
Towards "no net loss" of biodiversity in urban development: adapting the mitigation hierarchy to a territorial scale

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Abstract

Human activities, in particular urban spread, are a major cause of biodiversity erosion. In this context, the mitigation hierarchy of avoidance, reduction and offsetting impacts made by development projects has become an international regulatory tool whose aim is to achieve a "no net loss" of biodiversity. However, the efficiency of this tool has been increasingly questioned, in particular the ecological efficiency of the offset step.

In this study, we analyse how biodiversity is concretely included within the whole mitigation hierarchy with a multi-scale approach. To do so, we combine two complementary approaches: a quantitative analysis of biodiversity integration into the environmental impact assessment of small-scale, multiple development projects and a qualitative analysis of stakeholders' organisation and interactions through project development. Despite significant policy-related improvements at the project scale, ruptures in ecological connectivity and cumulative impacts on biodiversity are not correctly identified in environmental impact assessment. In addition, the avoidance step is totally neglected. The analysis of stakeholder interactions illustrates how biodiversity is streamlined by stakeholders and how interests, negotiations and power relationships can make the inclusion of biodiversity in project development difficult. At the "project scale", procedures lack flexibility concerning the localisation and opportunity of a project, indicative of why avoidance is not correctly implemented.

Upscaling the implementation of the mitigation hierarchy towards a territorial and strategic approach to biodiversity conservation at a "land-use planning scale" could help fill the current gaps associated with a project-by-project approach. In this perspective, we propose an anticipation framework for the mitigation hierarchy to set ecological priorities for avoidance and identify ecological similarities for offsetting in order to potentially reach "no net loss" objectives.

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