



# CAPTOR

## Collective Awareness Platform for Tropospheric Ozone Pollution

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**List of Abbreviations**

|             |  |
|-------------|--|
| <b>APP</b>  | Application                              |
| <b>ARPA</b> | Regional Environmental Protection Agency |
| <b>CAP</b>  | Collective Awareness Platform            |
| <b>NGOs</b> | Non-governmental organization            |

## **Executive Summary**

### **Description of the work**

This report presents the intermediate results of citizen engagement with regards of the three Citizen Science instantiations in Spain, Italy and Austria. This report includes also national reports on the engagement activities and the empowerment strategies achieved.

### **Objectives**

The main objectives of the deliverable are:

- Describe citizen engagement actions during the first year of the project.
- Show citizen engagement performed in the Spanish, Austrian and Italian testbeds during 2016 summer campaign.

## 1. Introduction

The CAPTOR project aims to monitor the ozone concentrations in rural areas, using low-cost and widely distributed sensors, involving citizens in monitoring and in advocating public authorities for clean air.

In order to reach the project objectives, the involvement of people from regions affected by tropospheric ozone pollution in a citizen science project is foreseen as a key element.

Moreover, motivational issues of citizen scientists are the basis of our engagement plan. Attracting and retaining people who are willing to contribute with their skills, time, and effort for a scientific cause is an important pillar of citizen science work and thus receives more and more attention in all European strategies.

The general strategy used in the Captor project to involve people in citizen science activities revolves around the ozone monitoring activity. This report will be focused on:

- a) The strategy and the analysis used to locate the areas most affected by ozone pollution in the three test bed areas;
- b) The selection of volunteers for the first campaign and;
- c) A first “hand-on” experience with the first CAPTOR nodes produced in the project and their calibration with instruments of the national Air quality Agency.

Finally, another aspect focalised in this report, useful to emphasize and to accredit the citizen science role in the project, is the participation and presentation of CAPTOR project in technical and scientific meetings regarding the air pollution.

## 2. Citizen engagement report – year 2016

In the first year of the project (2016), citizens were engaged in different ways in the three test areas. In fact, the first year of captor's monitoring was centered to test the entire system and to improve the overall performance of the captor's nodes. For this reason, the monitoring of the summer 2016 was done with more intensity in Spain, considered a learning test for all the partners of the project.

On the basis of this experience, in Italy and Austria the monitoring action has been in the winter period to calibrate the instruments in the official national monitoring stations of the test bed areas.

- **Spanish allies** put in place an "*intensive and widespread*" **strategy of involvement** of volunteers: project presentations in the affected areas, with the help of the organizations that are part of the Air Quality Platform, and intensive social media campaign (Facebook and twitter) were the main actions to enroll volunteers.

The volunteer engagement in this first campaign should be considered extremely positive, given that more than the 20 required volunteers were recruited.

- **In Italy and Austria the citizen involvement strategy was instead more "gradual and linear"**, due to the fact that calibration instruments came to the involved territory only in the winter period and in a few units. The national official agency for the air pollution monitoring and the local groups of each NGO showed a strong interest for the development of the project and for the monitoring of the next years. The calibration phase also was useful to test the robustness of Captor nodes under different weather conditions.

**The common objective for next years is to build a neat of spread monitoring campaigns in the three countries, with reliable instruments and an heterogeneous network of local communities involved.**

### 2.1 Captor engagement in Spain

The strategy used in Spain for involving citizens and volunteers in the summer period of 2016, was intensive and widespread. In order to choose volunteers, different levels of engagement were proposed to the candidates and the engagement campaign was started from the beginning of the project in January 2016. At the same time, air quality conferences have been used to consolidate the network of alliance with stakeholders who follow the pollution problems and the health impacts. The key words for Spanish engagement were **Empowerment and Solution**.

#### Citizens Empowerment

In Catalonia, there are many citizen organizations that became part of the network alliance against pollution (Plataforma per la Qualitat de l'Aire). This Alliance was a privileged interlocutor for the project promotion, together with other concerned entities.

