Annex 1

Previous travelling habits	New travelling habits	Assumptions	
Car-dependent	Car-sharing		Change based on the kilometres travelled by car owners/ Assumption that the individual quits vehicle ownership
		19.09%	Reduction of the annual kilometres travelled when using car-sharing.
		24.80%	of the kilometres are driven by the shared car
		34.00%	of the km done by CS used to be done by private car
		41.00%	of the km done by CS used to be done by train
		4.00%	of the km done by CS used to be done by bus
		3.00%	of the km done by CS used to be done by bike
		1.00%	of the km done by CS used to be done by private car as passenger
		17.00%	Trips that wouldn't have been done or trips done as passengers. It does not make sense to assign this % to walking.
Car-free	Car-sharing		Change based on the kilometres travelled by car-free
		3.72%	Increase in the km travelled after joining CS

Annex 2

Steps to build the fleets

Peer-to-peer vehicles

Empirical data from a peer-to-peer company was used to build average vehicles. Rentals from 2018 were analysed as follows:

1. Identify the most rented vehicle differentiating brand and model for every fuel type
2. Search for official manuals that contain information about tailpipe emissions and fuel consumption of these vehicles. When vehicle manuals were not available we search for information in https://www.autoverleden.nl/ using the vehicle licenses available in the peer-to-peer database (for fuel consumption urban values were taken)
3. Group vehicles considering their fuel consumption and tailpipe emissions. Build averages of each group (Table S1)
4. For additional passengers in the car an increment of 6% in fuel consumption was modelled.

Table S1-Peer-to-peer average vehicles fuel consumption and tailpipe emissions

Type of fuel	Group	Tailpipe emissions	Fuel consumption
Petrol	Small vehicle	108 g of CO_2/km	0.045 l/km
	Medium vehicle	130 g of CO_2/km	0.058 l/km
	Big vehicle	225 g of CO_2/km	0.094 l/km
Diesel	Small vehicle	140 g of CO_2/km	0.058 l/km
	Big vehicle	130 g of CO_2/km	0.058 l/km
Electric	-	-	0.1945 kWh/km

Private vehicles

Publicly available data was used to build the private fleet following these steps for fuel consumption and tailpipe emissions for diesel and gasoline (Table S2):

1. Divide in ranges the tailpipe emissions and fuel consumption for every fuel type

2. Identify the percentage of vehicles in each range
3. Group the ranges in three categories to build average vehicles
4. For additional passengers in the car an increment of 6% in fuel consumption was modelled.

In the case of electric vehicles:

1. Identify the model and brand that are dominant in the fleet
2. Search for official manuals that contain the energy consumption per km driven

Table S2 - Private fleet average vehicles fuel consumption and tailpipe emissions

Type of fuel	Group	Tailpipe emissions	Fuel consumption
Petrol	Small vehicle	110 g of CO_2/km	0.0412 l/km
	Medium vehicle	150 g of CO_2/km	0.045 l/km
	Big vehicle	180 g of CO_2/km	0.063 l/km
Diesel	Small vehicle	100 g of CO_2/km	0.037 l/km
	Medium vehicle	120 g of CO_2/km	0.041 l/km
	Big vehicle	160 g of CO_2/km	0.054 l/km
Electric			0.127 kWh/km

Business-to-consumer

The average vehicle were assumed to have similar characteristics than the ones that are offered by Green Wheels. For additional passengers in the car an increment of 6% in fuel consumption was modelled.

Table S3 - Business-to-consumer average vehicles fuel consumption and tailpipe emissions

Type of fuel	Group	Tailpipe emissions	Fuel consumption
Petrol	Small vehicle	124 g of CO_2/km	0.04 l/km
	Medium vehicle	189 g of CO_2/km	0.06 l/km
Electric			0.127 kWh/km

Private ebikes

The average bike was assumed to have the same characteristics as the model Dolce Comfort FDST from stella (Table 4).

Table 4 - ebike average energy consumption

Type of fuel	Fuel consumption
Electric	0.035 kWh/km

Private motorcycles

The average motorcycle was assumed to be BMW R 1250 GS Adventure

Table S5 - Motorcycle average fuel consumption and tailpipe emissions

Type of fuel	Tailpipe emissions	Fuel consumption
Petrol	110 g of CO_2/km	0.035 l/km

Public transport

The average bus, metro, train and tram was obtain from the project STRAM personenvervoer 2014. The values are as follows:

Table S6 - Well-to-wheel emissions from public transport source: STREAM project

Type of fuel	Public transport mode	Well-to-wheel emissions
Petrol	Bus	124 g of CO_2/km
Petrol	Tram	76 of CO_2/km
Petrol	Metro	83 of CO_2/km
Petrol	Train	39 of CO_2/km

Annex 3

To start we calculate the amount of citizens that belong to certain age group in Amsterdam:

$$\# \text{ of citizen in age group } x = Amsterdam\ population * \% \text{ of NDL population in age group } x$$

Then these numbers are adjusted to population that can drive (the first age group includes people that cannot have a driving licence). Now we calculate car ownership in Amsterdam:

$$Car\ owners\ in\ Amsterdam = \# \text{ of citizen in age group } x * \text{Rate of owners within an age group in the NDL}$$

This value is later adjusted due to a lower rate of ownership in metropolitan areas (these reduction numbers are arbitrary)

The non-owner is the rest of the population that commutes (there is a percentage of the population that doesn't travel because they're sick or old.)