



AIT
Asian Institute of Technology

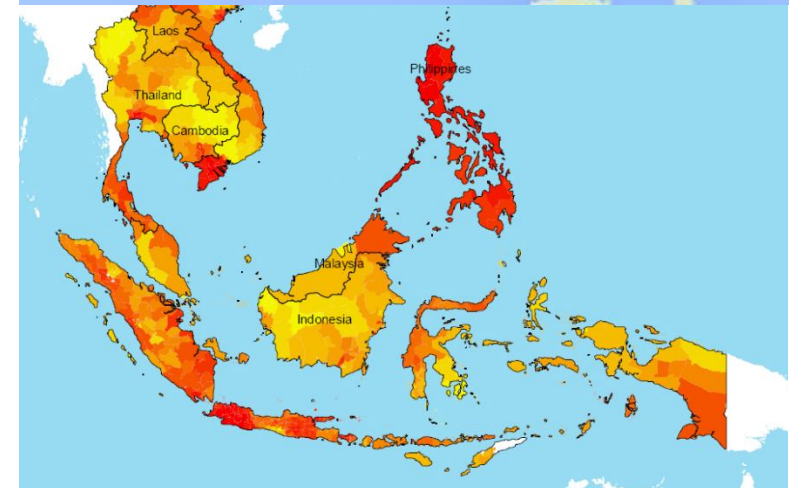
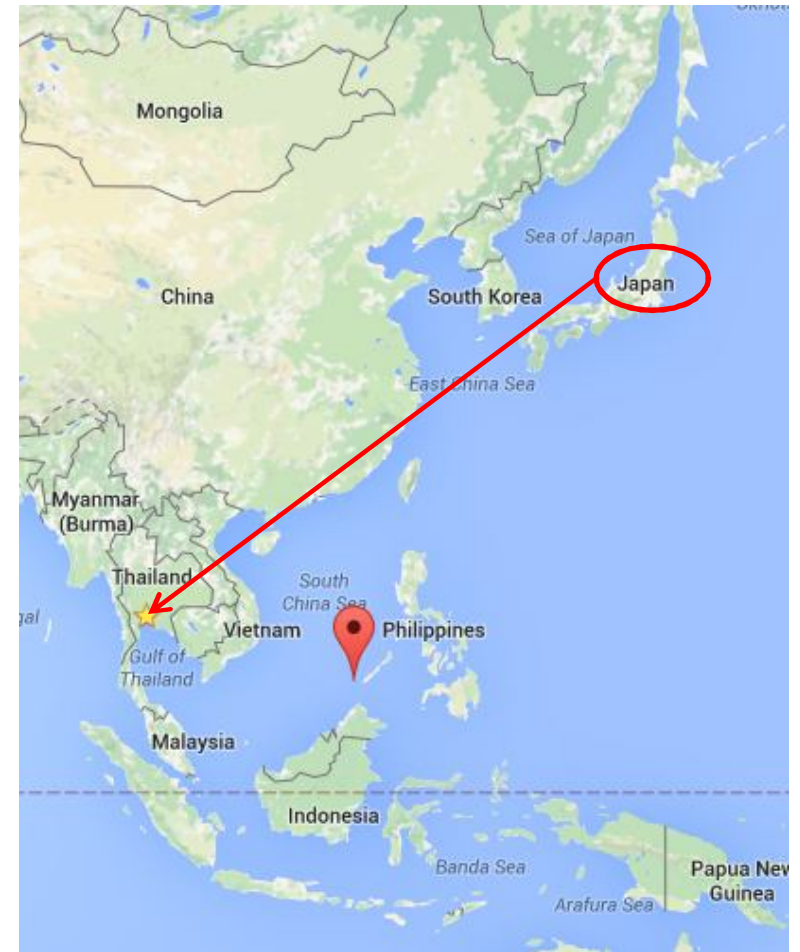
**School of Environment, Resources
and Development**

Contribution of the REDD+ Scheme to Carbon Emission Reductions and Biodiversity Conservation in Southeast Asia

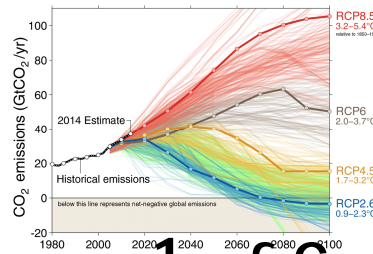
Nophea Sasaki
Associate Professor
Natural Resource Management

Outline

- Motivation
- COP21 and Emission Reductions
- REDD+ Scheme
- Forests in Southeast Asia
- REDD+ Case Studies
- REDD+ and Financial Support
- Concluding Remarks



