

LIFE 15 IPE IT 013



Data sharing, air quality evaluation and integrated assessment in the Po valley and Slovenia target area

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coordinators of actions (A3, C1, C3, D5)

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What: a permanent data sharing infrastructure and the air quality model (C1, C2, C3 actions)

The IP will realize a common and permanent infrastructure for data sharing, monitoring and evaluate air quality at the Po and northern Adriatic basin scale, where applicable. The tools that will be implemented on the whole target area are:

- 1. a common system for monitoring the environmental effects of the IP and the AQPs;
- 2. a modelling system and data processing tool for the assessment of the effects of PREPAIR and the regional air quality plans and the trans-boundary effects between Po Valley and Slovenia;
- 3. an Integrated Assessment Model for evaluating the cost-effectiveness of the actions.

This infrastructure will be managed by the IP partners also after the end of the project.





Why we need a common and permanent infrastructure for data sharing ?

Main gaps in achieving the objectives of air quality plans:

- air quality plans were not fully effective in achieving a sufficient reduction of PM, NO2 and O3 concentration levels below the EU limit values.
- the high complexity of the regions from a geographical, meteorological and socio-economic point of view, make the resource-demanding of measures to be adopted consistent;
- need to coordinate measures in a widespread area, to strengthen multi-level and cross-sector governance and to increase the capacity building of public and private operators;
- insufficient coordination between the regions on monitoring, modeling, assessing and forecasting air quality.

The responses from Prepair:

- Common technical tools are necessary for the design of the actions and monitoring of the environmental effects of the measures.
- Today those tools are available for each of the regions of the Po valley and Slovenia.
- The actions will integrate most of the existing tools at a basin scale. The Italian and Slovenian air quality models will be extended to the whole target area.
- The results will be applied for improving the means applied in the two target areas.
- This action will be realized also with the support of the Integrated Assessment Tool RIAT+ developed by the Life+ OPERA project according to the model GAINS-Italy and implemented on the Po valley domain.



THE STRATEGY FOR THE IMPLEMENTATION OF THE OVERALL PLAN









Action A - PREPARATORY ACTIONS

- This group of actions has the general goal to collect the input data needed for designing and implementing the air quality plans monitoring infrastructure. Actions A will deliver:
- A common data set of emissions data for the Po valley and Northern Adriatic basin;
- a data set containing a list of quantitative data about all actions/measures planned by the regional/local AQPs and by the IP itself
- and a common system for the periodic upgrading of the actions/measures data;
- a preliminary assessment of the expected pollutant levels in the target areas after the full implementation of all local AQPs.
- the transboundary effects of the Po valley AQPs on the Slovenia target area will be preliminary evaluated.





Long term Strategy for the implementation of the overall plan:

- The monitoring activities will deliver periodic reports with the implementation rate of concrete actions (action D1), the emissions of pollutants (action D2) and the state of the air quality (action D5).
- These reports will be used, at the beginning of the phase 3, for checking the effectiveness of concrete actions realized by PREPAIR and AQs plans on air quality in the Po Valley and Slovenia.
- The results will be evaluated by the steering committee (action F3) and the Po Basin Board which will decide about the need of further and/or corrective actions.
- These actions can be assessed by the support of the Integrated assessment model RIAT+ implemented on the target area.

Action D - MONITORING AND EVALUATION

- The monitoring and evaluation of the impact of the project actions will be guaranteed for the overall duration of the project.
- Actions D will periodically collect data about the successful implementation of the measures of the Air quality plans and of PREPAIR Actions.
- During actions D the technical tools set-up by the concrete actions will be applied on a regular basis for upgrading the common data bases on emissions and the air quality assessment by monitoring and modeling data.
- The air quality and emissions data collected on a regular basis by the data sharing infrastructure will be used for producing reports on air quality assessment on the Po Valley and Slovenia.



THE AQ PLANS MONITORING SYSTEM









Data sharing infrastructure (1)

Data to be shared:

- "raw" AQ observations (standard AQ monitoring networks)
- "derived" AQ monitoring data (eg.: real time AQ maps; monthly assessment of exposure)
- AQ forecasts and evaluation (produced by one or more models)
- ancillary data: meteorological observations, AQ observations from "special stations"

Constraints

- AQ data available from different sources must always be consistent
- Prepair partners must have real time access to all data (to produce "derived" products)
- Appropriate RT products must be made available to authorities and population But:
- AQ data undergo several steps of validation, some of them are delayed (also of months)



policy is under discussion)



Data sharing infrastructure (3)



Examples of products:

- AQ observations
- AQ forecast and evaluation



ARPA VENETO: Data from the AQ stations network



Arpae Emilia-Romagna: Data from the AQ stations network







Data sharing infrastructure (3)

egen

fino a 60

µg/m³

da 60 a

120 µg/m3

da 120 a

160 µg/m³

da 160 a

180 µg/m



Man data @2017 GeoBasis-DE/BKG (@2009) Google

Termini e co

lizioni d'uso



- AQ observations
- AQ forecast and evaluation

Arpae Emilia-Romagna Daily NO2 forecast over the Po Valley (daily mean microg/m3 02/02/2017)



Legenda PM₁₀ (µg/m³)

oltre i

240 µg/m³

da 180 a

ARPA Piemonte Annual mean evaluation











Example of actions

(from Prepair C actions, under compilation by WG A2):

Technical

- Agriculture
 - Fertilizer use without urea
 - Animal house adaption
 - Covered outdoor manure storage;
- Biomass burning:
 - High efficiency stoves
- Traffic:
 - New vehicles
 - Electric car

Non-technical

- Biomass burning:
 - Training for installer of biomass systems
- Traffic:
 - Cycling line
 - TLZ
 - Velocity Reduction



CORE: OPTIMIZATION











Output: abatement measures









The PREPAIR actions on air quality evaluation

Emissions and special stations (ARPA Lombardy)

- A Preparatory
 - A1 Emissions data set
 - A4 Setting the measuring protocols for special stations
- C Concrete
 - C2 Implementing the emission data warehouse
- D monitoring the impact of project actions
 - D2, D3, D4 Periodic update of emission data , focus on wood consumption, traffic flow and
 - D6 Monitoring of the environmental effects of the plan by special stations
- E public awareness and dissemination
 - E1/E2 communication and information

Air quality assessment and environmental accountability

- A Preparatory (Arpae)
 - A2 the "actions and measures" data set and web based platform for collecting data
 - A3 preliminary assessment of the AQ plans impact on air quality
- C Concrete
 - C1 Implementing the data sharing infrastructure
 - C1 Implementing the Air Quality models
 - C3 Implementing the Integrated Assessment model
- D monitoring the impact of project actions
 - D1 Periodical collection of the application rate of measures already planned
 - D5 Regular assessment (monthly/yearly) of the air quality of the Po basin
 - E public awareness and dissemination
 - E1/E2 communication and information



With the contribution of the LIFE Programme of the European Union

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The End

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