



# Forest Carbon Partnership Facility

## **Portfolio Management and Selection of ER-PINs**

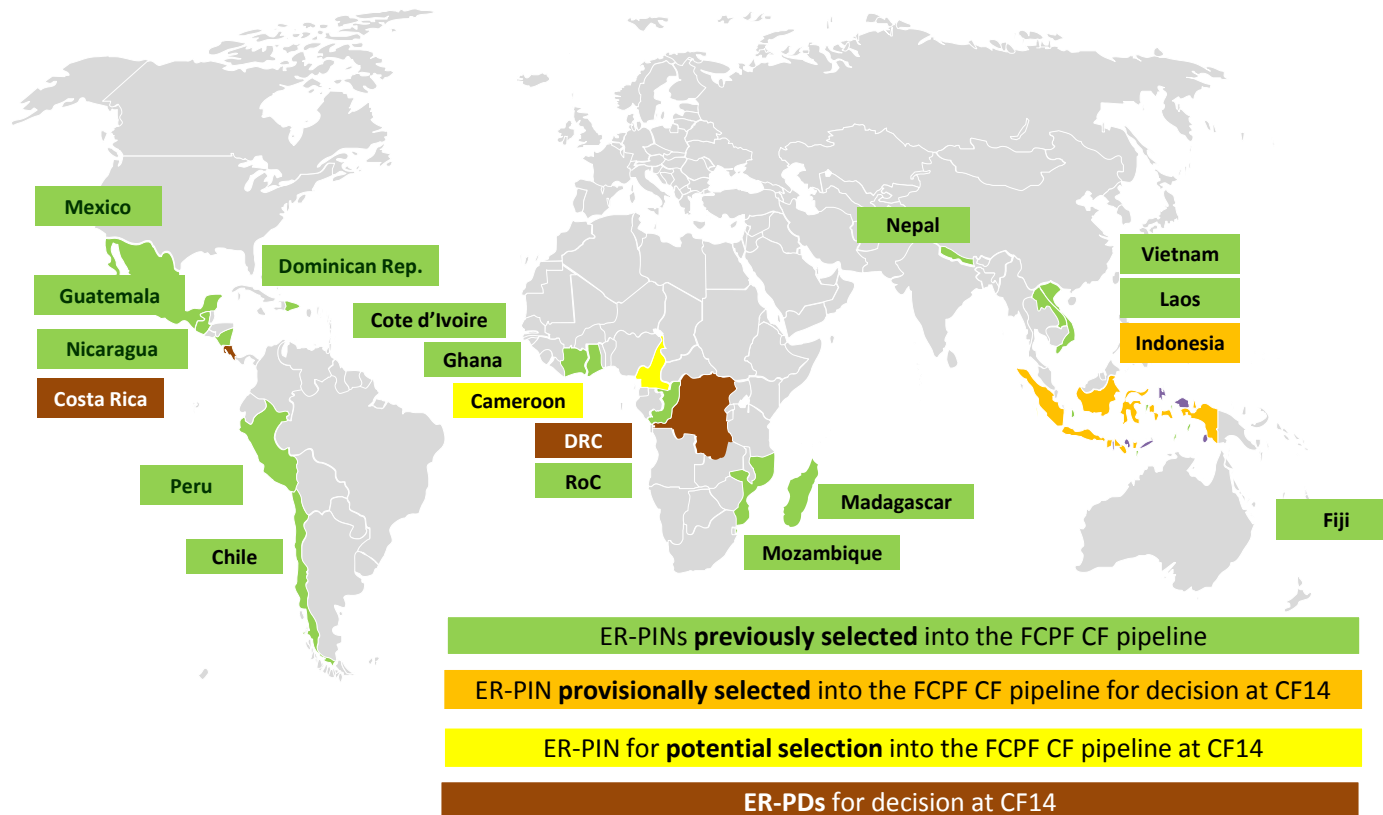
Fourteenth meeting of the Carbon Fund (CF14)

Paris, France

June 20-22, 2016

# Building the Carbon Fund Pipeline and Portfolio

- 18 ER-PINs in pipeline so far → approximately 12-13 ER-PAs in eventual portfolio.



