Forest & Climate Change: Issues & Options in West Africa

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Background

• The vulnerability of West African forest ecosystems to both climatic & non-climatic stimuli is unquestionable.

• Dependence on natural resources is only increasing
  – for livelihood security
  – National development etc.

• Climate impacts on forest will amplify the risks on humans putting the region in jeopardy of other risks.

• Autonomous adaptation of forest is insufficient to resist current and projected impacts of CC in WA.

• Planned adaptation is the option & should explore every opportunity available & done urgently.
West African Issues....
West African Focus ……

Desert encroachment
Increasing precipitation
Contrasting ecosystem margins
Migration & Population
Resource distribution

Congo Basin

500-2000 mm
> 2000 mm
Climate risks

- Increase in temperature
- Droughts – frequent & dispersed even when less intense
- Irregularities in precipitation
  - Flash floods
  - Crop Failures
- Outbreak of pests & diseases
- Wild fires
- Dust storms
- Wind storms etc
## Potential climate change impacts on forest ecosystems

<table>
<thead>
<tr>
<th>Level</th>
<th>Pattern of Impact</th>
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<tbody>
<tr>
<td>Cell</td>
<td>Reduction in stomata conductance</td>
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<tr>
<td></td>
<td>Increase in photosynthesis</td>
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<tr>
<td></td>
<td>Increase in transpiration</td>
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<tr>
<td>Organism</td>
<td>Phenology – changes in physiological cycles e.g. blooming, flowering, fruiting etc</td>
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<tr>
<td></td>
<td>Migration</td>
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<td></td>
<td>Insect emergence (metamorphosis)</td>
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<td>Reduction cropping seasons</td>
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<tr>
<td>Species</td>
<td>Changes in species distribution &amp; abundance</td>
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<td></td>
<td>Changes in morphology and reproduction</td>
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<td></td>
<td>Shift in plant &amp; animal ranges</td>
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<tr>
<td></td>
<td>Invasions</td>
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<tr>
<td></td>
<td>Extinction</td>
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<tr>
<td>Ecosystem</td>
<td>Changes in species composition &amp; ecosystem structure</td>
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<tr>
<td></td>
<td>Changes in ecosystem processes &amp; service provision</td>
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<tr>
<td></td>
<td>Decoupling of species interaction e.g. predator-prey</td>
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<tr>
<td></td>
<td><strong>Shift in entire ecosystems</strong></td>
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What are the issues?

Finding co-existence

- Concessions & subsistence
- Logging companies & communities
- National reserves & poaching
- Law enforcement & eviction?
- Vulnerability & marginalization

• Livelihood opportunities for
  • indigenous people
  • forest fringe communities
• Social exclusion
• Benefit sharing & equity
What are the issues?

Household energy & Climate Change

- Decreasing household affordability & accessibility
- Increasing climate variability & impacts
- Increasing prosperity
- Increasing cleanliness, efficiency, cost, convenience

- Charcoal
- Wood
- Crop waste
- Kerosene
- LPG. Gas
- Electricity

African Energy Zone >70% of population
What are the Issues?

Finding adaptation in market systems

- Tittigonia Veridicina
- Charcoal
- Pharmacopeia & alternative medicine
- Logging

Competing market-base activities
Emerging market opportunities for timber & non-timber forest products are stretching forest

- Forests and woodlands account for ~6% of Gross Domestic Product in Africa
- Traditional medicinal plants derived from forests support a US$ 100 million industry in Africa (UNEP 2005)
Response Options......
Forest and climate change...

Addressing mitigation and adaptation in the same framework

- Climate change and Climate variability
- Impacts
- Responses
- Mitigation
- Adaptation

...maintaining and increasing ecosystem C pools and C sequestration - reducing emissions from biosphere

...maintaining and increasing ecosystem resilience - reducing vulnerability
Forest and climate change...

Addressing mitigation and adaptation in the same framework

Vul of FE/FEGS (LULCC)

- Input of DD drivers to MRV
- Dev’t planning & forest manag’t practices
- Mitigation needs adaptation in forestry

REDD design

Forest for adaptation & Adaptation for forest

Addressing mitigation and adaptation in the same framework
Forest as an entry point for adaptation……

• Safety nets & capital base for communities
• Surrounded by indigenous knowledge
• Regenerative ‘green’ resource pool
• Cater for gender interest
• Cuts across multiple livelihood sectors for
  – Household &
  – National development
• Important for bilateral & multilateral co-operations
  – Trans-boundary resource
• Safeguard other ecosystems
  – Soil, watersheds, coastal, arid, Urban etc
<table>
<thead>
<tr>
<th>Category</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gene management</td>
<td>Reassessing conservation and seed banks locations, breeding pest-resistant genotypes, determining adaptability and responses of genotypes will be necessary for the genetic diversity and resilience of tree species to climate change.</td>
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<tr>
<td>Forest protection</td>
<td>Implement forest fire and pest management to reduce disturbance, restore destroyed forest and protect trees against diseases.</td>
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<td>Forest regeneration</td>
<td>Use drought tolerant genotypes, use artificial regeneration and control invasive species.</td>
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<td>Silvicultural management</td>
<td>Selectively remove poorly adapted trees, reduce rotation period, manage forest density, species composition, and forest structure to control the declining and disturbed stands.</td>
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<tr>
<td>Forest operations</td>
<td>Increase logging from disturbed stands, forest carbon management, increase use of woodfuel from forest, and put in place appropriate policies to ease adaptation actions.</td>
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<tr>
<td>Non-timber resources</td>
<td>Minimise habitat fragmentation, conserve wildlife, maintain primary forest and diversity of functional groups.</td>
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</tbody>
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Source: Kalame et al 2009
Using an Ecosystem-based Approach

- Synergies between Adaptation, mitigation & development
- Managing multiple activities
  - Side effects
  - Trade offs
  - Co-benefits
- Balancing multiple interests in
  - Policy
  - Governance
  - Sharing risks
- Co-existence
Finding Synergies

Matching REDD & Adaptation Benefits - Potential example from TroFCCA W. Africa

Prioritization of development sectors for adaptation

**Adaptation Priorities**

- Water (Potable)
- NTFP
  - Food (Human & animal)
  - Medicinal purposes
- Bioenergy

**REDD Contribution**

- Forest Protection
  - watersheds, catchments
  - Streams & river channels
- Forest Conservation
  - Weak compatibility except changes in baseline
  - Biodiversity
- Incompatible
  - (except limited household use included in baseline)
**Conclusion**

- Forest is a **resource base** for adaptation and mitigation yet vulnerable to changes.

- **Ecosystem approach** may be a promising option to deal with FES and CC issues.

- As a forest-base activity, REDD should emphasize **adaptation** through synergies between mitigation & adaptation.

- Stakeholders **participation & prioritization** may support synergies and formulated policies.

- Policies and resources governance should be **flexible** taking into account different scales.
Acknowledgement

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