



IMPROVEMENTS MADE TO THE ROAD TRANSPORT SECTOR IN CROATIA

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Workshop on Capacity building for emission inventories

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CONTENT

- Activity data needed for copert
- Key sources
- Emissions of main pollutants – NO_x, NMVOC and CO
- Changes in activity data due to COPERT V
- Changes in emissions – NO_x, NMVOC and CO

ACTIVITY DATA NEEDED FOR COPERT

- For emission calculation Croatia uses Copert model for 15 years
- In 2020 inventory we switch from COPERT IV to COPERT V model
- Usage of COPERT model requires a detailed set of data for each vehicle:
 - type of vehicle (PC, LDV, HDV, B or M)
 - type of motor (4-stroke, 2-stroke, diesel, hybrid, electric...)
 - cylinder capacity (<0.8 lit, 0.8-1.4 lit 1.4-2.0 lit, >2.0 lit),
 - weight class (HDV)
 - age of vehicles (year of production)
- Data provider of database with all those data is Ministry of Interior
- Data are collected from vehicle technical inspection which is annual obligation for all vehicles in Croatia

ACTIVITY DATA NEEDED FOR COPERT

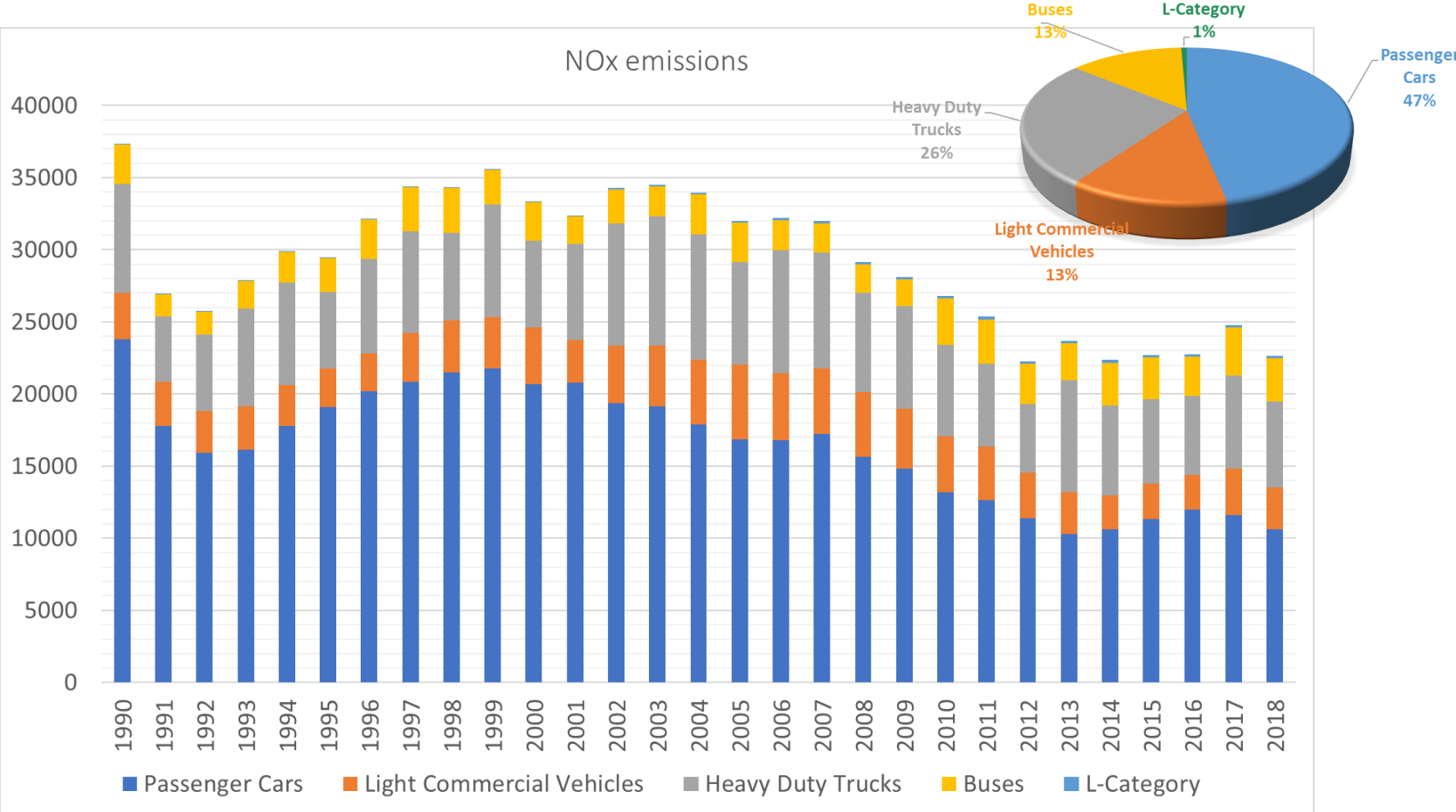
- Source for fuel sold for road transport is annual national energy balances
- Average monthly minimal and maximal temperature data were collected yearly for ten biggest towns in Croatia
- To calculate the SO₂ emissions from gasoline and diesel combustion, Croatia uses national values of the amount of S in each type of fuel
- National gas vapour pressure values are entered in accordance with the legal regulations of the Republic of Croatia
- Additional data like: highway, rural and urban transport mileage, average speed of various vehicles and different road types, average daily trip distance, beta value are COPERT default
- Assumptions applied = fuel filled abroad and consumed in Croatia is equal to amount of same type of fuel filled in Croatia and consumed abroad