# Task at CF14

## Two decision points to select ER programs:

1. Selection into Carbon Fund **pipeline** based on ER-PIN (**concept-stage ideas**)

→ Negotiate and sign Letter of Intent (LOI). This does not guarantee a Country will make it to Emission Reductions Payment Agreement (ERPA).

Cameroon

Indonesia

2. Selection into Carbon Fund **portfolio** based on ER-Program Document (full proposal)

→ Negotiate and sign ERPA.

Costa Rica

DRC

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# Task at CF14

- **Cameroon:**
  - Was not selected at CF13 (October 2015); was invited to revise its ER-PIN by CF15.
  - Resolution needed if selected into the Carbon Fund pipeline.
  - If selected, would enter the same pipeline as existing Countries upon LOI signature.
  
- **Indonesia:**
  - Was provisionally selected at CF11 (October 2014) subject to specific revisions to its ER-PIN (resolution CFM/11/2014/2).
  - No resolution is needed. CFPs are requested to:
    - provide feedback on whether the issues laid out in the resolution are addressed by the revisions,
    - consent (or not) to the inclusion of the revised ER-PIN in the Carbon Fund pipeline.
    - if CFPs consent, identify any key issues they wish to include in the cover letter of the Letter of Intent, to be taken into account in the development of the ER-PD.

# Task at CF14

- Selection of ER-PINs depends on:
  - Outlook for potential new funding
  - The quality of programs presented
  - CFPs' appetite for risk. Do CFPs want to over-program by the same amount?
    - Experience: Some ER-PINs may not become ER-PDs at all, or ER-PDs that meet requirements or Carbon Fund Participants' needs. BioCF T1/T2: 32% droppage rate from LOI to ERPA.
    - If there is under-delivery or if more funds become available, there will be additional Programs under development to buy into.
    - Competitive process on quality and progress.
    - Countries may access other funding if not selected by the Carbon Fund.

# Options for Selection of ER-PINs

## 1. Include ER-PIN in pipeline, allocate up to \$650,000 (subject to a signed Letter of Intent)

- to support Country to develop ER-PIN into an ER Program Document
- to support due diligence by World Bank
- funds will be managed by World Bank and/or FMT
- Gives green light to country to further develop concept. Not expected to answer all questions before signing an LOI
- ***LOI resolution requires setting a maximum volume (and possibly maximum value) to be contracted.***

## 2. Allocate up to \$200,000 to support revisions to ER-PIN

- ER-PIN to be considered for inclusion in pipeline at later stage
- funds will be managed by World Bank and/or FMT

## 3. Not include the ER-PIN

- ER-PIN may be modified and presented again later if window is open

FMT recommends option 1 or 3, as has been done in the past

# Criteria for selection of ER-PINs into pipeline

## 7 formal criteria:

1. Progress towards Readiness
2. Political commitment
3. Methodological Framework
4. Scale
5. Technical soundness
6. Non-carbon benefits
7. Diversity and learning value

## Other parameters raised by CFPs:

- Regional balance across portfolio
- Quality matters
- Goal of net emission reductions across portfolio
  - Countries with high forest cover and low deforestation (HFLD) should not represent a disproportionately large share of the total ER volume or total financial value of the portfolio.



# Task at CF14

## Two decision points to select ER programs:

1. Selection into Carbon Fund **pipeline** based on ER-PIN (**concept-stage ideas**)

→ Negotiate and sign Letter of Intent (LOI). This does not guarantee a Country will make it to Emission Reductions Payment Agreement (ERPA).

Cameroon

Indonesia

2. Selection into Carbon Fund **portfolio** based on ER-Program Document (full proposal)

→ Negotiate and sign ERPA.

Costa Rica

DRC

# Basis for selection into Carbon Fund portfolio

- Letter of Intent (LOI) was good faith agreement to move forward
- TAP reviewed draft and advanced draft ER-PDs
- CFPs consolidated their comments
- Calls were held between CFPs, Observers and Costa Rica/DRC
- WB engagement and due diligence to date
- Portfolio selection is on a first come first served basis, while taking into account:
  - Quality
  - selection criteria as per ER-PIN criteria, and
  - consistency with the Methodological Framework
- CF14 decision to select ER program would authorize Trustee to start negotiating an Emission Reductions Payment Agreement