Motivation

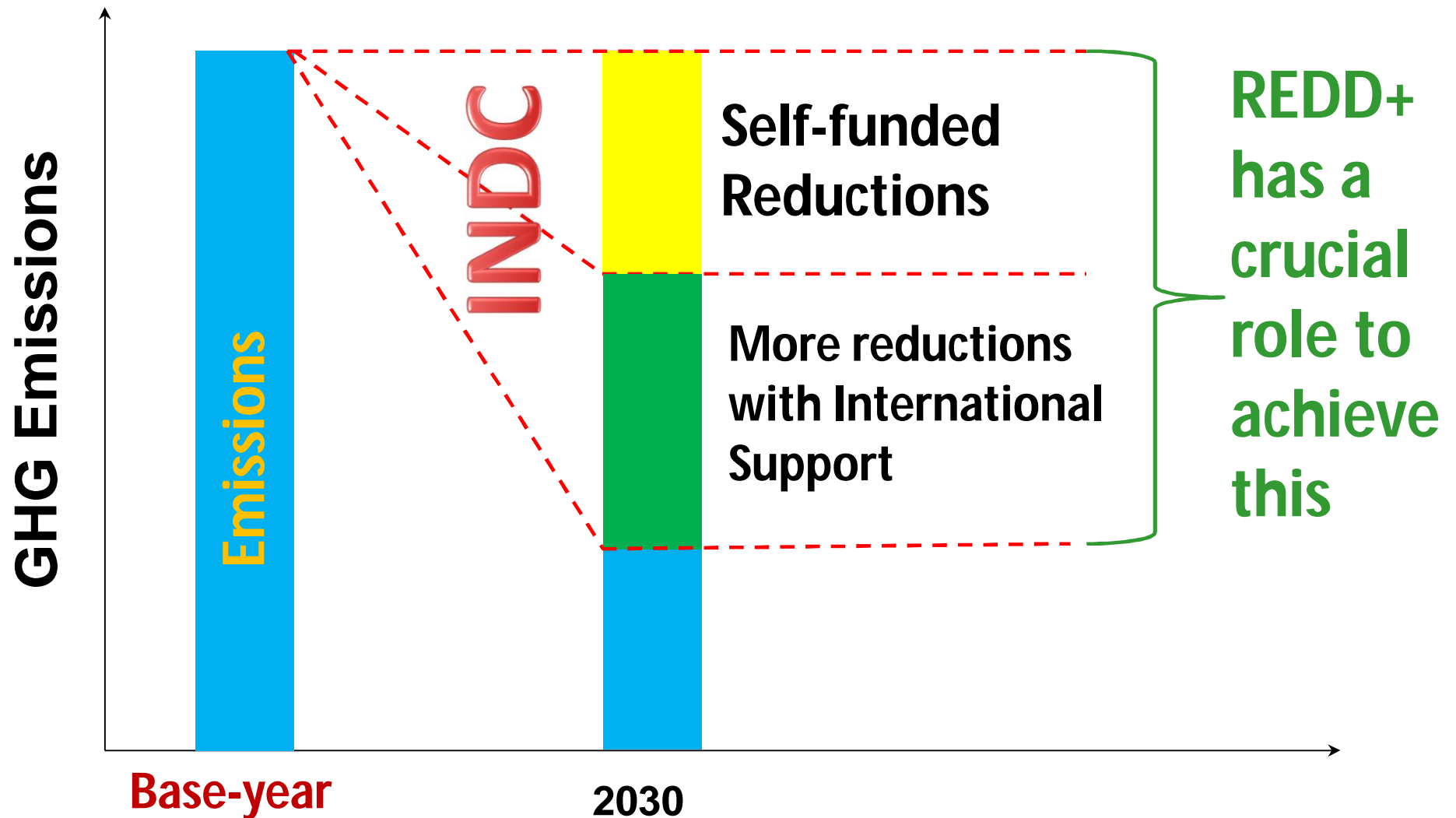


- About **\$230 billion year⁻¹** of Southeast Asian economy would be lost due to climate change (ADB 2010)
- Carbon emissions from deforestation in Southeast Asia account for about **5%** of total carbon emissions in Japan in 2013 (or **18%** of emissions from tropical deforestation)
- Deforestation also affects **83-91%** of all threatened plant, bird, and mammal species
- Therefore, REDD+ could contribute to climate change mitigation and biodiversity conservation if done appropriately

