



Operational Procedure for Emission Reduction Assessment

Executive Summary

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Project objectives

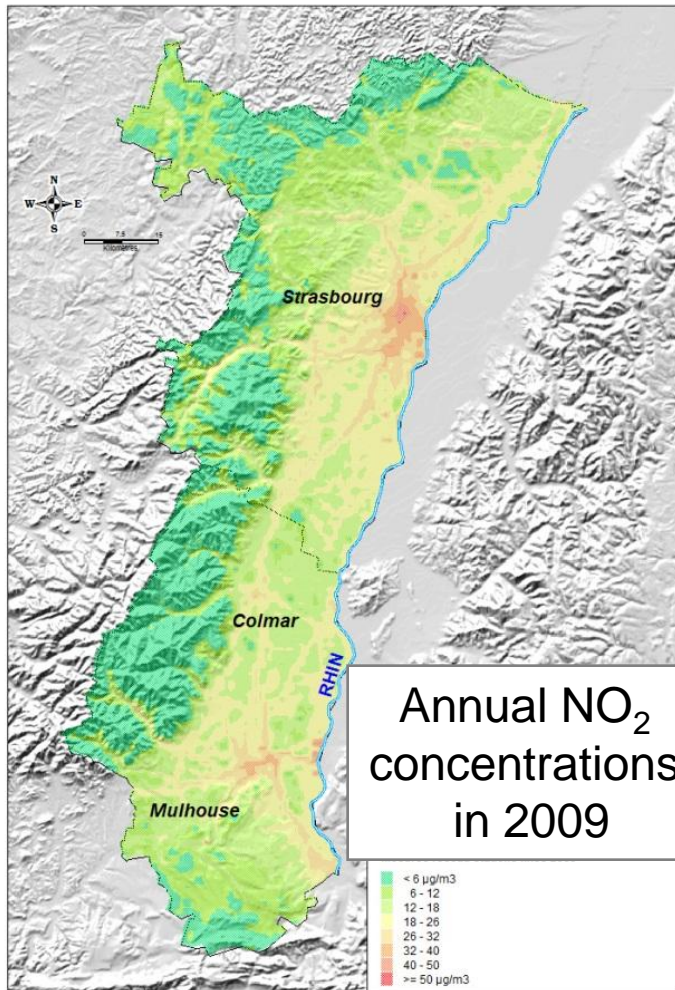
- ➔ To set-up a methodology to assist sub-national authorities in:
 - preparing, implementing and monitoring air quality plans, to reduce population and ecosystems exposure;
 - Integrating regional air quality plans with national and European ones;
 - assessing the synergies to reduce the burden of poor air quality and at the same time limiting climate change impacts.

- ➔ To develop an integrated assessment tool (**RIAT+**) to support the proposed methodology.



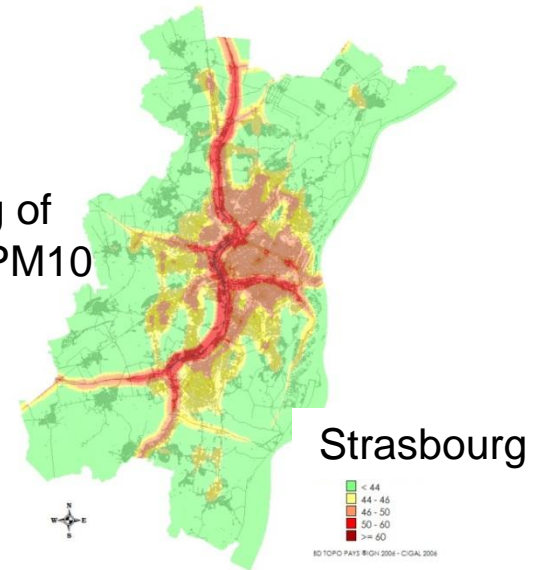
Expected results

- A methodology and tool (RIAT+) to support local authorities in designing and assessing efficient air quality plans.
- RIAT+ application to Emilia Romagna and Alsace and assessment of air quality plans in these two regions.
- A register including existing and new emission reduction measures (technical and non-technical) applied in the areas of the proposal. (Each action will be defined by its abatement efficiency and cost and will be linked to site specific implementation strategies).
- A full documentation, workshop and courses to support new users implementing the methodology to other European regions.
- A standardized set of quantitative indicators to monitor the action plans effectiveness.
- Guidelines for local administrations and environmental agencies (this is a national priority for Italy) to integrate local planning to national and European air quality policies.



