Forestry, Wildlife and Parks Division

Forest Reference Level 2018-2025 Dominica

Forestry, Wildlife and Parks Division

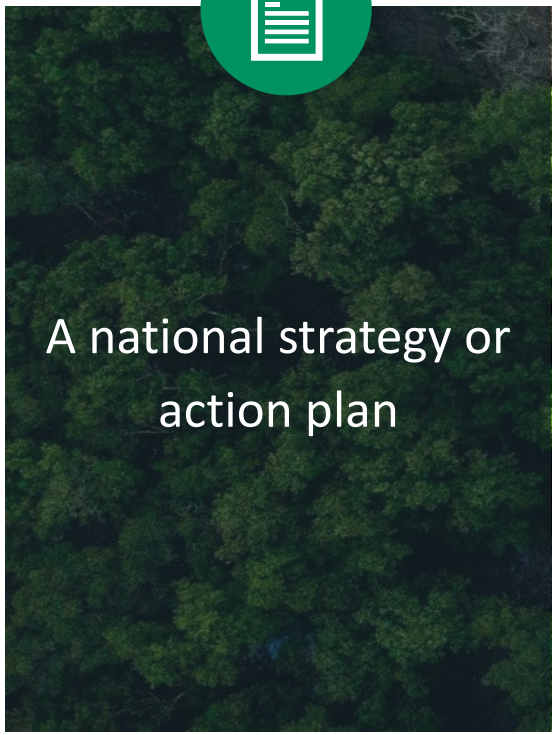
2022

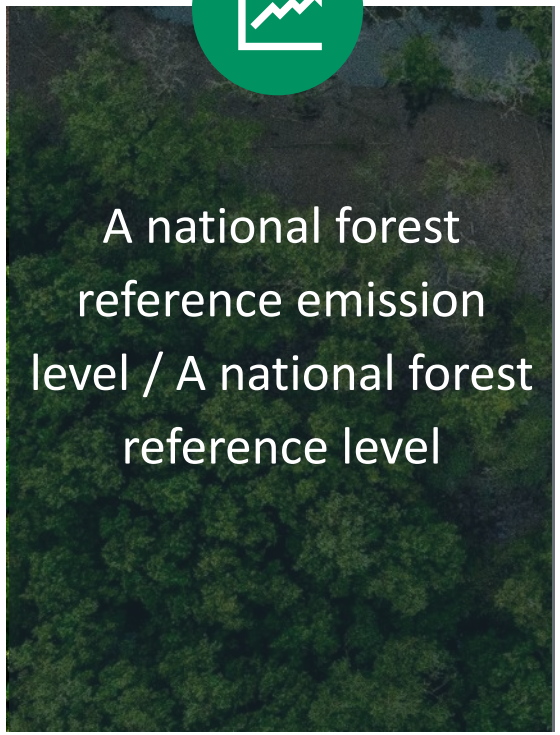
Decision 1/CP.16, paragraphs 70 and 71 The Cancun Agreements

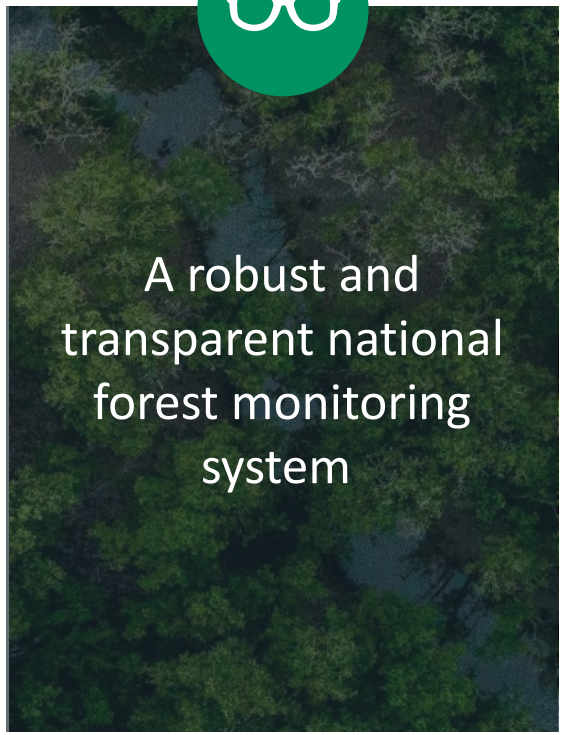
70. Encourages developing country Parties to contribute to mitigation actions in the forest sector by undertaking:

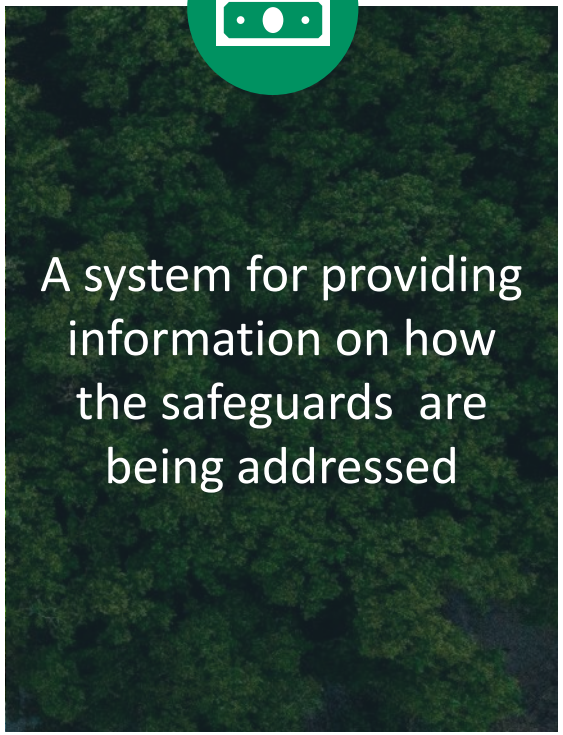
- Reducing emissions from deforestation
- Reducing emissions from forest degradation
- Conservation of forest carbon stocks
- Sustainable management of forests
- Enhancement of forest carbon stocks

71. Requests developing country Parties to develop the following elements:



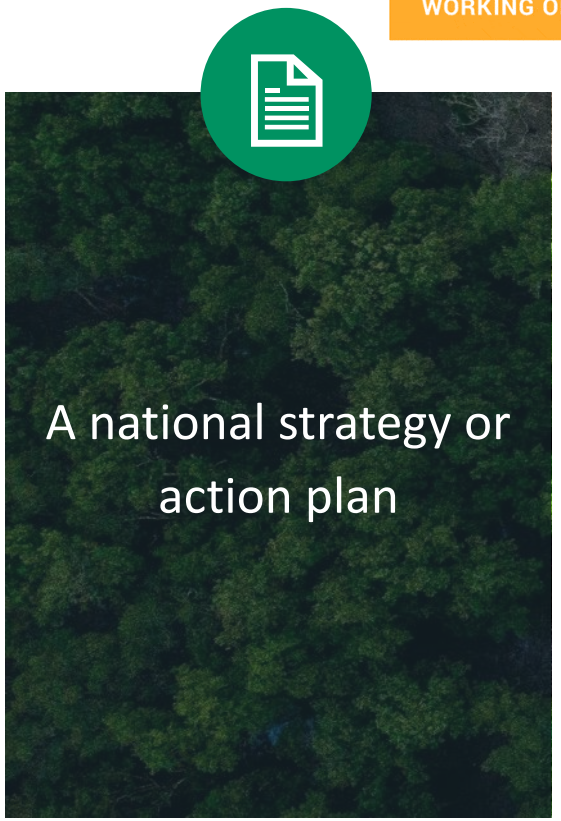


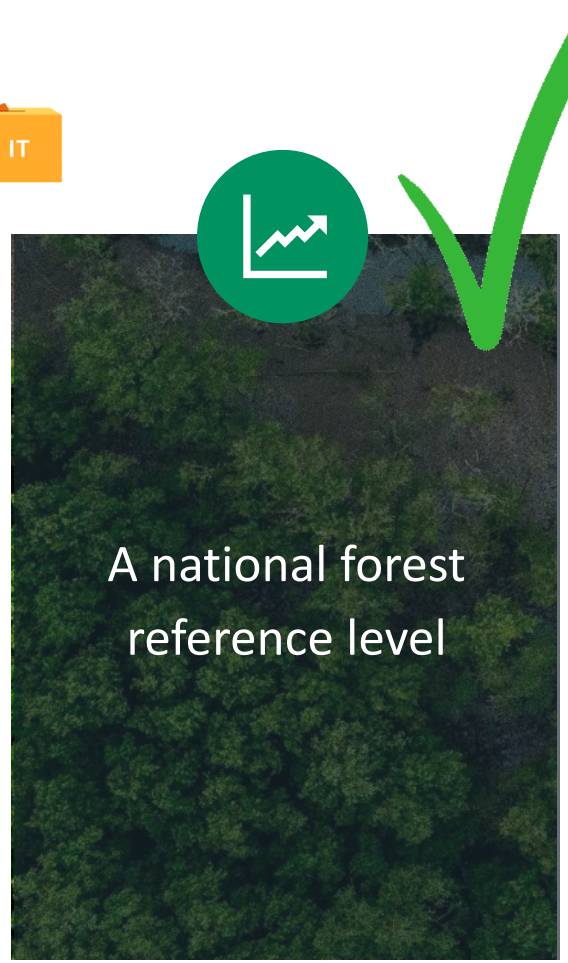


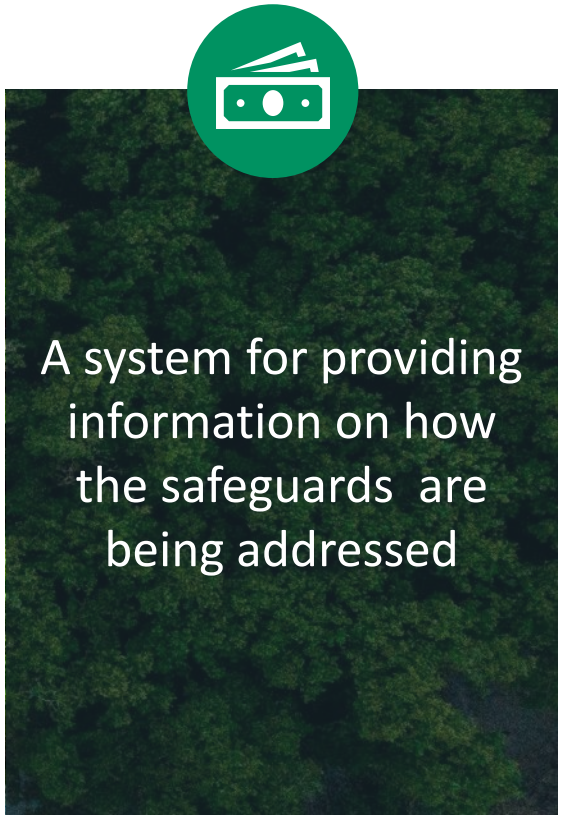


71. Requests developing country Parties to develop the following elements:

WORKING ON IT







Timeline

AD Data collection CE

2019

2020 (QC)

2020

GHG Inventory 2000-2017

FRL (2018-2025)+ FOLU-NDC (2021-2030)

