

FACT SHEET NO.: 6 / 6

PERFORMED BY: PRO

A GENERAL INFORMATION		
A 1	<b>Category</b>	Transport planning
A 2	<b>Subcategory</b>	Zero/low emission strategies
A 3	<b>Transport policy measure (TPM)</b>	Low Emission Zones (LEZ) / Environmental zone
A 4	<b>Description of TPM</b>	<p>The transport policy measure covers the integration of 'low emission zones' in urban transport / mobility.</p> <p>A 'low emission zone (LEZ)', also called 'Environmental zone', is a specific area mostly within cities, where the usage of specific transport modes is restricted or prohibited.[1] It is a defined geographical area that can only be entered by vehicles meeting certain emission criteria. [4]</p> <p>Further access restrictions can additionally being implemented in a LEZ:</p> <ul style="list-style-type: none"> <li>- a time restriction</li> <li>- vehicle restrictions (type, weight, length, height)</li> <li>- loading factor / utilisation rate</li> <li>- permanent street closures and pedestrianisation schemes [1], [4], [5]</li> </ul> <p>The purpose of a low emission zone is to restrict the most polluting vehicles entering the area of adaptation when they exceed a certain emission level. Hence, to lower the emissions in a certain area a LEZ is introduced when the level of pollutants has reached a dangerous level, which will negatively influence the public health. [4]</p> <p>In 2009 low emission zones have been established in about 70 European cities, with different access rules and different enforcement methods. The rules may be determined by national, regional and local legislation. Within the zones the access criteria vary widely (also across different environmental zones in the same country) and include:</p> <ul style="list-style-type: none"> <li>- Euro pollutant emission standards</li> <li>- Emission level for particulates only</li> <li>- Equipment of vehicles with a particulate filter (without checks on actual emission levels)</li> <li>- Equipment of vehicles with a catalytic converter</li> <li>- Weight, with local classifications varying for different vehicle categories</li> <li>- Age, differentiated by vehicle category</li> <li>- Vehicle technology (petrol, diesel, natural gas, LPG or electric)</li> <li>- Vehicle number plates [3]</li> </ul>
A 5	<b>Implementation examples</b>	<ul style="list-style-type: none"> <li>- Low emission Zone Utrecht (NL) [5]</li> <li>- Environmental zones Gothenburg, Stockholm, Lund, Malmo (SE) [5]</li> <li>- Protected zone Prague (CZ) [5]</li> <li>- Other cities in Italy, Norway, Denmark, Germany etc.</li> <li>- Delivery time windows and vehicle restrictions (53% of the Dutch municipalities) (NL) [5]</li> </ul>
A 6	<b>Objectives of TPM</b>	<ul style="list-style-type: none"> <li>- Reduction of pollutant emissions and to meet the obligations arising from the EU air quality legislation [3]; the main air pollution problems in European are caused by particulate matter (PM), nitrogen dioxide (NO2) and ground level ozone. Road traffic is a significant source of NO2 and PM. [4]</li> <li>- The implementation of LEZ may also reduce the traffic noise emissions and improve the road safety. (new vehicles) [4]</li> <li>- In the last years there emerged other strategic objectives (reduction of congestion, Increasing livability of cities) [6]</li> </ul>
A 7	<b>Key changes concerning:</b>	
A 7.1	- Choice of transport mode / Multimodality:	Increase of intermodality
A 7.2	- Origin and/or destination of trip:	No change
A 7.3	- Trip frequency:	Reduction (increase of load factor)
A 7.4	- Choice of route:	No change
A 7.5	- Timing (day, hour):	Depending on characteristic of measure
A 7.6	- Occupancy rate / Loading factor:	Increase
A 7.7	- Energy efficiency / Energy usage:	Energy usage will be reduced, thus energy efficiency will be positively affected.
A 8	<b>Main source</b>	[4] Best Urban Freight Solutions II (BESTUFS II) (2008): Policy and Research Recommendations IV. Environmental zones in European cities, Accommodating the needs of passengers and freight transport in cities, and BESTUFS Project Recommendations

