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Road user charges for heavy goods vehicles (HGV)

Tables with external costs of air pollution

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European Environment Agency

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Content

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Summary

In this report, the European Environment Agency (EEA) presents updated estimates of the **external costs** ([1]) of air pollution for different categories of heavy goods vehicles (HGVs). This report on road transport is a continuation of previous reporting from EEA on estimates for the external costs of air pollution from industrial facilities (EEA, 2011).

The amended **Eurovignette Directive** (2011/76/EU) relating to the charging of HGVs for use of major European motorways prescribes that from 2013, Member States may include **air pollution costs** in any charging structure for roads under the **Trans-European Network** (TEN-T) and for comparable domestic motorways.

Diesel engine exhaust has recently been classified as carcinogenic to humans (IARC, 2012) and price signals can help regulatory efforts laid down in other European directives to **improve the health and well-being** of European citizens, who currently are believed to suffer more than 100 million sick-days and 350 000 premature deaths annually due to air pollution (AEA Technology Environment, 2005). As the biggest road transport emitter of air pollution, HGVs are responsible for up to 40–50 per cent of road transport NO_X emissions in EEA member countries (cf. NERI, 2011:537).

An **external-cost charge** on HGVs will be passed on as a cost to purchasers of transport services. It will make costs of air pollution visible in freight rates. In so doing, it will provide a signal in the market that could impact freight transport modes and choice of transport corridors by HGVs. In this way a more **level playing field** could be created, as transporters cannot obtain competitive advantages from air pollution costs that are not accounted for.

The tables published here provide the basis for the inclusion of a vehicle-specific air pollution component in road user charges. Air pollution costs have been calculated on the basis of the **formula prescribed in the directive,** taking into account the fact that road transport emissions are mixed in a low volume of air. Following Article 9 in the Eurovignette Directive, additional revenues from external-cost charges must be used by Member States to benefit the transport sector and promote **sustainable mobility**.

Making use of scientific developments subsequent to the 2007 *Handbook of external costs* (Maibach et al., 2008), the EEA is able to provide an **updated estimate** of the external costs of air pollution from road transport.

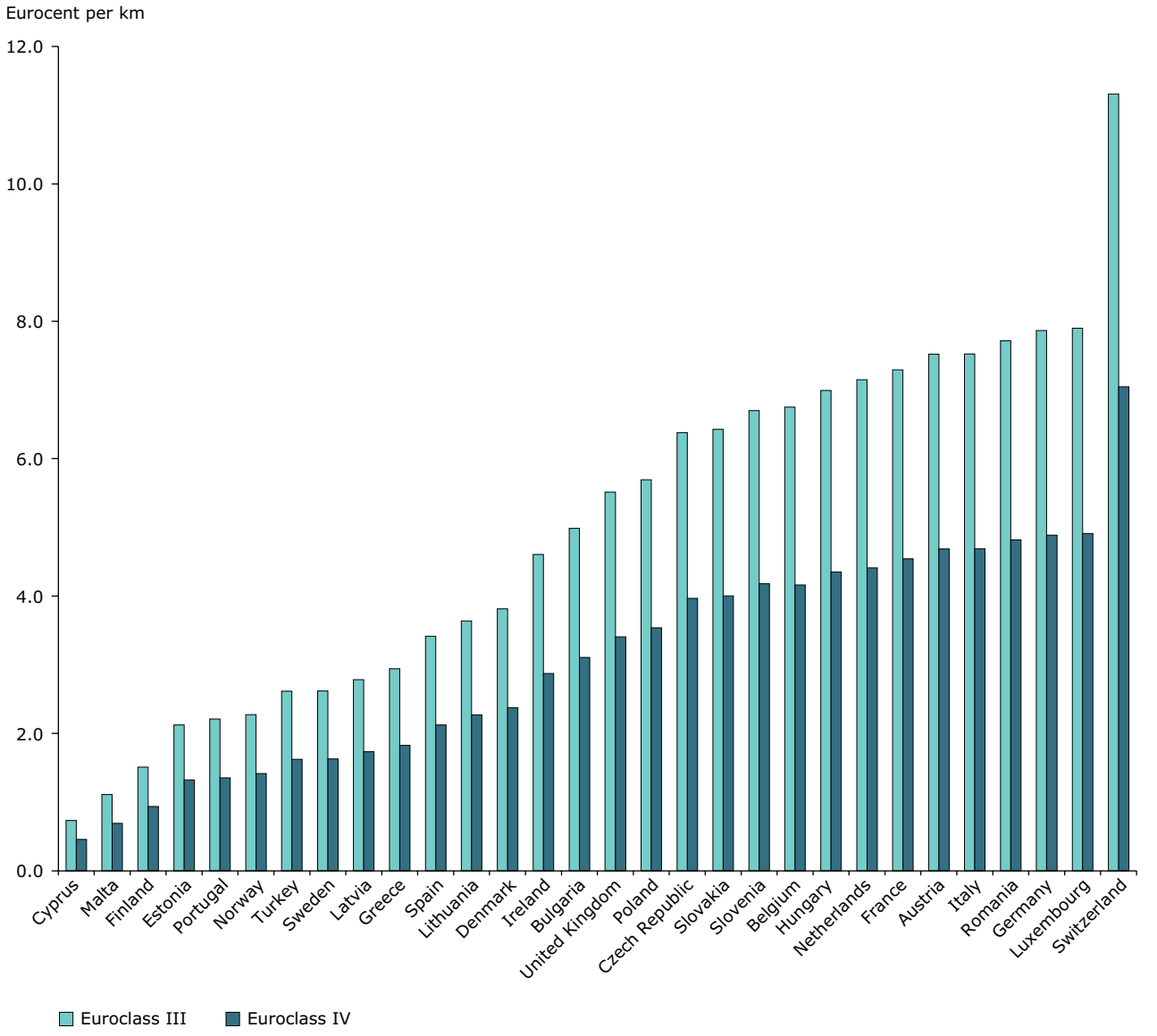
The tables in this report indicate for each country and **for the relevant vehicle categories**, estimates of the external costs of air pollution in 2010 prices. The high level of detail gives member countries an informed basis to group the vehicle categories for administrative purposes. The tables also include estimates for three non-EU member countries of the EEA, of which one (Switzerland) pioneered the first HGV road user charge in Europe.

The adoption of road user charges depends on a **decision by each individual country**. Several countries already charge power plants and industry for their emissions. Levies or taxes on NO_X and/or SO_2 from stationary polluters are in place in the Czech Republic, Denmark, Estonia, France, Hungary, Italy, Latvia, Lithuania, Norway, Poland, Slovakia, Spain and Sweden. Some countries, such as Poland, also levy taxes on transport-related emissions sources (see OECD/EEA database, OECD, 2011).

Figure S.1 provides an overview of table values for one illustrative vehicle category, indicating how the **external costs of HGVs differ among countries**. Higher external costs per kilometre are observed in landlocked countries with high population densities, whereas lower costs are observed in countries with

([1]) 'External costs' refers to situations where the effect of production or consumption of goods and services imposes costs or benefits on others that are not reflected in the prices charged for the goods and services being provided (OECD Glossary, 2002).

Figure S.1 Air pollution externalities of 12–14 ton HGV on highway



low population densities or countries where some emission dilution over maritime areas can take place. High costs also occur in mountainous areas, where air pollution will frequently be trapped and cause extended exposure.

EU Member States are not obliged to charge the full costs of air pollution that follow on from the formula detailed in the directive. Furthermore, Annex IIIb of the Eurovignette Directive establishes **maximum limits** for the charging of air pollution costs, and the estimates published here exceed these limits in some cases (NB: for road sections in mountainous areas charges may exceed the maximum ceiling).

1 Introduction

The Council of Ministers and the European Parliament in 2011 passed amendments to the Eurovignette Directive relating to road user charges for heavy goods vehicles (HGVs) ([2]). The amendments require that user charges for motorways shall reflect the environmental burdens caused by HGVs.

The initial Eurovignette Directive harmonised the standards to be applied in charging HGVs for the use of road infrastructures only. However, the directive did not initially include charges based on the level of pollution caused by different types of HGV.

The amended Eurovignette Directive harmonises charging for environmental burdens. It addresses air pollution, but also provides leeway for road user charges to take account of noise pollution and congestion in specific road sections. The latter aspects are often highly local and could unfortunately not be covered in this report, whereas air pollution costs are mainly regional and need to be addressed from a wider European perspective ([3]).

When imposing an external-cost charge to reflect environmental burdens, the market mechanism will help to identify the appropriate trade-off between emissions and pollution prevention. When costs are factored into market transactions, there will be incentives to use cleaner vehicles and adapt freight transport choices, as the Swiss experience has shown.

The environmental burden from HGVs depends on many different factors, including engine type, tonnage, number of axles, and driving patterns. It also depends on population density and the site-specific exposure that results from atmospheric conditions. The external-cost charges need to reflect these circumstances as well as possible, so as to provide the right incentives to use cleaner vehicles and to adapt the choice of route.

Member countries that have introduced road charging are making use of advanced electronic systems for payment and compliance that can allow traffic to flow freely (see Figure 1.1). These systems can also accommodate charging for environmental burdens.

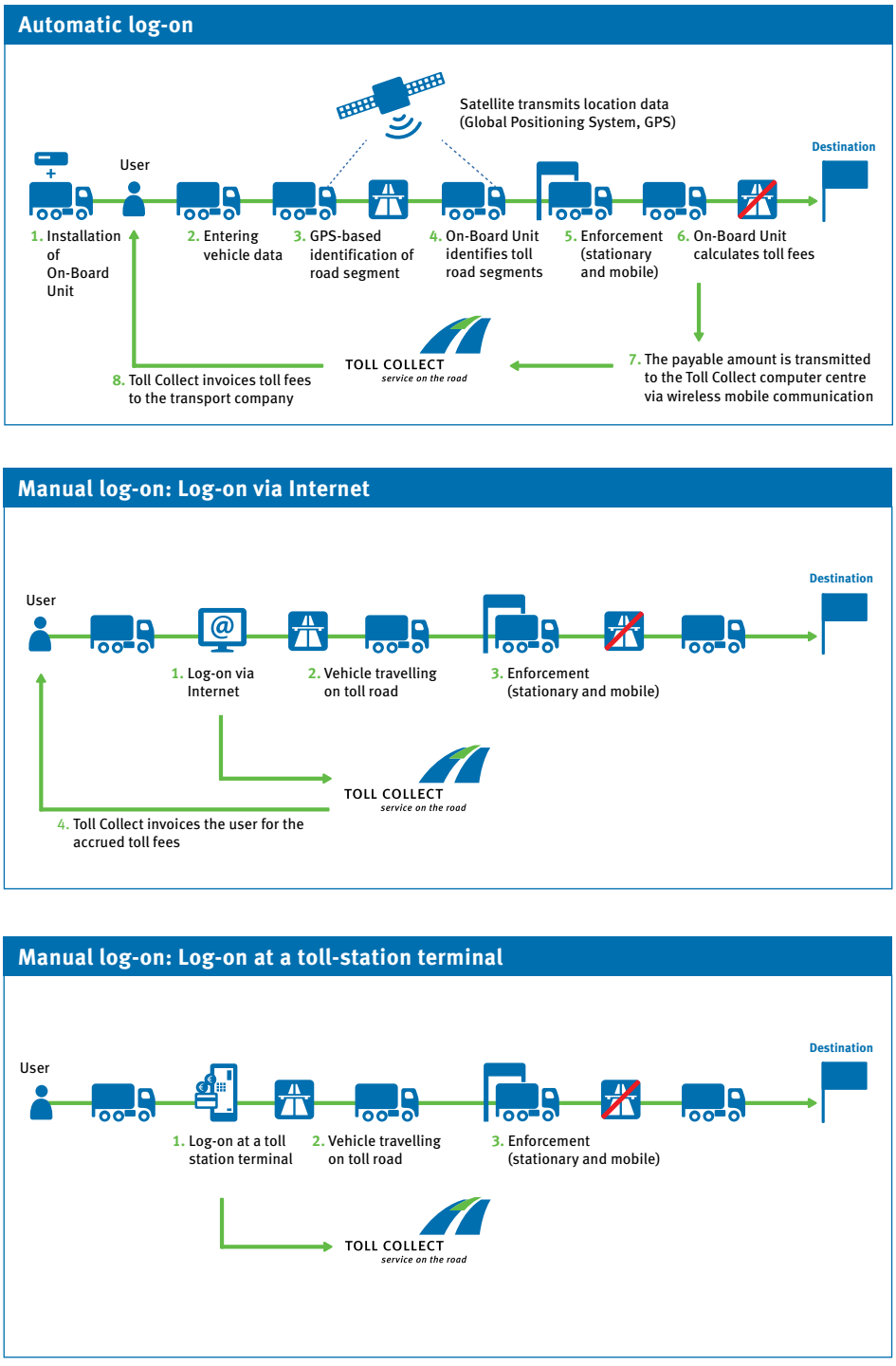
The amended Eurovignette Directive obliges Member States that levy road user infrastructure charges to at least make these dependent on the 'Euro emission class' (a measure that ranks the emissions levels of vehicles) of HGVs. Because this approach only provides a rough approximation of air pollution costs, the directive also provides a formula for a more precise external cost calculation (see Chapter 2). When basing air pollution charges on this more precise formula, Member States are allowed to recycle the additional revenues to benefit the transport sector and promote sustainable mobility (see Article 7f.4 in the Eurovignette Directive).

In the present technical report, the EEA offers a set of detailed tables where external costs are split according to the relevant vehicle categories and are specified for each country. The table values are derived from modelling and are underpinned by a monetary valuation technique that reflects the local- and country-specific costs of air pollutants.

When setting the external-cost charge, Member States are allowed to group vehicle categories for practical and administrative purposes. Member States may choose to include all or a percentage of the external costs of HGV road transport in the external-cost charge, subject also to the maximum ceilings defined (see Article 7c in the Eurovignette Directive).

([2]) Directive 2011/76/EU of the European Parliament and of the Council of 27 September 2011 amending Directive 1999/62/EC on the charging of heavy goods vehicles for the use of certain infrastructures.
([3]) With regard to noise, estimates are available in Maibach et al. (2008), table 22.

Figure 1.1 Electronic road user charging



Note: With the use of advanced electronic systems, traffic can flow freely while being subject to road user charges that — in addition to the infrastructure costs — levy for the external costs of air pollution.

Source: Toll Collect, 2012.

2 Method for the estimation of external costs

Annex IIIa of the Eurovignette Directive specifies the calculation formula for arriving at the external-cost charge related to air pollution as follows.

$PCV_{ij} = \sum_k EF_{ik} \times PC_{jk}$ where:

- PCV_{ij} air pollution cost of vehicle class i on road type j (EUR/vehicle-kilometre);
- EF_{ik} emission factor of pollutant k and vehicle class i (gram/kilometre);
- PC_{jk} monetary cost of pollutant k for type of road j (EUR/gram).

The emission factors (a rating applied to different vehicle classes according to the amount of emissions they produce) are the same as those used by Member States to draft national emission inventories provided for in Directive 2001/81/EC on national emission ceilings for certain atmospheric pollutants (requiring use of the *EMEP/EEA air pollutant emission inventory guidebook*). The monetary costs of pollutants are calculated with a methodology similar to the one adopted for the Clean Air for Europe (CAFE) programme, as applied in its assessment of the Thematic Strategy of Air Pollution (AEA Technology Environment, 2005).

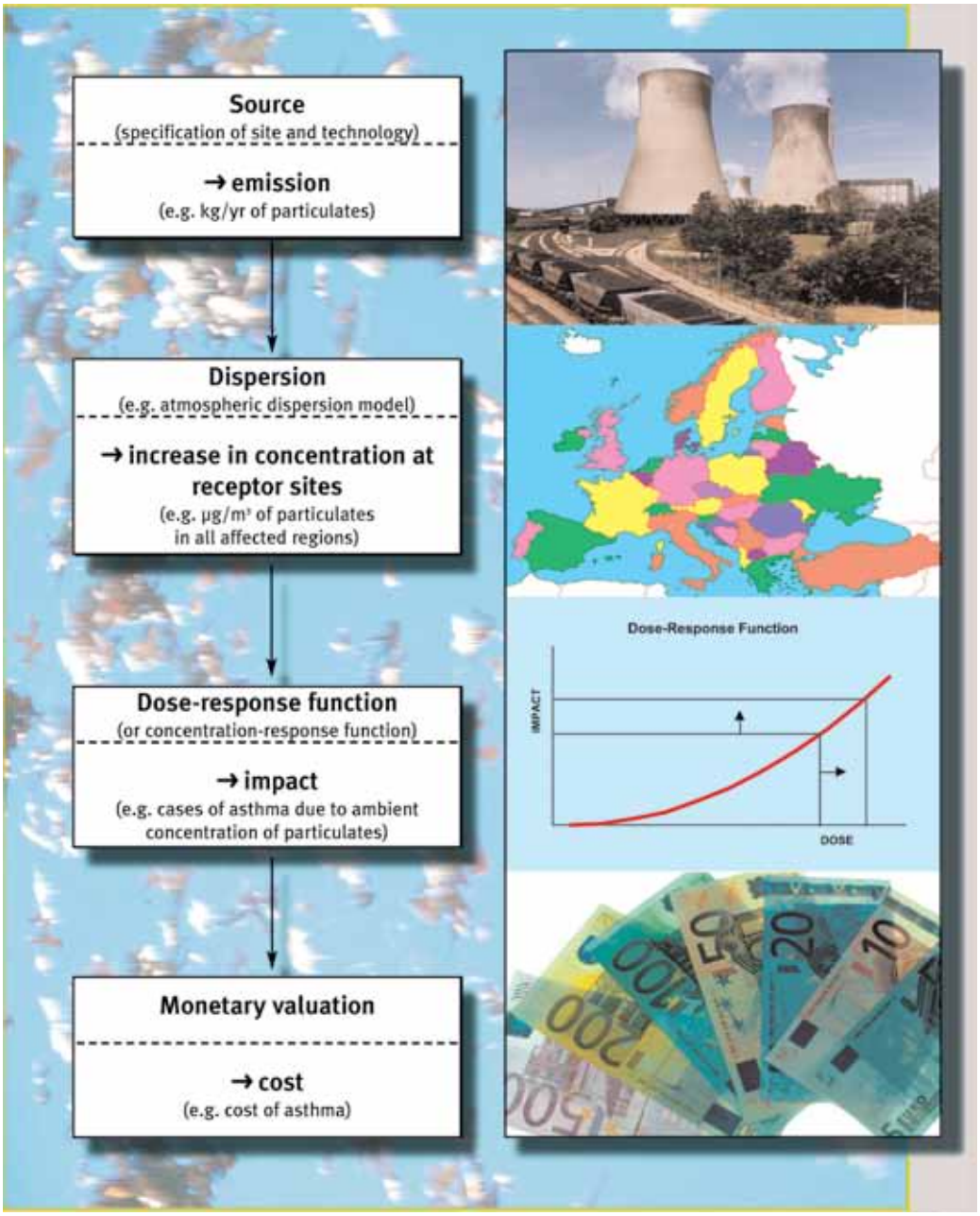
This type of calculation is known as impact pathway analysis, and is basically a sequence of four steps. These four steps consider:

- emissions;
- dispersion of emissions, resulting in changes in exposure;
- physical impacts of exposure (health effects mainly);
- prices for impacts according to established unit values;

Impact pathway analysis has identified the most important impacts of emissions. It has also derived exposure-response functions from available evidence on the relevant effects for health and environment (see details in Annex 1). It makes use of atmospheric modelling to trace patterns of dispersion, chemical transformation, and transport of emissions, so as to estimate the marginal annual amount of pollution that is caused by an emission source, in this case HGV transport (see details in Annex 2). Supported by data stored in geographical information systems, it then adds up the effects of changes in the concentrations of pollutants. In the final step, the analysis attaches a price to the physical-effect end points, using standard values derived from economic analysis. Scientists from different disciplines have collaborated with economists to integrate existing knowledge for an assessment of the external costs. See Figure 2.1 for an illustration of impact pathway analysis.

This method of analysis was developed in the 1990s with EU-funded ExternE research, and has been further explored in other EU-funded projects, notably NEEDS (New energy externalities development for sustainability) and EXIOPOL (A new environmental accounting framework using externality data and input-output tools for policy analysis). Results are available on the project websites (NEEDS, 2011; EXIOPOL, 2011). If the knowledge base changes, for instance regarding the health impact endpoints to be included, the results may undergo changes.

Figure 2.1 Impact pathway approach to analysis of air pollution costs



Note: Sequence of impact pathway analysis. Transport emissions take place closer to the ground and mix in a lower volume of air than high-stack sources, which the models can also describe.

Source: European Commission, 2003.

3 Unit costs for air pollutants from transport

In order to take advantage of new developments since the preparation in 2007 of the Commission's 'Handbook of external costs' (Maibach et al., 2008) the EEA, under the framework contract for environmental economics, has requested an updated estimate of the external costs of air pollution from road transport.

Previous estimates, such as in EEA (2011), have been based on uniform source modelling of air pollution dispersion, and have therefore not included separate calculations for the various emission-producing sectors. However, the updated estimates now specifically address road transport emissions.

Road transport pollutants are emitted close to the surface of the earth, and hence display a different pattern of dispersion than pollutants emitted from 'high-stack' sources (the tall chimneys used by heavy industry and electricity generation). Road transport emissions are also mixed in a lower volume of air, which results in higher concentrations of pollutants near the surface. Research has substantiated how pollutants from road transport exhausts result in greater exposure than pollutants from high-stack sources, and hence should be attributed separate unit estimates of external costs.

The chemical transformation of emissions and the formation of secondary pollutants involve non-linear processes. For this reason, it is preferable to base estimates on one uniform modelling exercise that can keep track of the inter-linkages between pollutants. In particular, the inter-linkages between NO_X emissions, the formation of secondary nitrate particles and the reactions with ozone are complex phenomena that require detailed specification. The EEA update of unit values (as listed in Table 3.1) has been derived from one consistent modelling exercise for relevant pollutants.

The monetary values applied for the health effects of pollutants (as well as the exposure-response functions for the relationships between pollution concentrations and health effects) remain comparable to those that were applied with the European Commission's CAFE methodology (see Table A1.1). Hence any differences in unit costs that may arise for pollutants in comparison with previous externality estimates can be explained by scientific improvements in the underlying atmospheric modelling. The remaining key parameters and assumptions are constant, with some minor modifications, although they have been updated to 2010 prices.

Table 3.1 presents for each country the resulting unit values for the external costs of specific air pollutants, namely NO_X and $PM_{2.5}$ (exhaust and non-exhaust). These unit values have been used as a basis for the annex tables, converting them into external costs per kilometre and vehicle category.

The Eurovignette Directive applies to highways but also distinguishes between suburban roads (*within* cities) and interurban roads (*between* cities). Because air pollution emissions depend on the average speed of the vehicle and its driving pattern, the tables have three resulting columns for average speeds of 35, 55 and 80 km per hour. These are suburban roads (35 km/h), interurban roads (55 km/h) and highways (80 km/h) respectively. Values for suburban and interurban road sections can sometimes be taken into account, for example where highways traverse urban zones or are suffering from congestion.

The Eurovignette Directive allows for the possibility to exempt HGVs of less than 12 tonnes from road user charges, provided that Member States can justify such exemptions (see Article 7.5 in Eurovignette Directive). Figures published include all vehicle categories so as to allow an informed choice to be made for possible exemptions.

The country tables show that NO_X emissions contribute relatively more to per kilometre-externalities than primary particles $PM_{2.5}$. This is because NO_X is a regional pollutant that can travel — and thus cause exposure of many citizens — over considerable geographic distances (several hundred kilometres). Primary particles $PM_{2.5}$, on the other hand, are local pollutants with shorter

atmospheric transport and with resulting exposure in closer proximity to the emission sources.

Still, in urban and suburban zones with high population densities $PM_{2.5}$ may result in high external costs per kilometre, due to more people being affected. Hence, when emitted from suburban road sections, $PM_{2.5}$ may contribute as much as — or even more — than NO_X to the external costs per kilometre of HGVs. For this reason, when calculating road-use externalities in large urban zones, a separate additional charge component related to $PM_{2.5}$ can be relevant.

The EEA has estimated additional $PM_{2.5}$ charges on the standard per-kilometre costs to reflect higher population densities for urban zones with more than 500 000 inhabitants. Table 3.2 lists the relevant urban zones, cf. Eurostat Urban Audit data. The resulting urban zone annex tables are

Table 3.1 Marginal air pollution costs in EUR/tonne of pollutant for road transport

	Pollutant	$PM_{2.5}$ (exhaust)	NO_x	$PM_{2.5}$ (non-exhaust)
	Source model	EVA	EVA	EVA
	Valuation approach	See Table A1.1	See Table A1.1	See Table A1.1
	Unit	EUR 2010	EUR 2010	EUR 2010
	Population density	National average	National average	National average
AT	Austria	46.656	17.963	46.656
BE	Belgium	82.991	14.714	82.991
BG	Bulgaria	30.941	11.910	30.941
CH	Switzerland	70.860	26.994	70.860
CY	Cyprus	3.263	1.795	3.263
CZ	Czech Republic	50.388	14.871	50.388
DE	Germany	62.981	18.304	62.981
DK	Denmark	25.182	9.060	25.182
EE	Estonia	15.351	5.002	15.351
EL	Greece	23.620	6.844	23.620
ES	Spain	25.992	7.996	25.992
FI	Finland	12.605	3.491	12.605
FR	France	47.489	17.343	47.489
HU	Hungary	52.613	16.392	52.613
IE	Ireland	27.070	11.050	27.070
IT	Italy	48.584	17.907	48.584
LT	Lithuania	20.513	8.760	20.513
LU	Luxembourg	20.513	18.438	20.513
LV	Latvia	17.932	6.623	17.932
MT	Malta	7.085	2.645	7.085
NL	Netherlands	86.140	15.644	86.140
NO	Norway	13.755	5.442	13.755
PL	Poland	46.547	13.217	46.547
PT	Portugal	37.078	4.481	37.078
RO	Romania	40.816	18.673	40.816
SE	Sweden	18.021	6.191	18.021
SI	Slovenia	37.238	16.154	37.238
SK	Slovakia	44.665	15.192	44.665
TR	Turkey	23.325	6.006	23.325
UK	United Kingdom	61.544	12.231	61.544

Source: Brandt et al., 2010.

available electronically from the EEA website and may also support assessments to demonstrate where environmental damage is higher than that generated on the average road network, as mentioned under section 1 of Annex IIIa in the Eurovignette Directive.

Table 3.2 Larger Urban Zones (LUZs) with more than 500 000 inhabitants for which road sections may have $PM_{2.5}$ externalities above national levels

Aarhus	Glasgow	Palermo
Amsterdam	Gothenburg	Palmas
Antwerp	Grenoble	Paris
Athens	Hague	Porto
Augsburg	Hamburg	Poznan
Barcelona	Hannover	Prague
Bari	Helsinki	Rennes
Belfast	Karslruhe	Riga
Berlin	Katowice	Rome
Bielefeld	Krakow	Rotterdam
Bilbao	Las Palmas	Rouen
Birmingham	Leeds-Bradford	Ruhr
Bologna	Leicester	Saarbrücken
Bonn	Leipzig	Sczezin
Bordeaux	Liege	Seville
Bratislava	Linz	Sheffield
Bristol	Lisbon	Sofia
Brno	Liverpool	Stockholm
Brussels	Ljubljana	Strasbourg
Bucharest	Lodz	Stuttgart
Budapest	London	Tallinn
Bydgoszcz	Lublin	Thessaloniki
Cardiff	Lyon	Toulouse
Catania	Madrid	Turin
Cologne	Malaga	Tyne and Wear
Copenhagen	Malmö	Utrecht
Coventry	Manchester	Valencia
Dresden	Milan	Venice
Dublin	Munich	Verona
Düsseldorf	Nantes	Vienna
Edinburgh	Naples	Vigo
Florence	Nottingham	Vilnius
Frankfurt a.M.	Nuremberg	Warsaw
Freiburg	Oslo	Wroclaw
Gdansk	Ostrava	Zaragoza
Genoa	Padua	Zurich

Source: Eurostat Urban Audit, 2007–2009.

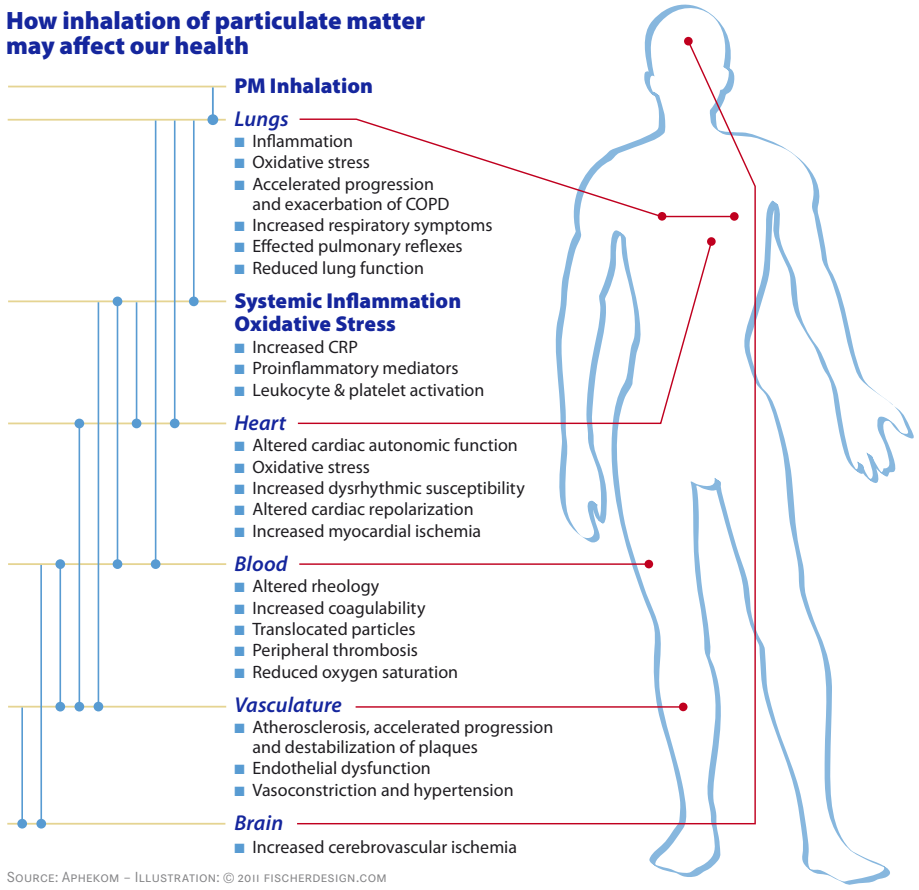
Annex 1 Health impacts of air pollution and their valuation

Mortality

Emissions of air pollutants have generally declined in recent decades in Europe. Yet improved understanding of the health implications of air pollutants has encouraged policymakers to reduce emissions still further. According to expert estimates, about 350 000 premature deaths annually across the EU-25 are attributable to air pollution from primary and secondary particulate matter (PM) and related ozone formation ([4]).