2021

2021/2022

External Review QA

FREL Tech. Assessment

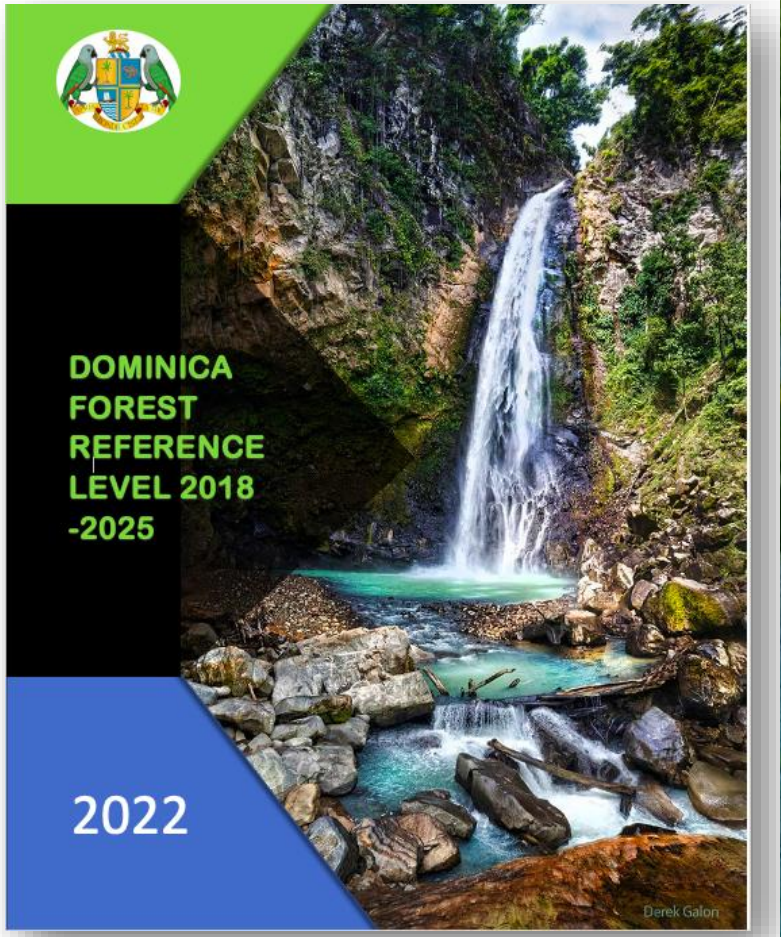
2022

2022

New Cycle GHGi 2019-2021

Dominica Forest Reference Level 2022

- In January 2022, Dominica submitted their first Forest Reference Level to the UNFCCC.
- The current national FRL proposed by Dominica is the net balance of greenhouse gas (GHG) emissions and removals in Forest lands remaining forest lands undergoing natural and assisted regeneration, as well as lands converted to Forest Lands after hurricane Maria in 2017.
- The analysis is done at national level, following the Gain-Loss method proposed in the 2006 Intergovernmental Panel on Climate Change (IPCC) guidelines for National GHG inventories, and implementing a country-specific excel calculation tool.
- All lands were considered as managed.
- It includes the pools above-ground biomass, below-ground biomass, dead organic matter, and soil organic carbon.



Activities selected in Dominica

Conservation

Refers to the areas of forest lands remaining forest lands under the Protected Areas System. Conservation also includes, as stated in the National Land Use Policy and Plan, any areas identified as sensitive zones for natural resources management that are considered as "specially conserved areas". The priority of the system of protected areas is to effectively manage forests to conserve the natural biodiversity and function, and contributes to the sustainable socio-economic development, resilience and well-being of all citizens and users. However, since hurricane Maria in 2017, these areas were significantly affected and now these are prioritized for natural regeneration.

Sustainable management of forest

Refers to the areas of forest lands remaining forest lands under management strategies, within the Protected Areas System, in particular in the two forest reserves (Central Forest Reserve and Northern Forest reserve). Since hurricane Maria in 2017, these areas are prioritized for restoration, rehabilitation, and reforestation activities. Sustainable management of forest also refers to restoration, rehabilitation, and reforestation activities on farmlands and unallocated state lands.

Enhancement of forest carbon stock

Refers to lands converted to forest lands, and lands utilizing agroforestry practices that enhance forest carbon pools.

Activities selected in Dominica

Dominica aims at achieving full consistency among its FOLU-GHG inventory, REDD+, its FOLU-NDC and other national reports. Therefore, the FRL is developed using the IPCC structure: Forest lands remaining forest lands, and forest lands converted to and from other lands. Hence, the approach selected is a land-based approach, instead of an Activity-based approach. In this way, Dominica is able to monitor all land use dynamics, even if not all of them are included as REDD+ activities and ensure environmental integrity. Emissions and removals are accounted in both the historical and FRL period using the Gain-Loss method (IPCC 2006, V4, Ch2)

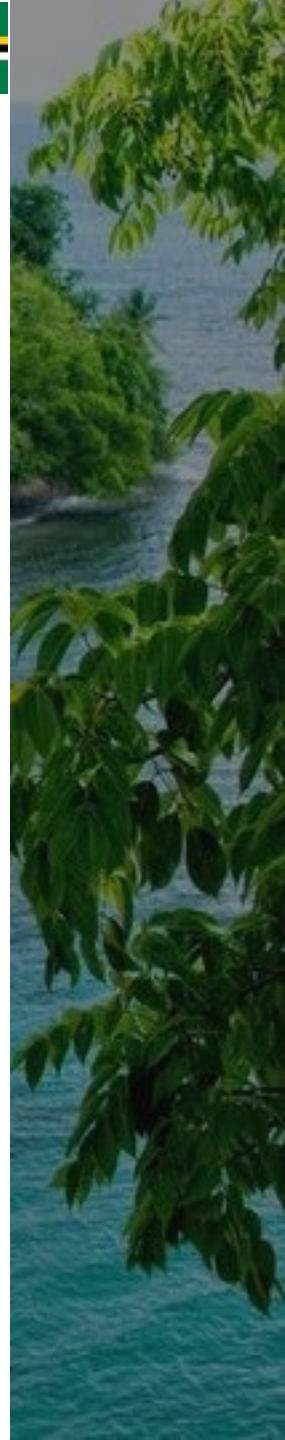
Associated REDD+ Activity	Source Category (IPCC Structure / GHG Inventory / NDC)
Conservation	Forest land Remaining Forest Land, disturbed, under management for natural regeneration.
Sustainable management of forest	Forest land remaining forest land, disturbed, under management for assisted regeneration.
Enhancement of C Stocks	Croplands converted to Forest Land
	Grasslands converted to Forest Land
	Wetlands converted to Forest Land
	Settlements converted to Forest Land
	Other lands converted to Forest Land

Activities not selected in Dominica

Deforestation, was defined as forest lands converted to other lands (croplands, grasslands, wetlands, settlements, and other lands) and **Forest degradation**, was defined as Forest land remaining forest land affected by human disturbances (logging and fires) and natural disturbances (hurricanes).

Different to most of the other FRELs/FRL submitted by other countries, Dominica has found it complex to include these two activities because in 2017 Dominica lost about 90% of their forest cover in the forest lands due to the hurricane Maria. Thus:

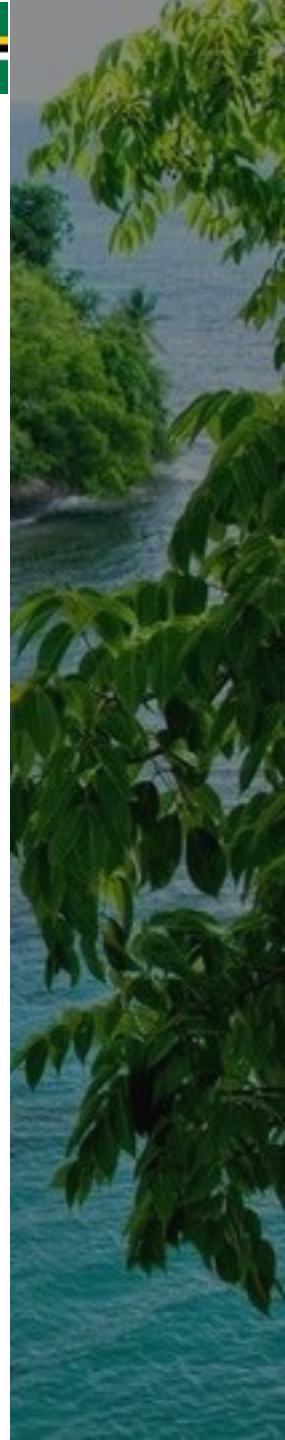
- Since 2018, Dominica had to fully restructure to meet the new needs that raised post-hurricane. National strategies, efforts, budget and staff has been mostly allocated to restoring the forest lands, instead of avoiding deforestation or degradation.
- It is complex to estimate emissions from deforestation or degradation post-disturbance in the temporary unstock areas. We currently don't have data on emission factors associated to this new mixed forest and there are no IPCC values/methods that can represent this specific circumstance.



Activities not selected in Dominica

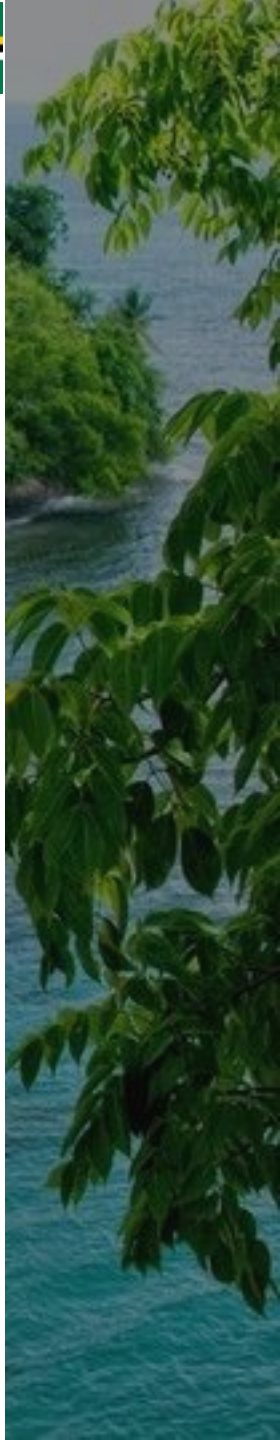
Even though this new scenario for deforestation and degradation if complex and with many uncertainties, Dominica will monitor all land use dynamics. These two activities will be monitored as:

Associated REDD+ Activity	Source Category (IPCC Structure / GHG Inventory / NDC)
Degradation	Forest land Remaining Forest Land, disturbed by logging, fires, natural disasters and shifting cultivation.
Deforestation	Forest converted to Croplands
	Forest converted to Grasslands
	Forest converted to Wetlands
	Forest converted to Settlements
	Forest converted to Other lands



Decision 4/CP.15 Methodological guidance for activities deforestation, degradation, conservation, sustainable management of forest and enhancement of carbon stocks

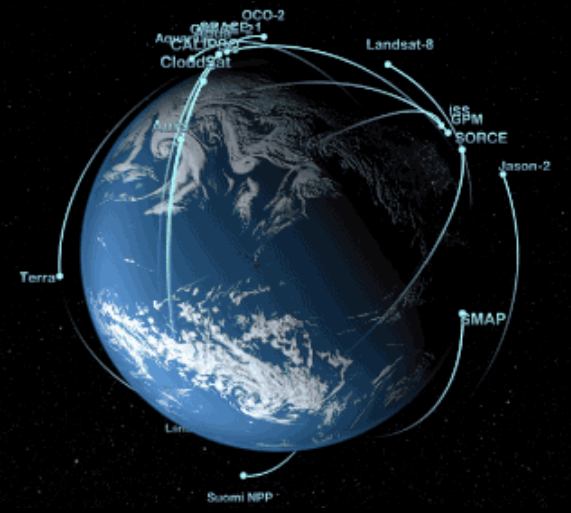
- Identify drivers of deforestation and forest degradation
- Use the most recent Intergovernmental Panel on Climate Change guidance and guidelines
- Establish, according to national circumstances and capabilities, robust and transparent national forest monitoring systems



Identify drivers of deforestation and forest degradation

The information on Activity Data (AD) used was obtained from land use and land-use change assessment, which was conducted on the basis of a sampling approach (IPCC approach 3) using Collect Earth.

COLLECT EARTH

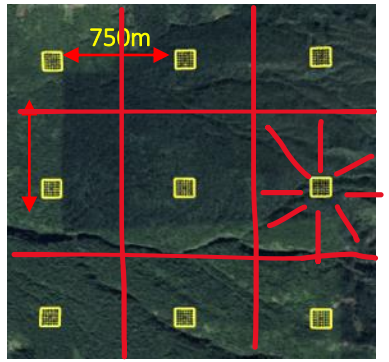


Forest land was stratified by forest type (Montane Forest -Elfin, Cloud montane, Montane Rainforest-, Seasonal Forest -Semi-Evergreen, Semi-Deciduous-, Littoral Evergreen, Dry Scrub). Croplands are reported as annual and perennial crops. Grasslands and Settlements are reported as Woody and Non-Woody. Wetlands do not have further sub-classification and Other lands divided in Other Lands and Mining.

Identify drivers of deforestation and forest degradation

National grid: a 750m by 750m national systematic grid consisted of 1605 sampling plots of 1Ha was selected. These sampling points were visually evaluated annually from 2000 to 2017.

