ANNEX – SOME REMINDERS

ACRONYMES/ABREVIATIONS & EXPLANATION OF INSTITUTIONS/ASSOCIATIONS

ACEA	(Association des Constructeurs Européens Automobiles - *European Automobile Manufacturers' Association*) established in 1991 is the main lobbying and standards group of the automobile industry in the European Union.
ACUSTICA	ACUSTICA is an UK based independent consultant offering expert advice on acoustics, environmental and building noise control and IT solutions to government and commercial organisations.
ADEME	is the French Agency for Ecological Transition.
ANOTEC	'Aircraft NOise TEChnology' since 2001 is providing solutions for Aircraft and Airport noise.
AUT	Aristotle University of Thessaloniki created in 1925
ATEEL	(**A**llied **T**echnology **E**xperts - **E**nterprise of **L**uxembourg) is a Luxembourg international technical service with expertise in technical certification of motor vehicles and their components.
BRUITPARIF	is a French independent non-profit organization created in 2004 by the French Regional Council. Their activities consist in assessing noise, supporting public policies, and informing the public.
Brussels Environment	is a Belgium Environment and Energy Administration of the Brussels-Capital Region, responsible for designing and implementing regional policies in all matters related to the environment.
CEREMA	(Centre d'Etudes et d'expertise sur les Risques, l'Environnement, la Mobilité et l'Aménagement - *Center for studies and expertise on risks, the environment, mobility and planning*) is a French public establishment of an administrative nature placed under the joint supervision of the Minister for Ecological and Inclusive Transition, and the Minister for Territorial Cohesion created in 2014.
CREDOC	(Centre de Recherche pour l'Etude et l'Observation des Conditions de vie - Research Center for the Study and Observation of Living Conditions) is a study and research organization dedicated to the economic and social life.
DEUFRABASE	is a Franco-German database for the acoustics of road surfaces to evaluate the Noise Impact of Pavements in Typical Road Geometries
DfT	UK - Department for Transport
EC DG GROW	Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs of the European Commission.
EMISIA	is a spin-off company of the Aristotle University of Thessaloniki / Laboratory of Applied Thermodynamics and was established in February 2008.

EMISIA Study	is a study mandated by the European Commission on "Study on sound level limits of M- and N-category vehicles", which aims at reviewing and possibly updating the sound level limits for all M- and N category vehicles, taking into account the evolution of sound levels of approved vehicle types, the citizens' needs, and the technical and economic feasibility. https://op.europa.eu/en/publication-detail/-/publication/d23a63bc-8310-11ec-8c40-01aa75ed71a1/language-en
ETRTO	(European Tyre and Rim Technical Organisation) established in 1964 is a tire standardization organization whose members are tire, rim and valve manufacturers who have a production facility in one of the European countries.
FEDRO	(FEDeral Roads Office) established in 1998 is a Switzerland's federal authority responsible for road infrastructure and private road transport.
FEV	'Forschungsgesellschaft für Energietechnik und Verbrennungsmotoren' is an independent development service providers in the development of combustion engines and vehicle technology with headquarters in Aachen starting in 1985.
HSDAC	'Heinz Steven Data Analysis and Consultancy' independent expert among others for noise and emission topics created in 2008.
IAI	IMPACT ASSESSMENT INSTITUTE is a Belgian based independent body with the mission to scrutinize the evidence based for existing and proposed legislation. IAI is open to cooperation with European Union institutions, civil society, Member State governments, business and individuals
IDIADA	IDIADA is a worldwide partner for the automotive industry providing design, engineering, testing and homologation services.
ISO	International Organization for Standardization
ISO	**ISO TC31/WG 11** is a working group dedicated to tyre test method development, as part of the Technical Committee 31 related to tyres, rims and valves.
JAMA	(Japan Automobile Manufacturers Association) is a trade association established in 1967 and serves as a platform for the automakers of Japan to share technological developments and management practices.
JARI	(Japanese Automobile Research Institute) established in 1969 is a comprehensive research institute that carries out basic surveys, research, and technology development, as well as testing and evaluation of technology related to automobiles.
KBA	Kraftfahrt-Bundesamt - *Federal Motor Transport Authority* in Germany
LAT	Laboratory of Applied Thermodynamics belongs to the Energy Division of the Mechanical Engineering Department, in the Aristotle University of Thessaloniki, Greece founded in 1974.
LEON-T Project	(Low particle emissions and low noise tyres) will study both particulate and noise emissions from tyres. The findings will be used to define and propose practical standardised methods of tyre abrasion rates and airborne particulate emissions. The potential effects of tyre noise on cardiovascular health will also be studied. The project's insights will be useful for the design of airless tyres that are expected to reduce noise

