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An example RIAT+: Regional Integrated Assessment Tool

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1^o Appraisal conference



OPERA: Operational Procedure for Emission Reduction Assessment



LIFE09 ENV/IT/000092 (2010-2013)



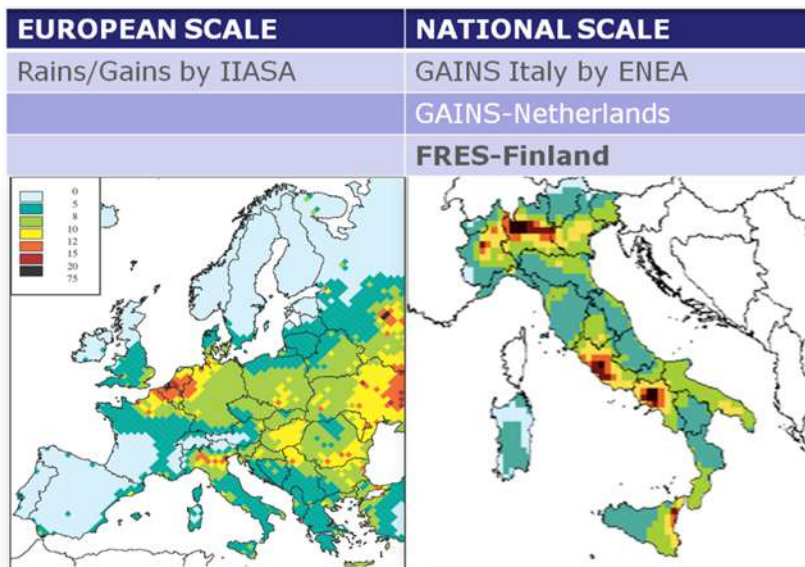
Coordinator and partner

Stakeholder



TEAM

The definition of a methodology and its implementation in a software tool, RIAT+, to support regional/local authorities in the definition, application and evaluation of air quality plans policies, devoted to the reduction of population exposure to PM₁₀, PM_{2.5}, NO₂ and O₃.



Is it possible to develop, at regional scale, a tool to plan cost-effective air quality policies harmonized with national and EU actions



GOAL

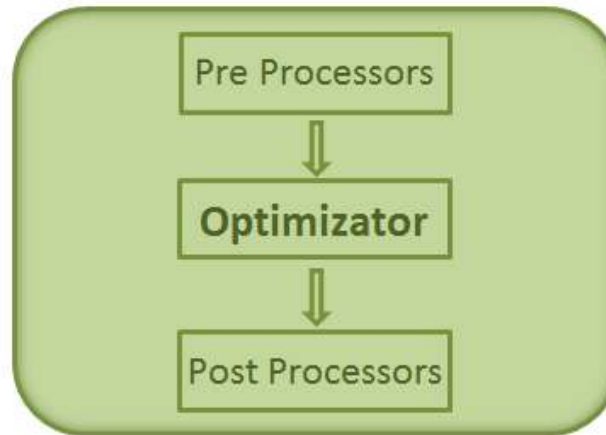


Scenario analysis:
assesses the impacts of
proposed actions

**Optimization
approach:**
identifies emission
reduction measures
maximizing the
environmental benefits
and minimizing costs



