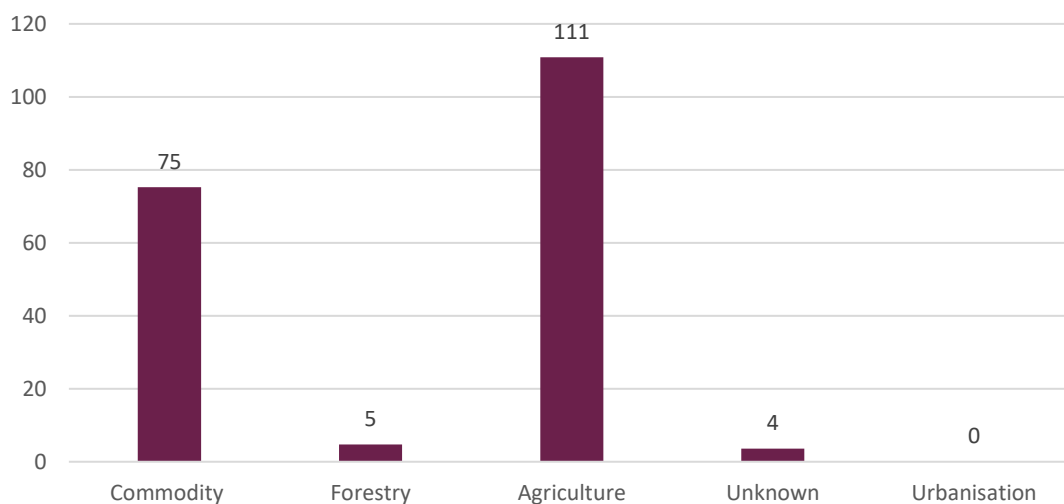
¹¹ Afforestation, reforestation and revegetation projects

2.2 Colombia

NDC Context	
Summary	<ul style="list-style-type: none"> Original iNDC submitted in 2018, updated in 2020. Provides more detail in reporting than other countries in this study.

Forestry Profile	
Forest Cover Loss	2020: 0.32 Mha of natural forest lost, equivalent to 195 MtCO _{2e} .
Primary Forest	From 2002 to 2020, Colombia lost 1.66 Mha of primary forest (38% of total tree cover loss in this period, and 3% of total primary forest cover).
FAO Data	In FAO Global Forest Resources Assessment data, Colombia had 59.1 Mha of forest area, representing 53.3% of total area. 21% of forest area is within protected areas.

NDC Targets	
Climate Action Tracker Rating	Highly insufficient.
NDC Target	Target: Reduction of 20% by 2030 compared to BAU trajectory Conditional NDC is 30% reduction BAU to 2030. NDC information on deforestation using 2013-2017 FREL for the Amazon region, NDC promise to increase 2.5 Mha coverage of National System of Protected Areas (SINAP).
International Market Mechanisms	Will use in accordance with CMA decisions and San Jose principles on environmental integrity.
Mitigation Sectors	Agriculture, Forestry and Land Use, Energy, Waste, Industrial Processes. 10 subsectors of agriculture (e.g. rice, coffee, livestock, silvopastoral)
Relevant Policy	CONPES 3700 The Colombian Low Carbon Development Strategy (CLCDS). The National Strategy for Reducing Emissions from Deforestation and Forest Degradation (ENREDD +). The National Adaptation Plan for Climate Change. Sectorial Mitigation Action Plans (SMAPs) carbon efficiency of activities at national and sectorial levels.
Funding	Colombia has yet to release a quantification of the costs of implementing its NDC and the level of funding targeted from national, international, public and private sources. 15 of the country's departments participating in the technical working groups on climate and agriculture.

Figure 3: Historical emissions from deforestation: Colombia (MtCO₂/year)**Figure 4: Annual average deforestation emissions by driver, 2016-20: Colombia (MtCO₂/year)****Table 2: Forest-based credits in the VCM: Colombia**

	Credits Issued (2010-2022)		Estimated Annual Issuances (Jan 22 pipeline)	
	No. of projects	Volume (tCO ₂)	No. of projects	Volume (tCO ₂)
REDD+	11	29,000,000	14	16,000,000
ARR	3	818,000	2	170,000

2.3 Costa Rica

NDC Context	
Summary	<ul style="list-style-type: none"> • First NDC 2016, updated in 2020. • A slight reduction in fixed level net emissions target between first NDC and updated NDC. • Removed base-year data and comparisons with BAU. • Ambition to become carbon neutral economy starting 2021, reaching emissions levels of 2005 (from 2015 NDC).

Forestry Profile	
Deforestation Rate	Under Forestry Law of 1996, they achieved 52.4% forest coverage by 2013.
Forest Cover Loss	2010: 3.78 Mha of natural forest cover, 76% of land area (GFW). 2020: lost 7340 ha of natural forest, equivalent to 4.03 MtCO ₂ e.
Primary Forest	From 2002 to 2020, Costa Rica lost 26.2 kha of humid primary forest, constituting 11% of total tree cover loss. In this period, the total area of humid primary forest decreased by 1.8%.
FAO Data	In FAO data, Costa Rica had 3 Mha of forest area in 2020, covering 59.4% of its total area, with 43% of forest area within protected areas.

NDC Targets	
Climate Action Tracker Rating	2°C compatible.
NDC Target	Maximum net emissions of 9.11 MtCO ₂ e in 2030, and maximum budget of net emissions of 106.53 MtCO ₂ e during 2021-2030. Costa Rica's NDC is not conditional on the availability of international climate finance. The country indicates in its NDC its needs for financial support, technology transfer and capacity building.
International Market Mechanisms	Primarily will achieve through domestic means and maximising carbon sinks, but will participate in Article 6 mechanisms 'as a complement.'
Relevant Policy	The National Environmental Information System (SINIA) promotes an open data policy for all relevant climate information. In 2007, Costa Rica's National Climate Change Strategy was launched, launching creation of a Climate Change Department at the MINAE (Ministry of Environment and Energy).
Funding	The National Forestry Financing Fund (FONAFIFO) is currently developing its Emissions Reduction Program under the Carbon Fund (FCPF), known as the National REDD+ Strategy since 2010.

Figure 5: Historical emissions from deforestation: Costa Rica (MtCO₂/year)

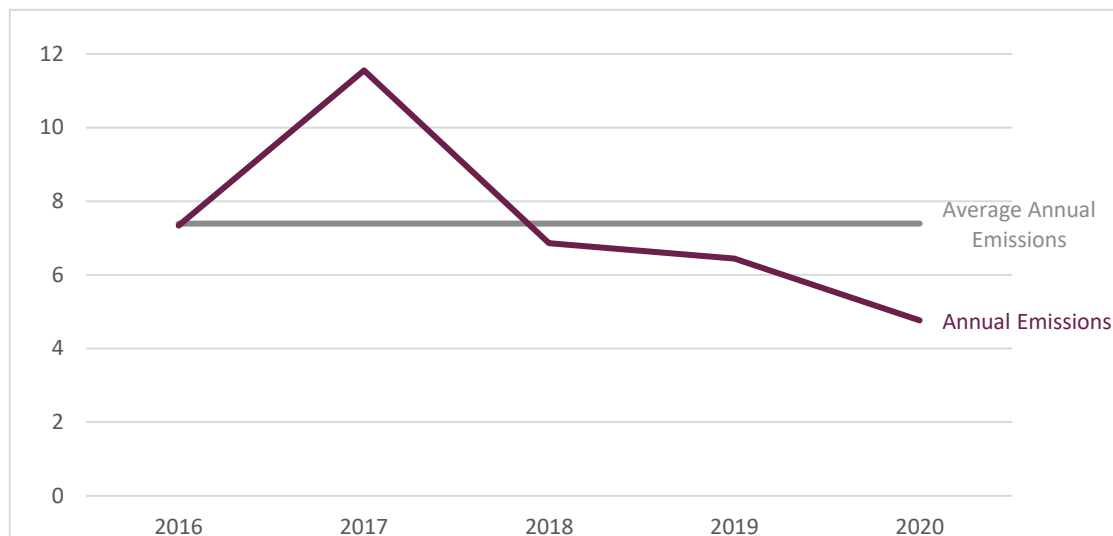
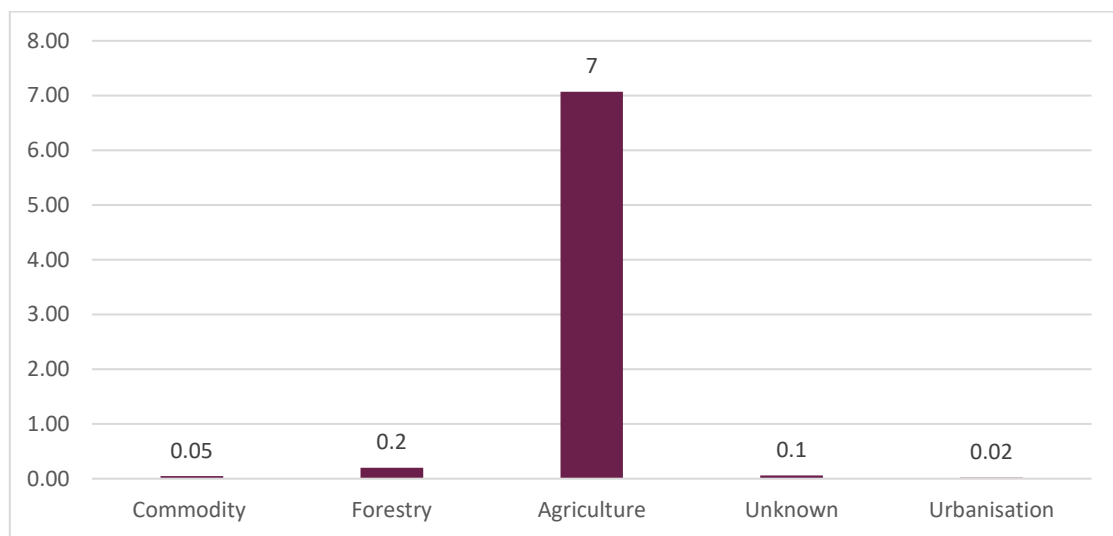


Figure 6: Annual average deforestation emissions by driver, 2016-20: Costa Rica (MtCO₂/year)



Forest-based credits in the VCM: Costa Rica

No historical forestry projects in the VCM, and no projects currently identified in the pipelines of Verra or Gold Standard.

2.4 Democratic Republic of the Congo

NDC Context	
Summary	<ul style="list-style-type: none"> • First NDC submitted in 2017, pledge updated in December 2021. • Agriculture, Energy and LULUCF are 98% of GHG emissions, according to their NDC. • According to CAIT data, emissions including LUC and Forestry were 682 MtCO₂e in 2018, up from 444 MtCO₂e in 2010.

