

A strong basis for environmental legislation

- ★ The European Commission recently financed a study to review current air quality legislation and to assess how their public acceptability can influence the effectiveness of future policies. This is a context in which the work of the SEFIRA project takes on real importance, as project coordinator **Professor Michela Maione** explains

The European Commission depends on accurate, reliable data in drafting and implementing air quality legislation, such as the National Emissions Ceiling Directive. While the effects of air quality on health are of course a prominent concern, legislators also need to consider the likely socio-economic impact of legislation, issues that the SEFIRA project is addressing. “We have quite a diverse consortium in SEFIRA, with competences from the hard sciences, along with social scientists, economists, geographers and others,” says Professor Michela Maione, the project coordinator. The project aims to create trans-disciplinary scientific and socio-economic resources to support the ECs review of existing air quality legislation and the eventual implementation of updated measures; Professor Maione says that the trans-disciplinary nature of this work is challenging. “Scientists from different disciplines tend to speak very different languages. So it was not very easy at the beginning to put all these things together, and to start the project,” she explains. “Then we are using discrete choice models, which have never previously been used in this field. They are being used to evaluate the acceptability of air quality policies.”

These policies have generally sought to limit the emissions of harmful pollutants. There is a clear distinction here between emissions and the levels of a pollutant that may be present in the atmosphere. “Emissions are the quantity of a pollutant that is emitted by a source over time. Levels are the concentration that you have in the

atmosphere - that’s the consequence of the emissions,” says Professor Maione. The European Union has been actively trying to improve air quality since the 1970s, partly through controlling emissions, yet such policies must be accepted by the public if they are to be effective, an issue which is central to the SEFIRA project’s research. The project’s scope encompasses elements of atmospheric sciences, environmental and legal sociology, anthropology, geography and economics, and researchers are bringing together data gathered from questionnaires and discrete choice models.

Discrete choice models

This latter aspect of the project’s research relates to individual choices and decisions rather than the overall economic impact of air quality legislation. While many of us would agree when asked that it’s important to improve air quality, we tend to be a little more circumspect when we are confronted with the practical effects of legislation. “What we do in SEFIRA is to evaluate whether a citizen is likely to accept a policy over another. What trade-offs are they willing to make?” outlines Professor Maione. Existing survey methodologies can gather data on people’s general attitudes towards air quality, but not the changes they’re ready to make to improve it; by contrast, discrete choice models can be used to evaluate the trade-offs people

are willing to make. “With discrete choice models you can ask the respondent how much they are ready to pay to improve the environment. Would they prefer to pay money, or would they prefer to reduce the use of polluting means of transport?” says Professor Maione. “Then of course we also know that production of meat and dairy products are major factors in atmospheric pollution. So would people be willing to reduce their intake of those foods?”

The project presents a combination of these choices to citizens in seven countries, whose responses are then evaluated in the discrete choice model. These choices relate not only to financial and lifestyle-related issues, but also wider, more long-term considerations. “Premature death is another attribute – how much do you want to reduce the total number of premature deaths? Then there’s the distribution of the policy cost. For example, would you prefer that people who pollute more pay more? Or do you prefer that everybody pays the same? These are the kinds of attributes that we have in our exercise,” says Professor Maione. This work is built on solid scientific foundations and fundamental research into air quality. “When we started this dialogue with social scientists and economists, we immediately found out that there was the need for a common language,” continues Professor Maione. “The most recent research findings are very useful in building this kind of exercise. So, we base our inputs into the model on the development of these exercises, and use our scientific expertise to disentangle some common misunderstandings.”

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The project is also involved in outreach work, heightening awareness among citizens of recent scientific findings, so that the wider public is well-informed about air quality issues. Several stakeholder meetings have been held, where scientists have explained the scientific basis for air quality legislation to citizens and stakeholders. "The relationship between air quality and climate change is becoming clearer. This is not really well known, and it's something that we are trying to explain and measure; what is the real awareness of this problem among citizens?" says Professor Maione. While the majority of people are aware of environmental and air quality issues, Professor Maione says they often see industry as being the main cause of atmospheric pollution. "Most of the respondents say that they think industry is primarily responsible for atmospheric pollution in their country. I think that's an interesting answer – they kind of delegate the responsibility for dealing with atmospheric pollution to other people," she outlines. "Only a very small percentage quote domestic waste, domestic heating and agriculture, as important factors in atmospheric pollution."