Average life expectancy would be improved if air pollution levels were reduced to the level recommended by the World Health Organization (WHO). Even in Brussels, the 'capital' of the European Union, air pollution reduces life expectancy by an average of 7 months per

Figure A1.1 How inhalation of particulate matter may affect our health



Source: Based on Pope and Dockery, 2006, cf. Aphekom project.

([4]) Estimate derived from the cost–benefit analysis carried out as part of the Clean Air for Europe programme (AEA, 2005). A more recent analysis by the European Topic Centre on Air and Climate Change puts this figure at 492 000 for EEA-32 (excl. Turkey) and west-Balkans (de Leeuw, F. and Horalek, J., 2009).

individual (Aphecom, 2011). The burden of reduced life expectancy is not equally distributed: in the main, it is older people and vulnerable individuals who suffer the most from air pollution, but the average lung cancer death, for instance, causes a loss of life expectancy of between 9 and 10 years and may also affect middle-aged people (Bach et al. 2006:82).

Figure A1.1 provides an overview of the potential health implications of inhaling particulate matter. Epidemiological research demonstrates that there is an increase in average mortality when individuals are chronically exposed over several years to increased levels of particulate matter. It is mainly cardiovascular disease and lung cancer that are related to long-term exposure to elevated levels of particulate matter, and these account for the majority of the premature deaths predicted.

The monetary estimate of the external costs associated with premature deaths is based on the largest available cohort study relating to air pollution mortality that has been carried out (Pope et al., 2002). PM concentrations are indicators of complex mixtures of pollutants and are used as proxies for the particulate characteristics responsible for the effects of PM exposure (see also EEA SOER, 2010:97).

Morbidity

Exposure to increased levels of air pollution has been shown to result in greater morbidity. This can be manifested in different ways, for example in an increase in the number of working days lost to sickness or in increased reports of discomfort due to headaches. For actual days of work lost there is an associated decline in productivity.

There is continued scientific scrutiny into the extent to which new cases of asthma can be triggered by air pollution. But it is beyond doubt that confirmed asthmatics will need more doses of medicine when levels of air pollution are exacerbated. Only the latter effect is included in the estimate of external costs.

The prevalence of chronic diseases in the general population has also been shown to increase with higher long-term exposure to air pollution. Chronic bronchitis — also known as chronic obstructive pulmonary disease (COPD) — is a serious and life-threatening disease, with significant implications for the personal welfare and earnings of those affected (see Figure A1.2).

Finally, there is a higher rate of acute hospitalisations, particularly for asthmatics and older people, during episodes of smog or highly elevated pollutant concentrations. There are also more visits to clinics.

The calculations of external costs relating to HGV road transport are conservative in that only a selection of impacts are included, based on the expert assessment carried out with the European Commission's CAFE review (AEA, 2005). Future changes in the knowledge base may have implications for our estimates.

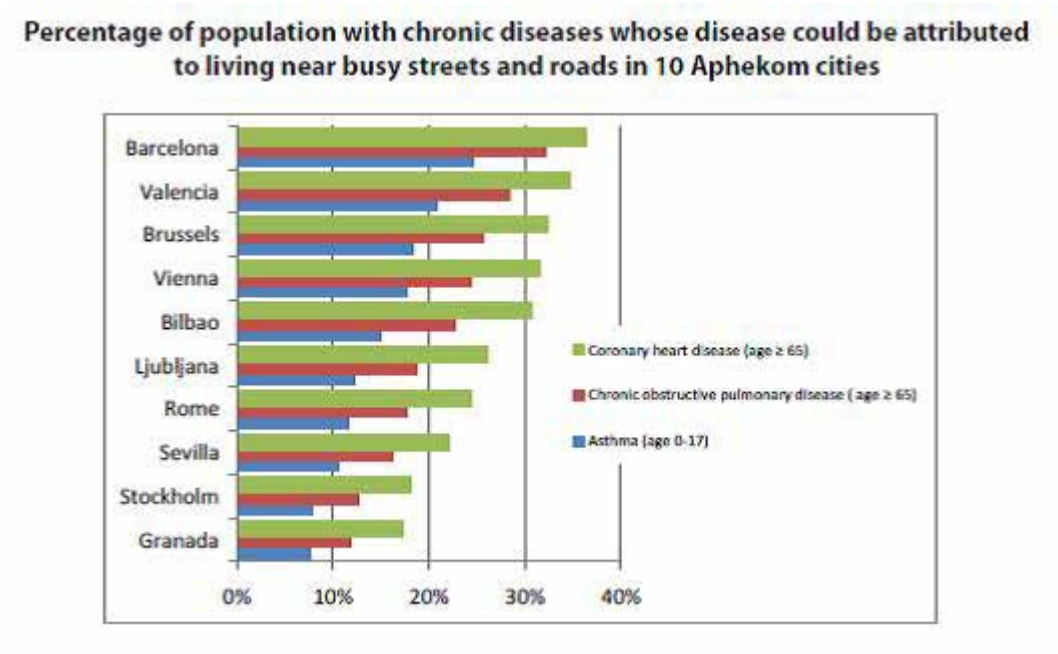
Valuation

In order to account for the external costs of air pollution, a monetary value needs to be attributed to excess mortality. This has been done by adopting methods and figures conventionally applied in transport economics, where such calculations are used for economic assessments of road improvement projects that reduce fatalities.

The valuation of a statistical life expresses the risk premium that individuals will be willing to pay to avoid a statistical fatality. If individuals are willing to pay EUR 140 for a road improvement project or safety device that can lower the fatality rate with 1/10 000, then the value of a statistical life is by implication EUR 1.4 million (140 : 1/10 000). The sacrifice for risk reductions has been explored in numerous economic studies, for instance relating to what people pay for airbags in their cars. Traffic fatalities on average befall middle-aged people, leading to a loss of life expectancy of about 30 years. The value of a lost life year is by implication about EUR 50 000 (1.4 million: 30 = EUR 47 000). More advanced studies, specifically exploring the sacrifice people are willing to make to avoid loss of life expectancy due to air pollution, have reached similar estimates (Alberini, Hunt and Markandya, 2006).

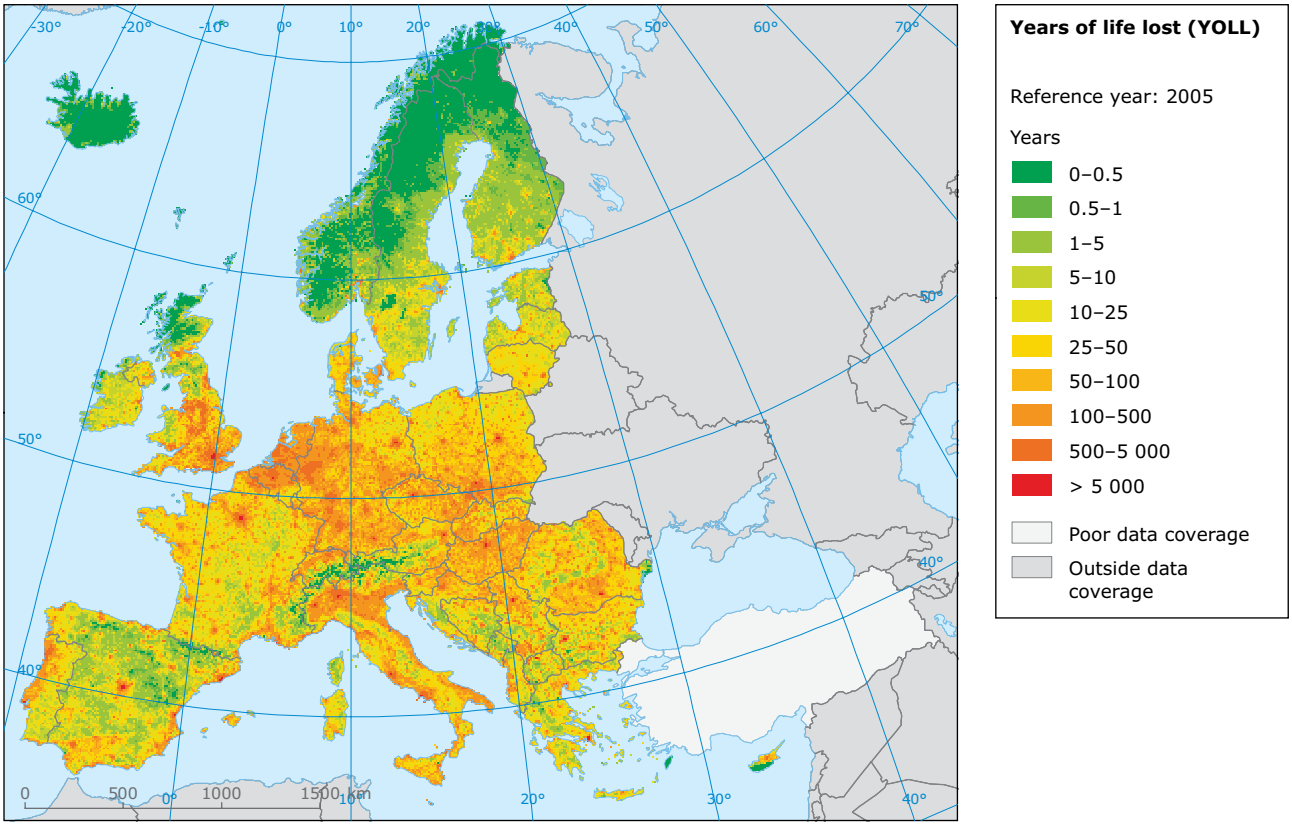
The above estimates represent an average for the enlarged European Union, but the willingness to pay for reductions in risk obviously differs across income levels. However, in the case of air pollution costs, adjustment according to per capita income differences among EU Member States is not regarded as appropriate, because long-range transport implies that emissions from one Member State will affect numerous other Member States and their citizens. Map A1.1 provides an overview of premature mortality predicted to occur in Europe as a result of air pollutants.

Figure A1.2 Air pollution and morbidity effects



Source: Aphekom, 2011.

Map A1.1 Estimated years of life lost (YOLL) attributable to long-term $PM_{2.5}$ exposure for reference year 2005



Source: EEA, 2010.

Table A1.1 lists the specific valuation estimates applied in the modelling of externality costs for mortality and morbidity effects. In the Clean Air for Europe cost–benefit assessment, a principal value of EUR 1.4m (in year 2000 values) was applied for preventing a fatality. Because air pollution is believed to affect mainly older people, and because some surveys indicate a lower risk aversion for this group, the value was adjusted to about EUR_{2000} 1 million following advice from an expert panel convened by the European Commission (2001). For the valuation of a life year, the results from a survey relating specifically to air pollution risk reductions were applied (Alberini, Hunt and Markandya, 2006), implying a value of EUR_{2000} 52 000 per year of life lost (YOLL). With the more conservative metric of estimating lost life years, rather than 'full' statistical lives, there is no adjustment for age. Most of the excess mortality is due to chronic exposure to air pollution over many years and the life year metric is based on life tables that can account for the number of lost life years in a statistical cohort. Following the guidelines of the Organisation for Economic Co-operation and Development (OECD, 2006), the predicted acute deaths, mainly from ozone, are valued here with the adjusted value for preventing a fatality (VSL, Value of a Statistical Life). The unit values referred to in this paragraph are in year-2000 prices, but have been indexed to 2010 prices for the purposes of the externality tables, as indicated in Table A1.1.

Table A1.1 Priority health impacts, exposure-response functions and economic valuation

Health effects (species)	Exposure-response coefficient	Valuation, Euros (2010-prices)
Morbidity		
Chronic Bronchitis (PM)	4.4E-5 cases/μgm^{-3} (adults)	232,000 per case
Restricted activity days (PM)	9.0E-2 days/ μgm^{-3} (adults)	101 per day
Minor Restricted activity days (O_3)	1.15E-2*SOMO35 cases/μgm^{-3} (adults-above65)	46 per day
Hospital admissions		
Respiratory (PM)	1.17E-5 cases/ μgm^{-3}	2,450 per case
Respiratory (O_3)	1.25E-5*SOMO35 cases/μgm^{-3} (>65 years)	
Cardiac (PM)	7.23E-6 cases/ μgm^{-3}	
Asthma children (7.6 % < 16 years)		
Bronchodilator use (PM)	1.52E-1 cases/ μgm^{-3}	1.2 per case
Bronchodilator use (O_3)	8.5E-3 *SOMO35 cases/μgm^{-3}	
Lower respiratory symptoms (PM)	3.1E-1 days/ μgm^{-3}	46 per day
Lower respiratory symptoms (O_3)	1.09E-1*SOMO35 cases/μgm^{-3}	
Asthma adults (6.4 % > 15 years)		
Bronchodilator use (PM)	3.05E-2 cases/ μgm^{-3}	1.2 per case
Bronchodilator use (O_3)	2.0E-4 *SOMO35 cases/μgm^{-3}	
Lower respiratory symptoms (PM)	1.01E-1 days/ μgm^{-3}	46 per day
Mortality		
		1,198,000 per case
Acute mortality (O_3)	3.27E-6*SOMO35 cases/ μgm^{-3}	
Chronic mortality (PM)	1.091E-3 YOLL/ μgm^{-3} (>30 years)	63,550 per YOLL
Infant mortality ($PM_{2.5}$)	6.67E-6 cases/ μgm^{-3} (< 9 months)	1,833,000 per case

Annex 2 Emissions and atmospheric transport: data and models

Actual 'real-world' vehicle emissions differ considerably both from limit values laid down for vehicles in legislation, and from vehicle approval test conditions. Emissions in real traffic situations depend on several factors: cumulated mileage driven, maintenance levels for engine and exhaust, as well as actual driving behaviour.

Emission factors (the rating applied to different vehicle classes according to the amount of emissions they produce) are derived from repeated emissions measurements, reflecting the diversity of driving patterns and a sufficient range and number of test vehicles. Fuel use and emissions have been simulated for operationally hot engines, taking into account emission standards and the increase in emissions that accompanies catalyst wear. Also taken into consideration are the emission effects of cold start and evaporation. Emissions arising from tyre and brake wear (as well as from road abrasion) are estimated in accordance with the COPERT IV methodology, and are consistent with UNECE (United Nations Economic Commission for Europe) reporting, cf. EMEP/EEA Air Pollutant Emission Inventory Guidebook (EEA, 2009).

The COPERT IV fleet classification has been used to group vehicles into vehicle classes, subclasses and layers. The layer classification is a further division of vehicle subclasses into groups of vehicles with the same average fuel use and emission behaviour, according to emission legislation levels.

Air pollutants are transported over considerable distances from the point of emission, and interact with substances in the atmosphere. A modelling framework has been used to account for the production of secondary pollutants, which are produced by the interaction between pre-existing atmospheric substances and the primary air pollutants that are emitted by vehicles, identifying the marginal contribution of road transport. The EEA has used the EVA (Economic Valuation of Air pollution) modelling framework as a basis for estimating the external costs from heavy goods vehicles. This framework is based on a comprehensive, state-of-the-art, regional-scale air pollution model.

The overall concept of the EVA model is based on the impact pathway chain, and consists of the following elements:

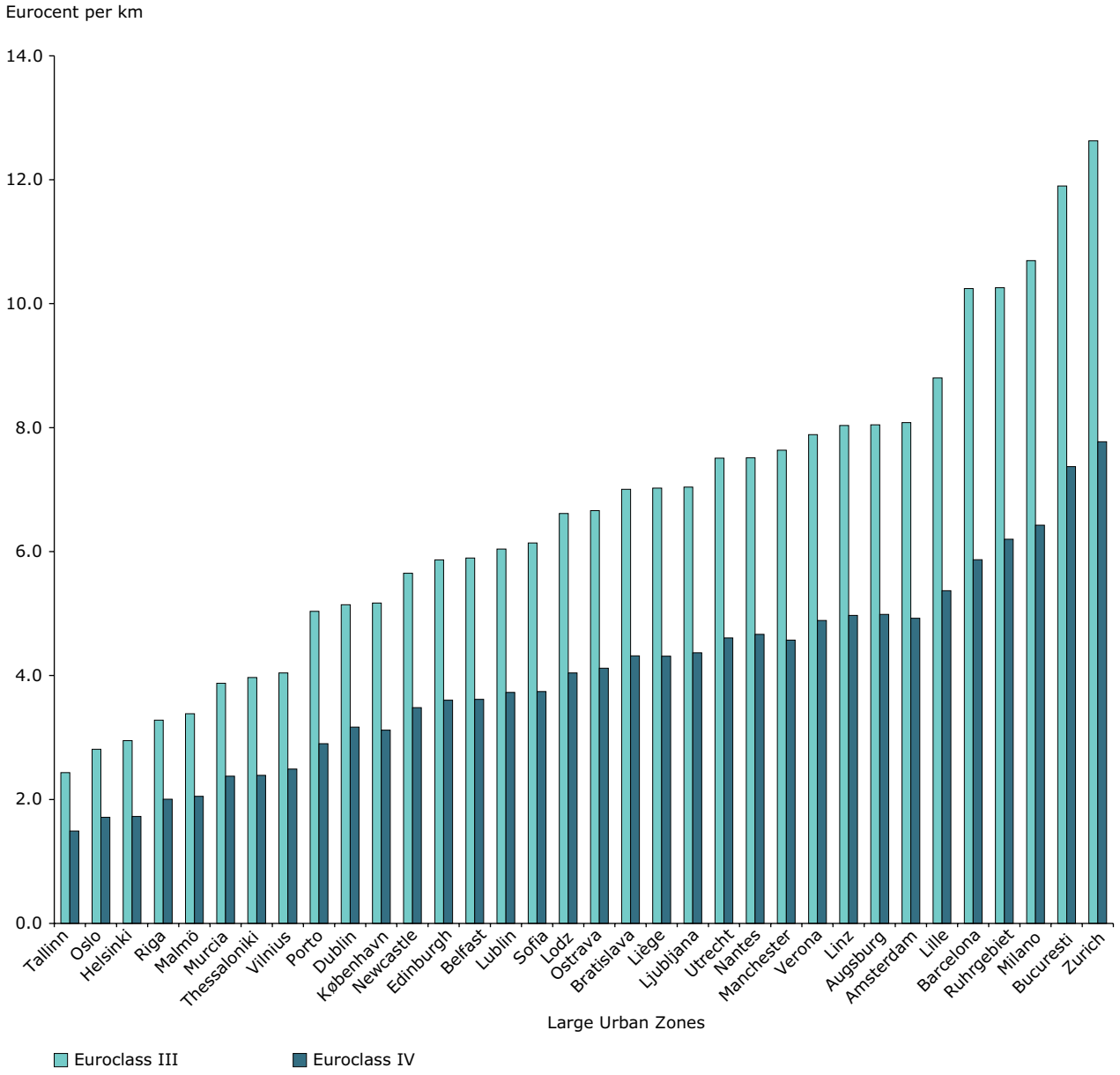
- a comprehensive, state-of-the-art, long-range Eulerian Atmospheric Chemistry-Transport Model DEHM, version 5.1 (Christensen, 1997; Frohn et al., 2002);
- detailed emission inventories, based on European Monitoring and Evaluation Programme (EMEP) data for Europe (September 2010 version) and Global Emission Inventory Activity/ Emission Database for Global Atmospheric Research (GEIA/EDGAR) data for the northern hemisphere;
- gridded population data;
- state-of-the-art exposure-response functions (Table A1.1);
- monetary valuation of the impacts from air pollution on human health applicable for European conditions.

The DEHM is a three-dimensional model covering most of the northern hemisphere with a 96 x 96 horizontal grid, using a polar stereographic projection. The model includes a two-way nesting capability for obtaining higher resolutions over Europe (Frohn et al., 2002). The vertical grid is defined using the sigma-coordinate system with 20 vertical layers. The model describes concentration fields of 58 chemical species including emissions of NO_X, SO_2, VOCs, CO and NH_3 and nine classes of particulate matter ($PM_{2.5}$, PM_{10}, TSP, sea salt > 2.5 μm, primary emitted smoke, fresh black carbon, aged black carbon and organic carbon). The model includes a total of 122 chemical reactions.

The MM5v3 meteorological model (Grell et al., 1994) provides meteorological fields for the DEHM model on an hourly basis, with data from an average meteorological year. Wet deposition, included in the loss term, is expressed as the product of scavenging coefficients and the concentration. Dry deposition is estimated separately for gases and particles, and depends on the land cover. Background emissions, based on EMEP data for year 2000, include ships and previous wildfires.

Quantifying the contribution of specific emission sources to the atmospheric concentration levels of pollutants is a challenge, especially if the emissions of interest are relatively small. Numerical 'noise' in atmospheric models can be of a similar order of magnitude as the 'signal' from the emissions of interest. A careful 'tagging method' — that reduces the influence of numerical 'noise' — has been employed to assess how specific emission sources influence air pollution levels, without assuming linearity of the non-linear atmospheric chemistry. This method is more adequate than taking the simple difference between two concentration fields, which is sometimes used in decision-support tools.

Figure A2.1 Air pollution externalities of 12–14 ton HGV on highway



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Glossary

Externalities	refers to situations when the effect of production or consumption of goods and services imposes costs or benefits on others which are not reflected in the prices charged for the goods and services being provided (OECD Glossary of Statistical Terms, 2002).
External-cost charge	means a charge levied for the purpose of recovering the costs incurred in a Member State caused by the release of particulate matter and of ozone precursors, such as nitrogen oxide, in the course of the operation of a vehicle (2011/76/EU).
Impact pathway	simply relates to the sequence of events linking an environmental burden to an impact (cf. Friedrich and Bickel, 2001:5). Emissions can be quantified and followed through to impact assessment and monetary valuation.
Impact pathway analysis	the principal steps are (cf. Rabl and Peuportier, 1995:422): • characterisation of pressures and quantification of their environmental burdens **(emissions)**, • modelling of transport and dispersion patterns so as to account for the resulting marginal pollutant concentration changes in receptors at local and regional scale **(dispersion)**, • for the priority pathways, forecasting of the expected physical impacts on basis of exposure–response functions derived from state-of-the-art epidemiological or other scientific literature **(exposure–response)**, • monetary valuation of impact end-points according to benefit transfer procedures and estimation of the marginal social cost for the quantified emissions changes **(valuation).**
Internalisation of costs	means the principle that all costs associated with the protection of the environment should be included in the polluting undertakings' production costs (EC 2008/C82).
Morbidity	is an incidence of ill health.
Mortality	is incidence of death in a population.
Polluter	means someone who directly or indirectly damages the environment or who creates conditions leading to such damage (L194/1975) ([5]).
Polluter pays principle	means that the costs of measures to deal with pollution should be borne by the polluter who causes the pollution, unless the person responsible for the pollution cannot be identified or cannot be held liable under Community or national legislation or may not be made to bear the costs of remediation. Pollution in this context is the damage caused by the polluter by directly or indirectly damaging the environment, or by creating conditions leading to such damage, to physical surroundings or natural resources (EC 2008/C82).
YOLL	years of life lost in a population. YOLL's are calculated on basis of life tables featuring demographic data for a population cohorte. One life table uses observed survival probabilities and one life table is a scenario representing mortality risk changes from air pollution. The difference between the two life tables is interpreted as the years of life lost (YOLL) owing to the population exposure to air pollution (cf. Leksell and Rabl, 2001).

([5]) Council Recommendation of 3 March 1975 regarding cost allocation and action by public authorities on environmental matters (OJ L 194, 25.7.1975, p. 1).

Tables with external costs of HGV in EEA member countries

Unit costs of air pollutants		PM_{25}	N	NO_x	PM_{25}	N	NO_x
		EUR/kg	EUR/kg	EUR/kg	cent/gram	cent/gram	cent/gram
AT	Austria	46.656	59.022	17.963	4.666	5.902	1.796
BE	Belgium	82.991	48.345	14.714	8.299	4.834	1.471
BG	Bulgaria	30.941	39.132	11.910	3.094	3.913	1.191
CH	Switzerland	70.860	88.693	26.994	7.086	8.869	2.699
CY	Cyprus	3.263	5.897	1.795	0.326	0.590	0.179
CZ	Czech Republic	50.388	48.863	14.871	5.039	4.886	1.487
DE	Germany	62.981	60.142	18.304	6.298	6.014	1.830
DK	Denmark	25.182	29.769	9.060	2.518	2.977	0.906
EE	Estonia	15.351	16.434	5.002	1.535	1.643	0.500
EL	Greece	23.620	22.486	6.844	2.362	2.249	0.684
ES	Spain	25.992	26.271	7.996	2.599	2.627	0.800
FI	Finland	12.605	11.469	3.491	1.261	1.147	0.349
FR	France	47.489	56.983	17.343	4.749	5.698	1.734
HU	Hungary	52.613	53.859	16.392	5.261	5.386	1.639
IE	Ireland	27.070	36.308	11.050	2.707	3.631	1.105
IT	Italy	48.584	58.838	17.907	4.858	5.884	1.791
LT	Lithuania	20.513	28.783	8.760	2.051	2.878	0.876
LU	Luxembourg	61.534	60.581	18.438	6.153	6.058	1.844
LV	Latvia	17.932	21.760	6.623	1.793	2.176	0.662
MT	Malta	7.085	8.692	2.645	0.708	0.869	0.265
NL	Netherlands	86.140	51.402	15.644	8.614	5.140	1.564
NO	Norway	13.755	17.881	5.442	1.375	1.788	0.544
PL	Poland	46.547	43.428	13.217	4.655	4.343	1.322
PT	Portugal	37.078	14.725	4.481	3.708	1.472	0.448
RO	Romania	40.816	61.353	18.673	4.082	6.135	1.867
SE	Sweden	18.021	20.342	6.191	1.802	2.034	0.619
SI	Slovenia	37.238	53.076	16.154	3.724	5.308	1.615
SK	Slovakia	44.665	49.917	15.192	4.466	4.992	1.519
TR	Turkey	23.325	19.733	6.006	2.333	1.973	0.601
UK	United Kingdom	61.544	40.188	12.231	6.154	4.019	1.223

Source: From: Brandt, J, Silver, JD, Gross, A & Christensen, JH, 2010, Marginal damage cost per unit of air pollution emissions, Roskilde: National Environmental Research Institute. 23 p. Specific agreement 3555/B2010/EEA.54131 implementing framework contract ref. no. EEA/IEA/09/002.