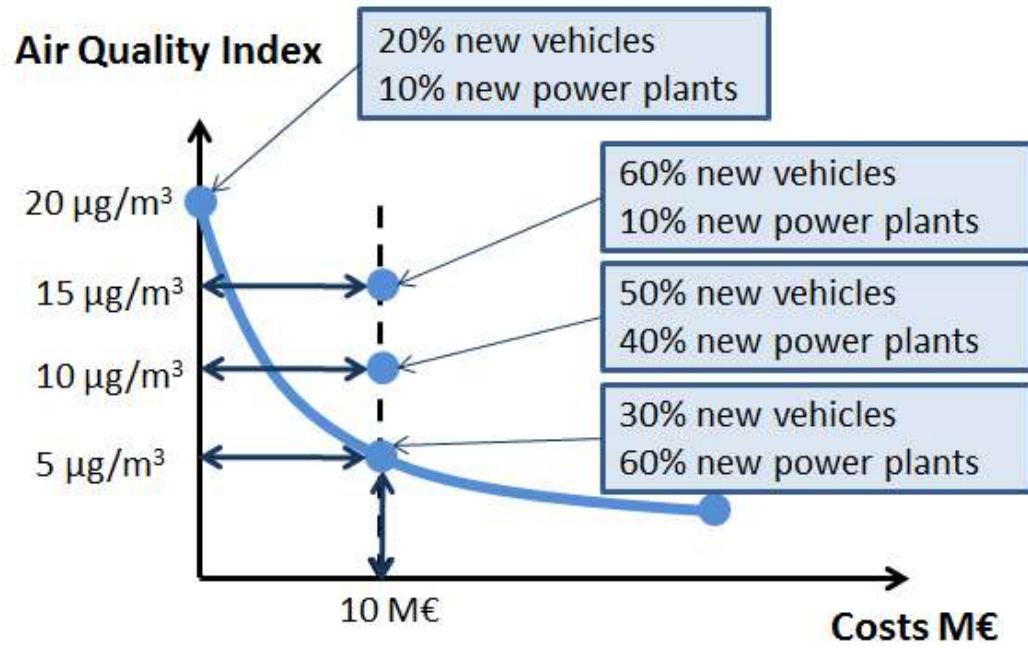
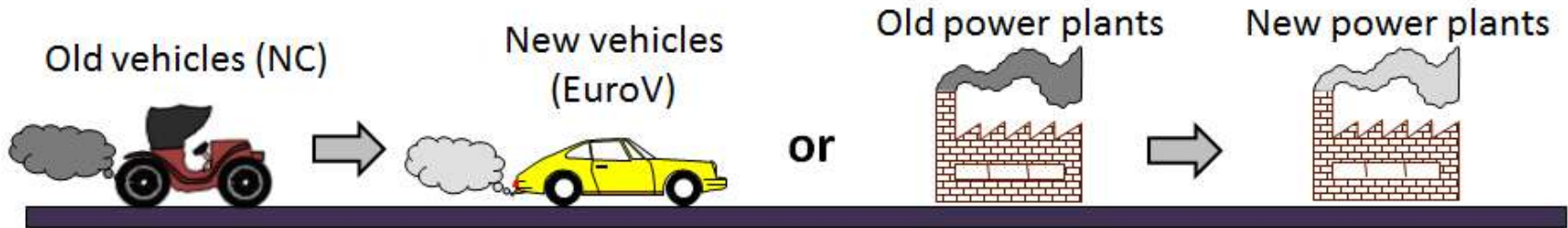
INPUT



RIAT + CORE SYSTEM

OUTPUT





Optimization: find the set of Application Rates which minimize the Air Quality Index for a given cost.

Total Cost [M€]

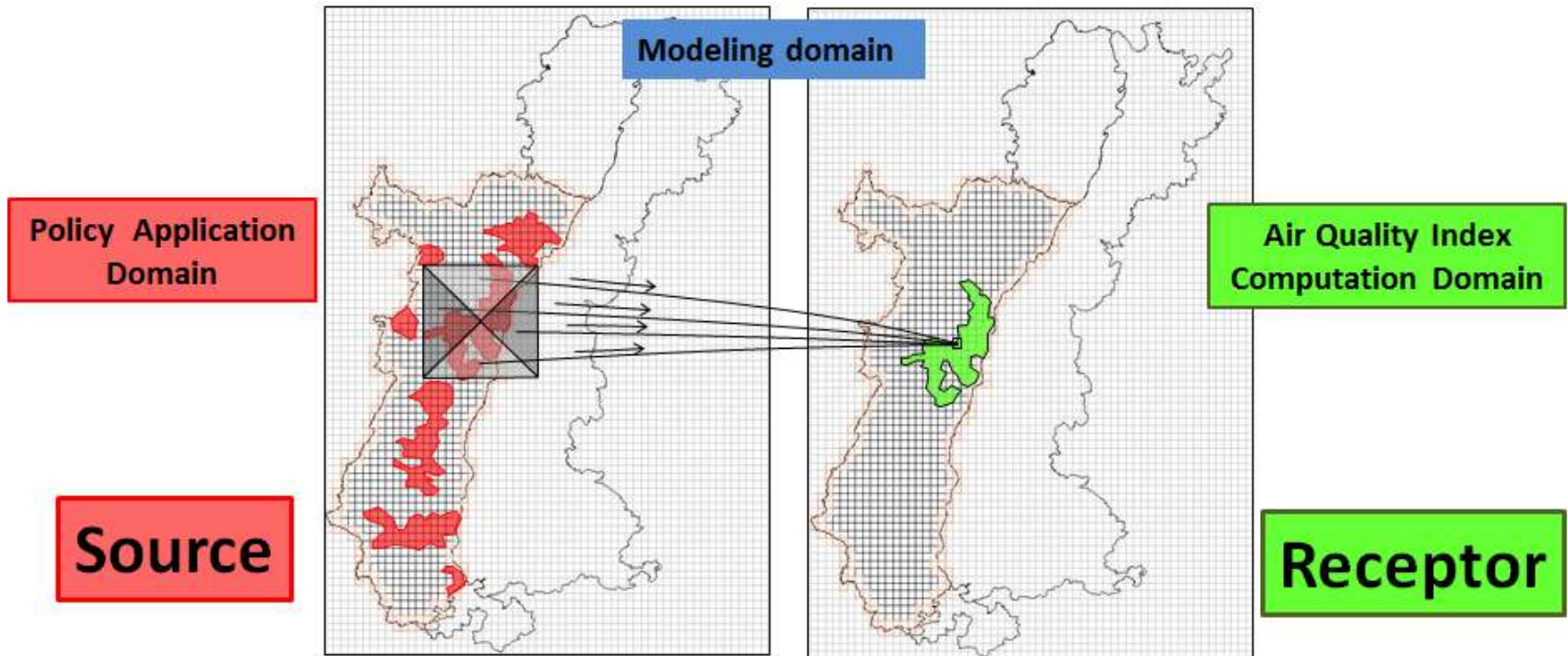
$$C = \alpha_1 \cdot c_1 \cdot A_1 + \alpha_2 \cdot c_2 \cdot A_2 + \dots$$

