This project is co-financed by the European Union and the Republic of Turkey.

Technical Assistance for Developed Analytical Basis for Formulating Strategies and Actions towards Low Carbon Development

Activity Data

EMISIA SA presentation

October 2019, Ankara

Guide to a national inventory compilation (1/3)

A feasible approach…

1. Obtain fuel consumption from national statistics (fuel sold)
2. Estimate effects of tank tourism, black market, otherwise these are kept zero
3. From 1 and 2 estimate true consumption of road transport
4. Collect data on total fleet in operation per vehicle category
   - National registers (cars, light trucks, heavy trucks, busses, motorcycles)
   - Police (mopeds)
5. Collect data on vehicle distribution per fuel and sub-category
   - National registers
   - Data from countries with similar structure (data from the *TRACCS/Fleets* projects)

Guide to a national inventory compilation (2/3)

6. If no statistical data exist, use age distributions to allocate vehicles to emission standards
   - pre ECE vehicles up to 1971
   - ECE 15 00 & 01 1972 to 1977
   - ECE 15 02 1978 to 1980
   - ECE 15 03 1981 to 1985
   - ECE 15 04 1985 to 1992
   - Euro 1 1992 to 1996
   - Euro 2 1996 to 2000
   - etc.

   ➢ Use information on sales/new registrations

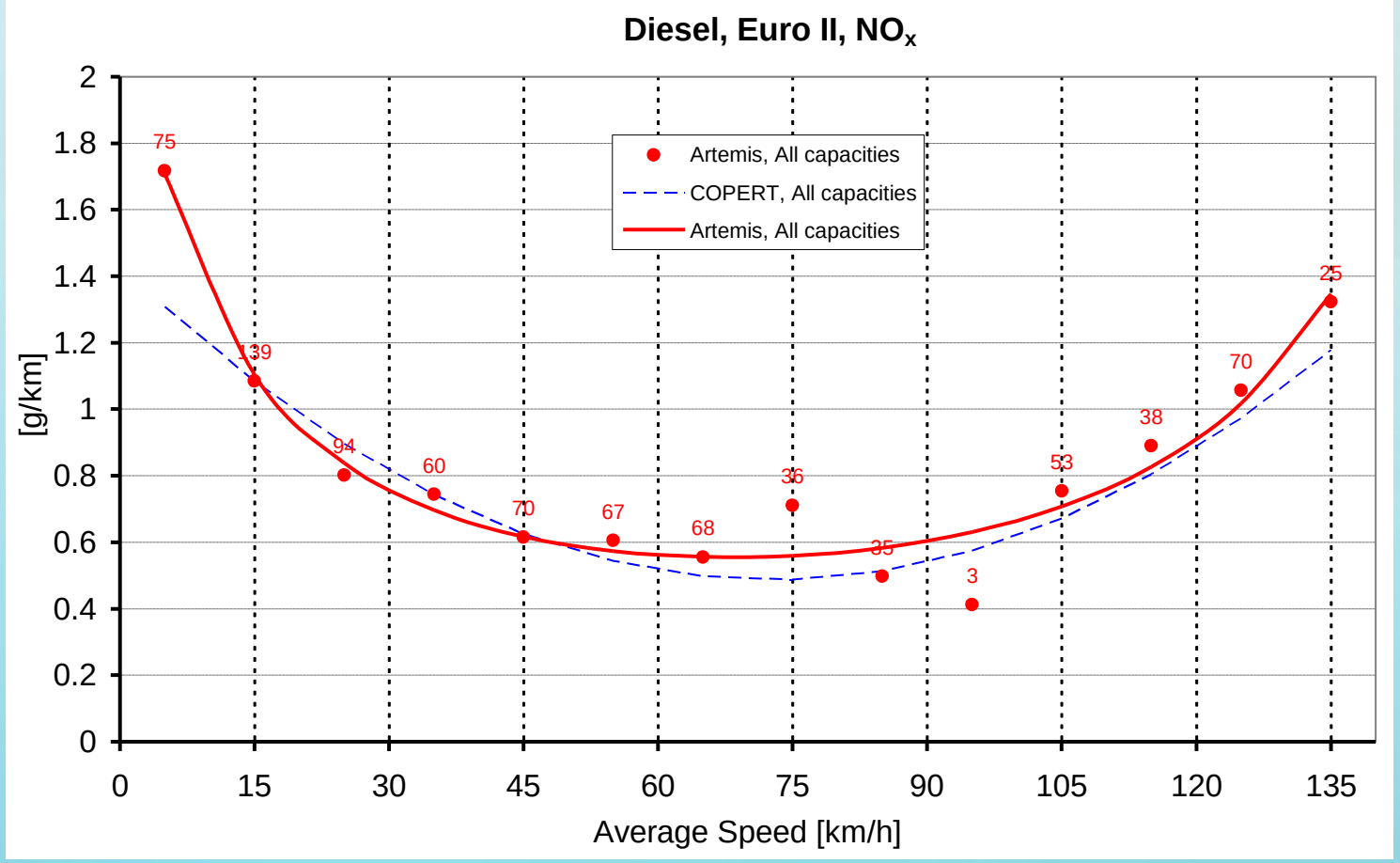
   ➢ Watch out for second-hand registrations
7. Obtain average min and max monthly temperatures for major cities and produce average. Data can be found on the internet (e.g. www.weatherbase.com) as well.
8. Estimate travelling speeds for urban areas (e.g. 25 km/h), rural areas (e.g. 60 km/h) and highways (e.g. 90 km/h). Estimation needs to be reasonable but not exact.

