

Plantation Activities and Ecosystem Conservation: Criteria and Indicators for Biodiversity Conservation¹

Takeshi Toma

Center for International Forestry Research (CIFOR)
P.O. Box 6596 JKPWB, Jakarta 10065, Indonesia

Abstract

The paper is based on CIFOR's research achievements contained in the following two publications, "Fast Wood Forestry: Myths and Realities" by Cossalter and Pye-Smith and "Linking C&I to a Code of Practice for Industrial Tropical Tree Plantations" by Poulsen, Applegate and Raymond. One should consider all aspects of plantation when trying to measure their impacts on biodiversity. The two above-mentioned publications contain key information in this respect.

"Fast Wood Forestry: Myth and Realities" discusses the main points of controversy related to forest plantations and sort out fact from fiction, truth from misinformation. The discussion on the links between fast wood plantations and biodiversity is summarized as follows:

Plantation activities could do much to conserve biodiversity if they abided by a set of guiding principles. Impacts of plantation on biodiversity will be a function of what they replace. If a large swathe of natural forest is cleared to make way for a plantation, there will be a loss of biodiversity. The same applies when a natural savanna ecosystem is replaced by a plantation of alien species. Yet a similar plantation, established on degraded land, might bring about an increase in biodiversity. Other factors of importance include the location of the plantation, its size, length of rotation and species composition. The issue of contiguity is also important. If new plantations are sited close to existing natural forests, they may benefit from their biodiversity: animals, birds and insects will be readily available to invade the new plantations. However, if no such reservoir of biodiversity exists, then the chance of the plantations being invaded by wildlife from outside, and providing a new habitat, becomes more remote. It is worth bearing in mind that generalisations about the impact of plantations on the biodiversity, are often misleading. The problems related to plantations are often site-specific, and the way in which they are planned and managed is of paramount importance.

"Linking C&I to a Code of Practice for Industrial Tropical Tree Plantations" is a useful tool to improve plantation planning and managing. CIFOR's Criteria and Indicators (C&I) for Sustainable Development of Industrial Tropical Tree Plantations provides the benchmark for a plantation owner to assess progress towards sustainable forest management within their forest estate. The Code provides details on principles and minimum standards relating to improved plantation development and establishment. The CIFOR C&I and Code for Industrial Tropical Tree Plantations in relation to biodiversity conservation are formulated as follows:

Criteria

Impact on structure and ecosystem function is minimized

Indicators

Exclusion and Conservation Zones are developed according to Best Practice;
Habitat trees are retained in plantation production areas where appropriate for wildlife;
Endangered flora and fauna on international (CITES) and country lists are protected;
Endangered flora and fauna on local and regional lists are protected.

¹ The views expressed in this article are those of the author, and not necessary of CIFOR.

Code of practice:

Setting aside natural forest reserves within production areas large enough to maintain viable populations of plants and animals particularly where rare or endangered;

Retaining areas of unlogged forest to maintain habitat diversity. These areas should connect patches of forest as corridors which will not be logged;

Retaining habitat trees in production areas where appropriate for wildlife;

Representation of forest types to be adequately reserved in conservation forests.

Keywords

Biodiversity Conservation, Criteria and Indicator, Code of Practice, Plantation

1. Introduction

Afforestation/Reforestation (A/R) CDM projects can contribute biodiversity conservation or at least avoid biodiversity loss, if they properly planned and managed. CIFOR's research achievements on plantation forestry in the tropics are relevant to consider biodiversity and ecosystem conservation in A/R CDM projects. This paper introduces CIFOR's research achievements contained in the following two publications, "Fast Wood Forestry: Myths and Realities" (Cossalter and Pye-Smith, 2003) and "Linking C&I to a Code of Practice for Industrial Tropical Tree Plantations" (Poulsen et al., 2001). Those publications are focusing on industrial tree plantations, however, the insights of those publications will be relevant to afforestation/ reforestation activities of CDM.

This paper, firstly, refers the discussions on the links between short-rotation tree plantations and biodiversity summarized in "Fast Wood Forestry", because the controversy on A/R CDM activities are not far from those on short-rotation tree plantations. Secondly, this paper cites the CIFOR C&I with links to Code of practice for Industrial Tropical Tree Plantations in relation to biodiversity conservation, which may help to plan and to manage A/R CDM activities with reference to biodiversity conservation. Thirdly, the paper mentions concerns on sustainability of plantation projects, which is also important for biodiversity conservation in A/R CDM projects.

2. Controversy on Plantation Development and Biodiversity Conservation

Cossalter and Pye-Smith (2003) discussed the main points of controversy related to fast wood plantations and sorts out fact from fiction, truth from misinformation. The authors examined the arguments on fast-wood plantation both from proponents and opponents. The summary on the controversy on the fast wood plantation and biodiversity conservation are as follows;

Impacts of plantation on biodiversity will be a function of what they replace. If a large swathe of natural forest is cleared to make way for a plantation, there will be a loss of biodiversity. The same applies when a natural savanna ecosystem is replaced by a plantation of alien species. Yet a similar plantation, established on degraded land, might bring about an increase in biodiversity. Other factors of importance include the location of the plantation, its size, length of rotation and species composition.

Cossalter and Pye-Smith (2003) concluded that Plantation activities could do much to conserve biodiversity if they abided by a set of guiding principles. Although they made brief summary of the impact of plantations, they also raised attention that generalizations about the impact of plantations on the biodiversity, are often misleading and the problems related to plantations are often site-specific, and the way in which they are planned and managed is of

paramount importance. Thus to conserve biodiversity through AR-CDM activities, site specific planning and managing way of the projects will be a key.