Forestry Profile	
Forest Cover Loss	2010: 198 Mha of natural forest, 85% of land area (GFW). 2020: lost 1.31 Mha of natural forest, equivalent to 854 MtCO ₂ e (GFW).
Primary Forest	From 2002 to 2020, the Democratic Republic of the Congo lost 5.32 Mha of primary forest, constituting 34% of total tree cover loss in this period. They lost 5.1% of total primary forest cover in this period.
FAO Data	122.6 Mha of forest area in FAO Global Forest Resources data, with forest area 55.7% representing of total area and 19.3% of forest area is in protected areas. Primary forest is 66% of forest area.

NDC Targets	
Climate Action Tracker Rating	No rating.
NDC Target	December 2021 update pledged emissions reductions from Agriculture, Waste and Energy of 43%, 20% and 11% by 2030. Targets an overall estimated mitigation level of up to 650 MtCO ₂ e by 2030.
International Market Mechanisms	Looking to sell carbon credits through the international carbon market through Article 6 to finance the measures of its NDC. Set up a national Register of Emission Reduction Transactions to avoid double counting of forestry emission reductions. The register is intended to track emissions and reductions from each project and provide information on transfers and sales.
Mitigation Sectors	AFOLU, Waste, Energy, Agriculture
Relevant Policy	Low-Carbon Development Strategy National Strategic Development Plan (PNSD) Developing a 2021-2025 action plan and a 2021-2030 plan.
Funding	Cost of implementation of target estimated at USD 48.68 billion.

Figure 7: Historical emissions from deforestation: Democratic Republic of the Congo (MtCO2)

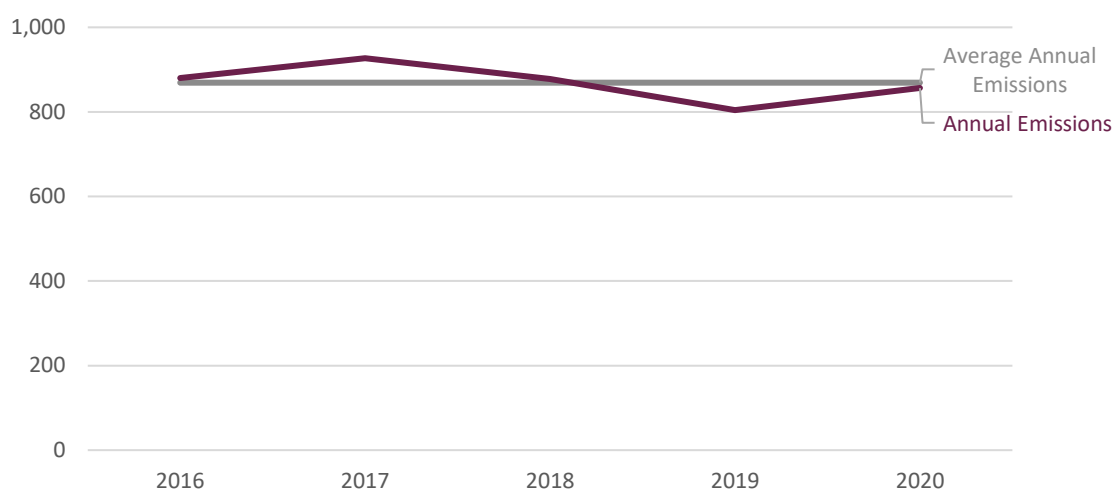


Figure 8: Annual average deforestation emissions by driver, 2016-20: Democratic Republic of the Congo (MtCO2/year)

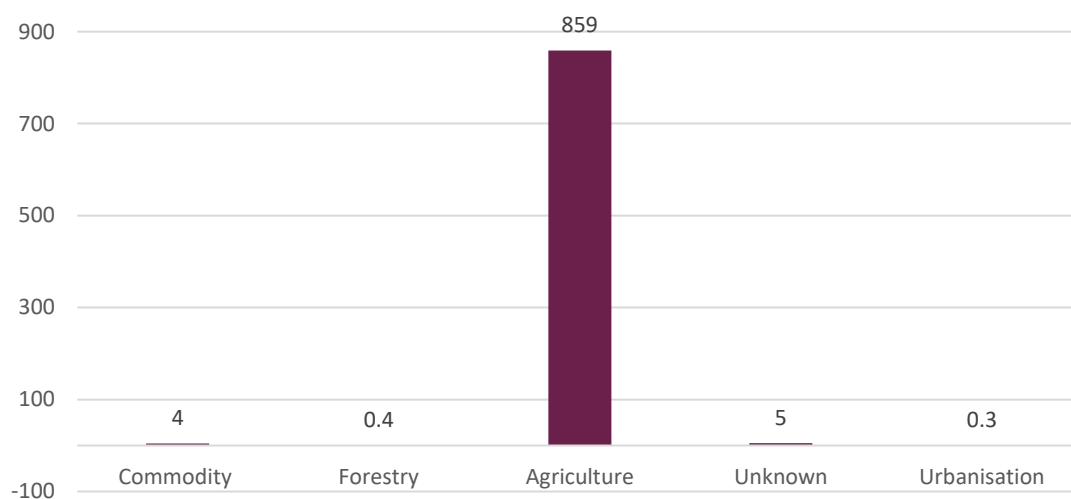


Table 3: Forest-based credits in the VCM: Democratic Republic of the Congo

	Transactions (2010-2022)		Annual Credits Pipeline (Jan 22)	
	No. of projects	Volume (tCO2)	Project number	Volume (tCO2)
REDD+	2	15,000,000		
ARR			1	122,000

2.5 Gabon

NDC Context	
Summary	<ul style="list-style-type: none"> The NDC has fewer details than some others in the study. There may be some differences between the values reported in its NDC and the accompanying data, which present a challenge for interpretation of Gabon's target.

Forestry Profile	
Forest Cover Loss	2010: 24.7 Mha of natural forest cover, 93% of land area. 2020: lost 22,000 ha of natural forest, equivalent to 14.4 MtCO ₂ e.
Primary Forest	From 2002 to 2020, Gabon lost 0.25 Mha of primary forest, constituting 56% of total tree cover loss in this period. In the same period, this represented a loss of 1.1% of total primary forest cover.
FAO Data	91.3% of total area is forest area (23.5 Mha)

NDC Targets	
Climate Action Tracker Rating	No rating.
NDC Target	Reduce emissions by 50% by 2025 compared to baseline scenario.
International Market Mechanisms	No planned use.
Mitigation Sectors	No explicit mention of all mitigation sectors covered. Target for forestry sector: 68% emissions reduction by 2020 from LULUCF and Forestry/Sustainable Land Management against BAU scenario (potential reductions: up to 1,500 Mt CO ₂ e (2010-2025))
Relevant Policy	Renewables: development of hydropower, targeting 80% of electricity supply from hydropower and 20% from gas by 2025.
Funding	<ul style="list-style-type: none"> Gabon will focus its commitment on GHG emissions with the exclusion of carbon stocks in forests. Gabon states that it will achieve its NDC not solely through the conservation of forest with support from international finance. Finance for mitigation and adaptation both mentioned but not in detail.

Figure 9: Historical emissions from deforestation: Gabon (MtCO2)

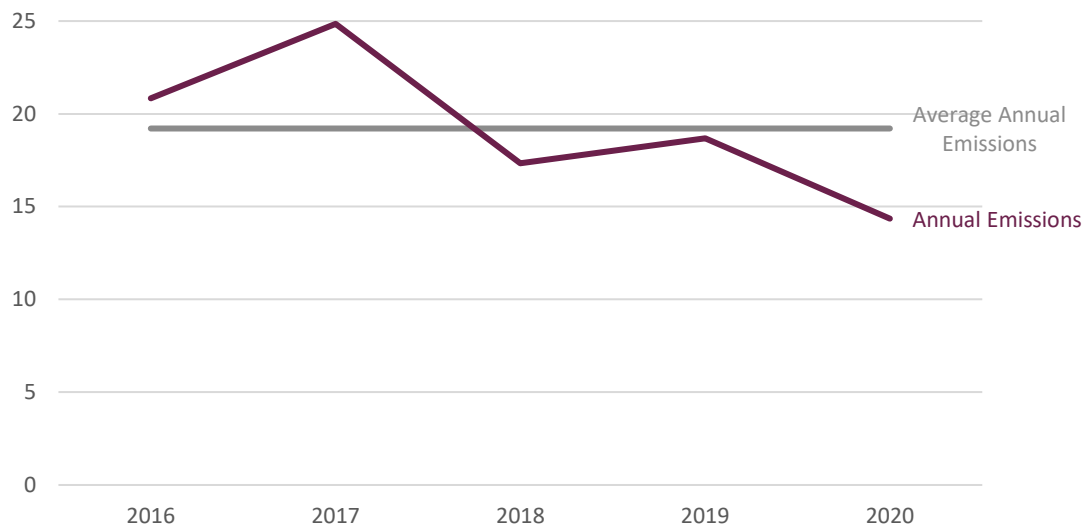
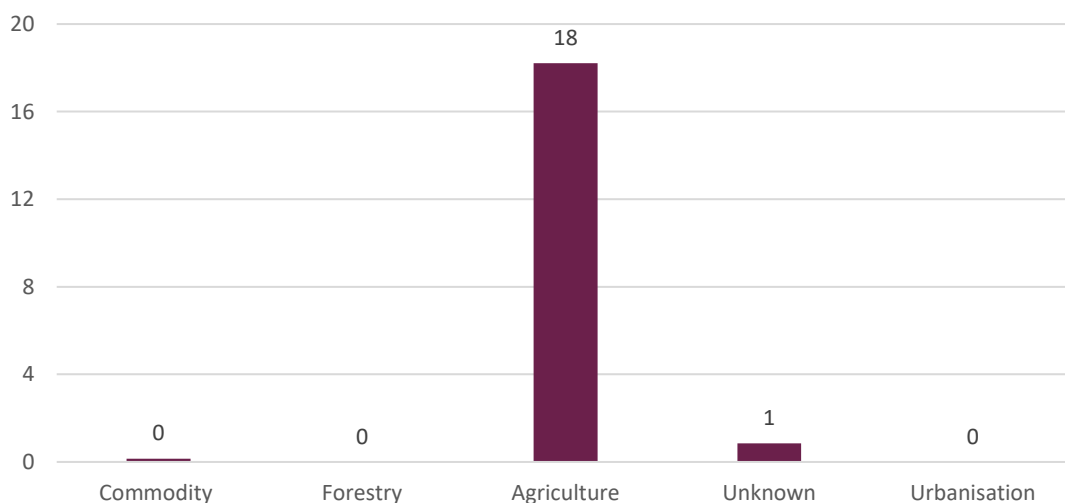


