



11. HABITAT & LANDSCAPE PROTECTION

Policy summary

The presence of linear, ground transport infrastructures always impacts the environment with fragmentation, causing habitat loss and disturbance (e.g. from noise, chemical pollution, etc.) and forming a barrier to the movement and dispersal of many species. Furthermore, traffic associated with the infrastructure causes an increase in the mortality risk for fauna, which adds to the fragmentation effect. For these reasons, fragmentation of landscapes and habitats is a major cause of the impoverishment of biodiversity. Measures to counteract these problems refers first of all to a proper infrastructure project, permitting to choose the most appropriate route and design; second, it is necessary to minimize any residual impacts of the project through landscape bridges, fauna underpasses and overpasses, culverts and pipes for aquatic species, and several measures for reducing wildlife mortality; finally, compensatory measures have to be adopted, creating, restoring or enhancing habitats to compensate for any outstanding losses.



SWOT Analysis

Strengths

- Reduction of defragmentation caused by linear infrastructures
- Preserve biodiversity
- Reduction of animal deaths and of accidents caused by animals
- Multidisciplinary approach

Weaknesses

- Expensive local studies with biologists and stakeholders to define animal paths
- A combination of different kinds of passages targeting different species is necessary
- Complex monitoring of results
- Long-term policy
- Those measures against habitat fragmentation increase the cost of construction and maintenance of the infrastructure
- No direct financial returns
- Reduction of social costs of accidents hard to define
- Lack of public knowledge, promotion and support for this type of infrastructures

Opportunities

- Large linear infrastructures in sensitive areas
- It's a way to promote government policies on sustainable development by integrating social, environmental and economic aspects of development
- Potential to support nature tourism/outdoor recreation
- Transferability: definition of a standard defragmentation measures applicable depending on species (overpasses, underpasses, characteristics, plant...) also in different contexts

Threats

- Public acceptance
- Possible lack of support from planners and policy makers, focused on retaining traditional approaches to the management of biodiversity and spatial planning
- Potential contrasts from certain key stakeholders (e.g. farmers, landowners...)

Policy topic

- Air pollution or GH gas
- **Land-use/urban planning/landscape**
- Traffic noise
- Congestion
- Traditional fiscal instruments
- Accidents, transport safety
- Public transport subsidies/support
- **Infrastructure investment**
- Users' behaviour

Level of application

- **National**
- **Regional**
- **Provincial/Metropolitan area**
- Municipal

External costs

- Congestion and scarcity
- Accidents ++
- Air pollution (human health, material damages, nature)
- Noise
- Climate change
- Urban space
- Nature and landscape ++





Methodological suggestions

Cost component	External cost	Cost elements	Cost function/ drivers	Suggested estimation techniques	Data needed	Critical valuation issues
Accidents	material damages, administrative and medical costs, production losses and estimation of costs induced on friends/relatives	medical costs	traffic volume	resource cost for health improvement	database of accidents and of their outcomes (heavy/ slight injuries, fatalities ...)	value of human life
			risk attitude			
		loss of productivity	type of infrastructure	WTP/WTA to estimate the value of statistical life		externalities
			speed distribution			
		loss of human life	day/night			
			weather			
Nature and Landscape		cost to enhance bio-continuity	type of infrastructure	repair cost approach for ground sealing and impacts on ecosystem	georeferentiation of infrastructure	valuation approach
		compensation costs to ensure biodiversity		standard price approach for quantifying the negative effects of airborne emissions		
		cost for soil and water pollution	meteo and topography have an influence on pollutants concentration	two stage approach for quantifying biodiversity losses	pollutants concentration in water and soil	definition of reference state, calculation of restoration costs
		two stage approach for habitat loss and fragmentation				

Recommendations / Comments

Technical feasibility	Medium	Public acceptance	Medium	Equity	partial
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Habitat connectivity is a vital property of landscapes and it should be a strategic goal in the environmental policy of the transport sector and infrastructure planning. Public involvement is also essential, to ensure the success of the chosen solutions. To successfully plan and build wildlife crossings, it is necessary to integrate their planning into the early stages of the ordinary transportation planning process. The selection of the most appropriate type of measure requires consideration of the landscape, habitats affected and target species. The importance of the habitats and species should be evaluated in a local, regional, national and even international perspective as part of an environmental impact assessment. All mitigation measures have to be routinely inspected and maintained to ensure their functioning in the long term. Maintenance aspects, including the costs of maintenance, have to be considered at the earliest possible stage, i.e., when a measure is designed. Finally, monitoring programmes to establish the effectiveness of mitigation measures are important and the cost of monitoring programmes should be included in the overall budget for new infrastructure schemes.

Related Good Practices

- Habitat Fragmentation due to Linear Transportation Infrastructure, CH
- LINCE, Andalucia ES