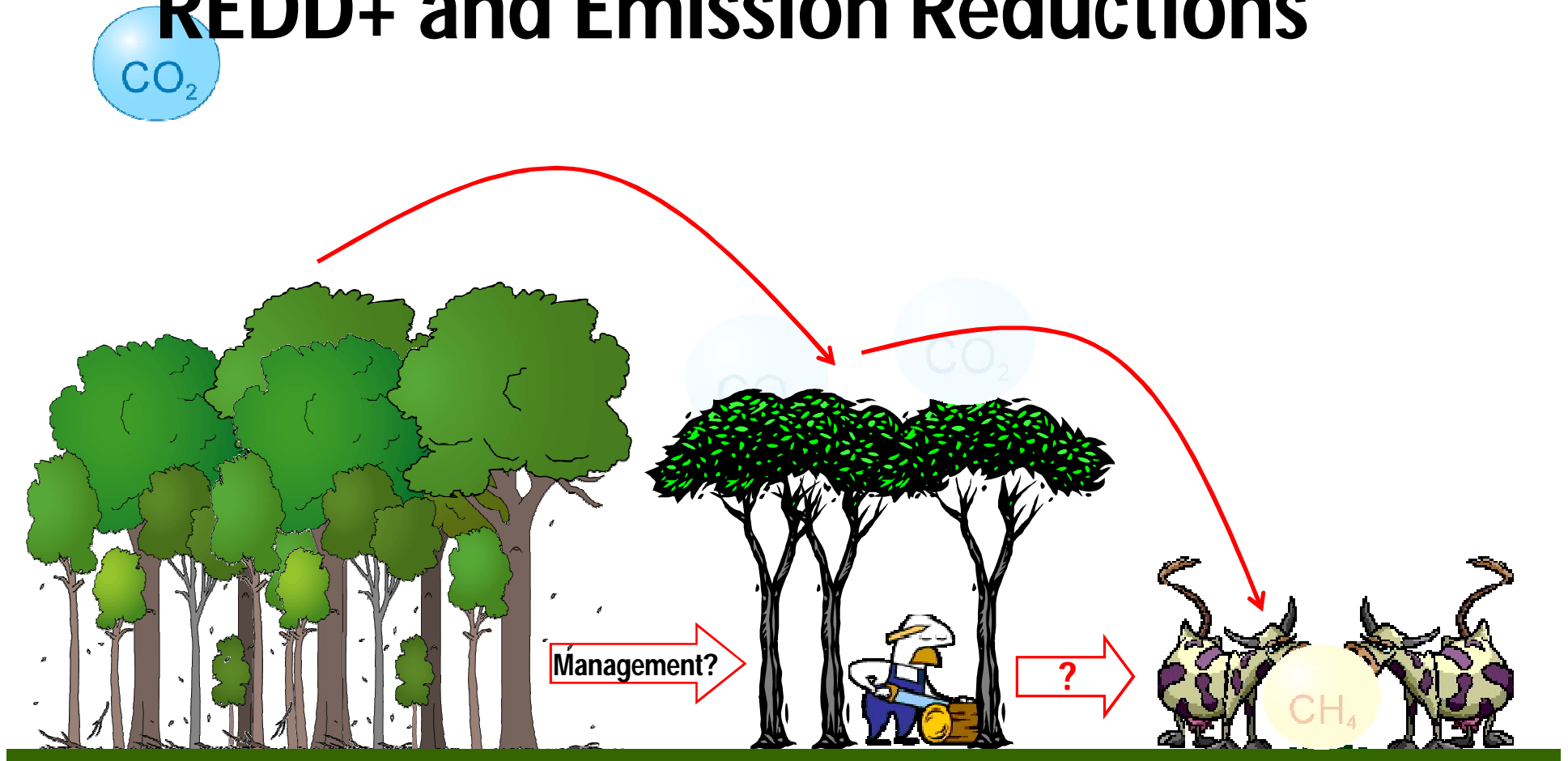
COP21 and Emission Reductions

Paris Agreement: Long-term commitment below 2°C

Parties: Intended **N**ationally **D**etermined Contribution (**INDC**)



