



# CAMBODIA REDD+ PROGRAMME

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## Development of National Forest Inventory

8<sup>th</sup> Meeting of the UN-REDD and FCPF Programme Executive Board

Mr. So Than



# Introduction: History of Forest Inventories in Cambodia

Title	Year	Institution	Country Coverage (Full/Partial, %)
Forest Inventory	1958-62	FAO/UNDP	East Mekong River (5,520,000 ha), almost 1/3 of the country.
National Forest Inv. Divided 7 SU, Done only SU No1.	1960-62	USAID	Inventory done on one of seven sampling units (Cardamom Range, 3,792,000 ha), nearly 1/5 of the country.
Inv. of Cardamom Rang a round the bay of Kampong Som.	1968-70	FAO/UNDP	300,000 ha of the Cardamom Range.
Report on establishment of a forest resources inventory process in Cambodia.	1996-97	DFW-FAO/UNDP	279,242ha in Sandan district, Kampong Thom Province.
Recent Pilot/subnational inventories	various	Various actors	Eg: Oddar Mean Chay Carbon Stock Survey , PACT 2008: inventoried area: > 67,853 ha, Sample size: 126 plots, tree inventoried: DBH $\geq$ 10cm, plot size (50m x 50m); Seima protection forest REDD+ project, WCS 2009: Inventoried area = 187,698ha, 225plots, tree inventoried: DBH $\geq$ 5cm, Plot shape: Circle Plots (R=20m,14m,4m); Southern Cardamom carbon stock survey, WA 2010: Inventoried area: ... ha, Sample size: 124plots, tree, etc.
Permanent Sample Plots	2004	FA, MoE,WCS	Province: KK, KT, SR,RK, Kratie, Regrowth Forest, FE, Mx, Fd.

**Cambodia not yet had its forest resource assessed at a national scale.** National assessment is highly relevant in the context of REDD+ in order to provide reliable and accurate emission factors (tCO<sub>2</sub>e emission per land unit).

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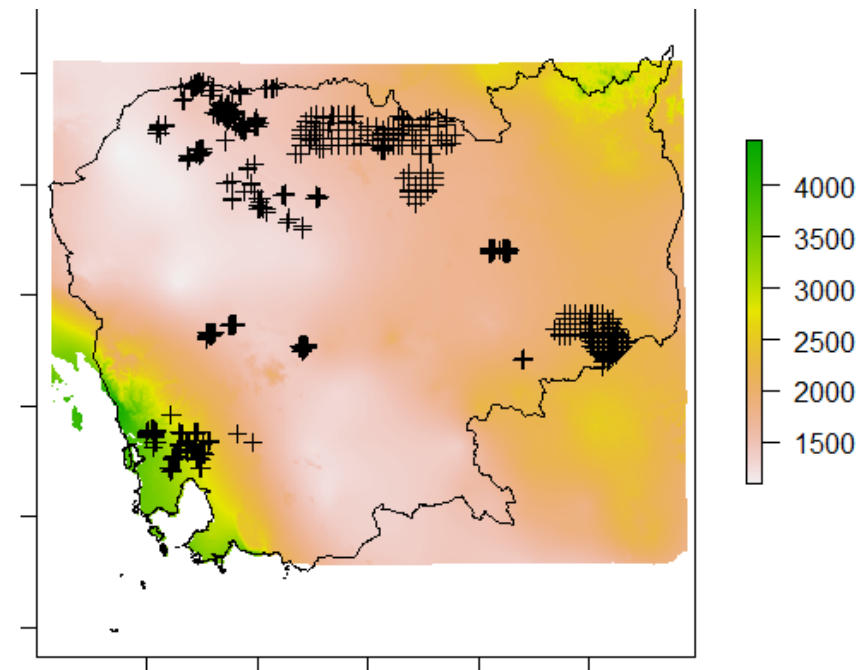


# Introduction

While no comprehensive National Forest Inventory (NFI) has been carried out in Cambodia to date. Local/subnational inventories have been carried for various purposes.

Data of these inventories have been collected and analyzed to provide relevant information to design the NFI

Because data has been collected for different purposes and using different methodologies, the data had to be cleaned and harmonized.



