



Emerging Research Needs on Air Quality

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G7 2017, 9 June 2017– BOLOGNIA, ITALY

Research findings in support of the EU Air Quality policy review

In 2013 this report synthesised the output of EU-funded projects in the field of air quality...

*Identified several **key questions** on:*

Health Impacts

Particulate Matter

Ozone

Nitrogen

Air Quality and Climate

Integrated Assessment for Policy Design





APPRAISAL



Appraisal project

APPRAISAL has significantly contributed to fix the state of the art of the Integrated Assessment Methodologies for Air Quality planning.

EU Air quality plans and projects database:
<http://servizi.appraisal-fp7.eu/appraisal>

This database allows collecting information on the different assessment methodologies used in European Member States with the purpose to identify the strengths and weaknesses in current practices and provide guidelines to users, to **help in the assessment of the impact of local/regional air quality plans.**

SEFIRA



Addressed the Integrated Assessment for Policy Design issue

Limited value of the cost-benefit analysis in assessing the wider acceptability of policies, particularly in relation to the impact on individual behaviour.

16100 interviews in 7 countries to assess the **acceptability drivers** and policies and the acceptable **trade-offs**.

Individual Acceptability is crucial for the implementation and effectiveness of policies.

HORIZON 2020 - SC5-04: Air quality and carbon footprint in urban areas

Large number of proposals

Broad scope: development **and** rapid deployment of technology, citizen awareness, tools for policy makers, integration of assessment, monitoring, modelling, technology **and** strategies, involvement of main source sectors, ...

Wide range of expertise required

- **Social Science dimension**
- **Users' view**

HORIZON 2020 - SC5-04: Air quality and carbon footprint in urban areas

iSCAPE 5.8 million €, 36 months, 14 partners

- Evaluation of local measures influencing citizen transport choice
- Passive control systems (low boundary walls, green infrastructure, photocatalytic coatings)

Clair-CITY 6.8 million €, 48 months, 16 partners

- Citizen behaviour/multi stakeholders dialogue
- Co creation of roadmaps towards a clean air/low carbon healthy future in 6 pilot cities in IT, NL, PT, PL, SI and UK.
- Apps, Serious Game

ICARUS 6.4 million €, 48 months, 18 partners

- Integrated monitoring and modelling
- Impact assessment and Decision Support System
- Policy evaluations and creation of emission pathways

iSCAPE



Improving the Smart Control of Air Pollution in Europe

Provides **practical solutions** on improving air quality in 6 European cities:

- Developed living labs pilot projects
 - for Passive Control Systems
 - for Behavioural Changes in transport mode choice and activity patterns
- Co-designed with cities

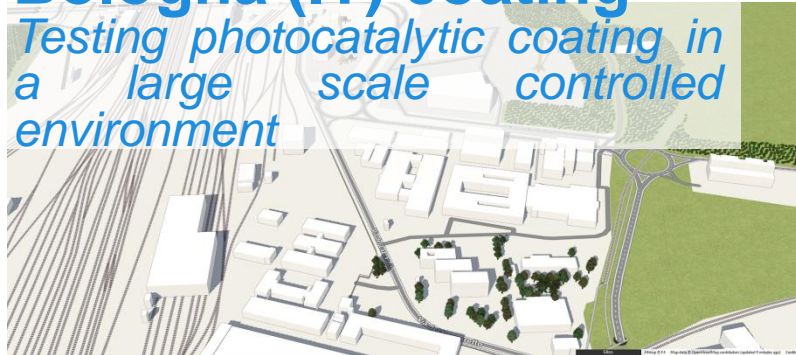
Contribution to **NEC directive**



iSCAPE – Living Labs

Bologna (IT) coating

Testing photocatalytic coating in a large scale controlled environment



Dublin LEGO walls

Assessing effects of low boundary walls and engaging citizens



Bottrop (GE) wandering trees:

Involving citizens to promote positive effects of green areas on climate, air quality and health



Hasselt (BE) sustainable transport :

Changing travel behaviour for greener cities



iSCAPE –results

BBC News featured iSCAPE research[1] on green infrastructure in open road & built-up street canyon environments