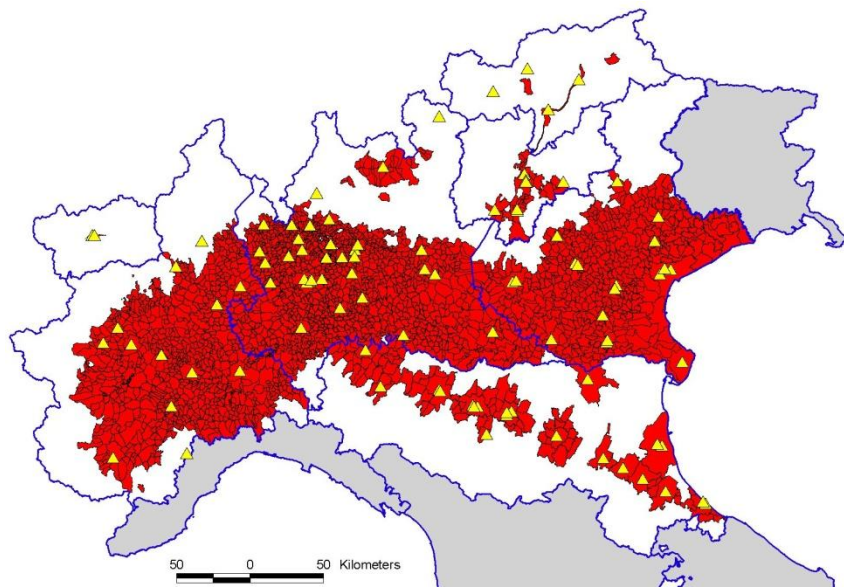
The problem to be solved: Current challenges in Alsace

Percentile of exceeding of daily limit of $50 \mu\text{g}/\text{m}^3$ of PM_{10} concentration