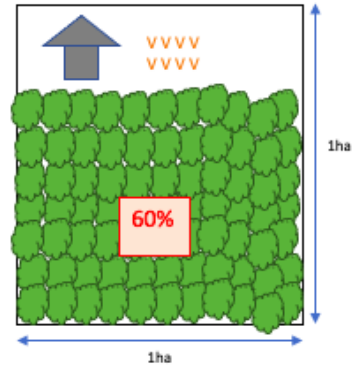
Plot Size: The size of the plot was decided to be 1Ha, to allow consistency with the Forest definition. This, along with the samples, 49 of them, facilitated counting the percentage of land use cover

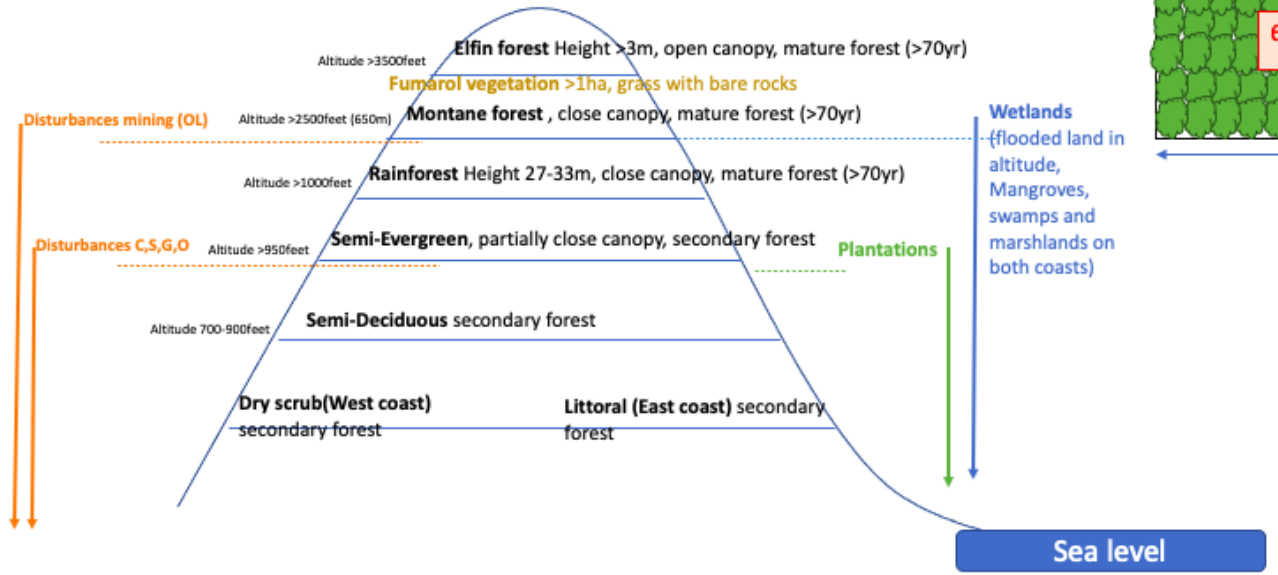


Distance among plots: Dominica planned to use a high sampling intensity, balancing country size, representatives of the samples, time and interpreters availability. As a result, a sampling of 750m by 750 m was selected

Identify drivers of deforestation and forest degradation

Forest Type	Predominantly m.a.s.l	Location
Dry Scrub	0-200	West
Littoral Evergreen Forest	0-200	East
Seasonal Decidious	200-300	Concentric rings around the island
Seasonal Semi Evergreen	300-400	
Montane – Rainforest	400-700	
Montane – Cloud Forest	600-900	
Montane – Elfin forest	900>	





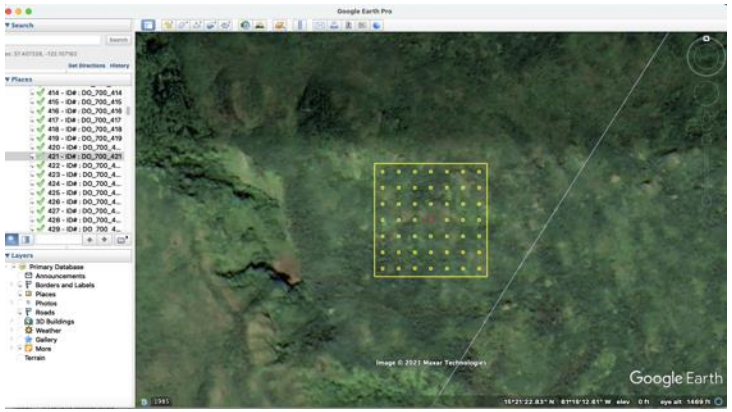
Disturbances:
- Grazing
- Logging
- Mining (quarry)
- Settlement
- Crops : Annual and tree crops (citrus, Bananas, Cocoa)

Natual Disturbances:
- Hurricane
- Landslides
- Earthquakes
- Fire

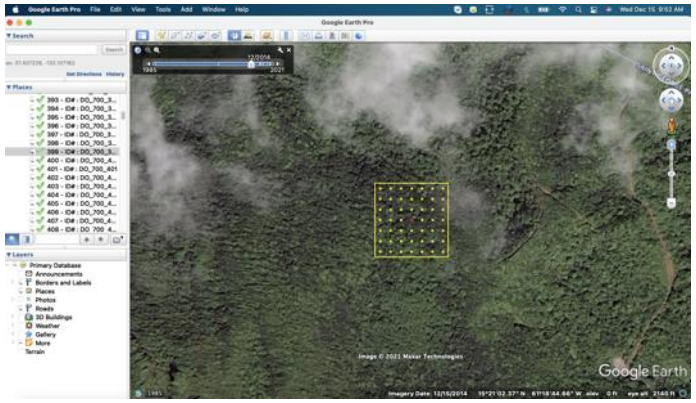
NB: mangroves area are too small to enter the forest definition, therefore they are included in the Wetland category.
Changes. In sensitive areas, it is required to have at least 1,5 acres of land to be allowed to build

Identify drivers of deforestation and forest degradation

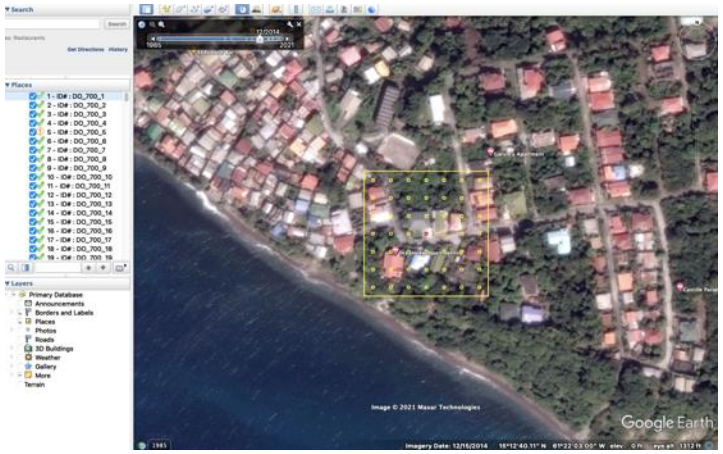
Elfin forest



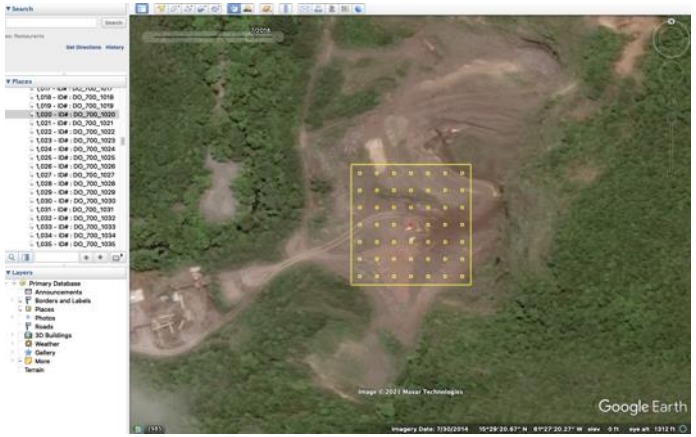
Cloud montane



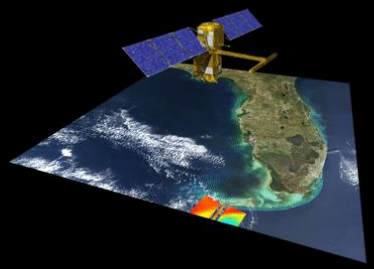
Urban areas

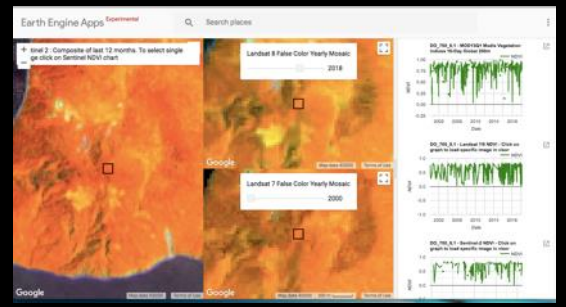


Other Lands



Collect Earth software contains a combination of high and medium spatial resolution imagery (i.e. 15 m resolution Landsat imagery, 2.5 m resolution SPOT imagery and high-resolution imagery from several other sources) accessible through the Google Earth, Bing Maps and Google Earth Engine platforms