Key findings

→ Significant reduction of air pollutants by

- Green walls: >20%
- Green roofs: >9%

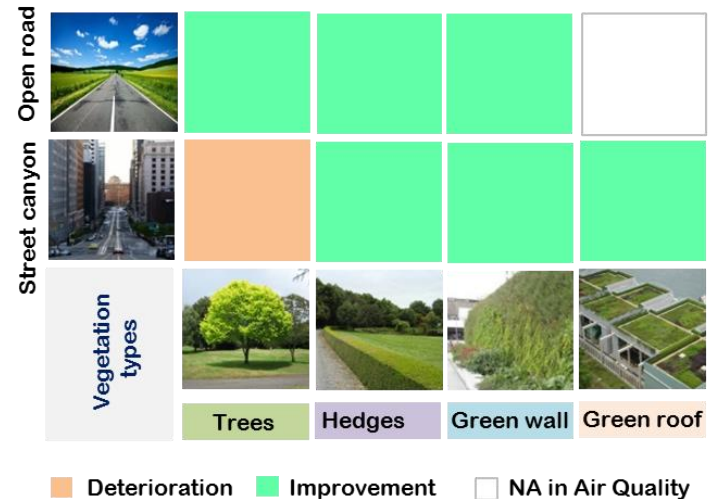
→ Hedges improved air quality in street canyon by 24–61%

→ Hedges and trees in open streets decreased 15–60% pollutant concentrations

Key recommendations

→ Hedges are recommended over trees in street canyon environments.

→ Proper design of hedges and trees in open roads - for 50% or more reductions



[1] Abhijith, K.V., et al 2017. Air pollution abatement performances of green infrastructure in open road and built-up street canyon environments—A review. Atmospheric Environment.

BBC news: <http://www.bbc.com/news/science-environment>



CLAIR-CITY



Citizen Led Air pollution Reduction in Cities

ClairCity aims to **assess and quantify the environmental impacts and health outcomes of citizens' behaviour and activities** to enrich city, national and EU level policy-making through:

- An innovative public engagement process and toolkit
- Evaluation of city policies relevant for air quality
- Empowering citizens to define city scenarios for reducing emissions in support of city policy packages
- Process evaluation and policy lessons

CLAIR-CITY – first results

- ✓ *Data activity inventory and online Data Portal*
- ✓ *Policy Baseline Analysis for 1st pilot city (Amsterdam)*



The project activities will

- ⇒ illustrate and quantify how EU Air Quality Directives targets can be achieved through low-cost high-gain behaviour changes
- ⇒ result in improved air quality, reduced carbon emissions, improved public health outcomes and greater citizen awareness



ICARUS



ICARUS

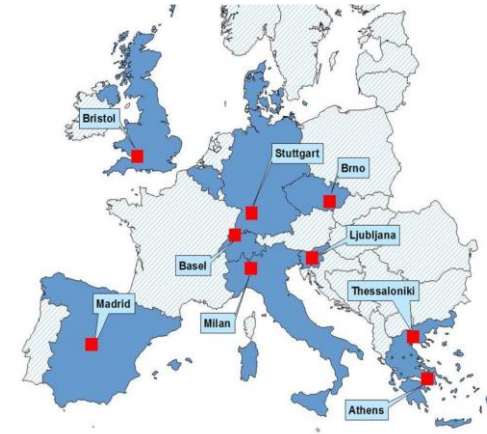
Integrated Climate forcing and Air pollution Reduction in Urban Systems

Develops **innovative tools for urban impact assessment** to evaluate policy impact and improve air quality measures in 9 European cities through:

- Developing of integrated models and tools
- Designing pathways and implementing win-win strategies for air quality improvements and carbon footprint reduction in cities
- Involving and informing citizens and pollution-generating stakeholders

ICARUS – first results

- ✓ *Emission inventory for the 9 pilot cities*
- ✓ *Monitoring campaigns in 6 pilot cities*
- ✓ *Testing of silicon bands for personal pollution exposure identification*



Will contribute to

- ⇒ a web-based guidebook for sustainable air pollution and climate change policy strategies
- ⇒ urban vision scenarios and transition pathways for green and healthy cities
- ⇒ awareness-raising and societal acceptance of emission reduction policies