# Options for Decisions by Carbon Fund Participants (1)

- i. Decide to **select** an ER Program into its portfolio and proceed to negotiating an ERPA subject to completion of World Bank due diligence and final World Bank approval of the program
- ii. Decide to **provisionally select** an ER Program into its portfolio and proceed to negotiating an ERPA subject to: completion of World Bank due diligence and final World Bank approval of the program and other requirements, such as a **list of key issues** to be addressed, have been fulfilled to the satisfaction of the World Bank
- iii. Request the REDD Country to **resubmit a revised ER-PD** with specific revisions or attention to certain areas
- iv. Decide **not to select** an ER Program into its portfolio and, therefore, not to proceed to negotiating an ERPA and do not request the country to resubmit (i.e. rejection)

# Options for Decisions by Carbon Fund Participants (2)

- Option iv (**not to select program**) should only be valid if proposed ER Program is substantially different from the selected ER-PIN or the selection has portfolio management implications e.g., in relation to net emission reductions across the portfolio
- Other issues, such as non-compliance with the Methodological Framework, could be addressed through options ii (**provisional selection**) or iii (**request revised ER-PD**)

# Carbon Fund Contributions to Date

## FCPF Carbon Fund Donor Contributions as of (June 15, 2016) of FY16 (in \$ thousands)

Participant Name	Total	Outstanding*	FY16	FY15	FY14	FY13	FY12	FY11	FY10	FY09
Australia	18,393						5,658	12,735		
BP Technology Ventures	5,000							5,000		
Canada	5,015						5,015			
European Commission	6,709								362	6,347
France	5,000							5,000		
Germany	125,685	2,016	13,329	32,108	27,280	6,556	15,443	21,125	3,819	4,009
Norway	300,462	70,800	58,352			161,310				10,000
Switzerland	10,796						10,796			
The Nature Conservancy	5,000									5,000
United Kingdom	202,540	184,600						17,940		
United States of America	14,000					4,000		10,000		
<b>Committed Funding</b>	<b>698,600</b>	<b>257,416</b>	<b>71,681</b>	<b>32,108</b>	<b>27,280</b>	<b>171,866</b>	<b>36,912</b>	<b>71,800</b>	<b>4,181</b>	<b>25,356</b>
Germany	56,000	56,000								
<b>Pledged Funding</b>	<b>56,000</b>	<b>56,000</b>								
<b>Committed and Pledged Funding</b>	<b>754,600</b>	<b>313,416</b>	<b>71,681</b>	<b>32,108</b>	<b>27,280</b>	<b>171,866</b>	<b>36,912</b>	<b>71,800</b>	<b>4,181</b>	<b>25,356</b>

\*Amounts may vary due to exchange rate fluctuations.

# Financial Situation: Sources and Uses Summary

<b>Carbon Fund Sources and Uses Summary (\$m)</b>			
	Current Situation	with Cameroon	with Guyana
<b>Sources (\$m)</b>	<b>755</b>	<b>755</b>	<b>755</b>
Number of Lols (#)	18	19	20
<b>Number of ER Programs (#)</b>	<b>12</b>	<b>13</b>	<b>14</b>
<b>Uses</b>			
Costs over Fund Lifetime	\$m	\$m	\$m
Fixed Costs (FY10 to FY26)	22.7	22.7	22.7
ER Program Costs	23.6	25.3	27
<b>Total Costs</b>	<b>46.3</b>	<b>48</b>	<b>49.7</b>
<b>Available for Purchase of ERs</b>	<b>708.7</b>	<b>707</b>	<b>705.3</b>
<b>Average ER Program</b>	<b>59.1</b>	<b>54.4</b>	<b>50.4</b>

# Status of the Carbon Fund Pipeline at CF14

- At CF13: selection of additional programs into the CF pipeline
  - 7 additional programs were selected (some with conditions that were met since CF13)
  - CFPs considered capital requirements to support additional programs
- At CF14: pipeline updates and eventual CF portfolio performance
  - Final ER-PDs: DRC and Costa Rica
  - Draft ER-PDs (under TAP review): Rep. of Congo, Vietnam, Chile, Mexico
  - Indonesia: provisionally selected at CF11; now CFPs 'consent' is required on ER-PIN
  - Cameroon: not selected previously, an updated ER-PIN is presented at CF14

