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RESEARCH ARTICLE

Biodiversity offsets: An inclusive approach for biodiversity impact assessment.

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Abstract

Biodiversity offsets have emerged as a useful planning tool to manage development and to restoring biodiversity as a means to address the impacts of our expanding footprint. Biodiversity offsets are environmentally beneficial activities undertaken to counterbalance an adverse environmental impact to achieve not net environmental loss or a net environmental benefit. The inclusion of offset in the generic environmental impact assessment process represents a possible scenario for visualization of conservation actions to be explored and recommended in the mitigation measures. Biodiversity offsets address to translate biodiversity into societal value (ecological, social and economic) including conservation banking, biodiversity credits and ensure the perpetuity of healthy and productive ecosystems.

INTRODUCTION

Biodiversity and development are the conflicting goals with complementary objectives so there is a threat from many factors, such as globalization, extraction of natural resources, poverty, and human migration to pristine areas which is eroding biological diversity (Wilcove etal., 1998: Miller etal., 1992).As the pressure is mounting to ensure the compatibility between economic development and conservation of world biodiversity, biodiversity impact assessment as a national instrument(Sadler, 1993) for mainstreaming environmental sustainability in decision making on policies, plan and programmes. The relevance of offsets as conservation actions at regional and national level is being increasing realized to help reduce the current rate of biodiversity loss at global level with an objective to benefit all life on earth as proposed by conference on convention on biodiversity (CBD 2002).In convention on biological diversity article 8, 9 and 14 emphasize on biodiversity-inclusive impact assessment together with green development mechanism.

Biodiversity offset as an instrument: No net loss or net biodiversity gain as mitigation of negative impact on biodiversity is the best practice and benchmark for impact assessment (Slootweg etal. 2006). The biodiversity offset approaches, including conservation banking, develop tradable rights, biodiversity credits, and reputational benefit for nature and virtually represent the last line defense for the natural ecosystem. The activities intended to help counterbalance the environmental impacts with aim of achieving no environmental loss considered by restoration of biodiversity corridors, rehabilitation and sequestration along with secondary offsets like buffering monitoring, removal of threat and research activities. The process of integrating biodiversity in impact assessment offers an adequate ground to stimulate biodiversity offsets as mainstreaming instrument, the inclusion of biodiversity offset in generic environmental impact assessment process represents for conservation actions and explored the mitigation measures which includes avoidance, minimization, rectification reduction and compensation.

Conservation action for biodiversity offsets (i) establishing habitat network which attributes in management of biological corridors and maximize opportunities for biodiversity. The initiatives of encouraging biodiversity by

design became important strategy to offset impacts of species isolation, mortality and habitat fragmentation (TCPA,2004).(ii) up gradation and conservation enhancement activities of protected areas and ecosystem (iii) demarking sites of conservation importance,(iv) removal of threats like habitat fragmentation, introduction of exotic species, pollution and climate change challenges.(v)building partnership with private and public sectors (vi) to address causes of biodiversity loss and biodiversity-related sustenance needs for local communities(Eaton,1985).

Marketization of biodiversity offsets: The economic instrumentation have enormous scope for restoration of biodiversity and conservation of biodiversity(Tietenburg and Johnstone,2004)by economic instruments like(i)taxes, fees and charges on basis of polluter pay principle by charging those who cause environmental damage (ii)subsidies, grants and funds are market based instruments which help to establish a direct link between economic incentives and conservation measures (iii)conservation fund to offset impacts on biodiversity (iv)intellectual property rights including ownership, conservation easements and communal property rights (Gunningham and Young, 2002).(v)payments for environmental services including tangible and intangible costs.(vi) biodiversity credits are as a tradable to counterbalance harm to habitat and environment.(vii) creating market for biodiversity conservation including sustainable forestry.

Framework for implementing biodiversity offsets. There is no generic framework for using offsets for conservation the extensive literature on offsets (Anonymous,2002; Ten Kate etal.,2004; Mckenny,2005); these literature associated with approaches like onsite and offsite options for conservation and mechanism for offsets. It includes that the size of offsets to impact ratio should be larger than1:1 and must also recognize the dynamism of ecosystems, their complexity and uniqueness. Offsets should follow the principle of like for like or better and therefore must result in a net conservation benefit and impacts should be quantifiable. Offsets should follow the mitigation hierarchy and indigenous sensitivity.

Challenges for biodiversity offsets; There are several challenges includes (i) nature of offsets (ii) identify conservation strategies (iii) economic limitation (iv) timing of offsets (v) barriers for offsets (vi)promises of compensating biodiversity losses for decision makers by bigger and richer offsets may become permitted for trash environmental impact assessment reports and may even become precedence for overselling of untested offsets.
The inclusion of biodiversity in frame work of environmental impact assessment it considers social as well as biophysical mechanism and comprehensive in sense that it can applied to any imaginable impact, including those on biodiversity. It provides an integration framework for impact assessment like environment, health, strategic as an instrument. In the biodiversity arena similar approach defined by CBD2006, in which communication and translation the biodiversity concept into societal values with salience, credibility and legitimacy (Cash etal 2003).
Barrier to incorporation of biodiversity in environmental impact assessment includes lack of full treatment of biodiversity knowledge information and management system BKIMS (Dular,A.K 2011),limited with attention on positive planning of biodiversity, the biodiversity impact assessment is confined to local scale which do not allowed prediction, and incompatibility of timelines for impact assessment with seasonality for biodiversity survey.

Conclusion

Biodiversity offsets in impact assessment is tool to harvesting as well as harnessing of biodiversity resources and valuation in term of ecological, social and economic are strongly recommended.
Inclusion of biodiversity offsets in impact assessment is essential for avoid irreversible losses of biodiversity, to seek alternative solution to minimize biodiversity losses and ahead with positive planning for biodiversity.
To seek sustainable use and equitable sharing of biodiversity incorporation of biodiversity offsets in impact assessment provides essential life support system.
Introduction of biodiversity impact assessment under lens of article 14(b) of CBD, 1992 provides guidelines and recommendations
Adoption of biodiversity offsets concept in impact assessment reveals that intrinsic value of biodiversity attributed not only ecosystem services but also the human interest, which leads balance and integration of conservation and use of biological diversity.
The aspect of biodiversity impact assessment focus on impacts with their composition structure/ pattern, and key processes at different level of biodiversity which are basic criteria for scoping of biodiversity.

Screening criteria for biodiversity must incorporate legal, biodiversity screening maps, drives to change the biodiversity, or biodiversity restoration alternatives.

Evaluate the impact assessment biodiversity in vision of plan, policies and strategies by using biodiversity indicators (Dular,A.K 2014) and biophysical factors.

Biodiversity impact assessment emphasize on connectivity rather than fragmentation which is major cause of biodiversity losses. It also provides complementary as well conflicting goals objectives.

Not least but last to emphasize, organize, interlink and synthesize information for meaningful output and exhaustive understanding of linkage between biodiversity human and well being also and associated with millennium development goals and human security

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