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		Road	Rail	Air	Public transport	Slow modes	Road	Rail	IWW	Air	Maritime										Public transport	
B 3.1	Transport costs	↑					↑												L	N	S	I
B 3.2	Private income / commercial turn over																		L	N	E	
B 3.3	Revenues in the transport sector						↓	↑				↑							L	N	S/E	I
B 3.4	Sectoral competitiveness	↑			↑	↑	↓	↑				↑							L	N	E	
B 3.5	Spatial competitiveness																					
B 3.6	Housing expenditures																					
B 3.7	Insurance costs																					
B 3.8	Health service costs																		N		E	
B 3.9	Public authorities & adm. burdens on businesses																		L		S/E	I
B 3.10	Public income (e.g.: taxes, charges)																					
B 3.11	Third countries and international relations						↑					↑									EE	
B 3.I	Overall impacts on social groups																					
B 3.II	Implementation phase	- Freight Distributors: Strategy of redeployment (old / new vehicles) depends on market coverage (local - national) and size of vehicle fleet																				
B 3.III	Operation phase	- Freight Distributors: Operating costs are closely related to the companies frequency of replacing vehicles and stringency of individual LEZ																				
B 3.IV	Summary / comments concerning the main impacts	- Transport costs increase - Increase of capital costs (replacement/adaptation) for road transport operators; Potential economic inefficiency due to imposed replacement of vehicles before end of economic life, if not only time restricted access [6] This is potentially positive for developing countries as these may use the old vehicles, thus replacing even older / inefficient vehicles. [EE] - Reduction of revenues for transport operators - Costs for public authorities increase due to additional investigation - Higher potential business costs for directly affected companies (businesses within zone) => Reduction of revenues - Reduction of health service costs - Changed transport costs influence the sectoral competitiveness between modes for passenger traffic.																				
B 3.V	Quantification of impacts	- The major reasons for higher operational costs are the variety of conditions regarding the individual time windows for freight deliveries and vehicle-type related restrictions; estimation at 100 million € per year for freight distributors caused by local regulations at supermarkets in the Netherlands. Potential significant increase of vehicle operating costs between 0.1 and 70%. [3] - Estimations for urban rail based transport systems gain about 4.5 bn € for the rail supply industry up to 2020 due to fragmentation. [3] - Copenhagen: Estimation of implementation and operation cost of 45-100 million € (HGV>3.5t gross weight; EURO 3) [4] - Utrecht Low emission Zone: Additional costs for companies due to replacement/adaptation of vehicles (6500 vehicles: 69 million €); Additional costs for municipality (cameras, signs, communication, capacity costs) [5] - Additional annual costs of mesh containers (MC) in core shopping areas for the whole Dutch retail sector: 425 million €. 63% of costs increase by time windows, 37% of costs increase by vehicle restrictions (height, length, width, axle pressure, weight) [5]																				

  

B 4	SOCIAL IMPACTS	AFFECTED SEGMENTS														Geographical level		Source				
		Passengers					Transport operators					Employees in transport	Residents	Economy	Public bodies	Society	1st level	2nd level	Source of assessment	Spatial level of source		
		Road	Rail	Air	Public transport	Slow modes	Road	Rail	IWW	Air	Maritime										Public transport	
B 4.1	Health (incl. well-being)																		L	N	S/E	I
B 4.2	Safety																		L	N	S/E	I
B 4.3	Crime, terrorism and security																					
B 4.4	Accessibility of transport systems																					
B 4.5	Social inclusion, equality & opportunities																		R		E	
B 4.6	Standards and rights (related to job quality)																					
B 4.7	Employment and labour markets																					
B 4.8	Cultural heritage / culture																		N		S	I
B 4.I	Overall impacts on social groups	The very young and old population/residents will be positively affected by a reduction of air pollutants (health benefits) as this are the age groups which suffer most from transport emissions. [4]																				
B 4.II	Implementation phase																					
B 4.III	Operation phase																					
B 4.IV	Summary / comments concerning the main impacts	- Health benefits for residents and society - Safety benefits for residents and society - Benefits for employment according to the improvements in the vehicle sector (including retrofitting) - Measure does not work when "illegal" entrants accept the fines, which occurred in some LEZ's [EE] - 3rd level impact: Inequality between residential areas can increase if some areas will become LEZs and other areas will not be appointed. This can cause dissatisfaction in residential areas which suffer from air pollution but are not appointed as LEZ.																				
B 4.V	Quantification of impacts																					