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
4.6656	1.79633	4.666	1.796	4.666	1.796	cent/km	cent/km	cent/km
2.146	8.083	2.146	13.472	2.146	13.472	10.2	15.6	15.6
2.048	7.952	1.578	7.815	1.477	8.792	10.0	9.4	10.3
0.960	5.540	0.781	5.680	0.746	6.385	6.5	6.5	7.1
0.570	5.907	0.534	5.859	0.553	6.409	6.5	6.4	7.0
0.594	4.621	0.499	4.314	0.471	4.643	5.2	4.8	5.1
0.340	2.804	0.319	2.745	0.313	3.028	3.1	3.1	3.3
0.340	1.655	0.320	1.592	0.313	1.756	2.0	1.9	2.1
2.105	15.115	1.554	13.836	1.436	14.575	17.2	15.4	16.0
1.358	8.963	1.031	8.293	0.970	8.604	10.3	9.3	9.6
0.744	9.492	0.656	8.620	0.700	8.765	10.2	9.3	9.5
0.771	7.524	0.613	6.567	0.580	6.440	8.3	7.2	7.0
0.372	4.571	0.341	4.095	0.332	4.156	4.9	4.4	4.5
0.374	2.700	0.342	2.420	0.333	2.389	3.1	2.8	2.7
2.245	16.954	1.672	14.930	1.544	15.169	19.2	16.6	16.7
1.449	10.135	1.107	8.955	1.039	8.945	11.6	10.1	10.0
0.787	10.795	0.687	9.339	0.747	9.119	11.6	10.0	9.9
0.787	8.824	0.640	7.237	0.615	6.904	9.6	7.9	7.5
0.379	5.272	0.346	4.489	0.337	4.350	5.7	4.8	4.7
2.954	21.593	2.119	18.101	1.923	17.442	24.5	20.2	19.4
1.852	12.885	1.362	10.751	1.238	10.362	14.7	12.1	11.6
0.921	13.875	0.799	11.380	0.805	10.882	14.8	12.2	11.7
0.985	11.344	0.768	8.962	0.716	8.306	12.3	9.7	9.0
0.419	6.707	0.371	5.420	0.358	5.134	7.1	5.8	5.5
0.421	4.024	0.372	3.208	0.358	3.020	4.4	3.6	3.4
2.977	23.692	2.181	19.002	1.996	17.782	26.7	21.2	19.8
2.327	16.635	1.622	13.374	1.459	12.548	19.0	15.0	14.0
1.134	17.705	0.916	14.065	0.988	13.134	18.8	15.0	14.1
1.165	14.250	0.869	11.142	0.800	10.347	15.4	12.0	11.1
0.450	8.567	0.389	6.825	0.372	6.370	9.0	7.2	6.7
0.453	5.102	0.390	4.041	0.373	3.766	5.6	4.4	4.1
3.142	24.953	2.291	20.036	2.070	18.671	28.1	22.3	20.7
2.418	17.557	1.712	14.030	1.534	13.073	20.0	15.7	14.6
1.188	18.469	0.958	14.615	1.035	13.586	19.7	15.6	14.6
1.226	14.417	0.913	11.253	0.821	10.470	15.6	12.2	11.3
0.454	8.839	0.392	7.012	0.374	6.530	9.3	7.4	6.9
0.457	5.219	0.394	4.113	0.375	3.831	5.7	4.5	4.2
3.445	28.195	2.515	23.114	2.266	21.502	31.6	25.6	23.8
2.632	20.109	1.888	16.321	1.706	15.215	22.7	18.2	16.9
1.334	20.888	1.042	17.051	1.188	15.382	22.2	18.1	16.6
1.291	16.546	0.969	13.101	0.886	11.957	17.8	14.1	12.8
0.468	10.198	0.402	8.245	0.382	7.497	10.7	8.6	7.9
0.471	6.061	0.404	4.847	0.384	4.334	6.5	5.3	4.7
3.459	28.972	2.524	23.009	2.297	21.090	32.4	25.5	23.4
2.723	20.528	1.906	16.266	1.711	14.949	23.3	18.2	16.7
1.312	17.133	0.966	13.446	0.880	12.129	18.4	14.4	13.0
0.472	10.514	0.402	8.291	0.384	7.617	11.0	8.7	8.0
3.059	25.977	2.242	20.436	2.033	17.876	29.0	22.7	19.9
2.374	18.415	1.723	14.381	1.558	12.569	20.8	16.1	14.1
1.234	18.778	0.947	14.721	1.093	12.754	20.0	15.7	13.8
1.158	15.150	0.882	11.494	0.814	9.920	16.3	12.4	10.7
0.443	9.323	0.385	7.115	0.368	6.354	9.8	7.5	6.7
0.445	5.529	0.386	4.170	0.369	3.708	6.0	4.6	4.1
3.533	29.939	2.543	23.239	2.291	20.133	33.5	25.8	22.4
2.793	21.094	1.947	16.365	1.735	14.199	23.9	18.3	15.9
1.414	22.014	1.055	16.945	1.222	14.687	23.4	18.0	15.9
1.329	17.531	0.977	13.397	0.886	11.628	18.9	14.4	12.5
0.471	10.811	0.401	8.264	0.382	7.373	11.3	8.7	7.8
0.475	6.390	0.403	4.851	0.383	4.329	6.9	5.3	4.7
3.824	33.661	2.770	26.156	2.494	22.586	37.5	28.9	25.1
3.026	23.550	2.137	18.259	1.912	15.780	26.6	20.4	17.7
1.553	24.448	1.160	18.780	1.340	16.184	26.0	19.9	17.5
1.408	19.414	1.035	14.864	0.937	12.904	20.8	15.9	13.8
0.481	12.099	0.407	9.235	0.387	8.188	12.6	9.6	8.6
0.485	7.115	0.409	5.388	0.389	4.790	7.6	5.8	5.2
1.836	29.438	1.356	22.421	1.564	19.148	31.3	23.8	20.7
0.508	14.669	0.424	11.097	0.401	9.695	15.2	11.5	10.1

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
8.299	1.471	8.299	1.471	8.299	1.471	cent/km	cent/km	cent/km
3.818	6.621	3.818	11.035	3.818	11.035	10.4	14.9	14.9
3.642	6.513	2.806	6.401	2.628	7.201	10.2	9.2	9.8
1.708	4.538	1.390	4.653	1.327	5.230	6.2	6.0	6.6
1.015	4.838	0.949	4.799	0.984	5.250	5.9	5.7	6.2
1.057	3.785	0.888	3.533	0.838	3.803	4.8	4.4	4.6
0.604	2.297	0.568	2.248	0.557	2.480	2.9	2.8	3.0
0.605	1.356	0.569	1.304	0.557	1.439	2.0	1.9	2.0
3.745	12.381	2.765	11.333	2.554	11.938	16.1	14.1	14.5
2.416	7.341	1.833	6.793	1.725	7.048	9.8	8.6	8.8
1.324	7.775	1.167	7.061	1.245	7.179	9.1	8.2	8.4
1.372	6.163	1.091	5.379	1.032	5.275	7.5	6.5	6.3
0.662	3.744	0.606	3.354	0.590	3.404	4.4	4.0	4.0
0.665	2.212	0.608	1.983	0.592	1.957	2.9	2.6	2.5
3.993	13.887	2.974	12.229	2.747	12.425	17.9	15.2	15.2
2.577	8.302	1.969	7.335	1.847	7.327	10.9	9.3	9.2
1.401	8.842	1.223	7.650	1.329	7.469	10.2	8.9	8.8
1.400	7.228	1.139	5.927	1.094	5.655	8.6	7.1	6.7
0.674	4.318	0.616	3.677	0.600	3.563	5.0	4.3	4.2
5.254	17.687	3.769	14.826	3.420	14.286	22.9	18.6	17.7
3.294	10.554	2.423	8.806	2.202	8.488	13.8	11.2	10.7
1.638	11.365	1.422	9.322	1.431	8.913	13.0	10.7	10.3
1.752	9.292	1.366	7.341	1.274	6.803	11.0	8.7	8.1
0.746	5.494	0.660	4.439	0.636	4.206	6.2	5.1	4.8
0.749	3.296	0.662	2.628	0.638	2.473	4.0	3.3	3.1
5.296	19.406	3.879	15.565	3.550	14.565	24.7	19.4	18.1
4.140	13.626	2.885	10.955	2.595	10.278	17.8	13.8	12.9
2.018	14.502	1.629	11.521	1.758	10.758	16.5	13.1	12.5
2.072	11.672	1.546	9.126	1.424	8.476	13.7	10.7	9.9
0.801	7.017	0.691	5.591	0.662	5.218	7.8	6.3	5.9
0.805	4.179	0.694	3.310	0.664	3.084	5.0	4.0	3.7
5.589	20.439	4.075	16.412	3.683	15.294	26.0	20.5	19.0
4.302	14.381	3.046	11.492	2.728	10.708	18.7	14.5	13.4
2.113	15.128	1.704	11.971	1.840	11.128	17.2	13.7	13.0
2.181	11.809	1.625	9.218	1.461	8.576	14.0	10.8	10.0
0.807	7.240	0.698	5.743	0.665	5.349	8.0	6.4	6.0
0.812	4.275	0.701	3.369	0.667	3.138	5.1	4.1	3.8
6.129	23.095	4.473	18.933	4.031	17.613	29.2	23.4	21.6
4.681	16.471	3.358	13.369	3.035	12.463	21.2	16.7	15.5
2.374	17.109	1.854	13.967	2.113	12.600	19.5	15.8	14.7
2.296	13.553	1.723	10.731	1.576	9.794	15.8	12.5	11.4
0.832	8.353	0.715	6.753	0.680	6.141	9.2	7.5	6.8
0.838	4.965	0.719	3.970	0.683	3.550	5.8	4.7	4.2
6.153	23.731	4.489	18.847	4.087	17.275	29.9	23.3	21.4
4.843	16.814	3.391	13.323	3.043	12.245	21.7	16.7	15.3
2.334	14.034	1.718	11.013	1.566	9.935	16.4	12.7	11.5
0.840	8.612	0.716	6.791	0.683	6.239	9.5	7.5	6.9
5.440	21.278	3.989	16.739	3.617	14.643	26.7	20.7	18.3
4.223	15.084	3.065	11.779	2.771	10.295	19.3	14.8	13.1
2.195	15.381	1.685	12.058	1.945	10.447	17.6	13.7	12.4
2.059	12.410	1.569	9.415	1.448	8.126	14.5	11.0	9.6
0.788	7.636	0.685	5.828	0.655	5.204	8.4	6.5	5.9
0.792	4.529	0.687	3.415	0.657	3.037	5.3	4.1	3.7
6.285	24.523	4.524	19.035	4.074	16.491	30.8	23.6	20.6
4.968	17.278	3.463	13.404	3.086	11.630	22.2	16.9	14.7
2.515	18.032	1.876	13.880	2.173	12.030	20.5	15.8	14.2
2.364	14.359	1.737	10.974	1.575	9.524	16.7	12.7	11.1
0.839	8.855	0.713	6.769	0.679	6.039	9.7	7.5	6.7
0.844	5.234	0.716	3.973	0.682	3.546	6.1	4.7	4.2
6.802	27.572	4.928	21.425	4.436	18.500	34.4	26.4	22.9
5.382	19.290	3.802	14.956	3.401	12.926	24.7	18.8	16.3
2.763	20.026	2.063	15.382	2.383	13.256	22.8	17.4	15.6
2.505	15.902	1.840	12.175	1.667	10.570	18.4	14.0	12.2
0.856	9.910	0.724	7.564	0.689	6.707	10.8	8.3	7.4
0.862	5.828	0.727	4.414	0.692	3.924	6.7	5.1	4.6
3.265	24.112	2.413	18.365	2.783	15.684	27.4	20.8	18.5
0.904	12.016	0.754	9.089	0.714	7.941	12.9	9.8	8.7

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

***** Heavy Duty Vehicles

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
3.094	1.191	3.094	1.191	3.094	1.191	cent/km	cent/km	cent/km
1.423	5.359	1.423	8.932	1.423	8.932	6.8	10.4	10.4
1.358	5.272	1.046	5.181	0.980	5.829	6.6	6.2	6.8
0.637	3.673	0.518	3.766	0.495	4.233	4.3	4.3	4.7
0.378	3.916	0.354	3.885	0.367	4.249	4.3	4.2	4.6
0.394	3.064	0.331	2.860	0.313	3.078	3.5	3.2	3.4
0.225	1.859	0.212	1.820	0.208	2.008	2.1	2.0	2.2
0.226	1.097	0.212	1.055	0.208	1.164	1.3	1.3	1.4
1.396	10.021	1.031	9.173	0.952	9.663	11.4	10.2	10.6
0.901	5.942	0.683	5.498	0.643	5.705	6.8	6.2	6.3
0.494	6.293	0.435	5.715	0.464	5.811	6.8	6.2	6.3
0.511	4.988	0.407	4.354	0.385	4.270	5.5	4.8	4.7
0.247	3.030	0.226	2.715	0.220	2.755	3.3	2.9	3.0
0.248	1.790	0.227	1.605	0.221	1.584	2.0	1.8	1.8
1.489	11.241	1.109	9.899	1.024	10.057	12.7	11.0	11.1
0.961	6.720	0.734	5.937	0.689	5.931	7.7	6.7	6.6
0.522	7.157	0.456	6.192	0.495	6.046	7.7	6.6	6.5
0.522	5.851	0.425	4.798	0.408	4.578	6.4	5.2	5.0
0.251	3.495	0.230	2.977	0.224	2.884	3.7	3.2	3.1
1.959	14.316	1.405	12.001	1.275	11.564	16.3	13.4	12.8
1.228	8.543	0.903	7.128	0.821	6.870	9.8	8.0	7.7
0.611	9.199	0.530	7.545	0.534	7.215	9.8	8.1	7.7
0.653	7.521	0.509	5.942	0.475	5.507	8.2	6.5	6.0
0.278	4.447	0.246	3.593	0.237	3.404	4.7	3.8	3.6
0.279	2.668	0.247	2.127	0.238	2.002	2.9	2.4	2.2
1.975	15.708	1.446	12.599	1.324	11.789	17.7	14.0	13.1
1.543	11.029	1.076	8.867	0.967	8.319	12.6	9.9	9.3
0.752	11.738	0.607	9.325	0.655	8.708	12.5	9.9	9.4
0.772	9.448	0.576	7.387	0.531	6.860	10.2	8.0	7.4
0.299	5.680	0.258	4.525	0.247	4.223	6.0	4.8	4.5
0.300	3.383	0.259	2.679	0.248	2.497	3.7	2.9	2.7
2.084	16.544	1.519	13.284	1.373	12.379	18.6	14.8	13.8
1.604	11.640	1.136	9.302	1.017	8.668	13.2	10.4	9.7
0.788	12.245	0.635	9.690	0.686	9.007	13.0	10.3	9.7
0.813	9.558	0.606	7.461	0.545	6.942	10.4	8.1	7.5
0.301	5.860	0.260	4.649	0.248	4.329	6.2	4.9	4.6
0.303	3.460	0.261	2.727	0.249	2.540	3.8	3.0	2.8
2.285	18.693	1.668	15.325	1.503	14.256	21.0	17.0	15.8
1.745	13.332	1.252	10.821	1.131	10.088	15.1	12.1	11.2
0.885	13.849	0.691	11.305	0.788	10.199	14.7	12.0	11.0
0.856	10.970	0.642	8.686	0.587	7.927	11.8	9.3	8.5
0.310	6.761	0.267	5.466	0.254	4.970	7.1	5.7	5.2
0.312	4.019	0.268	3.214	0.255	2.874	4.3	3.5	3.1
2.294	19.209	1.674	15.255	1.524	13.983	21.5	16.9	15.5
1.806	13.610	1.264	10.784	1.135	9.911	15.4	12.0	11.0
0.870	11.359	0.641	8.915	0.584	8.042	12.2	9.6	8.6
0.313	6.971	0.267	5.497	0.255	5.050	7.3	5.8	5.3
2.028	17.223	1.487	13.549	1.348	11.852	19.3	15.0	13.2
1.575	12.209	1.143	9.534	1.033	8.333	13.8	10.7	9.4
0.818	12.450	0.628	9.760	0.725	8.456	13.3	10.4	9.2
0.768	10.045	0.585	7.621	0.540	6.577	10.8	8.2	7.1
0.294	6.181	0.255	4.717	0.244	4.212	6.5	5.0	4.5
0.295	3.666	0.256	2.764	0.245	2.459	4.0	3.0	2.7
2.343	19.850	1.687	15.407	1.519	13.348	22.2	17.1	14.9
1.852	13.985	1.291	10.850	1.151	9.414	15.8	12.1	10.6
0.938	14.595	0.699	11.234	0.810	9.738	15.5	11.9	10.5
0.881	11.623	0.648	8.882	0.587	7.709	12.5	9.5	8.3
0.313	7.168	0.266	5.479	0.253	4.889	7.5	5.7	5.1
0.315	4.237	0.267	3.216	0.254	2.870	4.6	3.5	3.1
2.536	22.317	1.837	17.342	1.654	14.974	24.9	19.2	16.6
2.007	15.614	1.417	12.106	1.268	10.462	17.6	13.5	11.7
1.030	16.209	0.769	12.451	0.888	10.730	17.2	13.2	11.6
0.934	12.872	0.686	9.855	0.622	8.556	13.8	10.5	9.2
0.319	8.021	0.270	6.123	0.257	5.429	8.3	6.4	5.7
0.321	4.717	0.271	3.573	0.258	3.176	5.0	3.8	3.4
1.217	19.517	0.900	14.865	1.038	12.695	20.7	15.8	13.7
0.337	9.726	0.281	7.357	0.266	6.428	10.1	7.6	6.7

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
7.086	2.699	7.086	2.699	7.086	2.699	cent/km	cent/km	cent/km
3.260	12.147	3.260	20.245	3.260	20.245	15.4	23.5	23.5
3.110	11.949	2.396	11.744	2.244	13.212	15.1	14.1	15.5
1.459	8.325	1.187	8.536	1.133	9.595	9.8	9.7	10.7
0.866	8.876	0.810	8.805	0.840	9.631	9.7	9.6	10.5
0.903	6.945	0.758	6.482	0.716	6.977	7.8	7.2	7.7
0.516	4.213	0.485	4.124	0.475	4.550	4.7	4.6	5.0
0.517	2.487	0.485	2.392	0.476	2.639	3.0	2.9	3.1
3.198	22.713	2.361	20.791	2.181	21.902	25.9	23.2	24.1
2.063	13.468	1.565	12.462	1.473	12.930	15.5	14.0	14.4
1.131	14.264	0.997	12.954	1.063	13.171	15.4	14.0	14.2
1.171	11.306	0.931	9.868	0.881	9.678	12.5	10.8	10.6
0.565	6.868	0.518	6.154	0.504	6.245	7.4	6.7	6.7
0.568	4.058	0.519	3.637	0.505	3.590	4.6	4.2	4.1
3.409	25.478	2.540	22.435	2.346	22.795	28.9	25.0	25.1
2.201	15.231	1.681	13.457	1.577	13.442	17.4	15.1	15.0
1.196	16.221	1.044	14.034	1.134	13.703	17.4	15.1	14.8
1.196	13.261	0.972	10.875	0.934	10.375	14.5	11.8	11.3
0.576	7.922	0.526	6.746	0.512	6.536	8.5	7.3	7.0
4.486	32.449	3.218	27.200	2.920	26.210	36.9	30.4	29.1
2.813	19.363	2.069	16.156	1.880	15.572	22.2	18.2	17.5
1.399	20.851	1.214	17.101	1.222	16.352	22.2	18.3	17.6
1.496	17.047	1.166	13.467	1.088	12.482	18.5	14.6	13.6
0.637	10.079	0.563	8.145	0.543	7.715	10.7	8.7	8.3
0.640	6.047	0.565	4.821	0.544	4.538	6.7	5.4	5.1
4.522	35.603	3.312	28.555	3.031	26.721	40.1	31.9	29.8
3.535	24.998	2.463	20.097	2.216	18.856	28.5	22.6	21.1
1.723	26.605	1.391	21.136	1.501	19.736	28.3	22.5	21.2
1.769	21.413	1.320	16.743	1.216	15.549	23.2	18.1	16.8
0.684	12.874	0.590	10.256	0.566	9.572	13.6	10.8	10.1
0.688	7.667	0.592	6.073	0.567	5.659	8.4	6.7	6.2
4.772	37.497	3.479	30.108	3.145	28.057	42.3	33.6	31.2
3.673	26.383	2.601	21.083	2.330	19.645	30.1	23.7	22.0
1.804	27.753	1.455	21.962	1.571	20.415	29.6	23.4	22.0
1.862	21.664	1.387	16.911	1.247	15.734	23.5	18.3	17.0
0.689	13.282	0.596	10.536	0.568	9.813	14.0	11.1	10.4
0.693	7.842	0.598	6.180	0.570	5.757	8.5	6.8	6.3
5.233	42.369	3.819	34.734	3.442	32.312	47.6	38.6	35.8
3.997	30.217	2.867	24.526	2.591	22.864	34.2	27.4	25.5
2.027	31.388	1.583	25.623	1.805	23.116	33.4	27.2	24.9
1.960	24.864	1.471	19.686	1.345	17.968	26.8	21.2	19.3
0.710	15.324	0.611	12.390	0.581	11.265	16.0	13.0	11.8
0.715	9.109	0.614	7.284	0.583	6.513	9.8	7.9	7.1
5.254	43.537	3.833	34.576	3.489	31.692	48.8	38.4	35.2
4.135	30.848	2.895	24.443	2.599	22.464	35.0	27.3	25.1
1.993	25.746	1.467	20.205	1.337	18.226	27.7	21.7	19.6
0.717	15.799	0.611	12.459	0.583	11.446	16.5	13.1	12.0
4.645	39.036	3.406	30.710	3.088	26.863	43.7	34.1	30.0
3.606	27.673	2.617	21.610	2.366	18.887	31.3	24.2	21.3
1.874	28.218	1.439	22.121	1.660	19.166	30.1	23.6	20.8
1.758	22.767	1.339	17.272	1.236	14.908	24.5	18.6	16.1
0.672	14.009	0.584	10.692	0.559	9.548	14.7	11.3	10.1
0.676	8.309	0.587	6.266	0.561	5.572	9.0	6.9	6.1
5.366	44.990	3.863	34.921	3.479	30.254	50.4	38.8	33.7
4.242	31.698	2.957	24.592	2.635	21.337	35.9	27.5	24.0
2.147	33.081	1.602	25.463	1.856	22.070	35.2	27.1	23.9
2.018	26.344	1.483	20.132	1.345	17.473	28.4	21.6	18.8
0.716	16.246	0.609	12.418	0.580	11.080	17.0	13.0	11.7
0.721	9.603	0.611	7.289	0.582	6.506	10.3	7.9	7.1
5.808	50.583	4.207	39.306	3.788	33.940	56.4	43.5	37.7
4.596	35.389	3.246	27.437	2.904	23.713	40.0	30.7	26.6
2.359	36.739	1.761	28.220	2.035	24.320	39.1	30.0	26.4
2.139	29.174	1.571	22.337	1.423	19.392	31.3	23.9	20.8
0.731	18.181	0.618	13.877	0.588	12.304	18.9	14.5	12.9
0.736	10.692	0.621	8.097	0.591	7.198	11.4	8.7	7.8
2.788	44.236	2.060	33.692	2.376	28.774	47.0	35.8	31.2
0.772	22.044	0.644	16.675	0.610	14.569	22.8	17.3	15.2

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
0.326	0.179	0.326	0.179	0.326	0.179	cent/km	cent/km	cent/km
0.150	0.808	0.150	1.346	0.150	1.346	1.0	1.5	1.5
0.143	0.795	0.110	0.781	0.103	0.878	0.9	0.9	1.0
0.067	0.554	0.055	0.568	0.052	0.638	0.6	0.6	0.7
0.040	0.590	0.037	0.585	0.039	0.640	0.6	0.6	0.7
0.042	0.462	0.035	0.431	0.033	0.464	0.5	0.5	0.5
0.024	0.280	0.022	0.274	0.022	0.303	0.3	0.3	0.3
0.024	0.165	0.022	0.159	0.022	0.175	0.2	0.2	0.2
0.147	1.510	0.109	1.382	0.100	1.456	1.7	1.5	1.6
0.095	0.896	0.072	0.829	0.068	0.860	1.0	0.9	0.9
0.052	0.948	0.046	0.861	0.049	0.876	1.0	0.9	0.9
0.054	0.752	0.043	0.656	0.041	0.644	0.8	0.7	0.7
0.026	0.457	0.024	0.409	0.023	0.415	0.5	0.4	0.4
0.026	0.270	0.024	0.242	0.023	0.239	0.3	0.3	0.3
0.157	1.694	0.117	1.492	0.108	1.516	1.9	1.6	1.6
0.101	1.013	0.077	0.895	0.073	0.894	1.1	1.0	1.0
0.055	1.079	0.048	0.933	0.052	0.911	1.1	1.0	1.0
0.055	0.882	0.045	0.723	0.043	0.690	0.9	0.8	0.7
0.027	0.527	0.024	0.449	0.024	0.435	0.6	0.5	0.5
0.207	2.158	0.148	1.809	0.134	1.743	2.4	2.0	1.9
0.130	1.287	0.095	1.074	0.087	1.035	1.4	1.2	1.1
0.064	1.386	0.056	1.137	0.056	1.087	1.5	1.2	1.1
0.069	1.133	0.054	0.895	0.050	0.830	1.2	0.9	0.9
0.029	0.670	0.026	0.542	0.025	0.513	0.7	0.6	0.5
0.029	0.402	0.026	0.321	0.025	0.302	0.4	0.3	0.3
0.208	2.367	0.153	1.899	0.140	1.777	2.6	2.1	1.9
0.163	1.662	0.113	1.336	0.102	1.254	1.8	1.4	1.4
0.079	1.769	0.064	1.405	0.069	1.312	1.8	1.5	1.4
0.081	1.424	0.061	1.113	0.056	1.034	1.5	1.2	1.1
0.031	0.856	0.027	0.682	0.026	0.636	0.9	0.7	0.7
0.032	0.510	0.027	0.404	0.026	0.376	0.5	0.4	0.4
0.220	2.493	0.160	2.002	0.145	1.866	2.7	2.2	2.0
0.169	1.754	0.120	1.402	0.107	1.306	1.9	1.5	1.4
0.083	1.845	0.067	1.460	0.072	1.357	1.9	1.5	1.4
0.086	1.441	0.064	1.124	0.057	1.046	1.5	1.2	1.1
0.032	0.883	0.027	0.701	0.026	0.652	0.9	0.7	0.7
0.032	0.521	0.028	0.411	0.026	0.383	0.6	0.4	0.4
0.241	2.817	0.176	2.310	0.158	2.148	3.1	2.5	2.3
0.184	2.009	0.132	1.631	0.119	1.520	2.2	1.8	1.6
0.093	2.087	0.073	1.704	0.083	1.537	2.2	1.8	1.6
0.090	1.653	0.068	1.309	0.062	1.195	1.7	1.4	1.3
0.033	1.019	0.028	0.824	0.027	0.749	1.1	0.9	0.8
0.033	0.606	0.028	0.484	0.027	0.433	0.6	0.5	0.5
0.242	2.895	0.176	2.299	0.161	2.107	3.1	2.5	2.3
0.190	2.051	0.133	1.625	0.120	1.494	2.2	1.8	1.6
0.092	1.712	0.068	1.343	0.062	1.212	1.8	1.4	1.3
0.033	1.051	0.028	0.828	0.027	0.761	1.1	0.9	0.8
0.214	2.596	0.157	2.042	0.142	1.786	2.8	2.2	1.9
0.166	1.840	0.120	1.437	0.109	1.256	2.0	1.6	1.4
0.086	1.876	0.066	1.471	0.076	1.274	2.0	1.5	1.4
0.081	1.514	0.062	1.148	0.057	0.991	1.6	1.2	1.0
0.031	0.932	0.027	0.711	0.026	0.635	1.0	0.7	0.7
0.031	0.552	0.027	0.417	0.026	0.371	0.6	0.4	0.4
0.247	2.992	0.178	2.322	0.160	2.012	3.2	2.5	2.2
0.195	2.108	0.136	1.635	0.121	1.419	2.3	1.8	1.5
0.099	2.200	0.074	1.693	0.085	1.468	2.3	1.8	1.6
0.093	1.752	0.068	1.339	0.062	1.162	1.8	1.4	1.2
0.033	1.080	0.028	0.826	0.027	0.737	1.1	0.9	0.8
0.033	0.639	0.028	0.485	0.027	0.433	0.7	0.5	0.5
0.267	3.363	0.194	2.614	0.174	2.257	3.6	2.8	2.4
0.212	2.353	0.149	1.824	0.134	1.577	2.6	2.0	1.7
0.109	2.443	0.081	1.876	0.094	1.617	2.6	2.0	1.7
0.098	1.940	0.072	1.485	0.066	1.289	2.0	1.6	1.4
0.034	1.209	0.028	0.923	0.027	0.818	1.2	1.0	0.8
0.034	0.711	0.029	0.538	0.027	0.479	0.7	0.6	0.5
0.128	2.941	0.095	2.240	0.109	1.913	3.1	2.3	2.0
0.036	1.466	0.030	1.109	0.028	0.969	1.5	1.1	1.0

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
5.039	1.487	5.039	1.487	5.039	1.487	cent/km	cent/km	cent/km
2.318	6.692	2.318	11.154	2.318	11.154	9.0	13.5	13.5
2.211	6.583	1.704	6.470	1.596	7.279	8.8	8.2	8.9
1.037	4.586	0.844	4.703	0.806	5.286	5.6	5.5	6.1
0.616	4.890	0.576	4.851	0.598	5.306	5.5	5.4	5.9
0.642	3.826	0.539	3.571	0.509	3.844	4.5	4.1	4.4
0.367	2.321	0.345	2.272	0.338	2.507	2.7	2.6	2.8
0.367	1.370	0.345	1.318	0.338	1.454	1.7	1.7	1.8
2.274	12.513	1.679	11.454	1.551	12.066	14.8	13.1	13.6
1.467	7.420	1.113	6.865	1.048	7.123	8.9	8.0	8.2
0.804	7.858	0.709	7.136	0.756	7.256	8.7	7.8	8.0
0.833	6.229	0.662	5.436	0.627	5.332	7.1	6.1	6.0
0.402	3.784	0.368	3.390	0.358	3.440	4.2	3.8	3.8
0.404	2.236	0.369	2.004	0.359	1.978	2.6	2.4	2.3
2.424	14.036	1.806	12.360	1.668	12.558	16.5	14.2	14.2
1.565	8.391	1.196	7.414	1.122	7.405	10.0	8.6	8.5
0.850	8.937	0.742	7.732	0.807	7.549	9.8	8.5	8.4
0.850	7.306	0.691	5.991	0.664	5.716	8.2	6.7	6.4
0.410	4.364	0.374	3.717	0.364	3.601	4.8	4.1	4.0
3.190	17.877	2.289	14.985	2.076	14.440	21.1	17.3	16.5
2.000	10.668	1.471	8.901	1.337	8.579	12.7	10.4	9.9
0.995	11.487	0.863	9.422	0.869	9.009	12.5	10.3	9.9
1.064	9.392	0.829	7.420	0.774	6.876	10.5	8.2	7.6
0.453	5.553	0.401	4.487	0.386	4.251	6.0	4.9	4.6
0.455	3.331	0.402	2.656	0.387	2.500	3.8	3.1	2.9
3.216	19.614	2.355	15.732	2.156	14.721	22.8	18.1	16.9
2.514	13.772	1.752	11.072	1.575	10.388	16.3	12.8	12.0
1.225	14.657	0.989	11.644	1.067	10.873	15.9	12.6	11.9
1.258	11.797	0.939	9.224	0.865	8.566	13.1	10.2	9.4
0.486	7.093	0.420	5.650	0.402	5.274	7.6	6.1	5.7
0.489	4.224	0.421	3.346	0.403	3.118	4.7	3.8	3.5
3.393	20.658	2.474	16.587	2.236	15.457	24.1	19.1	17.7
2.612	14.535	1.849	11.615	1.657	10.823	17.1	13.5	12.5
1.283	15.290	1.034	12.099	1.117	11.247	16.6	13.1	12.4
1.324	11.935	0.986	9.316	0.887	8.668	13.3	10.3	9.6
0.490	7.317	0.424	5.805	0.404	5.406	7.8	6.2	5.8
0.493	4.321	0.426	3.405	0.405	3.172	4.8	3.8	3.6
3.721	23.342	2.716	19.136	2.447	17.801	27.1	21.9	20.2
2.842	16.647	2.039	13.512	1.842	12.596	19.5	15.6	14.4
1.441	17.292	1.126	14.117	1.283	12.735	18.7	15.2	14.0
1.394	13.698	1.046	10.846	0.957	9.899	15.1	11.9	10.9
0.505	8.442	0.434	6.826	0.413	6.206	8.9	7.3	6.6
0.509	5.018	0.436	4.013	0.415	3.588	5.5	4.4	4.0
3.736	23.985	2.725	19.049	2.481	17.460	27.7	21.8	19.9
2.941	16.995	2.059	13.466	1.848	12.376	19.9	15.5	14.2
1.417	14.184	1.043	11.131	0.951	10.041	15.6	12.2	11.0
0.510	8.704	0.435	6.864	0.414	6.306	9.2	7.3	6.7
3.303	21.506	2.422	16.919	2.196	14.799	24.8	19.3	17.0
2.564	15.246	1.861	11.905	1.683	10.406	17.8	13.8	12.1
1.333	15.546	1.023	12.187	1.181	10.559	16.9	13.2	11.7
1.250	12.543	0.952	9.516	0.879	8.213	13.8	10.5	9.1
0.478	7.718	0.416	5.890	0.398	5.260	8.2	6.3	5.7
0.481	4.578	0.417	3.452	0.399	3.070	5.1	3.9	3.5
3.816	24.786	2.747	19.239	2.474	16.668	28.6	22.0	19.1
3.016	17.463	2.103	13.548	1.874	11.755	20.5	15.7	13.6
1.527	18.225	1.139	14.028	1.320	12.159	19.8	15.2	13.5
1.435	14.513	1.055	11.091	0.956	9.627	15.9	12.1	10.6
0.509	8.950	0.433	6.841	0.412	6.104	9.5	7.3	6.5
0.513	5.290	0.435	4.016	0.414	3.584	5.8	4.5	4.0
4.130	27.867	2.992	21.654	2.693	18.698	32.0	24.6	21.4
3.268	19.496	2.308	15.116	2.065	13.064	22.8	17.4	15.1
1.677	20.240	1.252	15.547	1.447	13.398	21.9	16.8	14.8
1.521	16.073	1.117	12.306	1.012	10.683	17.6	13.4	11.7
0.520	10.016	0.440	7.645	0.418	6.779	10.5	8.1	7.2
0.524	5.890	0.442	4.461	0.420	3.966	6.4	4.9	4.4
1.982	24.371	1.465	18.562	1.690	15.852	26.4	20.0	17.5
0.549	12.145	0.458	9.187	0.433	8.026	12.7	9.6	8.5