Guide to a national inventory compilation (3/3)

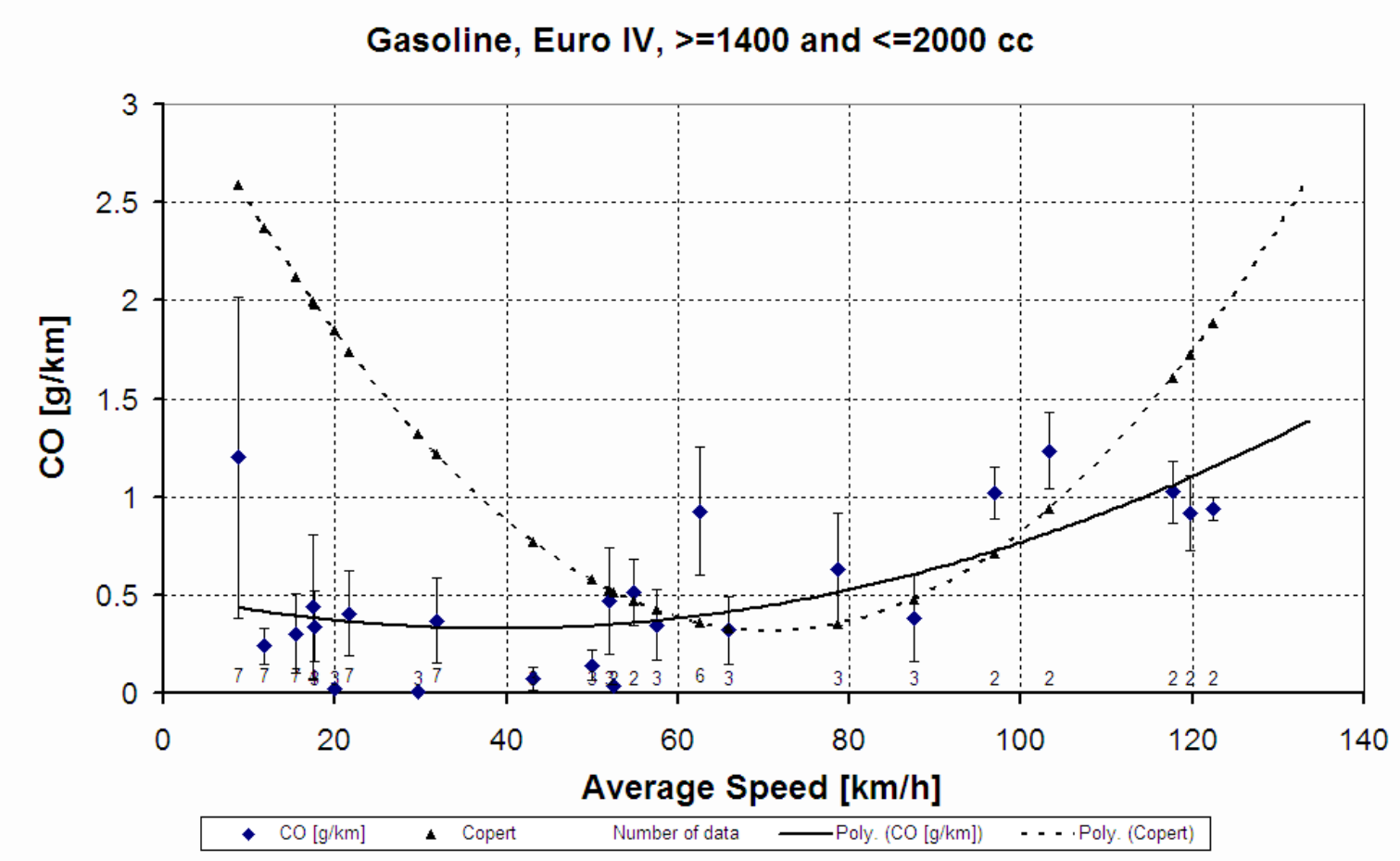
9. Estimate mileage shares in the three modes. The sum should make up 100%. Reasonable but not exact estimation is required.
10. Assume mileage values in the order of
    - PCs: 12 – 16 Mm/year
    - LCVs: 15 – 25 Mm/year
    - HDVs: 50 – 80 Mm/year (national km only!)
    - Busses: 50 – 70 Mm/year
    - Mopeds: 2 – 5 Mm/year
    - Motorycles: 4 – 8 Mm/year
    - One could adjust mileage per age based on the 'TRACCS' data
11. Perform COPERT run
12. Compare statistical with calculated fuel consumption per year
13. Adjust mileage to match calculated with statistical values

