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With the contribution  
of the LIFE Programme  
of the European Union



# CITIZENS AND AIR QUALITY

The results of the first survey carried out in the Po  
river basin, northern Italy

EXECUTIVE SUMMARY



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The present document is the Executive summary of the results of the Survey “Valuta l’Aria” (evaluate the Air) regarding the perception of the air quality by the citizens. The survey has been carried out from November 2018 to January 2019 at a Po basin level within the activities of project PREPAIR PREPAIR (LIFE 15 IPE IT 013) co-financed by LIFE programme 2014-2020 of the European Union.

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The implementation of the survey was coordinated by ART\_ER in collaboration with the Prepair partners and the assistance of external subjects.

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For suggestion and support:



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## THE PREPAIR PROJECT AND THE INTEGRATED LIFE PROGRAM

The survey was carried out as part of the Life15 IPE IT 013 PREPAIR Project (Po Regions Engaged to Policies of Air), which involves 18 national and international partners, and includes all the regions of the Po Basin. The project aims to implement the measures envisaged by the regional plans for air quality and the Basin Agreement on a larger scale and to strengthen the sustainability and durability of the results. The project covers the Po valley as well as the regions and cities that most influence the quality of the air in the basin.

Over 23 million people (40% of the population in Italy) live in the regions of the Po valley basin and over 50% of the Italian GDP is produced here. The atmospheric emissions in this basin are thus significant. However they are lower than the European Union average and in line with those of the most advanced countries, if compared to GDP or the number of inhabitants. This is a sign that the technological standards and management practices are among the most advanced. Despite this, the orographic conformation and the particular meteorological and climatic conditions of the basin make the dispersion of pollutants particularly difficult, with above threshold values for dust, nitrogen oxides and ozone.

Atmospheric pollution in this area of Italy goes beyond local boundaries and requires a supra-regional approach- Integrated and coordinated measures need to be introduced over a vast area in order to reduce emissions and thus obtain a decrease of pollutant concentrations in the atmosphere.

The aim of the European project PREPAIR is to promote sustainable lifestyles, production and consumption, all of which can help reduce emissions. To do this, specific awareness-raising is planned for public, private and local communities.

The communication and dissemination of PREPAIR objectives are of primary importance for the implementation of the project. Communication activities include an action (E2 - Development of communication actions in support of single actions) whose purpose is to ensure homogeneity between the different communication activities envisaged by the project, so that they send a common message using a common language. This action also involves a survey on citizens' perception of air quality particularly in relation to the factors considered to be the main culprits for air pollution. The project

communication campaign will then be built on these factors, on the basis of the survey results summarized in this document.

The same survey will then be implemented again in 2022 to verify how such perceptions may have changed over time.

## INTRODUCTION

In terms of the limit values set by the European Union, the Po River Basin is a critical area for air quality - fine dust, nitrogen oxides, and ozone. This area covers the regions of northern Italy and includes some large urban agglomerations as Milan, Bologna and Turin. The Po area is densely populated and highly industrialized. Tonnes of nitrogen oxides, powders and ammonia are released into the atmosphere every year as well as many other pollutants above all related to traffic, domestic heating, industry, energy production and intensive agriculture including livestock.

How do citizens in the Po Basin perceive this problem? Are they aware that many actions to improve air quality are closely linked to their lifestyle? How willing are they to change their habits? And above, how can local authorities get them to change these habits?

These are some of the questions covered by the survey.



*la percezione dei cittadini  
sulla qualità dell'aria*



The air quality survey conducted in the PREPAIR<sup>1</sup> project investigated the level of perception and awareness of citizens on the air quality and, in particular, on the main sources of air pollution. This study means that perceptions could then be compared between in the Po basin and other parts of Italy and Europe. Some questions were taken from surveys carried out in the 2017 Eurobarometer and to citizens' part in the PREPAIR survey.

We adopted a multi-channel "social" methodology to reach a representative audience of respondents. A communication campaign invited citizens to share the purpose of the investigation with their networks of friends. In fact, for every 20 questionnaires received through a social channel, a tree was donated (in total 250 trees, to be planted in selected areas of the

