



The application of Strategic Environmental Assessment to sustainability assessment of infrastructure development

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Abstract

This paper addresses the need for an environmental assessment of policies, plans, and programmes (Strategic Environmental Assessment—SEA). It presents the concept and procedures of the art in SEA, and focuses on its application to sustainability assessment of infrastructure development. A specific case in Spain is described: the planning of ring and radial motorway approaches to Madrid. © 2000 Elsevier Science Inc. All rights reserved.

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1. Introduction: The need for an environmental assessment of policies, plans, and programmes

Environmental Impact Assessment (EIA) of projects is today extended all over the world. However, as EIAs constitute preventive instruments, their efficiency increases when applied at higher levels of the decision-making process and used from more global approaches. Therefore, the environmental assessment should be extended to earlier stages of the policy-making and planning process, when the strategic decisions (such as location or type of project) have not been made yet. The Strategic Environmental

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Assessment (SEA) is the term used to describe the environmental assessment process for policies, plans, and programmes (PPPs) [2].

Moreover, individual projects have not only economic but also environmental, social, and political *impacts* that can be acceptable when considering an isolated project, but unacceptable when taking into account both the direct and indirect effects of projects, policies, and programmes acting in synergy. SEA provides the framework for the articulation of individual projects in a way that is coherent and respectful with the environmental, social, political, and economic conditions.

SEA contributes to a better planning and monitoring process and is a potential tool for *decision making*, as its more integrated assessment procedures improve the coordination between different impact assessments. SEAs should enable foresight and assist policy makers to design projects that maximize environmental, functional, economical, social, and political goals.

2. Concept of SEA and its contribution towards sustainability

Strategic Environmental Assessment [7] is a systematic, on-going process for evaluating, at the earliest appropriate stage of publicly accountable decision making, the environmental quality and consequences of alternative visions and development intentions incorporated in policy, planning, or program initiatives, ensuring full integration of relevant biophysical, economic, social, and political considerations.

Actually, speaking of SEA is pretty vague, as the Environmental Assessment (EA) of plans is different from the EA of programmes, and both of them differ from the EA of policies, for the time being not considered by the European Union legislation.

SEA constitutes a potential tool for the articulation of individual projects into complementary design, implementation, and management to meet the idealistic goal of *development*, which improves social, quality of life, and environmental conditions in the present without compromising those in the future. SEAs increase the possibility of analyzing and proposing alternative solutions and incorporating sustainability criteria throughout the planning process, as they carry the principles of *sustainability* down from policies to individual projects.

The contribution of SEA towards sustainability stems from several points: (1) SEA ensures the consideration of environmental issues from the beginning of the decision-making process; (2) provides a framework for the chain of actions; (3) contributes to integrated policy making, planning, and programming; and (4) can detect potential environmental impacts at an early stage, even before the projects are designed.

At the level of planning, programming, and policy design, many decisions are taken. By developing SEAs, these decisions can be integrated into a

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