REDD+ and Emission Reductions



REDD: Reducing Emissions from Deforestation and Forest Degradation

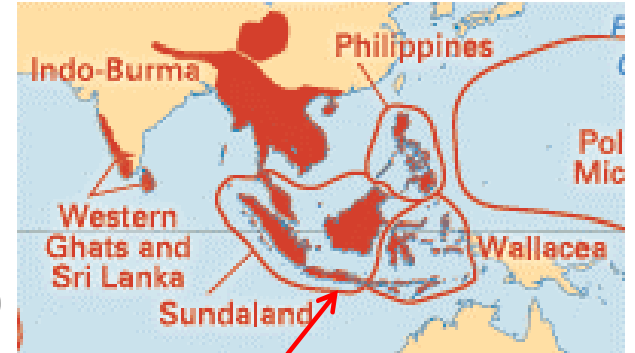
REDD+: Conservation of Forests

REDD+: Sustainable Management of Forests

REDD+: Enhancement of Carbon Stocks

**CO_2 +
Safeguards = \$**

Forests in Southeast Asia

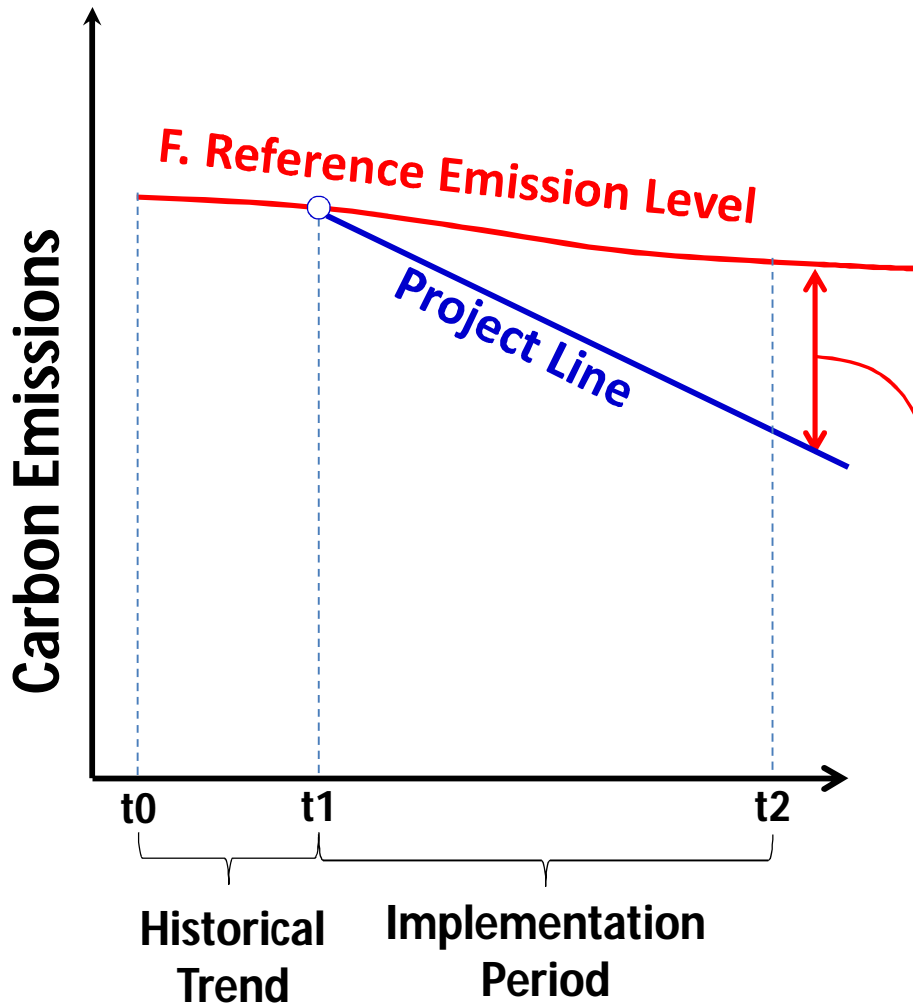


- **Total Population:** 618 million (2013)
- **GDP:** \$1.9 trillion (\$4.92 trillion in Japan)
- **Forest Cover (2010):** 214 million ha
 - Protection Forests (**39%**) => **REDD+** (conservation and restoring)
 - Production Forests (**32%**) => **REDD+** (management and restoring)
 - Conversion Forests (**22%**): **REDD or REDD+**
 - Plantation (**7%**): **REDD+** (enhancement)
- **Deforestation:** 1.5 million yr⁻¹ (**0.6 PgCO₂** emissions)
- **Biodiversity:** 20% of global plant, animal and marine species; **four biodiversity hotspots** (Sodhi et al. 2004)

Reduction under REDD and Conservation

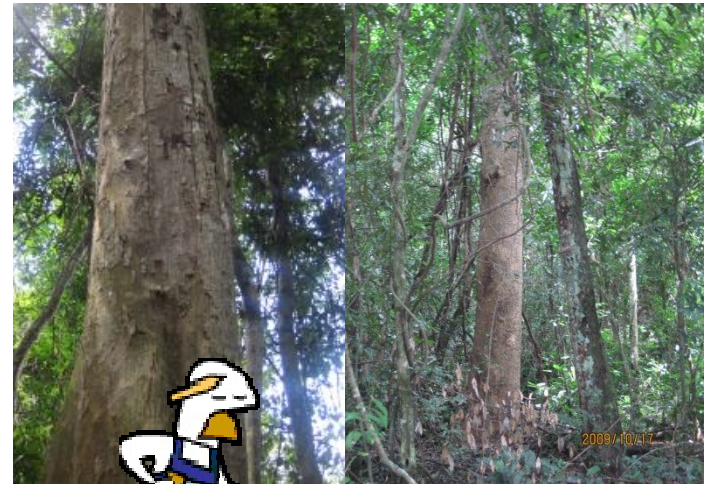
Major REDD+ Activities

- ✓ Securing land tenure
- ✓ Local participation to control illegal logging, overexploitation of fuelwood
- ✓ Improve cooking stoves
- ✓ Increase agricultural land productivity, etc.



Reduction=\$

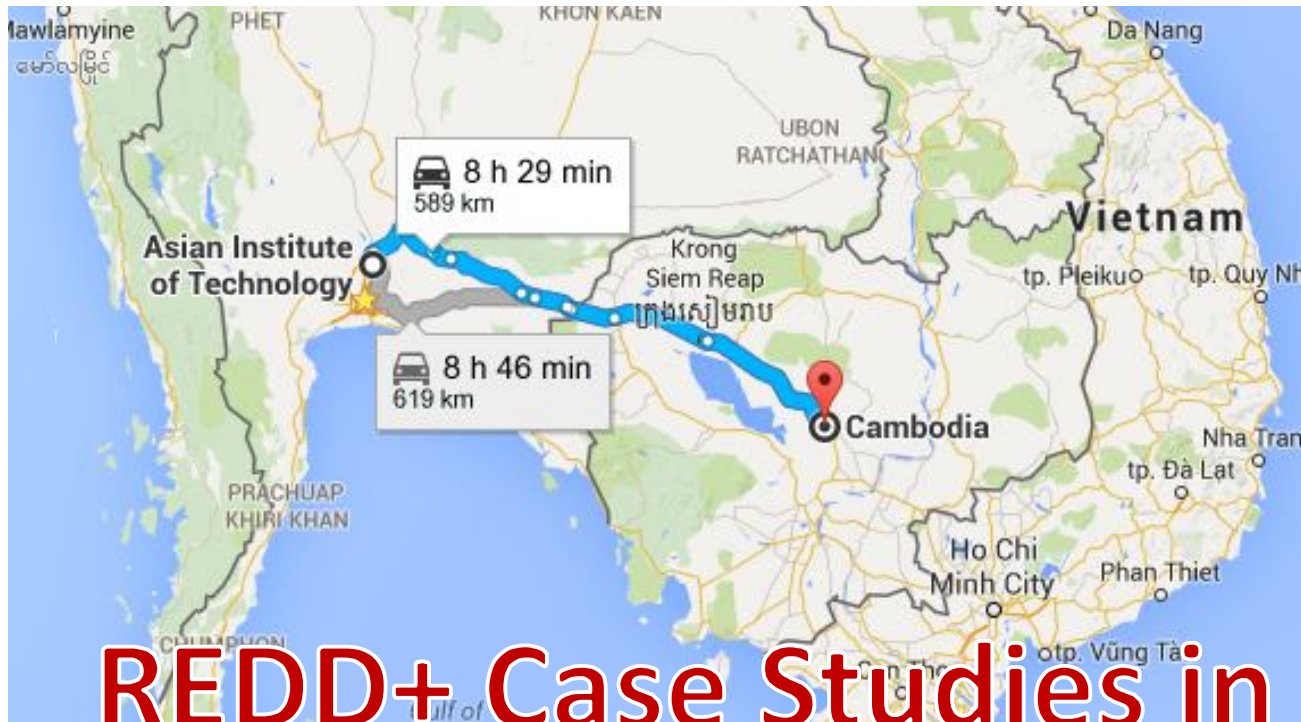
Reduction under REDD+ (Sustainable Management of Forests)