Figure 10: Annual average deforestation by driver, 2016-20: Gabon (MtCO2/year)



Forest-based credits in the VCM: Gabon

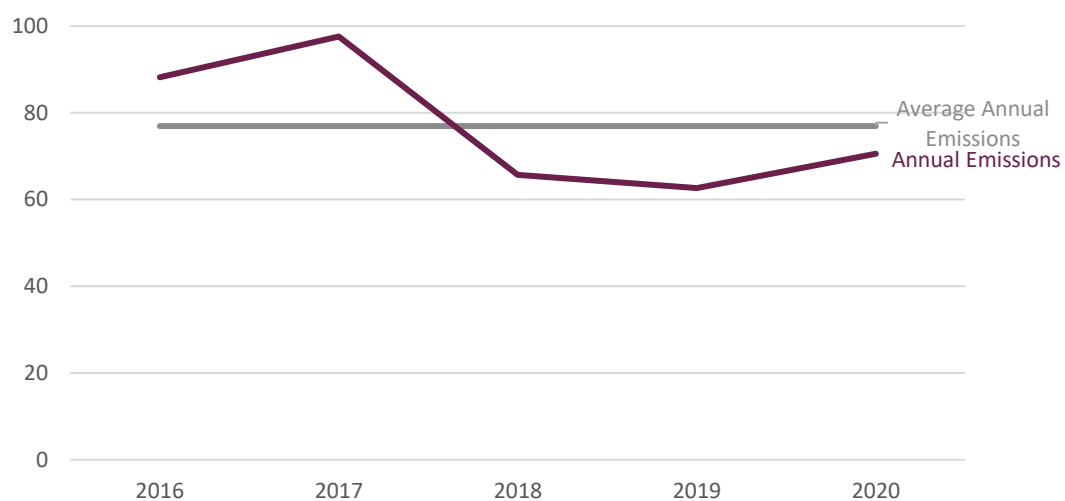
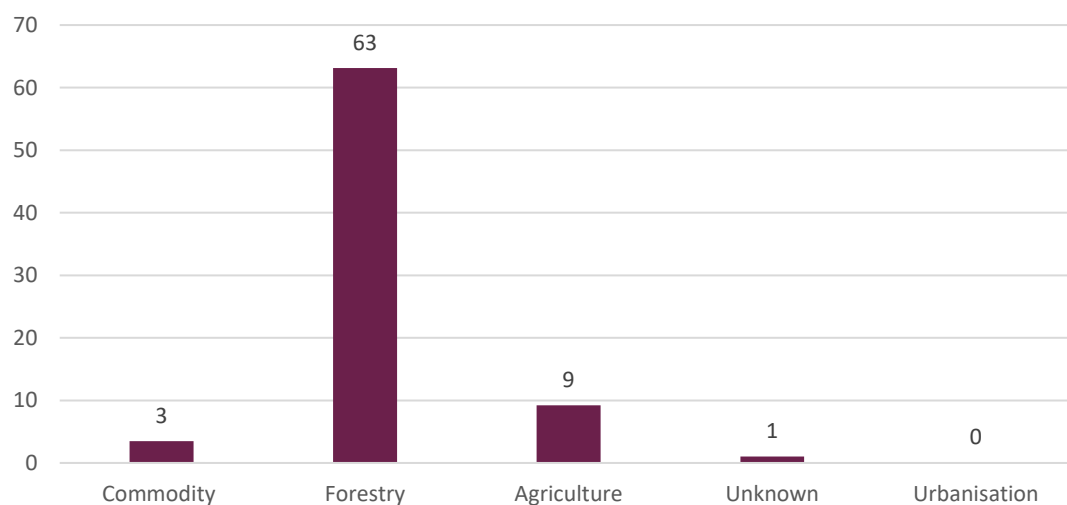
No historical forestry projects in the VCM, and no projects currently identified in the pipelines of Verra or Gold Standard.

2.6 India

NDC Context	
Summary	<ul style="list-style-type: none"> Complete NDC submitted in 2016. No updated NDC submitted yet, but committed to net zero by 2070 at COP26. Recognised by UNEP as a country on track to attain its goal. Emissions of 3.35 Gt CO₂e in 2018, according to CAIT data, up from 2.58 Gt CO₂e in 2010.

Forestry Profile	
Forest Cover Loss	2010: 31.3 Mha of natural forest, 11% of land area (GFW). 2020: lost 0.13 Mha of natural forest, equivalent to 67.3 MtCO ₂ e (GFW).
Primary Forest	From 2002 to 2020, India lost 0.35 Mha of primary forest. This was 19% of total tree cover loss, and 3.4% of total primary forest cover in this period.

NDC Targets	
Climate Action Tracker Rating	Highly insufficient.
NDC Target	33% to 35% reduction in the emissions intensity of GDP by 2030 compared to 2005 level.
International Market Mechanisms	Not specified.
Mitigation Sectors	Renewables, Energy, Urban Transport.
Relevant Policy	Green Energy Corridor project (USD 6 billion) rolled out.
Funding	Preliminary estimate suggests that at least USD 2.5 trillion (at 2014-15 prices) will be required for meeting India's climate change actions between now and 2030.

Figure 11: Historical emissions from deforestation: India (MtCO₂)**Figure 12: Average annual deforestation by driver, 2016-20: India (MtCO₂/year)****Table 4: Forest-based credits in the VCM: India**

	Credits Issued (2010-2022)		Estimated Annual Issuances (Jan 22 pipeline)	
	No. of projects	Volume (tCO ₂)	No. of projects	Volume (tCO ₂)
REDD+				
ARR	4	447,000	11	4,000,000

2.7 Indonesia

NDC Context	
Summary	<ul style="list-style-type: none"> • Has a more detailed NDC than some other countries in the study. • Has several conditional targets to its NDC.

Forestry Profile	
Deforestation Rate	2015 FREL was set at 0.568 GtCO ₂ e yr ⁻¹ (AGB), Planned to submit second FREL by end of 2020.
Forest Cover Loss	2001: 93.8 Mha of primary forest – 50% of land area (GFW). 2020: lost 0.27 Mha of primary forest, equivalent to 208MtCO ₂ e. 17% decrease in tree cover between 2000 and 2020 (GFW).
Primary Forest	Lost 9.75 Mha of primary forest (2002 to 2020), representing 36% of tree cover loss and a loss of 10% of total primary forest cover.

NDC Targets	
Climate Action Tracker Rating	Highly insufficient
NDC Target	<p>Unconditional reduction targets: 26% of GHG emissions against BAU scenario by 2020 and 29% of emissions against BAU scenario by 2030</p> <p>Conditional target: up to 41% reduction of emissions by 2030, dependent on finance and tech transfer.</p> <p>Target for 2030: peat land restoration of 2 Mha, rehabilitation of 12 Mha degraded land.</p>
International Market Mechanisms	Presidential Decree 98/2021, signed in November 2021, provides the basis for market mechanisms, including a cap-and-trade scheme, carbon credit tax, and prior notification system for carbon credits. These indicate a preference for private finance over results-based payments from international donors.
Mitigation Sectors	FOLU (Forestry and other land use), Energy, Waste Management, Agriculture, IPPU (industrial processes and product use).
Relevant Policy	<p>Moratorium on clearing of primary forests</p> <p>Development of clean energy sources as national policy, with targets: 2025: 23% renewables, oil less than 25%, coal min. 30%, gas min. 22% 2050: 31% renewables, oil less than 20%, coal min. 25%, gas min. 24%</p> <p>Integrated National Transparency framework, through:</p> <ul style="list-style-type: none"> • National Registry System (Id. Sistema Registry Nasional/SRN) for implementing mitigation and adaptation. • MRV system for mitigation including REDD+. • Safeguards Information System for REDD+ (SIS-REDD+).
Funding	USD 323 billion needed to implement mitigation actions in the NDC. Between 2007 and 2014 Indonesia spent USD 17.5 billion on climate adaptation and mitigation, and USD 55 billion between 2015 and 2019.

Figure 13: Historical emissions from deforestation: Indonesia (MtCO2)

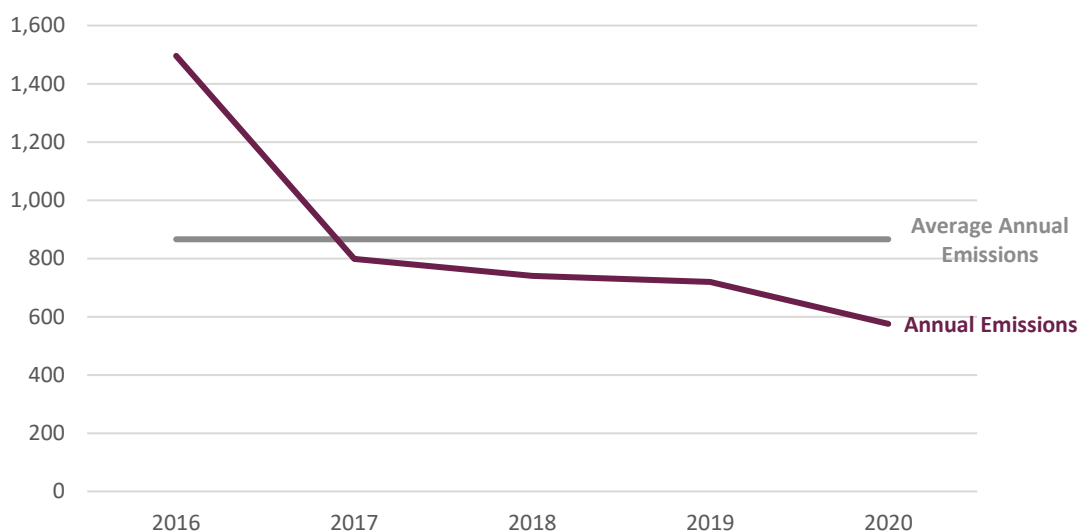


Figure 14: Annual average deforestation by driver, 2016-20: Indonesia (MtCO2/year)