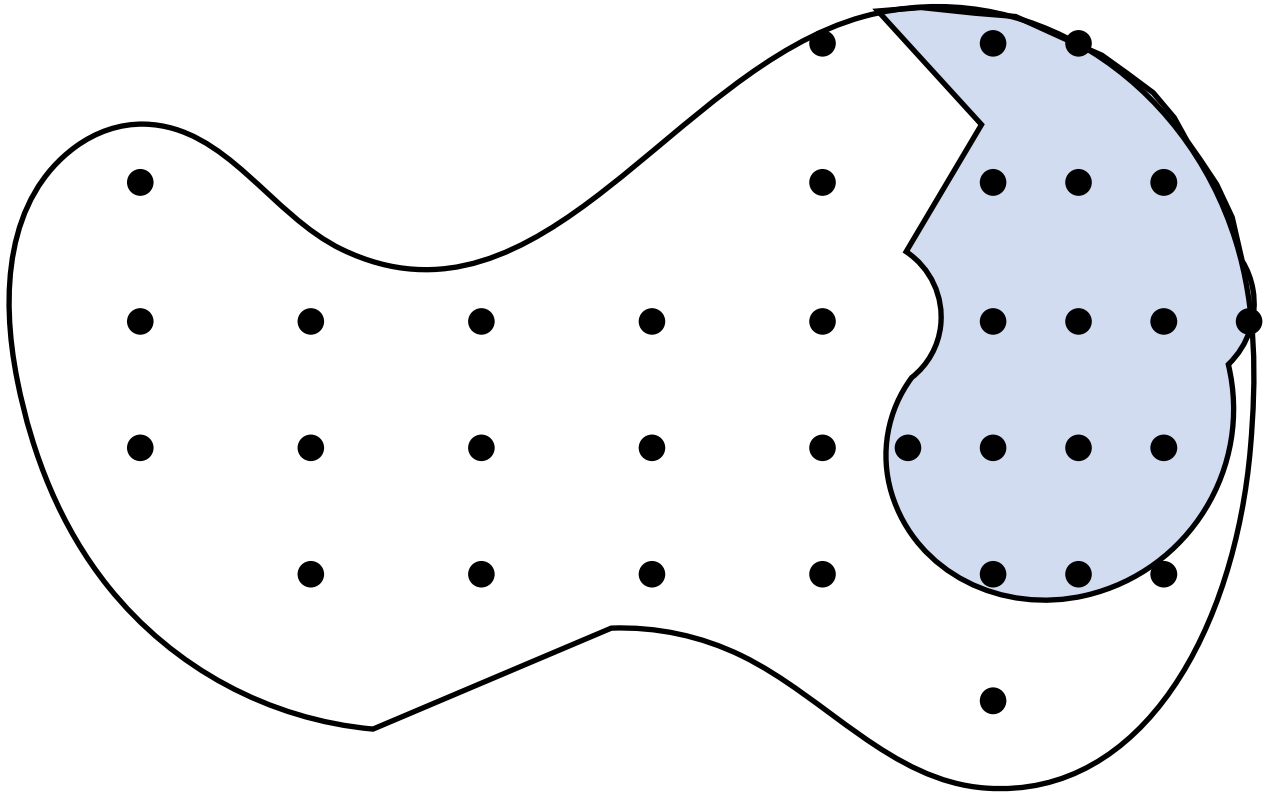


Identify drivers of deforestation and forest degradation

Example on how the data was used

Sampling design: systematic

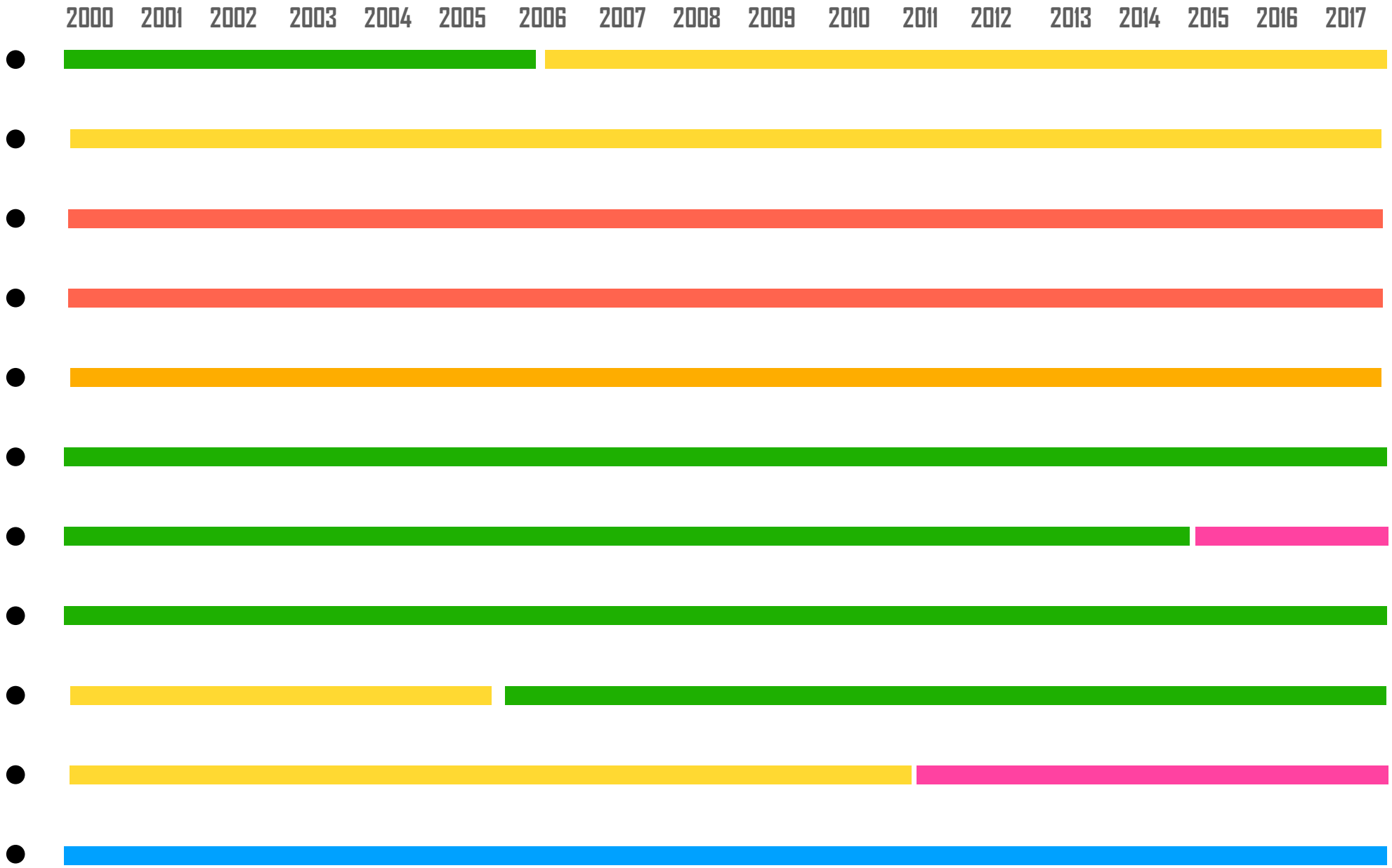
Expansion factor: calculated diving the total surface of the country (75000 Ha) by the total number of plots of the grid (1605 plots), equal to 43.76 Ha; meaning that each 1Ha plot represents an area of 43.76 ha, area that is distributed surrounding the plot.



Sampling data

A coding system was created allowing an analysis plot by plot through the time series, identifying any land use conversion, disturbance or both.

- Forest lands
- Croplands
- Grasslands
- Wetlands
- Settlements
- Other Lands

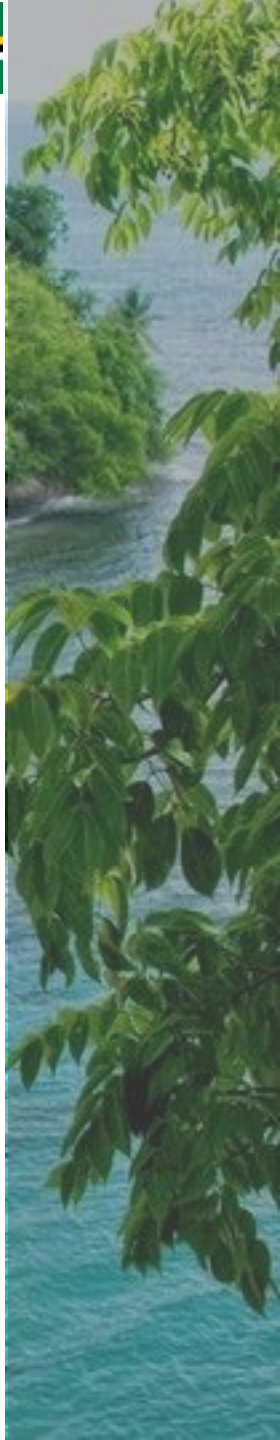


Identify drivers of deforestation and forest degradation

The plot level information can be used to construct land use and land use change matrices and/or disturbance matrices. In this structure, the information on land use and disturbances is separated.

	Forest land	Cropland	Grassland	Wetlands
Forest land				
Cropland				
Grassland				
Wetlands				

Land use change Matrix



Use the most recent Intergovernmental Panel on Climate Change guidance and guidelines

2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017

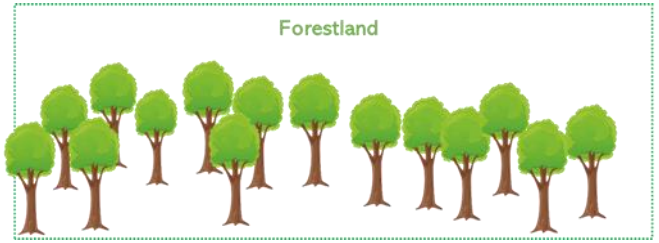
Land use change
Equations 2.15, 2.16
…+ other pools

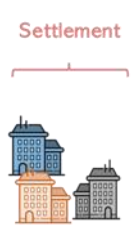
FL > SL

FOREST LAND REMAINING FOREST LAND
Equations 2.7, 2.9, 2.10, 2.11

2014

Each of the equations for the Gain-loss method was applied to each plot, for each year of the timeseries and for the different C pools.





FL > FL, Hurricane Disturbance

Use the most recent Intergovernmental Panel on Climate Change guidance and guidelines

1. Activity Data

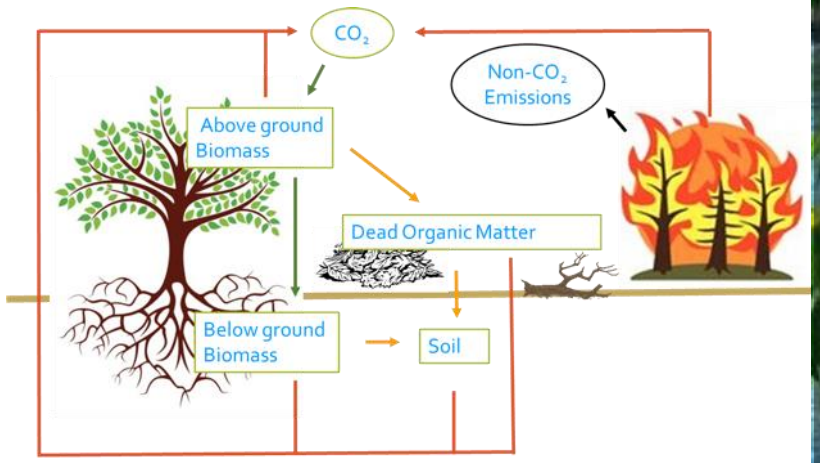
Historical land representation of the land use and land use change dynamics using Collect Earth Desktop

To estimate GHG emissions and removals two variables are needed Activity Data and Emission factors

Emission/Removal = AD x EF

CfRN Foundational Platform

2. Carbon stocks (Emission Factors)



The information on Emission Factors (EFs) was obtained from default values of the 2006 IPCC Guidelines, 2019 Refinement to the 2006 IPCC Guidelines, and from the National Forest Inventory from Saint Lucia (2009), as both islands share the same forest types, and no recent Forest inventory has taken place in Dominica


TRANSPARENCY

Institutional Arrangements

DOMINICA - FOLU Greenhouse gas inventory, Forest Reference Emission Level / Forest Reference Level REDD+, REDD+ and NDC MRV calculation tool

Date	Jan-22
Version	V1

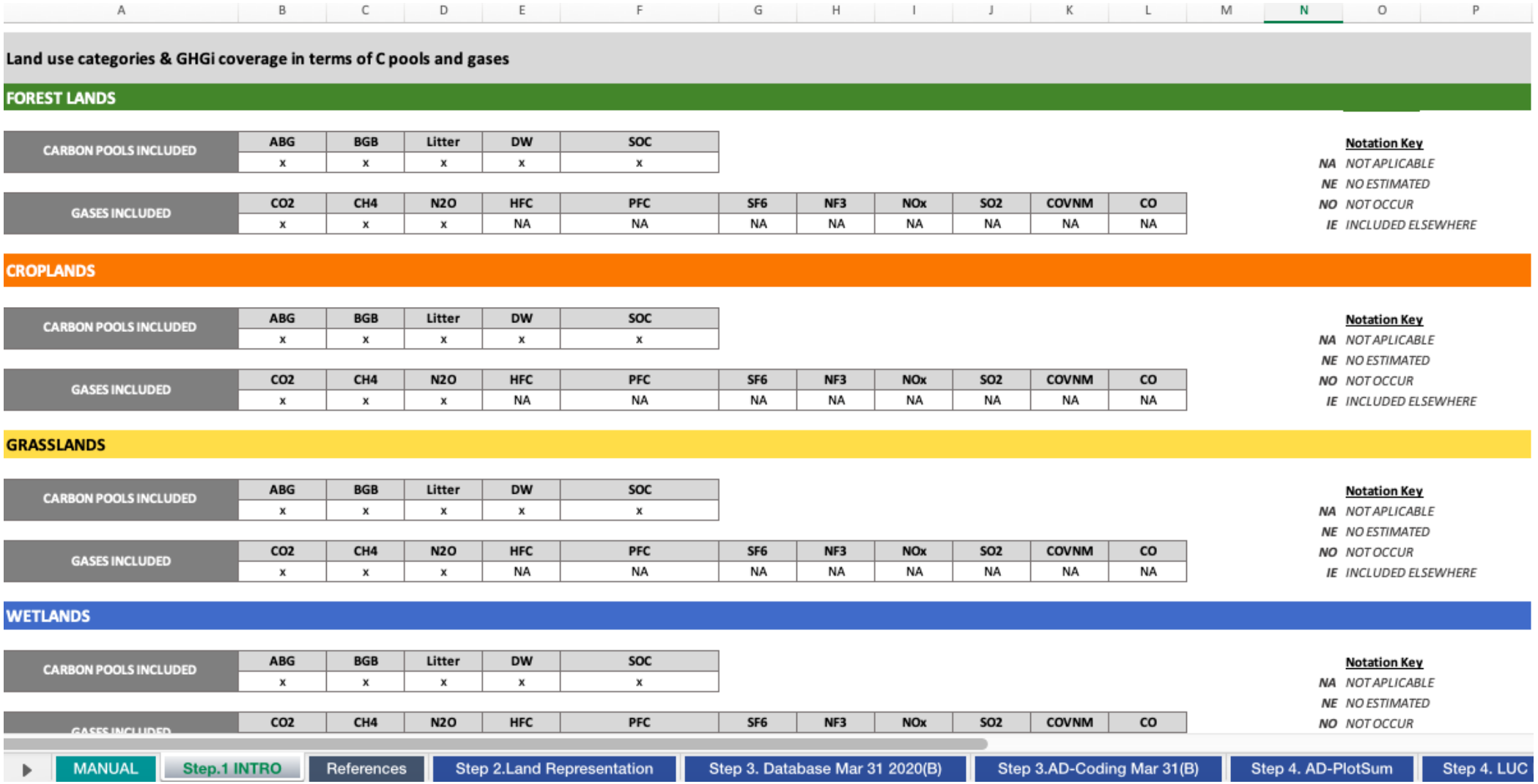
Institution	Division / Department	Name	E-mail	Role (Data Provider/Data Archiving/ QA/AC/Inventory Prep)
Ministry of Environment, Rural Modernisation and Kalinago Upliftment	Forestry, Wildlife and Parks Division	Minchinton Burton	directorforestry@dominica.gov.dm	Director Forestry, Wildlife and Parks Division - Coordinator
Ministry of Environment, Rural Modernisation and Kalinago Upliftment	Forestry, Wildlife and Parks Division	Bradley Guye	guyeb@dominica.gov.dm	Technical Lead, Activity Data Collection for LULUC 2000-2018, GHGi Preparation, Documentation, QC, Archives.
Ministry of Environment, Rural Modernisation and Kalinago Upliftment	Forestry, Wildlife and Parks Division	Machel Sulton	machelsulton@hotmail.com	Activity Data Collection for LULUC 2000-2018, GHGi Preparation, Documentation, QC, Archives.
				Activity Data Collection for