This is done automatically in COPERT 5!

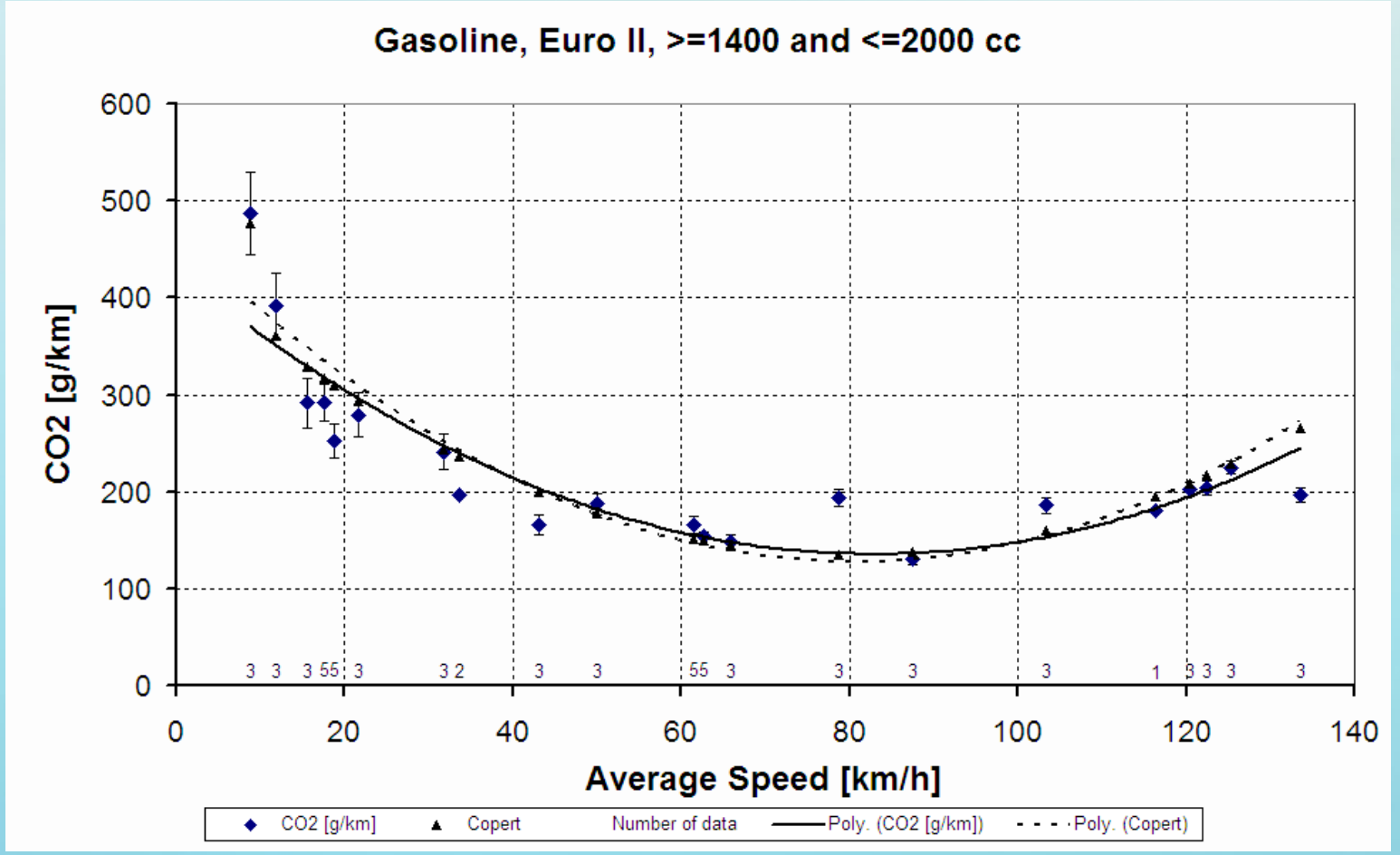
How accurate should speed estimate be?



Typical variability of measured data – CO



Typical variability of measured data – CO_2



Trip distance

- Required to calculate cold-start
  - Short frequent trips increase over-emission due to cold start
- What is a journey
  - A driving sequence
- What is a **trip**
  - A driving sequence between a switch-on and switch-off event
    - Work – grocery store – home: Two trips (one journey)
    - Home – children drop-off – work: One trip

Typical trip distributions

Distance classes	Percentage of trips
0-1	5.67%
1-5	39.17%
5-20	39.17%
20-50	11.84%
50-80	2.15%
80-100	0.50%
100-200	0.93%
200-500	0.43%
>500	0.14%
sum	100.00%

France

Distance classes	Percentage of trips
0-1	6.19%
1-5	31.71%
5-20	37.23%
20-50	19.80%
50-80	3.31%
80-100	1.38%
100-200	0.22%
200-500	0.01%
>500	0.16%
sum	100.00%

Sweden

Importance of input variables

Parameter	Importance	Availability of statistics	Notes /Particular Issues
Total number of vehicles per class	⇧⇧	☺	Question is the scooter and mopeds registration availability
Distinction of vehicles to fuel used	⇧⇧	☺	Question is the availability of records for vehicles retrofitted for alternative fuel use
Distribution of cars/motorcycles to engine classes	⇧	😐	Not important for conventional pollutants, more important for CO2 emission estimates
Distribution of heavy duty vehicles to weight classes	⇧	😐☹	Vehicle size important both for conventional pollutant and CO2 emissions
Distinction of vehicles to technology level	⇧⇧	😐☹	Imported, second-hand cars and scrappage rates are an issue
Annual mileage driven	⇧⇧	😐☹	Can be estimated from total fuel consumption. The effect of mileage with age requires attention.
Urban driving speed	⇧	😐	Affects the emission factors
Rural, highway driving speeds	⇗	😐	Little affect the emission factors, within their expected range of variation
Mileage share in different driving modes	⇗	😐☹	Little affect emissions, within their expected range of variation

Detailed activity data

- May be found at EMISIA website
- Have been collected in the framework of the DG Clima 'TRACCS' project
- Updated data (SIBYL Baseline with projections)
- TRACCS 2 (under development)

… a good starting point!