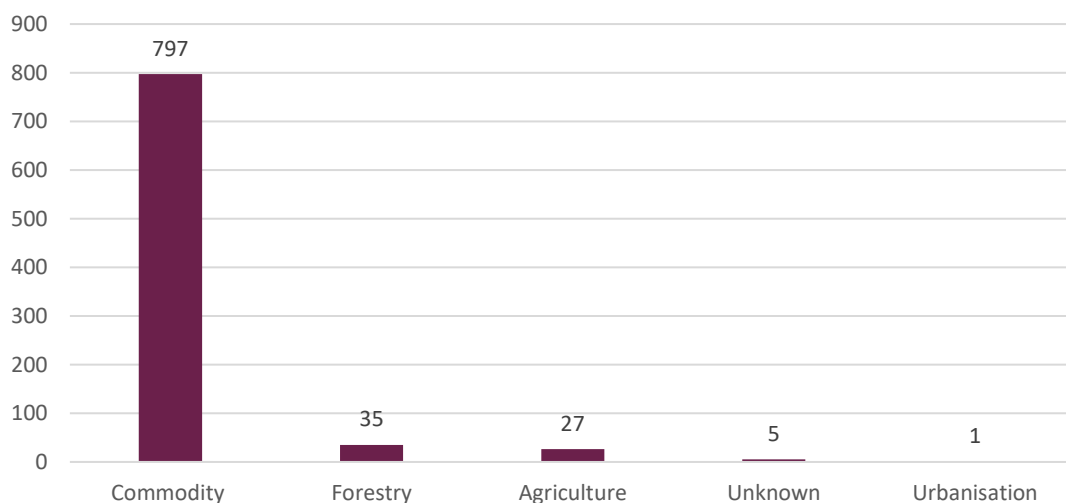


Table 5: Forest-based credits in the VCM: Indonesia

	Credits Issued (2010-2022)		Estimated Annual Issuances (Jan 22 pipeline)	
	No. of projects	Volume (tCO2)	No. of projects	Volume (tCO2)
REDD+	3	68,000,000	1	2,000,000
ARR				

2.8 Kenya

NDC Context	
Summary	<ul style="list-style-type: none"> • First NDC produced in 2015, updated in 2020. • Adaptation already a major concern, with an estimated annual loss of GDP of 3-5% from climate impacts. • Over 84% Kenya's land area is arid and semi-arid, less than 16% of the land area supports over 80% population.

Forestry Profile	
Forest Cover Loss	2010: 3.18 Mha of natural forest, 5.7% of land area (GFW). 2020: lost 17,000 ha of natural forest, equivalent to 7.68 MtCO ₂ e (GFW).
Primary Forest	From 2002 to 2020, Kenya lost 49,000 ha of primary forest, which is equal to 14% of total tree cover loss and a loss of 7.6% of total primary forest cover in this period.

NDC Targets	
Climate Action Tracker Rating	Almost sufficient.
NDC Target	32% emissions reduction compared to BAU scenario.
International Market Mechanisms	If Kenya exceeds its NDC targets, it will engage in market and non-market mechanisms from Article 6, in line with future domestic legislation.
Mitigation Sectors	Energy, Transportation, Industrial Processes, Agriculture, Land Use, Land Use Change and Forestry (LULUCF), and Waste
Relevant Policy	National development strategy is Vision 2030 and achievement of NDC is linked to this.
Funding	Kenya NDC aims are estimated to cost around USD 62 billion, and Kenya is requesting for 87% of this budget from international support and 13% from domestic funding.

Figure 15: Historical emissions from deforestation: Kenya (MtCO2)

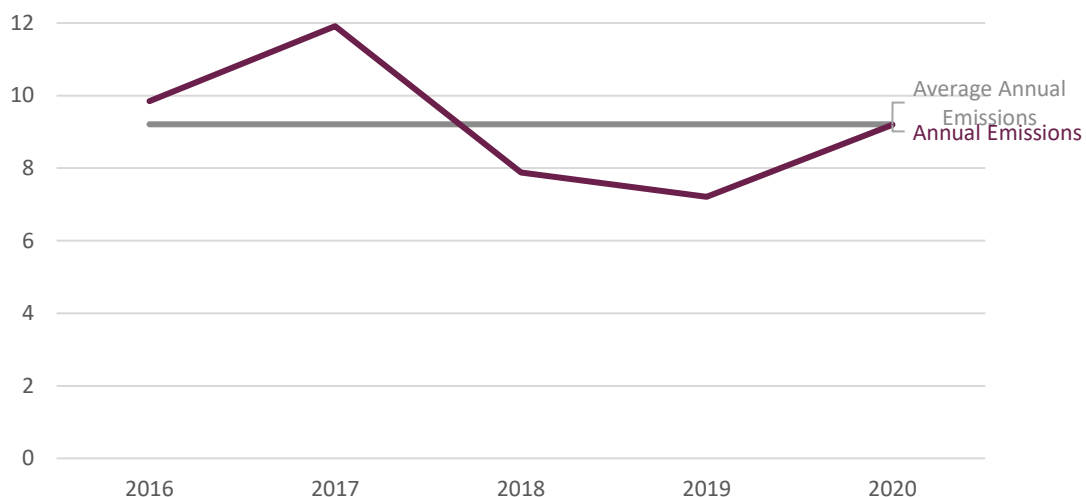


Figure 16: Annual average deforestation emissions by driver, 2016-20: Kenya (MtCO2/year)

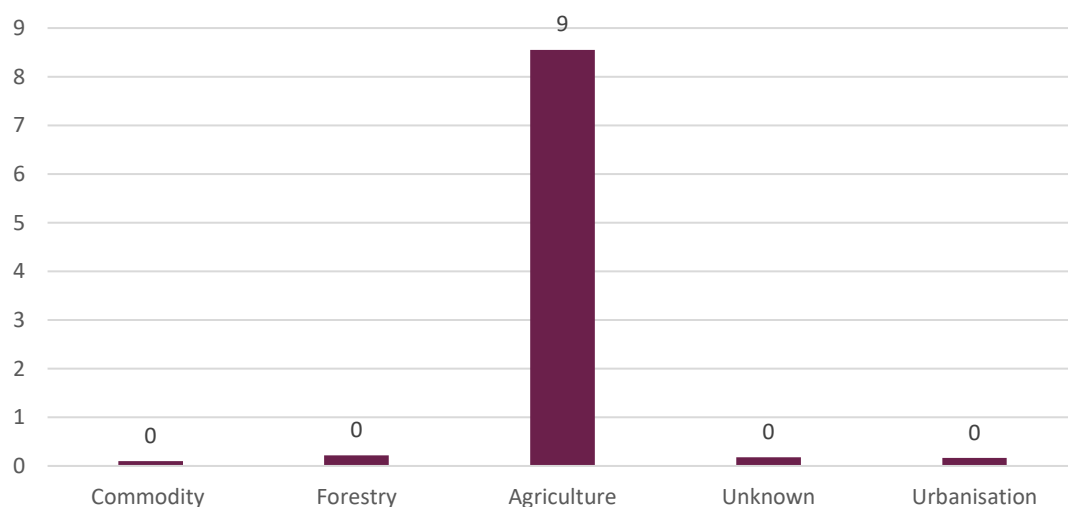


Table 6: Forest-based credits in the VCM: Kenya

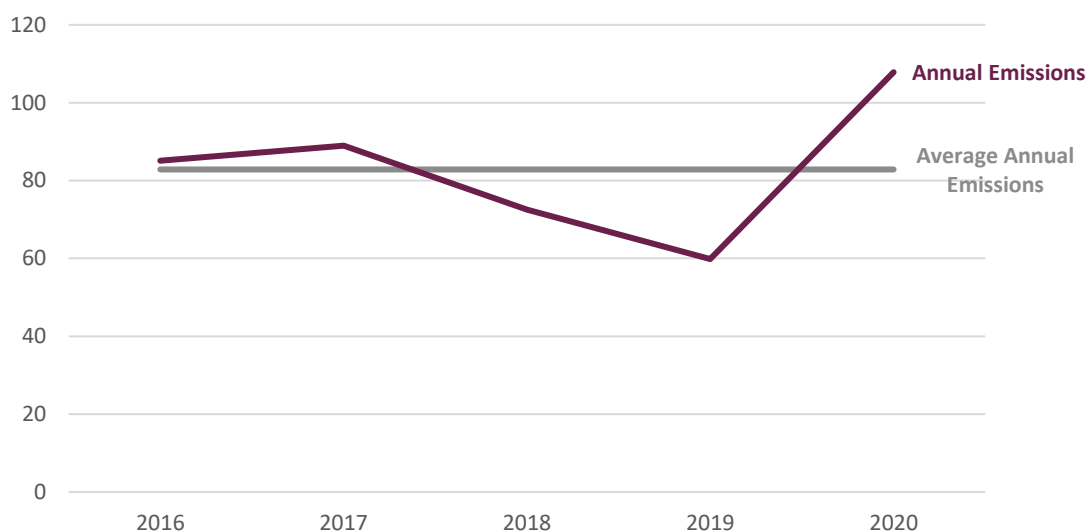
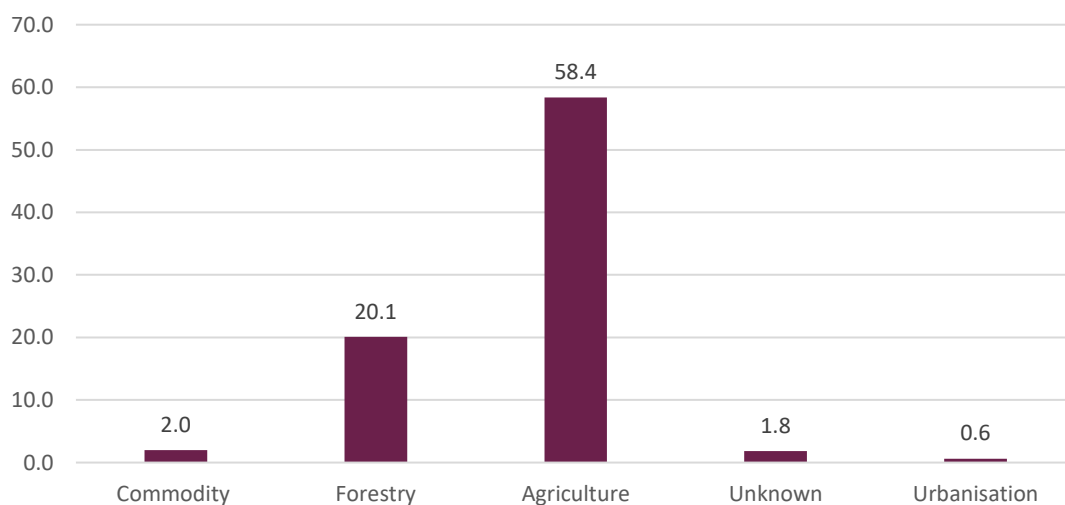
	Credits Issued (2010-2022)		Estimated Annual Issuances (Jan 22 pipeline)	
	No. of projects	Volume (tCO2)	No. of projects	Volume (tCO2)
REDD+	3	20,000,000	1	306,000
ARR	8	3,000,000	1	16,000

2.9 Papua New Guinea

NDC Context	
Summary	<ul style="list-style-type: none"> • First NDC in 2016, updated first NDC submitted in 2020. • NDC covers AFOLU and Energy only, but these account for 90% of emissions.