=> Several variables that impact portfolio performance can be assessed on the basis of more information

  - Provides more confidence on certain variables (e.g., RL estimates or required buffer volume)
- The analysis presented here does not directly inform CF14 decisions
  - Rather: informs portfolio management options going forward

# Today's Pipeline:

	<i>Unit: [million tCO<sub>2</sub>e/year]</i>	<b>HFLD Adjustment</b> (% of total emissions)	<b>Emissions</b> <sup>3</sup>	<b>Removals</b> <sup>3</sup>	<b>Effectiveness</b> <sup>4</sup> (% estimate, indicative)	
<b>Final ER-PD</b> <sup>1</sup>	Costa Rica		7.7	-4.4	47%	
	DRC	4.8 (7%)	68.2	-5.9	10-30 (10-30)%	
<b>Draft ER-PD</b> <sup>1</sup>	Chile		9.3	-10.8	10 (11)%	
	Mexico		24.0		26%	
	Rep. Congo	6.7 (41%)	16.5		36%	
	Vietnam		8.6	-9.8	23 (16)%	
<b>ER-PIN</b> <sup>2</sup>	Ghana		28.5		13%	
	Nepal		4.4		64%	
	Guatemala		11.5		37%	
	Peru	3.1 (18%)	17.6		24%	
	Cote d'Ivoire		18.4		16%	
	Dom. Republic		2.8	-5.5	49 (32)%	
	Fiji		0.3	-0.1	91 (450)%	
	Lao PDR		6.9	-7.2	10 (10)%	
	Madagascar		12.1		27%	
	Mozambique		3.9		30%	
	Nicaragua		21.5		8%	
	<b>CF14 ER-PIN</b>	Indonesia		49.9		10-20%
		Cameroon	10.0 (227%)	4.4		-
	<b>Total</b>	<b>24.6 (8%)</b>	<b>316.5</b>	<b>-43.7</b>		

<sup>1</sup> June 2016

<sup>2</sup> As submitted CF9-13

<sup>3</sup> For respective reference period

<sup>4</sup> Removals in parenthesis

# Estimated Reference Levels and Program Effectiveness



# Key variables that affect the eventual ER Volume in the Carbon Fund portfolio

## 1. Updates to Reference Level (RL) estimates

- RL is more carefully estimated for the ER-PD (e.g., using updated emission factors or different satellite data)
- Updates to RL may be warranted during implementation (prior to first monitoring) due improved methods or data

<i>Unit: [million tCO<sub>2</sub>e/year]</i>	Estimated Reference Level (removals in parenthesis where applicable)		
	ER-PIN	Draft ER-PD	Final ER-PD
DRC	23.9	103.2 (-22.0)	68.2 (- 5.9)
Costa Rica	10.6 (-15.3)	7.2 (-4.4)	7.7 (-4.4)
Vietnam	16.0 (-15.3)	8.6 (-9.8)	-
Rep. Congo	6.2	16.5	-
Chile	9.4	9.3 (-10.8)	-
Mexico	6.2	24.0	-

# Key variables that affect the eventual ER Volume in the Carbon Fund portfolio (cont.)

## 2. Program Effectiveness (*percentage change in rate of emissions or removals during program implementation*)<sup>1</sup>

- Difficult to estimate reliably at this stage
- Most ER-PINs estimate effectiveness to be 10-40%
- ER-PDs have more details on implementation design and hence effectiveness



## 3. Quality of Measurement (*statistical uncertainty associated with measured emission reductions*)

- Improved measurement (e.g., better data) lowers uncertainty
- Uncertainty (confidence in estimates) used for conservativeness factors (ER discount)
- Accordingly, a certain portion of ERs is managed through an Uncertainty Buffer account (and only paid for under certain conditions)



## 4. Share of Total ERs offered to the Carbon Fund

- Countries may choose to retain a certain portion of ERs for sale to other buyers or may not be able to transfer title



# Key variables that affect the eventual ER Volume in the Carbon Fund portfolio (cont.)

## 4. Risk of Reversals (*disturbance events lead to emissions that impact ERs paid for by the Carbon Fund*)

- Risk is assessed during verification
- Risk of reversal can be mitigated (through program design) and managed (a reversal buffer)
- A portion of ERs (10-40%) is set-aside in a Reversal Buffer account (and only released if reversal is risk reduced)