Why not just use official statistics?

- Official statistics are available from various sources, both at a national and at an international level:
  - Are usually aggregated, present gaps, incomplete time series
  - Inconsistent definitions, no common vehicle classification
  - Values from different sources do not always agree
  - No single source provides all data required
  - No information at all for some specific data categories
- A processing methodology is required to create a complete dataset by synthesizing all the collected statistical information
- Cross-checking in the end to ensure matching with official statistics to the degree possible (at least at aggregated level)

Available information in EMISIA website

- EMISIA actively maintains up-to-date datasets used in COPERT/SIBYL
- Up to 2010, data are based on FLEETS and TRACCS projects funded by EC
- Latest update in 01.2019 covering the period 1990-2050

The FLEETS project

European Database of Vehicle Stock for the Calculation and Forecast of Pollutant and Greenhouse Gases Emissions with TREMOVE and COPERT

Funded by European Commission / DG Environment

December 2006 – April 2008

Under the coordination of LAT/AUTH

The TRACCS project (http://traccs.emisia.com)

Transport data collection supporting the quantitative analysis of measures relating to transport and climate change

Funded by European Commission / DG Climate Action

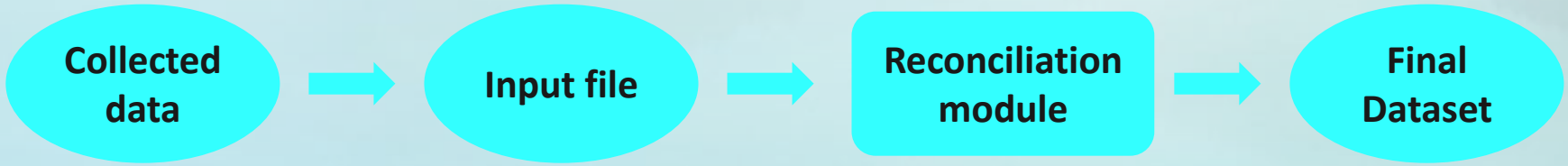
January 2012 – December 2013

Under the coordination of Emisia

Sources for data collection

Source	Information provided
Eurostat	Stock and new registrations per fuel and engine capacity
EC Statistical Pocket Book	Stock and new registrations
ACEA/ACEM	New registrations per fuel, per segment
ANFAC Motor Vehicle Parc	Stock of vehicles per fuel
CO_2 monitoring database	New registrations with details for every single vehicle sold
EAFO (European Alternative Fuels Observatory)	Stock and new registrations of alternative fuels
NGVA Europe (Natural Gas Vehicle Association)	Stock of natural gas vehicles
NGV Global (Natural Gas Vehicle Knowledge Base)	Stock of natural gas vehicles
National statistics web sites	Stock and new registrations (level of detail country-dependent)
Other literature, studies, reports	Various information