Forestry Profile	
Forest Cover Loss	2010: 42.6 Mha of natural forest cover, 93% of land area (GFW). 2020: lost 75,400 ha of natural forest, equivalent to 56.2 MtCO ₂ of emissions (GFW).
Primary Forest	From 2002 to 2020, Papua New Guinea lost 0.78 Mha of primary forest. This figure is equal to 51% of total tree cover loss, and a loss of 2.4% of total primary forest cover in the same period.

NDC Targets	
Climate Action Tracker Rating	No rating.
NDC Target	Papua New Guinea commits to a carbon neutrality target within the energy industry by 2030. 10 MtCO ₂ e reduction in annual emissions from deforestation and forest degradation compared to 2015 level by 2030.
International Market Mechanisms	Papua New Guinea will use bilateral, market and non-market mechanisms under Article 6.
Mitigation Sectors	Land use and forestry (REDD+), Energy, Oil and gas, Transport
Relevant Policy	40-year development strategy launched in 2009: Papua New Guinea Vision 2050. Forestry: The Papua New Guinea National REDD+ Strategy (2017 – 2027), The REDD+ Finance and Investment Plan, National REDD Strategy, The National Reforestation and Afforestation Strategies, National Strategies on Domestic Processing of Forest Produce.
Funding	REDD+ activities under the UNFCCC are currently being supported by the UN-REDD Programme, the World Bank's Forest Carbon Partnership Facility (FCPF), and the European Union.

Figure 17: Historical emissions from deforestation: Papua New Guinea (MtCO₂)**Figure 18: Annual average deforestation emissions by driver, 2016-20: Papua New Guinea (MtCO₂/year)****Table 7: Forest-based credits in the VCM: Papua New Guinea**

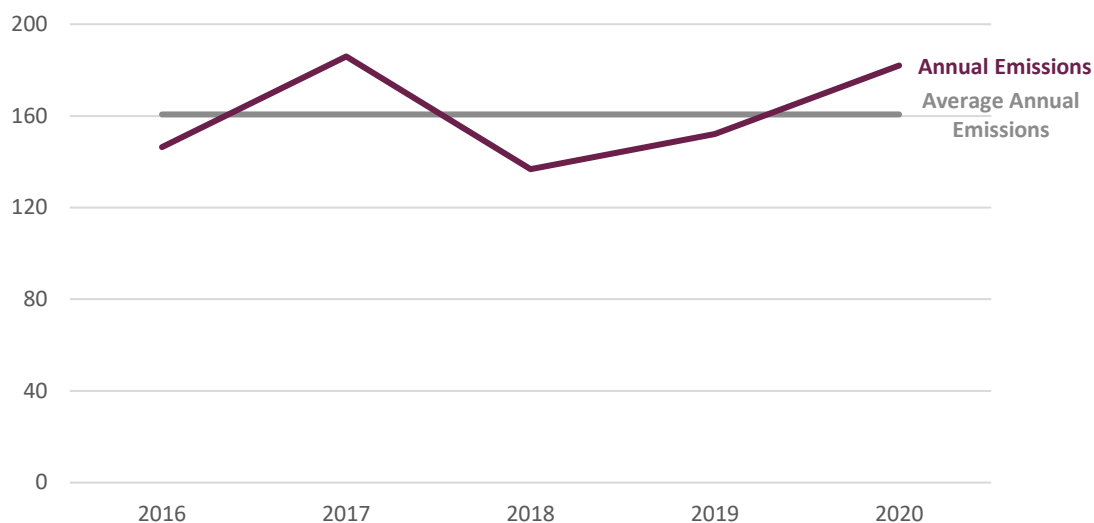
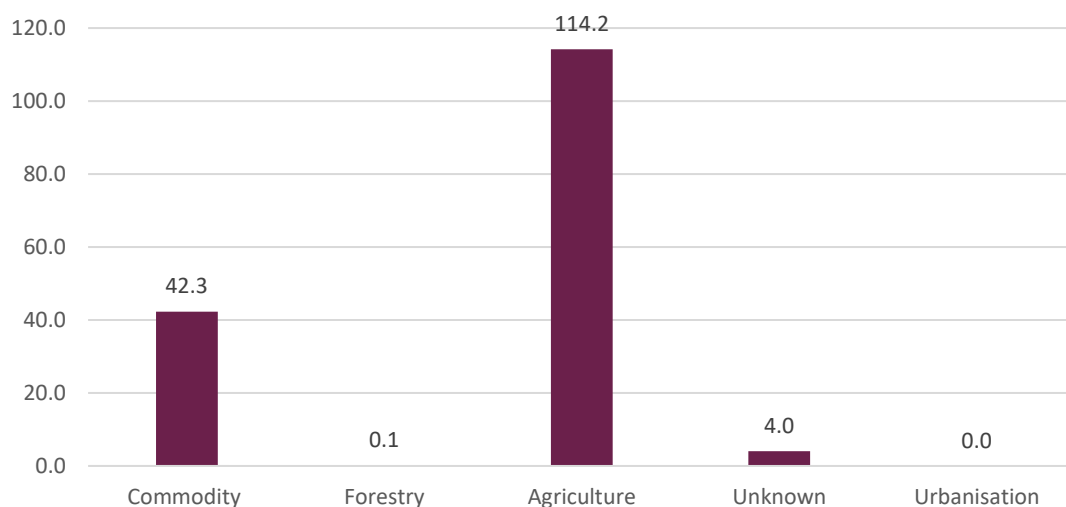
	Credits Issued (2010-2022)		Estimated Annual Issuances (Jan 22 pipeline)	
	No. of projects	Volume (tCO ₂)	No. of projects	Volume (tCO ₂)
REDD+	2	2,000,000	1	202,000
ARR				

2.10 Peru

NDC Context	
Summary	<ul style="list-style-type: none"> • First NDC submitted in 2016. Updated first NDC submitted in 2020. • Received support from NDC Support Programme. • Peru has seven of the nine characteristics of countries recognized by the UNFCCC as ‘particularly vulnerable’³ to climate change.

Forestry Profile	
Emissions	50% emissions from LULUCF.
Forest Cover Loss	2010: 78.7 Mha of natural forest cover (61% of land area (GFW)). 2020: lost 0.28 Mha of natural forest, equivalent to 182 MtCO ₂ e (GFW).
Primary Forest	From 2002 to 2020, Peru lost 2.16 Mha of primary forest, constituting 65% of total tree cover loss and 3.1% of total primary forest cover in this period.

NDC Targets	
Climate Action Tracker Rating	Insufficient.
NDC Target	Limit GHG emissions to a maximum level of 208.8 MtCO ₂ e (unconditional) and 179.0 MtCO ₂ e (conditional) in 2030.
International Market Mechanisms	Peru expects to participate in cooperative approaches under the Paris Agreement. Bilateral emissions trading deal signed with Switzerland in 2020, which took two years to negotiate (an early Article 6.2 cooperation). Swiss fund sustainable development projects in Peru, then offsets can then be retired by local government or private companies based in Switzerland.
Mitigation Sectors	Energy; Industrial Processes and Products Use (IPPU); Waste; Land Use, Land Use Change and Forestry (LULUCF); and Agriculture
Relevant Policy	National Strategy for Climate Change
Funding	Received USD 53 million in GCF funding, including USD 3 million in readiness support.

Figure 19: Historical emissions from deforestation: Peru (MtCO2)**Figure 20: Annual average deforestation emissions by driver, 2016-20: Peru (MtCO2/year)****Table 8: Forest-based credits in the VCM: Peru**

	Credits Issued (2010-2022)		Estimated Annual Issuances (Jan 22 pipeline)	
	No. of projects	Volume (tCO2)	No. of projects	Volume (tCO2)
REDD+	10	59,000,000	3	3,000,000
ARR	3	463,000	1	10,000

2.11 Suriname

NDC Context	
Summary	<ul style="list-style-type: none"> • First NDC submitted in 2015. Updated First NDC submitted in 2020. • Submitted an 'Actions Only' NDC. • Claims to hold the status of a carbon negative nation. • Adaptation risks include sea level rise that will affect both mangrove forests and arable lands. • Hydropower supplies the majority of its electricity generation.

Forestry Profile	
Emissions	<p>Suriname's forests store about 11 GtCO₂e and absorbs more than 8.8 MtCO₂e per year</p> <p>Forest Reference Emission Level (FREL) for Suriname's REDD+ Programme was submitted for review to the UNFCCC in 2018.</p>
Forest Cover Loss	<p>2010: 14.0 Mha of tree cover, 96% of its land area (GFW).</p> <p>2020: lost 15,000 ha of tree cover, equivalent to 11.8 MtCO₂e (GFW).</p>
Primary Forest	<p>From 2002 to 2020, Suriname lost 0.13 Mha of primary forest, making up 68% of total tree cover loss in this period, and a loss of 1% of total primary forest cover.</p>

NDC Targets	
Climate Action Tracker Rating	No rating.
NDC Target	Actions only.
International Market Mechanisms	"As part of this INDC Suriname has not given consideration to the use of markets though such markets could become a feature for the future."
Mitigation Sectors	Energy, Forests, Agriculture, Transport. Together these total 70% of emissions
Relevant Policy	13% total land area under national protection system.
Funding	Energy and forestry sector mitigation requirements estimated at USD 2.49 billion, and USD 1 billion by 2025 for climate resilience programme.