## 5. Length of the ERPA Term

- With the Carbon Fund extension to 2025, up to 7-year ERPAs may be possible for some programs (subject to ERPA signature date)

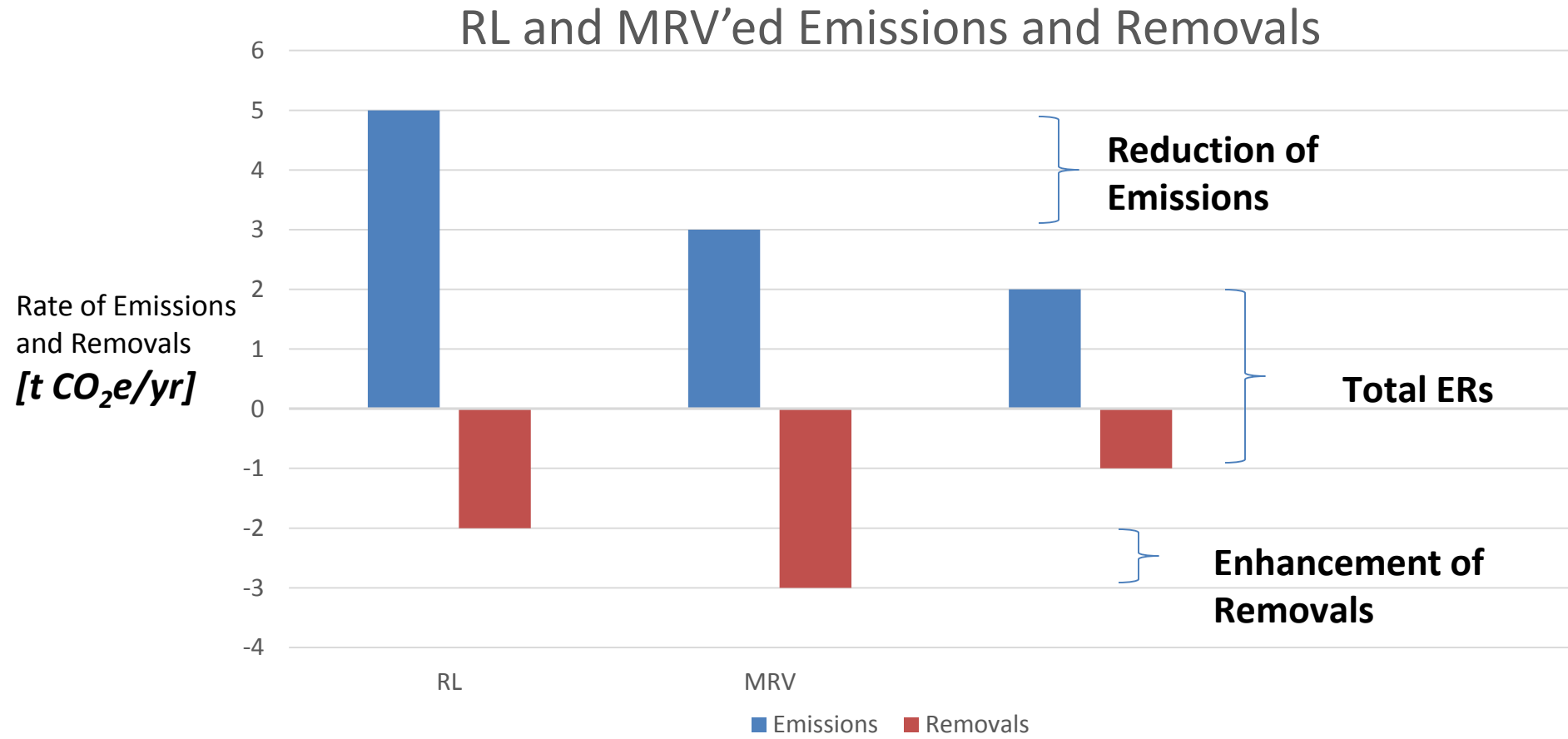


## 6. Pipeline attrition

- A portion of selected ER-PINs may not get fully developed and result in an ERPA