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

***** Heavy Duty Vehicles

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
6.298	1.830	6.298	1.830	6.298	1.830	cent/km	cent/km	cent/km
2.897	8.237	2.897	13.728	2.897	13.728	11.1	16.6	16.6
2.764	8.103	2.130	7.963	1.994	8.959	10.9	10.1	11.0
1.296	5.645	1.055	5.788	1.007	6.506	6.9	6.8	7.5
0.770	6.019	0.720	5.970	0.747	6.531	6.8	6.7	7.3
0.802	4.709	0.674	4.396	0.636	4.731	5.5	5.1	5.4
0.458	2.857	0.431	2.797	0.423	3.086	3.3	3.2	3.5
0.459	1.687	0.431	1.622	0.423	1.790	2.1	2.1	2.2
2.842	15.402	2.098	14.098	1.938	14.852	18.2	16.2	16.8
1.833	9.133	1.391	8.450	1.309	8.768	11.0	9.8	10.1
1.005	9.672	0.886	8.784	0.945	8.931	10.7	9.7	9.9
1.041	7.667	0.828	6.691	0.783	6.563	8.7	7.5	7.3
0.502	4.657	0.460	4.173	0.448	4.235	5.2	4.6	4.7
0.504	2.752	0.461	2.466	0.449	2.435	3.3	2.9	2.9
3.030	17.276	2.257	15.213	2.085	15.457	20.3	17.5	17.5
1.956	10.328	1.494	9.125	1.402	9.115	12.3	10.6	10.5
1.063	11.000	0.928	9.517	1.008	9.292	12.1	10.4	10.3
1.063	8.992	0.864	7.374	0.830	7.035	10.1	8.2	7.9
0.512	5.372	0.468	4.575	0.455	4.432	5.9	5.0	4.9
3.988	22.003	2.861	18.444	2.595	17.773	26.0	21.3	20.4
2.500	13.130	1.839	10.955	1.671	10.559	15.6	12.8	12.2
1.243	14.139	1.079	11.596	1.086	11.088	15.4	12.7	12.2
1.329	11.560	1.037	9.132	0.967	8.464	12.9	10.2	9.4
0.566	6.834	0.501	5.523	0.483	5.232	7.4	6.0	5.7
0.568	4.100	0.502	3.269	0.484	3.077	4.7	3.8	3.6
4.019	24.142	2.944	19.363	2.694	18.119	28.2	22.3	20.8
3.142	16.951	2.189	13.628	1.969	12.786	20.1	15.8	14.8
1.531	18.041	1.236	14.332	1.334	13.383	19.6	15.6	14.7
1.572	14.520	1.173	11.353	1.081	10.544	16.1	12.5	11.6
0.608	8.730	0.525	6.955	0.503	6.491	9.3	7.5	7.0
0.611	5.199	0.527	4.118	0.504	3.837	5.8	4.6	4.3
4.241	25.427	3.093	20.416	2.795	19.026	29.7	23.5	21.8
3.265	17.890	2.312	14.297	2.071	13.321	21.2	16.6	15.4
1.603	18.819	1.293	14.892	1.397	13.844	20.4	16.2	15.2
1.655	14.690	1.233	11.467	1.108	10.669	16.3	12.7	11.8
0.613	9.006	0.530	7.145	0.505	6.654	9.6	7.7	7.2
0.616	5.318	0.532	4.191	0.506	3.904	5.9	4.7	4.4
4.651	28.730	3.395	23.553	3.059	21.911	33.4	26.9	25.0
3.553	20.490	2.549	16.631	2.303	15.504	24.0	19.2	17.8
1.801	21.284	1.407	17.375	1.604	15.675	23.1	18.8	17.3
1.742	16.860	1.308	13.349	1.196	12.184	18.6	14.7	13.4
0.631	10.391	0.543	8.401	0.516	7.639	11.0	8.9	8.2
0.636	6.176	0.546	4.939	0.518	4.416	6.8	5.5	4.9
4.670	29.522	3.407	23.446	3.101	21.490	34.2	26.9	24.6
3.676	20.918	2.573	16.574	2.310	15.233	24.6	19.1	17.5
1.771	17.458	1.304	13.701	1.188	12.359	19.2	15.0	13.5
0.637	10.713	0.543	8.448	0.518	7.761	11.4	9.0	8.3
4.129	26.470	3.027	20.824	2.745	18.216	30.6	23.9	21.0
3.205	18.765	2.326	14.654	2.103	12.807	22.0	17.0	14.9
1.666	19.134	1.279	15.000	1.476	12.996	20.8	16.3	14.5
1.563	15.438	1.190	11.712	1.099	10.109	17.0	12.9	11.2
0.598	9.500	0.519	7.250	0.497	6.474	10.1	7.8	7.0
0.601	5.634	0.521	4.249	0.499	3.779	6.2	4.8	4.3
4.770	30.508	3.433	23.680	3.092	20.515	35.3	27.1	23.6
3.770	21.494	2.628	16.676	2.342	14.468	25.3	19.3	16.8
1.908	22.432	1.424	17.267	1.649	14.966	24.3	18.7	16.6
1.794	17.863	1.318	13.651	1.195	11.849	19.7	15.0	13.0
0.636	11.016	0.541	8.421	0.516	7.513	11.7	9.0	8.0
0.641	6.512	0.543	4.943	0.517	4.412	7.2	5.5	4.9
5.162	34.300	3.740	26.653	3.367	23.014	39.5	30.4	26.4
4.085	23.997	2.885	18.605	2.581	16.080	28.1	21.5	18.7
2.097	24.913	1.565	19.136	1.808	16.491	27.0	20.7	18.3
1.901	19.783	1.397	15.146	1.265	13.149	21.7	16.5	14.4
0.650	12.328	0.549	9.410	0.523	8.343	13.0	10.0	8.9
0.654	7.250	0.552	5.491	0.525	4.881	7.9	6.0	5.4
2.478	29.996	1.831	22.846	2.112	19.512	32.5	24.7	21.6
0.686	14.948	0.572	11.307	0.542	9.879	15.6	11.9	10.4

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
2.518	0.906	2.518	0.906	2.518	0.906	cent/km	cent/km	cent/km
1.158	4.077	1.158	6.795	1.158	6.795	5.2	8.0	8.0
1.105	4.011	0.851	3.942	0.797	4.434	5.1	4.8	5.2
0.518	2.794	0.422	2.865	0.403	3.220	3.3	3.3	3.6
0.308	2.979	0.288	2.955	0.299	3.233	3.3	3.2	3.5
0.321	2.331	0.269	2.176	0.254	2.342	2.7	2.4	2.6
0.183	1.414	0.172	1.384	0.169	1.527	1.6	1.6	1.7
0.184	0.835	0.173	0.803	0.169	0.886	1.0	1.0	1.1
1.136	7.624	0.839	6.978	0.775	7.351	8.8	7.8	8.1
0.733	4.520	0.556	4.183	0.524	4.340	5.3	4.7	4.9
0.402	4.788	0.354	4.348	0.378	4.421	5.2	4.7	4.8
0.416	3.795	0.331	3.312	0.313	3.248	4.2	3.6	3.6
0.201	2.305	0.184	2.066	0.179	2.096	2.5	2.2	2.3
0.202	1.362	0.184	1.221	0.179	1.205	1.6	1.4	1.4
1.212	8.551	0.902	7.530	0.834	7.651	9.8	8.4	8.5
0.782	5.112	0.597	4.517	0.561	4.512	5.9	5.1	5.1
0.425	5.445	0.371	4.710	0.403	4.599	5.9	5.1	5.0
0.425	4.451	0.345	3.650	0.332	3.482	4.9	4.0	3.8
0.205	2.659	0.187	2.264	0.182	2.194	2.9	2.5	2.4
1.594	10.891	1.144	9.129	1.038	8.797	12.5	10.3	9.8
1.000	6.499	0.735	5.423	0.668	5.227	7.5	6.2	5.9
0.497	6.998	0.431	5.740	0.434	5.489	7.5	6.2	5.9
0.531	5.722	0.415	4.520	0.387	4.189	6.3	4.9	4.6
0.226	3.383	0.200	2.734	0.193	2.590	3.6	2.9	2.8
0.227	2.030	0.201	1.618	0.193	1.523	2.3	1.8	1.7
1.607	11.950	1.177	9.584	1.077	8.969	13.6	10.8	10.0
1.256	8.390	0.875	6.745	0.787	6.329	9.6	7.6	7.1
0.612	8.930	0.494	7.094	0.533	6.624	9.5	7.6	7.2
0.629	7.187	0.469	5.620	0.432	5.219	7.8	6.1	5.7
0.243	4.321	0.210	3.442	0.201	3.213	4.6	3.7	3.4
0.244	2.573	0.211	2.038	0.202	1.899	2.8	2.2	2.1
1.696	12.586	1.236	10.106	1.117	9.417	14.3	11.3	10.5
1.305	8.855	0.924	7.076	0.828	6.594	10.2	8.0	7.4
0.641	9.315	0.517	7.371	0.558	6.852	10.0	7.9	7.4
0.662	7.271	0.493	5.676	0.443	5.281	7.9	6.2	5.7
0.245	4.458	0.212	3.536	0.202	3.293	4.7	3.7	3.5
0.246	2.632	0.213	2.074	0.202	1.932	2.9	2.3	2.1
1.860	14.221	1.357	11.658	1.223	10.845	16.1	13.0	12.1
1.420	10.142	1.019	8.232	0.921	7.674	11.6	9.3	8.6
0.720	10.535	0.563	8.600	0.641	7.758	11.3	9.2	8.4
0.697	8.345	0.523	6.608	0.478	6.031	9.0	7.1	6.5
0.252	5.143	0.217	4.158	0.206	3.781	5.4	4.4	4.0
0.254	3.057	0.218	2.445	0.207	2.186	3.3	2.7	2.4
1.867	14.613	1.362	11.605	1.240	10.637	16.5	13.0	11.9
1.470	10.354	1.029	8.204	0.923	7.540	11.8	9.2	8.5
0.708	8.641	0.521	6.782	0.475	6.118	9.3	7.3	6.6
0.255	5.303	0.217	4.182	0.207	3.842	5.6	4.4	4.0
1.651	13.102	1.210	10.307	1.097	9.016	14.8	11.5	10.1
1.281	9.288	0.930	7.253	0.841	6.339	10.6	8.2	7.2
0.666	9.471	0.511	7.425	0.590	6.433	10.1	7.9	7.0
0.625	7.641	0.476	5.797	0.439	5.004	8.3	6.3	5.4
0.239	4.702	0.208	3.589	0.199	3.205	4.9	3.8	3.4
0.240	2.789	0.208	2.103	0.199	1.870	3.0	2.3	2.1
1.907	15.101	1.373	11.721	1.236	10.155	17.0	13.1	11.4
1.507	10.639	1.051	8.254	0.936	7.162	12.1	9.3	8.1
0.763	11.103	0.569	8.546	0.659	7.408	11.9	9.1	8.1
0.717	8.842	0.527	6.757	0.478	5.865	9.6	7.3	6.3
0.254	5.453	0.216	4.168	0.206	3.719	5.7	4.4	3.9
0.256	3.223	0.217	2.447	0.207	2.184	3.5	2.7	2.4
2.064	16.978	1.495	13.193	1.346	11.392	19.0	14.7	12.7
1.633	11.878	1.154	9.209	1.032	7.959	13.5	10.4	9.0
0.838	12.331	0.626	9.472	0.723	8.163	13.2	10.1	8.9
0.760	9.792	0.558	7.497	0.506	6.509	10.6	8.1	7.0
0.260	6.102	0.220	4.658	0.209	4.130	6.4	4.9	4.3
0.262	3.589	0.221	2.718	0.210	2.416	3.9	2.9	2.6
0.991	14.847	0.732	11.308	0.844	9.658	15.8	12.0	10.5
0.274	7.399	0.229	5.597	0.217	4.890	7.7	5.8	5.1

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
1.535	0.500	1.535	0.500	1.535	0.500	cent/km	cent/km	cent/km
0.706	2.251	0.706	3.751	0.706	3.751	3.0	4.5	4.5
0.674	2.214	0.519	2.176	0.486	2.448	2.9	2.7	2.9
0.316	1.542	0.257	1.582	0.245	1.778	1.9	1.8	2.0
0.188	1.645	0.176	1.631	0.182	1.785	1.8	1.8	2.0
0.196	1.287	0.164	1.201	0.155	1.293	1.5	1.4	1.4
0.112	0.781	0.105	0.764	0.103	0.843	0.9	0.9	0.9
0.112	0.461	0.105	0.443	0.103	0.489	0.6	0.5	0.6
0.693	4.209	0.511	3.852	0.472	4.058	4.9	4.4	4.5
0.447	2.496	0.339	2.309	0.319	2.396	2.9	2.6	2.7
0.245	2.643	0.216	2.400	0.230	2.440	2.9	2.6	2.7
0.254	2.095	0.202	1.828	0.191	1.793	2.3	2.0	2.0
0.122	1.273	0.112	1.140	0.109	1.157	1.4	1.3	1.3
0.123	0.752	0.112	0.674	0.109	0.665	0.9	0.8	0.8
0.739	4.721	0.550	4.157	0.508	4.224	5.5	4.7	4.7
0.477	2.822	0.364	2.494	0.342	2.491	3.3	2.9	2.8
0.259	3.006	0.226	2.600	0.246	2.539	3.3	2.8	2.8
0.259	2.457	0.211	2.015	0.202	1.922	2.7	2.2	2.1
0.125	1.468	0.114	1.250	0.111	1.211	1.6	1.4	1.3
0.972	6.012	0.697	5.040	0.633	4.856	7.0	5.7	5.5
0.609	3.588	0.448	2.994	0.407	2.885	4.2	3.4	3.3
0.303	3.863	0.263	3.169	0.265	3.030	4.2	3.4	3.3
0.324	3.159	0.253	2.495	0.236	2.313	3.5	2.7	2.5
0.138	1.867	0.122	1.509	0.118	1.430	2.0	1.6	1.5
0.139	1.120	0.122	0.893	0.118	0.841	1.3	1.0	1.0
0.980	6.597	0.718	5.291	0.657	4.951	7.6	6.0	5.6
0.766	4.632	0.534	3.724	0.480	3.494	5.4	4.3	4.0
0.373	4.930	0.301	3.916	0.325	3.657	5.3	4.2	4.0
0.383	3.968	0.286	3.102	0.263	2.881	4.4	3.4	3.1
0.148	2.385	0.128	1.900	0.123	1.774	2.5	2.0	1.9
0.149	1.421	0.128	1.125	0.123	1.049	1.6	1.3	1.2
1.034	6.948	0.754	5.579	0.681	5.199	8.0	6.3	5.9
0.796	4.888	0.563	3.907	0.505	3.640	5.7	4.5	4.1
0.391	5.142	0.315	4.069	0.340	3.783	5.5	4.4	4.1
0.403	4.014	0.301	3.133	0.270	2.915	4.4	3.4	3.2
0.149	2.461	0.129	1.952	0.123	1.818	2.6	2.1	1.9
0.150	1.453	0.130	1.145	0.123	1.067	1.6	1.3	1.2
1.134	7.851	0.827	6.436	0.746	5.987	9.0	7.3	6.7
0.866	5.599	0.621	4.544	0.561	4.236	6.5	5.2	4.8
0.439	5.816	0.343	4.748	0.391	4.283	6.3	5.1	4.7
0.425	4.607	0.319	3.648	0.291	3.329	5.0	4.0	3.6
0.154	2.839	0.132	2.296	0.126	2.087	3.0	2.4	2.2
0.155	1.688	0.133	1.350	0.126	1.207	1.8	1.5	1.3
1.138	8.067	0.830	6.407	0.756	5.872	9.2	7.2	6.6
0.896	5.716	0.627	4.529	0.563	4.162	6.6	5.2	4.7
0.432	4.771	0.318	3.744	0.290	3.377	5.2	4.1	3.7
0.155	2.927	0.132	2.309	0.126	2.121	3.1	2.4	2.2
1.006	7.233	0.738	5.690	0.669	4.977	8.2	6.4	5.6
0.781	5.127	0.567	4.004	0.513	3.500	5.9	4.6	4.0
0.406	5.228	0.312	4.099	0.360	3.551	5.6	4.4	3.9
0.381	4.218	0.290	3.200	0.268	2.762	4.6	3.5	3.0
0.146	2.596	0.127	1.981	0.121	1.769	2.7	2.1	1.9
0.147	1.540	0.127	1.161	0.122	1.032	1.7	1.3	1.2
1.163	8.336	0.837	6.471	0.754	5.606	9.5	7.3	6.4
0.919	5.873	0.641	4.557	0.571	3.954	6.8	5.2	4.5
0.465	6.130	0.347	4.718	0.402	4.089	6.6	5.1	4.5
0.437	4.881	0.321	3.730	0.291	3.238	5.3	4.1	3.5
0.155	3.010	0.132	2.301	0.126	2.053	3.2	2.4	2.2
0.156	1.779	0.132	1.351	0.126	1.205	1.9	1.5	1.3
1.258	9.373	0.911	7.283	0.821	6.289	10.6	8.2	7.1
0.996	6.557	0.703	5.084	0.629	4.394	7.6	5.8	5.0
0.511	6.807	0.382	5.229	0.441	4.506	7.3	5.6	4.9
0.463	5.406	0.340	4.139	0.308	3.593	5.9	4.5	3.9
0.158	3.369	0.134	2.571	0.127	2.280	3.5	2.7	2.4
0.160	1.981	0.135	1.500	0.128	1.334	2.1	1.6	1.5
0.604	8.197	0.446	6.243	0.515	5.332	8.8	6.7	5.8
0.167	4.085	0.139	3.090	0.132	2.699	4.3	3.2	2.8

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
2.362	0.684	2.362	0.684	2.362	0.684	cent/km	cent/km	cent/km
1.087	3.080	1.087	5.133	1.087	5.133	4.2	6.2	6.2
1.037	3.030	0.799	2.977	0.748	3.350	4.1	3.8	4.1
0.486	2.111	0.396	2.164	0.378	2.433	2.6	2.6	2.8
0.289	2.250	0.270	2.232	0.280	2.442	2.5	2.5	2.7
0.301	1.761	0.253	1.644	0.239	1.769	2.1	1.9	2.0
0.172	1.068	0.162	1.046	0.158	1.154	1.2	1.2	1.3
0.172	0.631	0.162	0.606	0.159	0.669	0.8	0.8	0.8
1.066	5.759	0.787	5.271	0.727	5.553	6.8	6.1	6.3
0.688	3.415	0.522	3.159	0.491	3.278	4.1	3.7	3.8
0.377	3.616	0.332	3.284	0.354	3.339	4.0	3.6	3.7
0.390	2.866	0.311	2.502	0.294	2.454	3.3	2.8	2.7
0.188	1.741	0.173	1.560	0.168	1.583	1.9	1.7	1.8
0.189	1.029	0.173	0.922	0.168	0.910	1.2	1.1	1.1
1.136	6.459	0.847	5.688	0.782	5.779	7.6	6.5	6.6
0.734	3.861	0.560	3.412	0.526	3.408	4.6	4.0	3.9
0.399	4.113	0.348	3.558	0.378	3.474	4.5	3.9	3.9
0.399	3.362	0.324	2.757	0.311	2.630	3.8	3.1	2.9
0.192	2.009	0.175	1.710	0.171	1.657	2.2	1.9	1.8
1.495	8.227	1.073	6.896	0.973	6.645	9.7	8.0	7.6
0.938	4.909	0.690	4.096	0.627	3.948	5.8	4.8	4.6
0.466	5.286	0.405	4.336	0.407	4.146	5.8	4.7	4.6
0.499	4.322	0.389	3.414	0.363	3.164	4.8	3.8	3.5
0.212	2.555	0.188	2.065	0.181	1.956	2.8	2.3	2.1
0.213	1.533	0.188	1.222	0.181	1.150	1.7	1.4	1.3
1.507	9.026	1.104	7.240	1.010	6.775	10.5	8.3	7.8
1.178	6.338	0.821	5.095	0.739	4.781	7.5	5.9	5.5
0.574	6.745	0.464	5.359	0.500	5.004	7.3	5.8	5.5
0.590	5.429	0.440	4.245	0.405	3.942	6.0	4.7	4.3
0.228	3.264	0.197	2.600	0.189	2.427	3.5	2.8	2.6
0.229	1.944	0.197	1.540	0.189	1.435	2.2	1.7	1.6
1.591	9.507	1.160	7.633	1.048	7.113	11.1	8.8	8.2
1.224	6.689	0.867	5.345	0.777	4.981	7.9	6.2	5.8
0.601	7.036	0.485	5.568	0.524	5.176	7.6	6.1	5.7
0.621	5.493	0.462	4.287	0.416	3.989	6.1	4.7	4.4
0.230	3.367	0.199	2.671	0.189	2.488	3.6	2.9	2.7
0.231	1.988	0.199	1.567	0.190	1.460	2.2	1.8	1.6
1.744	10.742	1.273	8.806	1.147	8.192	12.5	10.1	9.3
1.332	7.661	0.956	6.218	0.864	5.797	9.0	7.2	6.7
0.676	7.958	0.528	6.496	0.602	5.860	8.6	7.0	6.5
0.653	6.304	0.490	4.991	0.448	4.555	7.0	5.5	5.0
0.237	3.885	0.204	3.141	0.194	2.856	4.1	3.3	3.0
0.238	2.309	0.205	1.847	0.194	1.651	2.5	2.1	1.8
1.751	11.038	1.278	8.766	1.163	8.035	12.8	10.0	9.2
1.378	7.821	0.965	6.197	0.866	5.695	9.2	7.2	6.6
0.664	6.527	0.489	5.123	0.446	4.621	7.2	5.6	5.1
0.239	4.006	0.204	3.159	0.194	2.902	4.2	3.4	3.1
1.548	9.897	1.135	7.786	1.029	6.811	11.4	8.9	7.8
1.202	7.016	0.872	5.479	0.789	4.789	8.2	6.4	5.6
0.625	7.154	0.480	5.608	0.553	4.859	7.8	6.1	5.4
0.586	5.772	0.446	4.379	0.412	3.780	6.4	4.8	4.2
0.224	3.552	0.195	2.711	0.186	2.421	3.8	2.9	2.6
0.225	2.107	0.196	1.589	0.187	1.413	2.3	1.8	1.6
1.789	11.406	1.288	8.854	1.160	7.670	13.2	10.1	8.8
1.414	8.036	0.986	6.235	0.878	5.410	9.5	7.2	6.3
0.716	8.387	0.534	6.456	0.619	5.596	9.1	7.0	6.2
0.673	6.679	0.494	5.104	0.448	4.430	7.4	5.6	4.9
0.239	4.119	0.203	3.148	0.193	2.809	4.4	3.4	3.0
0.240	2.435	0.204	1.848	0.194	1.649	2.7	2.1	1.8
1.936	12.824	1.402	9.965	1.263	8.605	14.8	11.4	9.9
1.532	8.972	1.082	6.956	0.968	6.012	10.5	8.0	7.0
0.786	9.315	0.587	7.155	0.678	6.166	10.1	7.7	6.8
0.713	7.397	0.524	5.663	0.474	4.916	8.1	6.2	5.4
0.244	4.609	0.206	3.518	0.196	3.120	4.9	3.7	3.3
0.245	2.711	0.207	2.053	0.197	1.825	3.0	2.3	2.0
0.929	11.215	0.687	8.542	0.792	7.295	12.1	9.2	8.1
0.257	5.589	0.215	4.228	0.203	3.694	5.8	4.4	3.9

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
2.599	0.800	2.599	0.800	2.599	0.800	cent/km	cent/km	cent/km
1.196	3.598	1.196	5.997	1.196	5.997	4.8	7.2	7.2
1.141	3.539	0.879	3.479	0.823	3.913	4.7	4.4	4.7
0.535	2.466	0.435	2.528	0.416	2.842	3.0	3.0	3.3
0.318	2.629	0.297	2.608	0.308	2.853	2.9	2.9	3.2
0.331	2.057	0.278	1.920	0.263	2.067	2.4	2.2	2.3
0.189	1.248	0.178	1.222	0.174	1.348	1.4	1.4	1.5
0.190	0.737	0.178	0.709	0.174	0.782	0.9	0.9	1.0
1.173	6.728	0.866	6.158	0.800	6.487	7.9	7.0	7.3
0.757	3.989	0.574	3.691	0.540	3.830	4.7	4.3	4.4
0.415	4.225	0.366	3.837	0.390	3.901	4.6	4.2	4.3
0.430	3.349	0.342	2.923	0.323	2.867	3.8	3.3	3.2
0.207	2.034	0.190	1.823	0.185	1.850	2.2	2.0	2.0
0.208	1.202	0.190	1.077	0.185	1.063	1.4	1.3	1.2
1.250	7.547	0.932	6.645	0.860	6.752	8.8	7.6	7.6
0.807	4.511	0.617	3.986	0.579	3.982	5.3	4.6	4.6
0.439	4.805	0.383	4.157	0.416	4.059	5.2	4.5	4.5
0.439	3.928	0.357	3.221	0.343	3.073	4.4	3.6	3.4
0.211	2.347	0.193	1.998	0.188	1.936	2.6	2.2	2.1
1.646	9.611	1.180	8.057	1.071	7.764	11.3	9.2	8.8
1.032	5.735	0.759	4.786	0.690	4.612	6.8	5.5	5.3
0.513	6.176	0.445	5.066	0.448	4.844	6.7	5.5	5.3
0.549	5.049	0.428	3.989	0.399	3.697	5.6	4.4	4.1
0.234	2.985	0.207	2.412	0.199	2.285	3.2	2.6	2.5
0.235	1.791	0.207	1.428	0.200	1.344	2.0	1.6	1.5
1.659	10.546	1.215	8.458	1.112	7.915	12.2	9.7	9.0
1.297	7.405	0.904	5.953	0.813	5.585	8.7	6.9	6.4
0.632	7.881	0.510	6.261	0.550	5.846	8.5	6.8	6.4
0.649	6.343	0.484	4.959	0.446	4.606	7.0	5.4	5.1
0.251	3.813	0.216	3.038	0.207	2.835	4.1	3.3	3.0
0.252	2.271	0.217	1.799	0.208	1.676	2.5	2.0	1.9
1.750	11.107	1.276	8.918	1.153	8.311	12.9	10.2	9.5
1.347	7.815	0.954	6.245	0.854	5.819	9.2	7.2	6.7
0.662	8.221	0.534	6.505	0.576	6.047	8.9	7.0	6.6
0.683	6.417	0.509	5.009	0.457	4.660	7.1	5.5	5.1
0.253	3.934	0.219	3.121	0.208	2.907	4.2	3.3	3.1
0.254	2.323	0.220	1.831	0.209	1.705	2.6	2.1	1.9
1.919	12.550	1.401	10.288	1.262	9.571	14.5	11.7	10.8
1.466	8.951	1.052	7.265	0.950	6.772	10.4	8.3	7.7
0.743	9.297	0.581	7.590	0.662	6.847	10.0	8.2	7.5
0.719	7.365	0.540	5.831	0.493	5.322	8.1	6.4	5.8
0.261	4.539	0.224	3.670	0.213	3.337	4.8	3.9	3.5
0.262	2.698	0.225	2.158	0.214	1.929	3.0	2.4	2.1
1.927	12.896	1.406	10.242	1.280	9.387	14.8	11.6	10.7
1.517	9.137	1.062	7.240	0.953	6.654	10.7	8.3	7.6
0.731	7.626	0.538	5.985	0.490	5.399	8.4	6.5	5.9
0.263	4.680	0.224	3.690	0.214	3.390	4.9	3.9	3.6
1.704	11.563	1.249	9.096	1.133	7.957	13.3	10.3	9.1
1.323	8.197	0.960	6.401	0.868	5.595	9.5	7.4	6.5
0.687	8.358	0.528	6.552	0.609	5.677	9.0	7.1	6.3
0.645	6.744	0.491	5.116	0.453	4.416	7.4	5.6	4.9
0.247	4.150	0.214	3.167	0.205	2.828	4.4	3.4	3.0
0.248	2.461	0.215	1.856	0.206	1.651	2.7	2.1	1.9
1.968	13.326	1.417	10.344	1.276	8.961	15.3	11.8	10.2
1.556	9.389	1.085	7.284	0.967	6.320	10.9	8.4	7.3
0.788	9.799	0.588	7.542	0.681	6.537	10.6	8.1	7.2
0.740	7.803	0.544	5.963	0.493	5.176	8.5	6.5	5.7
0.263	4.812	0.223	3.678	0.213	3.282	5.1	3.9	3.5
0.264	2.844	0.224	2.159	0.214	1.927	3.1	2.4	2.1
2.130	14.983	1.543	11.643	1.389	10.053	17.1	13.2	11.4
1.686	10.482	1.191	8.127	1.065	7.024	12.2	9.3	8.1
0.865	10.882	0.646	8.359	0.746	7.204	11.7	9.0	7.9
0.784	8.642	0.576	6.616	0.522	5.744	9.4	7.2	6.3
0.268	5.385	0.227	4.111	0.216	3.645	5.7	4.3	3.9
0.270	3.167	0.228	2.398	0.217	2.132	3.4	2.6	2.3
1.023	13.103	0.756	9.980	0.872	8.523	14.1	10.7	9.4
0.283	6.530	0.236	4.939	0.224	4.315	6.8	5.2	4.5

