



FEASIBLE INTERNALIZATIONS - OBJECTIVES AND MAIN OUTCOMES OF THE ECOTALE PROJECT

AIMS AND RESULTS OF THE PROJECT

€cotale

EXTERNAL COSTS OF TRANSPORT AND LAND EQUALIZATION

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THE CONSORTIUM

Alma Mater Studiorum - University of Bologna DA	IT
Emilia Romagna Region	IT
Aalto University Foundation (operating as Aalto University)	FI
Institute for Urban Planning and Development of Paris Ile-de-France Region	FR
MANCOMUNITAT DE LA RIBERA ALTA	ES
Thessaloniki Public Transport Authority (THEPTA)	EL
Institute of Logistics and Warehousing	PL
City of Poznan	PL
Central Transdanubian Nonprofit Company	HU



THE CONSORTIUM

THE ECOTALE TEAM: 9 PARTNERS, 7 COUNTRIES

KNOWLEDGE



EXPERIENCE

Research Centers

Structures with specific competencies

Public Administrations



Alma Mater Studiorum
Università di Bologna (IT)



Aalto University
Foundation (FI)



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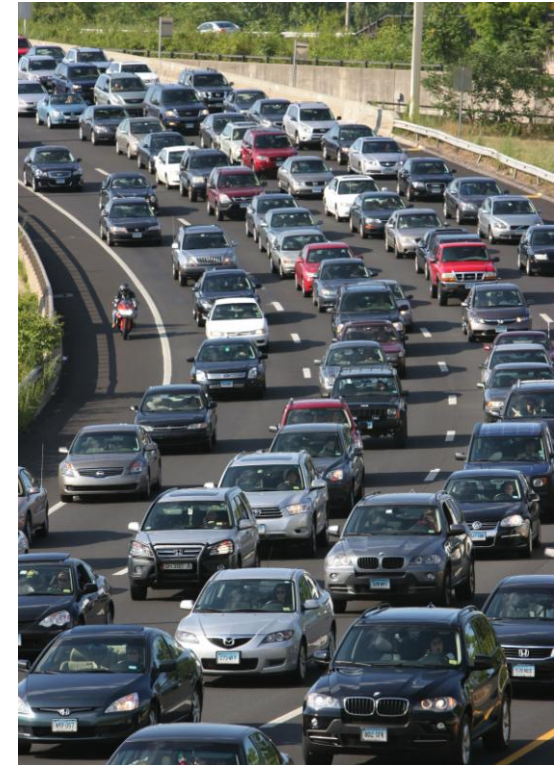
TRANSPORT EXTERNAL COSTS

- The building of transport infrastructures produces diffused benefits (i.e. reduction of congestion, travel time, accidents, etc.) and concentrated costs (environmental costs, i.e. air pollution, noise, vibrations, and other costs, i.e. spatial exclusion, segregation, etc.).
- Costs and benefits have consequences on political, administrative, economic and financial aspects of the interested bodies, modifying policies, objectives and choices.
- Transport infrastructures are therefore a means of fiscal interdependencies and territorial externalities (environmental, clustering, planning) and of opportunities and threats for spatial development which are distributed unequally in space and which could irreversibly modify land patterns.



INTERNALIZATION

- Without policy intervention, transport “external costs” are not taken into account by the transport users when they make a transport decision (the choice of a transport mode, whether to buy a car and which, how to use the car, which path to follow, where to park...)
- The internalization of external costs can be achieved when the account of all the social and environmental effects will be somehow made part of the transport-related decision making processes.
- That may lead to a more efficient use of infrastructures and to a more sustainable split of trips among the alternative transport modes, thus reducing the negative side effects of the mobility systems.

