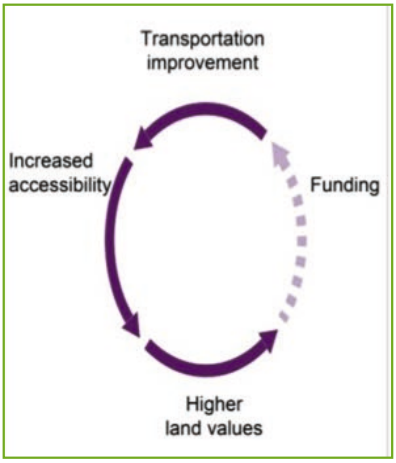
8. INFRASTRUCTURE FUNDING WITH ESTATE VALUE CAPTURE

Policy summary

Proximity to transport infrastructures can affect property values by giving one location a relative advantage over other locations, thus reflecting the direct benefits to residents and businesses for having different transportation options resulting in transport and parking cost savings; it can attract residential and commercial development and increase overall productivity by reducing total transportation costs. On the other hand, it can also have negative effects, for example an increase in private traffic, noise and air pollution. The potential economic benefits from improved accessibility could be used for infrastructure funding thanks to the value-capture concept, through which the value-added to the real estate induced by the accessibility gains provided by the new infrastructure is not wholly kept by the land owners but must be shared with the investors, most often a public agency. Value-added generated by the accessibility features can be estimated with appropriate regression analysis based on market values of different estates.



SWOT Analysis

Strengths	Weaknesses
• Recover part or the entire sum that the public infrastructure generates for private landowners (value capture) • Improvement of public transport • Involvement of citizens and stakeholders • Construction and evaluation of different development scenarios also using new technologies • Introduction of pricing measures • Citizens' land-use awareness increased	• The infrastructure realization is affected by the economic situation • Difficult estimation of costs and revenues • Difficult quantification of value capture • Difficult know-how integration
Opportunities	**Threats**
• Complemented by efforts of "mitigation/ compensation" • Integrated policies transport-land-environment • Optimized use of existing infrastructure rather than construction of new ones • Integration of new infrastructure and actions within planning framework • Urban requalification of areas affected by the new infrastructure • Promotion of government policies on sustainable development by integrating social, environmental and economic aspects of development • Possibility to foster social inclusion	• Legislative framework • Integration between Authorities and private stakeholders • Dependence on economic situation • Stakeholders' acceptance

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	+

ECOTALE GUIDELINES

Methodological suggestions

Cost component	External cost	Cost elements	Cost function/ drivers	Suggested estimation techniques	Data needed	Critical valuation issues
Congestion and scarcity	'increase in travel time x value of time x traffic volume	travel time (purpose, mode of transport lenght for passenger trips, mode of transport and commodity type for freight)	type of infrastructure	WTP/WTA to estimate the value of time in case of congestion	relation speed/ flow	speed/flow relation
		safety	amount and composition of traffic flow		demand elasticity	
		disamenity	kind of network (urban, interurban, metropolitan - N° lanes)		marginal social cost	value of time
		depreciation	capacity level over time	WTP to estimate costs due to scarcity	level of traffic	opportunity cost
		additional fuel costs				
		environmental costs	cost increases marginally with traffic and depending on the situation (time-place)		capacity	
		direct and induced delay				
		opportunity cost				
Nature and landscape		cost to enhance bio-continuity	meteo and topography have an influence on pollutants concentration	repair cost approach for ground sealing and impacts on ecosystem	pollutants concentration in water and soil	valuation approach
		cost for soil and water pollution		standard price approach for quantifying the negative effects of airborne emissions		
		compensation costs to ensure biodiversity	type of infrastructure	two stage approach for quantifying biodiversity losses	geo - referentiation of infrastructure	definition of reference state, calculation of restoration costs
				two stage approach for habitat loss and fragmentation		
Air pollution	'Air pollution costs are caused by the emission of particulate matter (PM), NOx, SO_2 and VOC. Air pollution costs arise also from industry, agriculture and private households.	damages to buildings	traffic level	repair cost	emission data per kind of pollutant	damages quantification
		damages to agriculture	location - exposure		vehicle mix	
		damages to human health	population and settlement density			
		damages to ecosystems	kind of engine - alimentation		network data	
			driver characteristics			
Noise	Noise can be defined as the unwanted sound that causes physiological or psychological harm to humans. It is recommended to take vulnerable groups, like children and elderly, into account.	annoyance	the annoyance depends on the traffic level	WTP hedonic price for noise reduction	noise exposure data	noise indicator
		effect on health	resident population and density			
		property value loss	time of exposure			evaluaton of annoyance
Urban space	"Motorised traffic in urban areas has different effects on non-motorised traffic participants (pedestrians, cyclists, etc.)."	separation costs for pedestrians	type of infrastructure	to estimate damages to pedestrian traffic, the additional waiting toime is to be measured	infrastructure network in urban areas database	evaluation process
		costs due to scarcity	level of traffic	compensation cost approach to compute scarcity		
			decency increase/decrease			

Recommendations / Comments

Technical feasibility	Medium	Public acceptance	Medium	Equity	Yes

Policy decisions on transport infrastructure development plans and investments require a lot of information about technical facts, environmental, functional and socio-economic effects and, in addition, a knowledge of welfare effects generated from the use of infrastructures. The evaluation of transportation projects' financial sustainability, in particular, requires a proper evaluation of expected benefits, generally carried out with the help of simulation models able to incorporate uncertainty and flexibility as well. Probabilistic cost-benefit analysis, risk-analysis simulation, qualitative methods such as multi-criteria analysis are renowned examples of decision-making methods in this field. Particular attention should be given to intangible inputs and outputs, typical in transportation project as – for example – improving accessibility and capacity projects and plans. Public-Private Partnerships (PPPs) have now emerged as popular ways for governments around the world to develop transportation infrastructure projects. The private partner takes on full responsibility and risk for the daily operation of the public project against pre-determined performance levels established by the public regulator. The compensation for the private partner is the revenue flow generated by the project, which typically takes the form of a user charge (such as a toll) or, in some cases, of an annual government subsidy for accomplished performance. Some of the main drivers of successful PPPs are: a proper risk allocation for all the stakeholders during the process, a correct estimation of costs, revenues and impacts, a careful evaluation of capacity, level of service and potential demand to capacity ratio and, finally, a transparent and efficient cooperation between public and private partners.

Related Good Practices

- T3 Tramway in Paris
- LRT process of development and funding, Nottingham
- Ørestad, Copenhagen Metro line
- Bolzano-Alto Adige provincial Transport Plan