	and emissions. The project will also make policy recommendations to address potential health hazards. https://cordis.europa.eu/project/id/955387
NTSEL	(National Traffic Safety and Environment Laboratory) was established in 1950 under MOT and is contributing to a safe and environmentally-friendly traffic society through activities in research and automobile type approval tests.
OICA	(Organisation Internationale des Constructeurs Automobiles - *International Organization of Motor Vehicle Manufacturers*) established in 1919 is an international trade association whose members are 39 national automotive industry trade associations.
PHENOMENA Project	is the project "Assessment of **P**otential **He**alth Benefits of **No**ise Abate**men**t Me**a**sures in the EU" to define the potential of measures capable of delivering significant reductions (20%-50%) of health burden arising from the environmental noise of roads, railways and aircraft, and to assess how relevant noise related legislation could increase the implementation of the most effective measures, while considering the constraints and specificities of each transport mode.
RACC-ACASA	ACASA (Automòbil Club Assistència S.A. Unipersonal) is company of the RACC group (Real Automòbil Club de Catalunya), a non-profit organisation providing advice, information, protection and advocacy of interest to its members (drivers, pedestrians) in the fields of road safety, sustainable mobility and environmental protection.
SIA	(Société des Ingénieurs de l'Automobile – *Society of automotive engineers*) in France brings together all the specialists of the automotive industry and its technologies: OEMs and Tiers 1, Engineering consultancies, R&D clusters, Universities and Research Centres. The SIA's goal is to encourage the development and knowledge sharing by engineers, managers and technicians of French or French-based companies and major groups in the automotive sector and mobility of the future.
TECHNALIA	is a Technological Research and Development Center in Europe/Spain, whose mission is to transform technology into GDP (General Data Protection).
TNO	Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek established in 1932 is an independent research organisation in the Netherlands that focuses on applied science.
T.U.GRAZ	Technical University in Graz/ Austria

TRUE	(The Real Urban Emissions) Initiative is a partnership of expert groups with a shared interest in cleaning up vehicles and improving urban air quality to inform policy makers, manufacturers, and consumers of the real impact of vehicle emissions on air quality through good data, transparency, and technical expertise.
UAB	Universitat Autònoma de Barcelona
UN TF-VS	United Nations - Task Force Vehicles'Sound is an Informal Working Group working on under the mandate of the GRBP (Groupe de Rapporteurs Bruit et Pneumatiques - *Working Party on Noise and Tyres*) as a vehicles' sound forum for discussions based on various available studies.
VVA	established in 1992, is a European consulting company based in Milan and Brussels with an international team of professionals including economists, sociologists, political scientists, public policy experts, digital talents, specialists in marketing and market research.
WHO	(World Health Organization) is the United Nations agency founded in 1948 that connects nations, partners and people to promote health, keep the world safe and serve the vulnerable – so everyone, everywhere can attain the highest level of health.

OTHERS ABREVIATIONS

AI	Artificial Intelligence
ANPR	Automatic Number Plate Recognition
ASEP	Additional Sound Emission Provisions
AVAS	Acoustic Vehicle Alerting System
CBA	Cost Benefit Analysis
CNOSSOS	Common NOise aSSessment MethOdS in Europe – Environmental Noise Directive 2002/49/EC (END)
DALY	Disability-Adjusted Life Years
END	Environmental Noise Directive in European Union
EQS	Environmental Quality Standards
EU MS	European Union Member State(s)
EV	Electric Vehicle
FMVSS	US Standard - Federal Motor Vehicle Safety Standard
ICE	Internal Combustion Engine
NORESS	Non-Original Replacement Exhaust Silencing System
PTI	Periodic Technical Inspection
RD-ASEP	Real driving - Additional Sound Emission Provisions
SEM	Sound Expectation Model
Technical symbols	Lexp, v, n, … are defined in UN Regulation No.51
TPMLM	Technically Permissible Maximum Laden Mass
xEV	Electrified Vehicle