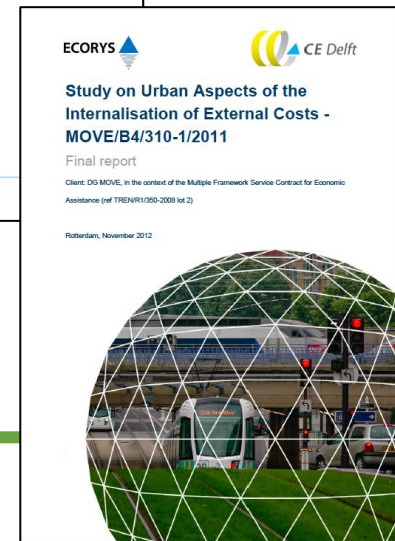
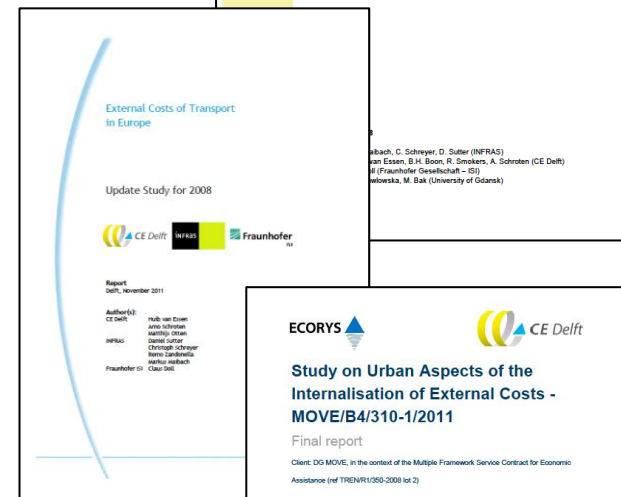
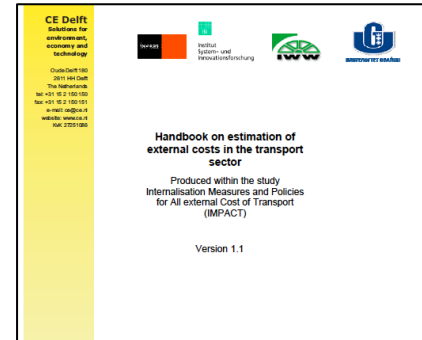


STATE OF THE ART

PAST STUDIES

- In the last few years EU underlined in more than one occasion the importance of calculating and taking into account external costs
- A substantial amount of research projects suggest that implementing market-based instruments inspired by the economic theoretical concept of marginal social cost pricing could yield considerable benefits. Internalization has also been advocated in a number of policy document issued by the UE

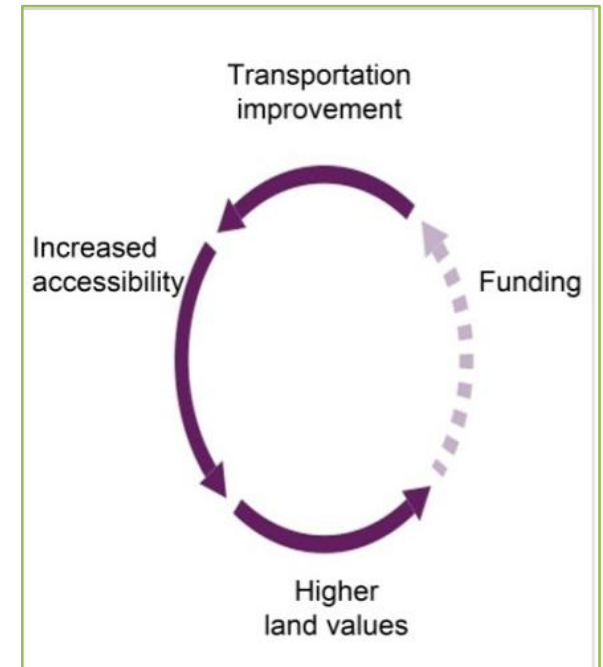
1. Handbook on external costs of transport (IMPACT)
2. External cost of transport – Update study INFRAS
3. Study on Urban Aspects of the Internalisation of External Costs
4.