MANUAL | Step.1 INTRO | References | Step 2.Land Representation | Step 3. Database Mar 31 2020(B) | Step 3.AD-Coding Mar 31(B) | Step 4. AD-PlotSum | Step 4

Ready


COMPLETNESS

Gases and carbon pools included



Land use categories & GHGi coverage in terms of C pools and gases

FOREST LANDS

CARBON POOLS INCLUDED	ABG	BGB	Litter	DW	SOC
	x	x	x	x	x

GASES INCLUDED	CO2	CH4	N2O	HFC	PFC	SF6	NF3	NOx	SO2	COVNM	CO
	x	x	x	NA	NA	NA	NA	NA	NA	NA	NA

Notation Key
NA NOT APLICABLE
NE NO ESTIMATED
NO NOT OCCUR
IE INCLUDED ELSEWHERE

CROPLANDS

CARBON POOLS INCLUDED	ABG	BGB	Litter	DW	SOC
	x	x	x	x	x

GASES INCLUDED	CO2	CH4	N2O	HFC	PFC	SF6	NF3	NOx	SO2	COVNM	CO
	x	x	x	NA	NA	NA	NA	NA	NA	NA	NA

Notation Key
NA NOT APLICABLE
NE NO ESTIMATED
NO NOT OCCUR
IE INCLUDED ELSEWHERE

GRASSLANDS

CARBON POOLS INCLUDED	ABG	BGB	Litter	DW	SOC
	x	x	x	x	x

GASES INCLUDED	CO2	CH4	N2O	HFC	PFC	SF6	NF3	NOx	SO2	COVNM	CO
	x	x	x	NA	NA	NA	NA	NA	NA	NA	NA

Notation Key
NA NOT APLICABLE
NE NO ESTIMATED
NO NOT OCCUR
IE INCLUDED ELSEWHERE

WETLANDS

CARBON POOLS INCLUDED	ABG	BGB	Litter	DW	SOC
	x	x	x	x	x

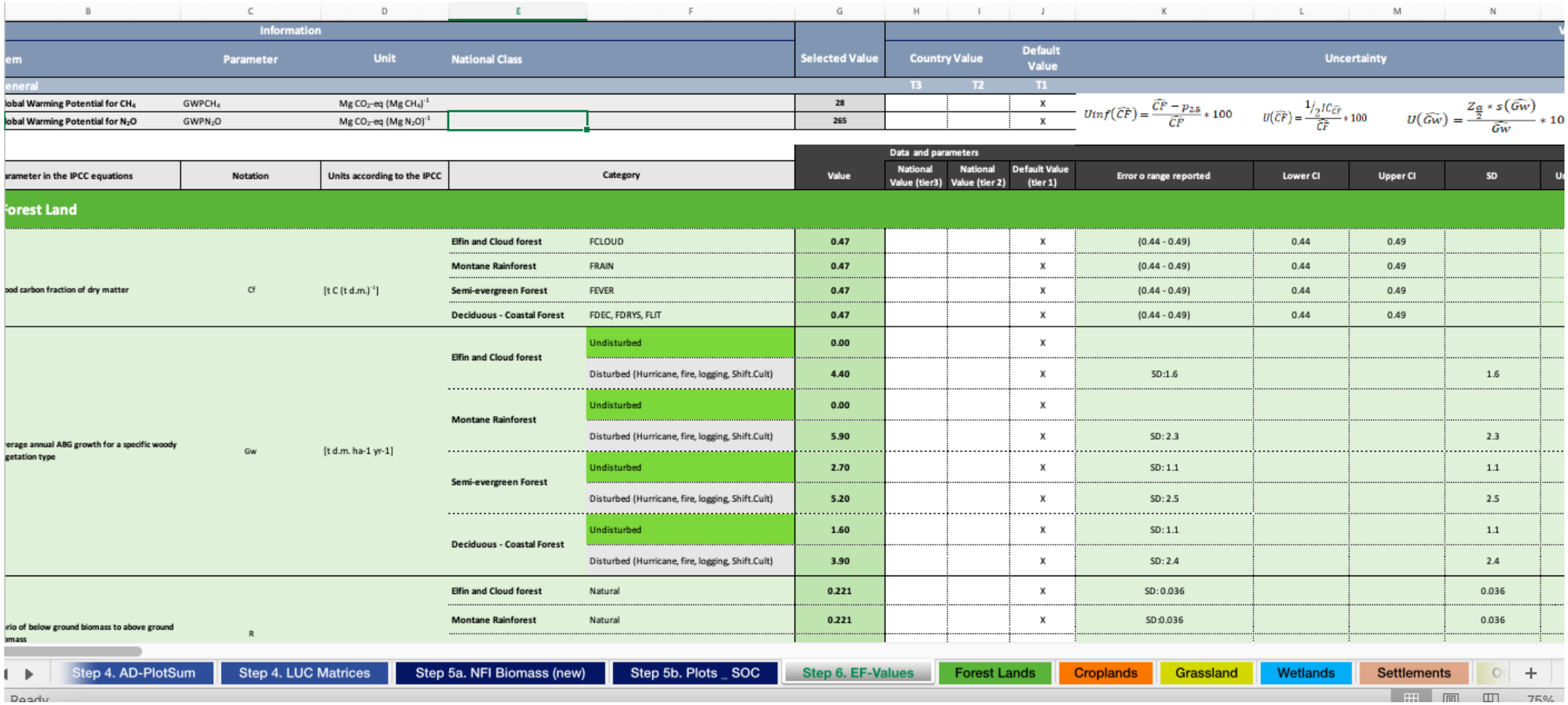
GASES INCLUDED	CO2	CH4	N2O	HFC	PFC	SF6	NF3	NOx	SO2	COVNM	CO

Notation Key
NA NOT APLICABLE
NE NO ESTIMATED
NO NOT OCCUR

MANUAL | Step.1 INTRO | References | Step 2.Land Representation | Step 3. Database Mar 31 2020(B) | Step 3.AD-Coding Mar 31(B) | Step 4. AD-PlotSum | Step 4. LUC


ACCURACY

Emissions Factors, Uncertainties



Information				Selected Value	Country Value		Default Value	Uncertainty
em	Parameter	Unit	National Class		T3	T2	T1	
eneral								
lobal Warming Potential for CH_4	$GWPCH_4$	$Mg\ CO_2\text{-eq}\ (Mg\ CH_4)^{-1}$		28			X	$Uinf(\widehat{CF}) = \frac{\widehat{CF} - p_{2.5}}{\widehat{CF}} * 100$ $U(\widehat{CF}) = \frac{1/2\, IC_{\widehat{CF}}}{\widehat{CF}} * 100$ $U(\widehat{Gw}) = \frac{Z_{\frac{\alpha}{2}} * s(\widehat{Gw})}{\widehat{Gw}} * 10$
lobal Warming Potential for N_2O	$GWPN_2O$	$Mg\ CO_2\text{-eq}\ (Mg\ N_2O)^{-1}$		265			X	

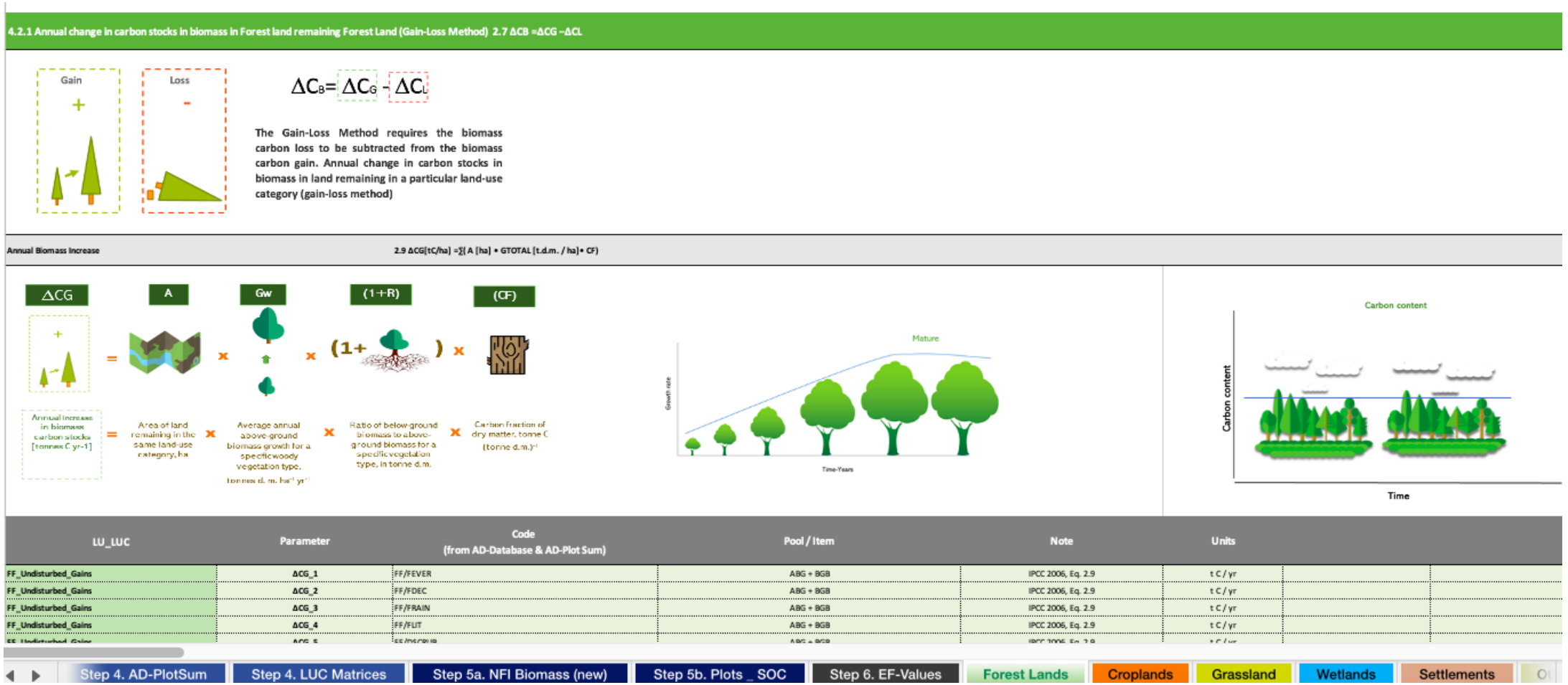
Data and parameters										
arameter in the IPCC equations	Notation	Units according to the IPCC	Category		Value	National Value (tier3)	National Value (tier 2)	Default Value (tier 1)	Error o range reported	Lower CI	Upper CI	SD
Forest Land												
ood carbon fraction of dry matter	Cf	$[t\ C\ (t\ d.m.)^{-1}]$	Elfin and Cloud forest	FCLOUD	0.47			X	(0.44 - 0.49)	0.44	0.49	
			Montane Rainforest	FRAIN	0.47			X	(0.44 - 0.49)	0.44	0.49	
			Semi-evergreen Forest	FEVER	0.47			X	(0.44 - 0.49)	0.44	0.49	
			Deciduous - Coastal Forest	FDEC, FDRYS, FLIT	0.47			X	(0.44 - 0.49)	0.44	0.49	
erage annual ABG growth for a specific woody getation type	Gw	[t d.m. ha-1 yr-1]	Elfin and Cloud forest	Undisturbed	0.00			X				
				Disturbed (Hurricane, fire, logging, Shift.Cult)	4.40			X	SD:1.6			1.6
			Montane Rainforest	Undisturbed	0.00			X				
				Disturbed (Hurricane, fire, logging, Shift.Cult)	5.90			X	SD: 2.3			2.3
			Semi-evergreen Forest	Undisturbed	2.70			X	SD: 1.1			1.1
				Disturbed (Hurricane, fire, logging, Shift.Cult)	5.20			X	SD: 2.5			2.5
			Deciduous - Coastal Forest	Undisturbed	1.60			X	SD: 1.1			1.1
				Disturbed (Hurricane, fire, logging, Shift.Cult)	3.90			X	SD: 2.4			2.4
rio of below ground biomass to above ground omass	R		Elfin and Cloud forest	Natural	0.221			X	SD: 0.036			0.036
			Montane Rainforest	Natural	0.221			X	SD:0.036			0.036