REDD+ secures this

REDD+ reduces these





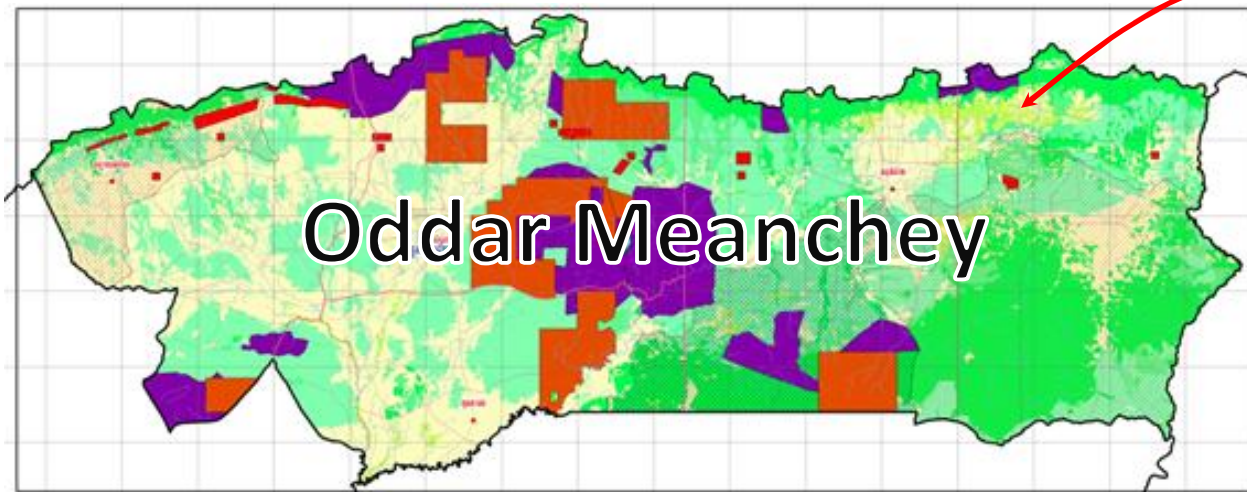
REDD+ Case Studies in Cambodia



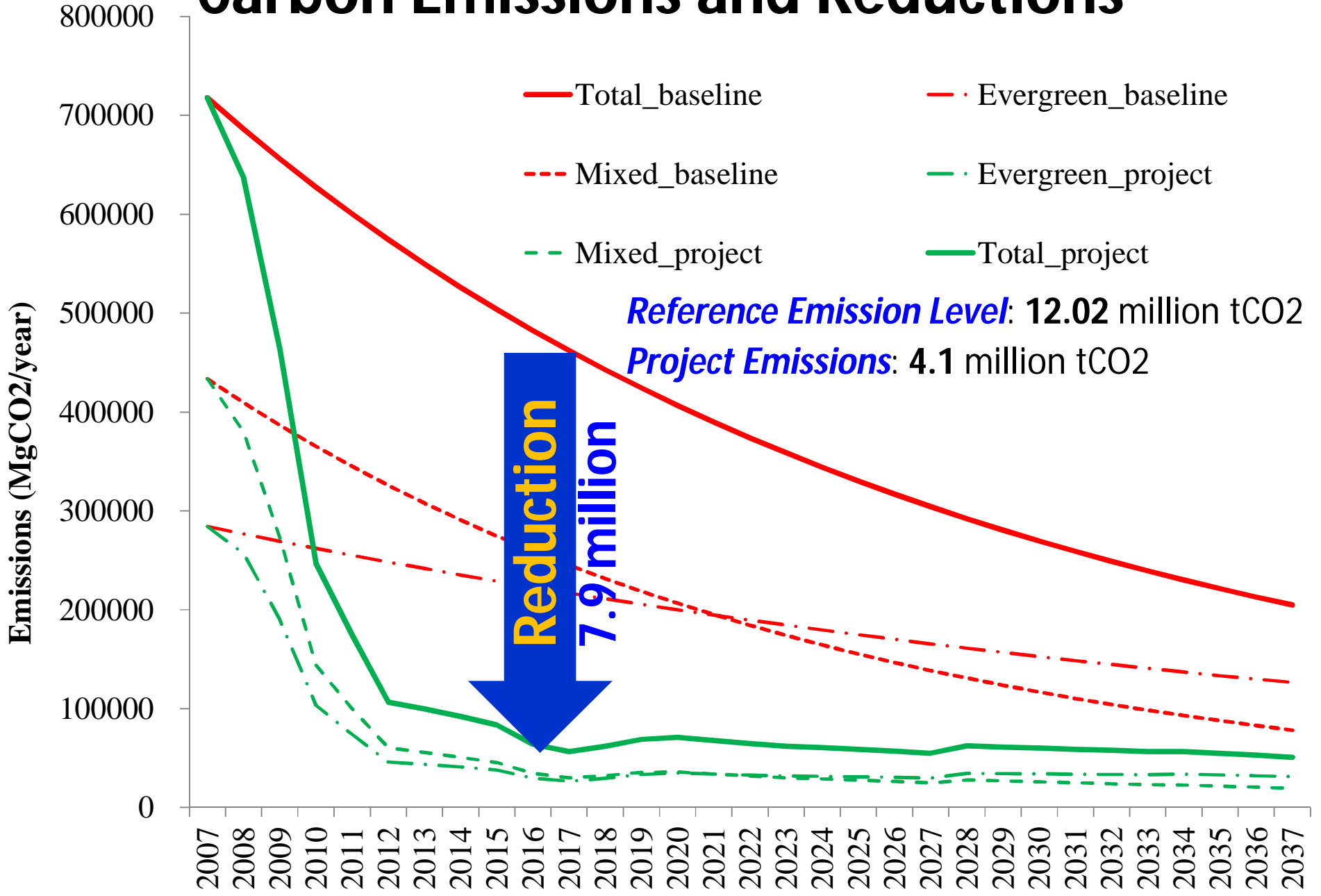
Long (2013)