PROJECT OBJECTIVES

NEED OF AN INNOVATIVE APPROACH

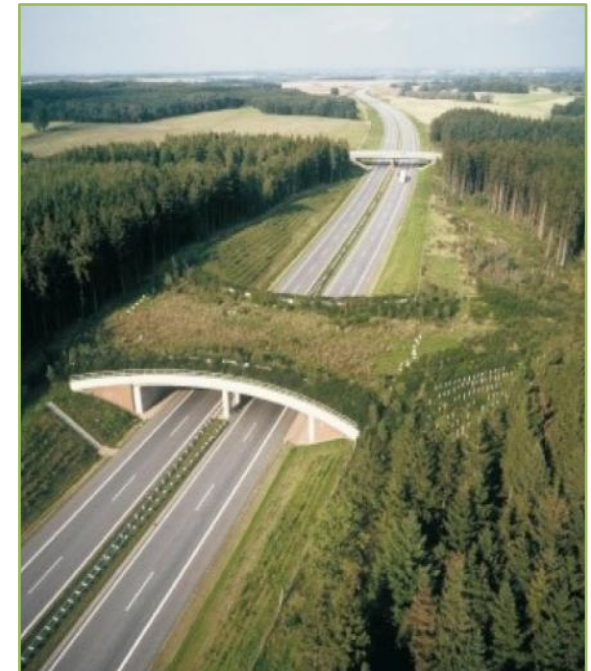
- incompleteness in the extent of the application of direct pricing and a missing or only partial link with modal policies, spatial planning and infrastructural decisions
- failures of the internalization policies in terms of their ability to reach improvements of the sustainability of the transport systems over the time.



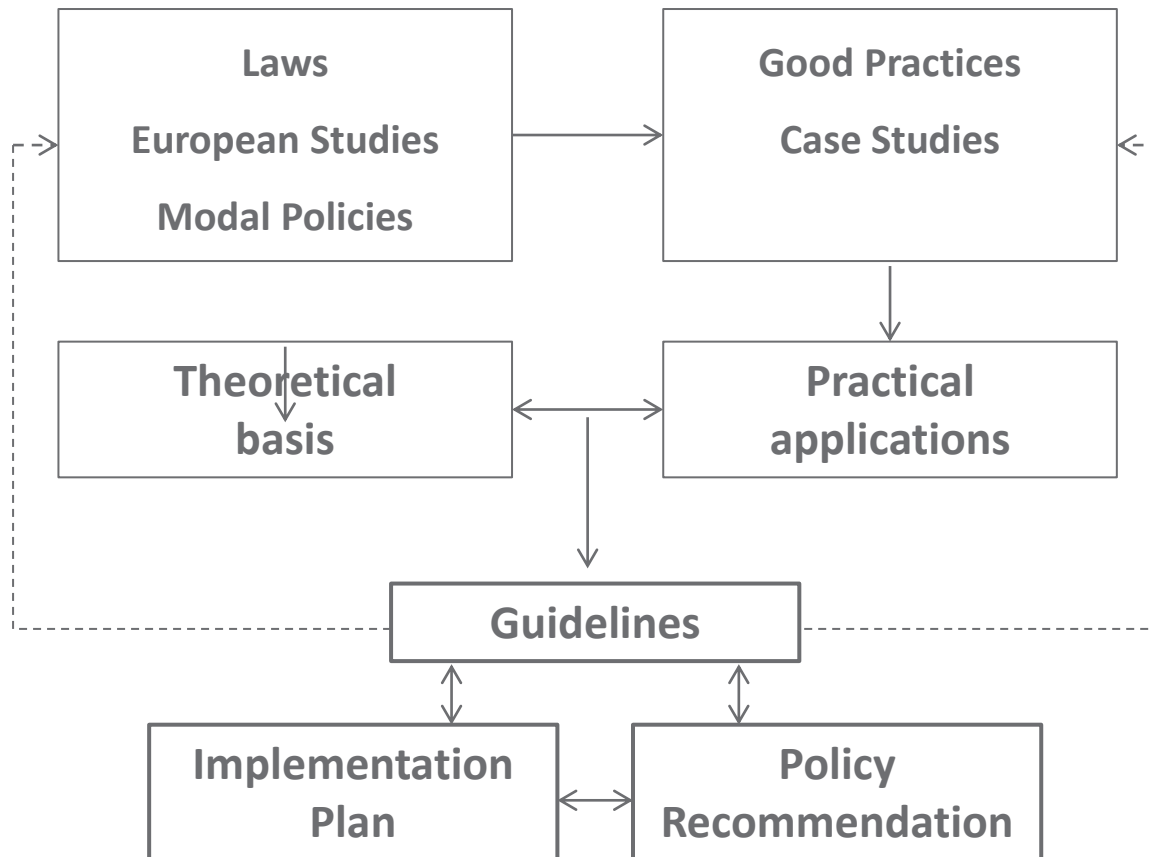
PROJECT OBJECTIVES

NEED OF AN INNOVATIVE APPROACH

- To foster the planning and investment approach to transport
- To focus on a “preventive” and more strategic approach to internalization, improving equity and sustainability of the transport systems.
- To integrate the traditional approach based on the “economic” internalization of external costs (i.e. pricing measures) by introducing criteria and policies considering land use and environmental planning as well.