  

B 5	ENVIRONMENTAL IMPACTS	AFFECTED SEGMENTS														Geographical level		Source				
		Passengers					Transport operators					Employees in transport	Residents	Economy	Public bodies	Society	1st level	2nd level	Source of assessment	Spatial level of source		
		Road	Rail	Air	Public transport	Slow modes	Road	Rail	IWW	Air	Maritime										Public transport	
B 5.1	Air pollutants																		L	R	S	L
B 5.2	Noise emissions																		L	R	S	L
B 5.3	Visual quality of the landscape																					
B 5.4	Land use																					
B 5.5	Climate																		I		E	
B 5.6	Renewable or non-renewable resources																					
B 5.I	Overall impacts on social groups	The very young and old population/residents will be positively affected by a reduction of air pollutants (health benefits) as this are the age groups which suffer most from transport emissions. [4]																				
B 5.II	Implementation phase																					
B 5.III	Operation phase																					
B 5.IV	Summary / comments concerning the main impacts	- Improved air quality: Not only reduction of NOx and PM, also emission reduction of CO, HC, CO2 - Reduction in noise emissions - More attractive environment for companies and people; Increase of life quality																				
B 5.V	Quantification of impacts	- Reduction of NOx from HGV within low emission zone by 10% and emissions of particulates by 40% (Stockholm) [4] - Less emissions inside (CO -6%, HC -4%, NOx -8% and PM -33%) and outside the zone because of generally newer fleet. Older vehicles generally operating countryside, where external costs are lower (Gothenburg, SE) [5] - LEZ London: Older goods vehicles will be displaced for company operations outside the LEZ; this can lead to a net increase of air pollution from freight transport vehicles in the UK. [4]																				

C REFERENCES	
C 1	Other TPMs of this subcategory
C 2	<p><b>References</b></p> <p><b>International</b></p> <p>[1] European Commission; Directorate General for Energy and Transport (2009): Transport Research Knowledge Centre - Thematic research Summary: Urban Transport, Brussels.</p> <p>[2] European Commission (2009): Communication from the Commission to the European Parliament, the Council, the European economic and social committee and the Committee of Regions. Action Plan on Urban Mobility. COM(2009)490, Brussels</p> <p>[3] European Commission (2009): Commission staff working document Communication from the Commission to the European Parliament, the Council, the European economic and social committee and the Committee of Regions. Action Plan on Urban Mobility - Impact Assessment. SEC(2009)1211, Brussels</p> <p>[4] Best Urban Freight Solutions II (BESTUFS II) (2008): Policy and Research Recommendations IV. Environmental zones in European cities, Accommodating the needs of passengers and freight transport in cities, and BESTUFS Project Recommendations</p> <p>[6] European Commission; Directorate General for Mobility and Transport (2010): Study on urban access restrictions, Rome</p> <p><b>Regional / Local</b></p> <p>[4] Best Urban Freight Solutions II (BESTUFS II) (2008): D1.4 Policy and Research Recommendations IV. Environmental zones in European cities, Accommodating the needs of passengers and freight transport in cities, and BESTUFS Project Recommendations</p> <p>[5] Best Urban Freight Solutions II (BESTUFS II) (2006): D5.2 Quantification of urban freight transport effects II</p>