3. C&I and Code of Practice for Biodiversity Conservation in Tree Plantations

CIFOR's Criteria and Indicator (C&I) and also a Code of Practice will be a tool for improved plantation plan and management. Poulsen et al. (2001) suggested a tool to improve plantation planning and managing as "Linking C&I to a Code of Practice for Industrial Tropical Tree Plantations". CIFOR's C&I for Sustainable Development of Industrial Tropical Tree Plantations provides the benchmark for a plantation owner to assess progress towards sustainable forest management within their forest estate. The Code provides details on principles and minimum standards relating to improved plantation development and establishment.

The CIFOR C&I and Code for Industrial Tropical Tree Plantations in relation to biodiversity conservation are formulated as follows:

Criteria

Impact on structure and ecosystem function is minimized

Indicators

- Exclusion and Conservation Zones are developed according to Best Practice;
- Habitat trees are retained in plantation production areas where appropriate for wildlife;
- Endangered flora and fauna on international (CITES) and country lists are protected;
- Endangered flora and fauna on local and regional lists are protected.

Code of practice

- Setting aside natural forest reserves within production areas large enough to maintain viable populations of plants and animals particularly where rare or endangered;
- Retaining areas of unlogged forest to maintain habitat diversity. These areas should connect patches of forest as corridors which will not be logged;
- Retaining habitat trees in production areas where appropriate for wildlife;
- Representation of forest types to be adequately reserved in conservation forests.

4. To Conserve Biodiversity, Plantation Sustainability Should Be Considered

We should consider all aspects of plantation when trying to measure their impacts on biodiversity.

The C&I noted as follows;

- Environmental concerns are relevant only at the landscape level;;
- Any action or change in land use will have some impact on ecosystem function and performance;
- Sustainable forest management of plantations should minimize the negative impacts on ecosystem functions

The code noted on sustainable forest management as follows;

An integrated approach to forest planning requires consideration of three areas crucial to the implementation of sustainable development. These are:

- Biological, which includes silvicultural and environmental;
- Market, which includes economic and financial;
- Socio-economic includes social issues, legal framework and institutions.

If the requirements of each of these areas are not adequately determined and provided for then sustainable development will not be achieved and the long-term success of any plantation development project is unlikely.

The controversy on above areas in short-rotation tree plantations is also well summarized in Cossalter and Pye-Smith (2003). A brief introduction on Cossalter and Pye-Smith (2003), introduced in CIFOR's Polex list serve is shown as an appendix of this text.

5. Conclusion

A/R CDM projects can contribute biodiversity conservation or at least avoid biodiversity loss, if they properly planned and managed. To ensure the positive effects of A/R CDM projects on biodiversity conservation, planning and managing way at landscape level and sustainability of the projects are to be considered. CIFOR has been conducting researches for sustainable forest management including plantation managements. It is worth visiting to CIFOR web site to get available information and then built on them.

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References

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- Kaimowitz, D. (2003) Will the eucalypts eat your children? POLEX, June 19, 2003, available at <http://www.cifor.cgiar.org/>
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Appendix. Will the eucalypts eat your children? (POLEX, June 19, 2003)

POLEX: CIFOR's Forest Policy Expert Listserver

Fast and effective policy alerts

Few forest-related issues generate more heated disagreement than commercial eucalypt, acacia, pine, and poplar plantations. Proponents argue that fast-growing tree plantations offer a sustainable source of wood to meet the growing global demand for paper and other products. They also claim plantations generate substantial employment, reduce global warming and protect watersheds, and take pressure off natural forests.

Opponents disagree with these claims. They say plantations will dry up water supplies, degrade the soil, and fall victim to pests and diseases. They deny that plantations will help protect natural forests or provide many jobs. In fact, the opponents maintain that companies often

destroy natural forests to grow plantations and displace small farmers and local communities, and they strongly object to calling these plantations “forests”.

The issue is key because fast-growing tree plantations and global demand for paper are both increasing rapidly. There are some ten million hectares of commercial fast-growing tree plantations and the area is increasing by about one million hectares each year. FAO predicts that global paper consumption will be 80% higher in 2010 than it was in 1990.

To sort out fact from fiction about the plantation controversial, CIFOR, WWF, IUCN, and Forest Trends have just published “Fast-Wood Forestry, Myths and Realities” by Christian Cossalter and Charlie Pye Smith. It concludes that fast-growing plantations:

- often but not always replace natural forest;
- only take pressure off natural forest in special circumstances;
- sometimes improve biodiversity in degraded areas;
- use more water than lower vegetation, but that is only a problem in dry areas;
- are not as susceptible to pests and diseases as sometimes argued;
- generally degrade the soil less than commercial agricultural crops;
- can do relatively little to reduce global warming;
- provide fewer jobs than claimed by proponents;
- have frequently been associated with conflicts; and
- should generally not be subsidized with public funds.

The authors are convinced that fast-growing commercial tree plantations are here to stay. The real issue is how to manage them better.

No, eucalypts and acacias are unlikely to eat your children or turn your region into a desert. But there is still a lot that could be done to improve plantations.

To request a free electronic copy of this report in pdf or word format or a hardcopy write Nia Sabarniati at nsabarniati@cgiar.org

To send comments or queries to the authors write Christian Cossalter at ccossalter@cgiar.org

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