PROJECT: OUTPUT AND SYNTHESIS



FRAMEWORK

PAST PROJECTS

synthesis of previously achieved outcomes from other relevant EU projects and initiatives



REPORT ON PREVIOUS EU PROJECTS

SUMMARY OF IMPACT

REGULATORY CONTEXT:

analysis of various national/regional/local regulatory contexts (spatial planning, public works, local fiscal system), specifically referring to planning and financing modalities and tools which allow or could allow (with suitable adaptations) implementation of efficient internalisation policies



REPORT ON REGIONAL MODAL POLICIES

REPORT ABOUT PARTNERS' COUNTRIES REGULATORY FRAMEWORK



GOOD PRACTICES

GOOD PRACTICES

critical selection of methodologies and applications in the field of transport costs internalisation, with special regard to their embedding in the planning and investment decision processes

50 cases identified and analysed:

- external costs: cases where an estimation of externalities is a determinant for the policy or cases where the policy have been decided and introduced also referring to known/perceived external costs;
- internalization: policies explicitly presented and introduced as internalization measures OR, though not explicitated, the policies act as an (implicit) internalization measure;
- planning/policy process (in cases of pricing or subsidy measures)
- broader proposal for internalization actions, especially by focusing on cost (re)allocations explicit or implicit in transport plans and policies and in infrastructural investments

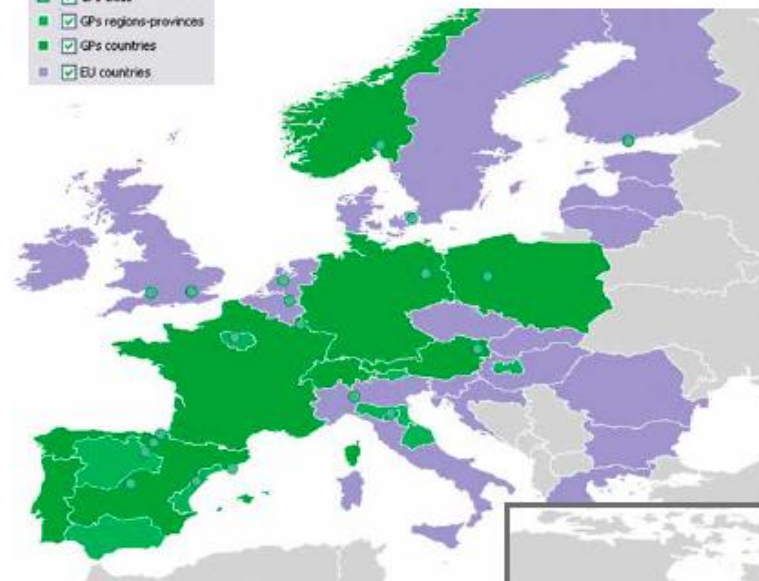
GOOD PRACTICES



GEOGRAPHICAL COVERAGE OF THE SURVEY

geographical coverage of the survey followed an indicative definition of the search domains among the project partners; regional/local administrations addressed to respective countries; research bodies taking care of countries outside the consortium (see maps)

