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Ecosystem services link the biophysical environment to people's needs. Their incorporation into Strategic Environmental Assessment is critical for effective spatial planning.



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**FASTIPS**

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## **Ecosystem Services in SEA for Spatial Planning**

Ecosystem Services (ES) are the benefits people and businesses obtain from the environment, in terms of goods and services, for present and future societies. Land/seascapes provide bundled ecosystem services that underpin human development (production, regulation and cultural services, see examples in box). Simultaneously, supporting services guarantee the functioning of ecosystems so they can keep on providing their benefits to humans in the future. Spatial planning deals with competing demands for limited space and resources and aims at optimising their use. SEA is a systematic decision support process to mainstream environmental considerations into policies, plans and programs. Incorporating ecosystem services in SEA helps inform spatial planning on regional development opportunities and constraints and set sustainability boundaries.

Using ES in SEA enables (i) a description of the environment in understandable language (i.e., human values); (ii) a holistic framework to describe linkages between people and their environment beyond silo- and sector based approaches; (iii) a means to cross boundaries between sectors and actors (i.e., planners, stakeholders and decision makers); (iv) identifying relevant geographic scales for negotiating trade-offs, while maintaining the integrity of ecological systems and processes.

The ES concept contributes to sustainable resource management. However, spatial planning is often guided by short-term economic and political motives. SEA will make clear the consequences of plans on (i) sustainability, (ii) winners and losers, and (iii) the transfer of problems to other areas or towards the future, which in turn leads to consideration of alternatives and mitigation measures. Scientific and spatial knowledge, in combination with often underused (and undervalued) local knowledge, usually provides sufficient information to set criteria for sustainability and to compare alternative plans.

#### **EXAMPLES OF ECOSYSTEM SERVICES:**

**Production:** Harvestable products such as food for people, fodder for cattle; wood for energy and construction; water for irrigation or public water supply; medicinal herbs...

**Regulation:** Coastal protection by mangroves or dunes; erosion control by vegetation; water storage, flood protection and water purification in wetlands; decomposition of organic material to maintain soil productivity; carbon sequestration...

**Cultural:** Non-material benefits such as religious sites; opportunities for tourism, recreation, scientific research...

**Supporting:** Maintenance of 'system earth' and the provision of the above services, through soil formation, evolutionary processes, climate regulation, maintaining resilience against shocks...

#### **FURTHER READING:**

Ecosystem services: Millennium Ecosystem Assessment ([www.unep.org/maweb](http://www.unep.org/maweb))  
Impact assessment: IAIA Resources ([www.iaia.org/publications.php](http://www.iaia.org/publications.php))

## FIVE IMPORTANT THINGS TO KNOW

- 1. ES support pro-active use of SEA.** A description of the environment in terms of ES reflects on opportunities (e.g. non-exploited ES such as underground water reservoirs; potential for tourism or hydropower) as well as constraints for development (e.g. already overexploited ES, such as overgrazed rangeland, dwindling water resources or over-exploited fish stocks). It pro-actively informs the planning process on the room for development within boundaries of sustainability and on the resilience to deal with future changes. Such pro-active use of ES in SEA for plans contributes to a positive planning approach and contrasts to the classical re-active Environmental Impact Assessment at project level.
- 2. Ownership and ecosystem conservation.** An ES approach highlights ecosystem benefits for groups of stakeholders, who may find in it a sense of ownership and a reason for biodiversity conservation. As formal management responsibility may fall with others (e.g. authorities) an ES approach enables negotiation on sharing of benefits and management responsibilities between ecosystem beneficiaries, stakeholders with opposing (or external) interests and resource managers at a relevant scale. This reduces conflicts of interest and leads to a consensus-based approach to conservation and sustainable use.
- 3. Relevance for decision making.** Information on ES is relevant for decision making when (i) ES are well-described using available scientific and local knowledge (credibility), (ii) participatory ES assessment represents stakeholder concerns in a procedurally fair manner (legitimacy), and (iii) ES information is linked to the broader policy context (relevance).
- 4. It's not always about money.** Decision makers use a wide array of non-monetary ES values, such as standards for health/ water/noise/air, sense of place, cultural values, conservation targets, safety considerations, or job opportunities. Non-monetary values of ES may often be more meaningful for stakeholders than their monetary value. What matters is how changes in ES affect present and future human well-being.
- 5. Scale matters.** A plan focuses on a geographically-bounded region. ES are supplied and used at different spatial scales, potentially much broader than the planning area. A proper analysis of spatial issues highlights situations where, for example, ES benefits accrue in one location (e.g. hydro-power dam site) while costs are borne somewhere else (all downstream water users).

## FIVE IMPORTANT THINGS TO DO

- 1. Keep it simple.** Qualitative (larger/smaller than...), or semi-quantitative approaches (a 5 point scale ranging from ++ to --) to quantify or value ES save time and allow non-specialist stakeholders to actively engage and contribute information. Even when not fully quantified, such information can be sufficient to compare plan alternatives. While less credible for scientists, such simple methods may significantly enhance the social legitimacy and relevance of the information for decision-making.
- 2. Stakeholder and expert input.** ES are linked to private and public stakeholders across many spatial scales; involving them in the early and ongoing planning process leads to ownership and responsibility for the outcomes. ES values can differ widely for stakeholders – recognition of winners and losers in a plan is essential. Apart from stakeholder input, expert input remains a necessity to guarantee that all ES are recognised, all stakeholders engaged and stakeholder views verified with appropriate and robust methodologies.
- 3. Make use of regulatory frameworks.** While 'bottom-up' participatory approaches tend to improve sense of ownership, 'top-down' regulatory frameworks on ES can provide necessary mandates and boundary conditions to guide a successful planning process. Bottom-up involvement from ES stakeholders can improve effective implementation of underutilised, but principally good top-down regulations. Globally working services are very often overlooked unless they are addressed in global agreements (e.g. climate regulation).
- 4. Avoid tipping points.** Resilience of ecosystems, i.e., their ability to bounce back after shocks, is related to the diversity, structure and functions of the ecosystem. Change in these characteristics may push an ecosystem beyond a tipping point into another, undesirable stable state. In SEA, resilience assessment based on historic evidence and future projections can assess whether an ecosystem is moving towards such a threshold of undesirable change.
- 5. Effective framing of ecosystem services.** Standard ES terminology may lead to prejudice or a defensive response. The language needs to be adapted to the cultural context. For example, the terms 'landscape values', 'system services' or 'natural capital' may provide different wording to express the same concept. People's values can also be used to frame ES in a cultural context (e.g., continuous flow of the Ganges river guarantees the spiritual lifeline for hundreds of millions in India).

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