



PNG National Forest Inventory (NFI) Management Plan, Schedule, Costs & Logistics

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Brief

1. Phase 1 – Pre-Assessment Planning

- A. Demonstration of Collect Earth – Elizabeth Kaidong
- B. Forest and Land Use in PNG and its findings – Gewa Gamoga

2. Phase 2 –NFI Methodology

- A. Optimal plot size, number and shape; learning from PSP data – Brunoh Kuroh
- B. Stratification and plot design – Prof. Simon Saulei
- C. NFI Field Manual – Brunoh Kuroh

3. Phase 3 – Implementation/Field Measurements (Forest Inventory)

- A. Awareness Strategy
- B. Testing (Trials)
- C. Field Measurements
- D. Data Processing

4. Management Plan, Schedule, costs and logistics

- A. NFI Management Plan
- B. Schedule
- C. Costs and Logistics
- D. Challenges
- E. Key messages



NFI Management Plan



Activity	Year 1				Year 2				Year 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Preliminary Workshop – Presentations of Drafts NFI Methodology												
Work on drafts for presentation at main NFI Workshop, 12th-14th/02/13.												
1.0 Development of NFI Methodology – Gap Analysis, Field Data Collection, Inventory Method and Master Plan.												
1.1 Workshop – Presentation of Draft NFI Methodology; Gap Analysis, Field Data Collection, Inventory Method & Management Plan												
1.2 Finalization of NFI Methodology												
1.3 Submit to FAO UNREDD												
2.0 Methodology/Plot Designs												
2.1 Trial												
2.2 Process Data & Analyse Results												
2.3 Workshop – presentation of results & recommendations												
2.3 Finalise Report												
2.4 Submit to FAO UNREDD												
3.0 Capacity Building												
3.1 Short courses (Dendrology, Data processing & Analysis etc.)												
3.2 Long Term Courses (MSc., PhD locally & abroad)												
3.3 Infrastructure – Office with facilities												
4.0 Procurement												
4.1 Inventory of available resources (inventory instruments & camping materials, IT facilities, mapping & Satellite images etc..)												
4.2 Actual procurement												
5.0 Inventory Regional Briefings/Training Workshop												
Coordinated by HQ												
5.1 Preparations of training materials & logistics/ Identification & notification of participants												
5.2 Southern/NGI/Momase/Highlands												
5.3 Prepare and submit reports												

Phase 1 & 2

NFI Management Plan...

Activity	Year 1				Year 2				Year 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
6.0 Pre-Inventory Community Awareness & Consent Coordinated by Area Offices in consultation with HQ												
6.1 Planning & Preparations												
6.2 Actual awareness and logistical assessment												
6.3 Distribution of equipment & materials to Regional & Provincial Offices and main locations nearest to plot locations												
7.0 Inventory Proper												
7.2 Team briefing at Provincial locations												
7.3 Transportation to survey sites												
7.4 Actual Inventory												
8.0 Survey Completion												
8.1 Audit of Survey Equipment												
8.2 Audit Field Books												
8.3 Field Books to Regional Coordinator												
9.0 Data Processing & Analysis												
9.1 Training on data processing												
9.2 Data processing/analysis												
10.0 Quality Checks and Assurance												
11.0 Reporting												
11.1 Debriefs – Team leaders –Regional Leaders – National coordinator												
11.2 Production of documents and submission to MD/FAO												
11.3 Workshop – presentation of results to stakeholders												
11.4 Workshop – follow up evaluation												
11.5 Way forward – resolutions from evaluation workshop												

Phase 3

NFI Schedule

Summarize schedule from NFI management plan

National Forest Inventory (NFI) Schedule					
	2012	2013	2014	2015	2016
Phase 1	Pre-assessment Planning/Workshops/Trainings			UNREDD	
Phase 1 & 2			Pre-ass... Methods, Awareness/Testing/Field Measurem	EU/FAO	
		Phase 2	Methods, Awareness & Field Measurements		EU/FAO
		Phase 2 & 3	...Methods, Awareness,Implementation,Field Measurments & Data Processing		EU/FAO
Phase 1 Pre-assessment Planning,Workshops, Training, Field Manuals, Procurements & logistics					
Phase 2 Methodology includes Awareness Strategy and location of tracts for field testing & field measurements					
Phase 3 Implementation/Field Measurements/Data processing					

NFITWG
Committees

FAO Technical
Team

Cost and Logistics

- The cost for the logistics to conduct Inventory Proper is now possible thru tracts' results attained from the Collect Earth Spatial Analysis and the Saiku Data Analysis (Phase 1 – Pre-assessment)
- Stratification of different stratum

- **Priority Activity 7.**

- **Inventory Proper (Field measurements):**

Cost and Logistics (manpower, transportation, rations, accommodation, travelling allowances, medicines, stationeries, security, patrol advance, communication medias, contingency and assessment)



Cost and Logistics...