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
1.261	0.349	1.261	0.349	1.261	0.349	cent/km	cent/km	cent/km
0.580	1.571	0.580	2.618	0.580	2.618	2.2	3.2	3.2
0.553	1.545	0.426	1.519	0.399	1.708	2.1	1.9	2.1
0.259	1.076	0.211	1.104	0.202	1.241	1.3	1.3	1.4
0.154	1.148	0.144	1.139	0.149	1.245	1.3	1.3	1.4
0.161	0.898	0.135	0.838	0.127	0.902	1.1	1.0	1.0
0.092	0.545	0.086	0.533	0.085	0.588	0.6	0.6	0.7
0.092	0.322	0.086	0.309	0.085	0.341	0.4	0.4	0.4
0.569	2.937	0.420	2.689	0.388	2.832	3.5	3.1	3.2
0.367	1.742	0.278	1.611	0.262	1.672	2.1	1.9	1.9
0.201	1.845	0.177	1.675	0.189	1.703	2.0	1.9	1.9
0.208	1.462	0.166	1.276	0.157	1.251	1.7	1.4	1.4
0.101	0.888	0.092	0.796	0.090	0.808	1.0	0.9	0.9
0.101	0.525	0.092	0.470	0.090	0.464	0.6	0.6	0.6
0.606	3.295	0.452	2.901	0.417	2.948	3.9	3.4	3.4
0.391	1.969	0.299	1.740	0.281	1.738	2.4	2.0	2.0
0.213	2.098	0.186	1.815	0.202	1.772	2.3	2.0	2.0
0.213	1.715	0.173	1.406	0.166	1.342	1.9	1.6	1.5
0.102	1.024	0.094	0.872	0.091	0.845	1.1	1.0	0.9
0.798	4.196	0.573	3.517	0.519	3.389	5.0	4.1	3.9
0.500	2.504	0.368	2.089	0.334	2.014	3.0	2.5	2.3
0.249	2.696	0.216	2.211	0.217	2.115	2.9	2.4	2.3
0.266	2.204	0.208	1.741	0.194	1.614	2.5	1.9	1.8
0.113	1.303	0.100	1.053	0.097	0.998	1.4	1.2	1.1
0.114	0.782	0.101	0.623	0.097	0.587	0.9	0.7	0.7
0.804	4.604	0.589	3.692	0.539	3.455	5.4	4.3	4.0
0.629	3.233	0.438	2.599	0.394	2.438	3.9	3.0	2.8
0.306	3.440	0.247	2.733	0.267	2.552	3.7	3.0	2.8
0.315	2.769	0.235	2.165	0.216	2.011	3.1	2.4	2.2
0.122	1.665	0.105	1.326	0.101	1.238	1.8	1.4	1.3
0.122	0.991	0.105	0.785	0.101	0.732	1.1	0.9	0.8
0.849	4.849	0.619	3.893	0.559	3.628	5.7	4.5	4.2
0.653	3.412	0.463	2.726	0.414	2.540	4.1	3.2	3.0
0.321	3.589	0.259	2.840	0.280	2.640	3.9	3.1	2.9
0.331	2.801	0.247	2.187	0.222	2.035	3.1	2.4	2.3
0.123	1.717	0.106	1.362	0.101	1.269	1.8	1.5	1.4
0.123	1.014	0.106	0.799	0.101	0.744	1.1	0.9	0.8
0.931	5.479	0.679	4.491	0.612	4.178	6.4	5.2	4.8
0.711	3.907	0.510	3.171	0.461	2.957	4.6	3.7	3.4
0.361	4.059	0.282	3.313	0.321	2.989	4.4	3.6	3.3
0.349	3.215	0.262	2.546	0.239	2.323	3.6	2.8	2.6
0.126	1.982	0.109	1.602	0.103	1.457	2.1	1.7	1.6
0.127	1.178	0.109	0.942	0.104	0.842	1.3	1.1	0.9
0.935	5.630	0.682	4.471	0.621	4.098	6.6	5.2	4.7
0.736	3.989	0.515	3.161	0.462	2.905	4.7	3.7	3.4
0.354	3.329	0.261	2.613	0.238	2.357	3.7	2.9	2.6
0.128	2.043	0.109	1.611	0.104	1.480	2.2	1.7	1.6
0.826	5.048	0.606	3.971	0.549	3.474	5.9	4.6	4.0
0.641	3.578	0.466	2.794	0.421	2.442	4.2	3.3	2.9
0.333	3.649	0.256	2.860	0.295	2.478	4.0	3.1	2.8
0.313	2.944	0.238	2.233	0.220	1.928	3.3	2.5	2.1
0.120	1.812	0.104	1.383	0.099	1.235	1.9	1.5	1.3
0.120	1.074	0.104	0.810	0.100	0.721	1.2	0.9	0.8
0.955	5.818	0.687	4.516	0.619	3.912	6.8	5.2	4.5
0.755	4.099	0.526	3.180	0.469	2.759	4.9	3.7	3.2
0.382	4.278	0.285	3.293	0.330	2.854	4.7	3.6	3.2
0.359	3.407	0.264	2.603	0.239	2.259	3.8	2.9	2.5
0.127	2.101	0.108	1.606	0.103	1.433	2.2	1.7	1.5
0.128	1.242	0.109	0.943	0.104	0.841	1.4	1.1	0.9
1.033	6.541	0.748	5.083	0.674	4.389	7.6	5.8	5.1
0.818	4.576	0.577	3.548	0.517	3.066	5.4	4.1	3.6
0.420	4.751	0.313	3.649	0.362	3.145	5.2	4.0	3.5
0.380	3.773	0.280	2.888	0.253	2.508	4.2	3.2	2.8
0.130	2.351	0.110	1.794	0.105	1.591	2.5	1.9	1.7
0.131	1.383	0.110	1.047	0.105	0.931	1.5	1.2	1.0
0.496	5.720	0.366	4.357	0.423	3.721	6.2	4.7	4.1
0.137	2.851	0.115	2.156	0.108	1.884	3.0	2.3	2.0

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
4.749	1.734	4.749	1.734	4.749	1.734	cent/km	cent/km	cent/km
2.184	7.804	2.184	13.007	2.184	13.007	10.0	15.2	15.2
2.084	7.677	1.606	7.545	1.504	8.488	9.8	9.2	10.0
0.977	5.348	0.795	5.484	0.759	6.165	6.3	6.3	6.9
0.581	5.703	0.543	5.657	0.563	6.188	6.3	6.2	6.8
0.605	4.462	0.508	4.165	0.480	4.482	5.1	4.7	5.0
0.346	2.707	0.325	2.650	0.319	2.923	3.1	3.0	3.2
0.346	1.598	0.325	1.537	0.319	1.696	1.9	1.9	2.0
2.143	14.593	1.582	13.358	1.461	14.071	16.7	14.9	15.5
1.382	8.653	1.049	8.006	0.987	8.307	10.0	9.1	9.3
0.758	9.164	0.668	8.322	0.712	8.462	9.9	9.0	9.2
0.785	7.264	0.624	6.340	0.591	6.218	8.0	7.0	6.8
0.379	4.413	0.347	3.954	0.338	4.012	4.8	4.3	4.3
0.380	2.607	0.348	2.337	0.338	2.307	3.0	2.7	2.6
2.285	16.369	1.702	14.414	1.572	14.645	18.7	16.1	16.2
1.475	9.785	1.127	8.646	1.057	8.636	11.3	9.8	9.7
0.802	10.422	0.700	9.017	0.760	8.804	11.2	9.7	9.6
0.801	8.520	0.652	6.987	0.626	6.666	9.3	7.6	7.3
0.386	5.090	0.353	4.334	0.343	4.199	5.5	4.7	4.5
3.007	20.847	2.157	17.475	1.957	16.839	23.9	19.6	18.8
1.885	12.440	1.386	10.380	1.260	10.004	14.3	11.8	11.3
0.937	13.396	0.814	10.987	0.819	10.506	14.3	11.8	11.3
1.002	10.952	0.782	8.652	0.729	8.019	12.0	9.4	8.7
0.427	6.475	0.378	5.233	0.364	4.957	6.9	5.6	5.3
0.429	3.885	0.379	3.097	0.365	2.915	4.3	3.5	3.3
3.031	22.873	2.220	18.346	2.032	17.167	25.9	20.6	19.2
2.369	16.060	1.651	12.912	1.485	12.114	18.4	14.6	13.6
1.155	17.093	0.932	13.579	1.006	12.680	18.2	14.5	13.7
1.185	13.757	0.885	10.757	0.815	9.990	14.9	11.6	10.8
0.458	8.271	0.396	6.589	0.379	6.150	8.7	7.0	6.5
0.461	4.926	0.397	3.902	0.380	3.636	5.4	4.3	4.0
3.198	24.091	2.332	19.344	2.107	18.026	27.3	21.7	20.1
2.462	16.950	1.743	13.545	1.561	12.621	19.4	15.3	14.2
1.209	17.830	0.975	14.110	1.053	13.116	19.0	15.1	14.2
1.248	13.919	0.930	10.864	0.836	10.108	15.2	11.8	10.9
0.462	8.533	0.400	6.769	0.381	6.304	9.0	7.2	6.7
0.465	5.038	0.401	3.971	0.382	3.699	5.5	4.4	4.1
3.507	27.221	2.560	22.316	2.307	20.759	30.7	24.9	23.1
2.679	19.414	1.922	15.757	1.736	14.689	22.1	17.7	16.4
1.358	20.166	1.061	16.462	1.209	14.851	21.5	17.5	16.1
1.314	15.974	0.986	12.648	0.902	11.544	17.3	13.6	12.4
0.476	9.845	0.409	7.960	0.389	7.238	10.3	8.4	7.6
0.479	5.852	0.411	4.680	0.391	4.184	6.3	5.1	4.6
3.521	27.971	2.569	22.214	2.338	20.361	31.5	24.8	22.7
2.771	19.819	1.940	15.704	1.742	14.433	22.6	17.6	16.2
1.335	16.541	0.983	12.981	0.896	11.710	17.9	14.0	12.6
0.480	10.151	0.410	8.004	0.391	7.354	10.6	8.4	7.7
3.113	25.080	2.282	19.730	2.070	17.259	28.2	22.0	19.3
2.417	17.779	1.754	13.884	1.586	12.135	20.2	15.6	13.7
1.256	18.129	0.964	14.212	1.113	12.313	19.4	15.2	13.4
1.178	14.627	0.898	11.097	0.829	9.578	15.8	12.0	10.4
0.451	9.000	0.392	6.869	0.375	6.134	9.5	7.3	6.5
0.453	5.338	0.393	4.025	0.376	3.580	5.8	4.4	4.0
3.596	28.905	2.589	22.436	2.331	19.437	32.5	25.0	21.8
2.843	20.365	1.982	15.799	1.766	13.708	23.2	17.8	15.5
1.439	21.253	1.073	16.359	1.244	14.180	22.7	17.4	15.4
1.353	16.925	0.994	12.934	0.901	11.226	18.3	13.9	12.1
0.480	10.437	0.408	7.978	0.389	7.119	10.9	8.4	7.5
0.483	6.170	0.410	4.683	0.390	4.180	6.7	5.1	4.6
3.892	32.498	2.820	25.253	2.538	21.805	36.4	28.1	24.3
3.080	22.736	2.176	17.628	1.946	15.235	25.8	19.8	17.2
1.581	23.604	1.180	18.131	1.364	15.625	25.2	19.3	17.0
1.433	18.743	1.053	14.351	0.954	12.459	20.2	15.4	13.4
0.490	11.681	0.414	8.916	0.394	7.905	12.2	9.3	8.3
0.493	6.869	0.416	5.202	0.396	4.625	7.4	5.6	5.0
1.868	28.420	1.381	21.646	1.592	18.487	30.3	23.0	20.1
0.518	14.163	0.431	10.713	0.409	9.360	14.7	11.1	9.8

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
5.261	1.639	5.261	1.639	5.261	1.639	cent/km	cent/km	cent/km
2.420	7.376	2.420	12.294	2.420	12.294	9.8	14.7	14.7
2.309	7.256	1.779	7.131	1.666	8.023	9.6	8.9	9.7
1.083	5.055	0.881	5.184	0.841	5.827	6.1	6.1	6.7
0.643	5.390	0.602	5.347	0.624	5.849	6.0	5.9	6.5
0.670	4.217	0.563	3.936	0.532	4.237	4.9	4.5	4.8
0.383	2.559	0.360	2.504	0.353	2.763	2.9	2.9	3.1
0.384	1.511	0.360	1.453	0.353	1.603	1.9	1.8	2.0
2.374	13.793	1.753	12.625	1.619	13.300	16.2	14.4	14.9
1.532	8.178	1.162	7.567	1.094	7.852	9.7	8.7	8.9
0.840	8.662	0.740	7.866	0.789	7.998	9.5	8.6	8.8
0.870	6.866	0.692	5.992	0.654	5.877	7.7	6.7	6.5
0.420	4.171	0.384	3.737	0.374	3.792	4.6	4.1	4.2
0.421	2.464	0.385	2.209	0.375	2.180	2.9	2.6	2.6
2.531	15.471	1.886	13.624	1.742	13.842	18.0	15.5	15.6
1.634	9.249	1.248	8.172	1.171	8.163	10.9	9.4	9.3
0.888	9.850	0.775	8.522	0.842	8.321	10.7	9.3	9.2
0.888	8.052	0.722	6.604	0.694	6.300	8.9	7.3	7.0
0.428	4.811	0.391	4.097	0.380	3.969	5.2	4.5	4.3
3.331	19.704	2.390	16.517	2.168	15.916	23.0	18.9	18.1
2.088	11.758	1.536	9.811	1.396	9.456	13.8	11.3	10.9
1.039	12.662	0.901	10.385	0.907	9.930	13.7	11.3	10.8
1.110	10.352	0.866	8.178	0.808	7.579	11.5	9.0	8.4
0.473	6.120	0.418	4.946	0.403	4.685	6.6	5.4	5.1
0.475	3.672	0.420	2.928	0.404	2.755	4.1	3.3	3.2
3.358	21.620	2.459	17.340	2.251	16.226	25.0	19.8	18.5
2.625	15.180	1.829	12.204	1.645	11.450	17.8	14.0	13.1
1.279	16.156	1.033	12.835	1.114	11.985	17.4	13.9	13.1
1.313	13.003	0.980	10.167	0.903	9.442	14.3	11.1	10.3
0.508	7.818	0.438	6.228	0.420	5.813	8.3	6.7	6.2
0.511	4.656	0.440	3.688	0.421	3.436	5.2	4.1	3.9
3.543	22.770	2.583	18.283	2.335	17.038	26.3	20.9	19.4
2.727	16.021	1.931	12.803	1.730	11.930	18.7	14.7	13.7
1.339	16.853	1.080	13.336	1.167	12.397	18.2	14.4	13.6
1.383	13.156	1.030	10.269	0.926	9.554	14.5	11.3	10.5
0.512	8.065	0.443	6.398	0.422	5.959	8.6	6.8	6.4
0.515	4.762	0.444	3.753	0.423	3.496	5.3	4.2	3.9
3.885	25.729	2.836	21.092	2.555	19.621	29.6	23.9	22.2
2.968	18.349	2.129	14.893	1.924	13.884	21.3	17.0	15.8
1.505	19.060	1.175	15.560	1.340	14.037	20.6	16.7	15.4
1.455	15.099	1.092	11.954	0.999	10.911	16.6	13.0	11.9
0.527	9.305	0.453	7.524	0.431	6.841	9.8	8.0	7.3
0.531	5.531	0.456	4.423	0.433	3.955	6.1	4.9	4.4
3.901	26.438	2.846	20.996	2.591	19.245	30.3	23.8	21.8
3.071	18.732	2.150	14.843	1.929	13.641	21.8	17.0	15.6
1.480	15.634	1.089	12.270	0.993	11.068	17.1	13.4	12.1
0.532	9.594	0.454	7.566	0.433	6.950	10.1	8.0	7.4
3.449	23.705	2.529	18.648	2.293	16.313	27.2	21.2	18.6
2.677	16.804	1.943	13.123	1.757	11.469	19.5	15.1	13.2
1.391	17.135	1.068	13.433	1.233	11.638	18.5	14.5	12.9
1.306	13.825	0.994	10.488	0.918	9.053	15.1	11.5	10.0
0.499	8.507	0.434	6.493	0.415	5.798	9.0	6.9	6.2
0.502	5.046	0.436	3.805	0.417	3.384	5.5	4.2	3.8
3.985	27.320	2.868	21.206	2.583	18.372	31.3	24.1	21.0
3.149	19.248	2.196	14.933	1.957	12.957	22.4	17.1	14.9
1.594	20.088	1.189	15.462	1.378	13.402	21.7	16.7	14.8
1.499	15.997	1.101	12.225	0.999	10.611	17.5	13.3	11.6
0.532	9.865	0.452	7.541	0.431	6.728	10.4	8.0	7.2
0.535	5.831	0.454	4.426	0.432	3.951	6.4	4.9	4.4
4.312	30.716	3.124	23.868	2.812	20.610	35.0	27.0	23.4
3.412	21.490	2.410	16.661	2.156	14.400	24.9	19.1	16.6
1.751	22.310	1.308	17.137	1.511	14.768	24.1	18.4	16.3
1.588	17.716	1.167	13.564	1.057	11.776	19.3	14.7	12.8
0.543	11.040	0.459	8.427	0.437	7.472	11.6	8.9	7.9
0.547	6.493	0.461	4.917	0.438	4.371	7.0	5.4	4.8
2.070	26.862	1.530	20.459	1.764	17.473	28.9	22.0	19.2
0.573	13.386	0.478	10.126	0.453	8.847	14.0	10.6	9.3

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
2.707	1.105	2.707	1.105	2.707	1.105	cent/km	cent/km	cent/km
1.245	4.973	1.245	8.288	1.245	8.288	6.2	9.5	9.5
1.188	4.892	0.915	4.807	0.857	5.408	6.1	5.7	6.3
0.557	3.408	0.453	3.494	0.433	3.928	4.0	3.9	4.4
0.331	3.634	0.310	3.604	0.321	3.943	4.0	3.9	4.3
0.345	2.843	0.290	2.654	0.273	2.856	3.2	2.9	3.1
0.197	1.725	0.185	1.688	0.182	1.863	1.9	1.9	2.0
0.197	1.018	0.185	0.979	0.182	1.080	1.2	1.2	1.3
1.222	9.298	0.902	8.511	0.833	8.966	10.5	9.4	9.8
0.788	5.513	0.598	5.101	0.563	5.293	6.3	5.7	5.9
0.432	5.839	0.381	5.303	0.406	5.392	6.3	5.7	5.8
0.447	4.628	0.356	4.039	0.337	3.962	5.1	4.4	4.3
0.216	2.812	0.198	2.519	0.192	2.556	3.0	2.7	2.7
0.217	1.661	0.198	1.489	0.193	1.470	1.9	1.7	1.7
1.302	10.430	0.970	9.184	0.896	9.331	11.7	10.2	10.2
0.841	6.235	0.642	5.509	0.603	5.503	7.1	6.2	6.1
0.457	6.640	0.399	5.745	0.433	5.609	7.1	6.1	6.0
0.457	5.428	0.371	4.452	0.357	4.247	5.9	4.8	4.6
0.220	3.243	0.201	2.762	0.196	2.676	3.5	3.0	2.9
1.714	13.283	1.229	11.135	1.116	10.729	15.0	12.4	11.8
1.075	7.926	0.790	6.614	0.718	6.374	9.0	7.4	7.1
0.534	8.535	0.464	7.001	0.467	6.694	9.1	7.5	7.2
0.571	6.978	0.446	5.513	0.416	5.109	7.5	6.0	5.5
0.243	4.126	0.215	3.334	0.207	3.158	4.4	3.5	3.4
0.244	2.475	0.216	1.974	0.208	1.858	2.7	2.2	2.1
1.728	14.574	1.265	11.689	1.158	10.939	16.3	13.0	12.1
1.350	10.233	0.941	8.227	0.846	7.719	11.6	9.2	8.6
0.658	10.891	0.531	8.652	0.573	8.079	11.5	9.2	8.7
0.676	8.766	0.504	6.854	0.464	6.365	9.4	7.4	6.8
0.261	5.270	0.225	4.199	0.216	3.918	5.5	4.4	4.1
0.263	3.139	0.226	2.486	0.217	2.316	3.4	2.7	2.5
1.823	15.350	1.329	12.325	1.201	11.486	17.2	13.7	12.7
1.403	10.800	0.994	8.631	0.890	8.042	12.2	9.6	8.9
0.689	11.361	0.556	8.990	0.600	8.357	12.1	9.5	9.0
0.712	8.869	0.530	6.923	0.476	6.441	9.6	7.5	6.9
0.263	5.437	0.228	4.313	0.217	4.017	5.7	4.5	4.2
0.265	3.210	0.229	2.530	0.218	2.357	3.5	2.8	2.6
1.999	17.344	1.459	14.219	1.315	13.227	19.3	15.7	14.5
1.527	12.370	1.095	10.040	0.990	9.360	13.9	11.1	10.3
0.774	12.849	0.605	10.489	0.689	9.463	13.6	11.1	10.2
0.749	10.178	0.562	8.059	0.514	7.355	10.9	8.6	7.9
0.271	6.273	0.233	5.072	0.222	4.612	6.5	5.3	4.8
0.273	3.729	0.234	2.982	0.223	2.666	4.0	3.2	2.9
2.007	17.822	1.464	14.154	1.333	12.973	19.8	15.6	14.3
1.580	12.628	1.106	10.006	0.993	9.196	14.2	11.1	10.2
0.761	10.539	0.561	8.271	0.511	7.461	11.3	8.8	8.0
0.274	6.468	0.233	5.100	0.223	4.685	6.7	5.3	4.9
1.775	15.980	1.301	12.571	1.180	10.997	17.8	13.9	12.2
1.378	11.328	1.000	8.846	0.904	7.732	12.7	9.8	8.6
0.716	11.551	0.550	9.055	0.634	7.846	12.3	9.6	8.5
0.672	9.320	0.512	7.071	0.472	6.103	10.0	7.6	6.6
0.257	5.735	0.223	4.377	0.214	3.908	6.0	4.6	4.1
0.258	3.401	0.224	2.565	0.214	2.281	3.7	2.8	2.5
2.050	18.417	1.476	14.295	1.329	12.385	20.5	15.8	13.7
1.620	12.976	1.130	10.067	1.007	8.735	14.6	11.2	9.7
0.820	13.542	0.612	10.424	0.709	9.035	14.4	11.0	9.7
0.771	10.784	0.567	8.241	0.514	7.153	11.6	8.8	7.7
0.274	6.650	0.233	5.083	0.222	4.536	6.9	5.3	4.8
0.275	3.931	0.234	2.984	0.222	2.663	4.2	3.2	2.9
2.219	20.707	1.607	16.090	1.447	13.894	22.9	17.7	15.3
1.756	14.487	1.240	11.232	1.109	9.707	16.2	12.5	10.8
0.901	15.040	0.673	11.552	0.777	9.956	15.9	12.2	10.7
0.817	11.943	0.600	9.144	0.544	7.938	12.8	9.7	8.5
0.279	7.442	0.236	5.681	0.225	5.037	7.7	5.9	5.3
0.281	4.377	0.237	3.315	0.226	2.947	4.7	3.6	3.2
1.065	18.109	0.787	13.792	0.908	11.779	19.2	14.6	12.7
0.295	9.024	0.246	6.826	0.233	5.964	9.3	7.1	6.2

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
4.858	1.791	4.858	1.791	4.858	1.791	cent/km	cent/km	cent/km
2.235	8.058	2.235	13.431	2.235	13.431	10.3	15.7	15.7
2.132	7.927	1.643	7.791	1.538	8.764	10.1	9.4	10.3
1.000	5.522	0.814	5.663	0.777	6.365	6.5	6.5	7.1
0.594	5.889	0.556	5.841	0.576	6.389	6.5	6.4	7.0
0.619	4.607	0.520	4.300	0.491	4.628	5.2	4.8	5.1
0.354	2.795	0.333	2.736	0.326	3.019	3.1	3.1	3.3
0.354	1.650	0.333	1.587	0.326	1.751	2.0	1.9	2.1
2.192	15.068	1.618	13.793	1.495	14.530	17.3	15.4	16.0
1.414	8.935	1.073	8.267	1.010	8.578	10.3	9.3	9.6
0.775	9.463	0.683	8.593	0.729	8.737	10.2	9.3	9.5
0.803	7.500	0.639	6.546	0.604	6.420	8.3	7.2	7.0
0.387	4.556	0.355	4.083	0.345	4.143	4.9	4.4	4.5
0.389	2.692	0.356	2.413	0.346	2.382	3.1	2.8	2.7
2.337	16.902	1.741	14.883	1.608	15.122	19.2	16.6	16.7
1.509	10.104	1.153	8.928	1.082	8.917	11.6	10.1	10.0
0.820	10.761	0.716	9.310	0.778	9.090	11.6	10.0	9.9
0.820	8.797	0.667	7.214	0.641	6.883	9.6	7.9	7.5
0.395	5.255	0.361	4.475	0.351	4.336	5.7	4.8	4.7
3.076	21.526	2.207	18.044	2.002	17.387	24.6	20.3	19.4
1.929	12.845	1.418	10.718	1.289	10.330	14.8	12.1	11.6
0.959	13.832	0.832	11.345	0.838	10.848	14.8	12.2	11.7
1.025	11.309	0.800	8.934	0.746	8.280	12.3	9.7	9.0
0.436	6.686	0.386	5.403	0.372	5.118	7.1	5.8	5.5
0.439	4.012	0.387	3.198	0.373	3.010	4.5	3.6	3.4
3.101	23.618	2.271	18.943	2.078	17.726	26.7	21.2	19.8
2.424	16.584	1.689	13.332	1.519	12.509	19.0	15.0	14.0
1.181	17.650	0.954	14.021	1.029	13.093	18.8	15.0	14.1
1.213	14.205	0.905	11.107	0.834	10.315	15.4	12.0	11.1
0.469	8.540	0.405	6.804	0.388	6.350	9.0	7.2	6.7
0.471	5.086	0.406	4.029	0.389	3.754	5.6	4.4	4.1
3.272	24.875	2.386	19.974	2.156	18.613	28.1	22.4	20.8
2.518	17.502	1.783	13.987	1.597	13.033	20.0	15.8	14.6
1.237	18.411	0.997	14.569	1.077	13.543	19.6	15.6	14.6
1.277	14.372	0.951	11.218	0.855	10.438	15.6	12.2	11.3
0.473	8.811	0.409	6.990	0.389	6.510	9.3	7.4	6.9
0.475	5.203	0.410	4.100	0.391	3.819	5.7	4.5	4.2
3.588	28.107	2.619	23.042	2.360	21.436	31.7	25.7	23.8
2.740	20.046	1.966	16.270	1.777	15.168	22.8	18.2	16.9
1.390	20.823	1.085	16.998	1.237	15.335	22.2	18.1	16.6
1.344	16.495	1.009	13.060	0.922	11.920	17.8	14.1	12.8
0.487	10.166	0.419	8.219	0.398	7.473	10.7	8.6	7.9
0.490	6.043	0.421	4.832	0.400	4.321	6.5	5.3	4.7
3.602	28.882	2.628	22.937	2.392	21.024	32.5	25.6	23.4
2.835	20.464	1.985	16.215	1.782	14.903	23.3	18.2	16.7
1.366	17.080	1.006	13.404	0.917	12.091	18.4	14.4	13.0
0.492	10.481	0.419	8.265	0.400	7.593	11.0	8.7	8.0
3.185	25.896	2.335	20.372	2.117	17.821	29.1	22.7	19.9
2.472	18.358	1.794	14.336	1.622	12.530	20.8	16.1	14.2
1.285	18.719	0.986	14.675	1.138	12.714	20.0	15.7	13.9
1.206	15.103	0.918	11.458	0.848	9.890	16.3	12.4	10.7
0.461	9.294	0.401	7.093	0.383	6.334	9.8	7.5	6.7
0.464	5.512	0.402	4.157	0.385	3.697	6.0	4.6	4.1
3.679	29.846	2.648	23.166	2.385	20.070	33.5	25.8	22.5
2.908	21.028	2.027	16.314	1.807	14.155	23.9	18.3	16.0
1.472	21.945	1.098	16.892	1.272	14.641	23.4	18.0	15.9
1.384	17.476	1.017	13.355	0.922	11.592	18.9	14.4	12.5
0.491	10.777	0.417	8.238	0.398	7.350	11.3	8.7	7.7
0.494	6.370	0.419	4.836	0.399	4.316	6.9	5.3	4.7
3.982	33.556	2.885	26.075	2.597	22.515	37.5	29.0	25.1
3.151	23.477	2.226	18.202	1.991	15.731	26.6	20.4	17.7
1.617	24.372	1.208	18.721	1.395	16.134	26.0	19.9	17.5
1.466	19.354	1.077	14.818	0.976	12.864	20.8	15.9	13.8
0.501	12.061	0.424	9.206	0.403	8.163	12.6	9.6	8.6
0.505	7.093	0.426	5.372	0.405	4.775	7.6	5.8	5.2
1.911	29.346	1.413	22.351	1.629	19.089	31.3	23.8	20.7
0.529	14.624	0.441	11.062	0.418	9.665	15.2	11.5	10.1