This runs contrary to recent scientific findings, which have shown that domestic heating and biomass burning are in fact among the main factors behind atmospheric pollution in many parts of Europe, reinforcing the importance of the project's outreach work. Researchers aim to gauge public opinion and awareness of the issues around air quality. "We are trying to explain and also to measure; what is the real level of awareness of this problem among citizens?" says Professor Maione. The project data will be made available once it has been completed and validated, while Professor Maione says there are also plans to bring their findings to the attention of policy-makers.

"We are in discussions with the European Commission and the European Parliament about presenting our results to the environmental committee. On top of that, we also want to write more focused policy briefs, that we will translate into all the different languages of the parties represented in the consortium, so that we can also reach policy-makers and administrators from other countries within the consortium," she explains.

Air quality legislation

This is central to building a common, broad-based approach to air quality legislation among European countries, reflecting the fact that pollution often crosses national and administrative boundaries. Pollution may affect an area quite a long distance from where it was generated, so the European Community has put policies in place to limit total emissions. "The current air quality directive was released in 2008. In 2013, the Director General Environment issued a new policy, what they call an air quality package, with a proposal to improve the 2008 air quality directive that was approved by the parliament in 2008, but the process was halted. So the National Emissions Ceiling Directive is still under discussion," explains Professor Maione. The European directive is also linked to wider conventions, in particular the 1999 Gothenburg protocol, which set emissions ceilings for several chemical compounds. "The main atmospheric circulation is from West towards East, so Europe is under the influence of pollution from the North American continent," says Professor Maione.

The direct cost to society of air pollution is estimated at around 23 billion euros a year, underlining both the economic and social importance of improving air quality. However, legislation must be built on a solid understanding of people's attitudes if it is to achieve the desired impact, and the work of the SEFIRA project will have a crucial role to play in underpinning future policy decisions.

"The discrete choice models are being used to evaluate the acceptability of policies in the field of air quality," says Dr Maione. Issues around air quality will of course persist beyond the term of the SEFIRA project, and Professor Maione plans to pursue further collaborative research in this area in future. "The EC has now issued a call, in Horizon 2020, for the provision of tools to administrators that will improve air quality and reduce greenhouse gas emissions in cities, and we have been in touch with other consortia on some proposals," she continues. "We hope that we will also have the opportunity to focus on some of these various topics that we have analysed in the SEFIRA project. For example food production, and the links with air quality and climate change."

At a glance

Full Project Title

Socio Economic Implications For Individual Responses to Air Pollution Policies in EU (Sefira)

Project Objectives

SEFIRA has the objective of creating a European coordination of transdisciplinary scientific and socio-economic resources in order to support the review and implementation of air quality legislation by the European Commission (EC) led by DG Environment. Individual behaviours and choices have been analysed in a socio-economic context ranging from the local to the European level. The main fields involved in the action are atmospheric sciences, environmental and legal sociology, anthropology, geography and economics.

Project Funding

Total requested EU contribution is 998,000 Euro

Project Partners

Please refer to this link For full partner details, please visit this link; <http://www.sefira-project.eu/ad/12-2/>

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Michela Maione is associate professor of Environmental Chemistry at UNIURB. Her research activity is focused on the changing composition of the atmosphere and implications on Air Quality and Climate change. She is responsible, in the frame of various international initiatives, for long-term observation programmes of climate altering species, including short-lived climate forcers and of atmospheric pollutants. She has been PI in several EC funded projects and is currently the coordinator of the EU FP7 coordination action SEFIRA (Socio-Economic implications For Individual Responses to Air pollution policies in EU +27).