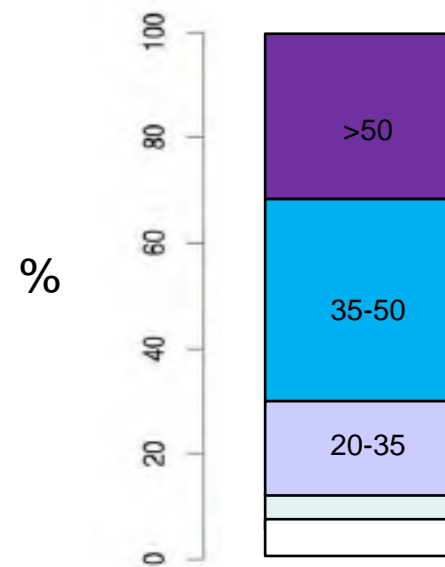




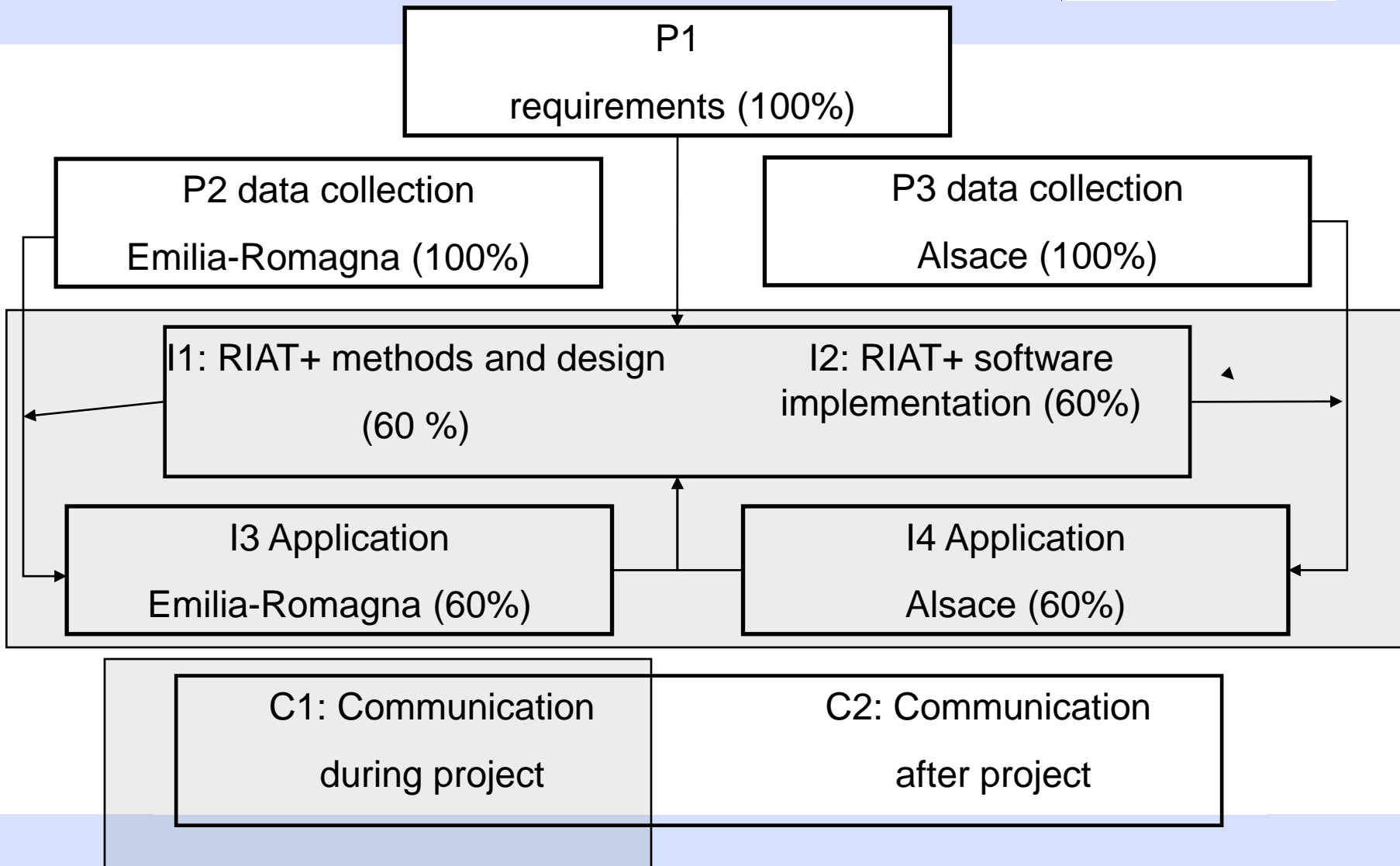
Po Valley: Area interested by the exceedence of the PM10 daily average (2005 -2006)



Emilia-Romagna: 70% of population exposed to PM10 exceeding daily LV (2011)