A meeting with all partners involved (Air quality Platform in Catalonia, Unió de Pagesos del Vallès I d'Osona, grup Ecologistes en Acció, associació La Torrenera and Coordinadora per a la salvaguardia del Montseny) took place in January 2016 in order to define the work plan for the first year and plan the volunteers involvement and empowerment. In Spain, we recognized the necessity to find and form some volunteers for the first year because we wanted to start the Captor monitoring in Catalonia in the summer of 2016.

A “call for volunteers” campaign started in 2016 and defined 20 volunteers from 84 participants. The remaining candidates who were not selected (except one) maintain interest to keep in touch for the future campaigns (planned to expand to 35 volunteers) or to collaborate in further activities provided by the project. The campaign has generated much interest in the areas by local authorities and media.

A first visit to the 20 selected volunteers had the triple purpose of: informing volunteers about the ozone pollution in their area, to show all the project actions and to form them on the operation with the sensors.

A second visit to the selected volunteers was done at the end of the summer: it permitted to resolve problems and doubts that had come out during the monitoring phase and it was useful to fill a first questionnaire to monitor the social impact of the project.

To encourage the involvement of volunteers in the different role of the project (not only like host volunteer but also like observer - people who watch data, discuss and take further actions), all the news and events related to the project and all the initiative of the campaign are actively communicated to volunteers.

### **Stakeholders Empowerment**

To disseminate information about the project and to expand the network with other stakeholders, the Spanish partner participated in a series of meetings and conferences relating to air pollution.

Several meetings were carried out in Valencia (Urban air quality - problems and possible solutions), Madrid (Symposium on tropospheric ozone and air quality) and Barcelona (Talks on sustainable mobility, Seminar on Environment and health and Air Pollution: a serious public health problem). The topics covered in these meetings (about urban sustainability and mobility, environment and health, which are directly connected with air pollution) are useful to bring up exchange about the problem and possible solutions. Moreover, these meetings introduce the project for futures alliances.

In the test bed area, it was carried a seminar about “Air pollution in Osona”, useful to introduce the campaign of citizens measuring tropospheric ozone levels in the area.

The event was organized together with CAPTOR allies in the local communities and political and technical responsible in air quality matter were invited with a high attendance. The campaign has generated much interest in the areas by local authorities and media. It has increased the awareness of the problem and the interest in participating in the campaign of the next year.





Figure 1: Captor presentation in Spain (2016) during meetings about air pollution.

