

# FAO - Methodology and Cost Analysis of FAO NFMA

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**FAO support to National Forest Monitoring and Assessment**

**Methodology and cost analysis**

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Anne Branthomme, FAO Forestry Officer Seoul, February 23<sup>rd</sup> 2010

**Technical & methodological development activities within the NFMA Programme**

General manuals, guidelines and tools & thematic studies

- Methods and protocols for multipurpose NFIs : sampling design, data collection
- Harmonization of terminology and definitions with international standards (FRA, IPCC...)
- Information system: data storage, processing and dissemination tools
- Other thematic studies (ILUA, TOF, RS, biophysical and socio-economic data integration, QA/QC...)

Country adaptation / advisory role

- According to information needs and context
- Field testing
- Piloting
- Training
- Experience sharing

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**Core guiding principles of the current approach**

- Precision, accuracy and robustness
- Consistency and comparability (over time and space)
- Completeness (nationwide, comprehensive, integrated, capture all land uses, incl. TOF, co-benefices)
- Cost-efficiency
- Transparency
- Flexibility (country specificities & needs and scalability, intensity)

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**Other main characteristics of the current approach**

- Country ownership
- Multi-sectoral approach and participatory process
- Capacity building
- Relevance to national policy (nfps) and to international reporting processes
- Fulfill IPCC guidelines & reporting requirements for GHG
- Sustainability (FAO's support)

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**An evolving processes...**

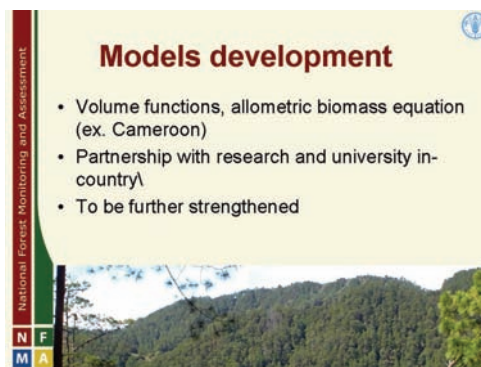
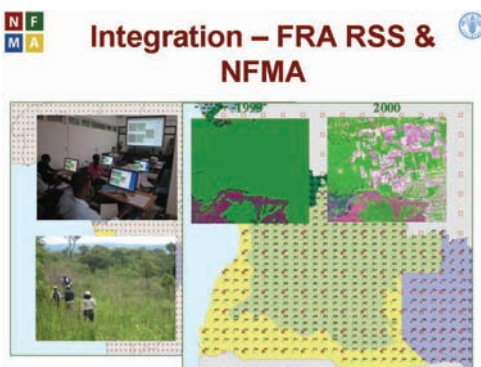
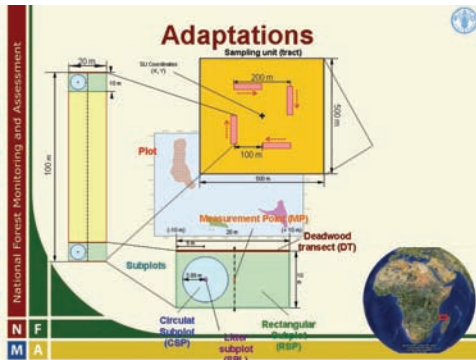
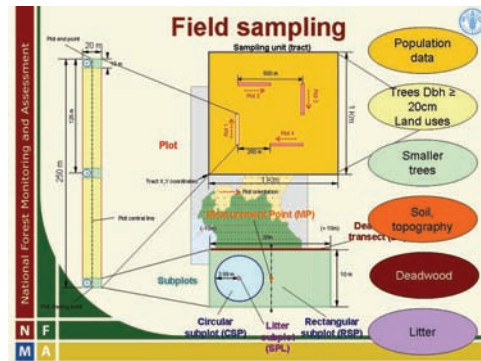
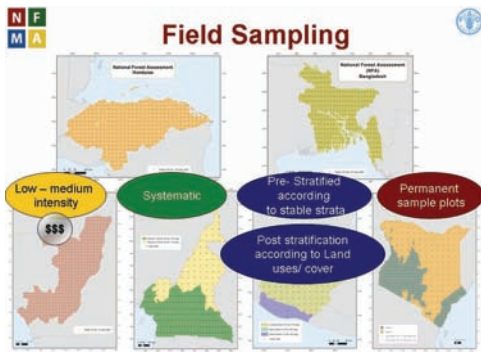
... to respond to evolving needs

