CBD

UNEP

CONVENTION ON BIOLOGICAL DIVERSITY

Distr.
GENERAL

UNEP/CBD/AHTEG-BDACC/1/3
4 August 2005

ORIGINAL: ENGLISH

AD HOC TECHNICAL EXPERT GROUP ON
BIODIVERSITY AND ADAPTATION TO
CLIMATE CHANGE
Helsinki, 13-16 September 2005
Item 3.2 of the provisional agenda*

PROPOSED FRAMEWORK: RISK ASSESSMENT AND MANAGEMENT FROM ADAPTATION PROJECTS ON BIODIVERSITY - PRACTICAL GUIDANCE

Note by the Executive Secretary

1. In its third assessment report, the Intergovernmental Panel on Climate Change (IPCC) concentrated on planned adaptation. It was concluded that adaptation has the potential to substantially reduce many of the adverse impacts of climate change and enhance beneficial impacts. Adaptation will become a challenge as the mean climate changes along with the changes in extremes that are projected as part of climate change. Thus action early on is likely to reduce the overall impacts on many natural and human systems. Here, some examples of adaptation activities are presented, the likely impact of these on biodiversity along with the potential risk to biodiversity. Then action is suggested in for risk management. This builds on the information presented in the note by the Executive Secretary on integration of biodiversity considerations in the implementation of adaptation activities to climate change at the local, sub-national, national, sub-regional and international levels **(**UNEP/CBD/AHTEG-BDACC/1/2) and particularly in its section 5.

2. It is commonly accepted that there are synergies between some mitigation and adaptation activities and hence the second part of this guidance presents mitigation activities in a similar form. As emphasized by the Convention on Biological Diversity (technical series no. 10) and IPCC, these actions are likely to be most successful if integrated in national development plansand in an integrated approach addressing the needs of the three Rio Conventions (CBD, UNFCCC, UNCCD), Ramsar Convention, as well as other multilateral agreements. The list included in the proposed framework is illustrative and not exhaustive.

* UNEP/CBD/AHTEG-BDACC/1/1.

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Types of adaptation activities	***Potential impacts on biodiversity***	***Potential risk to biodiversity*** (score of low-medium-high-very high)	***Action for risk management***
Infrastructural development based 1/			
Sea walls	Negative	High-very high if concrete/rock structures Low-medium if using mud walls and vegetation	Include biodiversity terrestrial and coastal/marine) considerations in EIA both on the
Bridges to cross potentially inundated areas due to climate change	Negative	Medium-high depending on the location	Include terrestrial and aquatic biodiversity considerations in EIA
Diversion of freshwater to areas suffering water shortage (dams or irrigation channels) or increased extraction of groundwater supply	Negative or neutral	Medium-high depending on environmental flow, the rate of withdrawal etc	Include terrestrial and aquatic biodiversity considerations in EIA
Buildings on stilt	Negative to neutral	Low if already in urban areas; rate of erosion could decrease	Monitor for likely effects on biodiversity and include adaptive management
Rezoning for urban development or migration			
Rezoning in coastal areas	Negative or positive	High-very high if urbanization of high biodiversity areas; low otherwise	Strategic environmental assessment should consider the impact on biodiversity and zone accordingly; allow for appropriate conservation areas for biodiversity

1/ In general these type of adaptation options would need environmental impact assessments and thus biodiversity considerations should be in the policy/regulatory framework for EIA. In all cases, it is important to include monitoring for impact of the activity on biodiversity if the project is to go ahead.

Migration of people from coastal/marginal lands (e.g. in semi-arid areas)	Negative or positive	Low if moving to urban areas although could place additional pressure on water and energy resources; high if moving to slightly less marginal areas	Educate the urban planners to minimise the exploitation of natural resources; effect of other migration may be hard to manage
Agriculture			
Introduction of drought tolerant varieties	Neutral or negative if extending into marginal lands not cultivated before	Low if the growth period is not extended	
Introduction of salt tolerant varieties	Neutral to negative	High as areas could become more saline and reduce the endemic biodiversity	
Introduction of higher temperature tolerant varieties	Neutral to negative	High if using more water for growth	
Introduction of pest resistant varieties	Neutral to positive	Low if neutral impact on biodiversity if pests not able to non-agrobiodiversity, high if doing so	
Introduction or extending multi-cropping or mixed farming systems Introduction of new crop/animal species	Impacts: positive if there is reduction in chemical use for pest and disease control and/or decrease in erosion due to crop cover all year round	Low –medium if replacing an existing crop without extending the cropland; High-very high if the crop/animal becomes an invasive species	Assess the potential invasiveness risk of the introduced species; minimse the land under intensive agriculture
Low tillage cropping, maintaining cropping residues and reducing fallow periods 2/	Impacts: positive due to possible decreased soil erosion and decreased loss of soil biodiversity	Low	Monitor for the gains in biodiversity or reduction in erosion and potential water use
Changes in timing and type of irrigation and fertiliser use	Positive if introducing water saving (e.g. drip irrigation) in areas that were already irrigated, negative if introducing irrigation	Low	Monitor for the changes and or look at the possibility of introducing the most appropriate irrigation for the crop; for fertiliser; timing of fertiliser application can be important in

2/ can be a LULUCF-based mitigation option too

			minimising the risk to biodiversity
Changes in grazing management[3]	Positive if reducing the intensity of grazing, negative if extending the areas grazed	Low to moderate	Monitor the effects on biodiversity
Abandonment of agriculture	Positive if native/endemic species colonise old fields; negative if old fields colonised by non-native and/or invasive species	Low to moderate	Management of the abandoned land is necessary to provide maximum benefits to biodiversity
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Forest management			
Natural forest regeneration, sustainable forest management[4] and avoided deforestation	Positive, if natural forest regeneration occurs and sustainable forest management harvesting practices are applied	Low	Monitoring to assess the gains for biodiversity
Conservation and sustainable use measures			
Corridors		Low-medium if allowing migration of invasive species	Monitor the migration of plant and animal species in the corridors and the connected cells of the landscapes and manage invasive species when detected
Wider landscape management		Low-very low as aimed to benefit biodiversity	Monitoring would still be necessary to ensure that the goals are being met Need to consider and if necessary enact policies to deal with land tenure issues and compensation for reduction in intensity of farming practices

3/ can be a mitigation option

[4] some annex 1 parties can declare this as an activity under the Kyoto protocol

Practices that are essentially seen as land use land cover change mitigation options under the Kyoto Protocol

Forestry – afforestation, reforestation

The risks to biodiversity can be low to moderate and thus environmental impact assessment for projects should aim to minimise the impacts

Impacts are likely to be positive:

- if afforestation and reforestation activities are included and:
- if natural regeneration is encouraged and native species are used
- if clearing of existing vegetation is minimized
- if multi-species stands are encouraged
- if plantings are done to create diverse landscape units
- if fragmentation of habitats is reduced
- if rotation lengths are extended
- if low-impact harvesting methods are used
- if there is reduced flooding, decreased soil erosion of the watershed, decreased fluctuations in seasonal flows, increased productivity of aquatic biota due to improved water quality.
- if there is decreased soil erosion, and decreased pressures on adjoining land

Impacts are likely negative:

- if activities occur on areas where undisturbed or non-intensively managed ecosystems are destroyed
- if monocultures and/or of exotic species are used
- if sites with special significance for the *in situ* conservation of agrobiodiversity are afforested
- if there is large-scale soil disturbance (could lose soil flora/fauna and increase the risk of establishment of invasive species)
- if chemicals are used