Step 4. AD-PlotSum | Step 4. LUC Matrices | Step 5a. NFI Biomass (new) | Step 5b. Plots _ SOC | Step 6. EF-Values | Forest Lands | Croplands | Grassland | Wetlands | Settlements

Ready


COMPARABILITY

IPCC Methodologies




CONSISTENCY

Time series consistency for AFOLU - GHG Inventory

National GHG Inventory Totals

IPCC Code	Source Category	Source Subcategory	C pool	Gases	Total GHG Emissions and Removals (Gg CO_2-eq) [CO2, CH4, N2O] 2000 - 2018							Total GHG Emissions and Removals (Gg CO_2-eq) [CO2, CH4, N2O] 2000 - 2018										
					2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
3.B	Land			CO_2	-111	-111	-111	-111	-111	-93	-78	-106	-106	-106	-106	-87	-43	-96	-56	-18	-92	20,189
3.B.1	Forest Land			CO_2	-111	-111	-111	-111	-111	-110	-110	-110	-110	-110	-110	-110	-109	-138	-110	-92	-137	20,108
3.B.2	Cropland			CO_2	0	0	0	0	0	7	1	1	1	1	1	11	2	34	3	3	3	30
3.B.3	Grassland			CO_2	0	0	0	0	0	6	1	1	1	1	1	1	7	2	32	60	32	8
3.B.4	Wetlands			CO_2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.B.5	Settlements			CO_2	0	0	0	0	0	5	30	2	2	2	2	10	57	6	12	8	9	9
3.B.6	Other Land			CO_2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	1	1	34
3.C	Aggregate Sources and Non-CO_2 Emissions Sources on Land			CH_4 & N_2O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.C.1	Emissions from Biomass Burning			CH_4 + N_2O	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
3.D	Other																					
3.D.1	Harvested Wood Products			CO_2	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

Detailed Table (IPCC 2006)

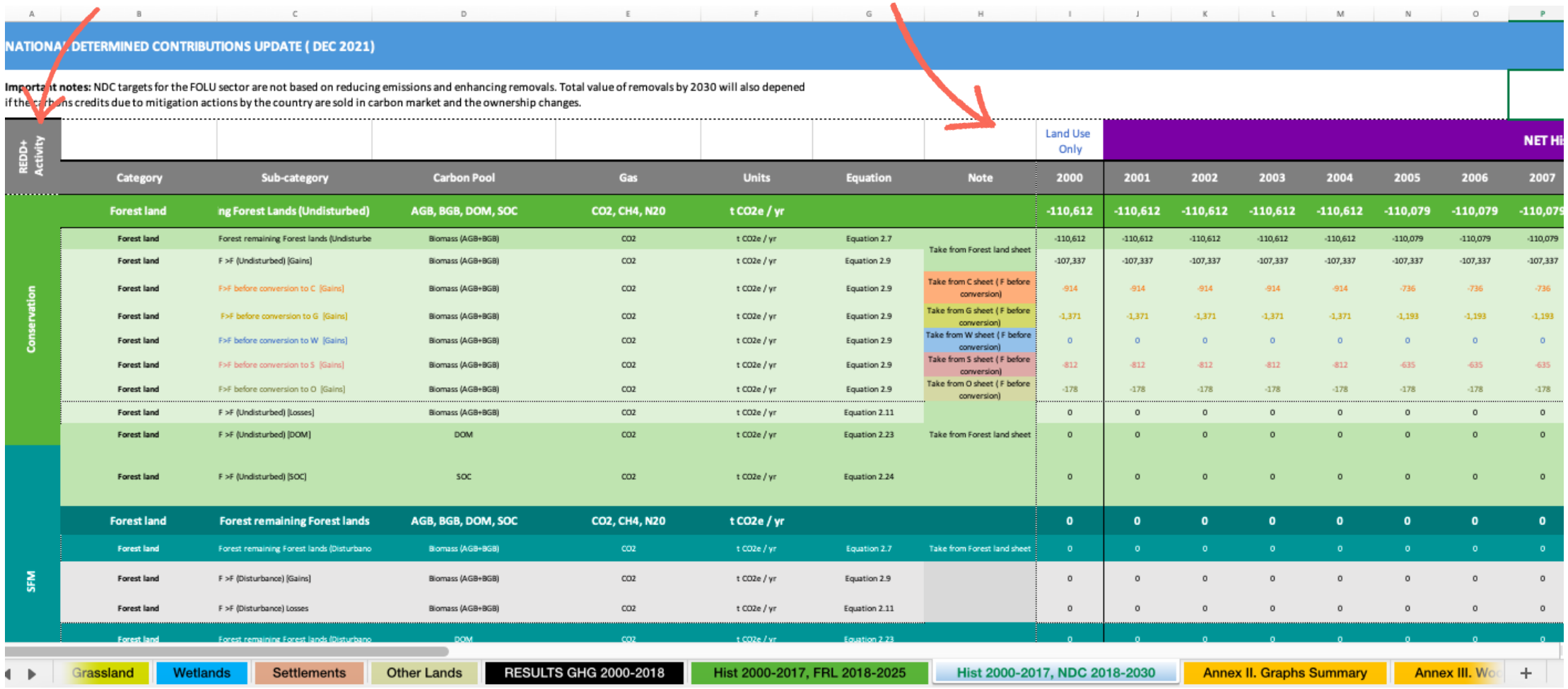
Source	Source Category	Source Subcategory	C pool	Gases	Total GHG Emissions and Removals (Gg CO2-eq) [CO2, CH4, N2O] 2000 - 2018							Total GHG Emissions and Removals (Gg CO2-eq) [CO2, CH4, N2O] 2000 - 2018										Total GHG Emissions and Removals (Gg CO2-e CH4, N2O] 2000 - 2018
					2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
3	Agriculture, Forestry, and Other Land Use																					
3.B	**Land**			CO_2	-110.6	-110.6	-110.6	-110.6	-110.6	-92.5	-78.2	-106.0	-106.0	-106.0	-106.0	-87.0	-43.1	-96.0	-55.8	-18.4	-91.5	20,188.7
3.B.1	**Forest Land**			CO_2	-110.6	-110.6	-110.6	-110.6	-110.6	-110.1	-110.1	-110.1	-110.1	-110.1	-110.1	-109.7	-109.3	-138.3	-110.5	-91.5	-137.0	20,107.8
3.B.1.a	Forest Land Remaining Forest Land (undisturbed)			CO_2	-110.6	-110.6	-110.6	-110.6	-110.6	-110.1	-110.1	-110.1	-110.1	-110.1	-110.1	-109.7	-109.3	-109.3	-108.9	-107.7	-107.4	-0.3
3.B.1.a	Forest Land Remaining Forest Land (disturbed)			CO_2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.7	-0.5	20,107.9
3.B.1.b	Land Converted to Forest Land			CO_2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-29.0	-1.5	-1.5	-29.0	0.2
3.B.1.b.i	Land Converted to Forest Land	Cropland Converted to Forest Land		CO_2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-29.0	-1.5	-1.5	-1.5	1.1
3.B.1.b.ii	Land Converted to Forest Land	Grassland Converted to Forest Land		CO_2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-27.5	-0.9
3.B.1.b.iii	Land Converted to Forest Land	Wetlands Converted to Forest Land		CO_2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.B.1.b.iv	Land Converted to Forest Land	Settlements Converted to Forest Land		CO_2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.B.1.b.v	Land Converted to Forest Land	Other Land Converted to Forest Land		CO_2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.B.2	**Cropland**			CO_2	0.0	0.0	0.0	0.0	0.0	7.3	0.7	0.7	0.7	0.7	0.7	11.5	2.4	34.1	3.2	3.2	3.2	29.9
3.B.2.a	Cropland Remaining Cropland			CO_2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.B.2.b	Land Converted to Cropland			CO_2	0.0	0.0	0.0	0.0	0.0	7.3	0.7	0.7	0.7	0.7	0.7	11.5	2.4	34.1	3.2	3.2	3.2	29.9
3.B.2.b.i	Land Converted to Cropland	Forest Land Converted to Cropland		CO_2	0.0	0.0	0.0	0.0	0.0	7.3	0.7	0.7	0.7	0.7	0.7	11.5	2.4	34.1	3.2	3.2	3.2	29.9
3.B.2.b.ii	Land Converted to Cropland	Grassland Converted to Cropland		CO_2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.B.2.b.iii	Land Converted to Cropland	Wetlands Converted to Cropland		CO_2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.B.2.b.iv	Land Converted to Cropland	Settlements Converted to Cropland		CO_2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.B.2.b.v	Land Converted to Cropland	Other Land Converted to Cropland		CO_2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.B.3	**Grassland**			CO_2	0.0	0.0	0.0	0.0	0.0	5.5	0.8	0.8	0.8	0.8	0.8	0.8	6.6	1.8	31.5	60.2	32.0	8.5

Step 6. EF-Values | Forest Lands | Croplands | Grassland | Wetlands | Settlements | Other Lands | RESULTS GHG 2000-2018 | Hist 2000-2017, FRL 2018-2025 | Hist 2000-2017, NDC 201

Consistency GHG Inventory / REDD+ / NDC

REDD+ activity

GHG Emissions and removals



NATIONAL DETERMINED CONTRIBUTIONS UPDATE (DEC 2021)

Important notes: NDC targets for the FOLU sector are not based on reducing emissions and enhancing removals. Total value of removals by 2030 will also depened if the carbons credits due to mitigation actions by the country are sold in carbon market and the ownership changes.

