

24 SHERPA: A tool to support regional authorities in designing and assessing the benefits of air quality plans

Type of support / service available

The SHERPA tool (Screening for High Emission Reduction Potentials on Air quality) is a user-friendly interactive tool that can support regional and local authorities in designing air quality plans. By following a three stage process: Source Allocation, Governance and Scenario analysis, a policy maker can investigate how much of an improvement in air quality can be made from acting locally, in which sectors actions should be taken (City, Province, Region, State) and how much additional improvement can be gained from coordinating these abatement measures with neighbouring areas.

Relevance for regional authorities

National, regional and city authorities have a legal obligation to maintain certain levels of air quality in their territories. Whenever these values are not met, authorities are obliged to design plans to improve air quality. Part of the plan includes an assessment of the impact of the pollution abatement measures proposed. However national, regional and city authorities frequently lack the proper tools to perform such analysis (see the results of the APPRAISAL FP7 project¹). SHERPA has been designed to provide practical assistance to regional and local authorities in performing these tasks and designing air quality plans.

Policy context

Although significant progress has been made in Europe regarding air quality in recent decades (EEA, 2015), problems still remain acute for some pollutants. In 2015, 22 out of 28 EU countries did indeed report excesses of the 2008 Air Quality Directive (AQD2008) limit values, for O₃, NO₂ and/or Particulate Matter (PM₁₀) (EEA, 2015). While these air quality excesses were in the past widespread across Europe, they now tend to concentrate in specific regions like the Po Valley, the South of Poland area or the Benelux for PM, and in cities for NO₂². As mentioned above, authorities that exceed the air quality directive limit values are obliged to produce an air quality plan, analysing the impact of the measures that will be taken to avoid future excesses.

How to use

SHERPA is a user-friendly tool³ that allows for a rapid exploration of potential air quality improvements resulting from national/regional/local emission reduction measures. SHERPA takes the policy maker through the three-stage process described below.

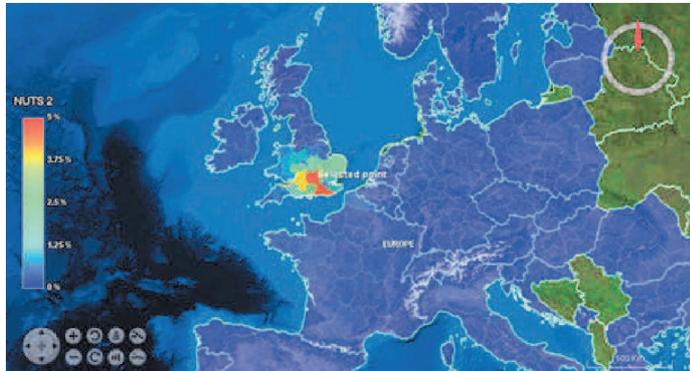
1. **Source allocation:** the policymaker defines the area of interest (city, province, region, etc.) and SHERPA evaluates the degree of control that the policymaker has over air pollution within this area. If most of the pollution is due to emission occurring outside the area, this level of control will be low (and vice-versa). During this step, SHERPA provides information on: (1) the amount of pollution originating from outside the area under consideration; and (2) the breakdown in terms of activity sectors and precursors for the pollution originating from emissions from within the area.
2. **Governance:** The next step identifies the sources (regions, countries, etc.) and activity sectors of the air pollution originating from outside the area of interest. For example, primary emissions from agriculture take time to form secondary particulate matter and thus have an effect on air pollution

1. <http://www.appraisal-fp7.eu/site/index.php>

2. Kieseewetter et al., 2015

3. It is available for download from <http://aqm.jrc.ec.europa.eu/sherpa.aspx>

over longer distances than traffic emissions that directly impact concentrations at the local scale. This allows policy makers to assess the benefits of regional or even wider scale collaboration in order to increase the efficiency of their abatement strategies on a sectorial basis.



Example of scenario analysis result.

3. **Scenario analysis:** In the scenario analysis step, the policymaker can experiment with different sector-specific emission abatement strategies in terms of both intensity and spatial coverage (city, province, region, country, etc.) in order to identify realistic emission reductions that achieve the desired improvement in air quality for the chosen area.



Example of scenario analysis result.

Impact

SHERPA helps policy-makers do the following:

- Identify the maximum air quality improvement that can be achieved by acting only in their area of interest (city, province, region)
- Identify the key sectors and pollutants that can be the subject of abatement actions for this given area
- Identify the contribution to air quality in their area of interest that comes from emissions in neighbouring areas and the key sectors and pollutants
- Identify the potential additional gains in air quality in their area of interest from coordinated abatement strategies addressing not just their area of interest and key sectors, but also surrounding areas and their key sectors.