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
2.051	0.876	2.051	0.876	2.051	0.876	cent/km	cent/km	cent/km
0.944	3.942	0.944	6.570	0.944	6.570	4.9	7.5	7.5
0.900	3.878	0.694	3.811	0.650	4.287	4.8	4.5	4.9
0.422	2.701	0.344	2.770	0.328	3.114	3.1	3.1	3.4
0.251	2.881	0.235	2.857	0.243	3.126	3.1	3.1	3.4
0.261	2.254	0.219	2.104	0.207	2.264	2.5	2.3	2.5
0.149	1.367	0.140	1.338	0.138	1.477	1.5	1.5	1.6
0.150	0.807	0.141	0.776	0.138	0.856	1.0	0.9	1.0
0.926	7.371	0.683	6.747	0.631	7.108	8.3	7.4	7.7
0.597	4.371	0.453	4.044	0.426	4.196	5.0	4.5	4.6
0.327	4.629	0.288	4.204	0.308	4.274	5.0	4.5	4.6
0.339	3.669	0.270	3.202	0.255	3.141	4.0	3.5	3.4
0.164	2.229	0.150	1.997	0.146	2.027	2.4	2.1	2.2
0.164	1.317	0.150	1.180	0.146	1.165	1.5	1.3	1.3
0.987	8.268	0.735	7.281	0.679	7.397	9.3	8.0	8.1
0.637	4.943	0.487	4.367	0.457	4.362	5.6	4.9	4.8
0.346	5.264	0.302	4.554	0.328	4.447	5.6	4.9	4.8
0.346	4.303	0.281	3.529	0.270	3.367	4.6	3.8	3.6
0.167	2.571	0.152	2.189	0.148	2.121	2.7	2.3	2.3
1.299	10.530	0.932	8.827	0.845	8.506	11.8	9.8	9.4
0.814	6.284	0.599	5.243	0.544	5.053	7.1	5.8	5.6
0.405	6.766	0.351	5.550	0.354	5.307	7.2	5.9	5.7
0.433	5.532	0.338	4.370	0.315	4.051	6.0	4.7	4.4
0.184	3.271	0.163	2.643	0.157	2.504	3.5	2.8	2.7
0.185	1.962	0.164	1.565	0.158	1.473	2.1	1.7	1.6
1.309	11.554	0.959	9.267	0.878	8.671	12.9	10.2	9.5
1.023	8.112	0.713	6.522	0.641	6.119	9.1	7.2	6.8
0.499	8.634	0.403	6.859	0.434	6.405	9.1	7.3	6.8
0.512	6.949	0.382	5.433	0.352	5.046	7.5	5.8	5.4
0.198	4.178	0.171	3.328	0.164	3.106	4.4	3.5	3.3
0.199	2.488	0.171	1.971	0.164	1.836	2.7	2.1	2.0
1.381	12.169	1.007	9.771	0.910	9.105	13.5	10.8	10.0
1.063	8.562	0.753	6.842	0.674	6.375	9.6	7.6	7.0
0.522	9.006	0.421	7.127	0.455	6.625	9.5	7.5	7.1
0.539	7.031	0.402	5.488	0.361	5.106	7.6	5.9	5.5
0.200	4.310	0.173	3.419	0.164	3.184	4.5	3.6	3.3
0.201	2.545	0.173	2.006	0.165	1.868	2.7	2.2	2.0
1.515	13.750	1.106	11.272	0.996	10.486	15.3	12.4	11.5
1.157	9.806	0.830	7.959	0.750	7.420	11.0	8.8	8.2
0.587	10.186	0.458	8.315	0.522	7.501	10.8	8.8	8.0
0.567	8.069	0.426	6.389	0.389	5.831	8.6	6.8	6.2
0.206	4.973	0.177	4.021	0.168	3.656	5.2	4.2	3.8
0.207	2.956	0.178	2.364	0.169	2.114	3.2	2.5	2.3
1.521	14.129	1.109	11.221	1.010	10.285	15.6	12.3	11.3
1.197	10.011	0.838	7.932	0.752	7.290	11.2	8.8	8.0
0.577	8.355	0.425	6.557	0.387	5.915	8.9	7.0	6.3
0.208	5.127	0.177	4.043	0.169	3.714	5.3	4.2	3.9
1.345	12.668	0.986	9.966	0.894	8.718	14.0	11.0	9.6
1.044	8.980	0.758	7.013	0.685	6.129	10.0	7.8	6.8
0.542	9.157	0.416	7.179	0.481	6.220	9.7	7.6	6.7
0.509	7.388	0.388	5.605	0.358	4.838	7.9	6.0	5.2
0.195	4.546	0.169	3.470	0.162	3.098	4.7	3.6	3.3
0.196	2.696	0.170	2.033	0.162	1.808	2.9	2.2	2.0
1.553	14.600	1.118	11.333	1.007	9.818	16.2	12.5	10.8
1.228	10.287	0.856	7.981	0.763	6.924	11.5	8.8	7.7
0.622	10.735	0.464	8.263	0.537	7.162	11.4	8.7	7.7
0.584	8.549	0.429	6.533	0.389	5.670	9.1	7.0	6.1
0.207	5.272	0.176	4.030	0.168	3.596	5.5	4.2	3.8
0.209	3.116	0.177	2.365	0.169	2.111	3.3	2.5	2.3
1.681	16.415	1.218	12.755	1.096	11.014	18.1	14.0	12.1
1.330	11.484	0.940	8.904	0.841	7.695	12.8	9.8	8.5
0.683	11.923	0.510	9.158	0.589	7.892	12.6	9.7	8.5
0.619	9.468	0.455	7.249	0.412	6.293	10.1	7.7	6.7
0.212	5.900	0.179	4.504	0.170	3.993	6.1	4.7	4.2
0.213	3.470	0.180	2.628	0.171	2.336	3.7	2.8	2.5
0.807	14.356	0.596	10.934	0.688	9.338	15.2	11.5	10.0
0.224	7.154	0.186	5.411	0.176	4.728	7.4	5.6	4.9

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
6.153	1.844	6.153	1.844	6.153	1.844	cent/km	cent/km	cent/km
2.831	8.297	2.831	13.828	2.831	13.828	11.1	16.7	16.7
2.701	8.162	2.081	8.021	1.949	9.024	10.9	10.1	11.0
1.267	5.686	1.031	5.831	0.984	6.554	7.0	6.9	7.5
0.752	6.063	0.704	6.014	0.730	6.579	6.8	6.7	7.3
0.784	4.743	0.658	4.428	0.622	4.766	5.5	5.1	5.4
0.448	2.878	0.421	2.817	0.413	3.108	3.3	3.2	3.5
0.449	1.699	0.422	1.634	0.413	1.803	2.1	2.1	2.2
2.777	15.514	2.050	14.201	1.894	14.960	18.3	16.3	16.9
1.791	9.199	1.359	8.512	1.279	8.832	11.0	9.9	10.1
0.982	9.743	0.865	8.848	0.923	8.996	10.7	9.7	9.9
1.017	7.723	0.809	6.740	0.765	6.611	8.7	7.5	7.4
0.491	4.691	0.449	4.203	0.438	4.265	5.2	4.7	4.7
0.493	2.772	0.451	2.484	0.439	2.452	3.3	2.9	2.9
2.960	17.402	2.205	15.324	2.037	15.570	20.4	17.5	17.6
1.911	10.403	1.460	9.192	1.370	9.181	12.3	10.7	10.6
1.039	11.080	0.907	9.586	0.985	9.360	12.1	10.5	10.3
1.038	9.058	0.844	7.428	0.811	7.087	10.1	8.3	7.9
0.500	5.411	0.457	4.608	0.445	4.465	5.9	5.1	4.9
3.896	22.164	2.795	18.579	2.536	17.903	26.1	21.4	20.4
2.443	13.226	1.796	11.035	1.633	10.636	15.7	12.8	12.3
1.215	14.242	1.054	11.681	1.061	11.169	15.5	12.7	12.2
1.299	11.644	1.013	9.199	0.945	8.525	12.9	10.2	9.5
0.553	6.884	0.489	5.563	0.472	5.270	7.4	6.1	5.7
0.555	4.130	0.491	3.293	0.473	3.099	4.7	3.8	3.6
3.927	24.318	2.876	19.505	2.632	18.252	28.2	22.4	20.9
3.070	17.075	2.139	13.727	1.924	12.880	20.1	15.9	14.8
1.496	18.173	1.208	14.437	1.303	13.481	19.7	15.6	14.8
1.536	14.626	1.146	11.436	1.056	10.621	16.2	12.6	11.7
0.594	8.793	0.512	7.006	0.491	6.538	9.4	7.5	7.0
0.597	5.237	0.514	4.148	0.492	3.865	5.8	4.7	4.4
4.144	25.612	3.021	20.565	2.731	19.164	29.8	23.6	21.9
3.190	18.021	2.259	14.401	2.023	13.419	21.2	16.7	15.4
1.566	18.957	1.263	15.001	1.365	13.945	20.5	16.3	15.3
1.617	14.798	1.205	11.551	1.083	10.747	16.4	12.8	11.8
0.599	9.072	0.518	7.197	0.493	6.702	9.7	7.7	7.2
0.602	5.357	0.520	4.221	0.495	3.932	6.0	4.7	4.4
4.544	28.940	3.317	23.725	2.989	22.071	33.5	27.0	25.1
3.471	20.640	2.490	16.752	2.250	15.617	24.1	19.2	17.9
1.760	21.439	1.375	17.502	1.567	15.789	23.2	18.9	17.4
1.702	16.983	1.277	13.447	1.168	12.273	18.7	14.7	13.4
0.617	10.467	0.530	8.463	0.504	7.695	11.1	9.0	8.2
0.621	6.222	0.533	4.975	0.506	4.449	6.8	5.5	5.0
4.562	29.738	3.328	23.617	3.030	21.647	34.3	26.9	24.7
3.591	21.070	2.514	16.695	2.257	15.344	24.7	19.2	17.6
1.730	17.586	1.274	13.801	1.161	12.449	19.3	15.1	13.6
0.623	10.792	0.531	8.510	0.506	7.818	11.4	9.0	8.3
4.034	26.664	2.957	20.976	2.682	18.349	30.7	23.9	21.0
3.131	18.902	2.272	14.761	2.055	12.901	22.0	17.0	15.0
1.627	19.274	1.249	15.109	1.442	13.091	20.9	16.4	14.5
1.527	15.551	1.163	11.798	1.074	10.183	17.1	13.0	11.3
0.584	9.569	0.508	7.303	0.485	6.521	10.2	7.8	7.0
0.587	5.675	0.509	4.280	0.487	3.806	6.3	4.8	4.3
4.660	30.730	3.354	23.853	3.021	20.665	35.4	27.2	23.7
3.683	21.651	2.568	16.797	2.288	14.574	25.3	19.4	16.9
1.865	22.596	1.391	17.393	1.611	15.075	24.5	18.8	16.7
1.753	17.994	1.288	13.751	1.168	11.935	19.7	15.0	13.1
0.622	11.097	0.529	8.482	0.504	7.568	11.7	9.0	8.1
0.626	6.559	0.531	4.979	0.505	4.444	7.2	5.5	4.9
5.043	34.550	3.654	26.847	3.289	23.182	39.6	30.5	26.5
3.991	24.172	2.819	18.741	2.521	16.197	28.2	21.6	18.7
2.048	25.094	1.529	19.276	1.767	16.612	27.1	20.8	18.4
1.857	19.927	1.364	15.257	1.236	13.245	21.8	16.6	14.5
0.635	12.418	0.537	9.479	0.511	8.404	13.1	10.0	8.9
0.639	7.303	0.539	5.531	0.513	4.917	7.9	6.1	5.4
2.421	30.215	1.789	23.013	2.063	19.654	32.6	24.8	21.7
0.671	15.057	0.559	11.390	0.529	9.951	15.7	11.9	10.5

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
1.793	0.662	1.793	0.662	1.793	0.662	cent/km	cent/km	cent/km
0.825	2.980	0.825	4.967	0.825	4.967	3.8	5.8	5.8
0.787	2.932	0.606	2.881	0.568	3.241	3.7	3.5	3.8
0.369	2.042	0.300	2.094	0.287	2.354	2.4	2.4	2.6
0.219	2.178	0.205	2.160	0.213	2.363	2.4	2.4	2.6
0.228	1.704	0.192	1.590	0.181	1.712	1.9	1.8	1.9
0.131	1.034	0.123	1.012	0.120	1.116	1.2	1.1	1.2
0.131	0.610	0.123	0.587	0.120	0.648	0.7	0.7	0.8
0.809	5.572	0.597	5.101	0.552	5.373	6.4	5.7	5.9
0.522	3.304	0.396	3.057	0.373	3.172	3.8	3.5	3.5
0.286	3.500	0.252	3.178	0.269	3.231	3.8	3.4	3.5
0.296	2.774	0.236	2.421	0.223	2.374	3.1	2.7	2.6
0.143	1.685	0.131	1.510	0.127	1.532	1.8	1.6	1.7
0.144	0.996	0.131	0.892	0.128	0.881	1.1	1.0	1.0
0.863	6.251	0.643	5.504	0.594	5.592	7.1	6.1	6.2
0.557	3.737	0.425	3.302	0.399	3.298	4.3	3.7	3.7
0.303	3.980	0.264	3.443	0.287	3.362	4.3	3.7	3.6
0.303	3.253	0.246	2.668	0.236	2.545	3.6	2.9	2.8
0.146	1.944	0.133	1.655	0.130	1.604	2.1	1.8	1.7
1.135	7.961	0.814	6.673	0.739	6.430	9.1	7.5	7.2
0.712	4.750	0.523	3.964	0.476	3.820	5.5	4.5	4.3
0.354	5.115	0.307	4.196	0.309	4.012	5.5	4.5	4.3
0.378	4.182	0.295	3.304	0.275	3.062	4.6	3.6	3.3
0.161	2.473	0.143	1.998	0.137	1.893	2.6	2.1	2.0
0.162	1.484	0.143	1.183	0.138	1.113	1.6	1.3	1.3
1.144	8.735	0.838	7.006	0.767	6.556	9.9	7.8	7.3
0.894	6.133	0.623	4.931	0.561	4.626	7.0	5.6	5.2
0.436	6.527	0.352	5.185	0.380	4.842	7.0	5.5	5.2
0.448	5.253	0.334	4.108	0.308	3.815	5.7	4.4	4.1
0.173	3.158	0.149	2.516	0.143	2.348	3.3	2.7	2.5
0.174	1.881	0.150	1.490	0.144	1.388	2.1	1.6	1.5
1.207	9.199	0.880	7.387	0.796	6.883	10.4	8.3	7.7
0.929	6.473	0.658	5.173	0.590	4.820	7.4	5.8	5.4
0.456	6.809	0.368	5.388	0.398	5.009	7.3	5.8	5.4
0.471	5.315	0.351	4.149	0.316	3.860	5.8	4.5	4.2
0.174	3.259	0.151	2.585	0.144	2.407	3.4	2.7	2.6
0.175	1.924	0.151	1.516	0.144	1.412	2.1	1.7	1.6
1.324	10.395	0.967	8.522	0.871	7.927	11.7	9.5	8.8
1.011	7.413	0.726	6.017	0.656	5.609	8.4	6.7	6.3
0.513	7.701	0.401	6.286	0.457	5.671	8.2	6.7	6.1
0.496	6.100	0.372	4.830	0.340	4.408	6.6	5.2	4.7
0.180	3.760	0.155	3.040	0.147	2.764	3.9	3.2	2.9
0.181	2.235	0.155	1.787	0.148	1.598	2.4	1.9	1.7
1.330	10.681	0.970	8.483	0.883	7.775	12.0	9.5	8.7
1.046	7.568	0.733	5.997	0.658	5.511	8.6	6.7	6.2
0.504	6.316	0.371	4.957	0.338	4.472	6.8	5.3	4.8
0.181	3.876	0.155	3.057	0.147	2.808	4.1	3.2	3.0
1.176	9.577	0.862	7.534	0.781	6.590	10.8	8.4	7.4
0.912	6.789	0.662	5.302	0.599	4.634	7.7	6.0	5.2
0.474	6.923	0.364	5.427	0.420	4.702	7.4	5.8	5.1
0.445	5.585	0.339	4.237	0.313	3.657	6.0	4.6	4.0
0.170	3.437	0.148	2.623	0.141	2.342	3.6	2.8	2.5
0.171	2.039	0.148	1.537	0.142	1.367	2.2	1.7	1.5
1.358	11.038	0.978	8.567	0.880	7.422	12.4	9.5	8.3
1.073	7.777	0.748	6.033	0.667	5.235	8.8	6.8	5.9
0.543	8.116	0.405	6.247	0.470	5.415	8.7	6.7	5.9
0.511	6.463	0.375	4.939	0.340	4.287	7.0	5.3	4.6
0.181	3.986	0.154	3.047	0.147	2.718	4.2	3.2	2.9
0.182	2.356	0.155	1.788	0.147	1.596	2.5	1.9	1.7
1.470	12.410	1.065	9.643	0.959	8.327	13.9	10.7	9.3
1.163	8.682	0.821	6.731	0.735	5.818	9.8	7.6	6.6
0.597	9.013	0.446	6.924	0.515	5.967	9.6	7.4	6.5
0.541	7.157	0.398	5.480	0.360	4.758	7.7	5.9	5.1
0.185	4.460	0.156	3.405	0.149	3.019	4.6	3.6	3.2
0.186	2.623	0.157	1.987	0.149	1.766	2.8	2.1	1.9
0.705	10.853	0.521	8.266	0.601	7.059	11.6	8.8	7.7
0.195	5.408	0.163	4.091	0.154	3.574	5.6	4.3	3.7

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
0.708	0.265	0.708	0.265	0.708	0.265	cent/km	cent/km	cent/km
0.326	1.190	0.326	1.984	0.326	1.984	1.5	2.3	2.3
0.311	1.171	0.240	1.151	0.224	1.295	1.5	1.4	1.5
0.146	0.816	0.119	0.837	0.113	0.940	1.0	1.0	1.1
0.087	0.870	0.081	0.863	0.084	0.944	1.0	0.9	1.0
0.090	0.681	0.076	0.635	0.072	0.684	0.8	0.7	0.8
0.052	0.413	0.048	0.404	0.048	0.446	0.5	0.5	0.5
0.052	0.244	0.049	0.234	0.048	0.259	0.3	0.3	0.3
0.320	2.226	0.236	2.037	0.218	2.146	2.5	2.3	2.4
0.206	1.320	0.156	1.221	0.147	1.267	1.5	1.4	1.4
0.113	1.398	0.100	1.269	0.106	1.291	1.5	1.4	1.4
0.117	1.108	0.093	0.967	0.088	0.948	1.2	1.1	1.0
0.056	0.673	0.052	0.603	0.050	0.612	0.7	0.7	0.7
0.057	0.398	0.052	0.356	0.050	0.352	0.5	0.4	0.4
0.341	2.497	0.254	2.199	0.235	2.234	2.8	2.5	2.5
0.220	1.493	0.168	1.319	0.158	1.317	1.7	1.5	1.5
0.120	1.590	0.104	1.375	0.113	1.343	1.7	1.5	1.5
0.120	1.300	0.097	1.066	0.093	1.017	1.4	1.2	1.1
0.058	0.776	0.053	0.661	0.051	0.641	0.8	0.7	0.7
0.449	3.180	0.322	2.666	0.292	2.568	3.6	3.0	2.9
0.281	1.898	0.207	1.583	0.188	1.526	2.2	1.8	1.7
0.140	2.043	0.121	1.676	0.122	1.602	2.2	1.8	1.7
0.150	1.671	0.117	1.320	0.109	1.223	1.8	1.4	1.3
0.064	0.988	0.056	0.798	0.054	0.756	1.1	0.9	0.8
0.064	0.593	0.056	0.472	0.054	0.445	0.7	0.5	0.5
0.452	3.489	0.331	2.798	0.303	2.619	3.9	3.1	2.9
0.353	2.450	0.246	1.969	0.222	1.848	2.8	2.2	2.1
0.172	2.607	0.139	2.071	0.150	1.934	2.8	2.2	2.1
0.177	2.098	0.132	1.641	0.122	1.524	2.3	1.8	1.6
0.068	1.262	0.059	1.005	0.057	0.938	1.3	1.1	1.0
0.069	0.751	0.059	0.595	0.057	0.555	0.8	0.7	0.6
0.477	3.675	0.348	2.951	0.314	2.750	4.2	3.3	3.1
0.367	2.585	0.260	2.066	0.233	1.925	3.0	2.3	2.2
0.180	2.720	0.145	2.152	0.157	2.001	2.9	2.3	2.2
0.186	2.123	0.139	1.657	0.125	1.542	2.3	1.8	1.7
0.069	1.302	0.060	1.033	0.057	0.962	1.4	1.1	1.0
0.069	0.769	0.060	0.606	0.057	0.564	0.8	0.7	0.6
0.523	4.152	0.382	3.404	0.344	3.166	4.7	3.8	3.5
0.400	2.961	0.287	2.403	0.259	2.241	3.4	2.7	2.5
0.203	3.076	0.158	2.511	0.180	2.265	3.3	2.7	2.4
0.196	2.437	0.147	1.929	0.135	1.761	2.6	2.1	1.9
0.071	1.502	0.061	1.214	0.058	1.104	1.6	1.3	1.2
0.071	0.893	0.061	0.714	0.058	0.638	1.0	0.8	0.7
0.525	4.266	0.383	3.388	0.349	3.106	4.8	3.8	3.5
0.413	3.023	0.289	2.395	0.260	2.201	3.4	2.7	2.5
0.199	2.523	0.147	1.980	0.134	1.786	2.7	2.1	1.9
0.072	1.548	0.061	1.221	0.058	1.122	1.6	1.3	1.2
0.464	3.825	0.340	3.009	0.309	2.632	4.3	3.3	2.9
0.361	2.712	0.262	2.118	0.237	1.851	3.1	2.4	2.1
0.187	2.765	0.144	2.168	0.166	1.878	3.0	2.3	2.0
0.176	2.231	0.134	1.693	0.124	1.461	2.4	1.8	1.6
0.067	1.373	0.058	1.048	0.056	0.936	1.4	1.1	1.0
0.068	0.814	0.059	0.614	0.056	0.546	0.9	0.7	0.6
0.537	4.409	0.386	3.422	0.348	2.965	4.9	3.8	3.3
0.424	3.106	0.296	2.410	0.263	2.091	3.5	2.7	2.4
0.215	3.242	0.160	2.495	0.186	2.163	3.5	2.7	2.3
0.202	2.582	0.148	1.973	0.134	1.712	2.8	2.1	1.8
0.072	1.592	0.061	1.217	0.058	1.086	1.7	1.3	1.1
0.072	0.941	0.061	0.714	0.058	0.638	1.0	0.8	0.7
0.581	4.957	0.421	3.852	0.379	3.326	5.5	4.3	3.7
0.459	3.468	0.325	2.689	0.290	2.324	3.9	3.0	2.6
0.236	3.600	0.176	2.766	0.203	2.383	3.8	2.9	2.6
0.214	2.859	0.157	2.189	0.142	1.900	3.1	2.3	2.0
0.073	1.782	0.062	1.360	0.059	1.206	1.9	1.4	1.3
0.074	1.048	0.062	0.793	0.059	0.705	1.1	0.9	0.8
0.279	4.335	0.206	3.302	0.238	2.820	4.6	3.5	3.1
0.077	2.160	0.064	1.634	0.061	1.428	2.2	1.7	1.5

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
8.614	1.564	8.614	1.564	8.614	1.564	cent/km	cent/km	cent/km
3.962	7.040	3.962	11.733	3.962	11.733	11.0	15.7	15.7
3.781	6.925	2.913	6.806	2.728	7.657	10.7	9.7	10.4
1.773	4.824	1.443	4.947	1.377	5.561	6.6	6.4	6.9
1.053	5.144	0.985	5.103	1.022	5.582	6.2	6.1	6.6
1.097	4.025	0.921	3.757	0.870	4.043	5.1	4.7	4.9
0.627	2.442	0.590	2.390	0.578	2.637	3.1	3.0	3.2
0.628	1.442	0.590	1.386	0.578	1.530	2.1	2.0	2.1
3.887	13.163	2.870	12.049	2.651	12.693	17.1	14.9	15.3
2.508	7.805	1.903	7.222	1.791	7.493	10.3	9.1	9.3
1.374	8.267	1.212	7.507	1.292	7.633	9.6	8.7	8.9
1.424	6.552	1.132	5.719	1.071	5.609	8.0	6.9	6.7
0.687	3.980	0.629	3.567	0.612	3.619	4.7	4.2	4.2
0.690	2.352	0.631	2.108	0.614	2.081	3.0	2.7	2.7
4.144	14.765	3.087	13.002	2.851	13.211	18.9	16.1	16.1
2.675	8.827	2.044	7.799	1.918	7.790	11.5	9.8	9.7
1.454	9.401	1.269	8.134	1.379	7.941	10.9	9.4	9.3
1.454	7.685	1.182	6.302	1.136	6.013	9.1	7.5	7.1
0.700	4.591	0.640	3.910	0.623	3.788	5.3	4.5	4.4
5.454	18.805	3.912	15.764	3.550	15.190	24.3	19.7	18.7
3.419	11.222	2.515	9.363	2.286	9.025	14.6	11.9	11.3
1.700	12.084	1.476	9.911	1.486	9.477	13.8	11.4	11.0
1.818	9.880	1.418	7.805	1.322	7.234	11.7	9.2	8.6
0.774	5.841	0.685	4.720	0.660	4.471	6.6	5.4	5.1
0.778	3.504	0.687	2.794	0.662	2.630	4.3	3.5	3.3
5.497	20.633	4.027	16.549	3.685	15.486	26.1	20.6	19.2
4.297	14.487	2.994	11.647	2.693	10.928	18.8	14.6	13.6
2.094	15.419	1.691	12.249	1.824	11.438	17.5	13.9	13.3
2.150	12.410	1.605	9.703	1.478	9.011	14.6	11.3	10.5
0.831	7.461	0.717	5.944	0.687	5.547	8.3	6.7	6.2
0.836	4.444	0.720	3.520	0.689	3.279	5.3	4.2	4.0
5.801	21.731	4.230	17.449	3.823	16.260	27.5	21.7	20.1
4.465	15.290	3.162	12.219	2.832	11.385	19.8	15.4	14.2
2.193	16.084	1.768	12.728	1.910	11.832	18.3	14.5	13.7
2.264	12.555	1.686	9.800	1.516	9.118	14.8	11.5	10.6
0.838	7.697	0.725	6.106	0.691	5.687	8.5	6.8	6.4
0.843	4.545	0.727	3.582	0.693	3.336	5.4	4.3	4.0
6.361	24.555	4.643	20.130	4.184	18.726	30.9	24.8	22.9
4.859	17.512	3.486	14.214	3.150	13.251	22.4	17.7	16.4
2.464	18.191	1.924	14.850	2.194	13.396	20.7	16.8	15.6
2.383	14.410	1.788	11.409	1.635	10.413	16.8	13.2	12.0
0.863	8.881	0.742	7.180	0.706	6.529	9.7	7.9	7.2
0.869	5.279	0.746	4.222	0.709	3.775	6.1	5.0	4.5
6.387	25.231	4.659	20.038	4.242	18.367	31.6	24.7	22.6
5.027	17.878	3.520	14.166	3.159	13.019	22.9	17.7	16.2
2.422	14.921	1.784	11.710	1.625	10.563	17.3	13.5	12.2
0.871	9.156	0.743	7.221	0.709	6.633	10.0	8.0	7.3
5.647	22.623	4.140	17.798	3.754	15.568	28.3	21.9	19.3
4.383	16.038	3.181	12.524	2.876	10.946	20.4	15.7	13.8
2.278	16.353	1.749	12.820	2.018	11.107	18.6	14.6	13.1
2.138	13.194	1.628	10.010	1.503	8.640	15.3	11.6	10.1
0.817	8.119	0.711	6.196	0.680	5.533	8.9	6.9	6.2
0.822	4.815	0.713	3.631	0.682	3.229	5.6	4.3	3.9
6.524	26.074	4.696	20.238	4.229	17.534	32.6	24.9	21.8
5.156	18.370	3.595	14.252	3.203	12.366	23.5	17.8	15.6
2.610	19.172	1.947	14.757	2.256	12.791	21.8	16.7	15.0
2.454	15.267	1.803	11.667	1.635	10.127	17.7	13.5	11.8
0.871	9.415	0.740	7.197	0.705	6.421	10.3	7.9	7.1
0.876	5.565	0.743	4.224	0.708	3.770	6.4	5.0	4.5
7.060	29.315	5.115	22.779	4.604	19.670	36.4	27.9	24.3
5.587	20.509	3.946	15.901	3.530	13.743	26.1	19.8	17.3
2.868	21.292	2.141	16.355	2.473	14.094	24.2	18.5	16.6
2.600	16.908	1.910	12.945	1.730	11.238	19.5	14.9	13.0
0.889	10.537	0.751	8.043	0.715	7.131	11.4	8.8	7.8
0.895	6.196	0.755	4.693	0.718	4.172	7.1	5.4	4.9
3.389	25.637	2.504	19.526	2.888	16.676	29.0	22.0	19.6
0.939	12.775	0.783	9.664	0.741	8.443	13.7	10.4	9.2