- GPs cities
- GPs regions-provinces
- GPs countries
- EU countries



COLLECTED CASES

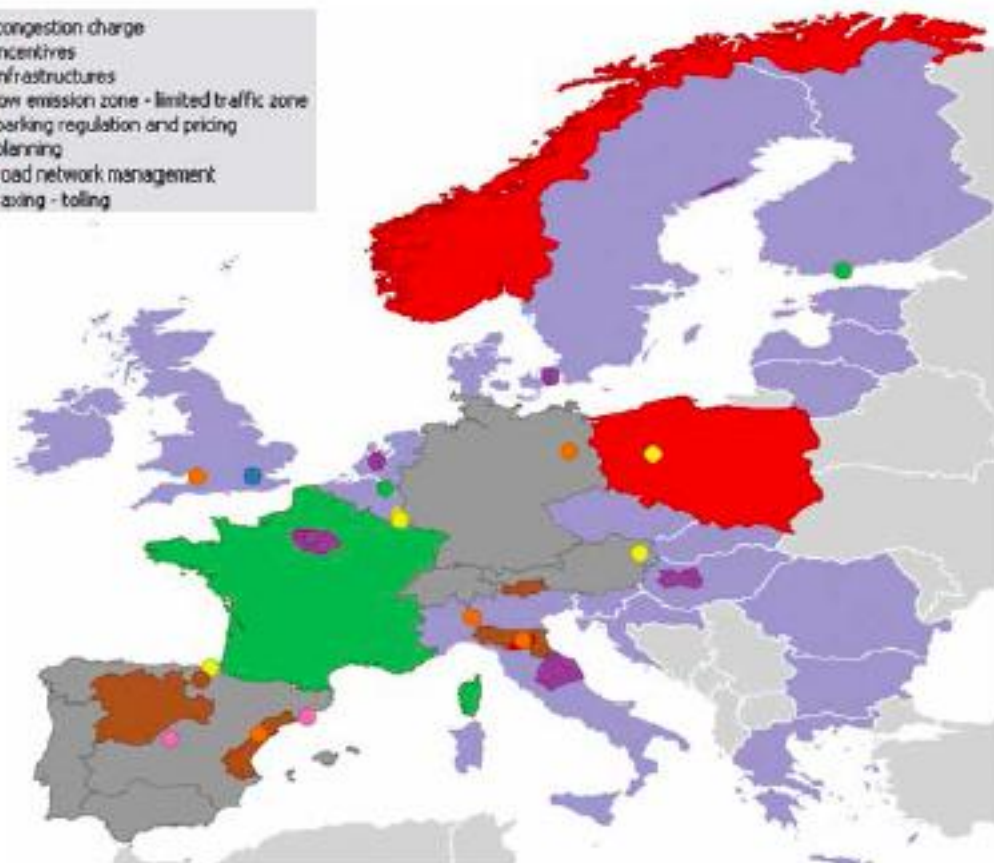
map showing geographical distribution of the good practices identified, distinguished by territorial extent of the cases/policies (country wide, regional, urban/metropolitan)

territorial extent of the policy case:	n. of cases
country wide	10
regional/provincial	15
urban/metropolitan	24



GOOD PRACTICES

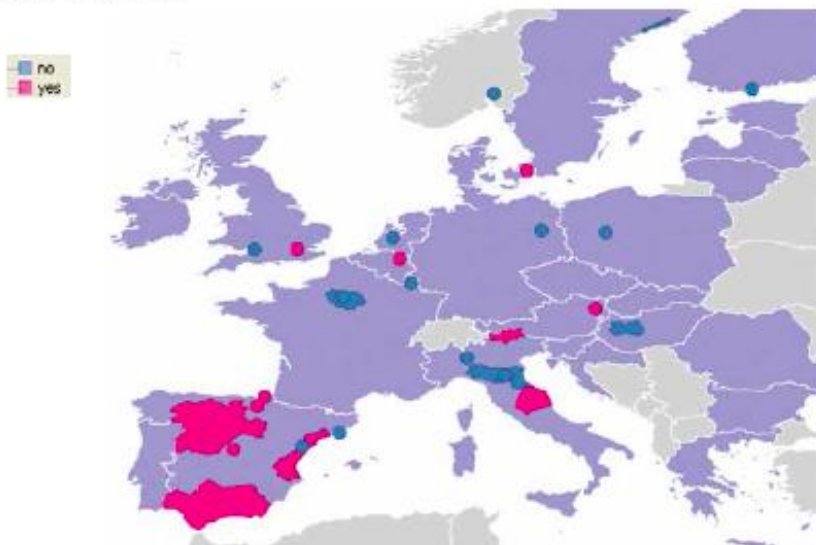
<i>category of case by main policy field:</i>	<i>n. of cases</i>
congestion charge	1
low emission zone - limited traffic zone	6
parking regulation and pricing	6
road freight pricing	3
e-mobility	2
road network management	2
infrastructures	9
incentives	3
planning	10
habitat - landscape	2
taxing - tolling	5