REDD+ Activity	Category	Sub-category	Carbon Pool	Gas	Units	Equation	Note	Land Use Only 2000	2001	2002	2003	2004	2005	2006	2007
Conservation	Forest land	ng Forest Lands (Undisturbed)	AGB, BGB, DOM, SOC	CO2, CH4, N20	t CO2e / yr			-110,612	-110,612	-110,612	-110,612	-110,612	-110,079	-110,079	-110,079
	Forest land	Forest remaining Forest lands (Undisturbe	Biomass (AGB+BGB)	CO2	t CO2e / yr	Equation 2.7		-110,612	-110,612	-110,612	-110,612	-110,612	-110,079	-110,079	-110,079
	Forest land	F >F (Undisturbed) [Gains]	Biomass (AGB+BGB)	CO2	t CO2e / yr	Equation 2.9	Take from Forest land sheet	-107,337	-107,337	-107,337	-107,337	-107,337	-107,337	-107,337	-107,337
	Forest land	F>F before conversion to C [Gains]	Biomass (AGB+BGB)	CO2	t CO2e / yr	Equation 2.9	Take from C sheet (F before conversion)	-914	-914	-914	-914	-914	-736	-736	-736
	Forest land	F>F before conversion to G [Gains]	Biomass (AGB+BGB)	CO2	t CO2e / yr	Equation 2.9	Take from G sheet (F before conversion)	-1,371	-1,371	-1,371	-1,371	-1,371	-1,193	-1,193	-1,193
	Forest land	F>F before conversion to W [Gains]	Biomass (AGB+BGB)	CO2	t CO2e / yr	Equation 2.9	Take from W sheet (F before conversion)	0	0	0	0	0	0	0	0
	Forest land	F>F before conversion to S [Gains]	Biomass (AGB+BGB)	CO2	t CO2e / yr	Equation 2.9	Take from S sheet (F before conversion)	-812	-812	-812	-812	-812	-635	-635	-635
	Forest land	F>F before conversion to O [Gains]	Biomass (AGB+BGB)	CO2	t CO2e / yr	Equation 2.9	Take from O sheet (F before conversion)	-178	-178	-178	-178	-178	-178	-178	-178
	Forest land	F >F (Undisturbed) [Losses]	Biomass (AGB+BGB)	CO2	t CO2e / yr	Equation 2.11		0	0	0	0	0	0	0	0
	Forest land	F >F (Undisturbed) [DOM]	DOM	CO2	t CO2e / yr	Equation 2.23	Take from Forest land sheet	0	0	0	0	0	0	0	0
	Forest land	F >F (Undisturbed) [SOC]	SOC	CO2	t CO2e / yr	Equation 2.24		0	0	0	0	0	0	0	0
SFM	Forest land	Forest remaining Forest lands	AGB, BGB, DOM, SOC	CO2, CH4, N20	t CO2e / yr			0	0	0	0	0	0	0	0
	Forest land	Forest remaining Forest lands (Disturbano	Biomass (AGB+BGB)	CO2	t CO2e / yr	Equation 2.7	Take from Forest land sheet	0	0	0	0	0	0	0	0
	Forest land	F >F (Disturbance) [Gains]	Biomass (AGB+BGB)	CO2	t CO2e / yr	Equation 2.9		0	0	0	0	0	0	0	0
	Forest land	F >F (Disturbance) Losses	Biomass (AGB+BGB)	CO2	t CO2e / yr	Equation 2.11		0	0	0	0	0	0	0	0
	Forest land	Forest remaining Forest lands (Disturbano	DOM	CO2	t CO2e / yr	Equation 2.23		0	0	0	0	0	0	0	0

Grassland | Wetlands | Settlements | Other Lands | RESULTS GHG 2000-2018 | Hist 2000-2017, FRL 2018-2025 | Hist 2000-2017, NDC 2018-2030 | Annex II. Graphs Summary | Annex III. Wo

Adjusting for national circumstances

Dominica acknowledges Decision 4 CP/15, paragraph 7. where "*developing country Parties in establishing forest reference emission levels and forest reference levels should do so transparently taking into account historic data*"; thus, an annual historical analysis from 2000 to 2017 of GHG emissions and removals for Forest land remaining Forest lands undisturbed, Forest land remaining Forest lands disturbed by human (fires and logging) and natural events (hurricanes), and conversions to and from Forest Lands is included.

However, only as **complementary information,** because historical data does not represent the future expected conditions; therefore, Dominica is adjusting for national circumstances, as also indicated in the same decision (4 CP/15, p7).

2017 before

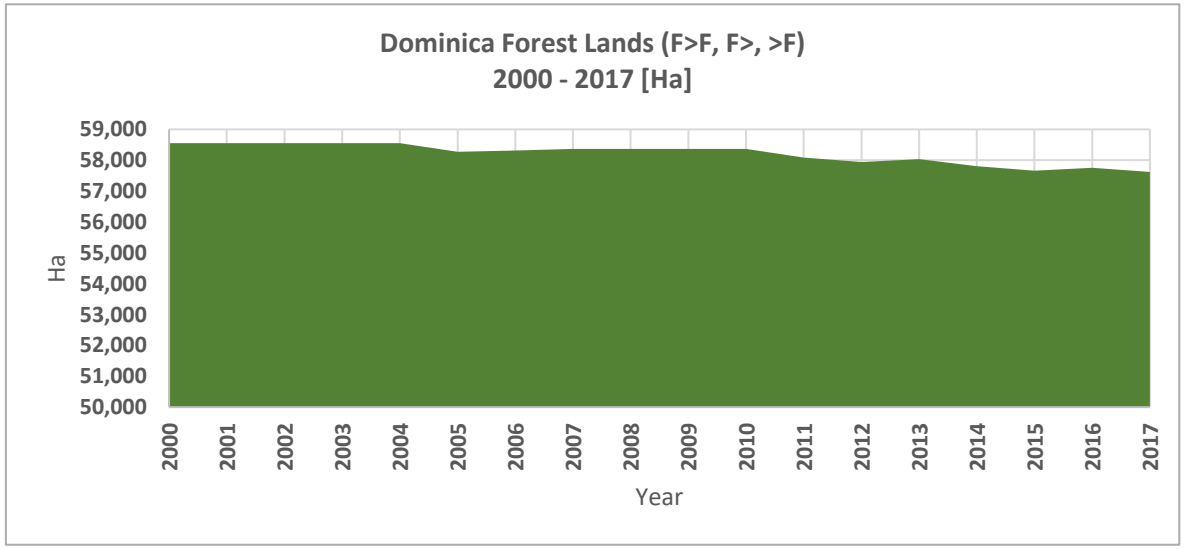
2017 after

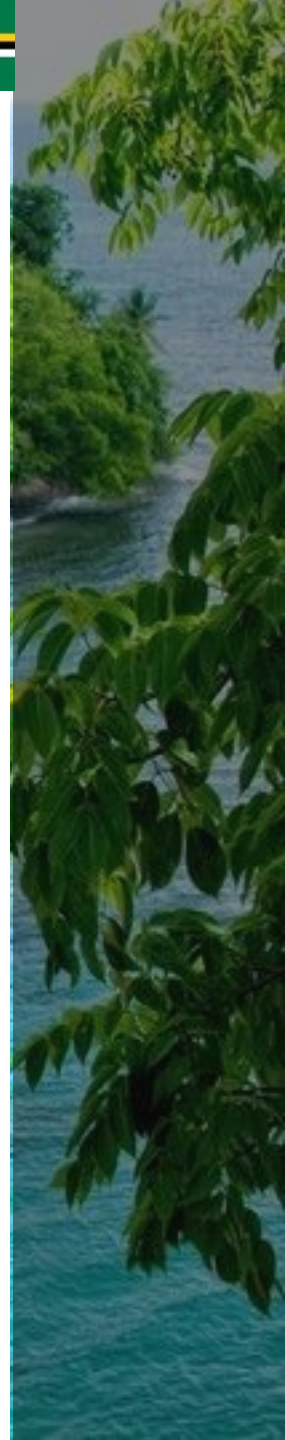
Forest lands use and forest land use change 2000-2017

The land use and land use change analysis indicated that total area of forest lands in 2000 was 58.551 Ha compared to 57.710 Ha in 2017, resulting in a forest loss of 888 Ha in 17 years of about 52Ha per year, locating Dominica in a high forest cover low, deforestation country.

In the period 2000-2017, 280 Ha of forest were converted to croplands, 327 Ha converted to Grasslands, 280 Ha converted to Settlements and 94 Ha converted to Other lands

AREA CHANGE [HA]					
	2000	2005	2010	2015	2017
Elfin and Cloud forest	7,056	7,056	7,056	7,009	7,009
Montane Rainforest	28,411	28,411	28,364	28,271	28,271
Semi-evergreen Forest	10,514	10,514	10,514	10,374	10,280
Deciduous Forest	7,056	7,009	7,009	6,963	6,963
Dry Scrub Forest	1,916	1,822	1,822	1,636	1,636
Litoral Forest	3,598	3,598	3,598	3,551	3,551
Total	58,551	58,411	58,364	57,804	57,710





Forest Degradation 2000-2017

Fires, Logging and hurricanes were assessed through the time series.

No fires or logging were visualized in forests. This is mainly due to the high-protection level in forest lands in Dominica. Fires usually occur in grassland areas.

The analysis indicted that the major degradation occurred due to a tropical storm in 2015 and a hurricane category 5 in 2017. In this last hurricane, almost all forest were severely affected, removing most of the canopy cover and in some cases uprooting trees, causing also floods and landslides.

Because of the magnitude of this event, it was considered not appropriated to exclude the C emissions/removals or areas affected by natural disturbances, as applied in other countries.

Forestry, Wildlife and Parks Division

2017

2019

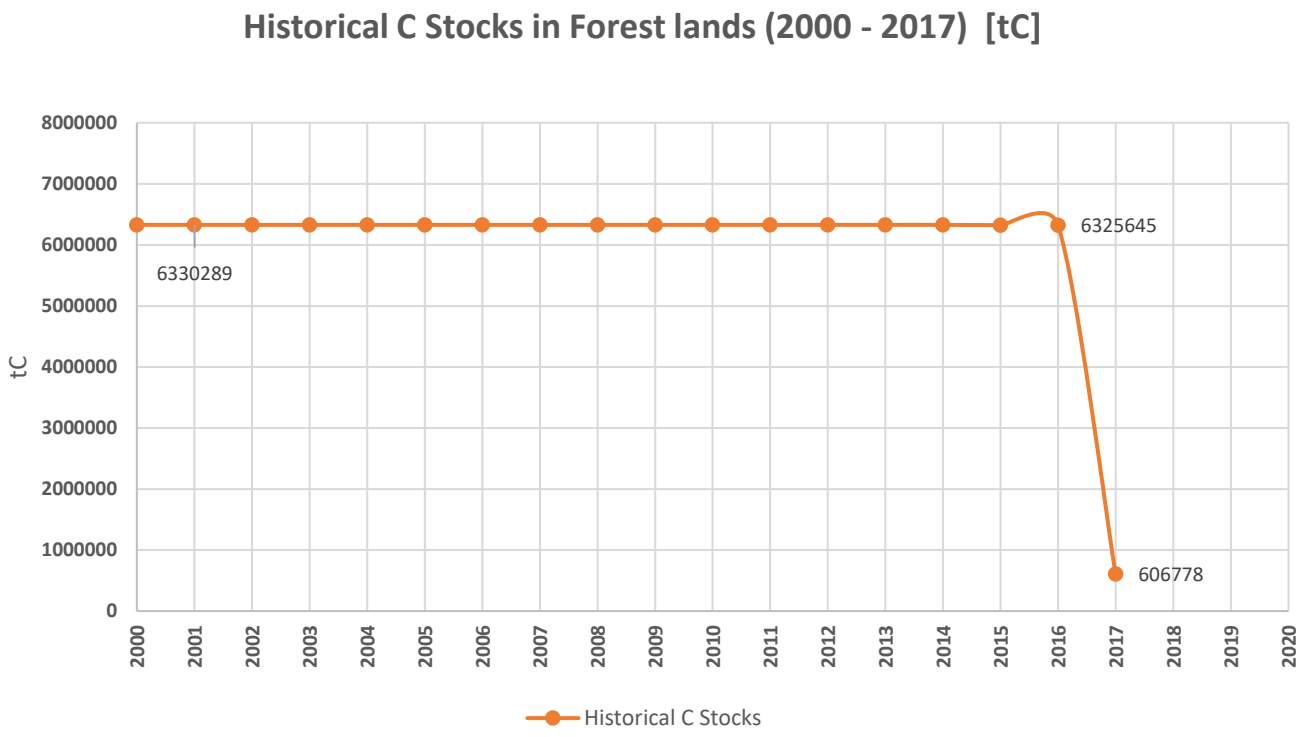
Forest Degradation 2000-2017

Forest land remaining Forest land (Disturbed)		*Forest Type*	*# plots*	*Variable*	*Source*	*Unit*	2015	2016	2017	2018
F>F Disturbed	**A_1**	FF/FELF/Hurricane_2017	42	Area	Collect Earth	ha	1962.6	1962.6	1962.6	1962.6
F>F Disturbed	**A_2**	FF/FCLOUD/Hurricane_2017	108	Area	Collect Earth	ha	5046.7	5046.7	5046.7	5046.7
F>F Disturbed	**A_3**	FF/FRAIN/Hurricane_2017	603	Area	Collect Earth	ha	28177.6	28177.6	28177.6	28177.6
F>F Disturbed	**A_5**	FF/FEVER/Hurricane_2017	218	Area	Collect Earth	ha	10186.9	10186.9	10186.9	10186.9
F>F Disturbed	**A_6**	FF/FEVER/Shifting Cultivation_2015	1	Area	Collect Earth	ha	46.7	46.7	46.7	46.7
F>F Disturbed	**A_7**	FF/FDEC/Hurricane_2015	1	Area	Collect Earth	ha	46.7	46.7	46.7	46.7
F>F Disturbed	**A_8**	FF/FDEC/Hurricane_2017	148	Area	Collect Earth	ha	6915.9	6915.9	6915.9	6915.9
F>F Disturbed	**A_9**	FF/FDSCRUB/Hurricane_2017	35	Area	Collect Earth	ha	1635.5	1635.5	1635.5	1635.5
F>F Disturbed	**A_11**	FF/FLIT/Hurricane_2017	76	Area	Collect Earth	ha	3551.4	3551.4	3551.4	3551.4