VEHICLE CATEGORIES

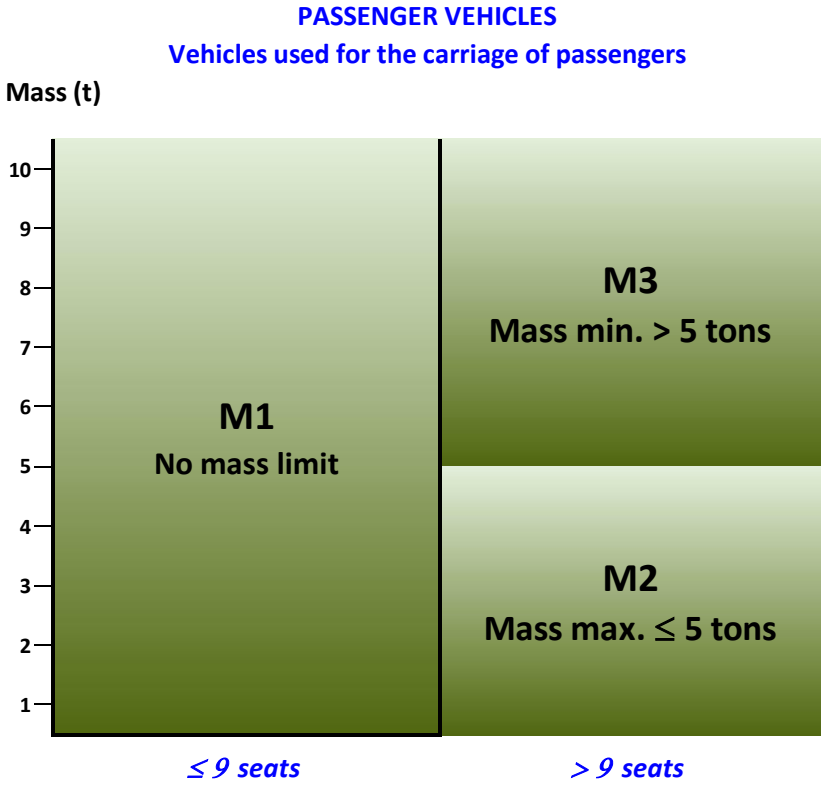
From definitions in EUROPEAN UNION - Directive 2007/46/CE – Annex II

PASSENGER VEHICLES

- **M1** Motor vehicles designed and constructed primarily for the carriage of persons and their luggage, comprising not more than eight seating positions in addition to the driver's seating position.
  Vehicles belonging to category M1 shall have no space for standing passengers.
  The number of seating positions may be restricted to one (i.e. the driver's seating position).

- **M2** Motor vehicles designed and constructed primarily for the carriage of persons and their luggage, comprising more than eight seating positions in addition to the driver's seating position and having a maximum mass not exceeding 5 tons.
  Vehicles belonging to category M2 may have space for standing passengers in addition to the seating positions.

- **M3** Motor vehicles designed and constructed primarily for the carriage of persons and their luggage, comprising more than eight seating positions in addition to the driver's seating position and having a maximum mass exceeding 5 tons.
  Vehicles belonging to category M3 may have space for standing passengers.

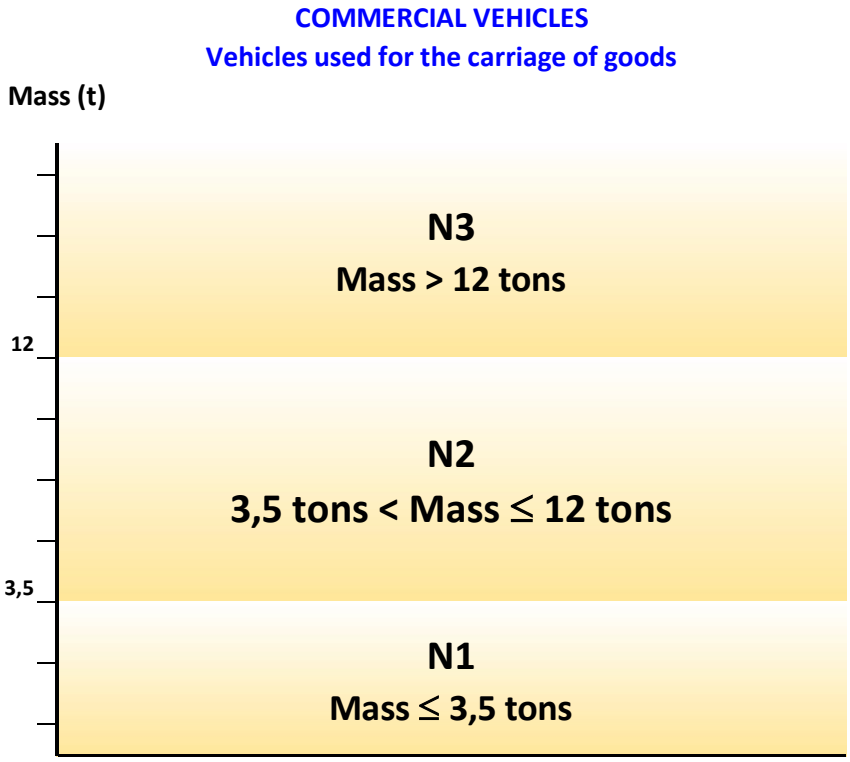


COMMERCIAL VEHICLES

- **N1** Motor vehicles designed and constructed primarily for the carriage of goods, having a maximum mass not exceeding 3.5 tons.