KEY SOURCES

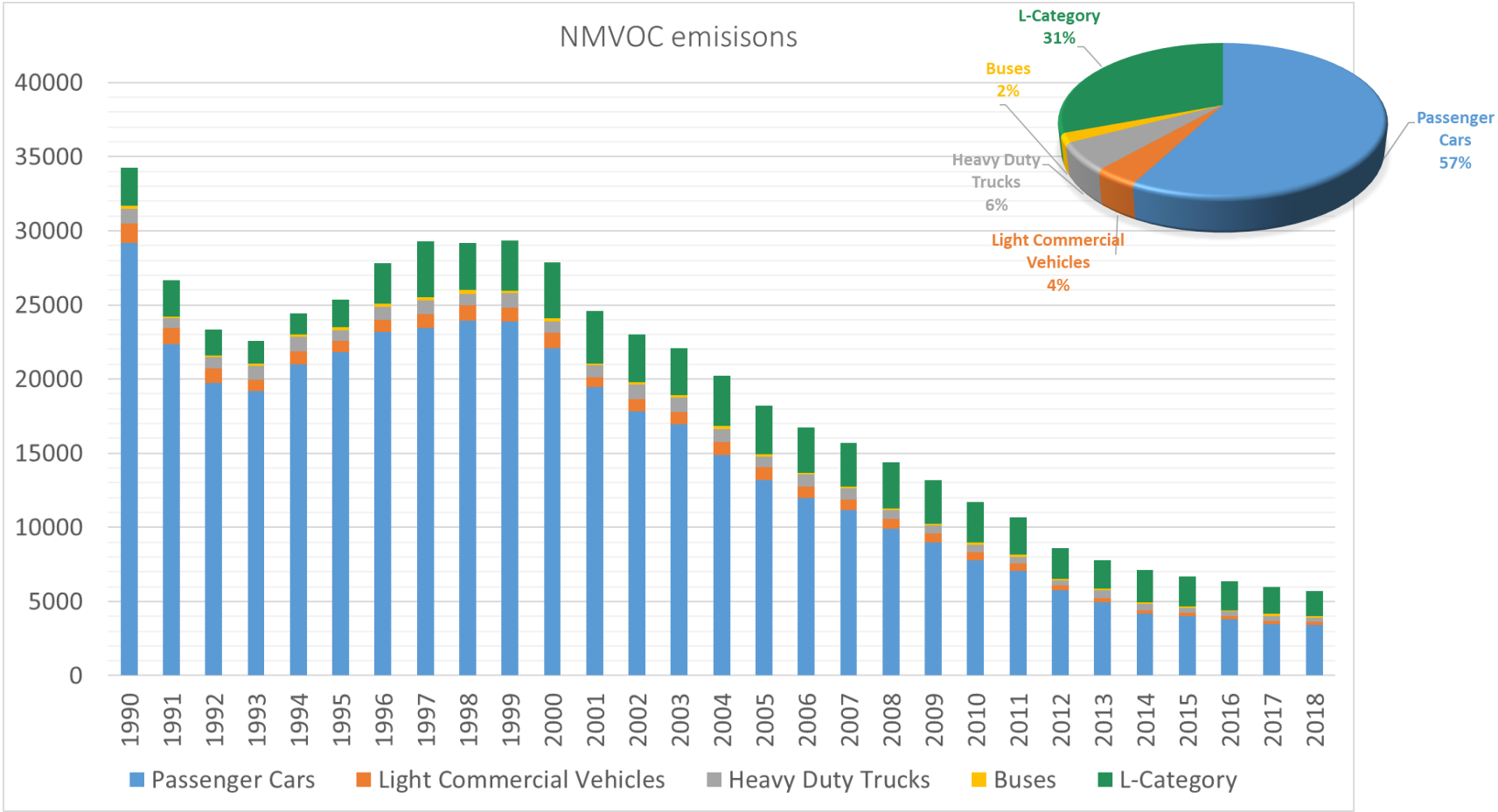
Emissions of pollutants where road transport is key source

