

Initial steps in the design of compensation measures for habitat and landscape effects of road construction

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Although environmental impacts caused by road construction may be reduced or rectified, some unavoidable residual damage persists. In order to improve sustainability, it is necessary to carry out some compensation measures. Different kinds of impacts require different kinds of compensatory measures. We can make a general classification of road impacts attending to three criteria: local/global effects, visual/not visual impact associated, measurable/not easy to measure. Thus, four main kinds of impacts can be distinguished: (1) habitat deterioration, *e.g.* noise level rise (local, not visual, measurable); (2) greenhouse emissions increase (global, not visual, measurable); (3) habitat loss (local, visual, measurable); (4) fragmentation (not only local, visual, not easy to measure). Regarding the way of carrying out the measures, we can distinguish four kinds of compensation: establishment (creation), restoration, enhancement, and preservation (US EPA, 2010). The following rules apply to in-kind compensation (using 'in-kind' as in Rundcrantz and Skärbäck, 2003). Then, the best kind of compensation for each type of impact may be: (1) in-site enhancement compensation (to raise the global quality of the affected habitat); (2) in-site or off-site measures (it makes no difference since effects have a global reach), consisting of either restoration, creation or enhancement (to increase the 'gas-drain' surface); (3) off-site restoration or creation (looking for a net gain of acres); (4) in-site establishment or restoration (focusing on re-connecting populations and landscape units). Here we present a series of tips to enhance the design of compensation measures. Among the studied scenarios, fragmentation may be the most difficult kind of impact to be compensated. Successful results may depend many times on the target species behaviour. Besides, in high-road-density zones it would be difficult to find an adequate place to execute the compensatory measures.

References:

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