GOOD PRACTICES

ESTIMATION OF TRANSPORT EXTERNALITIES

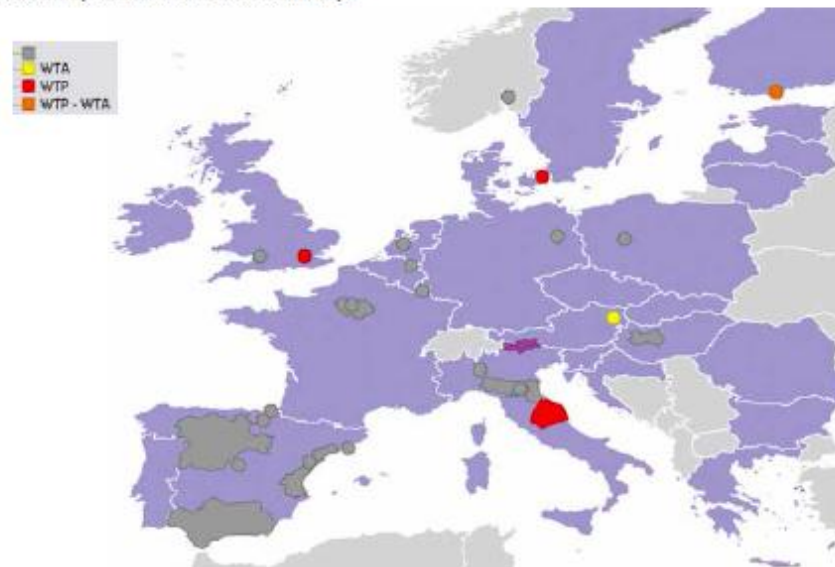
(country wide cases excluded in map)



role of transport externalities in the cases:	n. of cases
estimated to define the policy	20
referred to in the policy definition	25
(other)	4

EXTERNALITIES METHODOLOGY OF ESTIMATION

(provisional map) (country wide cases excluded in map)

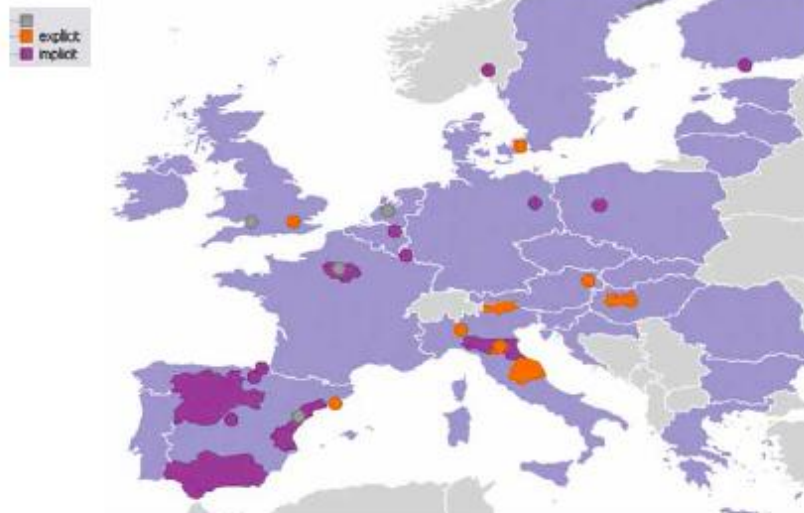


reference to internalization in the policy measures:	n. of cases
explicit	18
implicit	23
(other)	8

GOOD PRACTICES

KIND OF INTERNALIZATION

(explicit/implicit, where the case) (country wide cases excluded in map)



<i>financial means adopted within the cases:</i>	<i>n. of cases</i>
financial mean	
finance (funding)	23
subsidies	1
taxes	5
tolls - user fees	18
customs duties	0
reductions/exemptions/differentiations	14
(others)	4

PROJECT MAIN OUTCOMES

GUIDELINES:

innovative guidelines for external costs internalization available to partner and non-partner public administrations (municipalities, regional governments)

To let available to Regions and Cities a knowledge base created from real experiences and a set of methodological and analytical tools to guide and support plans and policies definition.

