ASSIST - Assessing the social and economic impacts of past and future sustainable transport policy in Europe

Workpackage 2: Transport Policy Measure Impact Assessment

FACT SHEET NO.: Cat -No.5 / Subcat No.5.3 PERFORMED BY: Fraunhofer-ISI

A GENERAL INFORMATION

A 1	**Category**	**Efficiency standards & Flanking measures**
A 2	**Subcategory**	**Standards- Environment**
A 3	**Transport policy measure (TPM)**	**CO_2 emission limits for LDV, cars, etc**
A 4	**Description of TPM**	As part of the Community's integrated approach to reducing CO_2 emissions from transport activities CO2 emissions can be regulated to set emission performance standards for new vehicles registered in the European Union Community at different point of time. [1,1]
A 5	**Implementation examples**	Regulation (EC) 443/2009 already sets CO2 emissions standards for European car manufacturers in terms of average maximum CO_2 emissions of new vehicles registered in the European Union in 2015 and 2020. For passenger cars average CO2 emissions of the new vehicle fleet should be 130 g/km in 2015 and 95 g/km in 2020. The regulation also takes into account the mass of vehicles by an equation calculating the specific CO2 emission target per manufacturer. [1] Regulation (EC) 510/2011 is setting CO2 emission standards for new light duty vehicles (LDV). The CO2 emission target for 2017 is 175 g/km, for 2020 147 g/km. [2]
A 6	**Objectives of TPM**	- to reduce CO2 emissions and improve fuel efficiency of new registered vehicles - to create incentives for the vehicle manufacturers to invest in new technologies [1]
A 7	**Key changes concerning:**	
A 7.1	- Choice of transport mode / Multimodality:	Decreasing costs for fuel per km evoke a rebound effect in terms of increasing modal share of the regulated road transport mode. As modal choice depends largely on out-of-pocket costs for fuel, higher investment costs for the vehicles are not relevant for the modal choice. [8]
A 7.2	- Origin and/or destination of trip:	no evidence found for a direct impact
A 7.3	- Trip frequency:	no evidence found for a direct impact
A 7.4	- Choice of route:	no evidence found for a direct impact
A 7.5	- Timing (day, hour):	no evidence found for a direct impact
A 7.6	- Occupancy rate / Loading factor:	no evidence found for a direct impact
A 7.7	- Energy efficiency / Energy usage:	Reducing CO2 emissions of road vehicles can be achieved by inreasing energy efficiency of fossil fuel cars and by alternative fuel cars with less CO2 emissions [3]
A 8	**Main source**	[1] Regulation (EC) No 443/2009 of the European Parliament and of the Council of 23 April 2009 setting emission performance standards for new passenger cars and light duty vehicles as part of the Community's integrated approach to reduce CO2 emissions(2009). [2] Regulation (EC) No 510/2011 of the European Parliament and of the Council of 11 May 2011 setting emission performance standards for new light commercial vehicles as part of the Union's integrated approach to reduce CO 2 emissions from light-duty vehicles (2011)

B IMPACTS

B 1 OVERVIEW ON IMPACTS

		AFFECTED SEGMENTS																Geographical level		Source	
		Passengers					Transport operators														
		Road	Rail	Air	Public transport	Slow modes	Road	Rail	IWW	Air	Maritime	Public transport	Employees in transport	Residents	Economy	Public bodies	Society	1st level	2nd level	Source of assessment	Spatial level of source
B 1.1	**Overall tendency**	↗			→										↗	↘	↘	I	N	S	I, N
	Overall positive impact, especially on climate.																				
B 1.2	**Overall tendency: Income groups**	Slightly negative impact on lower income groups because of the higher car retail prices.																			
B 1.3	**Overall tendency: Age groups**	No specific impact																			
B 1.4	**Overall tendency: Disabled people**	No specific impact																			
B 1.5	**Overall tendency: Gender groups**	No specific impact																			
B 1.6	**Overall tendency: Ethnic groups**	No specific impact																			