FAO 2013. Spatial distribution of inventory plots



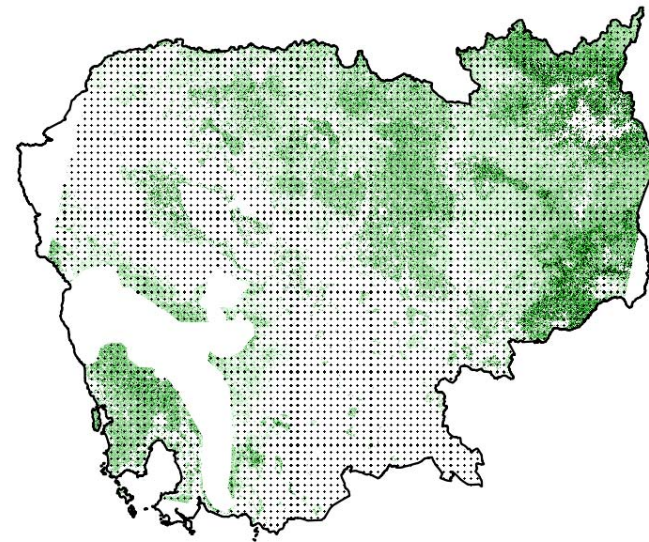
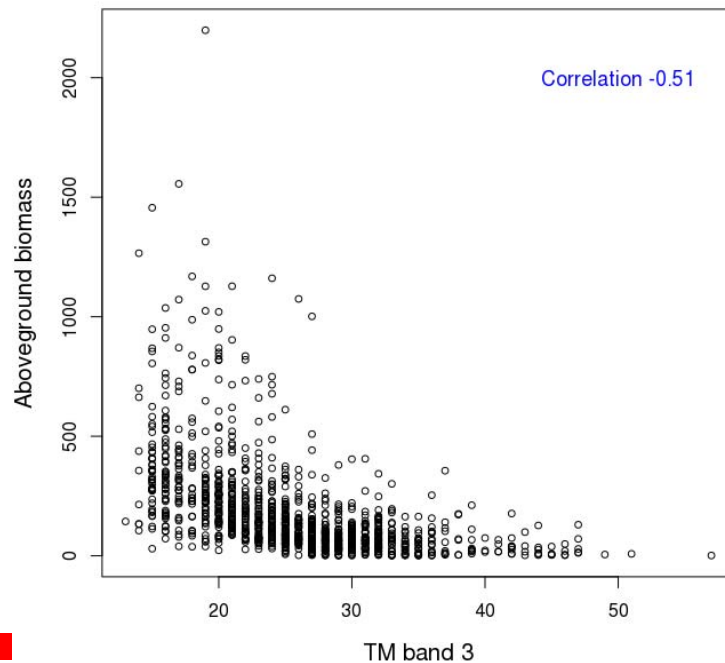
# Data used for design analysis

Project		Plot size analysis (Chojnacky)	Biomass analysis	Plot size analysis	Spatial: Biomass map for simulations
Forestry Administration (FA)	Koh Kong	×	×	×	×
	Siem Reap	×	×	×	×
Wildlife Conservation Society (WCS)	Kulen Promtep WS		×		×
	Preah Vihear PF		×		×
	Seima PF		×	×	×
PACT Cambodia	Oddar Meanchey Central		×		×
	Oddar Meanchey East		×		×
	Oddar Meanchey West		×		×
Community Forest Data	RECOFTC - Anh Chanh CF		×		×
	RECOFTC - Kampong Thom CF		×		×
	RECOFTC - Okrasang CF		×		×
	RECOFTC - Okrieng CF		×		×
	FAO - Kratie		×		
	FAO - Mondulkiri		×		
	FAO - Ratanakiri		×		
	FAO - Stung Treng		×		
	GERES		×		×
Wildlife Alliance (WA)	Cardamoms		×		×
Conservation International (CI)	Prey Long		×		×
Flora & Fauna International (FFI)	Cardamoms				
Flooded Forest : FIA report on forest inventories (2013)	Kampong Chhnang Province			⊗	
Mangroves: MoE & UNDP. Climate Change Enabling Activity Project, Phase 2.	Ream National Park			×	



# Spatial Simulation

Eg. Sampling simulations were used to determine distances required between clusters (clusters of four inventory plots)