TRACCS data processing methodology



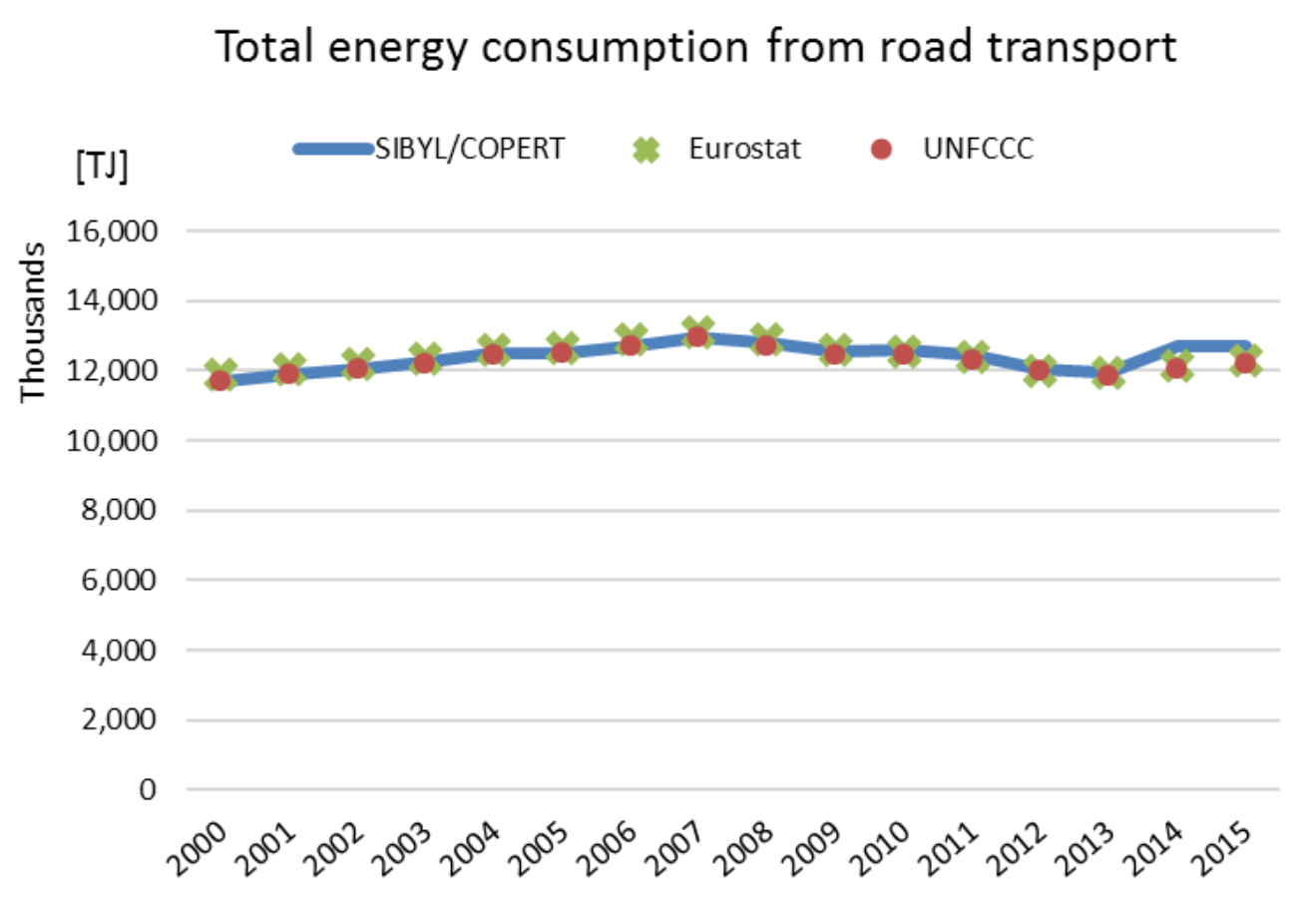
- Implemented with VB software modules (reconciliation for stock data, QA/QC rules, energy balance) applied to all countries
- Complete, processed, consistent dataset with no gaps for each country

Reliability of COPERT data

- TRACCS & FLEETS have been reviewed and cross-checked by EC, independent reviewers, national experts on road statistics and emission modelling
- The quality, completeness and consistency of these two projects datasets ensure the good quality of the COPERT data
- The fuel consumption produced by COPERT using these data matches consumption per fuel reported by national submissions to UNFCCC

Some indicative results

Total energy consumption from road transport



- The calculated energy consumption matches the national submissions of fuel sold according to UNFCCC
- In case there are small deviations from UNFCCC, these are usually eliminated with adjustments in mileage

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Thank you for your attention!

http://www.lowcarbonturkey.org/