

Consultation Report

FAO Expert Consultation Climate change guidelines for forest managers

Hotel Jose Antonio, Lima, Peru
9 & 10 November 2011

Introduction

The critical role of forests in climate change mitigation and adaptation is widely recognized. Forests play a significant role in mitigation by acting as “sinks”, absorbing carbon from the atmosphere and storing it in biomass and soils. Forests are also an important component of adaptation strategies to address continuing, sometimes dramatic, impacts on the natural resource base that sustains our livelihoods.

Ecosystem health and resilience, productivity, biological diversity, and carbon storage are likely to decrease in many places due to climate change impacts. Appropriate forest management interventions may help maintain or enhance the adaptive capacity of forests to climate change as well as improve the ability of forests to mitigate climate change. Forest management actions will inevitably be influenced by the values placed on forests by society, perceptions on whether impacts of climate change are positive or negative and the priorities of stakeholders for addressing climate change impacts.

The inter-relationship between forests and climate therefore implies that a dramatic change to one will influence the other. In some situations this feedback is negative whereas in other cases it is positive. Sustainable forest management can help to reduce the negative effects of climate change on forests and forest dependent people and take advantage of mitigation opportunities.

Forest management decisions made now could affect forests many decades into the future. Thus it is important for managers to take account of how forests may respond to future climatic conditions. FAO is developing guidelines to assist forest managers to respond to climate change challenges and opportunities at the forest management unit level. These guidelines will highlight adjustments that forest managers might consider making in the planning, implementation and monitoring phases of forest management to accommodate climate change considerations. It will also flag the possible changes to the policy, legal, economic and social environment driven by climate change responses that forest managers will need to take into consideration in forest planning and management.

To discuss the first draft of the guidelines and related issues, FAO convened the second expert consultation on 9 and 10 November 2011 in Lima, Peru (see agenda attached in Annex I). The first expert consultation was held in Kathmandu, Nepal on 21 and 22 June 2011.

Purpose of consultation

The main purpose of the consultation was to review the first draft of the guidelines and discuss the target audience, structure and contents of the guidelines as well as agree on the process and timeline of finalization and validation of the guidelines.

Results

The consultation was attended by 16 participants (see Annex II), representing most regions (Africa was not represented) and with expertise covering various aspects of forest management.

Target audience

The experts agreed that the guidelines should be practical and relevant for managers of all forests in the private and public sectors as well as community forest users groups. The guidelines should clearly

define the terms 'forest manager' and 'forest management' to ensure that the target audience is clearly understood.

It was agreed that the guidelines should also be targeted to professional consultations who support forest managers as well as policy makers who shape policies affecting forest managers.

It should nevertheless be made clear that while there is a specific target audience, the guidelines are important to all stakeholders since the success of forest management actions in response to climate change will be influenced by other sectors and stakeholders.

Structure & content

The revised structure of the guidelines was agreed upon (Annex III). Whether this will be presented in matrix form will depend on the actions and will be decided during the finalization of the guidelines.

The main changes agreed on were that:

- the purpose, scope and importance for forest managers of the guidelines should be clearly stated in the introduction;
- information on the role of forests in the carbon cycle, climate change impacts on forest management and associated risks for forest managers should be included in Section I;
- a description of the potential actions and how these can be interlinked should be given in Section II, including examples of best practices;
- in addition to a subsection on assessments of risks and vulnerability, Section III should also identify opportunities and constraints. The recommended management actions should include markets and policy and institutional engagement and the mitigation implications of adaptation actions should be highlighted.
- Mitigation and monitoring should remain separate sub-sections
- Reference should be made to other existing guidelines and tools related to forest management and climate change

Recommended (possible) management actions in response to climate change impacts (Section III), were defined by the experts working in three groups: biophysical impacts, social and institutional impacts and economic and market impacts. The implications for mitigation were also highlighted. The results of this work may be found in Annex IV.

Next steps

It was agreed that the revised draft guidelines would be sent to the expert group on 22 December 2011 with the deadline for comments set for 5 January 2012. Following this, the lead consultant would prepare the final draft of the guidelines to be sent to the group on 31 January 2012. Comments will be requested by 14th February 2012 to facilitate finalization of the guidelines by 29 February 2012.