- **N2** Motor vehicles designed and constructed primarily for the carriage of goods, having a maximum mass exceeding 3.5 tons but not exceeding 12 tons.

- **N3** Motor vehicles designed and constructed primarily for the carriage of goods, having a maximum mass exceeding 12 tons



From definitions in EUROPEAN UNION - Directive 2002/24/CE – Article 1

MOPEDS, MOTORCYCLES, MOTOR TRICYCLES, QUADRICYCLES

- **L1 & L2** Mopeds, i.e. two-wheel vehicles (**category L1e**) or three-wheel vehicles (**category L2e**) with a maximum design speed of not more than 45 km/h and characterised by:
    - (i) in the case of the two-wheel type, an engine whose:
        - cylinder capacity does not exceed 50 cm3 in the case of the internal combustion type, or
        - maximum continuous rated power is no more than 4 kW in the case of an electric motor;
    - (ii) in the case of the three-wheel type, an engine whose:
        - cylinder capacity does not exceed 50 cm3 if of the spark (positive) ignition type, or
        - maximum net power output does not exceed 4 kW in the case of other internal combustion engines, or
        - maximum continuous rated power does not exceed 4 kW in the case of an electric motor;

MOTORCYCLES

- **L3 & L4** Motorcycles, i.e. two-wheel vehicles without a sidecar (**category L3e**) or with a sidecar (**category L4e**), fitted with an engine having a cylinder capacity of more than 50 cm3 if of the internal combustion type and/or having a maximum design speed of more than 45 km/h

MOTOR TRICYCLES

- **L5** Motor tricycles, i.e. vehicles with three symmetrically arranged wheels (**category L5e**) fitted with an engine having a cylinder capacity of more than 50 cm3 if of the internal combustion type and/or a maximum design speed of more than 45 km/h.

QUADRICYCLES

- **L6** Quadricycles, i.e. motor vehicles with four wheels having the following characteristics:
    - (a) light quadricycles whose unladen mass is not more than 350 kg (**category L6e**), not including the mass of the batteries in case of electric vehicles, whose maximum design speed is not more than 45 km/h, and
        - (i) whose engine cylinder capacity does not exceed 50 cm3 for spark (positive) ignition engines, or
        - (ii) whose maximum net power output does not exceed 4 kW in the case of other internal combustion engines, or

- (iii) whose maximum continuous rated power does not exceed 4 kW in the case of an electric motor.

These vehicles shall fulfil the technical requirements applicable to three-wheel mopeds of category L2e unless specified differently in any of the separate directives;

- **L7** (b) quadricycles, whose unladen mass is not more than 400 kg (**category L7e**) (550 kg for vehicles intended for carrying goods), not including the mass of batteries in the case of electric vehicles, and whose maximum net engine power does not exceed 15 kW. These vehicles shall be considered to be motor tricycles and shall fulfil the technical requirements applicable to motor tricycles of category L5e unless specified differently in any of the separate Directives.

UN REGULATIONS MENTIONED IN THIS REPORT

- **Symbols used in the report:**
  - **UN-Rxxx-01** means UN Regulation No.xxx, 01 Series of amendment.
  - **UN-Rxxx-yy.Sz** means Supplement z to the UN Regulation No.xxx, yy Series of amendment.

- **UN Regulation No.28 (UN-R28)**: Uniform provisions concerning the approval of audible warning devices and of motor vehicles with regard to their audible signals.
- **UN Regulation No.41 (UN-R41)**: Uniform provisions concerning the approval of motorcycles (L3-category) with regard to noise.
- **UN Regulation No.51 (UN-R51)**: Uniform provisions concerning the approval of motor vehicles having at least four wheels (M- & N-categories) with regard to their sound emissions.
- **UN Regulation No.59 (UN-R59)**: Uniform provisions concerning the approval of replacement silencing systems for vehicles of categories M1 and N1.
- **UN Regulation No.63 (UN-R63)**: Uniform provisions concerning the approval of two-wheeled mopeds (L1-category) with regard to noise
- **UN Regulation No.117 (UN-R117)**: Uniform provisions concerning the approval of tyres (C1-, C2- & C3-classes) with regard to rolling sound emissions and/or to adhesion on wet surfaces and/or to rolling resistance
- **UN Regulation No.138 (UN-R138)**: Uniform provisions concerning the approval of Quiet Road Transport Vehicles with regard to their reduced audibility to be applied to electrified vehicles of categories M & N.
- **UN Regulation No.165 (UN-R165)**: Uniform provisions concerning the approval of the reverse warning