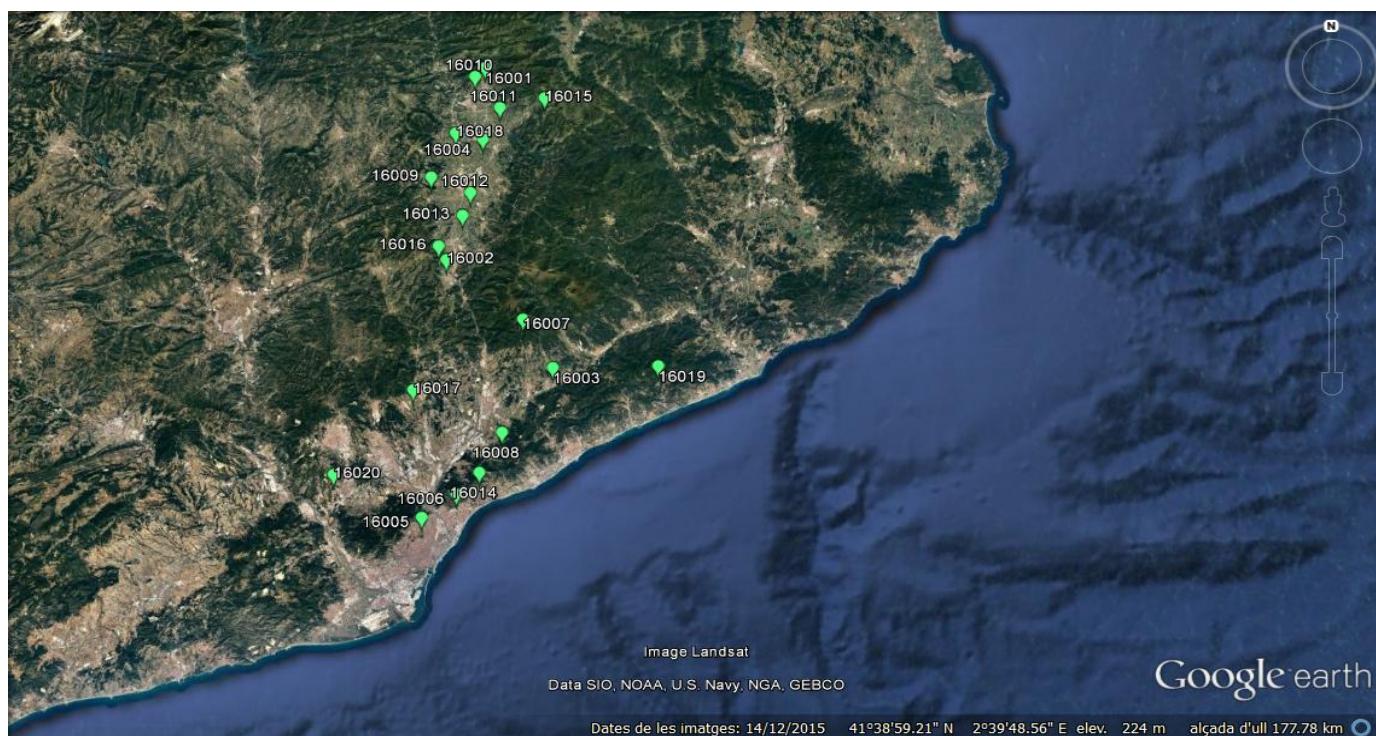


Figure 2: Captor testbed areas in Spain during the first campaign in summer 2016



## 2.2 Captor engagement in Italy

The strategy used in Italy for the involvement of citizens took place in a gradual and linear approach during the 2016, which developed four sequential steps:

Legambiente Onlus, the Italian reference of the project, has analyzed with its 4 regional groups (one for each Italian testbed area) the trend of concentrations of ozone over the last five years in each region. This analysis allowed to consolidate in the Legambiente regional groups, a first level of knowledge of ozone problem on a regional scale.

In a second step, Legambiente Onlus and Legambiente regional groups analysed more than 100 existing local group in the four-testbed regions. The analysis of each local groups has been taken into account the number of people registered and the "history" of the group (like if it is an existing group for many years or is newly created or if the local group follows the air pollution issue in its own territory regardless of the project Captor).

The third phase of this approach consisted in the creation of a map, where the official ozone monitoring stations were reported (with the ozone average of the last 5 years for each station) with the Legambiente local groups site. This overlapping of information made it possible to see the spread of the problem at the local level and the potential involvement by Legambiente local groups.