Possible options for validation of the guidelines were discussed and it was agreed that as much as possible validation should be done directly with all groups of forest managers. Forest owners associations and other networks could be used to facilitate the process. The validation methodology will be prepared and shared with the expert group for review.



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Lima, Peru

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Agenda

Wednesday, 9 November 2011

- 08:30 - 09:00 Welcome remarks – Jorge Ellegren, *Assistant FAO Representative, Peru*
Introduction of all experts
Introduction to the consultation – *Susan Braatz, FAO*
- 09:00 – 09:15 Review of progress since first consultation – *Simmons Rose, FAO*
09:15 – 10:00 Introduction of draft guidelines & discussion – *Jack Putz*

Coffee break (30 min)

- 10:30 - 12:00 Continued discussion on draft guidelines
12:00 – 12:30 Introduction to working groups

Lunch break

- 14:00 – 15:00 Working groups - drafting of sections – *Experts*

Coffee break (30 min)

- 15:30 – 17:30 Working groups - drafting of sections – *Experts*
- 17:30 – 18:00 Group reporting & wrap up – *Jack Putz*

19:00 Cocktail reception

Thursday, 10 November 2011

08:30 – 12:00 Working groups - drafting of sections (*incl. coffee break*)

Lunch break

13:30 – 14:00 Working groups - drafting of sections

14:00 – 15:00 Report from group discussions

Coffee break (30 min)

15:30 – 16:30 Discussion of next steps & validation methodology – *Jack Putz*

16:30 – 17:00 Wrap up & final remarks

ANNEX II LIST OF PARTICIPANTS



FAO EXPERT CONSULTATION Climate change guidelines for managers of forests



Hotel Jose Antonio, Miraflores, Lima
9 & 10 November 2011

LIST OF PARTICIPANTS

	Organization	Representative	Position	Contact information	Postal address
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ANNEX III DRAFT OUTLINE

TABLE OF CONTENTS

Introduction (objectives, target audience.....)

SECTION I BACKGROUND

Climate change
Forests and global carbon cycle
Adaptation and mitigation
Synergies, safeguards and trade-offs
Ecosystem services
International policy decisions
What does this mean for forest managers?

SECTION II GUIDING APPROACHES TO CLIMATE CHANGE

SFM as the basis for climate change responses
Resilience and resistance
Adaptive management
Multi-purpose management
Multi-stakeholder participation
Benefits justifying costs

SECTION III MANAGEMENT RESPONSES TO CLIMATE CHANGE

ASSESSMENTS OF RISKS, VULNERABILITY AND IDENTIFICATION OF OPPORTUNITIES & CONSTRAINTS

Actions include:

Information gathering (climate change & potential impacts, direction of market changes, policy and institutional changes, socio-economic changes)
Assessment and analysis (risk, vulnerability & opportunities)
Identification & analysis of mitigation and adaptation options and incorporate into management plans