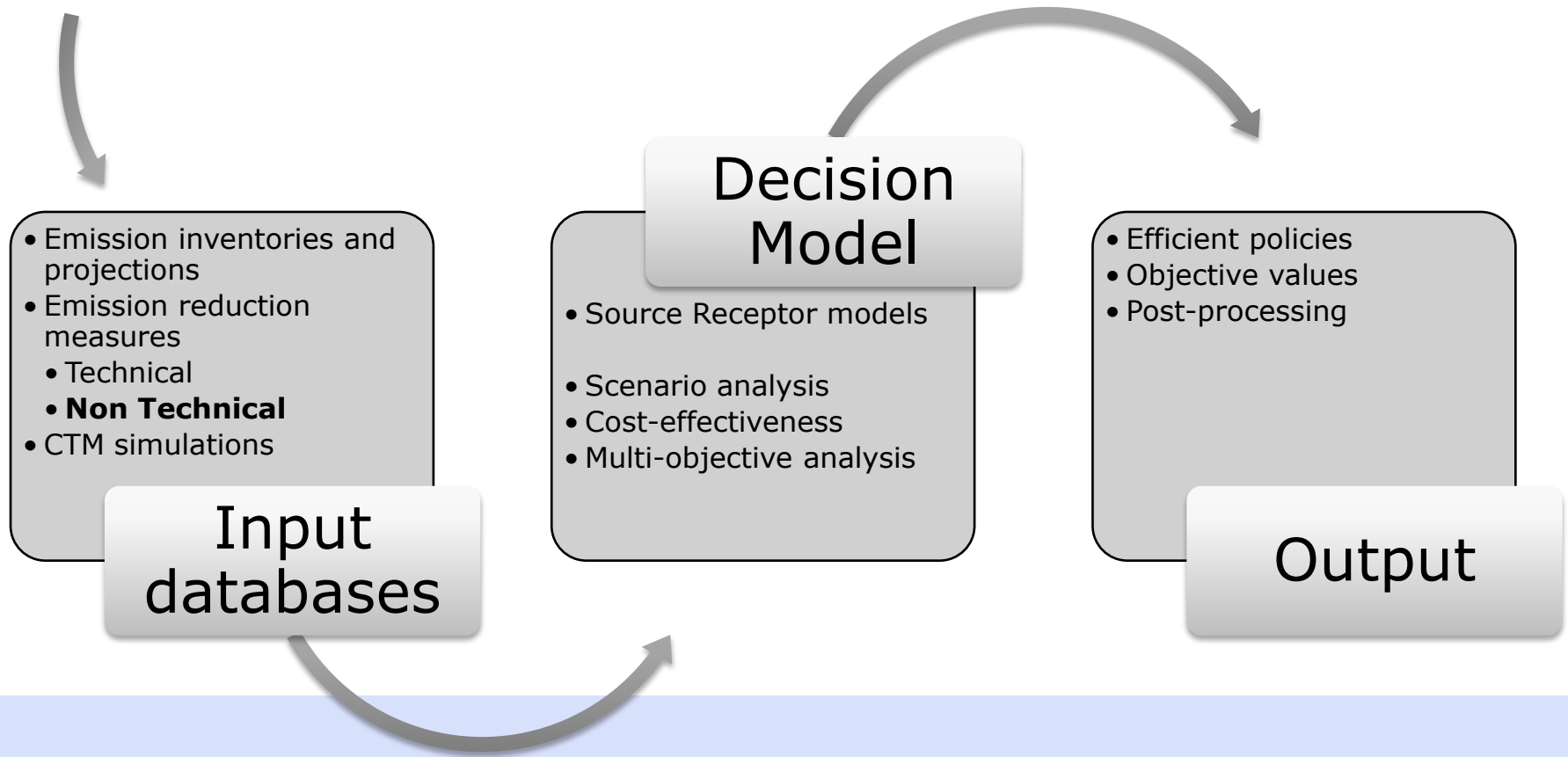


decision of the European Commission 2008/2194 in response to the request by Italian government to postpone the attainment deadlines to Limit Values for PM10,

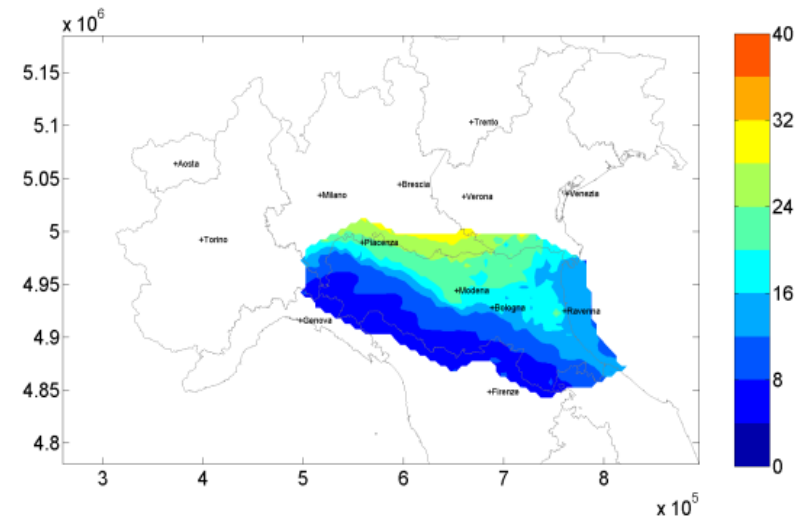
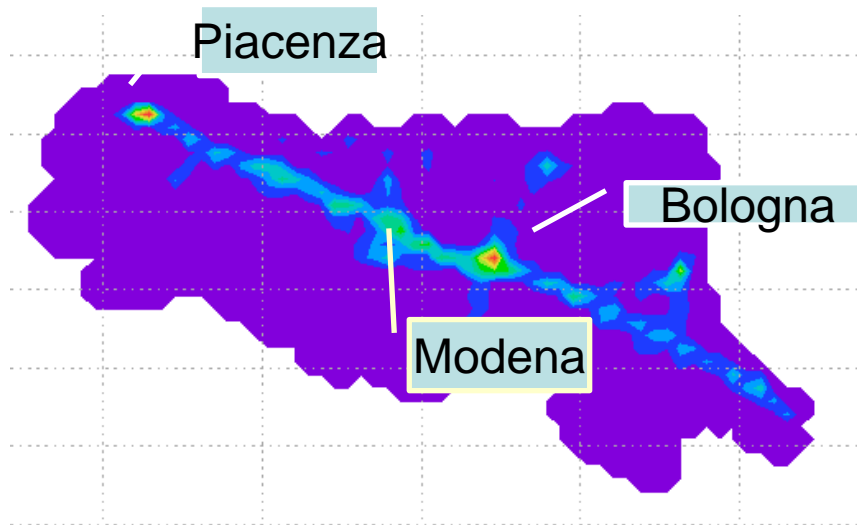