Pollutant	NFR Code	Key source during 2018	Emission in 2018	% of total emission in 2018	% change from 1990 to 2018
NO _x	1A3biii	Road transport: Heavy duty vehicles and buses	8.97	17.74%	-12.40%
	1A3bi	Road transport: Passenger cars	10.86	21.49%	-54.33%
NMVOG	1A3bi	Road transport: Passenger cars	1.99	2.76%	-91.67%
CO	1A3bi	Road transport: Passenger cars	21.01	8.9%	-90.0%

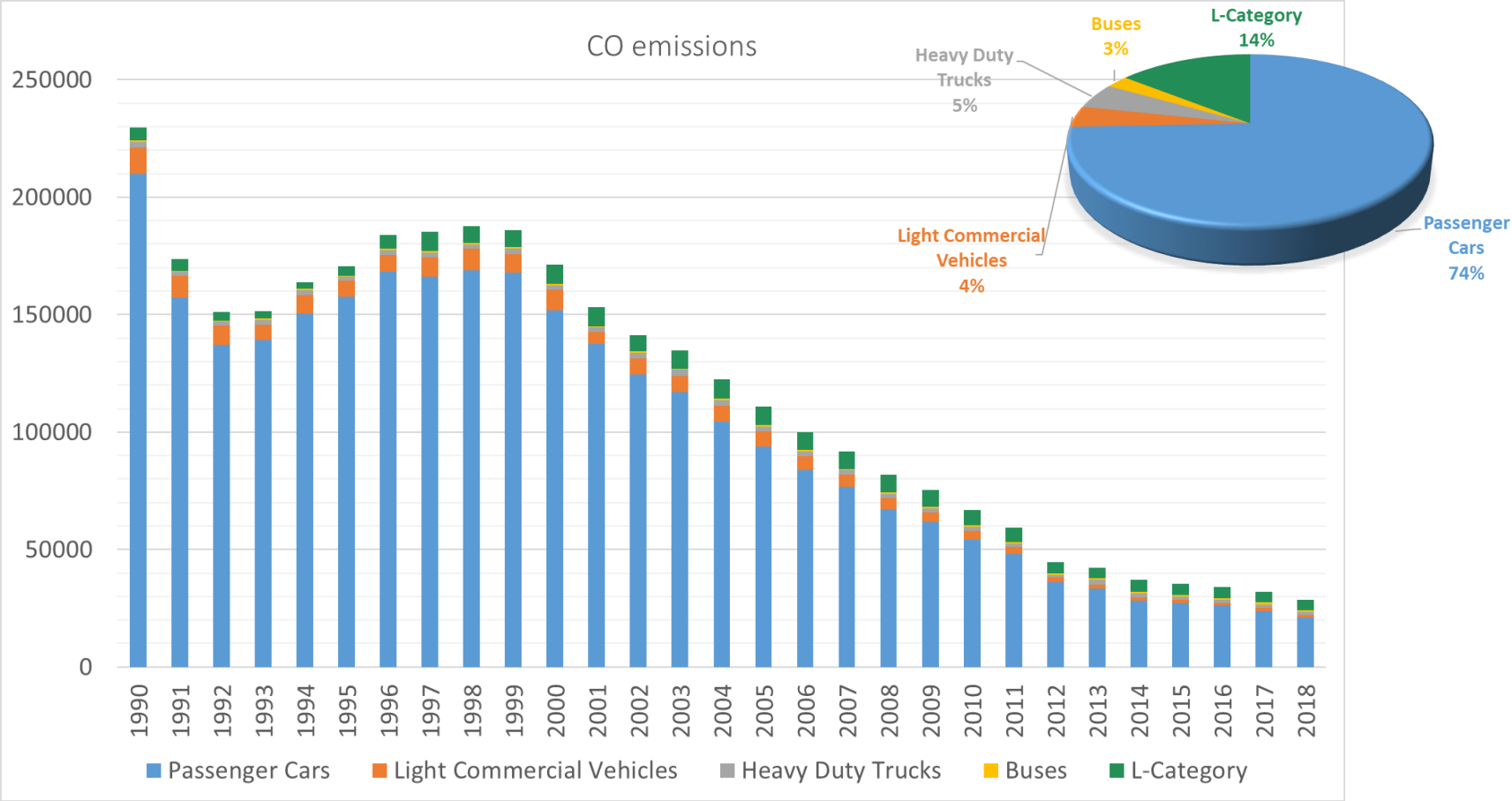
EMISSIONS OF MAIN POLLUTANTS - NOx



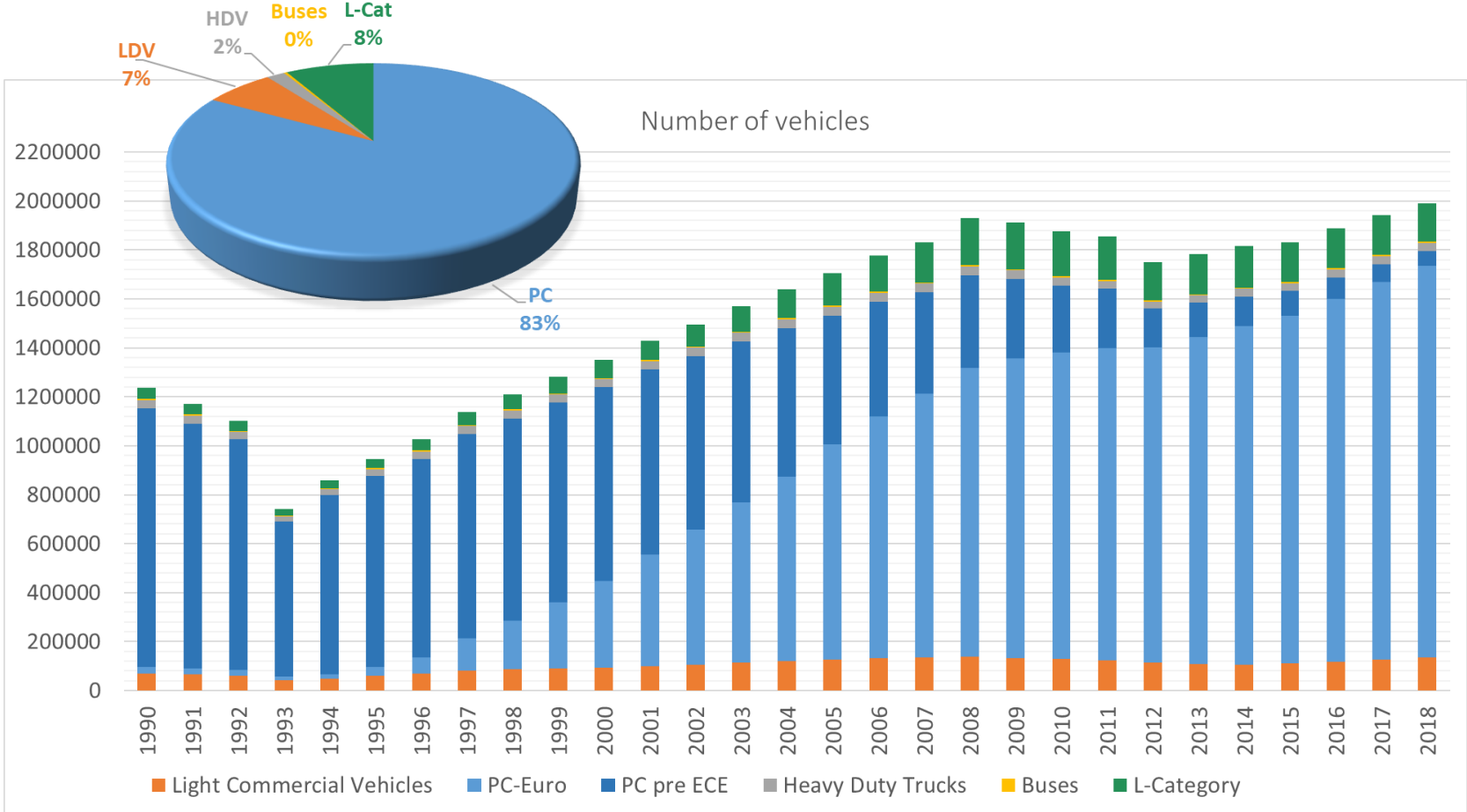
EMISSIONS OF MAIN POLLUTANTS - NMVOC



EMISSIONS OF MAIN POLLUTANTS - CO



NUMBER OF VEHICLES IN CROATIA



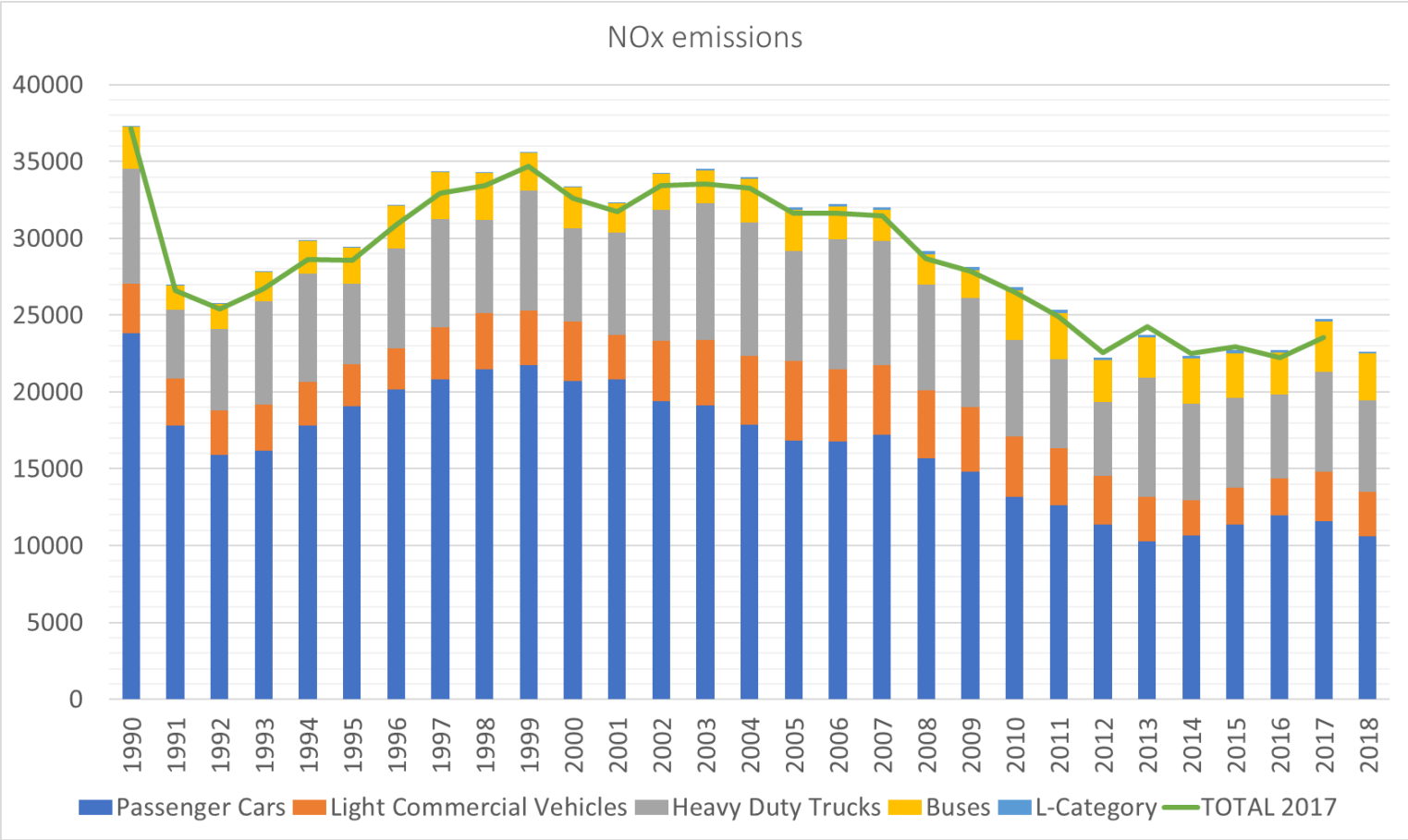
CHANGES IN ACTIVITY DATA DUE TO COPERT V

- Passenger cars:
 - a category of small vehicles (less than 0.8 liters) was added
 - vehicles manufactured in the period 2017-2019 added to EURO 6 standard
 - Vehicles that use both LPG and CNG as fuel are distributed in the by cylinder capacity
- Light commercial vehicles
 - vehicles manufactured in the period 2017-2019 added to EURO 6 standard
 - all light commercial vehicles are categorized as N1-I