B 2 TRAFFIC IMPACTS

		AFFECTED SEGMENTS																Geographical level		Source	
		Passengers					Transport operators														
		Road	Rail	Air	Public transport	Slow modes	Road	Rail	IWW	Air	Maritime	Public transport	Employees in transport	Residents	Economy	Public bodies	Society	1st level	2nd level	Source of assessment	Spatial level of source
B 2.1	Travel or transport time																	R	L	S	I,N
B 2.2	Risk of congestion	↗					↗											I	N	E	I
B 2.3	Vehicle mileage	↗					↗											I	N	S	I
B 2.4	Service and comfort																				
B 2.I	**Overall impacts on social groups**	Mainly persons in medium to high income groups can benefit from more fuel efficient vehicles as lower income groups have a generally lower motorization rate and a higher share of small vehicles which are already comparably fuel efficient. [12] Higher investment costs mainly affect modal share of persons in low income groups.																			
B 2.II	**Implementation phase**	During the implementation phase, vehicle manufacturers have to widen their vehicle portfolio and offer more fuel efficient or alternative fuel vehicles. Vehicle prices for fuel efficient vehicles could be higher than in the operation phase as the level of learning is still on an initial level. [7]																			
B 2.III	**Operation phase**																				
B 2.IV	**Summary / comments concerning the main impacts**	Fossil fuel based vehicles need to be equipped with additional technology to reduce fuel consumption. Hence, higherinvestment costs for vehicles could lead to an increased use of public transport especially for people in lower income groups [3]. Rebound effects can occur as the competitive position of cars improve against other modes which can result in an overall increasing vehicle mileage. [5]																			
B 2.V	**Quantification of impacts**	EU27 passenger-km by car are expected to increase due to a rebound effect initiated by significantly decreasing fuel costs by up to 7% until 2020. [11]																			

B 3 ECONOMIC IMPACTS

		AFFECTED SEGMENTS																Geographical level		Source	
		Passengers					Transport operators														
		Road	Rail	Air	Public transport	Slow modes	Road	Rail	IWW	Air	Maritime	Public transport	Employees in transport	Residents	Economy	Public bodies	Society	1st level	2nd level	Source of assessment	Spatial level of source
B 3.1	Transport costs	↘																I	N	S	I, N
B 3.2	Private income / commercial turn over														↗			I	N	S	I, N
B 3.3	Revenues in the transport sector																				
B 3.4	Sectoral competitiveness														↗			N	R	S	I
B 3.5	Spatial competitiveness																				
B 3.6	Housing expenditures																				
B 3.7	Insurance costs																				
B 3.8	Health service costs																				
B 3.9	Public authorities & adm. burdens on businesses																				
B 3.10	Public income (e.g.: taxes, charges)															↘		N	R	S	I,N
B 3.11	Third countries and international relations																				
B 3.I	**Overall impacts on social groups**	Low income groups will be more affected if the cost impacts on small /medium size vehicles are higher. [3]																			
B 3.II	**Implementation phase**																				
B 3.III	**Operation phase**																				
B 3.IV	**Summary / comments concerning the main impacts**	The research, development and implementation of technologies to reduce CO2 emissions will increase investment costs for vehicles. As opposed to, fuel efficient vehicles lead to decreasing fuel costs. Savings over lifetime by fuel efficiency overcompensate higher investment costs. Therefore, total cost of ownership (TCO) decrease. [3,7] Improving fuel efficiency leads to a decrease of fuel tax revenues for the European economies. [11]																			
B 3.V	**Quantification of impacts**	- The lifetime fuel savings are about twice the additional retail price [3] - About 23 billion Euro less fuel tax revenues until 2030 [6] - 6% higher investment costs for vehicles [4] - For the German case, fuel cost savings between 2008 and 2020 account for 79 billion Euro while in parallel vehicle investment increases by 45 billion Euro [4]																			

B 4	SOCIAL IMPACTS	AFFECTED SEGMENTS																Geographical level		Source	
		Passengers					Transport operators														
		Road	Rail	Air	Public transport	Slow modes	Road	Rail	IWW	Air	Maritime	Public transport	**Employees in transport**	**Residents**	**Economy**	**Public bodies**	**Society**	1st level	2nd level	Source of assessment	Spatial level of source
B 4.1	Health (incl. well-being)																↗	R	L	E	I
B 4.2	Safety																				
B 4.3	Crime, terrorism and security																				
B 4.4	Accessibility of transport systems				→													R	L	S	I,N
B 4.5	Social inclusion, equality & opportunities	↘															→	I	N	S	I,N
B 4.6	Standards and rights (related to job quality)																				
B 4.7	Employment and labour markets												↗		↗			I	N	S	I,N
B 4.8	Cultural heritage / culture																				
B 4.I	**Overall impacts on social groups**	The TPM has a slightly negative impact on society. As the prices for new cars will increase, it will be more difficult for persons in low and middle income groups to purchase a new car and can cause social exclusion [3]. Slightly reduced air pollutant emissions lead to positive impacts on health for the																			
B 4.II	**Implementation phase**																				
B 4.III	**Operation phase**																				
B 4.IV	**Summary / comments concerning the main impacts**	Because of higher investment costs for vehicles, demand can decrease and therefore a loss of work is possible. On the other hand, there is an increase in work because of the development of new technologies. [3] Studies like GHG-TransPoRD confirm that emission targets can be achieved with slightly increasing investment costs. Investments in research and development and new production sites induce new jobs in the automotove industry. [9]																			
B 4.V	**Quantification of impacts**	People in low income groups are expected to be impacted only marginally as the motorization rate is low and the average monthly mileage is by about 670 km about 60% lower than in the second highest income group. The major benefits in terms of fuel cost savings are expected for the second highest income group. [12]																			