Oddar Meanchey REDD+ Project

- **Area:** 67,000 ha
- **Community:** 13 Community Forests
- **Started in 2008**
- **Project Validation:** 2012 (VCS and CCBA)
- **Project Verification:** 2013 (**Triple-GOLD**)
- **Emission Reductions:** 7.5-8.2 M tCO₂ for 30 years



Carbon Emissions and Reductions





Elliott et al. (2011)

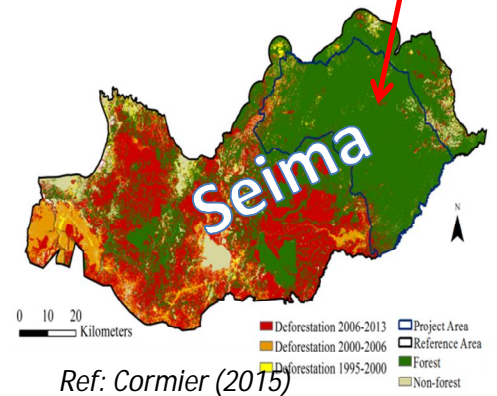
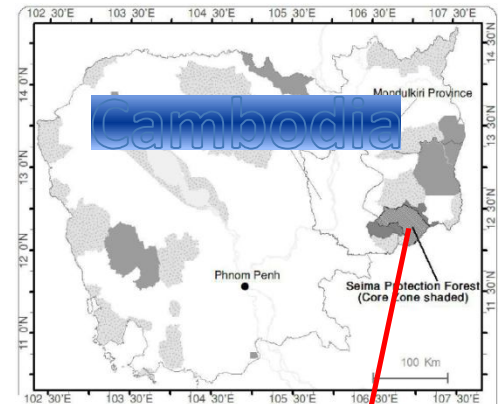
Threatened bird species found by BirdLife International (2010)

Scientific Name	Common Name
Critically Endangered Species	
<i>Thaumatibis gigantean</i>	Giant Ibis
<i>Pseudibis davisoni</i>	White-shouldered Ibis
<i>Sarcogyps calvus</i>	Red-headed Vulture
<i>Gyps bengalensis</i>	White-rumped Vulture
<i>Gyps tenuirostris</i>	Slender-billed Vulture
<i>Houbaropsis bengalensis</i>	Bengal Florican
Endangered Species	
<i>Pavo muticus</i>	Green Peafowl
<i>Cairina scutulata</i>	White-winged Duck
<i>Leptoptilos dubius</i>	Greater Adjutant
<i>Heliopais personatus</i>	Masked Finfoot*



Seima REDD+ Project

- Area: 187,983 ha
- Community: 20 villages (5000 people)
- CCBA Validation: November 2015
- Emission Reductions: **51 TgCO₂ per 10 years**



Biodiversity

Class	Number of species (number of species that are not yet confirmed, but suspected to occur, in brackets)					
	Critical	Endangered	Vulnerable	Near Threatened	Data Deficient	Total
Mammals		9 (2)	13	6	1	29 (2)
Birds	4 (1)	3	6	8 (1)		21 (2)
Reptiles	(1)	2	2 (2)	2		6 (3)
Amphibians			2	1	2	5
Fish		(1)			(2)	(3)
Total	4 (2)	14 (3)	23 (2)	17 (1)	3 (2)	61 (10)