Figure 21: Historical emissions from deforestation: Suriname (MtCO2)

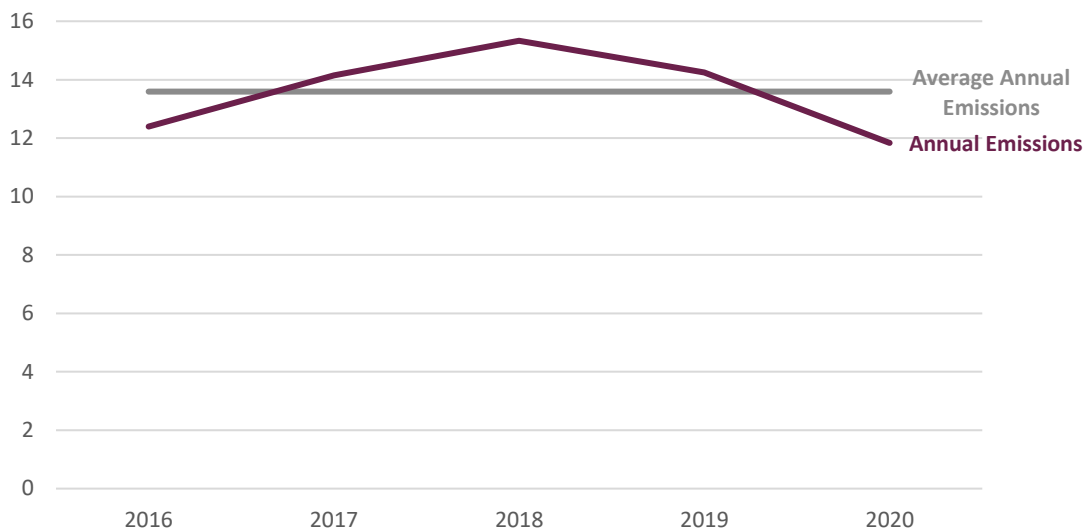
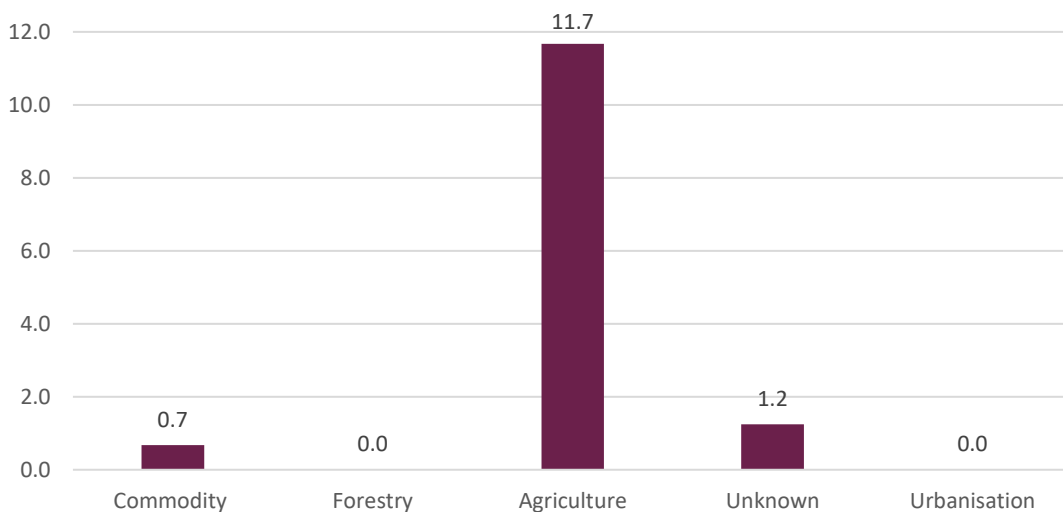


Figure 22: Annual average deforestation emissions by driver, 2016-20: Suriname (MtCO2/year)



Forest-based credits in the VCM: Suriname

No historical forestry projects in the VCM, or identified projects in the Verra or Gold Standard pipelines.

2.12 Vietnam

NDC Context	
Summary	<ul style="list-style-type: none"> Detailed NDC submission, with implementation plans. Between NDC releases, promised increase from 62.6 to 83.9 MtCO₂e of emission reductions. Energy sector reduction of 51.5 MtCO₂e (5.5% vs BAU scenario) Agriculture: 6.8 MtCO₂e (0.7% vs BAU) LULUCF: 9.3 MtCO₂e (1% vs BAU)

Forestry Profile	
Forest Cover Loss	2010: 14.5Mha of natural forest cover, 50% of land area. 2020: lost 0.15 Mha of natural forest, equivalent to 74.4MtCO ₂ of emissions (GFW).
Primary Forest	From 2002 to 2020, Vietnam lost 0.69 Mha of primary forest, which was equivalent to 23% of total tree cover loss and 10% of total primary forest cover in this period.

NDC Targets	
Climate Action Tracker Rating	Critically Insufficient, based on significant coal pipeline despite draft plans to cancel some planned coal projects.
NDC Target	Unconditional: 9% reduction compared to BAU by 2030 (93.9 MtCO ₂ e) Conditional: 27% reduction compared to BAU by 2030. Dependent on international support through bilateral and multilateral cooperation and implementation of Article 6 mechanisms
International Market Mechanisms	Possible uptake.
Mitigation Sectors	Energy, Agriculture, Land Use, Land-Use Change and Forestry (LULUCF), Waste and Industrial Processes)
Relevant Policy	Discussions under for REDD+, improving institutional frameworks and policies, capacity building, building technical guidelines. REDD+ emission reduction programme in North Central Vietnam is expected to cut 25 MtCO ₂ e from 2018 to 2025.

Figure 23: Historical emissions from deforestation: Vietnam (MtCO2)

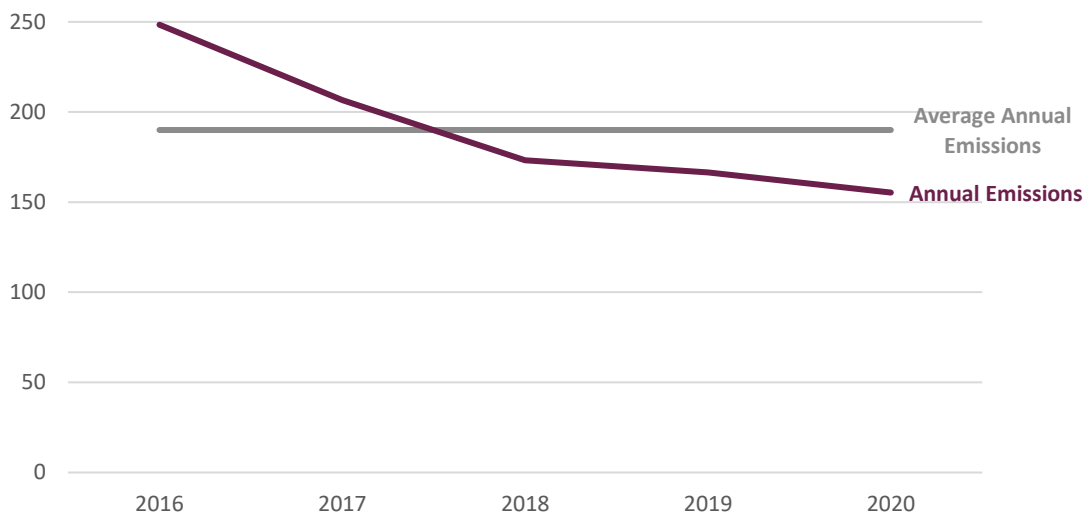
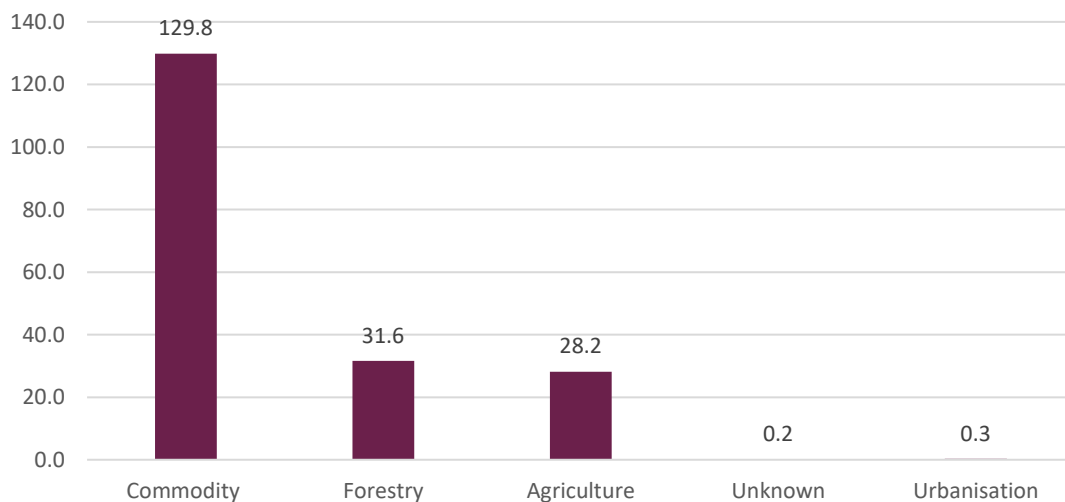


Figure 24: Annual average deforestation emissions by driver, 2016-20: Vietnam (MtCO2/year)



Forest-based credits in the VCM: Vietnam

No historical forestry projects in the VCM, or forest projects identified in the Verra or Gold Standard pipelines.

2.13 Findings

The 12 country profiles show the important differences in countries' approaches to their NDCs, including how they are formulated and the role of forestry. Historical deforestation rates, forest policy and current development of carbon-credit projects, too, are highly varied.

Therefore, on NDC commitments, targets should be viewed in the context of each country. Countries with high forest cover and low deforestation rates (HFLD), for example Gabon and Suriname, have less precise targets. While setting an 'Actions Only' target may complicate some aspects of corresponding adjustment implementation, Suriname is in a fundamentally different position to Brazil or Indonesia for forestry emissions and its emissions as whole.

Assessing a country's level of ambition through its NDC can be challenging. Vietnam and Brazil both have received lower ratings from initiatives like the Climate Action Tracker, as the language of their NDCs may obscure a reduction in ambition. On the other hand, while Indonesia's overall NDC commitment received a 'critically insufficient' rating from Climate Action Tracker, within this there are key forestry-policy developments and recent policy has had an impact on reducing deforestation.

On forestry emissions, several countries have a downward trend in emissions from forestry in recent years, including Costa Rica, Gabon and Indonesia. In other cases, the annual level of emissions from deforestation is more variable between years, such as in Democratic Republic of the Congo and Peru. There does not seem to be a relationship between the dominant drivers of deforestation in each country and these different profiles.

In the case of Papua New Guinea, the increase in forestry emissions between 2019 and 2020 is surprising given the more consistent trends in deforestation in HFLD countries. The lower historical emissions from forestry in HFLD countries perhaps means that any increase in emissions is more noticeable in the data.

Indonesia, Colombia, Brazil and Peru have existing large REDD+ projects. Kenya has REDD+ and afforestation, reforestation and revegetation (ARR) projects too. These prior projects may contribute to the enabling conditions required (in monitoring, accounting, legal frameworks, compliance, etc.) for the expansion of carbon credits.

However, some countries have no existing forest carbon-credit projects, or have not expressed an interest in using international market mechanisms for their NDCs. Such countries may not yet have the monitoring and accounting capacities to facilitate development of credit projects. This is not a barrier to engaging in cooperative or market approaches under Article 6 per se, but may alter the timelines for such activities. Capacity building, creation of legal frameworks and developing local value chains may be required.