RIAT+ methodology

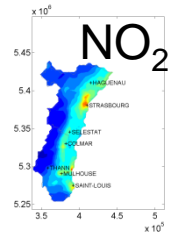


Preliminary results Emilia-Romagna: the source-receptor model



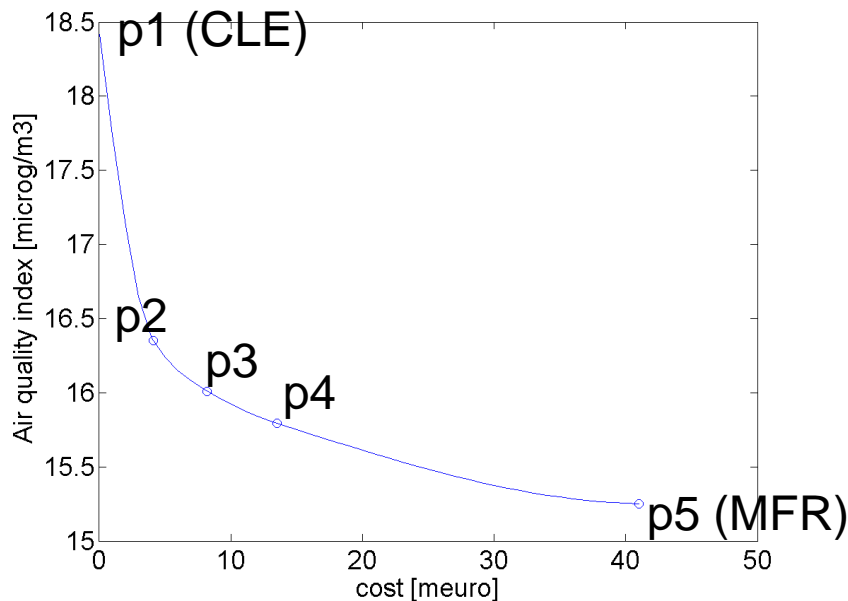
NOx: base scenario - high reduction
scenario (tons/year)

Ground PM10 concentration in the
high reduction scenario ($\mu\text{g}/\text{m}^3$)
estimated by the source receptor
model

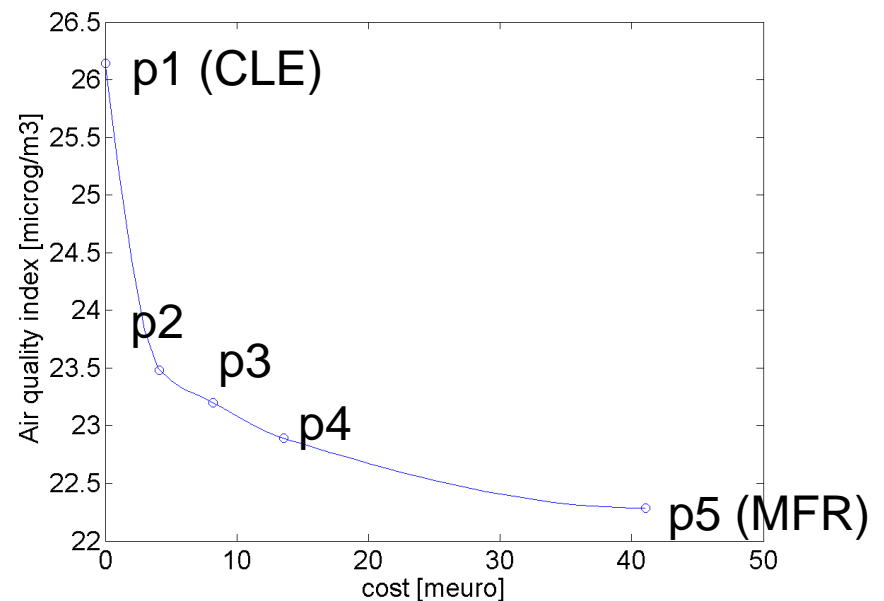


Preliminary results Alsace: optimization

(pareto curves: NO₂ winter population weighted)