MANAGEMENT ACTIONS

Biophysical responses

Production and ecosystem services

Biodiversity

Water availability

Extreme weather events

Fires

Pests and diseases

Sea level rise

Social and cultural responses

Economic responses

Markets

Policy and institutional engagement

MITIGATION

MONITORING

SECTION IV CONCLUSIONS

SECTION V SELECTED REFERENCES AND TOOLS

ANNEX IV

Possible management actions in response to biophysical impacts

	Impact	Possible Management Actions	Implication for Mitigation
Biodiversity (<i>species level</i>)	Species/genotypes no longer viable in the management area.	<ul style="list-style-type: none"> • Gather information where species of concern are in their “climate envelopes”, the geographical area of appropriate climate. • Plant or promote climate-adapted species and genotypes (incl. GMOs, exotic species) • Provide corridors of suitable habitat for migration. • Assist movements of species past physical and biotic obstacles. • Maintain and restore appropriate habitats along migration pathways. • Adjust levels of hunting and fishing so as to be sustainable under new climate conditions • Increase protected areas • Avoid non-endemic species for forest regeneration • Protect primary forests 	<p><i>Increase carbon stocks through maintenance of old growth forest, establishment of corridors</i></p> <p><i>Contribution to protection of forested protected areas</i></p>
	Species moving into the area	<ul style="list-style-type: none"> • Improve the resilience and resistance of ecosystems • Encourage influx of new species adapted to expected climate • Employ best management practices (e.g., reduced-impact logging & silvicultural controls) to avoid degradation • Develop plans to combat alien invasive species at national scale 	<i>Increasing carbon stocks by increase in tree cover</i>
	Aquatic species declining	<ul style="list-style-type: none"> • Maintain shade in riparian areas through increased tree cover favouring fruit-bearing species • Improve stream connectivity 	<i>Increasing carbon stocks by increase in tree cover</i>
Biodiversity (<i>gene level</i>)	Loss of genetic diversity	<ul style="list-style-type: none"> • Maintain connectivity • Use seed stocks from appropriate climate envelope • Protect species at edges of ranges • Protect primary forests 	<i>Increase resilience</i>
Biodiversity (<i>landscape level</i>)	Fragmentation changes to forest types	<ul style="list-style-type: none"> • Maintain landscape connectivity • Reduce homogeneity among stands 	<i>Increase resilience</i>
Water Availability	Water scarcity	<ul style="list-style-type: none"> • Promote water infiltration and storage (e.g. mulching, storage lakes & irrigation channels) • Vegetation management (e.g. weed control) to limit adverse hydrological effects. • Maintain forest cover on ridge tops to promote fog interception. • Assess and perhaps reverse channelization. 	<p><i>Stock reduction to reduce evapotranspiration will limit mitigation effects (e.g. Mediterranean)</i></p> <p><i>Increase soil carbon in mesic areas</i></p>
	Increased precipitation	<ul style="list-style-type: none"> • Vegetation management (e.g. weed control) to limit adverse hydrological effects. • Adjust harvesting schedule and product processing 	

Pest and diseases	Increased outbreaks of insects, pathogens, and invasive native and exotic plant species.	<ul style="list-style-type: none"> • Manage for diversity (e.g., mixtures of species and stand ages) to maintain resistance to invasion and resilience if and when invasions occur. • Identify forest areas vulnerable to pests and diseases • Employ integrated pest management approaches. • Avoid infestations through good phytosanitary practices. • Avoid introductions by humans, domesticated animals, and heavy equipment. • Maintain stand and tree health to enhance resistance (e.g., thinning to reduce water stress). • Prevent damage to trees during harvesting or silvicultural interventions and by fires to maintain pest resistance. • Properly dispose of harvesting or silvicultural waste. • Favour genotypes and species that are resistant and resilient to attack. 	<p><i>Prevention of GHG emissions</i></p> <p><i>Potential to reduce emissions through use of bioenergy (use of residues)</i></p> <p><i>Enhance resilience</i></p>
Fires	Increase in the number, frequency, size, severity of wildfires.	<ul style="list-style-type: none"> • Assess the regional impacts of climate change on fire occurrence and behaviour. • Employ an integrated fire management approach (i.e. fire suppression and fire prevention). • Modify landscape structure to impede fire spread (e.g., networks of shaded and other sorts of fire breaks; mixed stand ages and stocking densities; stand thinning; mosaics of controlled burns, promote fire tolerant species). • Adjust fire management plans and policies to reflect climate-induced changes in fuels and fire risks. • Integrate fire management considerations into forest management planning (e.g., assess quantities of dead fuel during forest inventories to assess fire risks). • Restore appropriate fire regimes to enhance forest resistance to cataclysmic fires. • Use controlled burns and “let burn” policies in fire-maintained ecosystems for fuel management and to achieve ecological management objectives. • Salvage logging, but carried out in ways that do not impair critical ecosystem functions or otherwise exacerbate the impacts of climate change. • Develop fire management plans that avoid unnecessary ecological damage while fighting fires. • Ensure inclusion of ‘fire management’ in local and regional planning • Consider developing ‘fire smart’ landscapes 	<p><i>Decrease of GHG emissions through reduction of severe wildfires</i></p> <p><i>Increase of GHG emissions due to fuel reduction (e.g. from controlled burning)</i></p>
	Changes in ecosystem functions, composition, and productivity.	<ul style="list-style-type: none"> • Protect fire-sensitive ecosystems. • Maintain or restore appropriate fire regimes. • Avoid deleterious environmental impacts of fire suppression activities. • Use reduced impact logging to reduce the size of logging gaps, reduce logging damage & waste, reduce soil erosion and improve soil fertility. • Conserve hydrological regimes of peatlands to avoid dry-out. 	<p><i>See above</i></p>