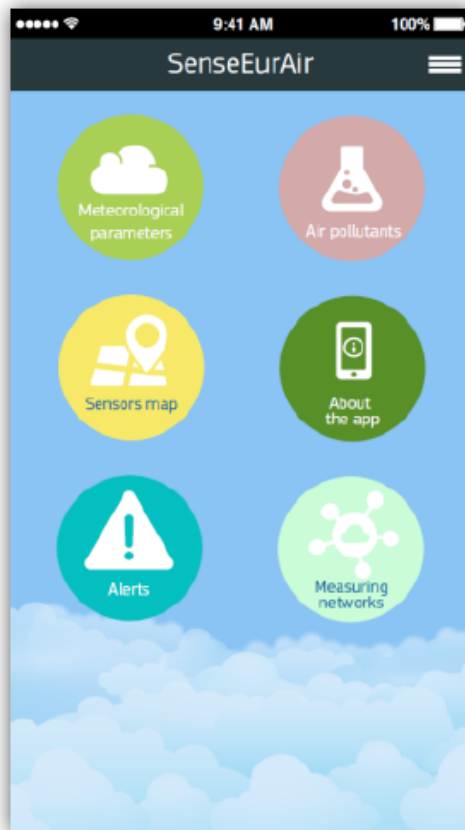




SenseEurAir



in MyGeoss



The app enables the public to receive and share information about the quality of ambient air

The app's purposes are:

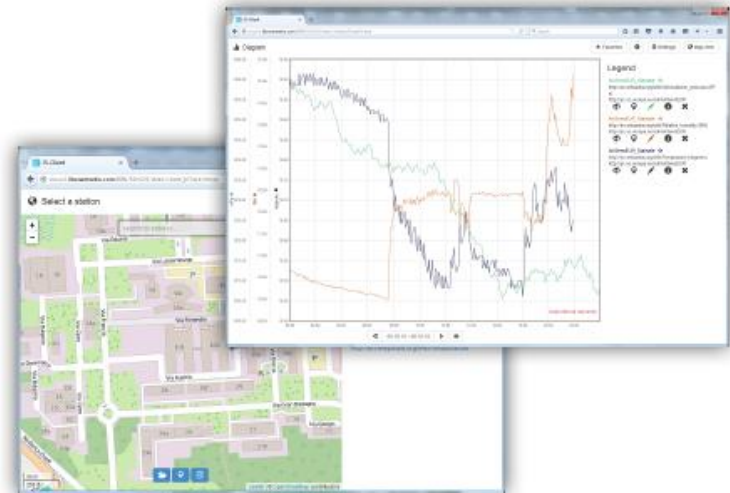
- 1) to inform users about the quality of ambient air;
- 2) to notify users in case of an exceedance of pre-set pollution thresholds; and
- 3) to display data from the air-sensing platform developed by JRC (www.AirSenseEur.org) or by other sensor networks that publish their data using sensor observation services compliant with the INSPIRE Directive.



SenseEurAir



The air sensing platform uses low-cost sensors. Both, the hardware of the platform and the software for data processing and publishing, are Open Source. They follow similar standards as governmental systems, and thus interoperate.



NEW CHALLENGES

IPCC AR 5

- Calls for science evidence on **the impacts of CO2 concentration on health**

Recent U.S. Global Change Research Program's report on "The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment" states that *"Reducing the health risks from climate change is a top priority "* – including impacts of climate change on AQ

PARIS AGREEMENT

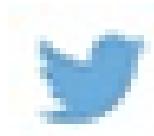
- Commitment to maintain warming level well below 2° C (1.5° C)
- Speed up the decarbonisation process
- Occasion for coupling climate change and air quality policies

Horizon 2020 – WP 2018-2020

- The EU will step-up its climate engagement also by increasing its budget dedicated to climate change related research and innovation
- The “Focus Area” ‘Building a low-carbon, climate resilient future’ will mobilise more than 1.1 billion €/year
- Follow the call on Climate change impacts on health in Europe (2018)
- ...and on Innovative nature-based solutions for carbon neutral cities and improved air quality (in 2020)

Thanks for your attention

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