Ref: PDD

Wildlife Found in Seima REDD+ Site

Ungulates

Asian Elephant
Regionally important (116 in 2006)
Great growth potential

Banteng
Globally important site (c. 200?)
Great growth potential

Gaur
Regionally important (c. 200?)
Great growth potential

Eld's Deer
Numbers unclear
Potentially a key population

Southern Annamite endemics

Germain's peacock-pheasant

Ruby-eyed Green Pitviper

O'Reang Horned Frog

Mouhot's Litter Frog

Orange-necked Partridge

Primates

Black-shanked Douc (EN)

Yellow-cheeked Crested Gibbon (EN)

Germain's Silvered langur (EN)

Northern Pig-tailed Macaque (VU)

Long-tailed Macaque

Stump-tailed Macaque (VU)

Pygmy Loris (VU)

Birds

Giant Ibis

White-shouldered Ibis

White-rumped Vulture

Green Peafowl

Sarus Crane

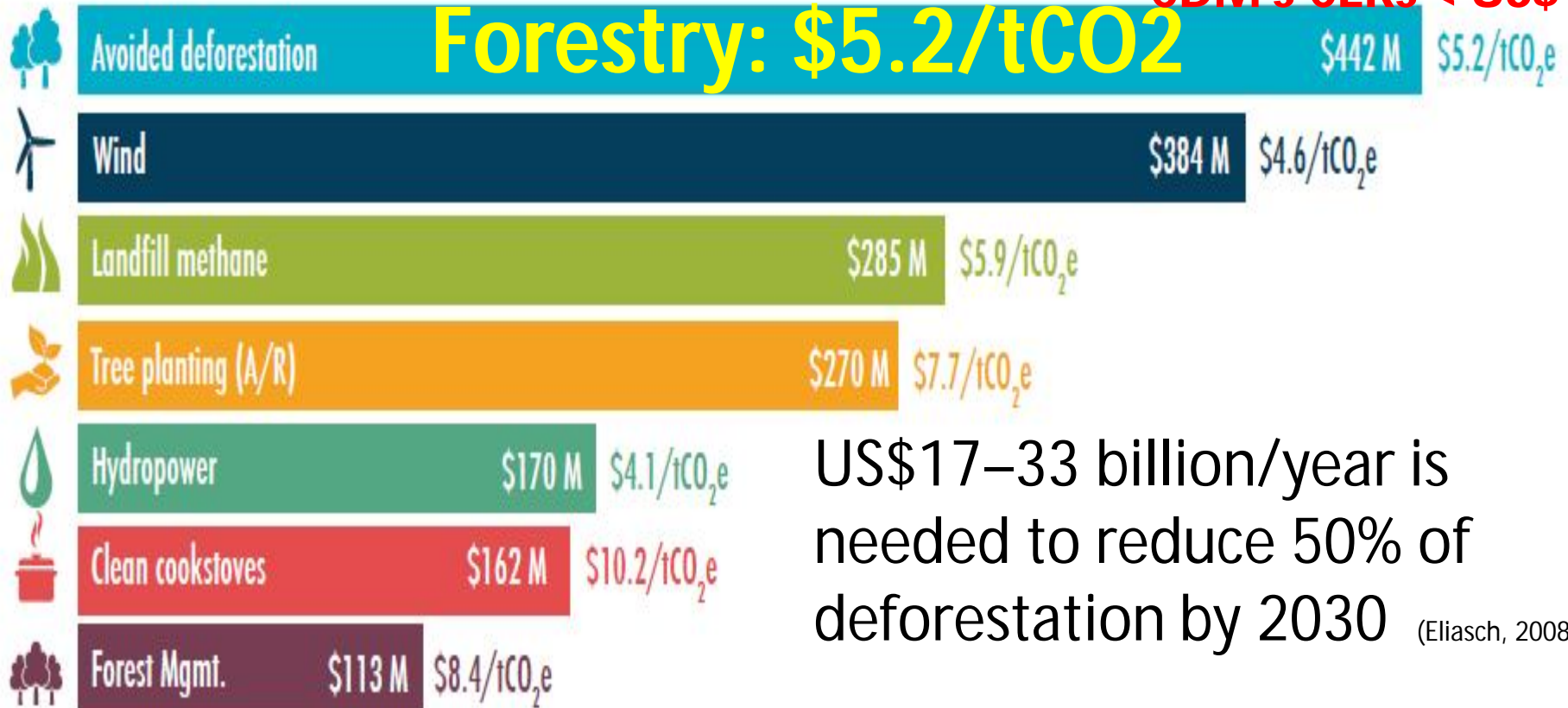
Red-headed Vulture

White-winged Duck

Ref: Yeang (2015)

Low Carbon Price could affect REDD+

CDM's CERs < US\$1



US\$17–33 billion/year is needed to reduce 50% of deforestation by 2030 (Eliasch, 2008)

Area	10% reduction, \$			50% reduction, \$		
	GCOMAP	DIMA	GTM	GCOMAP	DIMA	GTM
Central and South America	3.98	8.03	1.48	19.86	24.48	9.70
Africa	1.04	3.50	1.63	5.20	12.30	9.60
Southeast Asia	8.42	8.73	1.24	38.15	19.56	8.31
Globe	3.50	4.62	1.41	16.90	20.57	9.27

Delay in REDD+ Financing could affect REDD+

Fund	Pledged (USD M)	Deposited	Approved	No of projects approved
AM	1,033.60	792.19	431.38	62
FCPF-CF	388.40	280.62	0	0
FCPF-RF	355.13	257.93	87.86	42
FIP	599	530	258.97	29
UN-REDD	248.84	215.22	192.54	21
CBFF	186.02	164.65	95.38	37