CHANGES IN ACTIVITY DATA DUE TO COPERT V

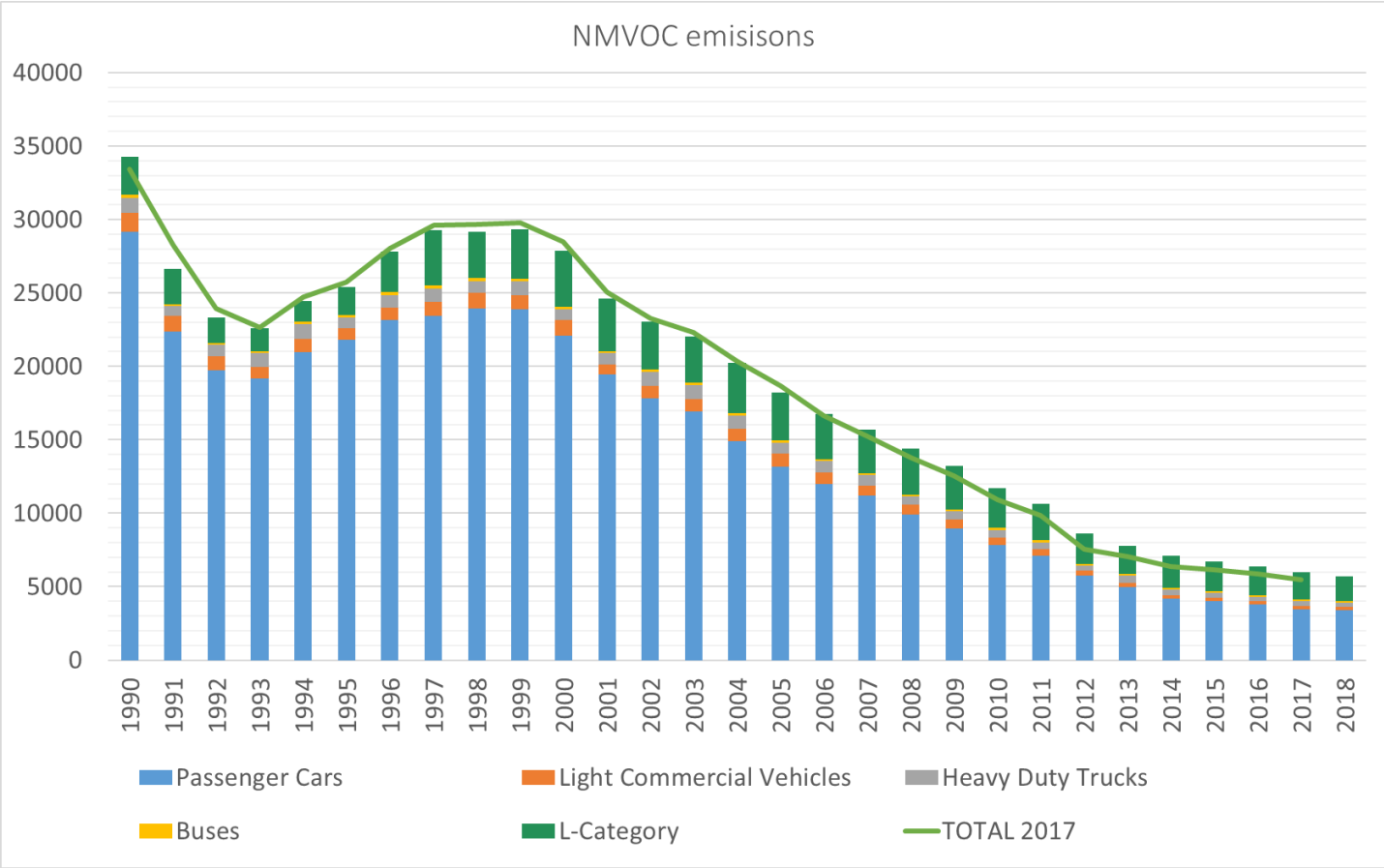
- Heavy Duty Trucks:
 - The distribution of vehicles in COPERT 5 is identical to the COPERT 4 distribution.
 - significant progress has been made in the Inventory – actual registered weight class is used to match COPERT 5 categories (before excel table which was has been used to switch total number
 - HDV vehicles are in the appropriate categories as registered in the Croatian vehicle database.
- L category:
 - Quad & ATVs as well as Micro-car categories are added in COPERT 5 - these vehicles were added as well

