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Linking ecosystem services to strategic environmental assessment in development policies

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ABSTRACT

This paper first, introduces the concept of mainstreaming ecosystem services by showing its relevance for development planning. Second, it presents the role and importance of strategic environmental assessment in designing and implementation of development policy. Third, the paper sets-out the concept of economic valuation of ecosystem services by discussing what it means and what is at stake if valuation of ecosystem services is ignored in the process of development policy making. The methods of capturing economic contribution of ecosystem services at policy level are discussed with examples in the paper.

The main focus of this paper is how ecosystem services can be used in policy scale environmental impact assessment. The paper argues that ecosystem services can be an appropriate indicator to weight developmental policies, programs and plans to ensure the consideration of environmental balancing at the policy level. The paper suggests that the roles of ecosystem services in macroeconomic policies including ecosystem accounting, poverty alleviation and employment generation can be used to link environmental policies and SEA with development policies for a successful impact assessment at policy and program levels. By building upon the various contemporary initiatives within UNEP and outside, the paper in its synthesis section, flags-up necessary knowledge gaps, challenges and lessons learned in integrating values of ecosystem services in strategic environmental assessments.

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1. Introduction

Ecosystem services, which are benefits humans obtain from various ecosystems, have been degraded over the past years. This problem, unless addressed, will substantially diminish the benefits that future generations obtain from ecosystems, posing a barrier to achieving the Millennium Development Goals (MA, 2005a, 2005b). Although a range of stakeholders are affected by the degradation of ecosystem services, this relationship is not fully captured in development planning processes. The effectiveness of the management of ecosystem services depends on knowledge of both physical and social sciences. For developing effective measures, decision-makers should understand how ecosystems function, how humans benefit from the services provided by ecosystems, how human activities impact the state of ecosystem services, and how human activities could be most effectively influenced through policy interventions. This requires the support of scientific research, knowledge and information, which should be reflected in decision-making processes at multiple scales. Furthermore, a wide array of policy instruments is required for influencing the behavior of diverse stakeholders.

In this context, this paper discusses that the concept of ecosystem services needs to be reflected in the Strategic Environmental Assessment (SEA), which could effectively link the development planning and environment, particularly through the application of valuation of ecosystem services that clarifies the costs and benefits of development policies, plans and programs to different stakeholders. Further, the paper highlights that in order to integrate ecological concerns into SEAs, a macroeconomic perspective would be helpful as it acknowledges the interdependence of the sectors of the economy. In this regard, ecosystem accounting is discussed as a useful tool in highlighting this interdependence. Finally, some key lessons learned in mainstreaming of ecosystem services in a SEA context are discussed.

2. SEA in development policy-making practice

The SEA is defined as a formal and systematic process of assessment addressing the environmental effects of policies, plans and programs (Abaza et al., 2004). The SEA has been used both by developed and developing countries as an environmental assessment tool. Additionally, SEA-type assessment tools have been used by multilateral and bilateral development agencies (Dalal-Clayton and Sadler, 2005).

Environmental Impact Assessment (EIA) has been used as an environmental management tool in project implementation since 70s (Birnir et al., 2002). Some limitations of a project-specific EIA have led to the development of a new assessment tool, SEA, which is being

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used at the upstream levels of policy-making. The SEA extends the assessment of environmental impacts from project level to the levels of policies, programs and plans, which provide the framework for development projects (Hirji and Davis, 2009).

EIAs and SEAs have been globally accepted as tools for mainstreaming environmental goals. Countries in the East and Southeast Asia have introduced relatively well established EIA systems, which include the legal and administrative framework. EIAs in Hong Kong, China, and Vietnam include SEAs, whereas EIAs in the other countries remain as project-based. Korea has a planning-based type SEA system and Japan incorporates the SEA at the local level. Main limitations for EIAs across the region include weak enforcement of their recommendations, leading to the situation where short-term economic benefits override environmental concerns. Late implementation of EIAs is also an issue, leading to the situation where the recommendations of assessments cannot be acted upon (Dusik and Xie, 2009).

In Africa, based on a review of EIAs covering 23 African countries, it was found that 18 countries have legislations relevant to the EIA. Among these 18 countries, Ghana, Tunisia, Benin, Egypt, Algeria, Uganda and South Africa have functional and relatively robust EIA systems. Only Ethiopia and Kenya have a legal framework for the SEA (ECA, 2005). In Latin America, EIA tools have been officially introduced in Brazil, Colombia, Cuba, Ecuador, Honduras and Mexico (Coze and Nava, 2009). In Europe, a newly developed legislation in EU Environment Acquis plays an important role in promoting member countries to take a holistic approach by integrating ecosystem-based assessments into their SEAs (Apitz et al., 2006).