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
1.375	0.544	1.375	0.544	1.375	0.544	cent/km	cent/km	cent/km
0.633	2.449	0.633	4.081	0.633	4.081	3.1	4.7	4.7
0.604	2.409	0.465	2.368	0.436	2.663	3.0	2.8	3.1
0.283	1.678	0.230	1.721	0.220	1.934	2.0	2.0	2.2
0.168	1.789	0.157	1.775	0.163	1.942	2.0	1.9	2.1
0.175	1.400	0.147	1.307	0.139	1.407	1.6	1.5	1.5
0.100	0.849	0.094	0.831	0.092	0.917	0.9	0.9	1.0
0.100	0.501	0.094	0.482	0.092	0.532	0.6	0.6	0.6
0.621	4.579	0.458	4.192	0.423	4.415	5.2	4.6	4.8
0.400	2.715	0.304	2.512	0.286	2.607	3.1	2.8	2.9
0.219	2.876	0.193	2.611	0.206	2.655	3.1	2.8	2.9
0.227	2.279	0.181	1.989	0.171	1.951	2.5	2.2	2.1
0.110	1.385	0.100	1.241	0.098	1.259	1.5	1.3	1.4
0.110	0.818	0.101	0.733	0.098	0.724	0.9	0.8	0.8
0.662	5.136	0.493	4.523	0.455	4.595	5.8	5.0	5.1
0.427	3.071	0.326	2.713	0.306	2.710	3.5	3.0	3.0
0.232	3.270	0.203	2.829	0.220	2.763	3.5	3.0	3.0
0.232	2.673	0.189	2.192	0.181	2.092	2.9	2.4	2.3
0.112	1.597	0.102	1.360	0.099	1.318	1.7	1.5	1.4
0.871	6.542	0.625	5.484	0.567	5.284	7.4	6.1	5.9
0.546	3.904	0.402	3.257	0.365	3.139	4.4	3.7	3.5
0.271	4.204	0.236	3.448	0.237	3.297	4.5	3.7	3.5
0.290	3.437	0.226	2.715	0.211	2.516	3.7	2.9	2.7
0.124	2.032	0.109	1.642	0.105	1.555	2.2	1.8	1.7
0.124	1.219	0.110	0.972	0.106	0.915	1.3	1.1	1.0
0.878	7.178	0.643	5.757	0.588	5.387	8.1	6.4	6.0
0.686	5.040	0.478	4.052	0.430	3.801	5.7	4.5	4.2
0.334	5.364	0.270	4.261	0.291	3.979	5.7	4.5	4.3
0.343	4.317	0.256	3.375	0.236	3.135	4.7	3.6	3.4
0.133	2.595	0.115	2.068	0.110	1.930	2.7	2.2	2.0
0.133	1.546	0.115	1.224	0.110	1.141	1.7	1.3	1.3
0.926	7.560	0.675	6.070	0.610	5.656	8.5	6.7	6.3
0.713	5.319	0.505	4.250	0.452	3.961	6.0	4.8	4.4
0.350	5.595	0.282	4.428	0.305	4.116	5.9	4.7	4.4
0.362	4.368	0.269	3.409	0.242	3.172	4.7	3.7	3.4
0.134	2.678	0.116	2.124	0.110	1.978	2.8	2.2	2.1
0.135	1.581	0.116	1.246	0.111	1.161	1.7	1.4	1.3
1.016	8.542	0.741	7.002	0.668	6.514	9.6	7.7	7.2
0.776	6.092	0.557	4.945	0.503	4.609	6.9	5.5	5.1
0.393	6.328	0.307	5.166	0.350	4.660	6.7	5.5	5.0
0.380	5.013	0.286	3.969	0.261	3.622	5.4	4.3	3.9
0.138	3.089	0.119	2.498	0.113	2.271	3.2	2.6	2.4
0.139	1.836	0.119	1.469	0.113	1.313	2.0	1.6	1.4
1.020	8.777	0.744	6.971	0.677	6.389	9.8	7.7	7.1
0.803	6.219	0.562	4.928	0.504	4.529	7.0	5.5	5.0
0.387	5.190	0.285	4.073	0.259	3.674	5.6	4.4	3.9
0.139	3.185	0.119	2.512	0.113	2.307	3.3	2.6	2.4
0.902	7.870	0.661	6.191	0.599	5.416	8.8	6.9	6.0
0.700	5.579	0.508	4.357	0.459	3.808	6.3	4.9	4.3
0.364	5.689	0.279	4.460	0.322	3.864	6.1	4.7	4.2
0.341	4.590	0.260	3.482	0.240	3.005	4.9	3.7	3.2
0.131	2.824	0.113	2.155	0.109	1.925	3.0	2.3	2.0
0.131	1.675	0.114	1.263	0.109	1.123	1.8	1.4	1.2
1.042	9.070	0.750	7.040	0.675	6.099	10.1	7.8	6.8
0.823	6.390	0.574	4.958	0.512	4.302	7.2	5.5	4.8
0.417	6.669	0.311	5.133	0.360	4.449	7.1	5.4	4.8
0.392	5.311	0.288	4.059	0.261	3.523	5.7	4.3	3.8
0.139	3.275	0.118	2.503	0.113	2.234	3.4	2.6	2.3
0.140	1.936	0.119	1.470	0.113	1.312	2.1	1.6	1.4
1.127	10.198	0.817	7.924	0.735	6.842	11.3	8.7	7.6
0.892	7.134	0.630	5.531	0.564	4.781	8.0	6.2	5.3
0.458	7.407	0.342	5.689	0.395	4.903	7.9	6.0	5.3
0.415	5.882	0.305	4.503	0.276	3.909	6.3	4.8	4.2
0.142	3.665	0.120	2.798	0.114	2.481	3.8	2.9	2.6
0.143	2.155	0.121	1.632	0.115	1.451	2.3	1.8	1.6
0.541	8.918	0.400	6.792	0.461	5.801	9.5	7.2	6.3
0.150	4.444	0.125	3.362	0.118	2.937	4.6	3.5	3.1

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
4.655	1.322	4.655	1.322	4.655	1.322	cent/km	cent/km	cent/km
2.141	5.948	2.141	9.913	2.141	9.913	8.1	12.1	12.1
2.043	5.851	1.574	5.750	1.474	6.469	7.9	7.3	7.9
0.958	4.076	0.780	4.180	0.744	4.698	5.0	5.0	5.4
0.569	4.346	0.532	4.311	0.552	4.716	4.9	4.8	5.3
0.593	3.400	0.498	3.174	0.470	3.416	4.0	3.7	3.9
0.339	2.063	0.319	2.019	0.312	2.228	2.4	2.3	2.5
0.339	1.218	0.319	1.171	0.312	1.292	1.6	1.5	1.6
2.100	11.122	1.551	10.180	1.432	10.724	13.2	11.7	12.2
1.355	6.595	1.028	6.102	0.968	6.331	7.9	7.1	7.3
0.743	6.984	0.655	6.343	0.698	6.449	7.7	7.0	7.1
0.769	5.536	0.612	4.832	0.579	4.739	6.3	5.4	5.3
0.371	3.363	0.340	3.013	0.331	3.058	3.7	3.4	3.4
0.373	1.987	0.341	1.781	0.332	1.758	2.4	2.1	2.1
2.239	12.475	1.668	10.985	1.541	11.161	14.7	12.7	12.7
1.446	7.458	1.104	6.589	1.036	6.582	8.9	7.7	7.6
0.786	7.943	0.686	6.872	0.745	6.710	8.7	7.6	7.5
0.785	6.493	0.639	5.325	0.614	5.080	7.3	6.0	5.7
0.378	3.879	0.346	3.303	0.336	3.201	4.3	3.6	3.5
2.947	15.888	2.114	13.318	1.918	12.834	18.8	15.4	14.8
1.848	9.481	1.359	7.911	1.235	7.625	11.3	9.3	8.9
0.919	10.210	0.797	8.374	0.803	8.007	11.1	9.2	8.8
0.982	8.347	0.766	6.594	0.715	6.112	9.3	7.4	6.8
0.418	4.935	0.370	3.988	0.357	3.778	5.4	4.4	4.1
0.420	2.961	0.371	2.361	0.358	2.222	3.4	2.7	2.6
2.971	17.433	2.176	13.982	1.991	13.084	20.4	16.2	15.1
2.322	12.240	1.618	9.841	1.455	9.233	14.6	11.5	10.7
1.132	13.027	0.914	10.349	0.986	9.664	14.2	11.3	10.6
1.162	10.485	0.867	8.198	0.799	7.614	11.6	9.1	8.4
0.449	6.304	0.388	5.022	0.371	4.687	6.8	5.4	5.1
0.452	3.754	0.389	2.974	0.373	2.771	4.2	3.4	3.1
3.134	18.360	2.286	14.743	2.066	13.738	21.5	17.0	15.8
2.413	12.918	1.708	10.323	1.530	9.619	15.3	12.0	11.1
1.185	13.589	0.956	10.754	1.032	9.996	14.8	11.7	11.0
1.223	10.608	0.911	8.280	0.819	7.704	11.8	9.2	8.5
0.453	6.503	0.392	5.159	0.373	4.805	7.0	5.6	5.2
0.456	3.840	0.393	3.026	0.374	2.819	4.3	3.4	3.2
3.437	20.746	2.509	17.008	2.261	15.821	24.2	19.5	18.1
2.626	14.796	1.884	12.009	1.702	11.195	17.4	13.9	12.9
1.331	15.369	1.040	12.546	1.185	11.318	16.7	13.6	12.5
1.288	12.175	0.966	9.639	0.884	8.798	13.5	10.6	9.7
0.467	7.503	0.401	6.067	0.381	5.516	8.0	6.5	5.9
0.470	4.460	0.403	3.567	0.383	3.189	4.9	4.0	3.6
3.451	21.318	2.518	16.930	2.292	15.518	24.8	19.4	17.8
2.717	15.104	1.902	11.968	1.707	11.000	17.8	13.9	12.7
1.309	12.607	0.964	9.893	0.878	8.925	13.9	10.9	9.8
0.471	7.736	0.401	6.101	0.383	5.604	8.2	6.5	6.0
3.051	19.114	2.237	15.037	2.029	13.153	22.2	17.3	15.2
2.369	13.550	1.719	10.581	1.554	9.248	15.9	12.3	10.8
1.231	13.817	0.945	10.831	1.091	9.384	15.0	11.8	10.5
1.155	11.148	0.880	8.457	0.812	7.299	12.3	9.3	8.1
0.442	6.860	0.384	5.235	0.367	4.675	7.3	5.6	5.0
0.444	4.068	0.385	3.068	0.368	2.728	4.5	3.5	3.1
3.525	22.029	2.537	17.099	2.285	14.814	25.6	19.6	17.1
2.786	15.521	1.942	12.041	1.731	10.448	18.3	14.0	12.2
1.411	16.198	1.052	12.468	1.219	10.807	17.6	13.5	12.0
1.326	12.899	0.974	9.858	0.883	8.556	14.2	10.8	9.4
0.470	7.955	0.400	6.080	0.381	5.425	8.4	6.5	5.8
0.474	4.702	0.402	3.569	0.382	3.186	5.2	4.0	3.6
3.815	24.768	2.764	19.246	2.488	16.618	28.6	22.0	19.1
3.019	17.328	2.132	13.435	1.907	11.611	20.3	15.6	13.5
1.550	17.989	1.157	13.818	1.337	11.908	19.5	15.0	13.2
1.405	14.285	1.032	10.937	0.935	9.495	15.7	12.0	10.4
0.480	8.902	0.406	6.795	0.386	6.025	9.4	7.2	6.4
0.484	5.235	0.408	3.965	0.388	3.525	5.7	4.4	3.9
1.831	21.660	1.353	16.497	1.561	14.089	23.5	17.9	15.7
0.507	10.794	0.423	8.165	0.400	7.134	11.3	8.6	7.5

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
3.708	0.448	3.708	0.448	3.708	0.448	cent/km	cent/km	cent/km
1.706	2.017	1.706	3.361	1.706	3.361	3.7	5.1	5.1
1.627	1.984	1.254	1.950	1.174	2.193	3.6	3.2	3.4
0.763	1.382	0.621	1.417	0.593	1.593	2.1	2.0	2.2
0.453	1.474	0.424	1.462	0.440	1.599	1.9	1.9	2.0
0.472	1.153	0.397	1.076	0.375	1.158	1.6	1.5	1.5
0.270	0.700	0.254	0.685	0.249	0.755	1.0	0.9	1.0
0.270	0.413	0.254	0.397	0.249	0.438	0.7	0.7	0.7
1.673	3.771	1.235	3.452	1.141	3.636	5.4	4.7	4.8
1.079	2.236	0.819	2.069	0.771	2.147	3.3	2.9	2.9
0.592	2.368	0.521	2.150	0.556	2.187	3.0	2.7	2.7
0.613	1.877	0.487	1.638	0.461	1.607	2.5	2.1	2.1
0.296	1.140	0.271	1.022	0.264	1.037	1.4	1.3	1.3
0.297	0.674	0.272	0.604	0.264	0.596	1.0	0.9	0.9
1.784	4.230	1.329	3.725	1.227	3.784	6.0	5.1	5.0
1.152	2.529	0.880	2.234	0.825	2.232	3.7	3.1	3.1
0.626	2.693	0.546	2.330	0.594	2.275	3.3	2.9	2.9
0.626	2.201	0.509	1.805	0.489	1.722	2.8	2.3	2.2
0.301	1.315	0.275	1.120	0.268	1.085	1.6	1.4	1.4
2.348	5.387	1.684	4.516	1.528	4.351	7.7	6.2	5.9
1.472	3.215	1.082	2.682	0.984	2.585	4.7	3.8	3.6
0.732	3.462	0.635	2.839	0.640	2.715	4.2	3.5	3.4
0.783	2.830	0.610	2.236	0.569	2.072	3.6	2.8	2.6
0.333	1.673	0.295	1.352	0.284	1.281	2.0	1.6	1.6
0.335	1.004	0.296	0.800	0.285	0.753	1.3	1.1	1.0
2.366	5.911	1.733	4.741	1.586	4.436	8.3	6.5	6.0
1.850	4.150	1.289	3.336	1.159	3.130	6.0	4.6	4.3
0.902	4.417	0.728	3.509	0.785	3.277	5.3	4.2	4.1
0.926	3.555	0.691	2.780	0.636	2.581	4.5	3.5	3.2
0.358	2.137	0.309	1.703	0.296	1.589	2.5	2.0	1.9
0.360	1.273	0.310	1.008	0.297	0.939	1.6	1.3	1.2
2.497	6.225	1.821	4.999	1.645	4.658	8.7	6.8	6.3
1.922	4.380	1.361	3.500	1.219	3.261	6.3	4.9	4.5
0.944	4.607	0.761	3.646	0.822	3.389	5.6	4.4	4.2
0.975	3.597	0.726	2.807	0.653	2.612	4.6	3.5	3.3
0.361	2.205	0.312	1.749	0.297	1.629	2.6	2.1	1.9
0.363	1.302	0.313	1.026	0.298	0.956	1.7	1.3	1.3
2.738	7.034	1.999	5.766	1.801	5.364	9.8	7.8	7.2
2.091	5.017	1.500	4.072	1.356	3.796	7.1	5.6	5.2
1.060	5.211	0.828	4.254	0.944	3.838	6.3	5.1	4.8
1.026	4.128	0.770	3.268	0.704	2.983	5.2	4.0	3.7
0.372	2.544	0.320	2.057	0.304	1.870	2.9	2.4	2.2
0.374	1.512	0.321	1.209	0.305	1.081	1.9	1.5	1.4
2.749	7.228	2.005	5.740	1.826	5.261	10.0	7.7	7.1
2.164	5.121	1.515	4.058	1.360	3.729	7.3	5.6	5.1
1.043	4.274	0.768	3.354	0.699	3.026	5.3	4.1	3.7
0.375	2.623	0.320	2.068	0.305	1.900	3.0	2.4	2.2
2.431	6.481	1.782	5.098	1.616	4.460	8.9	6.9	6.1
1.887	4.594	1.369	3.588	1.238	3.136	6.5	5.0	4.4
0.981	4.685	0.753	3.672	0.869	3.182	5.7	4.4	4.1
0.920	3.780	0.701	2.867	0.647	2.475	4.7	3.6	3.1
0.352	2.326	0.306	1.775	0.293	1.585	2.7	2.1	1.9
0.354	1.379	0.307	1.040	0.294	0.925	1.7	1.3	1.2
2.808	7.469	2.021	5.797	1.820	5.023	10.3	7.8	6.8
2.219	5.262	1.547	4.083	1.379	3.542	7.5	5.6	4.9
1.124	5.492	0.838	4.227	0.971	3.664	6.6	5.1	4.6
1.056	4.373	0.776	3.342	0.704	2.901	5.4	4.1	3.6
0.375	2.697	0.319	2.062	0.304	1.839	3.1	2.4	2.1
0.377	1.594	0.320	1.210	0.305	1.080	2.0	1.5	1.4
3.039	8.398	2.202	6.525	1.982	5.635	11.4	8.7	7.6
2.405	5.875	1.699	4.555	1.519	3.937	8.3	6.3	5.5
1.234	6.099	0.922	4.685	1.065	4.038	7.3	5.6	5.1
1.119	4.843	0.822	3.708	0.745	3.219	6.0	4.5	4.0
0.383	3.018	0.323	2.304	0.308	2.043	3.4	2.6	2.4
0.385	1.775	0.325	1.344	0.309	1.195	2.2	1.7	1.5
1.459	7.344	1.078	5.593	1.243	4.777	8.8	6.7	6.0
0.404	3.660	0.337	2.768	0.319	2.419	4.1	3.1	2.7

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
4.082	1.867	4.082	1.867	4.082	1.867	cent/km	cent/km	cent/km
1.878	8.403	1.878	14.005	1.878	14.005	10.3	15.9	15.9
1.791	8.266	1.380	8.124	1.293	9.139	10.1	9.5	10.4
0.840	5.758	0.684	5.905	0.653	6.637	6.6	6.6	7.3
0.499	6.140	0.467	6.091	0.484	6.663	6.6	6.6	7.1
0.520	4.804	0.437	4.484	0.412	4.826	5.3	4.9	5.2
0.297	2.915	0.279	2.853	0.274	3.148	3.2	3.1	3.4
0.298	1.721	0.280	1.655	0.274	1.826	2.0	1.9	2.1
1.842	15.712	1.360	14.382	1.256	15.151	17.6	15.7	16.4
1.188	9.317	0.902	8.620	0.849	8.944	10.5	9.5	9.8
0.651	9.867	0.574	8.961	0.612	9.111	10.5	9.5	9.7
0.675	7.821	0.537	6.826	0.508	6.695	8.5	7.4	7.2
0.326	4.751	0.298	4.257	0.290	4.320	5.1	4.6	4.6
0.327	2.807	0.299	2.516	0.291	2.484	3.1	2.8	2.8
1.964	17.624	1.463	15.520	1.351	15.768	19.6	17.0	17.1
1.268	10.536	0.968	9.309	0.909	9.298	11.8	10.3	10.2
0.689	11.221	0.601	9.708	0.653	9.479	11.9	10.3	10.1
0.689	9.173	0.560	7.522	0.538	7.177	9.9	8.1	7.7
0.332	5.480	0.303	4.667	0.295	4.522	5.8	5.0	4.8
2.584	22.446	1.854	18.816	1.682	18.131	25.0	20.7	19.8
1.620	13.394	1.192	11.176	1.083	10.772	15.0	12.4	11.9
0.806	14.424	0.699	11.830	0.704	11.312	15.2	12.5	12.0
0.861	11.792	0.672	9.316	0.627	8.634	12.7	10.0	9.3
0.367	6.972	0.325	5.634	0.313	5.337	7.3	6.0	5.6
0.368	4.183	0.326	3.335	0.314	3.139	4.6	3.7	3.5
2.605	24.628	1.908	19.753	1.746	18.484	27.2	21.7	20.2
2.036	17.292	1.419	13.902	1.276	13.044	19.3	15.3	14.3
0.992	18.404	0.801	14.621	0.864	13.652	19.4	15.4	14.5
1.019	14.812	0.760	11.582	0.700	10.756	15.8	12.3	11.5
0.394	8.906	0.340	7.095	0.326	6.622	9.3	7.4	6.9
0.396	5.304	0.341	4.201	0.327	3.914	5.7	4.5	4.2
2.749	25.939	2.004	20.828	1.811	19.409	28.7	22.8	21.2
2.116	18.250	1.498	14.584	1.342	13.590	20.4	16.1	14.9
1.039	19.198	0.838	15.192	0.905	14.122	20.2	16.0	15.0
1.073	14.986	0.799	11.698	0.718	10.884	16.1	12.5	11.6
0.397	9.188	0.343	7.289	0.327	6.788	9.6	7.6	7.1
0.399	5.425	0.345	4.275	0.328	3.982	5.8	4.6	4.3
3.014	29.309	2.200	24.027	1.982	22.352	32.3	26.2	24.3
2.302	20.903	1.652	16.966	1.492	15.816	23.2	18.6	17.3
1.167	21.713	0.912	17.725	1.039	15.990	22.9	18.6	17.0
1.129	17.200	0.847	13.618	0.775	12.429	18.3	14.5	13.2
0.409	10.600	0.352	8.571	0.334	7.793	11.0	8.9	8.1
0.412	6.301	0.354	5.039	0.336	4.505	6.7	5.4	4.8
3.026	30.117	2.208	23.918	2.010	21.923	33.1	26.1	23.9
2.382	21.339	1.668	16.908	1.497	15.540	23.7	18.6	17.0
1.148	17.810	0.845	13.977	0.770	12.608	19.0	14.8	13.4
0.413	10.929	0.352	8.618	0.336	7.918	11.3	9.0	8.3
2.676	27.003	1.962	21.243	1.779	18.583	29.7	23.2	20.4
2.077	19.143	1.507	14.949	1.363	13.065	21.2	16.5	14.4
1.079	19.520	0.829	15.302	0.956	13.258	20.6	16.1	14.2
1.013	15.749	0.771	11.948	0.712	10.312	16.8	12.7	11.0
0.387	9.691	0.337	7.396	0.322	6.605	10.1	7.7	6.9
0.390	5.748	0.338	4.334	0.323	3.855	6.1	4.7	4.2
3.091	31.122	2.225	24.157	2.004	20.928	34.2	26.4	22.9
2.443	21.927	1.703	17.011	1.518	14.760	24.4	18.7	16.3
1.237	22.883	0.923	17.614	1.069	15.267	24.1	18.5	16.3
1.163	18.223	0.854	13.926	0.775	12.087	19.4	14.8	12.9
0.412	11.238	0.351	8.590	0.334	7.665	11.7	8.9	8.0
0.415	6.643	0.352	5.042	0.335	4.500	7.1	5.4	4.8
3.345	34.991	2.424	27.190	2.182	23.478	38.3	29.6	25.7
2.647	24.480	1.870	18.980	1.672	16.404	27.1	20.8	18.1
1.359	25.414	1.014	19.522	1.172	16.823	26.8	20.5	18.0
1.232	20.181	0.905	15.451	0.820	13.414	21.4	16.4	14.2
0.421	12.577	0.356	9.600	0.339	8.511	13.0	10.0	8.9
0.424	7.396	0.358	5.601	0.340	4.979	7.8	6.0	5.3
1.606	30.600	1.187	23.306	1.369	19.905	32.2	24.5	21.3
0.445	15.249	0.371	11.535	0.351	10.078	15.7	11.9	10.4

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
1.802	0.619	1.802	0.619	1.802	0.619	cent/km	cent/km	cent/km
0.829	2.786	0.829	4.643	0.829	4.643	3.6	5.5	5.5
0.791	2.741	0.609	2.693	0.571	3.030	3.5	3.3	3.6
0.371	1.909	0.302	1.958	0.288	2.201	2.3	2.3	2.5
0.220	2.036	0.206	2.019	0.214	2.209	2.3	2.2	2.4
0.230	1.593	0.193	1.487	0.182	1.600	1.8	1.7	1.8
0.131	0.966	0.123	0.946	0.121	1.044	1.1	1.1	1.2
0.131	0.571	0.123	0.549	0.121	0.605	0.7	0.7	0.7
0.813	5.209	0.600	4.768	0.555	5.023	6.0	5.4	5.6
0.525	3.089	0.398	2.858	0.375	2.965	3.6	3.3	3.3
0.288	3.272	0.253	2.971	0.270	3.021	3.6	3.2	3.3
0.298	2.593	0.237	2.263	0.224	2.220	2.9	2.5	2.4
0.144	1.575	0.132	1.411	0.128	1.432	1.7	1.5	1.6
0.144	0.931	0.132	0.834	0.128	0.823	1.1	1.0	1.0
0.867	5.843	0.646	5.146	0.596	5.228	6.7	5.8	5.8
0.560	3.493	0.428	3.086	0.401	3.083	4.1	3.5	3.5
0.304	3.720	0.265	3.219	0.288	3.143	4.0	3.5	3.4
0.304	3.041	0.247	2.494	0.238	2.380	3.3	2.7	2.6
0.146	1.817	0.134	1.547	0.130	1.499	2.0	1.7	1.6
1.141	7.442	0.818	6.238	0.743	6.011	8.6	7.1	6.8
0.715	4.441	0.526	3.705	0.478	3.571	5.2	4.2	4.0
0.356	4.782	0.309	3.922	0.311	3.750	5.1	4.2	4.1
0.380	3.910	0.297	3.089	0.277	2.863	4.3	3.4	3.1
0.162	2.312	0.143	1.868	0.138	1.770	2.5	2.0	1.9
0.163	1.387	0.144	1.106	0.138	1.041	1.5	1.2	1.2
1.150	8.165	0.842	6.549	0.771	6.128	9.3	7.4	6.9
0.899	5.733	0.626	4.609	0.563	4.325	6.6	5.2	4.9
0.438	6.102	0.354	4.848	0.382	4.526	6.5	5.2	4.9
0.450	4.911	0.336	3.840	0.309	3.566	5.4	4.2	3.9
0.174	2.953	0.150	2.352	0.144	2.195	3.1	2.5	2.3
0.175	1.759	0.151	1.393	0.144	1.298	1.9	1.5	1.4
1.213	8.600	0.885	6.905	0.800	6.435	9.8	7.8	7.2
0.934	6.051	0.661	4.835	0.592	4.506	7.0	5.5	5.1
0.459	6.365	0.370	5.037	0.400	4.682	6.8	5.4	5.1
0.474	4.969	0.353	3.878	0.317	3.608	5.4	4.2	3.9
0.175	3.046	0.152	2.417	0.144	2.251	3.2	2.6	2.4
0.176	1.799	0.152	1.417	0.145	1.320	2.0	1.6	1.5
1.331	9.717	0.971	7.966	0.875	7.411	11.0	8.9	8.3
1.016	6.930	0.729	5.625	0.659	5.244	7.9	6.4	5.9
0.515	7.199	0.403	5.877	0.459	5.302	7.7	6.3	5.8
0.498	5.703	0.374	4.515	0.342	4.121	6.2	4.9	4.5
0.181	3.515	0.155	2.842	0.148	2.584	3.7	3.0	2.7
0.182	2.089	0.156	1.671	0.148	1.494	2.3	1.8	1.6
1.336	9.985	0.975	7.930	0.887	7.269	11.3	8.9	8.2
1.052	7.075	0.736	5.606	0.661	5.152	8.1	6.3	5.8
0.507	5.905	0.373	4.634	0.340	4.180	6.4	5.0	4.5
0.182	3.624	0.155	2.857	0.148	2.625	3.8	3.0	2.8
1.181	8.953	0.866	7.043	0.785	6.161	10.1	7.9	6.9
0.917	6.347	0.666	4.956	0.602	4.332	7.3	5.6	4.9
0.477	6.472	0.366	5.073	0.422	4.396	6.9	5.4	4.8
0.447	5.222	0.341	3.961	0.314	3.419	5.7	4.3	3.7
0.171	3.213	0.149	2.452	0.142	2.190	3.4	2.6	2.3
0.172	1.906	0.149	1.437	0.143	1.278	2.1	1.6	1.4
1.365	10.319	0.982	8.009	0.885	6.939	11.7	9.0	7.8
1.079	7.270	0.752	5.640	0.670	4.894	8.3	6.4	5.6
0.546	7.587	0.407	5.840	0.472	5.062	8.1	6.2	5.5
0.513	6.042	0.377	4.617	0.342	4.008	6.6	5.0	4.3
0.182	3.726	0.155	2.848	0.148	2.541	3.9	3.0	2.7
0.183	2.202	0.156	1.672	0.148	1.492	2.4	1.8	1.6
1.477	11.601	1.070	9.015	0.963	7.784	13.1	10.1	8.7
1.169	8.116	0.826	6.293	0.738	5.439	9.3	7.1	6.2
0.600	8.426	0.448	6.472	0.517	5.578	9.0	6.9	6.1
0.544	6.691	0.400	5.123	0.362	4.448	7.2	5.5	4.8
0.186	4.170	0.157	3.183	0.150	2.822	4.4	3.3	3.0
0.187	2.452	0.158	1.857	0.150	1.651	2.6	2.0	1.8
0.709	10.146	0.524	7.727	0.604	6.599	10.9	8.3	7.2
0.196	5.056	0.164	3.824	0.155	3.341	5.3	4.0	3.5