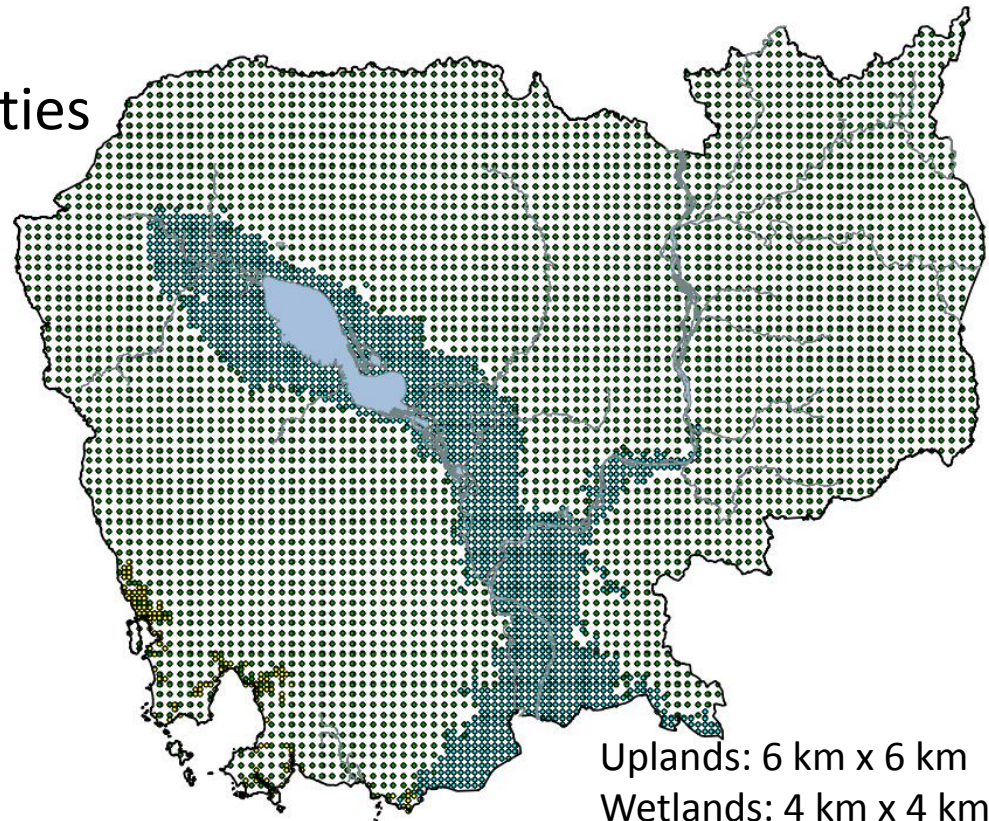
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# National Forest Inventory Design

The NFI design proposes different sampling intensities for three different strata:

1. Upland Strata
2. Wetland Strata
3. Mangroves

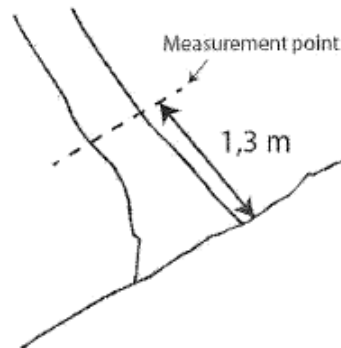
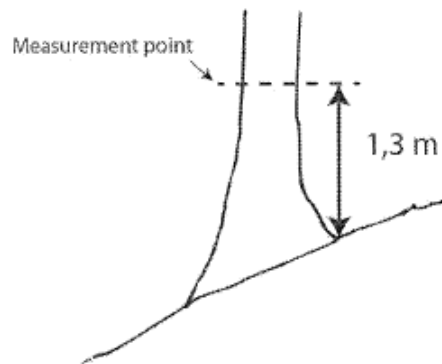


Uplands: 6 km x 6 km  
Wetlands: 4 km x 4 km  
Mangroves: 3 km x 3 km



# Field manual

Following the design, NFI field manual and field forms have been developed



Cambodia National Forest Inventory, Draft 28.1.2014 F1 - Cluster

1. Cluster number				
2. Stratum	<input type="checkbox"/> Uplands <input type="checkbox"/> Wetlands <input type="checkbox"/> Mangrove			
3. Soil & Litter sampling cluster	<input type="checkbox"/> Yes <input type="checkbox"/> No			
A. Admin. area	code	name	code	name
4. Province			8. Inspectorate	
5. District			9. Cantonment	
6. Commune			10. Division	
7. Village			11. Triage	

