



ECOTALE GUIDELINES

2. LOW EMISSION ZONES / LIMITED TRAFFIC ZONES (LEZ/LTZ)

Policy summary

Low Emission Zones (LEZs) are areas where access could be restricted/banned to the most polluting vehicles. Otherwise, vehicles whose emission are over a set level, might be charged. Those measures aim at improving air quality by deterring users of the most polluting vehicles from driving in the area. In general, the vehicles affected are lorries, buses and coaches, vans and other heavy vehicles that do not meet specific emission standards (e.g. Euro IV emission standard for Particulate Matter); in some cases, also older engined cars and motorcycles are affected. Most LEZs operate 24/7, but there can be exceptions. Limited traffic zones (LTZs) are restricted traffic areas. In order to access those areas, vehicles owned by particular categories (i.e. residents, business owners, etc.) must have a special authorization. It is necessary to control and enforce the access to the area to ensure that the measures are being respected.



SWOT Analysis

<p>Strengths</p> <ul style="list-style-type: none"> • Reduction of environmental impacts • Urban quality • Reduction of congestion 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Efficient public transport required • Re-routing of traffic flows on external road network (possible traffic increase outside the charged area, especially at the beginning) • Possible negative economic impacts in the short term • Control system implementation and management (gates, authorized vehicles lists) • Access control: possibility of non-compliance • Difficulties in monitoring the effectiveness of the policy
<p>Opportunities</p> <ul style="list-style-type: none"> • Renewal of the vehicle fleet • Educational effects • Possibility of integration with congestion charging • Promotion of modal shift outside the city center 	<p>Threats</p> <ul style="list-style-type: none"> • Expensive investments in complementary transport • Legislative framework • Public acceptance • Vehicle selection issues; definition of the policy in relation with actual and specific polluting emissions levels

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"	disamenity	type of infrastructure	WTP/WTA to estimate the value of time in case of congestion	speed/flow relation	speed/flow relation	
		safety	amount and composition of traffic flow		demand elasticity	speed/flow relation	
		travel time (purpose, mode of transport length for passenger trips; mode of transport and commodity type for freight)	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 increased marginally with traffic and depending on the situation (time-place)		capacity		
		direct and induced delay					
		opportunity cost					
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	
			location - exposure				
		damages to agriculture	population and settlement density		vehicle mix		
		damages to human health	kind of engine - alimentation		network data		
	damages to ecosystems	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	
			resident population and density			evaluation of annoyance	
		effect on health	time of exposure				
	property value loss						
Climate change	"Climate change is a long term and global risk. A differentiated approach (looking both at the damages and the avoidance strategy) is necessary. In addition long term risks should be included. Impacts of transport are mainly caused by emissions of the greenhouse gases CO ₂ , N ₂ O, CH ₄ ."	preventive measures	emission level dependent on traffic level and kind of propellant	avoidance cost approach or damage cost approach	emission data per kind of pollutant	damages quantification over time	
						type of vehicle and equipment in use	
		damages induced by climate change (rise of temperature, rainstorms, tornados...)	speed				trend pollution/ altitude
			driving style				
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 time 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	Easy	Public acceptance	Difficult	Equity	Partial
-----------------------	------	-------------------	-----------	--------	---------

Low emission zones (LEZ) have proven to be a successful way to improve air quality in line with EU regulations. A low emission zone will not instantaneously and directly reduce traffic, but it can significantly increase the pressure to switch to environmentally friendly vehicles or to retrofit with exhaust after treatment technology, like particle matters traps. The identification of the real impact of LEZs on air quality is a difficult task. Changes in the weather conditions are relevant for dispersion and dilution of emitted pollutants from traffic also have a large impact on measured pollution levels, irrespective of any changes in the emissions; likewise, any variation in traffic volumes in the air quality monitoring sites need to be taken into account as such changes are barely related to the LEZ effectiveness. The overall impact of LEZ-LTZ zones may not always be as great as expected. For example, the zones may be too small or irregular and affecting too few passing vehicles. In addition, the increase in new diesel cars could have overestimated positive impacts by causing a rise in some emissions, especially particle matter. The recent economic downturn could also have caused a general fall in traffic-related emissions, making it harder to detect a LEZ-related effect. LEZs are potentially able to reduce pollutants but it would appear that they may need to be applied in more stringent way and implemented jointly with local complementary policies, such as traffic mitigation strategies, in order to reduce pollutant emissions to a greater level.

Related Good Practices

- London LEZ
- LEZ in Berlin
- Area C – Limited traffic zone in Milan
- Limited traffic zone in Bologna