The country profiles phase of the analysis demonstrates several challenges for applying corresponding adjustments:

- Significant variation in NDCs in the detail on relevant policy and sectoral commitments.
- Many countries have not, as yet, stated their official position on the use of international market mechanisms within their NDCs.
- The type of NDC target has implications for applying corresponding adjustments, especially with actions-only targets, intensity targets and single-year targets.

3. Article 6 preparedness

3.1 Article 6 preparedness framework

To review institutional capacity and NDC ‘compatibility’ with applying corresponding adjustments, two assessments were conducted to understand the intention and ability to implement corresponding adjustments. This analysis explores how the content of each nation’s NDC may impact upon corresponding adjustment accounting and how this relates to forestry policy and monitoring capacity. This builds on the country profiles, by focusing on relevant policy measures that may indicate preparedness to implement the outcomes of Article 6.

Without a standardized format for mitigation targets in NDCs, even given differences in target types, difficulties arise in making comparisons. Other UNFCCC submissions were thus reviewed to compile a comprehensive picture of current plans and targets. Other forestry institutions and policies provided further evidence of forestry-related capacity and national strategies related to forestry where less detail was provided in the NDC.

3.1.1 Methodology: NDC rating

To assess the implications of each country’s NDC for corresponding adjustments, the natural starting point was the NDC submissions themselves. From here, other supporting documents could supplement the data on forestry in the NDC, and then additional data sources would provide valuable context, or fill the gaps where information had not been stated in NDCs and other official, submitted documents.

This provides an assessment of how each country’s NDC and associated targets would impact upon the application of corresponding adjustments. The steps for data collection were:

1. First to ascertain what information could be collected from each nation’s most recent NDC update, where available, or their original NDC submission.
2. This was supplemented with Climate Watch data on NDC submissions, such as regarding each country’s stance on international market mechanisms.
3. All sectoral coverage was taken from NDCs and summarized as ‘economy-wide’ where it was judged that the mitigation sectors covered most of their emissions.
4. Forestry coverage within the NDC is a qualitative rating based on our primary research regarding forestry targets, and forestry and land use policy. For example,
 - a. Colombia was rated ‘Good’ because of the availability of clear, quantified targets.
 - b. Others were rated ‘Sufficient’ if they had targets, but not in a way that would cover their entire forestry sector.
 - c. Costa Rica and the Democratic Republic of the Congo were rated as having ‘Limited Coverage’ as their targets are stated as a percentage of forestry cover, without further details on how this would be achieved (preventing deforestation, afforestation, reforestation, etc).

- d. Countries were rated 'Insufficient' where limited to no data were available in the NDC.
5. Forestry target in NDC details how forestry goals were defined: some using hectares, some targeting forestry emissions and some increasing the overall percentage of forest land cover.
6. These were rated from 1-5, and color-coded accordingly.

3.1.2 Methodology: Institutional capacity

To assess the institutional capacity of each country to implement corresponding adjustments, this assessment considered existing infrastructure and systems, and the relevant institutions that would likely provide governance of the application of corresponding adjustments in a tropical forest country.

The analysis was based on upon the following data sources:

- Most recent and previous NDC submissions.
- National Communications (NC): these are due every four years from developing countries (Non-Annex 1 countries) that report on and support the integration on climate change into broader environmental, social and economic policy.
- The Biennial Update Reports (BUR) provide an interim update to the most recently submitted NC, including information on national circumstances and institutional arrangements relevant to the ongoing process to prepare NCs. All countries in the UNFCCC must provide a national inventory report on emissions by sources and removals. This can track progress in implementing and achieving the NDC.¹²
- Alongside the BUR, all parties that seek payments of results-based actions through REDD+ must provide updates through the UN-REDD mechanism.
- Data on national registries were found through desk-based research. Kenya, India, Papua New Guinea, Peru and Suriname, for example, have recent outputs on carbon markets and the creation of registries.
- Country-by-country data collation on satellite data, environmental institutions and existing market infrastructure came from desk-based research.
- Forest Reference Emissions Level (FREL) documentation is uploaded to the UNFCCC REDD+ Web Platform as part of the technical assessment in the context of results-based payments for REDD+.¹³
- The REDD+ online platform was also consulted for updates submitted on BURs and FRELS, as well as funding information.
- Analysis of satellite data availability was ascertained through desk-based research of national policy documents and academic papers.

¹² NDCs, NCs and BURs were found through the UNFCCC registry.

¹³ UNFCCC REDD+ Web Platform. [Link](#)

This approach gave a broad overview of the capacity to measure forestry emissions and account for emissions reductions, were corresponding adjustments to be applied. Working through the hierarchy of data sources above was required, given differences in the coverage of submissions from different countries, and different levels of prior engagement with UN processes (particularly relating to forestry).

For example, NCs and BURs demonstrate the technical capability for each nation to produce regular updates of forestry data relevant to their targets. FREs, as the baseline for emissions from forestry, are integral to calculating deforestation emissions avoided through REDD+. While not conclusive, not submitting a FREL may indicate a current shortfall in national technical capacity. This is supplemented by the analysis of what satellite data is available.

3.1.3 Rating scale

Table 9 shows the ratings approach employed across both assessments.

For rating the content of NDCs:

- Insufficient (red) is used to signal an absence of information or clear stance in opposition to market mechanisms.
- Moderate (light green) and Significant (dark green) indicate data availability, capacity, level of public commitments, or ambition that is above the average.

For institutional capacity:

- Insufficient similarly indicates the absence of data or a particular capacity, or a stance in opposition to applying corresponding adjustments.
- Moderate and Significant indicate that current capacity or data availability is likely to support accounting for corresponding adjustments, or a positive position towards corresponding adjustments in the documentation reviewed.

Table 9: Assessment scale for NDC preparedness analysis

	Insufficient
	Limited
	Average
	Moderate
	Significant

3.2 Assessment: NDC rating

Table 10 presents a mixed picture of the current state of NDCs regarding the future application of corresponding adjustments. Across the 12 tropical forest countries, there are differences in ambition and detail on both overall targets and specific sectors.

There are also variations in the treatment of forestry within NDCs and the type of sub-targets. This can be a goal to increase forested area or tree cover, maintenance of a particular percentage of land area covered by forest, targeting reduced emissions from deforestation, or targets for reducing the rate of deforestation. Countries then may or may not have elaborated on what forestry activities (avoiding deforestation, reforestation, afforestation, etc.) and policies will be pursued to achieve the targets.

There is, therefore, variation in both how ambitious countries' NDCs are, and the ability to which we can assess how possible it will be to implement corresponding adjustments based on the contents of the NDC.

Some NDC target types may complicate the application of corresponding adjustments. A fixed level, multi-year target will be more straightforward, hence the higher rating. Reconciling these adjustments with a baseline scenario target with a single target year, for example, is likely to prove more difficult. Alternative accounting methods will have to be applied to adjust for transactions and agreements that will take place, on a yearly basis.

Similarly, where a country has a non-emission-based target, an actions-only target, or an emissions intensity target, this could complicate the implementation of corresponding adjustments. In each case, it is less clear how the host country needs to make a corresponding adjustment.

Moreover, where a host country NDC target does not contain forestry, the corresponding adjustment would not be applied to their NDC target. However, the Article 6 rulebook implies that the sectoral coverage of an NDC does not define when corresponding adjustments must be accounted for. An adjustment would still be made, and accounted for, but without being applied to the target.

This is, probably, to stop countries 'gaming' the boundaries of future NDCs to avoid corresponding adjustments, and to encourage countries to set economy-wide targets as adjustments will be required either way. However, countries with low or no coverage of forestry in their sectoral targets may have difficulty in applying corresponding adjustments if, as a result, they lack infrastructure for measurement and accounting.

Currently, Colombia looks to be amongst the better positioned countries. This is because Colombia has provided clear, measurable targets and appears to have the technical capabilities to update their submissions and targets regularly. Costa Rica is similarly well positioned, except for a less clear position on the use of market mechanisms. A 'no' on this issue would be a barrier to developing carbon-credit projects, and makes it less likely a country would apply corresponding adjustments or to give authorisation for them.

Elsewhere, Gabon is unique amongst countries in the study as having taken a very clear stance against the use of international market mechanisms, and India's 2016 NDC provides insufficient detail in several areas. Its pledged update may improve the situation.

Table 10: NDC alignment with corresponding adjustments and coverage of forestry

Country	Type of target	Stance on use of market mechanisms ¹⁴	Sectoral coverage	Coverage of forestry in NDC	Forestry target in NDC	Forestry policies in NDC
Brazil	Baseline scenario	Yes, when appropriate	Economy-wide	Insufficient: First NDC had more detail	Reforestation target	Floresta+ programme for REDD+
Colombia	Fixed level	Yes	Economy-wide	Good: Coverage in terms of area and CO2	Reduction of deforestation, reforestation, afforestation	Relevant, climate policy related to forestry
Costa Rica	Fixed level	Yes possibly	Economy-wide	Low level of detail	Forest coverage goal in percent	PES schemes; National Forestry Financing Fund
Democratic Republic of the Congo	Fixed level	Yes, provided they can negotiate price	LULUCF, Agriculture and Energy	Good: coverage of CO2, ambition increase	Reduction of deforestation, reforestation, afforestation	Less specific national policies
Gabon	Baseline scenario	No	No sectoral ambitions other than forestry	Low level of detail: sustainable land management	Insufficient: Target in percent, not comparable	Insufficient: None related to forestry
India	Emissions intensity	Unspecified	Renewables, Energy and Urban Transport	Sufficient: Targets for area and CO2 reduction	Forest cover as share of land area target, no date	Inconclusive
Indonesia	Baseline scenario	Yes, possible	Economy-wide	Insufficient: no detail of forestry target	Few forestry details, but covers land use	Moratorium to preserve primary forest
Kenya	Baseline scenario	Yes, possible when enhanced NDC exceeded	Economy-wide	Sufficient: restoration target	Forest restoration goal to 2030	Insufficient: Few detailed policies
Papua New Guinea	Multiple; fixed level and baseline	Yes	AFOLU and Energy	Sufficient: annual restoration target	Annual reduction of deforestation	Yes: Forestry in Papua New Guinea Vision 2050
Peru	Fixed level	Yes, intended	Economy-wide	Insufficient: No data	No quantified target	Insufficient: None related to forestry
Suriname	Actions only	Yes, possible	Economy-wide	Good ambition, low detail	Forest coverage goal	Yes
Vietnam	Baseline scenario	Yes, possible	Economy-wide	Insufficient: Lowered targets	Forest coverage goal	Yes: 2017 Forestry Law

In terms of ambition of forestry-related climate action, again there is significant variation. Some countries have not stated specific forestry targets in their NDCs (Peru), whereas others (Colombia, Democratic Republic of the Congo) have targets that cover emissions, land area and sub-targets for deforestation, reforestation and afforestation. For countries like

¹⁴ Climate Watch. Planned Use of International Market Mechanisms. [Link](#).