Only 37%

Total: US 2,811 million

AM: Amazon Fund; **FCPF-CF:** Forest Carbon Partnership Facility - Carbon Fund; **FCPF-RF:** FCPF - Readiness Fund; **FIP:** Forest Investment Program; **UN-REDD;** **CBFF:** Congo Basin Forest Fund

REDD+ Financing vs Economic Loss

- 50% reduction of deforestation at US\$15:
US\$4.5 billion annually (**\$15 x 300 TgCO₂**)
- Payment for Ecosystem Services (regulating functions) for protected forests: **\$207 billion** (**\$2500 x 83 Mha**)
- Total financial support: **\$212 billion** < **\$230 billion Economic Loss** due to climate change



Concluding Remarks

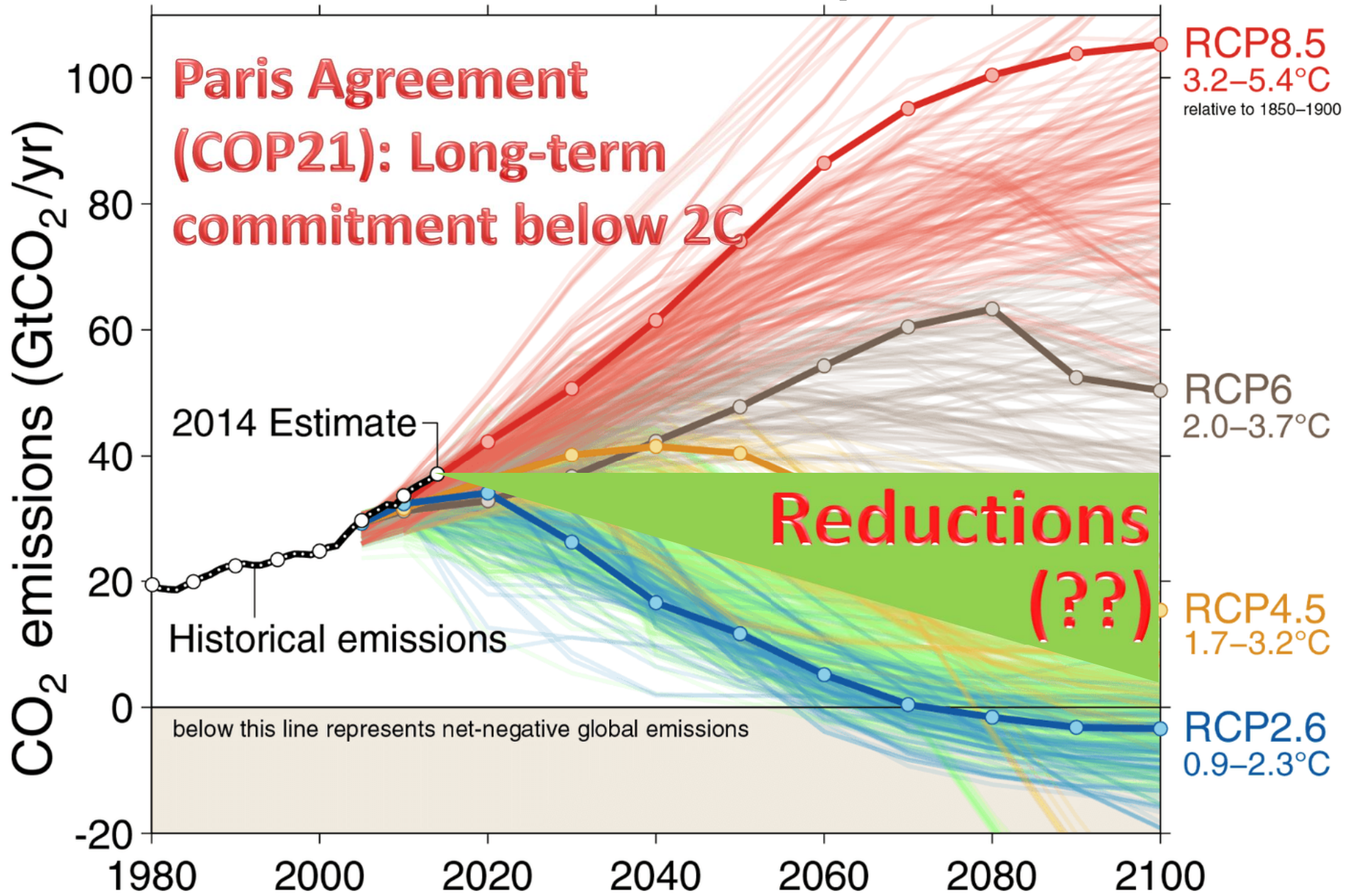
- COP21 Agreement enforces international efforts to mitigating climate change and making financial support available
- REDD+ has great potentials for emission reductions and biodiversity conservation but carbon price should be higher enough to make the REDD+ projects financially feasible
- Payment for Ecosystem Services should also be made available for forest protection
- Strengthening human capacity in REDD+ project development might be needed

Thank You

nrm.ait.asia

nopheas@ait.asia

Global Carbon Emissions and Required Reductions



Fuss et al. 2014, RCP: Representative Concentration Pathways