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
3.724	1.615	3.724	1.615	3.724	1.615	cent/km	cent/km	cent/km
1.713	7.269	1.713	12.115	1.713	12.115	9.0	13.8	13.8
1.634	7.151	1.259	7.028	1.179	7.906	8.8	8.3	9.1
0.766	4.982	0.624	5.108	0.595	5.742	5.7	5.7	6.3
0.455	5.312	0.426	5.269	0.442	5.764	5.8	5.7	6.2
0.474	4.156	0.398	3.879	0.376	4.175	4.6	4.3	4.6
0.271	2.521	0.255	2.468	0.250	2.723	2.8	2.7	3.0
0.272	1.489	0.255	1.431	0.250	1.579	1.8	1.7	1.8
1.680	13.592	1.241	12.442	1.146	13.107	15.3	13.7	14.3
1.084	8.060	0.823	7.457	0.774	7.737	9.1	8.3	8.5
0.594	8.536	0.524	7.752	0.559	7.882	9.1	8.3	8.4
0.615	6.766	0.490	5.905	0.463	5.792	7.4	6.4	6.3
0.297	4.110	0.272	3.683	0.265	3.737	4.4	4.0	4.0
0.298	2.428	0.273	2.177	0.265	2.148	2.7	2.4	2.4
1.792	15.246	1.335	13.426	1.233	13.641	17.0	14.8	14.9
1.156	9.114	0.884	8.053	0.829	8.044	10.3	8.9	8.9
0.629	9.707	0.549	8.398	0.596	8.200	10.3	8.9	8.8
0.628	7.935	0.511	6.508	0.491	6.209	8.6	7.0	6.7
0.303	4.741	0.277	4.037	0.269	3.911	5.0	4.3	4.2
2.358	19.418	1.691	16.277	1.535	15.685	21.8	18.0	17.2
1.478	11.587	1.087	9.668	0.988	9.318	13.1	10.8	10.3
0.735	12.477	0.638	10.234	0.642	9.786	13.2	10.9	10.4
0.786	10.201	0.613	8.059	0.572	7.469	11.0	8.7	8.0
0.335	6.031	0.296	4.874	0.285	4.617	6.4	5.2	4.9
0.336	3.619	0.297	2.885	0.286	2.715	4.0	3.2	3.0
2.376	21.305	1.741	17.088	1.593	15.990	23.7	18.8	17.6
1.858	14.959	1.294	12.027	1.164	11.284	16.8	13.3	12.4
0.905	15.921	0.731	12.648	0.789	11.810	16.8	13.4	12.6
0.930	12.814	0.694	10.019	0.639	9.305	13.7	10.7	9.9
0.359	7.704	0.310	6.138	0.297	5.728	8.1	6.4	6.0
0.361	4.588	0.311	3.634	0.298	3.386	4.9	3.9	3.7
2.508	22.439	1.829	18.018	1.653	16.790	24.9	19.8	18.4
1.930	15.788	1.367	12.617	1.224	11.756	17.7	14.0	13.0
0.948	16.608	0.764	13.143	0.826	12.217	17.6	13.9	13.0
0.979	12.964	0.729	10.120	0.655	9.415	13.9	10.8	10.1
0.362	7.948	0.313	6.305	0.299	5.872	8.3	6.6	6.2
0.364	4.693	0.314	3.698	0.299	3.445	5.1	4.0	3.7
2.750	25.355	2.007	20.786	1.809	19.336	28.1	22.8	21.1
2.100	18.083	1.507	14.677	1.362	13.682	20.2	16.2	15.0
1.065	18.783	0.832	15.334	0.948	13.833	19.8	16.2	14.8
1.030	14.879	0.773	11.781	0.707	10.752	15.9	12.6	11.5
0.373	9.170	0.321	7.414	0.305	6.741	9.5	7.7	7.0
0.376	5.451	0.323	4.359	0.306	3.898	5.8	4.7	4.2
2.761	26.053	2.014	20.691	1.834	18.965	28.8	22.7	20.8
2.173	18.460	1.521	14.627	1.366	13.443	20.6	16.1	14.8
1.047	15.407	0.771	12.091	0.703	10.907	16.5	12.9	11.6
0.377	9.455	0.321	7.456	0.306	6.849	9.8	7.8	7.2
2.441	23.360	1.790	18.377	1.623	16.075	25.8	20.2	17.7
1.895	16.560	1.375	12.932	1.243	11.303	18.5	14.3	12.5
0.985	16.886	0.756	13.238	0.873	11.469	17.9	14.0	12.3
0.924	13.624	0.704	10.336	0.650	8.921	14.5	11.0	9.6
0.353	8.383	0.307	6.398	0.294	5.713	8.7	6.7	6.0
0.355	4.972	0.308	3.749	0.295	3.335	5.3	4.1	3.6
2.820	26.923	2.030	20.897	1.828	18.105	29.7	22.9	19.9
2.229	18.969	1.554	14.716	1.385	12.768	21.2	16.3	14.2
1.128	19.796	0.842	15.238	0.975	13.207	20.9	16.1	14.2
1.061	15.765	0.779	12.047	0.707	10.456	16.8	12.8	11.2
0.376	9.722	0.320	7.431	0.305	6.630	10.1	7.8	6.9
0.379	5.747	0.321	4.362	0.306	3.893	6.1	4.7	4.2
3.052	30.270	2.211	23.521	1.991	20.310	33.3	25.7	22.3
2.415	21.177	1.706	16.419	1.526	14.191	23.6	18.1	15.7
1.240	21.985	0.926	16.888	1.069	14.554	23.2	17.8	15.6
1.124	17.458	0.826	13.367	0.748	11.604	18.6	14.2	12.4
0.384	10.880	0.325	8.305	0.309	7.363	11.3	8.6	7.7
0.387	6.398	0.326	4.846	0.310	4.308	6.8	5.2	4.6
1.465	26.472	1.083	20.162	1.249	17.219	27.9	21.2	18.5
0.406	13.192	0.338	9.979	0.320	8.718	13.6	10.3	9.0

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
4.466	1.519	4.466	1.519	4.466	1.519	cent/km	cent/km	cent/km
2.055	6.837	2.055	11.394	2.055	11.394	8.9	13.4	13.4
1.960	6.725	1.510	6.609	1.414	7.436	8.7	8.1	8.8
0.919	4.685	0.748	4.804	0.714	5.400	5.6	5.6	6.1
0.546	4.996	0.511	4.955	0.530	5.421	5.5	5.5	6.0
0.569	3.908	0.478	3.648	0.451	3.927	4.5	4.1	4.4
0.325	2.371	0.306	2.321	0.300	2.561	2.7	2.6	2.9
0.326	1.400	0.306	1.346	0.300	1.485	1.7	1.7	1.8
2.015	12.783	1.488	11.701	1.375	12.327	14.8	13.2	13.7
1.300	7.580	0.987	7.013	0.929	7.277	8.9	8.0	8.2
0.713	8.028	0.628	7.290	0.670	7.413	8.7	7.9	8.1
0.738	6.363	0.587	5.554	0.555	5.447	7.1	6.1	6.0
0.356	3.865	0.326	3.464	0.318	3.515	4.2	3.8	3.8
0.358	2.284	0.327	2.047	0.318	2.021	2.6	2.4	2.3
2.149	14.339	1.601	12.627	1.478	12.829	16.5	14.2	14.3
1.387	8.572	1.060	7.574	0.994	7.565	10.0	8.6	8.6
0.754	9.130	0.658	7.899	0.715	7.712	9.9	8.6	8.4
0.754	7.463	0.613	6.120	0.589	5.839	8.2	6.7	6.4
0.363	4.459	0.332	3.797	0.323	3.679	4.8	4.1	4.0
2.828	18.262	2.029	15.308	1.841	14.751	21.1	17.3	16.6
1.773	10.898	1.304	9.093	1.185	8.764	12.7	10.4	9.9
0.882	11.735	0.765	9.625	0.770	9.203	12.6	10.4	10.0
0.943	9.594	0.735	7.580	0.686	7.025	10.5	8.3	7.7
0.401	5.672	0.355	4.584	0.342	4.342	6.1	4.9	4.7
0.403	3.403	0.356	2.713	0.343	2.554	3.8	3.1	2.9
2.850	20.037	2.088	16.071	1.911	15.039	22.9	18.2	16.9
2.228	14.069	1.553	11.311	1.397	10.612	16.3	12.9	12.0
1.086	14.974	0.877	11.895	0.946	11.108	16.1	12.8	12.1
1.115	12.051	0.832	9.423	0.766	8.751	13.2	10.3	9.5
0.431	7.246	0.372	5.772	0.356	5.387	7.7	6.1	5.7
0.433	4.315	0.373	3.418	0.357	3.185	4.7	3.8	3.5
3.008	21.104	2.193	16.945	1.982	15.791	24.1	19.1	17.8
2.315	14.848	1.639	11.866	1.468	11.057	17.2	13.5	12.5
1.137	15.620	0.917	12.360	0.991	11.490	16.8	13.3	12.5
1.174	12.193	0.874	9.517	0.786	8.855	13.4	10.4	9.6
0.435	7.475	0.376	5.930	0.358	5.523	7.9	6.3	5.9
0.437	4.414	0.377	3.478	0.359	3.240	4.9	3.9	3.6
3.298	23.846	2.407	19.549	2.169	18.185	27.1	22.0	20.4
2.519	17.007	1.807	13.804	1.633	12.868	19.5	15.6	14.5
1.277	17.665	0.998	14.421	1.137	13.010	18.9	15.4	14.1
1.235	13.994	0.927	11.080	0.848	10.112	15.2	12.0	11.0
0.448	8.625	0.385	6.973	0.366	6.340	9.1	7.4	6.7
0.451	5.126	0.387	4.100	0.367	3.666	5.6	4.5	4.0
3.312	24.503	2.416	19.460	2.199	17.836	27.8	21.9	20.0
2.607	17.361	1.825	13.757	1.638	12.643	20.0	15.6	14.3
1.256	14.490	0.925	11.372	0.843	10.258	15.7	12.3	11.1
0.452	8.892	0.385	7.012	0.367	6.442	9.3	7.4	6.8
2.928	21.970	2.147	17.284	1.947	15.119	24.9	19.4	17.1
2.273	15.574	1.649	12.162	1.491	10.630	17.8	13.8	12.1
1.181	15.881	0.907	12.450	1.047	10.787	17.1	13.4	11.8
1.108	12.813	0.844	9.721	0.779	8.390	13.9	10.6	9.2
0.424	7.885	0.368	6.017	0.352	5.373	8.3	6.4	5.7
0.426	4.676	0.370	3.526	0.354	3.136	5.1	3.9	3.5
3.383	25.321	2.435	19.654	2.193	17.027	28.7	22.1	19.2
2.674	17.840	1.864	13.840	1.661	12.009	20.5	15.7	13.7
1.353	18.618	1.010	14.331	1.170	12.421	20.0	15.3	13.6
1.272	14.826	0.935	11.330	0.848	9.834	16.1	12.3	10.7
0.451	9.143	0.384	6.989	0.366	6.236	9.6	7.4	6.6
0.454	5.405	0.385	4.102	0.367	3.661	5.9	4.5	4.0
3.661	28.469	2.652	22.122	2.387	19.102	32.1	24.8	21.5
2.897	19.917	2.046	15.442	1.830	13.346	22.8	17.5	15.2
1.487	20.677	1.110	15.883	1.282	13.687	22.2	17.0	15.0
1.348	16.419	0.990	12.571	0.897	10.914	17.8	13.6	11.8
0.461	10.232	0.390	7.810	0.371	6.925	10.7	8.2	7.3
0.464	6.017	0.392	4.557	0.372	4.051	6.5	4.9	4.4
1.757	24.897	1.299	18.962	1.498	16.194	26.7	20.3	17.7
0.487	12.407	0.406	9.385	0.384	8.199	12.9	9.8	8.6

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
2.333	0.601	2.333	0.601	2.333	0.601	cent/km	cent/km	cent/km
1.073	2.703	1.073	4.504	1.073	4.504	3.8	5.6	5.6
1.024	2.659	0.789	2.613	0.739	2.939	3.7	3.4	3.7
0.480	1.852	0.391	1.899	0.373	2.135	2.3	2.3	2.5
0.285	1.975	0.267	1.959	0.277	2.143	2.3	2.2	2.4
0.297	1.545	0.249	1.442	0.236	1.552	1.8	1.7	1.8
0.170	0.937	0.160	0.918	0.156	1.012	1.1	1.1	1.2
0.170	0.553	0.160	0.532	0.157	0.587	0.7	0.7	0.7
1.053	5.054	0.777	4.626	0.718	4.873	6.1	5.4	5.6
0.679	2.997	0.515	2.773	0.485	2.877	3.7	3.3	3.4
0.372	3.174	0.328	2.882	0.350	2.930	3.5	3.2	3.3
0.385	2.515	0.307	2.195	0.290	2.153	2.9	2.5	2.4
0.186	1.528	0.170	1.369	0.166	1.389	1.7	1.5	1.6
0.187	0.903	0.171	0.809	0.166	0.799	1.1	1.0	1.0
1.122	5.669	0.836	4.992	0.772	5.072	6.8	5.8	5.8
0.724	3.389	0.553	2.994	0.519	2.991	4.1	3.5	3.5
0.394	3.609	0.344	3.123	0.373	3.049	4.0	3.5	3.4
0.394	2.950	0.320	2.419	0.308	2.308	3.3	2.7	2.6
0.190	1.763	0.173	1.501	0.169	1.454	2.0	1.7	1.6
1.477	7.220	1.059	6.052	0.961	5.831	8.7	7.1	6.8
0.926	4.308	0.681	3.595	0.619	3.465	5.2	4.3	4.1
0.460	4.639	0.400	3.805	0.402	3.638	5.1	4.2	4.0
0.492	3.793	0.384	2.996	0.358	2.777	4.3	3.4	3.1
0.210	2.242	0.185	1.812	0.179	1.717	2.5	2.0	1.9
0.211	1.345	0.186	1.073	0.179	1.010	1.6	1.3	1.2
1.489	7.921	1.090	6.353	0.998	5.945	9.4	7.4	6.9
1.164	5.562	0.811	4.471	0.729	4.195	6.7	5.3	4.9
0.567	5.919	0.458	4.703	0.494	4.391	6.5	5.2	4.9
0.582	4.764	0.435	3.725	0.400	3.460	5.3	4.2	3.9
0.225	2.864	0.194	2.282	0.186	2.130	3.1	2.5	2.3
0.226	1.706	0.195	1.351	0.187	1.259	1.9	1.5	1.4
1.571	8.343	1.145	6.699	1.035	6.243	9.9	7.8	7.3
1.209	5.870	0.856	4.691	0.767	4.371	7.1	5.5	5.1
0.594	6.175	0.479	4.886	0.517	4.542	6.8	5.4	5.1
0.613	4.820	0.457	3.762	0.411	3.501	5.4	4.2	3.9
0.227	2.955	0.196	2.344	0.187	2.183	3.2	2.5	2.4
0.228	1.745	0.197	1.375	0.188	1.281	2.0	1.6	1.5
1.723	9.427	1.257	7.728	1.133	7.189	11.1	9.0	8.3
1.316	6.723	0.944	5.457	0.853	5.087	8.0	6.4	5.9
0.667	6.984	0.521	5.701	0.594	5.143	7.7	6.2	5.7
0.645	5.532	0.484	4.380	0.443	3.998	6.2	4.9	4.4
0.234	3.409	0.201	2.757	0.191	2.506	3.6	3.0	2.7
0.235	2.027	0.202	1.621	0.192	1.449	2.3	1.8	1.6
1.729	9.687	1.262	7.693	1.149	7.051	11.4	9.0	8.2
1.361	6.863	0.953	5.438	0.855	4.998	8.2	6.4	5.9
0.656	5.728	0.483	4.495	0.440	4.055	6.4	5.0	4.5
0.236	3.515	0.201	2.772	0.192	2.547	3.8	3.0	2.7
1.529	8.685	1.121	6.833	1.017	5.977	10.2	8.0	7.0
1.187	6.157	0.861	4.808	0.779	4.202	7.3	5.7	5.0
0.617	6.278	0.474	4.922	0.547	4.264	6.9	5.4	4.8
0.579	5.065	0.441	3.843	0.407	3.317	5.6	4.3	3.7
0.221	3.117	0.192	2.379	0.184	2.124	3.3	2.6	2.3
0.223	1.849	0.193	1.394	0.185	1.240	2.1	1.6	1.4
1.766	10.010	1.272	7.770	1.145	6.731	11.8	9.0	7.9
1.396	7.052	0.973	5.471	0.867	4.747	8.4	6.4	5.6
0.707	7.360	0.527	5.665	0.611	4.910	8.1	6.2	5.5
0.664	5.861	0.488	4.479	0.443	3.888	6.5	5.0	4.3
0.236	3.615	0.200	2.763	0.191	2.465	3.9	3.0	2.7
0.237	2.137	0.201	1.622	0.192	1.447	2.4	1.8	1.6
1.912	11.254	1.385	8.745	1.247	7.551	13.2	10.1	8.8
1.513	7.874	1.069	6.105	0.956	5.276	9.4	7.2	6.2
0.776	8.174	0.580	6.279	0.670	5.411	9.0	6.9	6.1
0.704	6.491	0.517	4.970	0.469	4.314	7.2	5.5	4.8
0.241	4.045	0.203	3.088	0.194	2.738	4.3	3.3	2.9
0.242	2.379	0.204	1.802	0.194	1.602	2.6	2.0	1.8
0.918	9.842	0.678	7.496	0.782	6.402	10.8	8.2	7.2
0.254	4.905	0.212	3.710	0.201	3.241	5.2	3.9	3.4

Sub sector ID	Subsector	Tech 2	First year	Last year	Emissions (gram/km) PM (urban) 35 km/h	PM (inter) 55 km/h	PM (highway) 80 km/h	PM (non-exhaust)	NO_x (urban) 35 km/h	NO_x (inter) 55 km/h	NO_x (highway) 80 km/h
13	Gasoline >3.5t	Conventional	0	9999	0.400	0.400	0.400	0.060	4.500	7.500	7.500
14	Diesel RT 3.5–7.5t	Conventional	0	1993	0.379	0.278	0.257	0.060	4.427	4.351	4.894
14	Diesel RT 3.5–7.5t	Euro I	1994	1996	0.146	0.107	0.100	0.060	3.084	3.162	3.555
14	Diesel RT 3.5–7.5t	Euro II	1997	2001	0.062	0.054	0.059	0.060	3.288	3.262	3.568
14	Diesel RT 3.5–7.5t	Euro III	2002	2006	0.067	0.047	0.041	0.060	2.573	2.401	2.585
14	Diesel RT 3.5–7.5t	Euro IV	2007	2009	0.013	0.008	0.007	0.060	1.561	1.528	1.686
14	Diesel RT 3.5–7.5t	Euro V	2010	2014	0.013	0.009	0.007	0.060	0.922	0.886	0.978
15	Diesel RT 7.5–12t	Conventional	0	1993	0.391	0.273	0.248	0.060	8.414	7.702	8.114
15	Diesel RT 7.5–12t	Euro I	1994	1996	0.231	0.161	0.148	0.060	4.989	4.616	4.790
15	Diesel RT 7.5–12t	Euro II	1997	2001	0.100	0.081	0.090	0.060	5.284	4.799	4.879
15	Diesel RT 7.5–12t	Euro III	2002	2006	0.105	0.071	0.064	0.060	4.188	3.656	3.585
15	Diesel RT 7.5–12t	Euro IV	2007	2009	0.020	0.013	0.011	0.060	2.544	2.280	2.313
15	Diesel RT 7.5–12t	Euro V	2010	2014	0.020	0.013	0.011	0.060	1.503	1.347	1.330
16	Diesel RT 12–14 t	Conventional	0	1993	0.421	0.298	0.271	0.060	9.438	8.311	8.445
16	Diesel RT 12–14 t	Euro I	1994	1996	0.251	0.177	0.163	0.060	5.642	4.985	4.980
16	Diesel RT 12–14 t	Euro II	1997	2001	0.109	0.087	0.100	0.060	6.009	5.199	5.076
16	Diesel RT 12–14 t	Euro III	2002	2006	0.109	0.077	0.072	0.060	4.913	4.029	3.844
16	Diesel RT 12–14 t	Euro IV	2007	2009	0.021	0.014	0.012	0.060	2.935	2.499	2.421
17	Diesel RT 14–20t	Conventional	0	1993	0.573	0.394	0.352	0.060	12.021	10.076	9.710
17	Diesel RT 14–20t	Euro I	1994	1996	0.337	0.232	0.205	0.060	7.173	5.985	5.769
17	Diesel RT 14–20t	Euro II	1997	2001	0.137	0.111	0.112	0.060	7.724	6.335	6.058
17	Diesel RT 14–20t	Euro III	2002	2006	0.151	0.105	0.094	0.060	6.315	4.989	4.624
17	Diesel RT 14–20t	Euro IV	2007	2009	0.030	0.020	0.017	0.060	3.734	3.017	2.858
17	Diesel RT 14–20t	Euro V	2010	2014	0.030	0.020	0.017	0.060	2.240	1.786	1.681
18	Diesel RT 20–26t	Conventional	0	1993	0.578	0.407	0.368	0.060	13.189	10.579	9.899
18	Diesel RT 20–26t	Euro I	1994	1996	0.439	0.288	0.253	0.060	9.261	7.445	6.985
18	Diesel RT 20–26t	Euro II	1997	2001	0.183	0.136	0.152	0.060	9.856	7.830	7.311
18	Diesel RT 20–26t	Euro III	2002	2006	0.190	0.126	0.112	0.060	7.933	6.202	5.760
18	Diesel RT 20–26t	Euro IV	2007	2009	0.036	0.023	0.020	0.060	4.769	3.800	3.546
18	Diesel RT 20–26t	Euro V	2010	2014	0.037	0.024	0.020	0.060	2.840	2.250	2.096
19	Diesel RT 26–28t	Conventional	0	1993	0.613	0.431	0.384	0.060	13.891	11.154	10.394
19	Diesel RT 26–28t	Euro I	1994	1996	0.458	0.307	0.269	0.060	9.774	7.811	7.278
19	Diesel RT 26–28t	Euro II	1997	2001	0.195	0.145	0.162	0.060	10.281	8.136	7.563
19	Diesel RT 26–28t	Euro III	2002	2006	0.203	0.136	0.116	0.060	8.026	6.265	5.829
19	Diesel RT 26–28t	Euro IV	2007	2009	0.037	0.024	0.020	0.060	4.920	3.903	3.635
19	Diesel RT 26–28t	Euro V	2010	2014	0.038	0.024	0.020	0.060	2.905	2.290	2.133
20	Diesel RT 28–32t	Conventional	0	1993	0.678	0.479	0.426	0.060	15.696	12.868	11.970
20	Diesel RT 28–32t	Euro I	1994	1996	0.504	0.345	0.306	0.060	11.194	9.086	8.470
20	Diesel RT 28–32t	Euro II	1997	2001	0.226	0.163	0.195	0.060	11.628	9.492	8.563
20	Diesel RT 28–32t	Euro III	2002	2006	0.217	0.148	0.130	0.060	9.211	7.293	6.656
20	Diesel RT 28–32t	Euro IV	2007	2009	0.040	0.026	0.022	0.060	5.677	4.590	4.173
20	Diesel RT 28–32t	Euro V	2010	2014	0.041	0.027	0.022	0.060	3.374	2.698	2.413
21	Diesel RT >32t	Conventional	0	1993	0.681	0.481	0.432	0.060	16.129	12.809	11.740
21	Diesel RT >32t	Euro I	1994	1996	0.524	0.349	0.307	0.060	11.428	9.055	8.322
21	Diesel RT >32t	Euro III	2002	2006	0.221	0.147	0.129	0.060	9.538	7.485	6.752
21	Diesel RT >32t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	5.853	4.616	4.240
24	Diesel TT/AT 28–34t	Conventional	0	1993	0.596	0.421	0.376	0.060	14.461	11.377	9.952
24	Diesel TT/AT 28–34t	Euro I	1994	1996	0.449	0.309	0.274	0.060	10.252	8.006	6.997
24	Diesel TT/AT 28–34t	Euro II	1997	2001	0.204	0.143	0.174	0.060	10.453	8.195	7.100
24	Diesel TT/AT 28–34t	Euro III	2002	2006	0.188	0.129	0.114	0.060	8.434	6.399	5.523
24	Diesel TT/AT 28–34t	Euro IV	2007	2009	0.035	0.022	0.019	0.060	5.190	3.961	3.537
24	Diesel TT/AT 28–34t	Euro V	2010	2014	0.035	0.023	0.019	0.060	3.078	2.321	2.064
25	Diesel TT/AT 34–40t	Conventional	0	1993	0.697	0.485	0.431	0.060	16.667	12.937	11.208
25	Diesel TT/AT 34–40t	Euro I	1994	1996	0.539	0.357	0.312	0.060	11.743	9.110	7.904
25	Diesel TT/AT 34–40t	Euro II	1997	2001	0.243	0.166	0.202	0.060	12.255	9.433	8.176
25	Diesel TT/AT 34–40t	Euro III	2002	2006	0.225	0.149	0.130	0.060	9.759	7.458	6.473
25	Diesel TT/AT 34–40t	Euro IV	2007	2009	0.041	0.026	0.022	0.060	6.018	4.600	4.105
25	Diesel TT/AT 34–40t	Euro V	2010	2014	0.042	0.026	0.022	0.060	3.557	2.700	2.410
26	Diesel TT/AT 40–50t	Conventional	0	1993	0.760	0.534	0.475	0.060	18.739	14.561	12.573
26	Diesel TT/AT 40–50t	Euro I	1994	1996	0.589	0.398	0.350	0.060	13.110	10.164	8.785
26	Diesel TT/AT 40–50t	Euro II	1997	2001	0.273	0.189	0.227	0.060	13.610	10.454	9.009
26	Diesel TT/AT 40–50t	Euro III	2002	2006	0.242	0.162	0.141	0.060	10.808	8.275	7.184
26	Diesel TT/AT 40–50t	Euro IV	2007	2009	0.043	0.027	0.023	0.060	6.735	5.141	4.558
26	Diesel TT/AT 40–50t	Euro V	2010	2014	0.044	0.028	0.023	0.060	3.961	3.000	2.667
27	Diesel TT/AT 50–60t	Euro II	1997	2001	0.333	0.231	0.275	0.060	16.388	12.481	10.660
27	Diesel TT/AT 50–60t	Euro IV	2007	2009	0.049	0.031	0.026	0.060	8.166	6.177	5.397

Suburban		Interurban		Highway		Suburban	Interurban	Highway
PM	NO_x	PM	NO_x	PM	NO_x	SUM	SUM	SUM
cent/gram per pollutant per vehicle						country specific external costs per km		
6.154	1.223	6.154	1.223	6.154	1.223	cent/km	cent/km	cent/km
2.831	5.504	2.831	9.173	2.831	9.173	8.3	12.0	12.0
2.701	5.414	2.081	5.321	1.949	5.986	8.1	7.4	7.9
1.267	3.772	1.031	3.868	0.984	4.348	5.0	4.9	5.3
0.752	4.022	0.704	3.989	0.730	4.364	4.8	4.7	5.1
0.784	3.147	0.658	2.937	0.622	3.161	3.9	3.6	3.8
0.448	1.909	0.421	1.869	0.413	2.062	2.4	2.3	2.5
0.449	1.127	0.422	1.084	0.413	1.196	1.6	1.5	1.6
2.777	10.292	2.050	9.421	1.894	9.924	13.1	11.5	11.8
1.792	6.103	1.359	5.646	1.279	5.859	7.9	7.0	7.1
0.982	6.463	0.866	5.869	0.923	5.968	7.4	6.7	6.9
1.017	5.123	0.809	4.471	0.765	4.385	6.1	5.3	5.2
0.491	3.112	0.449	2.788	0.438	2.830	3.6	3.2	3.3
0.493	1.839	0.451	1.648	0.439	1.627	2.3	2.1	2.1
2.961	11.544	2.206	10.166	2.037	10.329	14.5	12.4	12.4
1.911	6.901	1.460	6.098	1.370	6.091	8.8	7.6	7.5
1.039	7.350	0.907	6.359	0.985	6.209	8.4	7.3	7.2
1.039	6.009	0.844	4.927	0.811	4.701	7.0	5.8	5.5
0.500	3.590	0.457	3.057	0.445	2.962	4.1	3.5	3.4
3.896	14.703	2.795	12.325	2.536	11.876	18.6	15.1	14.4
2.443	8.774	1.797	7.321	1.633	7.056	11.2	9.1	8.7
1.215	9.448	1.054	7.749	1.062	7.409	10.7	8.8	8.5
1.299	7.724	1.013	6.102	0.945	5.656	9.0	7.1	6.6
0.553	4.567	0.489	3.690	0.472	3.496	5.1	4.2	4.0
0.556	2.740	0.491	2.185	0.473	2.056	3.3	2.7	2.5
3.928	16.132	2.877	12.939	2.633	12.108	20.1	15.8	14.7
3.070	11.327	2.139	9.106	1.924	8.544	14.4	11.2	10.5
1.496	12.055	1.208	9.577	1.303	8.943	13.6	10.8	10.2
1.536	9.703	1.147	7.586	1.056	7.046	11.2	8.7	8.1
0.594	5.833	0.513	4.647	0.491	4.337	6.4	5.2	4.8
0.597	3.474	0.515	2.752	0.493	2.564	4.1	3.3	3.1
4.144	16.990	3.022	13.643	2.731	12.713	21.1	16.7	15.4
3.190	11.954	2.259	9.553	2.023	8.902	15.1	11.8	10.9
1.567	12.575	1.263	9.951	1.365	9.250	14.1	11.2	10.6
1.618	9.816	1.205	7.662	1.083	7.129	11.4	8.9	8.2
0.599	6.018	0.518	4.774	0.493	4.446	6.6	5.3	4.9
0.602	3.553	0.520	2.800	0.495	2.609	4.2	3.3	3.1
4.545	19.198	3.317	15.738	2.989	14.641	23.7	19.1	17.6
3.471	13.692	2.490	11.113	2.250	10.360	17.2	13.6	12.6
1.760	14.222	1.375	11.610	1.567	10.474	16.0	13.0	12.0
1.702	11.266	1.278	8.920	1.168	8.141	13.0	10.2	9.3
0.617	6.944	0.530	5.614	0.504	5.105	7.6	6.1	5.6
0.621	4.127	0.533	3.301	0.506	2.951	4.7	3.8	3.5
4.563	19.727	3.329	15.667	3.030	14.360	24.3	19.0	17.4
3.592	13.977	2.515	11.075	2.257	10.179	17.6	13.6	12.4
1.731	11.666	1.274	9.155	1.161	8.259	13.4	10.4	9.4
0.623	7.159	0.531	5.645	0.506	5.186	7.8	6.2	5.7
4.035	17.688	2.958	13.915	2.682	12.172	21.7	16.9	14.9
3.132	12.539	2.273	9.792	2.055	8.558	15.7	12.1	10.6
1.628	12.786	1.250	10.023	1.442	8.684	14.4	11.3	10.1
1.527	10.316	1.163	7.826	1.074	6.755	11.8	9.0	7.8
0.584	6.348	0.508	4.845	0.486	4.326	6.9	5.4	4.8
0.587	3.765	0.510	2.839	0.487	2.525	4.4	3.3	3.0
4.661	20.386	3.355	15.823	3.022	13.709	25.0	19.2	16.7
3.684	14.363	2.568	11.143	2.289	9.668	18.0	13.7	12.0
1.865	14.989	1.391	11.538	1.612	10.000	16.9	12.9	11.6
1.753	11.937	1.288	9.122	1.168	7.917	13.7	10.4	9.1
0.622	7.361	0.529	5.627	0.504	5.020	8.0	6.2	5.5
0.626	4.351	0.531	3.303	0.506	2.948	5.0	3.8	3.5
5.044	22.920	3.654	17.810	3.290	15.379	28.0	21.5	18.7
3.991	16.035	2.819	12.432	2.522	10.745	20.0	15.3	13.3
2.049	16.647	1.530	12.787	1.767	11.020	18.7	14.3	12.8
1.857	13.219	1.365	10.121	1.236	8.787	15.1	11.5	10.0
0.635	8.238	0.537	6.288	0.511	5.575	8.9	6.8	6.1
0.639	4.845	0.539	3.669	0.513	3.262	5.5	4.2	3.8
2.421	20.044	1.789	15.266	2.064	13.038	22.5	17.1	15.1
0.671	9.988	0.559	7.556	0.529	6.601	10.7	8.1	7.1

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