B. Organization and Crew list		
12. Organization	<input type="checkbox"/> FA (MAFF) <input type="checkbox"/> FIA (MAFF) <input type="checkbox"/> GDANCP (MoE)	
Name	Phone number	Role
13.		Team Leader
		Assistant TL

C. Equipment Used	
14. GPS (Brand name, model)	
15. GPS unit ID	
D. Cluster Access	
16. Accessibility [code]	
Starting position coordinates (leaving vehicle or camp)	
17. UTM E (x)	
18. UTM N (y)	
Day 1.	
19. Date [dd/mm/yyyy]	
20. Start Time	: h
21. Time of return	: h
Day 2.	
22. Date [dd/mm/yyyy]	
23. Start Time	: h
24. Time of return	: h

E. Follow up raw data	
Raw data delivered by (name and signature)	
Raw data delivered to (name and signature)	
Raw data delivered on date [dd/mm/yyyy]	

F. Follow up data (name and signature)		Date
Data controlled by		
Data entered by		
Data validated by		

25. Remarks (surrounding cluster)

F1 - Cluster

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## Field tests conducted (Semi-Evergreen & Deciduous forest, Siem Reap Province)



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## Field test of the manual (Mangroves, Koh Rong Province)

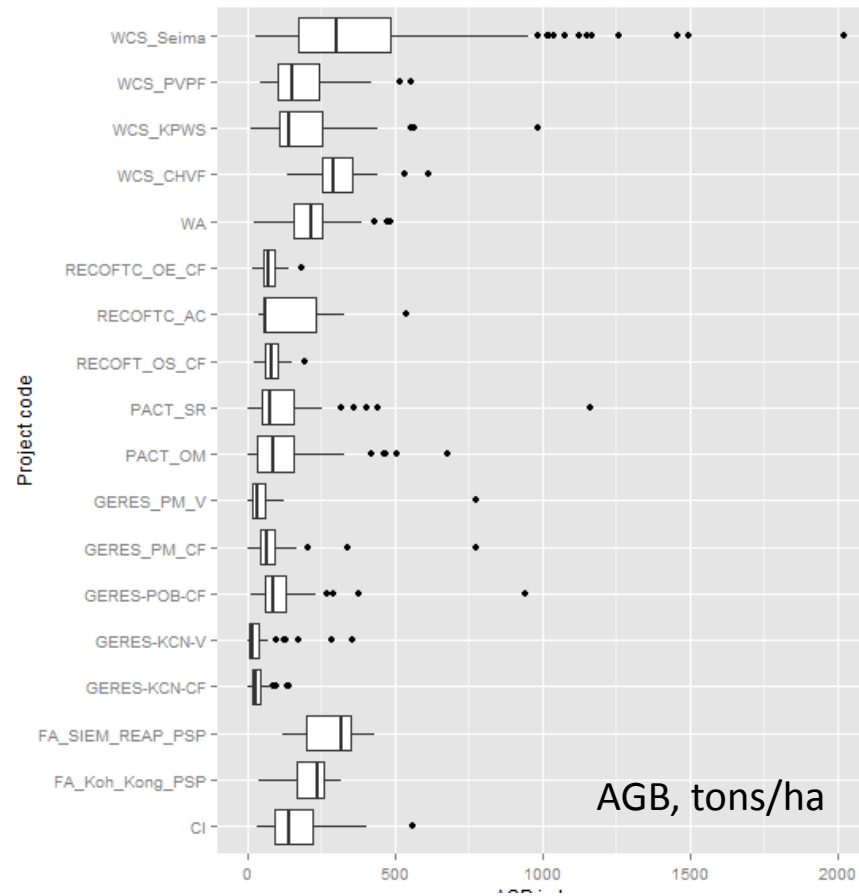


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# What's next

- Data analysis for initial country specific Emission Factors
- NFI design and field manual are being translated into Khmer
- Further comments will be reviewed; specific modules developed (Eg. soil and litter sampling protocol)
- **The framework is in place for the implementation of the first NFI in Cambodia**



# Thank You!

So Than

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