- Approaches, methods and techniques and technologies evolve : more options, quicker, easier (RS, models, algorithms...)
- Continuous adaptation to new challenges: be innovative...
- ...while continue building on robust and well-proven methods and tools (samplings, statistics, ground measurements ...) adapted to local context

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**Methodology – Overview**

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**Products: Guidelines and training material**

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**Products: Country reports on NFMA findings, policy analysis**

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**Products: databases and web-based dissemination**

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**Data addressing all the 7 thematic elements of SFM**

- Extent of forest resources
- Biological diversity
- Forest health and vitality
- Productive function of forest resources
- Protective functions of forest resources
- Socio-economic functions
- Legal, policy and institutional framework

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**Data on extent of forest resources**

- Area of forest
- Forest area change

Forest Category	Percentage
Broad-leaved Forest	2%
Mixed Forest	1%
Mangrove	1%
Coniferous Forest	92%
Bamboo/bamboo Formation	2%

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**Data on biological diversity**

- Number and types of tree species
- Forest structure
- Observations on fauna and flora
- Threatened species / IUCN red list

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**Data on forest health and vitality**

- Invasive species
- Crown / tree condition
- Causative agents
- Environmental problems (severity, trends)
- Fire disturbances (area, type)
- Human disturbances
- Insect pests and diseases

Invasive species distribution  
Eucalyptus camaldulensis - Bangladesh

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**Data on the productive functions of forest resources**

- Commercial timber volume
- Harvested products
- Tree species providing products
- NWFP
- End-use of the product
- Demand and supply trends
- Period and frequency of harvesting

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**Data on the protective functions of forest resources**

- Assessment of forest areas designated for protective purposes
- Environmental services provided by forests and TOF (water conservation...)
- Correlation with data on the occurrence of environmental problems (erosion, floods...)

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**Data on social-economic functions**

- Contribution of forest to livelihood
- User rights / conflicts
- Gender
- Ownership / land & forest management
- Cultural, spiritual and recreational value

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**Data on legal framework**

- Awareness and compliance of forest legislation
- Awareness of forest incentives

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**Data on Carbon**

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### Safeguards, Driving forces of FDD, impacts

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### ILUA: data on crops, livestock, water...

- Better understanding of ecosystems services
- Study interrelations and contribution to livelihoods, conflicts objectives between sectors

### NFMA Process – time frame and costs

NFMA approach and process: an analysis of Cost and Time

### Activities of a typical NFMA project

- Preparation and management
- Capacity building
- Procurement of equipment
- Awareness raising
- Mapping
- Field survey
- Technical assistance
- Supervision
- Data entry
- Processing
- Reporting

### NFMA actual or estimated budget

Country	Area (km2)	Funding (US\$)		
		FAO	Government + donors	Total
Costa Rica	22,960	150,000	0	150,000
Guatemala	108,890	228,000	232,000	460,000
Philippines	300,000	250,000	300,000	550,000
Cameroon	475,440	224,000	314,648	538,648
Lebanon	10,100	314,000	200,000	514,000
Bangladesh	144,000	352,000	168,000	520,000
Zambia	752,610	413,495	755,614	1,169,109
Honduras	112,090	402,938	97,514	500,452
Kenya	580,370	372,000	217,000	589,000
Algeria*	2,381,740	200,000	200,000	400,000
Congo	342,000	284,000	500,000	784,000
Angola	1,246,700	394,000	940,000	1,334,000
Kyrgyzstan	199,900	330,000	300,000	630,000
Nicaragua	130,000	218,000	850,000	1,068,000
Brazil**	8,514,880	440,000	55M\$	50 M\$
Tanzania***	845,090	0	3,811,000	3,811,000
Comoros***	1,960	378,000	100,000	478,000
Gambia***	11,300	440,000	100,000	540,000