CHANGES IN EMISSIONS - NOx



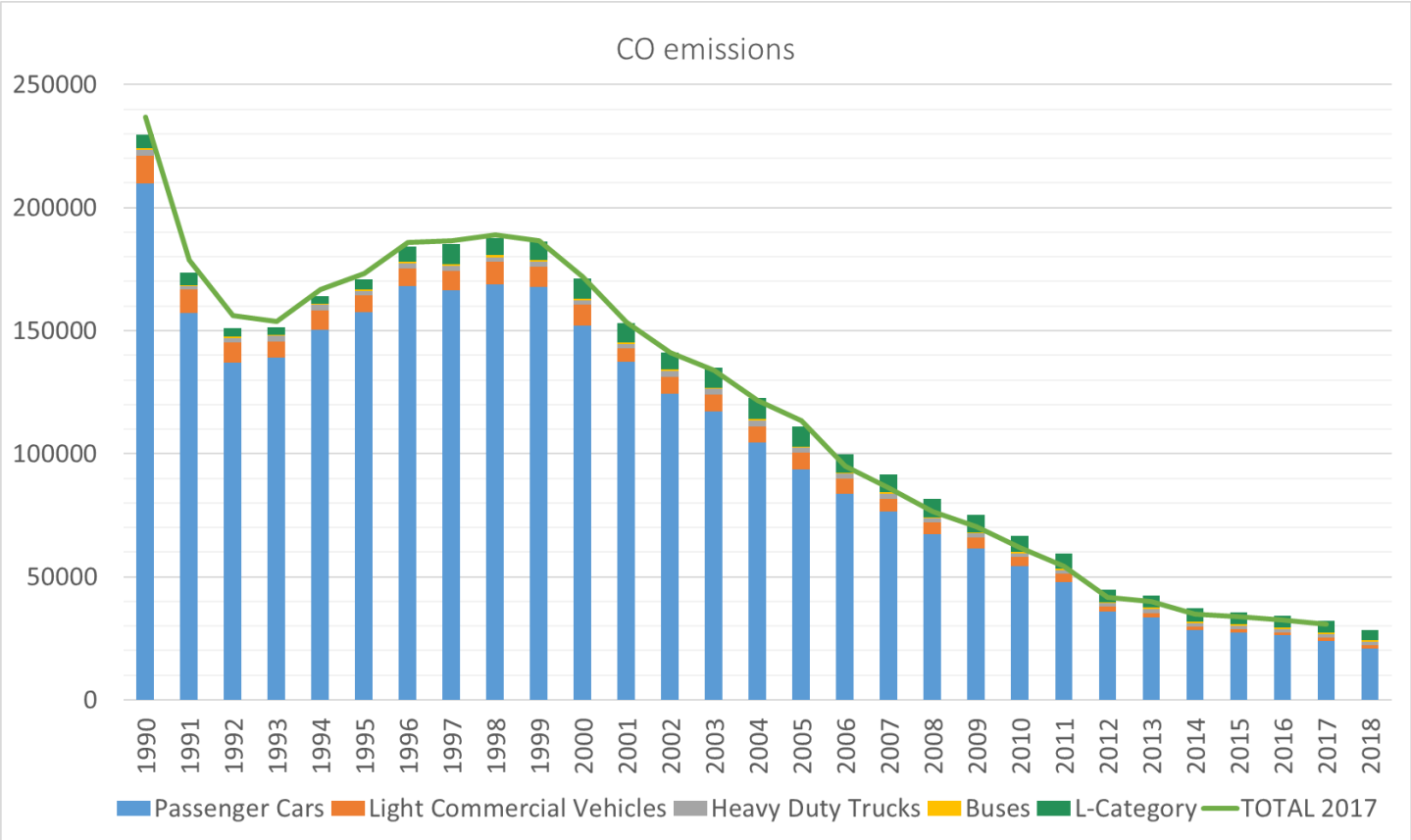
	1990	2000	2005	2010	2017
% change	0.43	2.28	1.11	1.27	5.26

CHANGES IN EMISSIONS - NMVOC



	1990	2000	2005	2010	2017
% change	2.4	-2.1	-2.4	7.2	9.4

CHANGES IN EMISSIONS - CO



	1990	2000	2005	2010	2017
% change	-3.1	-0.2	-2.1	3.7	4.7



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