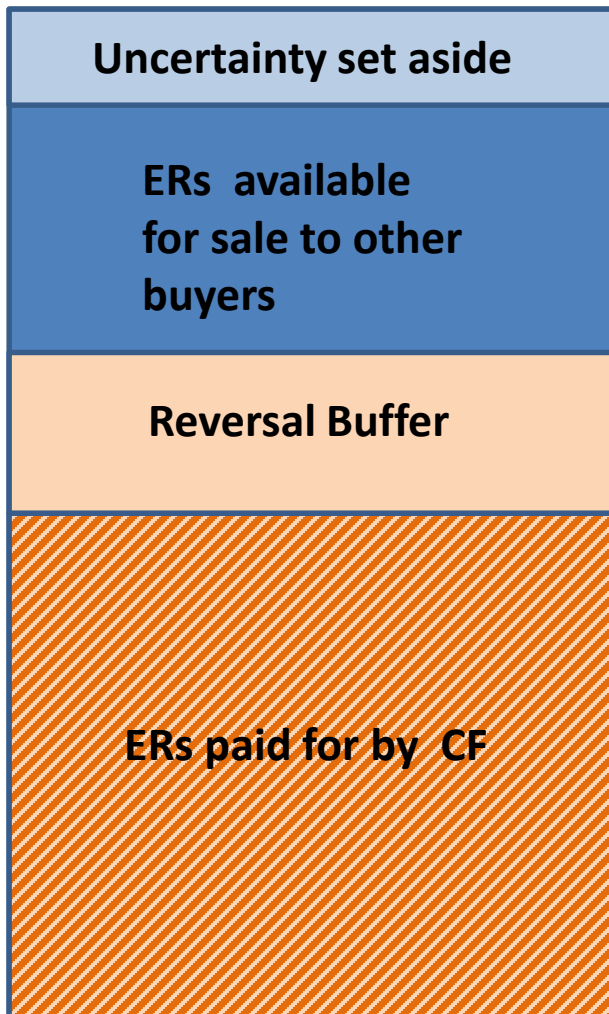
# The starting point for the analysis: Total Volume of ERs generated by a country's REDD+ program



# Carbon Accounting

## Calculation of Emission Reductions (ERs)

### Total ER Volume



- Subtract the reported and verified emissions and removals from RL
- Set aside a number of ERs to reflect the level of uncertainty associated with the estimation of ERs (percentage of ER Volume)
- CF will buy percentage of the ER Volume
- If CF Buffer is used → set-aside of ERs in CF Buffer to deal with risk of Reversals of ERs purchased by the CF (percentage of ERs purchased by CF)
- Remaining ERs can be sold to other buyers

# Portfolio Simulation using Monte Carlo Analysis



- A sophisticated approach to explore potential portfolio outcomes
  - Produces a distribution of thousands of portfolios using different randomized combinations of key portfolio variables
- Requires assumptions about the range of variability in key portfolio variables
  - Reasonable input values can be defined on the basis of experience, expert judgment or expectations
  - Assumptions and expectations can be updated later as more information becomes available about the ER Programs (e.g., in Draft and Final ER-PDs)
- Some caveats and considerations
  - Pricing is not considered
  - Supports exploration, not optimization
  - Makes assumptions about effectiveness (informed by implementation design described in ER-PD where available)
  - Does not consider what country offers (and rather explores potential supply)
  - Large programs and high RL weigh more heavily

# First, set variables ...

Portfolio Variable	Costa Rica	DRC	Draft ER-PDs	ER-PINs
Change relative to RL in ER-PIN	+/-5%	+/-5%	+/-20%	+/-40%
Program effectiveness	40-50%	20-30%	10-40%	10-30%
Uncertainty Buffer set-aside	10%	10%	5-15%	5-15%
Reversal Buffer set-aside	20%	20%	10-30%	10-30%
Share of ERs offered to Carbon Fund	32%	44%	90%	90%
ERPA Term Length	6 years			
LOI drop rate	25%			