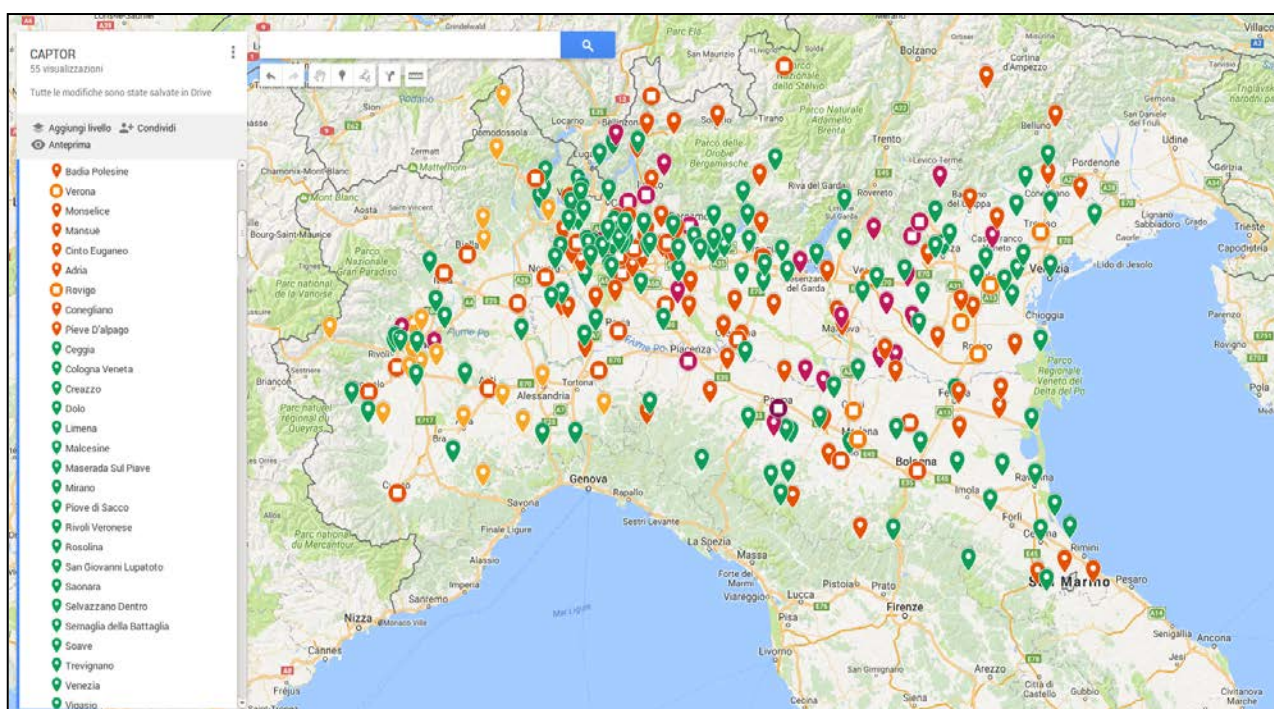


Figure 3: Italian map overlapping national ozone reference stations and Legambiente local group

The final selection of 10 Italian test areas for the Captor project was based on the superposition of two different kind of parameters, one "technical/scientific" and one "social".

The "technical/scientific" parameter depends on the proximity of Legambiente's local group to the areas affected by ozone pollution and covered by the official network monitoring or function areas left uncovered by the official monitoring network, but potentially covered by Legambiente's local group.

The social “parameter” depends on the ability of Legambiente's local group to follow the project over the next two years, by virtue of previous experience of involvement of citizens, stakeholder and local administrations in the Legambiente's campaigns. Alternatively, as a function of lack of previous experience, the local group of involvement in activities of citizens, stakeholders and local administrations in the Legambiente campaigns.

These two latter "social" issues have in fact taken into account the regional context of Legambiente's local groups, imagining which were the groups you can count on, and which would be the groups you want to enhance and grow in the course of such an important project.

All other local groups not directly involved and selected as Host and/or Observer of the project, were immediately involved to contribute as Observer and/or Innovator in the project, active and important roles to ensure the involvement of citizens of neighboring cities to those of 10 test areas.



*Figure 4: Captor presentation in Italy (2016) during regional and local initiative*

In addition to the involvement of Legambiente's local groups in Italian testbed areas, it was carried out in parallel the information to and involving of the Regional Agencies for Environmental Protection (ARPA).

The aim of the Regional Agencies involvement in the project was to provide support for the study phase and calibration of instruments captor, located at the monitoring stations in Spain in the summer period and in the winter period in Italy and Austria.

The importance of correlating the Captor data with the official data of the agencies allows us to check the correct operation of the sensors and correct any anomalies found, involving citizens, institutions and research institutes based on sound reliable and replicable data, thus acquiring prestige in their local communities.



*Figure 5: Captor nodes installation in Official Monitoring station in Italy*

At the same time Legambiente local groups and Regional office involved, met other associations and organizations present in the testbed areas. The objective was to explain the project and to enlarge the range of action of potential volunteers, building the bases for the engagement during the next years.

### **2.3 Captor engagement in Austria**

The strategy used in Austria for the involvement of citizens took place using a method of “3 levels of engagement” for CAPTOR over the project period:

- informing people
- involving people
- consulting people.

#### **Informing**

In the first project year, GLOBAL 2000 focused on informing organizations and people about the captor project. In Austria (as well as in Italy) the first 3 CAPTORS were installed in autumn.