Production and Ecosystem Services	Declining yields of forest products due to changes in temperature and moisture regimes or increasing yields due to increasing temperatures, N-deposition, and CO ₂ fertilization.	<ul style="list-style-type: none"> • Modify silvicultural regime (e.g., thinning, pruning, shorten/lengthen rotation period, reduced-impact logging and protection of streamside buffer zones). • Appropriately match species and genotypes to current and coming site climate conditions. • Vegetation management (e.g. weed control, control understory vegetation and lianas, mulching) to reduce drought stress. • Adjust yield expectations and change focal species. • Promote soil management to maintain/improve/restore soil productivity (incl. nutrient balance & management, soil structure protection etc.) 	<p><i>Increase carbon sequestration (increased carbon sequestration through: list</i></p> <p><i>decreased carbon stock through: list</i></p> <p><i>Possible N₂O emissions (if N fertilizer)</i></p>
	Increased risk of failure of harvest and provision of ecosystem services	<ul style="list-style-type: none"> • Gather and evaluate relevant information for yield prediction. • Promote diversity at all scales (genes, species, stand ages, landscapes) by direct and indirect means (e.g. planting, tending, harvesting, and protection). • Provide corridors for species migration uphill and polewards through ecosystem management and forest acquisition. • Adjust harvest schedules (e.g. hunting seasons, logging, and NWFP collection). • Further elaborate on possible actions in the text 	<p><i>Maintenance of carbon stocks (less risk)</i></p> <p><i>Reducing deforestation and forest degradation drivers</i></p>
Extreme weather events	Increased flood frequencies and intensities	<ul style="list-style-type: none"> • Design and build infrastructure with larger safety factors. • Ensure adequate maintenance of road network • Maintain hydrologic connectivity in channels. • Maintain infiltration rates and water storage capacities by avoiding soil compaction. • Keep heavy equipment off steep slopes and out of riparian areas. • Maintenance of riparian zones 	<i>Possibility of emission increase (more construction/heavier machinery)</i>
	Increased storm intensities and frequencies	<ul style="list-style-type: none"> • Maintain species and structural diversity in ecosystems to promote resistance to damage and resilience after damage is suffered. • Selection of wind resistant species • Avoid clear cutting in vulnerable areas • Thinning regime to improve individual and stand stability (early and regular). 	<i>Potential increase in carbon stocks (less damage)</i>
	Increased likelihood and size of landslides	<ul style="list-style-type: none"> • Protect steep slopes from damage due to ground-based timber harvests. • Maintain continuous tree cover on steep slopes • Tree species selection (e.g. deep rooting) • Contour planting • Avoid soil scarification 	<i>Maintain soil carbon stocks</i>
	<i>Increased risks of damaging coastal surges</i>	<ul style="list-style-type: none"> • Maintain and restore coastal forests and mangroves. 	

Sea level rise	Species overwhelmed by sea level rise and storm surges	<ul style="list-style-type: none"> • Provide appropriate migration corridors and remove impediments to migration. • Assist migration corridors within the historical ranges of species (managed relocation). • Protect or enhance freshwater and sediment inputs. • Employ more salt tolerant species for restoration, reforestation, and afforestation. 	<i>Increase tree cover (and carbon) in rural areas</i>
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Overarching

- Monitor the direction and rate of local climate change by inspecting local meteorological data and downscaling global climate models.