2.1. Role and importance of SEA in development policy-making

By design, SEA schemes are expected to contribute to the systematic and structured consideration of environment in development planning processes at the upstream of policy-making. They are also expected to ensure transparent, participatory and harmonized planning and decision-making processes, as they provide a structured approach for consultations, which is considered crucial in effective communication and stakeholder engagements (Fitzpatrick, 2006; Theophilou et al., 2010).

In the development of the Kenya Education Support Program (KESPP), the Government of Kenya undertook the SEA before initiating the Program. The SEA assessed the potential impacts of the program on social and environmental issues, and developed recommendations on how to mitigate these potential impacts in the design and implementation phases of the program. The recommendations of the SEA influenced the design of the program at an early stage, strengthened the environmental and social sustainability of the program and also improved donor co-ordination by avoiding duplication of efforts, as well as coordinating aims and priorities of multiple donor agencies (DFID/ERM, 2005).

In another SEA-type assessment, which focused on environmental impacts of a regional investment scheme to protect communities occupying the flood plains of Paraguay, Panama and Uruguay, it was found that many ecosystems and human activities depend to a great extent on the periodic floods. The findings of the report had a direct impact on the project design, leading to modifications to the investments portfolio, to ensure that flooding would continue, while ensuring that it would not give negative impacts on human well-being and economic infrastructure (Kjorven et al., 2002).

Although in theory, an overlap of the EIA and SEA processes is unlikely to occur, practitioners have reported that overlaps have occurred in most cases (Sheate et al., 2005). Furthermore, some of other challenges reported in the implementation of SEA schemes include: determination of the scope of SEAs and their reports; identification of the correct scale of data and the level of detail of the assessment; definition of reasonable alternatives; and lack of effective monitoring processes.

As mentioned earlier, SEAs and SEA-type assessments have been carried out in different parts of the world, which aim to ensure that

potential environmental effects of policies, plans and programs are taken into account during their preparatory stage, with a consistent framework for the inclusion of relevant environmental information into decision-making processes (EC, 2001). Although improvements in the policy and program planning processes have been reported in some countries after the implementation of SEA schemes, in general, SEAs have not changed major goals or the financial allocation across different policy or programmatic areas (Sheate et al., 2001). Therefore, innovative tools need to be developed to be used as an integral part of SEAs in order to recognize and address the value of environmental capital, which is still treated as free and inexhaustible. Furthermore, SEAs should be an integral part of the policy, plan and program development processes, rather than being a separate exercise. Particular attention has to be given to clarifying trade-offs among multiple ecosystem services, and presenting this information to the decision-maker, as part of SEA processes (Croal et al., 2010).

2.2. Integrating ecosystem services in SEA process

In most cases, SEAs have not provided an effective mechanism where the economic implications of environmental impacts and their distributions to different stakeholders are clarified and communicated to policy-makers. The SEA processes are usually limited with reporting on environment impacts only. Besides the environmental impacts, policy-makers are typically interested in understanding the economic implications of those environmental impacts, and how they are likely to affect different stakeholders, such as different economic sectors, income groups and social classes. Some policies and programs, which are intended to ultimately improve people's well-being, are often developed based on untested assumptions, without clear evidences on the potential environmental impacts and their implications on human well-being. Therefore, an innovative approach for SEAs is required where the latest scientific knowledge and information is utilized in clarifying the potential impacts of development planning processes on the state of ecosystems and their services (Carpenter et al., 2009).

The world's ecosystems are capital assets, which, if properly managed, yield a flow of vital services, including various goods (such as food and timber), life support processes (such as pollination and water purification), and life-fulfilling conditions (such as beauty and serenity) (Daily et al., 2000). As shown in Fig. 1, ecosystem services can be an appropriate indicator to weight impacts of developmental policies, programs and plans on the state of environment, which is the basis for providing natural capital. Using ecosystem services as an indicator could help ensuring that appropriate considerations are given to the implications of environmental impacts, when introducing new development policies, plans and programs. In order to facilitate this process, various ecosystem service-based tools, such as valuation and accounting for ecosystem services, can be utilized.

In practice, policy-making processes still lack critical steps to incorporate natural capital into resource- and land-use decisions on a large scale (Daily et al., 2009). Recently, various initiatives like UNEP's Project for Ecosystem Services (Proecoserv) try to mainstream ecosystem services into development policy. In this regard, some attributes of the ecosystem service assessments, such as scenario-based analysis and strong linkages with human well-being, could be instrumental and integrated into SEAs (Geneletti, 2011). Furthermore, integration of ecosystem services into SEA processes could be facilitated through the application of ecosystem accounting and economic valuation of ecosystem services (von Haaren and Albert, 2011). Moreover, SEA's legal basis can be a critical catalyzer to formally mainstream ecosystem services into decisions at the strategic level (Geneletti, 2011).

SEAs that incorporate the concept of ecosystem services may enable policy-makers to understand not only the environmental impacts of development policies but also the dependence of countries' development on the services provided by ecosystems (see Table 3 in Geneletti, 2011). The achievement of various development goals such as those related to

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