Application rates for the different technologies

$$\min [AQI(\alpha_1, \alpha_2, \dots, \alpha_t)]$$

AQI for a pollutant q

CORE: OPTIMIZATION



The results of the different scenarios are used by a neural network to calculate a relation between the AQI and any kind of emission reduction (i.e. any kind of application rates).

$$AQI(x, y) = \text{fct} \left[\left(AQI_s, \gamma_{s,1} E_1, \gamma_{s,2} E_2, \dots \right); \left(\alpha_1, \alpha_2, \dots \right) \right]$$

AQI and reduced emissions for all scenarios s including the base case ($s=0$)

All the AQI obtained with the different reduced emissions of the scenarios including the base case ($s=0$)

Application rates of the different technologies



Optimization: Find the best application rates of 3000 different technologies.



legislation

Air Quality Index

CLE: Current Legislation

Global technical measures

Global + Local technical measures

All measures



Cost over CLE [M€]



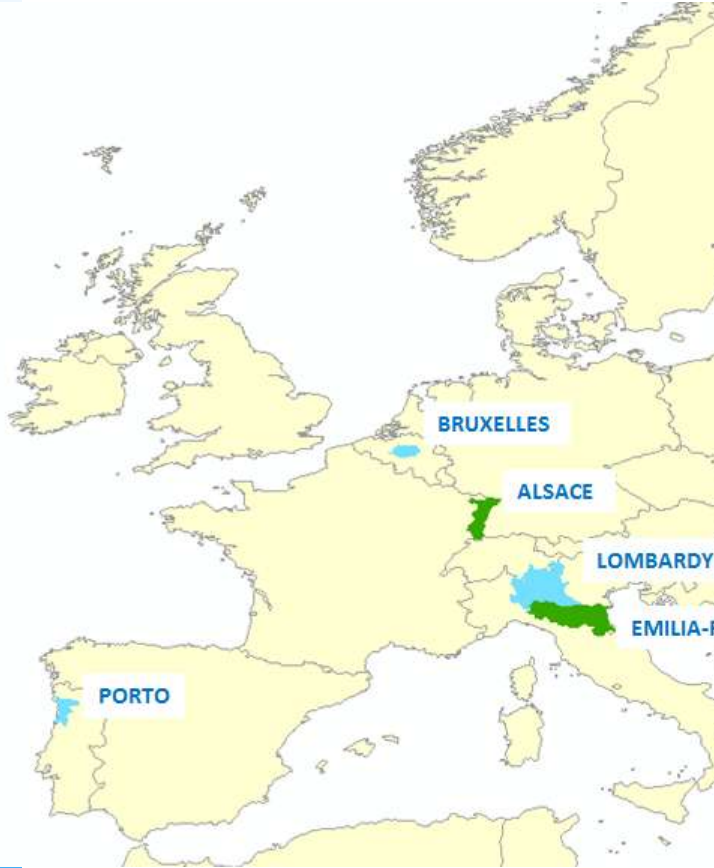
RIAT+ is an IAM sw focused at regional scale with a user friendly interface. RIAT+ main features are:

- manage different input (e.g. gridded or polygonal, annual or seasonal, SNAP detailed or aggregated emissions);
- various policies could be evaluated with RIAT+: emission abatement, energy efficiency and NTM
- multi objective and cost effectiveness (optimization), detailed and aggregated (scenarios analysis)

To apply RIAT+ in your Region at first you need to download RIAT+ installation kit (the software, the user guide, and two regional test cases) from the OPERA website. RIAT+ is free of charge: only an end user license agreement (EULA) should be signed online.



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- Background
- OPERA Project
- Tasks/Actions
- Opera tool
- Results
- References
- Dissemination
- Meeting
- News
- Web Survey
- Links
- Partners
- Contact us
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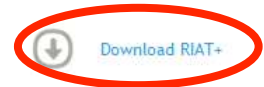
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RIAT+

A regional integrated assessment software to plan local cost-effective air quality policies harmonized with national and European actions.

The OPERA project finished in September 2013 but RIAT+ community is still active. Joining the RIAT+ community is easy: simply fill out the registration form; then you can download RIAT+ for free, and immediately start working on your air quality plan! Click [here](#) for a description of RIAT+ software.



FAQ



Tutorial video



RIAT+ documentation



Contact us



RIAT+