Output factsheet: Tools

Version 2

Project index number and acronym	CE1226 AWAIR
Lead partner	Regional Agency for the prevention, environment and energy in Emilia-Romagna Region
Output number and title	O.T1.3 Transnational common methodology for measuring effectiveness of actions in case of SAPES
Responsible partner (PP name and number)	Helmholtz Zentrum München – German Research Center for Environmental Health PP8
Project website	https://www.interreg-central.eu/Content.Node/AWAIR.html
Delivery date	February 2019, updated on July 2021

Summary description of the key features of the tool (developed and/or implemented)

In this document we present methods to verify the effectiveness of actions which could be implemented during SAPEs in order to reduce the air pollutant concentrations in the FUAs. The effectiveness of such actions can be verified in terms of drivers (for example by traffic counts in case of traffic flow reduction). A more common way of assessing the effectiveness of measures is the comparison of air pollutant levels between "normal days" and "mitigation action days" taking as many as possible confounding factors into account. This raises the question what parameters should be taken into account for monitoring effectiveness. As PM_{10}/$PM_{2.5}$ are regulated by limit values, both parameters are obviously key parameters. However, there are reasons for considering other parameters in addition, for example Ultrafine Particles (UFP) or Black Carbon. These parameters are not included in the air quality set of parameters to be monitored by official network. By now no limit values were set by EU for those parameters. Nevertheless, both parameters have a relevant impact on health and are strictly linked to combustion sources in general and traffic related air pollutants in particular. In addition to the choice of parameters, a second important step is the decision which approach should be used to assess effectiveness of actions. There are two main possibilities: spatial (comparison between monitoring sites within and outside the FUA) or temporal approach (comparison of period of operation of mitigation actions with periods without mitigation actions).

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Last but not least we described the methods for the assessment of effectiveness of mitigation actions aimed at reducing personal exposure. For this, personal measurements in two groups of participants were proposed. The mitigation action will be applied only to one group (case group) and not to the other one (control group). Personal exposure measurements will be conducted in both groups and the results compared.

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NUTS region(s) where the tool has been developed and/or implemented (relevant NUTS level)

The concerned NUTS regions comprise the FUA of Parma (Italy), the FUA of Katowice (Poland) and the FUA of Zugló (Budapest, Hungary).

Expected impact and benefits of the tool for the concerned territories and target groups

There is number of methods for assessing the effectiveness of adaption and mitigation actions specifically for the AWAIR project. We propose a portfolio of short-term measures (driving ban on certain vehicles, decrease in heating for offices and houses, free public transport during SAPEs, ban of secondary heating systems (e.g. wood burning stoves), speed limits on motorways). An improved surveillance system including more monitors and indicators (NO/NO2, UFP, BC) are useful for assessing the effectiveness of all possible mitigation and adaptation actions. All project partners have agreed on the common portfolio described in this report. Partners can choose the most appropiate method of verification of the propsed adaption and mitigation actions and select the best indicator for their respective FUA.

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Sustainability of the tool and its transferability to other territories and stakeholders

The proposed portfolio provides a basis for the selection of possible adaption and mitigations actions and methods to verify the effectiveness of those actions. The selection is site specific. All three FUAs of AWAIR have implemented a system for surveillance of ambient air pollution and prediction of SAPEs. This system was extended by including additional monitors in Katowice and Parma and improving the forecasting model of the air pollution for the next days. In addition, Katowice and Parma have implemented improved public information systems on current and predicted air pollution level by screens in the streets as well as in

nurseries and kindergartens. In all FUAs daily information on air quality is given via websites and an app created within the AWAIR project.

As the tool comprises a list of possible actions, it can easily be transferred to other territories, similar to the FUAs within this project which choose the most convenient and appropriate measures for their territory.

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Lessons learned from the development/implementation process of the tool and added value of transnational cooperation

The developmet of this deliverable showed that the impact of local measures in case of SAPEs is different for different pollutants. For more locally formed pollutants (such as UFP or NOx) there is more opportunity to influence peak levels on an urban (local) scale. For the secondary PM fraction, only permanent measures applied on a regional scale will reduce this fraction. Without such measures, only very large reductions in the primary fraction emissions on a local scale might achieve compliance with the limit value.

The second lesson we learnt is that it is not possible to simply transfer schemes between locations without consideration of local conditions which determine the effectiveness of selected mitigation actions (e.g. background pollutant levels, pollutant formation and transport mechanisms, frequency of emissions from various sectors).

In the end, the decision which specific actions could be implemented in a given FUA is the task of the politicians.

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References to relevant deliverables and web-links
If applicable, pictures or images to be provided as annex

Weblink: https://www.interreg-central.eu/Content.Node/AWAIR/AWAIR.html