B 5	ENVIRONMENTAL IMPACTS	AFFECTED SEGMENTS																Geographical level		Source	
		Passengers					Transport operators														
		Road	Rail	Air	Public transport	Slow modes	Road	Rail	IWW	Air	Maritime	Public transport	**Employees in transport**	**Residents**	**Economy**	**Public bodies**	**Society**	1st level	2nd level	Source of assessment	Spatial level of source
B 5.1	Air pollutants																↘	I	N	S	I,N
B 5.2	Noise emissions																↘	I	N	S	I,N
B 5.3	Visual quality of the landscape																				
B 5.4	Land use																				
B 5.5	Climate																↓	I	N	S	I,N
B 5.6	Renewable or non-renewable resources																↘	I	N	S	I,N
B 5.I	**Overall impacts on social groups**	No specific impact																			
B 5.II	**Implementation phase**																				
B 5.III	**Operation phase**																				
B 5.IV	**Summary / comments concerning the main impacts**	By reason of new technologies and more fuel efficient vehicles the CO2 emsission will decrease. An effect on the air polluntants is not expected, but if there is one, it will be small [3,4]. Improved aerodynamics and rolling resistance of vehicles result in less noise emissions. [4] Fuel efficient cars and a higher share of alternative fuel cars lead to decreasing consumption of renewable energy. [6]																			
B 5.V	**Quantification of impacts**																				

C REFERENCES

C 1	**Other TPMs of this subcategory**	Bio-ethanol quota Noise emission standards (SEC(2008)2203, SEC(2011)1505) Biofuels directive (Directive 2003/30/EC) / Introduction of biofuel quotas Standards for controlling air pollution (CO, NOx, particulate matter)
C 2	**References**	**International** [1] European Commission (2009): Regulation (EC) No 443/2009 of the European Parliament and of the Council of 23 April 2009 setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO2 emissions from light-duty vehiclesil (2009). [2] European Commission (2011): Regulation (EC) No 510/2011 of the European Parliament and of the Council of 11 May 2011 setting emission performance standards for new light commercial vehicles as part of the Union's integrated approach to reduce CO 2 emissions from light-duty vehicles (2011) [3] European Commission (2007): Possible regulatory approaches to reducing CO2 emissions from cars 070402/2006/452236/MAR/C3: Final Report, December 2007 [4] European Commission (2007): Proposal from the Commission to the European Parliament and Councilfor a regulation to reduce CO2 emissions from passenger cars - Impact assessment. [5] Robert M., Johnson D. (2006): Assessment of transport policies toward future emission targets - a backcasting approach for Stockholm 2030. In: Journal of Environmental Assessment Policy and Management, Vol. 8, No. 4, pp. 451-478. [6] Schade W. et. al. (2010): The iTREN-2030 Integrated Scenario until 2030. Deliverable 5 of iTREN-2030 project cofunded by European Commission 6th RTD Programme. Fraunhofer-ISI, Karlsruhe, Germany. [7] Schade W. et. al. (2012): Bottom-up quantifications of selected measures to reduce GHG emissions of transport for the time horizons 2020 and 2050: Cost assessment of GHG mitigation measures of transport. Deliverable D3.1 of GHG-TransPoRD. Project cofunded by European Commission 7th RTD Programme. Fraunhofer-ISI, Karlsruhe, Germany. [8] Schade W., Rothengatter W. (2011): Economic Aspects of Sustainable Mobility. On behalf of the European Parliament, DG for Internal Policies. [9] Nieuwenhuis P. (2007): Car CO2 Reduction Feasibility Assessment; is 130g/km Possible? Centre for Business Relationships, Accountability, Sustainability and Society, Cardiff, Wales. [10] Smokers R. et.al. (2009): Review and analysis of the reduction potential and costs of technological and other measures to reduce CO2-emissions from passenger cars. Delft, The Netherlands. [11] Fiorello et. al. (2012): Results of the technoeconomic analysis of the R&D and transport policy packages for the time horizons 2020 and 2050. Deliverable D4.1 of GHG-TransPoRD: Project co-funded by European Commission 7th RTD Programme. TRT Trasporti e Territorio SRL, Milan, Italy. **National** [12] Rothengatter W., Krail M. (2008): Sozialverträglichkeit der Nutzerfinanzierung für die Verkehrsinfrastruktur. Study on behalf of Friedrich Ebert-