



GHG emissions inventory for on-road transportation in the town of Sassari (Sardinia, Italy)

Laura Sanna, Roberto Ferrara, Pierpaolo Zara, and Pierpaolo Duce

National Research Council of Italy, Institute for Biometeorology, Sassari, Italy (sanna@ibimet.cnr.it)

The IPCC Fifth Assessment Report (AR5) accounts an increase of the total annual anthropogenic GHG emissions between 2000 and 2010 that directly came from the transport sector. In 2010, 14% of GHG emissions were released by transport and fossil-fuel-related CO₂ emissions reached about 32 GtCO₂ per year. The report also considers adaptation and mitigation as complementary strategies for reducing the risks of climate change for sustainable development of urban areas.

This paper describes the on-road traffic emission estimated in the framework of a Sardinian regional project [1] for the town of Sassari (Sardinia, Italy), one of the Sardinian areas where the fuel consumption for on-road transportation purposes is higher [2]. The GHG emissions have been accounted (a) by a calculation-based methodology founded on a linear relationship between source activity and emission, and (b) by the COPERT IV methodology through the EMITRA (EMISSIONS from road TRANSPORT) software tool [3].

Inventory data for annual fossil fuel consumption associated with on-road transportation (diesel, gasoline, gas) have been collected through the Dogane service, the ATP and ARST public transport services and vehicle fleet data are available from the Public Vehicle Database (PRA), using 2010 as baseline year. During this period, the estimated CO₂ emissions accounts for more than 180,000 tCO₂.

The calculation of emissions due to on-road transport quantitatively estimates CO₂ and other GHG emissions and represents a useful baseline to identify possible adaptation and mitigation strategies to face the climate change risks at municipal level.

Acknowledgements

This research was funded by the Sardinian Regional Project “Development, functional checking and setup of an integrated system for the quantification of CO₂ net exchange and for the evaluation of mitigation strategies at urban and territorial scale”, (Legge Regionale 7 agosto 2007, No. 7).

References

- [1] Sanna L., Ferrara R., Zara P. & Duce P. (2014), GHG emissions inventory at urban scale: the Sassari case study, *Energy Procedia*, No. 59, pp. 344 – 350.
- [2] Bellasio R, Bianconi R, Corda G, Cucca P. (2007), Emission inventory for the road transport sector in Sardinia (Italy), *Atmospheric Environment*, No. 41, pp. 677-691.
- [3] Gkatzoflias D., Kouridis C., Ntziachristos L. & Samaras Z. (2012), COPERT 4, Computer programme to calculate emissions from road transport, User manual (version 9.0), Emisia.