

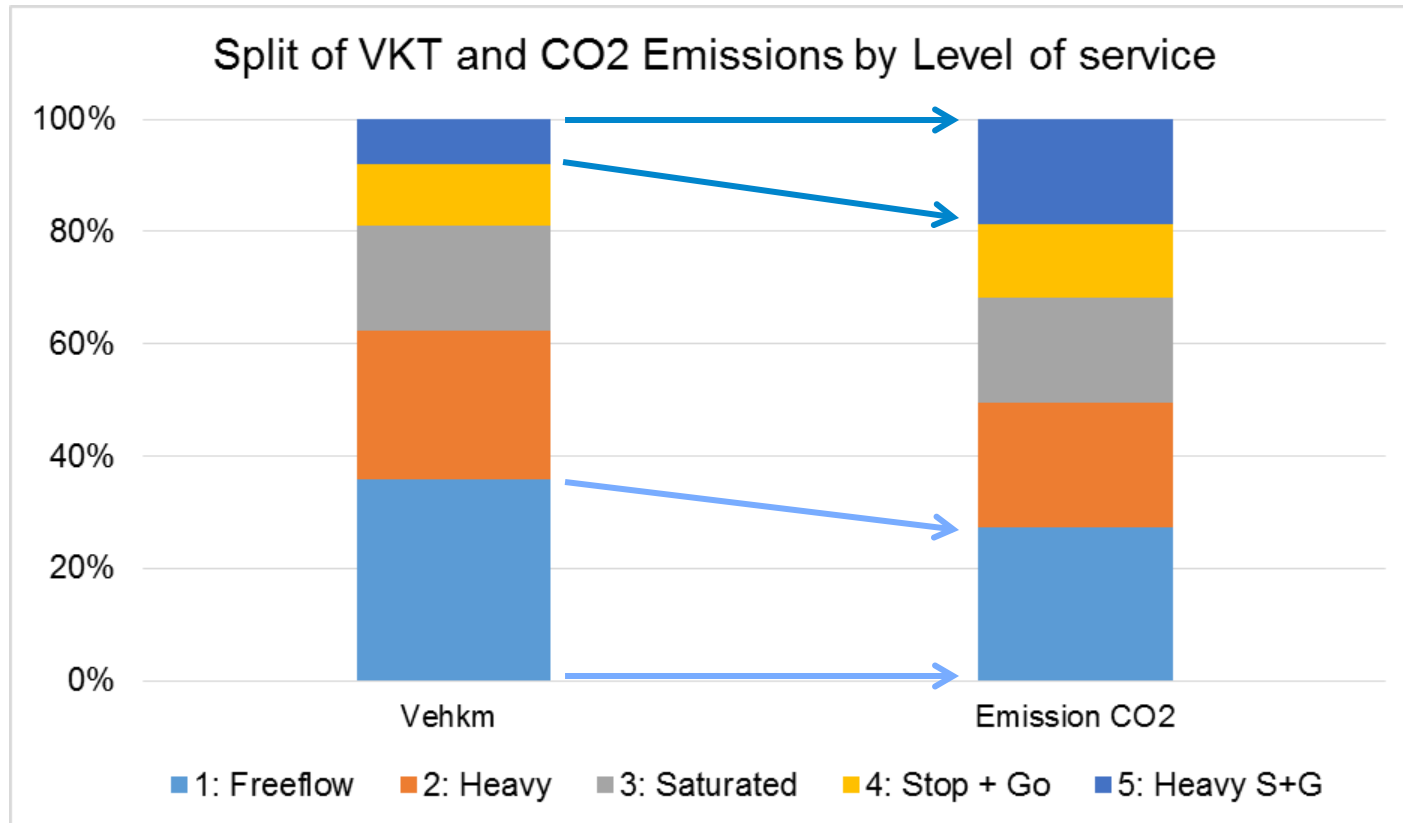
Exercise 2

What is your level of service?

Time: 30 minutes

- The level of service describes the quality of traffic situations based on speed and typical driving cycles. Sometimes it is also called “congestion level”
- In Europe we use four categories of LOS:
 - LOS 1: Free flowing traffic
 - LOS 2: Heavy traffic
 - LOS 3: Saturated traffic
 - LOS 4: Stop-and-go traffic
- In China we use five categories of LOS to reflect local realities:
 - LOS 5: Heavy stop-and-go traffic

Emissions vary by level of service



Beijing VKT and CO₂ emissions of passenger cars and taxis 2012

Exercise

1. Discuss the shares of LOS in the capitals of your countries (15 min)
2. Calculate the average CO₂ emission factor in your capitals based on your shares of LOS, using the CO₂ emission factors per LOS provided in the handout.
3. Calculate the total CO₂ emissions for your capital using a total VKT of 1,000,000 km.
4. Discuss the differences in emissions in your and other cities based on the different shares of LOS with your neighbours.

Calculation of emissions in Beijing

Levels Of Service	Average emission factor (CO ₂ /km)	Share of LOS (% of VKT)
LOS 1: Free flow	129	35%
LOS 2: Heavy	140	27%
LOS 3: Saturated	168	19%
LOS 4: Stop-and-go	202	11%
LOS 5: Heavy stop-and-go	395	8%
Average emission factor across all 5 LOS	169	100%

- Average EF = $129\text{g/km} \times 35\% + 140\text{ g/km} \times 27\% + 168\text{ g/km} \times 19\% + 202\text{ g/km} \times 11\% + 395\text{ g/km} \times 8\% = 169\text{ g CO}_2/\text{km}$
- Total emission per 100,000 km = $169\text{ g CO}_2/\text{km} \times 100,000\text{ km} = 16.9\text{ tons}$.

Thank You!