Province	Forest Types													Plantations												
	P	H	L	Mo	D	B	Fri	Fsw	Sa	W	Sc	M	Mc	TEAK	EUC	Balsa	Klinki	Hoop	Pine	Aca	TER	Und	Rub			
Hela		62	328	9									1										400	2		
SouthernHighlands	26	275	300	6			3	2			1		2						1				616	3		
Central	217	480	355	17		4	24	22	80	62	6	22	7	1								4	1,301	7	5	
Chimbu		59	145	6							2												212	1		
EasternHighlands		31	300	9						1	5		1										347	2		
EastNewBritain	152	347	144			3	11	4			1	2				1					2		667	3		
EastSepik	551	490	121	2		5	18	302		92	63	9	1										1,654	8	3	
Enga	1	30	329	67							4												431	2		
Gulf	551	528	93				30	179	5	18		47	1										1,452	7	4	
Jiwaka	2	167	437	37							2		6										651	3		
Madang	345	414	256	12		4	34	43		17	16		2						1				1,144	6	7	
Manus	174	132				2	3	17		4		10											342	2		
MilneBay	167	235	75			17		2		1	6	17			1					2			523	3		
Morobe	95	369	719	23		2	9	11		4	23	1	16				2	1					1,275	6	6	
NationalCapital(4+4)									1														1	0		
NewIreland	89	216	55			7	4	7				13			2								393	2		
Northern	204	364	255	17		1	7	38	3	46	11	8											954	5		
NorthSolomons	77	138	49			3	1	16		3	9	6											302	2		
Western	1,274	811	145	3	752	22	32	364	313	554	29	24				3						18	4,344	22	1	
WesternHighlands	11	40	313	22				4			7		4										401	2		
WestNewBritain	301	511	33			11	1	14		1	4	16											892	4		
WestSepik	421	799	322	4			16	94		14	9	3	2										1,684	8	2	
sub-total (tracts)	4,658	6,498	4,774	234	752	81	193	1,119	402	817	198	178	43	1	3	4	2	1	1	1	2	2	22	19,986	100	
percentage (%)	23	33	24	1	4	0	1	6	2	4	1	1	0	0	0	0	0	0	0	0	0	0	100			
ranks	3	1	2		6			4		5																



P – Low Altitude forest on plains & fans

H – Low Altitude forest on Uplands

L – Lower Montane forest

Mo – Montane forest

D – Dry seasonal forest

B – Littoral forest

Fri - Seral forest

Fsw – Swamp forest

Sa – Savanna

W – Woodland

Sc – Scrub

M – Mangrove

Mc – Montane coniferous

• More tracts in Western Province

• **D** only found in Western Province

• Almost all forest types found in Western and Central Provinces

• **P** dominant on coastal provinces

• More tracts on **H**

• Majority of provinces have **H**, except NCD

• Majority of provinces have **L**, except NCD & Manus



Suggested stratification, stratum & number of plots

Stratum			Number of plot	Required precision	Required number of clusters*
Low altitude forest on plains & fans	Primary		2,273	5%	80
	Degraded	Logged	1,306	10%	20
		Other disturbance	1,079	10%	20
Low altitude forest on uplands	Primary		3,730	5%	80
	Degraded	Logging	1,228	10%	20
		Other disturbance	1,540	10%	20
Lower montane forest	Primary (including 21 montane coniferous forest)		3,451	5%	80
	Degraded (including 14 montane coniferous forest)		1,358	10%	20
Swamp forest			1,119	10%	20
Woodland			817	10%	20
Dry seasonal forest			752	10%	20
Savanna & Scrub			600	10%	20
Littoral & Seral			274	20%	5
Montane including M/coniferous above 3000m (8 plots)			242	20%	5
Mangrove			178	20%	5