**... then generate a thousand portfolios ...**

# ... and examine the outcome!

	[million tCO <sub>2</sub> e]	Max. LOI volume	Net emissions reductions	ER Volume in CF portfolio			Buffer	
				< historical*	Average*	Max	Min	Uncertainty*
<b>Values from Final ER-PD</b>	Costa Rica	12	32.6	<b>7.6</b>	8.7	6.4	3.4	1.9
	DRC	10	111.5	<b>44.5</b>	53.4	36.3	14.3	11.5
<b>Values from Draft ER-PD</b>	Chile	5.2	29.8	<b>17.9</b>	36.8	5.7	4.0	6.1
	Mexico	8.7	35.8	<b>21.7</b>	46.3	6.8	3.7	2.7
	Rep. Congo	11.7	24.6	<b>39.2</b>	63.2	23.6	7.7	10.0
	Vietnam	10.3	27.5	<b>16.6</b>	34.7	5.6	2.8	3.1
<b>Simulated Values (Monte Carlo)</b>	Ghana	18.5	34.2	<b>20.6</b>	49.3	5.3	3.0	4.8
	Nepal	14	5.2	<b>3.1</b>	8.0	0.9	1.2	0.2
	Guatemala	16.8	13.7	<b>8.4</b>	21.0	2.4	1.9	1.3
	Peru	10.6	21.2	<b>24.0</b>	44.0	12.2	5.0	5.3
	Cote d'Ivoire	16.5	19.0	<b>11.5</b>	29.3	3.3	1.7	1.8
	Dom. Republic	7.5	10.0	<b>5.9</b>	13.2	1.9	0.9	1.5
	Fiji	3.6	0.4	<b>0.3</b>	0.6	0.1	0.1	0.1
	Lao PDR	8.4	16.3	<b>10.2</b>	22.6	4.3	1.5	3.8
	Madagascar	16.4	14.3	<b>8.7</b>	22.4	2.3	1.8	1.6
	Mozambique	8.7	4.7	<b>2.8</b>	6.8	0.8	0.9	1.4
	Nicaragua	11	26.1	<b>15.9</b>	38.9	4.0	3.5	4.4
	Indonesia	22	60.3	<b>36.5</b>	89.4	8.8	8.0	6.6
	Cameroon	n/a	5.2	<b>39.2</b>	53.7	29.4	9.4	10.5

<sup>1</sup> Updated per draft ER-PD, Sept. 2015

<sup>2</sup> Using values from CF11 ER-PIN

\* Average of 1000 randomly generated portfolios



# Aggregate Simulated Portfolio at CF14

(using variable settings above)

	Total ER Volume in LOIs (18 w/out Cameroon)	Net emissions reductions	ER Volume in CF portfolio			Buffer	
			Average *	Max	Min	Uncertainty*	Reversal*
<i>[million tCO<sub>2</sub>e]</i>	<b>212.9</b>	<b>492</b>	<b>335</b>	<b>642</b>	<b>160</b>	<b>75</b>	<b>79</b>

\* Average of 1000 randomly generated portfolios

- **Portfolio volume (with given assumptions)**
  - Potential supply of ERs for 6-year ERPAs could be 335 million tCO<sub>2</sub>e (assuming 90% of Total ERs are offered – in reality this will likely be less)
  - For reference: annual RL emissions in pipeline is 316.5 million tCO<sub>2</sub>e
  - Net emission reduction for the entire programs would be 492 million tCO<sub>2</sub>e (measured against respective historical average)
  - LOIs that have been signed are equivalent to 212.0 million tCO<sub>2</sub>e
- **Buffer ER Volumes**
  - Estimated based on average uncertainty discount and reversal risk for program lengths
  - If all ERs were paid for by CF: 75 and 79 million tCO<sub>2</sub>e would go into the uncertainty and reversal buffer, respectively

# Task of CF14

- Which portfolio scenarios would be important to explore to inform ERPA negotiation process and portfolio management going forward?
  - Provide feedback now and FMT can produce a concise analysis after CF14
  - Reflect on the ER-PDs presented at CF14 and how they might inform ERPA in the future
- Required CF14 Decisions
  1. Inclusion of DRC's program in the CF Portfolio
  2. Inclusion of Costa Rica's program in the CF Portfolio
  3. Provide 'consent' to Indonesia's revised ER-PIN and confirmation of inclusion in the CF Pipeline
  4. Inclusion of Cameroon's program in the CF Pipeline



THANK YOU!

[www.forestcarbonpartnership.org](http://www.forestcarbonpartnership.org)