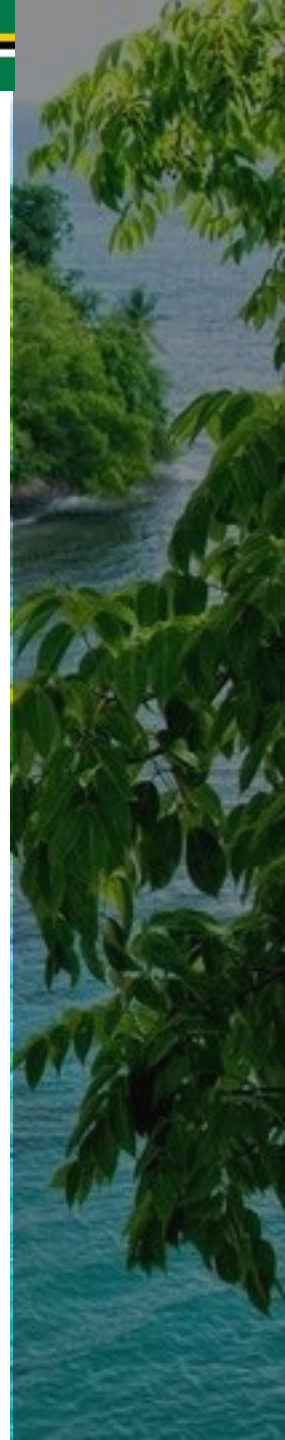
It was estimated that by 2017 Dominica had 57,710 ha of forest lands from which 57,477 ha were affected by hurricane Maria

Historical C stocks in Forest lands 2000-2017

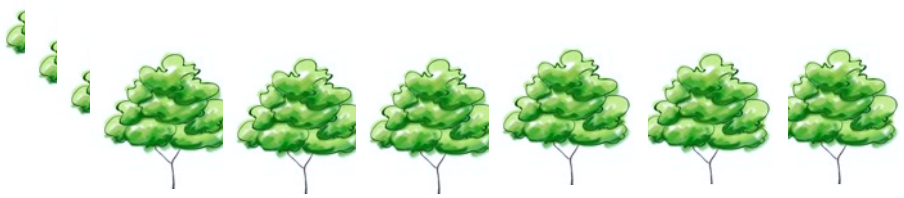
After Hurricane Maria in 2017, the land use assessment indicated that depending on the location and forest type, about 85% to 95% of the forest was lost. Therefore, despite a historical annual analysis of GHG emissions and removals was developed, it cannot be used as benchmark. This means, that from an estimated 6.3 million tC of stock in the forest previous to the hurricane, it went down to approximated 600,000 tC of stock.



As a result, all previous conditions to 2017 do not apply. Therefore, from 2018, forest lands present new conditions due to the loss of the majority of the forest cover. The country considers fundamental to build the reference level based on the post-hurricane conditions in 2018; particularly, considering the remaining forest cover area, which was about 15% to 25% compared to 2017 before the hurricane

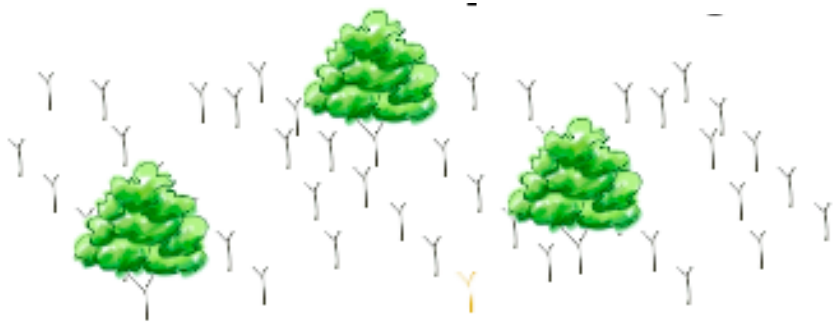


Historical C stocks in Forest lands 2000-2017 + Post- Hurricane



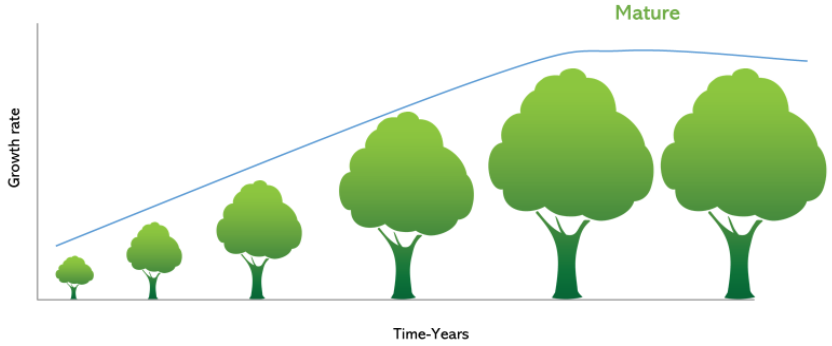
Previous C Stock: 6.3 million

*Full C Stock (tC) = total Area *(AGC+BGC)*



After hurricane C Stock: 600,000 tC

*C Stock loss due to Disturbance (tC) = total Area *(AGC+BGC)* fd*



Expected Recovery gains:
-648,028 tCO2e /yr (FRL)

Annual removals added to previous C stock

Historical C stocks in Forest lands 2000-2017

Historical GHG emissions and removals average 1,101,680 tCO2e from 2001 to 2017. However, this average does not represent future expected emissions and removals dynamics, because previous to the hurricane, Dominica was a net sink with an average of -90,940 tCO2e removals (average 2001-2016).

It is because of the hurricane Maria 2017, where emissions were approximated 20 million tCO2e, that Dominica resulted with more emissions than removals.

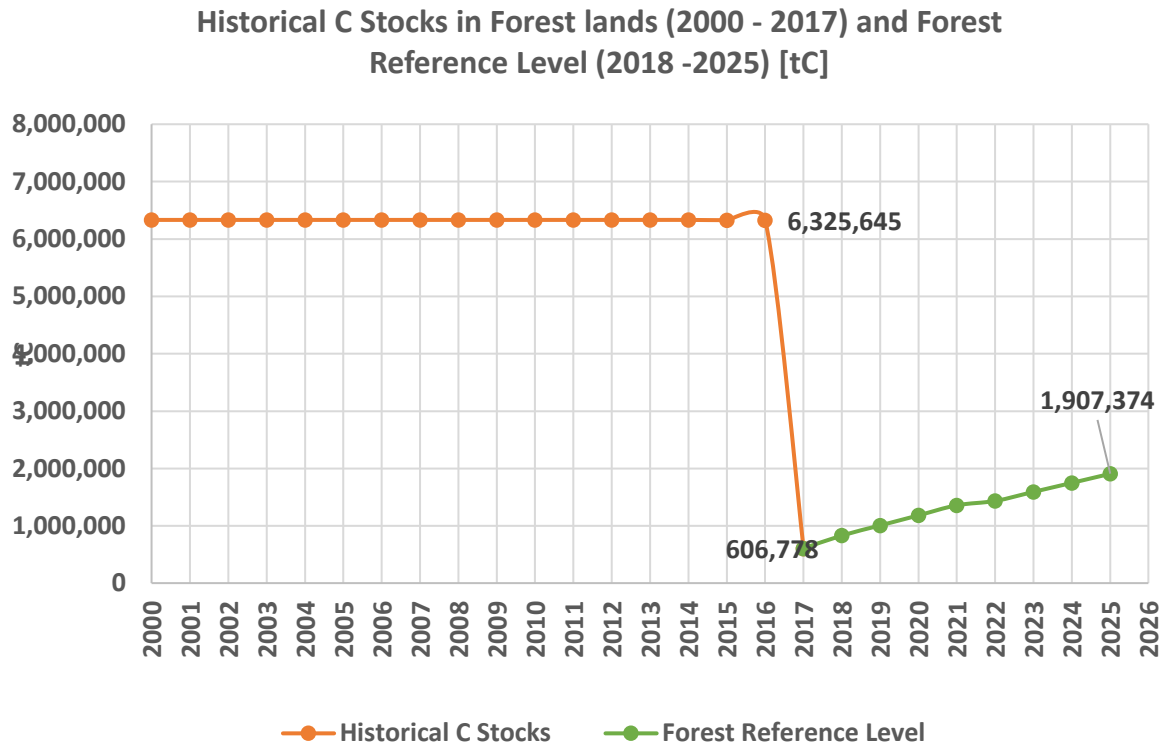
In addition, as these emissions and removals were based on a forest that does not exist anymore as it was known, and the post-hurricane conditions are different, the historical average cannot be used to represent the expected future GHG emissions or removals.

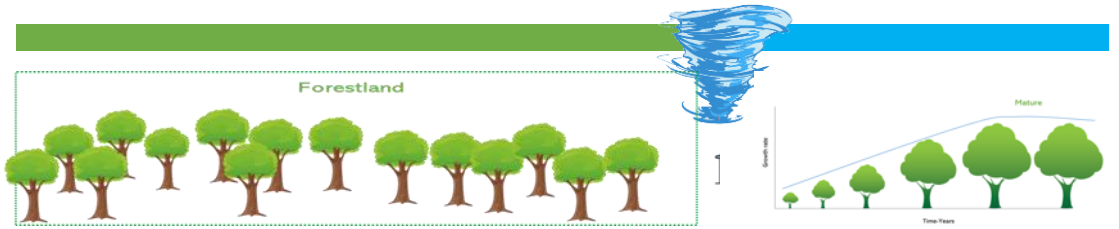
Year	Net balance emissions and removals [tCO2e]	Net balance emissions and removals in F>F (undisturbed) [tCO2e]	Net balance emissions and removals in F>F (disturbed) [tCO2e]	Net balance emissions and removals in land converted to F [tCO2e]	Net balance emissions and removals in F converted to other land uses [tCO2e]
2001	-110,612	-110,612	0	0	0
2002	-110,612	-110,612	0	0	0
2003	-110,612	-110,612	0	0	0
2004	-110,612	-110,612	0	0	0
2005	-97,787	-110,079	0	0	12,291
2006	-80,606	-110,079	0	0	29,473
2007	-105,128	-110,079	0	0	4,951
2008	-105,128	-110,079	0	0	4,951
2009	-105,128	-110,079	0	0	4,951
2010	-105,128	-110,079	0	0	4,951
2011	-90,377	-109,723	0	0	19,346
2012	-49,053	-109,266	0	0	60,213
2013	-97,396	-109,266	0	-29,031	40,901
2014	-60,511	-108,911	0	-1,541	49,941
2015	-23,274	-107,718	17,744	-1,541	68,240
2016	-93,085	-107,439	-545	-29,014	43,913
2017	20,183,601	-279	20,107,923	203	75,754
Average	1,101,680	-103,266	1,183,831	-3,584	24,699

Dominica Forest Reference Level 2018-2025

After the hurricane, some forest areas started to regenerate naturally; in other forest areas, restoration, rehabilitation, and reforestation projects have been necessary, for which the Government has drafted multiple projects to support and enhance the forest recovery. As a result, the selected baseline considers only the expected C removals due to post-disturbance forest regrowth as natural regeneration starting in 2018, along with the expected C removals of lands converted to forest lands, using the historical average, calculated as -648,028 tCO2 e /yr .

Therefore, Dominica will use the post-hurricane C stock of 606,778 tC as benchmark for assessing the country's performance in implementing the activities referred to in decision 1/CP.16, paragraph 70





Potential MRV Needs

- Peer Review through the FOLU Workcrew (addition of Dominican team to workcrew)
- Support to develop institutional arrangements & capacity
- Public Awareness on REDD+ Process
- Baseline MRV Assessment/ Capacity Building Assessment (with Dominica as newest MRV country member)


THANK YOU