19,986

435

Proposed cost & logistics to assess 1 cluster of 5 x 0.1ha circular plots

	Type of cost	Particulars	Qty	Rate(K)	Days/Nights	Meals	Cost (K)
1	Manpower	Composition per team (Team Leader,Botanist, Cartographer, Recorder,Biologist, 2x DBH men, 1x height man,2x assistants)	10				
2	Transport	Air, Road, Sea/water	8	1000	(return)		8,000
3	Accommodation	Hotel,Guest House	8	800	2		12,800
4	Village accommodation	Village, Forest Campsite	8	40	4		1,280
5	Transport hire	Road & sea/water		800	7		5,600
6	Travelling Allowance	Officers	8	200	2		3,200
7	Camping Allowance	Officers	8	100	5		4,000
8	Food Rations	All manpower	13	50	5	3	9,750
9	Medicines	All manpower					200
10	Communication Medias	Mobile phones, Satellite phones, Internet communication, V-SAT					500
11	Security	High risk areas (need police escort)	100		5		500
12	Patrol Advance	2xField assistants, 2xField Carriers	4	40	5		800
13	Contingency	Media Press Release, Short falls, Emergency,zoom,petrol,diesel					1,000
							45,930

1 cluster ÷ 7 days to complete

1 cluster ÷ K22,000-K46,000

**Preliminary Budget of Activity 7
for Inventory Proper is
K12,000,000**

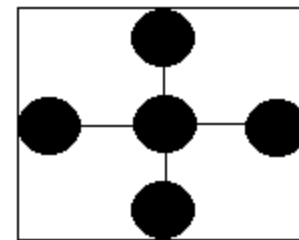
- Maximum Total estimated cost K20,010,000
- Minimum Total estimated cost K9,570,000

Take 4-8 years to
complete NFI



- Maximum estimated Cost K46,000
- Minimum estimated cost K22,000

435 clusters proposed to assess
on different stratum



Circular plot
radius=17.8m=0.1 ha



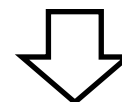
5 Circular plots=0.5 ha



Take 7 days to complete(including
travelling days & awareness)



Need manpower of 10
people per team



Cost and Logistics...

Priority Activities as of 2013	Preliminary Dates												Preliminary Budget (K)
	Year 1				Year 2				Year 3				
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
1. Development of NFI Methodology													100,000
2. Methodology/Plot design -eg Trial													100,000
3. Capacity Building *													2,000,000
4. Procurement													4,000,000
5. Inventory Regional Briefings/Training Workshop													1,200,000
6. Pre-Inventory Community Awareness & Consent													1,000,000
7. Inventory Proper-transportation,assessment etc..													12,000,000
8. Survey Completion													500,000
9. Data Processing & Analysis													150,000
10. Quality Checks & Quality Assurance													150,000
11. Reporting													150,000
													21,350,000
* Botany & dendrology training													

Category	Tracts	%
Forest	19,986	79
Grassland	1,422	6
Settlement	298	1
Other Land	317	1
No data	72	0
Wet Land	721	3
Cropland	2,463	10
	25,279	100

Challenges

Real Cost expectations:

1. Encroachment issues/land owner problems - also require money
2. Awareness to resource owners on remotely forest areas- might need more time
3. Accessibility to tract sites will be costly- most tracts that will be selected randomly for assessing will be on inaccessible sites
4. Delay in weather conditions while in the field- may delay days of work

Others, to generate discussions...

Key messages

NFI management planning have to align with the four project's expected outputs:

1. To improve the capacity of the PNG Forest Authority and the University of Technology-Department of Forestry on continuous national forest inventory;
2. To establish the first National Forest Inventory (NFI) of PNG. This NFI will be a basis for planning activities in the forestry sector and in particular for those related to sustainable forest management (SFM). The NFI will also be a key element of the National Monitoring System that PNG is required to establish in order to participate at the expected UNFCCC mechanism on REDD+ (Decision 1/CP.16) and will be one of the main data sources for the PNG national greenhouse gases (GHG) inventory that the country will use to ensure that its National Appropriate Mitigation Actions (NAMAs) are measurable, reportable and verifiable (MRV), including REDD+ mitigation activities in the forestry sector;
3. To carry out specific forestry and landscape studies including allometric equations, wood density, forest land uses, biodiversity and indigenous forest practices; and
4. To enhance policy dialogue on forestry .

NFI management planning:

- **ideas & skills have to be shared**
- **methods must be cost-effective & sustainably measurable, reportable and verifiable**
- **must be focus on unanswered research studies**
- **end results enhance policy dialogue on forestry & climate change issues**



Questions/Comments