POLICY RECOMMENDATIONS

ecotale
EXTERNAL COSTS OF TRANSPORT AND LAND EQUALIZATION



GUIDELINES

FOR A WIDER INTERNALIZATION PRACTICE
WITHIN THE TRANSPORT PLANNING AND POLICIES

GUIDELINES – DATA SHEETS

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 engine 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 these areas, vehicles owned by particular categories (e.g. 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

Strengths

- Reduction of environmental impacts
- Urban quality
- Reduction of congestion

Weaknesses

- 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

Opportunities

- Renewal of the vehicle fleet
- Educational effects
- Possibility of integration with congestion charging
- Promotion of modal shift outside the city center

Threats

- 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
- 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 values/ issues
Congestion and scarcity	Increase in travel time value of time in traffic structure	delay	type of infrastructure	WTP/WTA to estimate the value of time in case of congestion	speed limit	speed-flow relation
		safer	amount and position of traffic flow		margin to avoid cost	speed-flow relation
		downstream impacts, mode of transport, length of passenger trips, mode of transport and communication for the trip	kind of network (urban, suburban, metropolitan, etc.)		level of traffic	value of time
		depreciation	capacity level over time		level of traffic	value of time
Air pollution	Air pollution costs are caused by the emission of greenhouse matter (PM, NOx, SOx and VOC). Air pollution costs arise also from industry, agriculture and private households	additional fuel costs	capacity level over time	WTP to estimate costs due to scarcity	capacity	opportunity cost
		environmental costs	can increase marginally with traffic and depending on the location (road type)		capacity	opportunity cost
		direct and indirect delay	can increase marginally with traffic and depending on the location (road type)		capacity	opportunity cost
		opportunity cost	can increase marginally with traffic and depending on the location (road type)		capacity	opportunity cost
Noise	Noise can be defined as the unwanted or annoying sound. physiological or psychological harm to humans. It is recommended to take into account the noise and elderly, into account	damage to buildings	traffic level	WTP to estimate costs due to scarcity	noise level	noise indicator
		damage to agriculture	location-exposure		noise level	noise indicator
		damage to human health	population and settlement density		noise level	noise indicator
Climate change	Climate change is a long-term and global risk. A differentiated approach (taking both acute damage 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 , NO ₂ , CH ₄	damage to ecosystems	land of agriculture - urbanization	WTP to estimate costs due to scarcity	land use	land use indicator
		damage to ecosystems	land of agriculture - urbanization		land use	land use indicator
		damage to ecosystems	land of agriculture - urbanization		land use	land use indicator
Urban space	Motorists who live in urban areas have different preferences (noise reduction, traffic participation, pedestrian cycles, etc.)	separation costs for pedestrians	type of infrastructure	WTP to estimate costs due to scarcity	separation costs	separation costs
		separation costs for pedestrians	type of infrastructure		separation costs	separation costs
		separation costs for pedestrians	type of infrastructure		separation costs	separation costs

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 automatically 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. The 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 counteracted positive impacts by causing a rise in some emissions, especially particulate 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



CASE STUDIES

CASE STUDIES

to transfer the identified good practices to the selected case studies and to verify the applicability and effectiveness of the Guidelines



