

Calculating transport greenhouse gas emissions

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Background

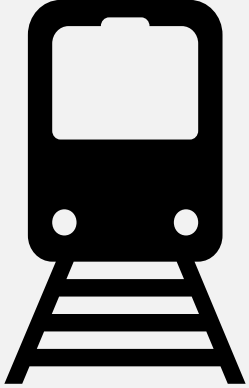
- ✓ Finland's annual transport greenhouse gas emissions have been previously calculated by VTT Technical Research Centre of Finland Ltd
- ✓ Statistics Finland will be responsible to calculate Finland's annual transport greenhouse gas and exhaust emissions from statistical year 2023

Greenhouse gas emissions

GHG-emissions are reported to European Union and to United Nations

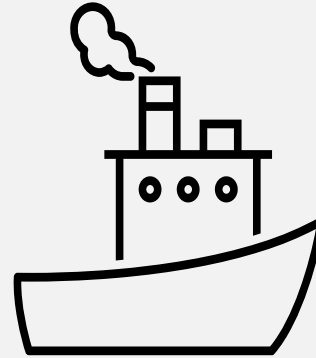
- In Energy sector
 - Energy used by transport
 - All transport modes
 - Transport statistics by mode is source information
 - Number and type of vehicles, transport performance, emission coefficients

Transport modes



Railway transport

- Closed transport system
- Data available on train movements
- From Finnish Transport Infrastructure Agency



Maritime transport

- Transport between ports of Finland and foreign countries



Air transport

- Data available on flights through Finnish Airports



Road transport

- Number of vehicles
- Traffic performance?
- Electrification?

Maritime transport

Maritime transport

→ data available on maritime transport between Finland and foreign countries

- Information on port visits from Finnish Transport and Communications Agency Traficom
- Engine types for Finnish ships obtained from Finnish register of ships
- Information on engine types for foreign ships?
 - Other data sources needed (AIS data,...)



Calculating greenhouse gas emissions

Transport statistics needed:

- By transport mode
- By applicable strata (driving power, age of vehicle, emission class standards,...)

1. Number of vehicles
2. Traffic/transport performance (kilometres, tonne-km,..)
3. Emission coefficients (g/km)

Emissions = number of vehicles * traffic performance * emission coefficients

- Greenhouse gases (CO₂, CH₄, O₃,...)
- Exhaust emissions (NO_x, CO, HC,..)



Road traffic performance

Total car-kilometres

- Based data on regular vehicle inspections
- Odometer readings of cars are included in motor vehicle stock data
- Kilometrage pairs, missing data
- Vehicle-kilometres by car class are estimated by Statistics Finland

Kilometrage on highways

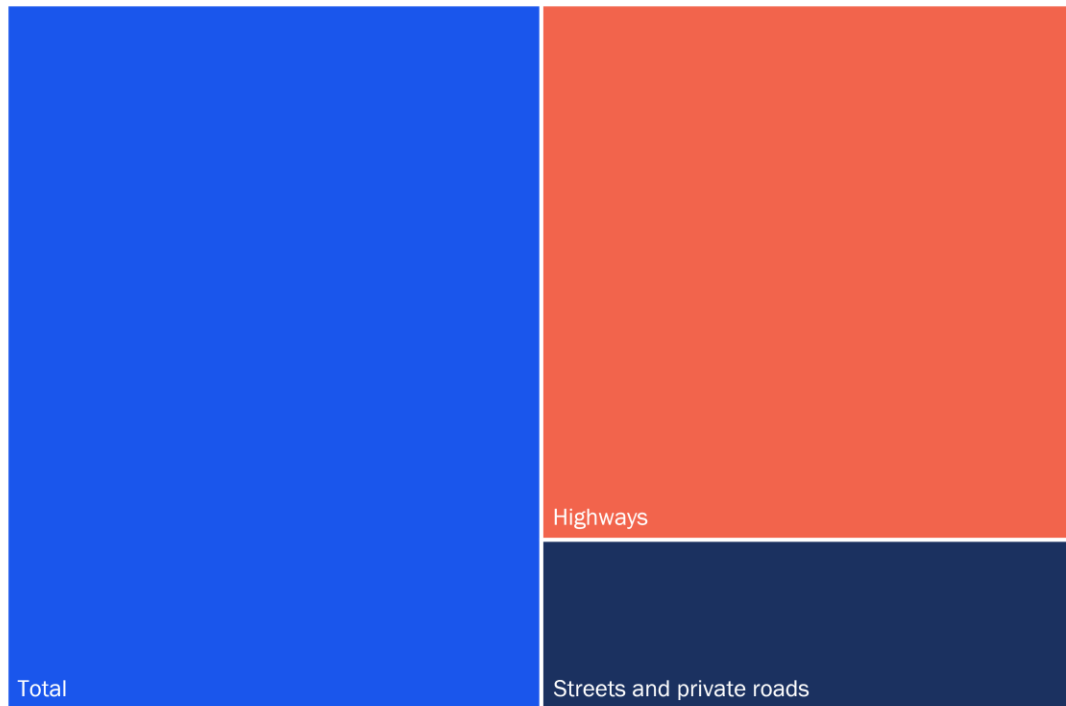
- Based on the Finnish Transport Infrastructure Agency's highway traffic automatic calculations
- A distinction by light cars, heavy cars and road trains

Kilometrages on private roads and streets

- Is calculated as a difference between the total kilometrage and the total kilometrage on public highways
- Total = highways (75%) + private roads and streets (25%)

Kilometrage on streets and private roads = Total kilometrage - Highways

■ Total ■ Highways ■ Streets and private roads



Mill. vehicle-km	Highways	Streets and private roads	TOTAL
Passenger cars	28 986	9 785	38 771
Vans	4 335	1 442	5 777
Trucks	2 958	338	3 296
Buses and coaches	315	146	461
Cars total	36 594	11 711	48 305



Data gaps and challenges for vehicle kilometres

Total vehicle kilometres driven during year is based on regular vehicle inspections

- Legislation on passenger car and van inspections changed in 2018: first inspection after four years since first registration, after that biennial inspection at 6 to 10 years
 - Less information on the newer passenger cars and vans
 - which are driven relatively lot
 - Less information on electric cars
 - Less information on consumption of electricity in road transport
 - Less information on yearly changes
 - Unexpected effects like Covid-19 pandemic
 - Less information on total kilometrage
 - Less information on kilometrage on streets and private roads

Road vehicle kilometrage

- ✓ Road vehicle kilometrage is key figure indicator
- ✓ Source information for emission calculations
- ✓ Source information also for other indicators like passenger kilometres
 - Average number of passengers during passenger car trip
 - Finland's National Travel Survey 2021 (by Traficom)

- ✓ Demand for new data sources for national total vehicle kilometrage
 - or kilometrage on streets and private roads
 - By vehicle class and type of driving power



Conclusions

- ✓ Statistics Finland will calculate Finland's annual transport greenhouse gas emissions from statistical year 2023
 - ✓ In cooperation with several statistics
 - ✓ Covering all transport modes and also working machines
- ✓ Transport statistics by mode is source information
- ✓ Data availability depends on transport mode
- ✓ There are data gaps and challenges in road transport sector



Thank you