Before that, it did not make sense to involve volunteers, as they could lose interest in the project, whose start was planned in the next year.

We have met with the Austrian Environmental Agency (Umweltbundesamt) and the air quality department of the federal province of Lower Austria (Amt der NÖ Landesregierung – Luftgüteüberwachung). They are responsible for official ozone measurements in Austria, especially in the project region. We found that 3 measuring stations would be suitable to install CAPTORS for calibration.



# CAPTOR

The 3 stations are (1) near a sports field, close to the motorway in housing environment; (2) near a small village upon a small hill, agricultural environment; (3) in a nature protected area nearby a lake, exposed to wind and weather conditions. We are in regular communication with both agencies. We inform them of Captor process regularly and they showed great interest in project, the data in specific and the communication around the project.

## Informing civil society:

Once the CAPTOR website was online, we informed organizations and communes about the project. Climate Alliance Austria communities in the test bed area as well as regions that are active on environmental issues, Vienna's University of Life Science and Austrian Traffic Club, were informed. GLOBAL 2000 published an article in the magazine of organization "GLOBAL NEWS"



Figure 6: Captor nodes installation in Official Monitoring station in Austria

## Involving:

There are 2 focus-groups on engaging volunteers for CAPTOR:

- **Group 1:** People interested in air quality and environmental issues.
- **Group 2:** People living in the project area.

To group 1 we have access through GLOBAL 2000 volunteer programs. They are interested in active building of the sensor nodes, in discussing and getting knowledge about air pollution. One event was organised in November 2016 to present CAPTOR to some of these students and to get a resonance about the various engagement possibilities for volunteers (building, hosting, discussing on the CAP, monitoring via the app).

Group 2 will be in focus for the coming summer season, especially in the south of Vienna. Engagement events at communities in Styria and Lower Austria will be held to motivate people in these regions. With three communities (Weiz, Ternitz and Hartberg) we are in close contact, in each community there will be several sensor nodes installed, so a local “Captor community” can be built in each region. Captor monitoring in the regions will take place in 2017.

For all volunteers, we will follow a clear “engagement model”, so that the cooperation runs smooth and satisfying for all:

- a) We will have a transparent and clear agreement on what their tasks and jobs are when working for CAPTOR.
- b) Volunteers will be informed about the project process.
- c) At each time, a volunteer can leave the project again. - They are not to obliged work for the whole season.
- d) Volunteers will get guidance or tutoring, if they need support for their tasks.
- e) We can clearly communicate that they are a part of a broader CAPTOR volunteer network in Spain, Italy and Austria.

### **Consulting:**

As the project proceeds, there will be more and more people involved on different engagement levels (makers, hosts, observers and innovators). Consulting becomes more important when people get deeper involved in the issue. Possible consulting issues are knowledge transferee on air quality, involving a variety of citizens in the regions or start of an off-spring project in a different region or country.

### **3. Conclusions**

After the first year experience, the key results of the citizen engagement confirm the interest of people to be involved in citizen science role and the knowledge to be part of the problem and, at the same time, part of the solution.

The key results that we will use as starting points for the next two years of engagement strategy <sup>1</sup> are:

- Transparency and responsiveness to build trust in volunteers → to be clear and open about the process.

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<sup>1</sup> <https://webtoolkit.govt.nz/guidance/online-engagement/engagement-strategy-template/#Principles>

## CAPTOR

- To encourage collaboration → to support and encourage people, the public sector, community groups and other stakeholders to work together to improve government.
- To set clear expectations → to set expectations about the purpose of the engagement and how much influence people will have over the outcomes.
- To plan and prepare carefully → through adequate and inclusive planning, to ensure that engagement serves both a clearly defined purpose and the needs of the participants.

For 2017 and 2018 the three testbed areas will be involved in captor official monitoring campaign: with the support of all the tools of the project (mobile app, website, platform, nodes) the engagement and the role of volunteers will be diversified as declined in the project. The objective of the project partners will be not only to engage volunteers for the monitoring phase, but also to grow up interest and to involve the entire citizen group in different ways.