Sensitive zones

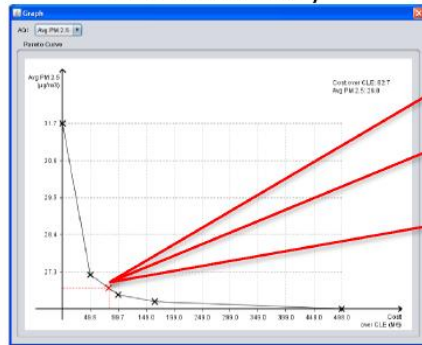


Strasbourg greater area



The sw tool: RIAT+

Pareto Boundary



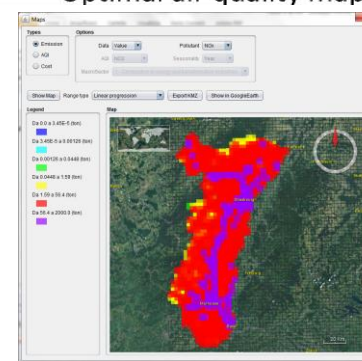
Effective policy

Regional cost over CLE
costOverCLE(Net) = 49.53

Regional average AgC
ag_per100(emission) = 10.140
ag_per25(emission) = 27.282
ag_per50(emission) = 32605.0
ag_per100(emission) = 3182.6

Emission reduction (respect CLE)
NH3CoefAct = 9450.0
NH3CoefAct = 10700.0
NH3CoefAct = 8500.0
NH3CoefAct = 8530.0
NH3CoefAct = 3760.0
NH3CoefAct = 17000.0
NH3CoefAct = 8040.0

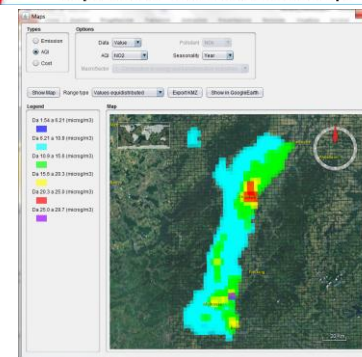
Optimal air quality map



Detailed technologies optimal application

ms	sec	act	tec	Application rate (-1+0+1)	C
1	Agriculture: Livest...	No fuel use	Feed modification (all ...	1	0
1	Agriculture: Livest...	No fuel use	Hay-silage for cattle	1	0
1	Agriculture: Livest...	Other cattle - II	Covered outdoor stora...	1	0
1	Agriculture: Livest...	Other cattle - II	Combination of CS_L...	1	0
1	Agriculture: Livest...	Other cattle - II...	Covered outdoor stora...	1	0
1	Agriculture: Livest...	Other cattle - II...	Low ammonia applica...	1	0
1	Agriculture: Livest...	Other cattle - II...	Low ammonia applica...	1	0
1	Agriculture: Livest...	Other cattle - II...	Animal house adapta...	1	0
1	Agriculture: Livest...	Other cattle - II...	Combination of SA_LNA	1	0
1	Agriculture: Livest...	Other cattle - s...	Low ammonia applica...	1	0
1	Agriculture: Livest...	Other cattle - s...	Low ammonia applica...	1	0
1	Agriculture: Livest...	Dairy cows - IIq...	Covered outdoor stora...	1	0
1	Agriculture: Livest...	Dairy cows - IIq...	Combination of CS_L...	1	0

Optimal emission map





Next steps:

- ➔ Improve the action databases for Alsace and Emilia – Romagna, special focus on non technical measures.
- ➔ Further test and improvement of the RIAT+ tool
- ➔ Prepare actions plan to reduce air pollution in the Emilia-Romagna and Alsace regions
- ➔ Disseminate the results (RIAT+ sw and user guide)



Impact on Environmental Policy & Governance?

- ➔ Find the best cost/effectiveness strategy to address air quality problems by local authorities
 - Which actions in addition to the CLE we should apply ?
 - Which are the costs of that actions ?