### Table 3: Time and Cost of NFMA and ILUA Activities in five selected Countries

Project tasks	Activities	Lebanon		Bangladesh		Cameroon		Kenya		Zambia	
		Total	Cost/ha	Total	Cost/ha	Total	Cost/ha	Total	Cost/ha	Total	Cost/ha
Preparation and management	Subtotal	48,000	1.8	21,440	4.2	93,000	4.7	45,000	4.7	48,000	4.4
Capacity building and awareness raising	Subtotal	10,000	4.5	7,000	3.5	80,700	7.8	50,000	8.5	10,000	3.5
Mapping	Subtotal	90,000	4.5	80,000	4.0	90,000	4.0	80,000	4.0	80,000	4.0
Field survey	Subtotal	30,000	4.5	30,000	4.5	30,000	4.5	30,000	4.5	30,000	4.5
Technical assistance	Subtotal	10,000	4.5	10,000	4.5	10,000	4.5	10,000	4.5	10,000	4.5
Supervision	Subtotal	10,000	4.5	10,000	4.5	10,000	4.5	10,000	4.5	10,000	4.5
Data entry	Subtotal	10,000	4.5	10,000	4.5	10,000	4.5	10,000	4.5	10,000	4.5
Processing	Subtotal	10,000	4.5	10,000	4.5	10,000	4.5	10,000	4.5	10,000	4.5
Reporting	Subtotal	10,000	4.5	10,000	4.5	10,000	4.5	10,000	4.5	10,000	4.5
Total	Subtotal	188,000	4.5	188,000	4.5	188,000	4.5	188,000	4.5	188,000	4.5

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### NFI Experiences on Costs, Time and Quality

Items	Zambia	Honduras	Nicaragua	Bangladesh	Cameroon	Average
Sample size (SU number)	221	156	371	296	206	250
Precision of national level results	4-10%	13-17%	n.a.	17-45%	3-7%	Field + RSS
Total budget (M US\$)	1.2	0.5	1.1	0.5	0.6	0.8
% fieldwork	29	24	27	22	32	25
Cost / Sample unit (US\$)	5,300	3,200	2,900	1,800	2,600	3,300
Cost / km <sup>2</sup> (US\$)	1.6	4.5	8.2	3.6	1.2	2.4

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### Breakdown of costs per selected activity

Items	ILUA	NFMA				Average
	Zambia	Honduras	Nicaragua	Bangladesh	Cameroon	
Total cost of fieldwork (USD)	343,636	118,204	273,016	115,000	185,105	205,714
% Fieldwork: Total project budget	29.4	23.3	25.6	22.1	34.4	25.4
% Measurement: Fieldwork	26.3	34.8	30.6	26.1	22.2	27.4
% Measurements: Total project budget	7.7	8.1	7.8	5.8	7.6	7.0
% International TA	29.5	29.3	13.3	38.5	13.8	23.1
% Supervision National Consultants	6.8	19.0	14.0	1.0	5.1	8.1
% Equipment	6.4	1.5	7.9	10.0	16.1	7.8
% Preparation and Management	7.7	7.2	8.5	6.7	15.3	8.1

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### Breakdown of time per activity

Country	Number of inventoried tracts	Total project duration (months)	Fieldwork				% of total field work time				
			No of field teams	No of team members <sup>a</sup>	Effective months	% of total duration	Planning	Transfer	Measurement	Interviews	Total
Bangladesh	296	33	10	3	5	11	6.1	31.3	21.3	21.3	100
Cameroon	206	24	8	6	7	13	18.3	36.1	36.5	9.1	100
Honduras	156	24	11	2	9	16	20.3	18.8	40.6	20.3	100
Nicaragua	371	24	24	3	7	8	18.6	21.4	37.1	22.9	100
Zambia	221	45	10	4	6	11	25	25	25	25	100
Average	250	30	12.6	3.6	6.8	11.8	17.7	26.6	34.1	21.7	100

<sup>a</sup> The number is related technical staff. Each team has at least one or two workers to guide and to help the technical staff

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### For further information

www.fao.org/forestry/site/nfma

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### Thank you for your attention

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