Indonesia or Gabon, imprecise NDC targets may not necessarily mean a lack of ambition on forest policy, but perhaps less willingness to include policy details in their NDCs. However, in the cases of Vietnam and Brazil, revised targets will likely work against efforts to reduce deforestation rates, by reducing ambition.

3.3 Assessment: institutional capacity

The assessment of institutional capacity provides analysis of monitoring and accounting capacity at the national level and of preparedness to enact Article 6. In this context, we have considered ‘preparedness’ to include both willingness (i.e. their stance on corresponding adjustments) and readiness (do they have the infrastructure that may be required).

Compared to the NDC assessment, it looks more closely into current registries and existing market infrastructure. Within this, we assessed the current development of national registries of carbon projects, forest monitoring, and what satellite data is already available to track these.

As with NDC ratings, it also assesses the potential willingness to apply corresponding adjustments. A major result of negotiations in Glasgow was that country authorisation determines whether a corresponding adjustment is applied and thus eligibility of credits or other emission reductions for different purposes.¹⁵

Many countries may clarify or revise their stances towards market mechanisms or corresponding adjustments after the Paris Rulebook was finalised at COP26. However, the data gaps relating to forestry within country emissions inventories and the uneven deployment of national registries suggest that institutional capacity may be a more significant barrier to Article 6 preparedness than the content or comprehensiveness of NDCs analyzed in section 3.2 above.

The “measurement & accounting” column shows the number of NCs, FRELs and BURs submitted by each country. Together, they provide an assessment of current capacity to monitor and report emissions. For example, having multiple BUR submissions is a promising sign, which implies a capacity for continual monitoring of progress towards NDCs. Kenya and Gabon, for example, may have a lower institutional capacity to prepare inputs for and monitor progress towards their NDCs.

Few nations have the funding for their own satellite monitoring, as Brazil and India do. Otherwise, Landsat or SPOT data are the most frequently used in monitoring. Landsat imagery is the primary source of data for half of the countries in the study. Peru, Kenya and Suriname are currently expanding national satellite measurement capacity.

¹⁵ Corresponding adjustments must be authorised and applied for credits or emissions reductions (referred in Article as International Transferred Mitigation Outcomes, ITMOs) to be used towards achievement of an NDC or compliance with the international aviation offset scheme, CORSIA.

Table 11: Institutional capacity and accounting metrics

Country	Stance on CAs	Registry of projects	Existing market infrastructure	Measurement and accounting (NC: FREL: BUR)	Satellite data availability	Relevant environmental institutions
Brazil	Likely to be against	Not currently, PL 528/2021 under debate ¹⁶	2020 FLORESTA+ Carbono programme	Frequent; up-to-date (4:1:4)	National system: PRODES	Federal Environment Ministry (MMA)
Colombia	San Jose Principles signatory	Voluntary market initiated in 2021 under ProClima ¹⁷	2015 National Carbon Market regulation proposed, not passed	Relatively frequent; up-to-date (3:1:2)	National system: IDEAM & IAvH	Ministry of Environment and Sustainable Development (MADS)
Costa Rica	For – project with Gold Standard on CAs ¹⁸	Decree 37926 in 2013 for domestic market issuing UCC credits ¹⁹	2015 MINAE's Domestic Carbon Market, pre-operation stage	Frequent, up-to-date: (3:1:2)	National Forest Monitoring System: IMN; SINAC; SLMS	Emissions Reduction Program of Carbon Fund.
Democratic Republic of the Congo	Not specified – likely in favor of greater host country flexibility	No domestic registry	No domestic infrastructure. Government reserve right to all land/carbon credits	Less frequent; Up-to-date: (3:1:0)	National Forest Monitoring System & Landsat	Ministry of Environment and Sustainable Development (MEDD)
Gabon	N/A	No domestic registry	No intention to use market mechanisms towards NDC ²⁰	Infrequent; out of date: (2:1:0)	Landsat	None specified
India	None specified	No domestic registry	Proposed domestic VCM through Bureau of Energy Efficiency ²¹	Fairly frequent, up-to-date: (2:1:3)	Regional forest monitoring programme: Forest Survey of India	Ministry of Environment, Forest and Climate Change (MoEFCC)
Indonesia	None specified, but likely against unless capital flow significant	National Registry System (SRN). Considering 2 nd registry for REDD+ projects	Hybrid ETS & Carbon Tax. Cross-border carbon trading controlled until emissions targets are met	Frequent, up-to-date: (3:2:2)	Landsat	The National Forest Monitoring System, Ministry of Forestry
Kenya	None specified	Creating registry (Nov 2021), related to electricity generation	Creation of Kenya Emissions Trading System ongoing since 2021	Infrequent, up-to-date: (2:1:0)	National Forestry Monitoring System (future), Landsat	The Ministry of Environment and Forestry

¹⁶ Camara dos Deputados. Bill 528/2021 [Link](#)¹⁷ ProClima. Voluntary Standard. [Link](#)¹⁸ Gold Standard and Costa Rica Partner. The Gold Standard blog. [Link](#)¹⁹ Ministerial Decree no 3792. Climate Change Laws of the World. [Link](#)²⁰ Pathways to increased voluntary action. IETA. [Link](#)²¹ National Carbon Market. Government of India, Ministry of Power. [Link](#)

Country	Stance on CAs	Registry of projects	Existing market infrastructure	Measurement and accounting (NC: FREL: BUR)	Satellite data availability	Relevant environmental institutions
Papua New Guinea	For all-inclusive corresponding adjustments ²²	Moratorium on new REDD+ projects (March 2022)	Launched Indo-Pacific Carbon Offsets scheme with Australia	Infrequent, some delays: (2:1:1)	Landsat, SPOT	The Climate Change and Development Authority
Peru	San Jose signatory	Yes: Registro Nacional	RENAMI created for MRV for facilitation of international markets	Fairly frequent, some delays: (3:1:2)	MINAM & SERFOR	High Level Commission on Climate Change
Suriname	None specified		Total Energies signed deal with Government to provide for future projects in Nov 21 ²³	Up-to-date: (2:2:0)	National Satellite monitoring system	National Institute for Environment and Development
Vietnam	None specified	Crediting programme for international mechanisms by 2025, launch ETS by 2030		Frequent, up-to-date: (3:1:3)	Landsat, SPOT	The Forestry Sector Support Program and Partnership

Costa Rica and Peru appear to have the highest preparedness to implement a system of corresponding adjustments. Costa Rica, in particular, has a clear stance on corresponding adjustments and provides frequent, up-to-date submissions of NCs and BURs.

²² Submission of Views by Papua New Guinea on behalf of the Coalition for Rainforest Nations on Article 6, paragraphs 2 and 4 of the Paris Agreement. [Link](#)

²³ Total Energies Partners with the Government of Suriname to Contribute to Preserve Forests as Carbon Sinks, Market Watch, [Link](#).

4. Preparedness review: Conclusions and implications

Across the three sections of analysis, the findings suggest that there is an uneven landscape for the future implementation of Article 6. Some countries are in a better position to implement corresponding adjustments than others. At COP27, clarity needs to be provided on the application of corresponding adjustments to the VCM. However, countries with existing registries, monitoring systems and stronger institutional capacity are better placed to implement the systems that would be necessary.

The main findings of this preliminary study are:

1. The different states and statuses of each nation's NDC highlights the lack of standardization in the formulation of targets. This hinders comparison between countries and could have an impact on the application of corresponding adjustments.
2. Assessing the ambition of targets is often complicated by different target types, baseline years and measurement metrics. If countries were to update their NDCs in a similar way, for example like the Democratic Republic of the Congo (updated in December 2021), quantified emissions targets for forestry could be more standardized in their use of MtCO₂ and hectare equivalents.
3. For the majority of countries, the country profiles indicate that their NDC targets are not currently ambitious enough to meet the 1.5°C goal of the Paris Agreement. Many countries could provide greater detail on how forestry will contribute to their goals, include forestry and land use sectoral targets in their NDCs, or increase the ambition of sectoral targets.
4. The funding requirements from domestic, international and private sector sources to even meet current levels of ambition in NDCs is significant. This is likely to be a factor in greater interest in encouraging carbon-credit projects in tropical forest countries.
5. Not all tropical forest countries have clarified their stance on using corresponding adjustments. This could be due to hesitancy over the need to increase ambition in climate action to meet emission targets, concerns over capacity to implement, or not wishing to create a disincentive to international or private-sector finance.
6. Lower levels of preparedness may demonstrate a reluctance to participate in international market mechanisms, for example in the Democratic Republic of the Congo. The government reserves rights over carbon credits and have historically been critical of the level of credit pricing of cooperative agreements or markets.
7. Data in the country profiles on the issuance of and pipelines for afforestation and reforestation credits suggest that these projects may be underdeveloped in tropical forest countries. Although there are critics of re/afforestation as a 'removal technology', it is likely to be the main supply of emission removals at scale for some time. Greater attention to capacity development and attracting investment for these projects in tropical forest countries may be required.

Looking forward, the continued growth in the VCM and interest in the purchase of credits, could encourage many of these countries to support credit-project development and put the necessary enabling conditions in place. Given the potential for credits from forestry from

these countries, this would have significant consequences for the role of forests in their NDCs, the impact of corresponding adjustments on NDCs, and the composition of VCM credit supply.

Countries will need to submit emissions accounting for the Global Stocktake, which will be the first full assessment of the collective progress that countries have made since the Paris Agreement. The first report will be due in 2023 and then repeated every five years. The Biennial Transparency Report (BTR), due in 2024, will be another opportunity to provide an assessment on progress towards NDC targets.

There are several consequences for host countries if they are to apply corresponding adjustments to voluntary market transactions. Countries need to track activities and understand the potential impacts on their NDCs.

This could lead to a reduction in the number or type of carbon projects approved by host countries. To approve a project to export carbon credits, the host government effectively takes responsibility for the delivery of the emission reductions from the project. This may require host governments to take a closer look at project additionality and baselines.

As noted in the capacity assessment, the majority of countries do not have a national registry, although some are in the process of setting them up. At the very least, countries need access to existing registry services to compile data on and monitor projects, even if they do not need to create their own in every case.

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