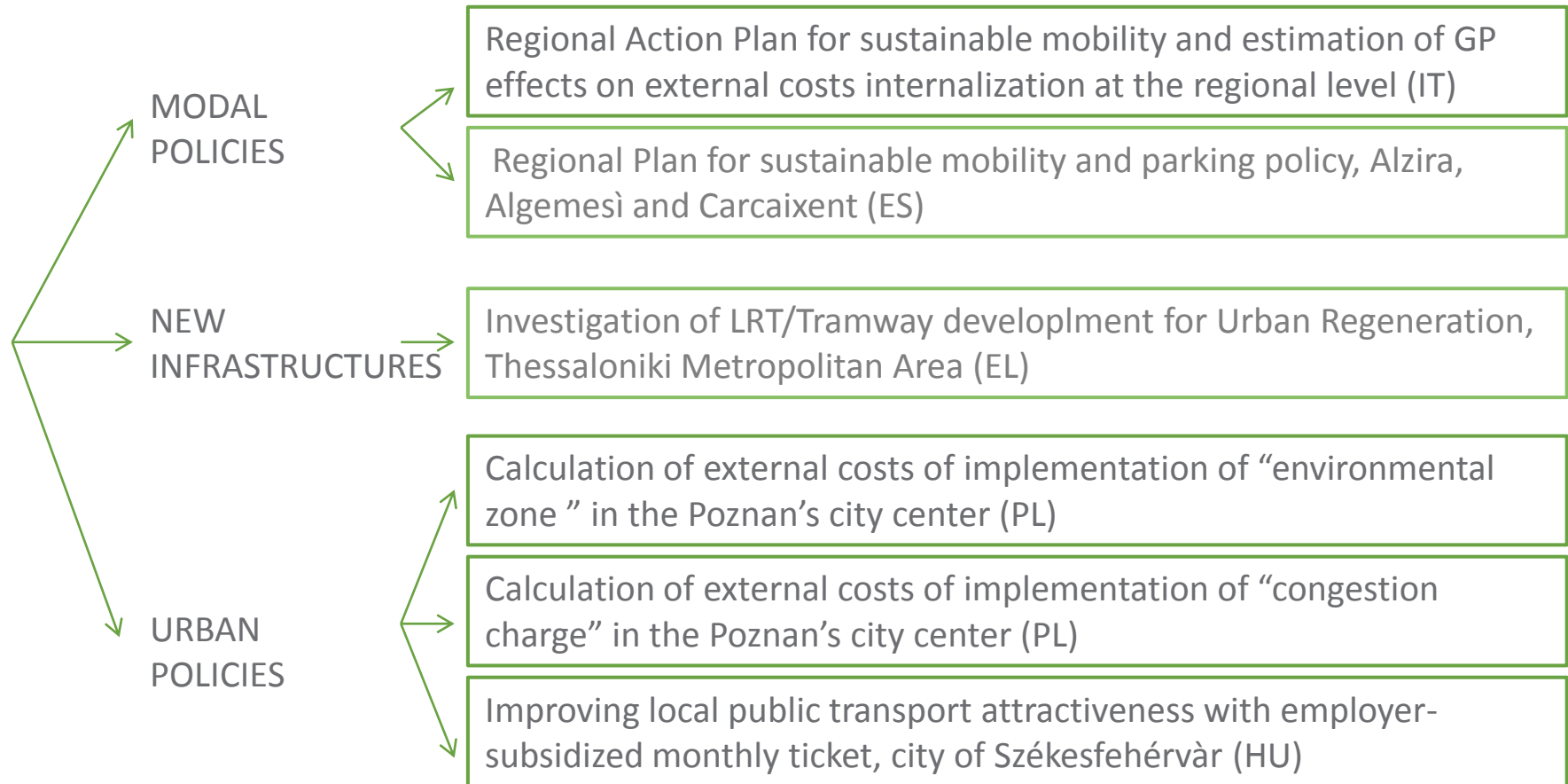
REPORT ON CASE STUDIES DESCRIPTION

1. City of Székesfehérvár (HU)
2. Region of Ribera Alta (ES)
3. Emilia-Romagna Region (IT)
4. Poznań's city centre (PL)
5. Poznań's centre within the 2nd ring road (PL)
6. Thessaloniki Metropolitan Area (GR)



IMPLEMENTATION PLANS

CASE STUDIES



PROJECT KEY RESULTS

- **GOOD PRACTICES** transfer to case studies
- **IMPROVED REGIONAL/LOCAL INSTRUMENTS AND POLICIES**
- increased **CAPACITY OF PARTNER STAFF** through exchange of information and sharing experiences
- **IMPROVED KNOWLEDGE** (approaches, data, methodologies) and skills concerning transport cost internalization approaches, integration of sustainable transport policies (modal policies, pricing), land planning, investment (infrastructural) decisions





ECOTALE PROJECT

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