

Fully considering the care of the natural environment at the road project concept stage

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1. Background and Purpose

Under the recently revised Environmental Impact Assessment Law (refer to, Topics: “Proposed Amendment of Environmental Assessment Law and Response to the SEA (Strategic Environmental Assessment)” for an outline of the revision proposal), the Strategic Environmental Assessment (below, “SEA”) which considers care for the environment from the earliest stage before the project begins, is stipulated. SEA was established in response to the insistence that it was needed to prevent loss of the natural environment, and in response to its codification, early concern for the natural environment may attract attention in the future.

From the practical perspective, presumably, there will many restrictions on the study of ways to care for the environment, because it is predicted that at the stage where the location and scale etc. of a project to which SEA will be applied (below, “concept stage”) is decided, the project plan will still be in preliminary form, and information concerning the local natural environment will be limited.

This research is intended to establish methods of effectively and efficiently caring for the natural environment at the road project concept stage.

2. Conservation effectiveness according to differences in route and road structure

—For future discussion which must be considered at the road project concept stage—

Road projects, as shown by *Eco-roads*¹⁾ for example, have included bridges, tunnels, and other structures, and initiatives to install facilities allowing animals to cross roads, in order to select routes which are in harmony and compatible with nature and to minimize change to the topography and vegetation. These often permit concrete studies at the stage where road structures are designed. To apply SEA, it is necessary to not only simply speed up the study period, but to also clarify the study range, conduct surveys according to the study stage, and search for effective ways to care for the environment.

In 2010, which was the first year of the project, to

prepare for future discussion of “items which must be considered at the concept stage”, we conducted a basic case study of the relationship between the effectiveness of conserving the environment and construction costs according to differences in route location and road structures. Five proposals for the road studied were hypothesized (Fig. 1), and existing documents were used to classify the degree to which each one would change vegetation and divide routes traveled by animals. The results have shown that the impact of each would vary according to differences in the location of route several hundred meters in length and selection of the road structure (Table 1), and suggested that it is possible to obtain various measures to care for environment.

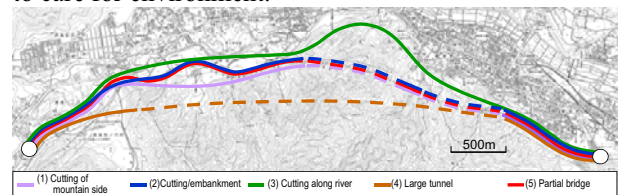


Figure 1. Hypothetical Proposals

Table 1. Conservation Effects of each Proposal and Construction Cost

	(1) Cutting of mountain side	(2) Cutting/embankment	(3) Cutting along river	(4) Large tunnel	(5) Partial bridge
Degree of alteration of existing vegetation	△	○	×	⊗	⊙
Degree of change of growth of valuable species and their habitat environments	△	○	×	⊗	○
Degree of division of routes traveled by animals	○	△	×	⊗	⊙
Construction cost (rough calculation)	×	○	⊙	×	△

Note) ⊙, ○, △, × beginning with smallest degree of impact and construction costs.

3. Contents of future studies

The following studies are planned in response to the amendment of the law and trends in later discussions of the amendment of related cabinet orders and ministerial orders.

(1) Clarification of the range of studies under SEA based on past cases

Past cases considering environment are analyzed to classify effective ways to care for environment which should be studied according to the stage of the project.

(2) Collecting information about the natural environment and studying the evaluation method

Effectively implementing SEA depends to a great extent on the quantity and quality of information concerning the natural environment of a region. Survey and research on animals and plants and the advance of IT are accompanied by the provision of various kinds of information, so methods of using SEA in a road project and methods of evaluating conservation effects are studied.

[Reference]

1) A. Kameyama: Eco-roads —creating roads kind to life—, Soft Science, 1997