Possible management actions in response to social and institutional impacts

Impact	Action	Implications for Mitigation
<p>Food security</p> <ul style="list-style-type: none"> - Production - Access - Quality - Cooking (energy) <p><i>Changes in production and food availability</i></p> <p><i>Conflict between biofuels and agric</i></p> <p><i>Poverty exacerbated by CC</i></p>	<ul style="list-style-type: none"> • Diversify management objectives based on social and economic factors – holistic management <ul style="list-style-type: none"> - Markets and projects to support NWF use - Value-added production / processing of forest products (NWF and timber) - Incorporate agroforestry - Land-use planning to identify potential inclusion of agricultural production within forest area. - Incorporate multi-purpose trees • Increase opportunities for employment <ul style="list-style-type: none"> - Ecotourism • Incorporate fuelwood production in planning • Recognise and support local community's needs • Enable local coping capacities • Buffer zone for multi-use by traditional groups 	<p><i>Generally positive as will increase value of standing forest.</i></p> <p><i>However, land-use planning for agriculture could potentially increase GHG emissions</i></p>
<p>Increased deforestation pressures</p>		
<p>Health changes</p> <ul style="list-style-type: none"> - Increase in disease - Water - Malnutrition 	<ul style="list-style-type: none"> • Awareness and care for risk of disease (malaria, other) and heat stress • Treatment and access to health care for forest employees 	<p><i>No impact</i></p>
<p>Migration</p>	<ul style="list-style-type: none"> • Out migration – create jobs and economic options • In-migration – collaboration and planning for potential co-management / use and conflict management • Increase protection of forest resources from robbery, fires, other. 	<p><i>Generally positive as increase value of forest and decrease degradation (e.g. fire)</i></p>

<p>Change in land ownership (who owns / buys land, investors, land-grabbing, new players demanding land [e.g. vineyards moving north])</p>	<ul style="list-style-type: none"> • Awareness of new demands and objectives / time perspectives of buyers • Assess implications of selling • Awareness of potential effects of land-use change in nearby areas on risks and opportunities 	<p><i>Both positive and negative.</i></p> <p><i>If sell and convert to agricultural → negative</i></p> <p><i>Positive → sell to investors interested in forest / plantations and/or restoration of degraded forests</i></p>
<p>Conflict over rights</p>	<ul style="list-style-type: none"> • Identify key resources of interest • Secure your own rights in writing. Maintain appropriate documentation. • Proactive conflict management with other stakeholders 	<p><i>Potential to increase success of REDD projects or other carbon initiatives</i></p>
<p>Changes in harvest cycles (e.g. timing due to rainy season, fruiting timing)</p>	<ul style="list-style-type: none"> • Adapt contracts and agreements • Identify potential changes in availability of labour pool • Find ways to harmonize with other harvest cycles / activities to maintain the same employees throughout the year (benefits, long term contracts) 	<p><i>Potentially positive</i></p>

Possible management actions in response to economic and market impacts

Impacts	Opportunities	Actions	Implications for mitigations
Production and Ecosystem Services	<ul style="list-style-type: none"> • Green building • Wood base energy • Local PES schemes (voluntary agreements with hydroelectric facilities, municipal waterworks) 	<ul style="list-style-type: none"> • Promote increase use of sustainable produced wood and other forest products as climate friendly materials and renewable energy source. • Identify alternative markets opportunities • Identify funding opportunities for diversification, R&D, Life cycle analysis. • Build strategic alliances • Engage local authorities to promote local wood base energy • Be aware of existing and new political and governance requirements which may affect forest operations and market 	<i>Also REDD+ arguments</i>
Biodiversity	Local PES schemes Public interests	<ul style="list-style-type: none"> • Identify funding opportunities for monitoring (SFM additional) • Identify markets opportunities that recognize biodiversity (opportunity cost). • Engage local PES schemes • Alert policy makers about PES schemes • Create business models that encourage free riders to pay for biodiversity (Tourism sector, Scientific sector) • Rise awareness about economic value of biodiversity loss (tourism sector is 8.1% GDP of Costa Rica) 	
Water	Local PES schemes	<ul style="list-style-type: none"> • Trigger local initiatives to promote the role of forest in water management. • Create business models that encourage free riders to pay for Water (bottle water companies) 	

Fires, Pest and Diseases		<ul style="list-style-type: none">• Explore markets for affected species• Identify funding for identification of more resistant species• Explore opportunities to insure your forest• Build strategic alliance to address the industry wide risk• Launch debate with policy makers on the higher risk and cost implication	
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