

# Reducing Emission Modelling uncertainty

## Action A1 and A2

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# Reducing Emission Modelling uncertainty

## Project focus:

REMY project, through a detailed quantitative modelling analysis in three EU critical areas (Po Valley - IT, Catalonia - E, Southern Poland - PL), investigates the impact of uncertainty in pollutants emission and air dispersion models that could negatively affect air quality plan, both on the regional and the local scale, leading to the identification of ineffective emission abatement strategies

## Action A1

Identification of the uncertainties related to emission factors for selected activities

## Action A2

Local/Regional/National emission inventory discrepancies and integration improvement also through an online web tool



# A1 - Identification of the uncertainties related to emission factors for selected activities

The aim of the Action A1 is to integrate the consolidated information on emission uncertainties, already available in the existent bibliography, with the results of scientific investigations on some of the most uncertain emission sources.

The list of the activities selected by LIFE-REMY is necessarily limited, but any suggestion to focus more attention to other sectors / activities is welcome, if compatible with the aims and the economic capacity of the Project.

All activities of this Action will be concluded within 18 months

Action Number/name	2021			2022				2023				2024	
	II	III	IV	I	II	III	IV	I	II	III	IV	I	II
A. Implementation actions:													
A1	X	X	X	X	X	X	X						

# A1 - Identification of the uncertainties related to emission factors for selected activities

**According to the final Agreement, Action A1 will be mainly focused on:**

## **1. Road dust resuspension**

The uncertainty related to PM emissions from road dust resuspensions will be determined through a two-fold methodology:

- a) uncertainty related to the method for estimating emission factors (EF);
- b) uncertainty due to the spatial and temporal variability of EF.

## **2. Domestic heating systems**

The emission factors for domestic heating systems are generally referred to scientific works carried out before the introduction of EU Ecodesign requirements (i.e. Commission Regulations EU n° 813/2013, 2015/1189 etc). Thus, the domestic heating emissions calculated for future scenarios could be overestimated.

# A1 - Identification of the uncertainties related to emission factors for selected activities

## 3. Domestic waste combustion and open burning

- As for domestic waste combustion, the results of specific projects (such as the European Parliament Pilot Project WASTE) will be taken into account together with the assessments of Action A3 through receptor modelling.
- Specific "in-field" investigations will be carried out in relation to the open burning agricultural waste or domestic waste in open field.

## 4. Wood combustion (sources different from domestic heating, e.g. pizzerias)

For some wood burning activities a specific emission factor doesn't exist and it is not well known the contribution of consensable fraction. The efficacy evaluations of local policies could be influenced by this lack of knowledge.

## 5. NMVOC emissions due to the solvent use sector

In many cities, the majority of the NMVOC emissions is due to the solvent use sector, but the SVOC and IVOC fractions are highly uncertain. Thus, it is not known if and how these emissions can influence the (SOA) production.

# A2 – Expected results

## A2 Action (IEP-NRI)

Local/Regional/National emission inventory discrepancies and integration improvement also through an online web tool

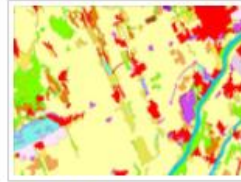
### Expected results :

- An on-line web-based tool: refining (relocation) of low-resolution inventories and further to combine with high-resolution inventories (Prototype web tool – 31.12.2022)
- Modelling studies using relocated low-resolution emission to test the impact of emission resolution → recommendations (modelling results 31.01.2024)

# A2 - Methodology

- **Assumptions:**

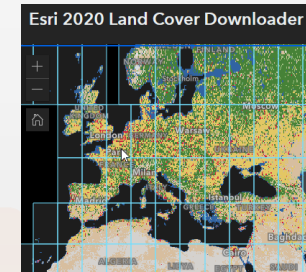
- Region of interest: Europe
- Relocation based on data proxy (OSM, Corine LandCover, Urban Atlas, Large Combustion Plants)
- Total emissions load per original low-resolution grid will be preserved
- No factors changing emission loads will be applied
- Output categories will follow GNFR
- Testing the weighting factors (e.g. different types of roads)
- Building the flexible mechanism (in terms of target resolution) to create GNFR mask to relocate emission flux in each single source grid square
- Input and output data will be in NetCDF format



CLC 2018



Urban Atlas 2018



OpenStreetMap

# A2 Emission data and modeling studies

## Emission data

- Top down inventory: Europe: EMEP
- Local inventories: Poland – Bottom Up inventory, emissions inventories for Po valley, Catalonia region, emission inventories for Milan and Barcelona

## Modeling studies:

- Area of interest: Po valley, Catalonia region, southern Poland
- Scenarios: with(1) and without(2) relocation of emission data
- Models: GEM-AQ



# THANK YOU!

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