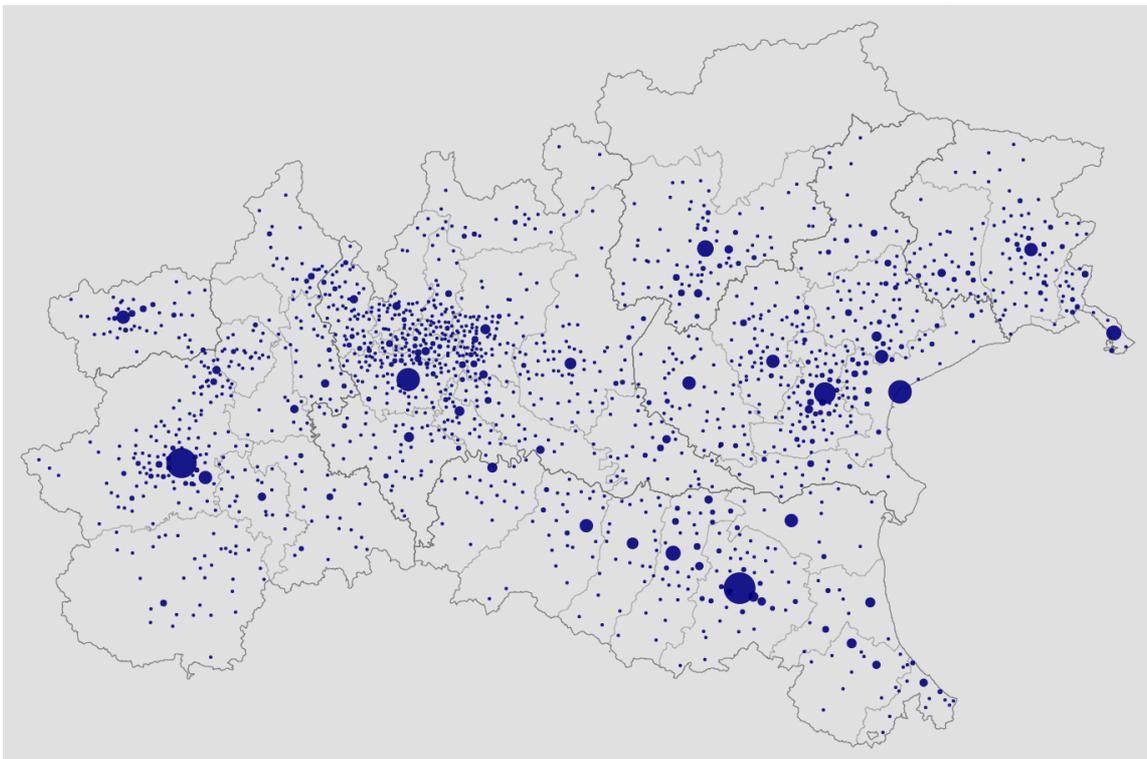
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<sup>1</sup> The PREPAIR project involves 18 national and international partners, including all the regions of the Po area. The project aims to implement the measures envisaged by the regional plans for air quality and included in the Basin Agreement on a larger scale and to strengthen its sustainability and durability of results. The project covers the Po area including the regions and cities that most influence air quality in the basin. To learn more, visit the website: [www.lifeprepareu.eu](http://www.lifeprepareu.eu)



Dolomites. An online game was also created with original graphics and drawings to which respondents, after completing the questionnaire, could participate.

The survey took place from 23 November 2018 to 10 January 2019 and aroused great interest in the entire area of the Po basin. A total of 7,331 citizens voluntarily filled in the questionnaire ensuring a representativeness of 36.3% compared to the total number of municipalities that make up this area and 77% of the population that is resident (4,188 municipalities, with a population of 25.1 million people). All 42 cities (provincial capitals) in the basin were involved, where a total of 6.5 million inhabitants live, equal to 26% of the total population of the area.



**Figure 1 Geolocation of the respondents to the questionnaire.**

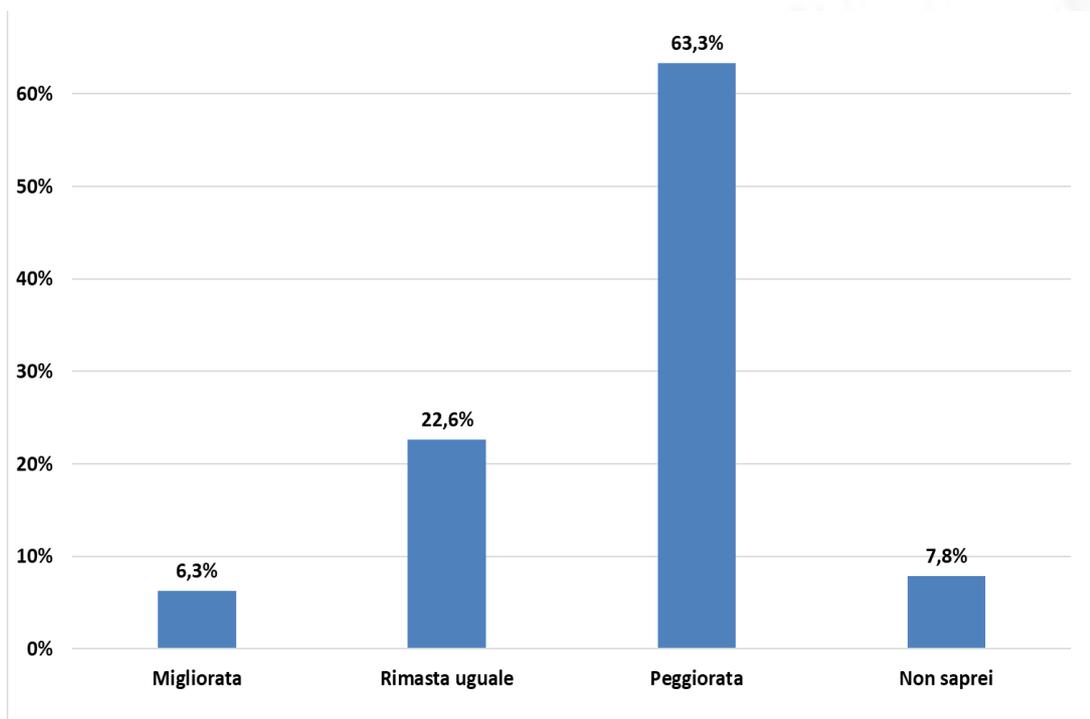
## RESULTS

An extensive and complex research can be difficult to interpret, therefore, to facilitate understanding, we grouped the results into "facts" through which the results can be interpreted.

## FACT 1 -PERCEPTION

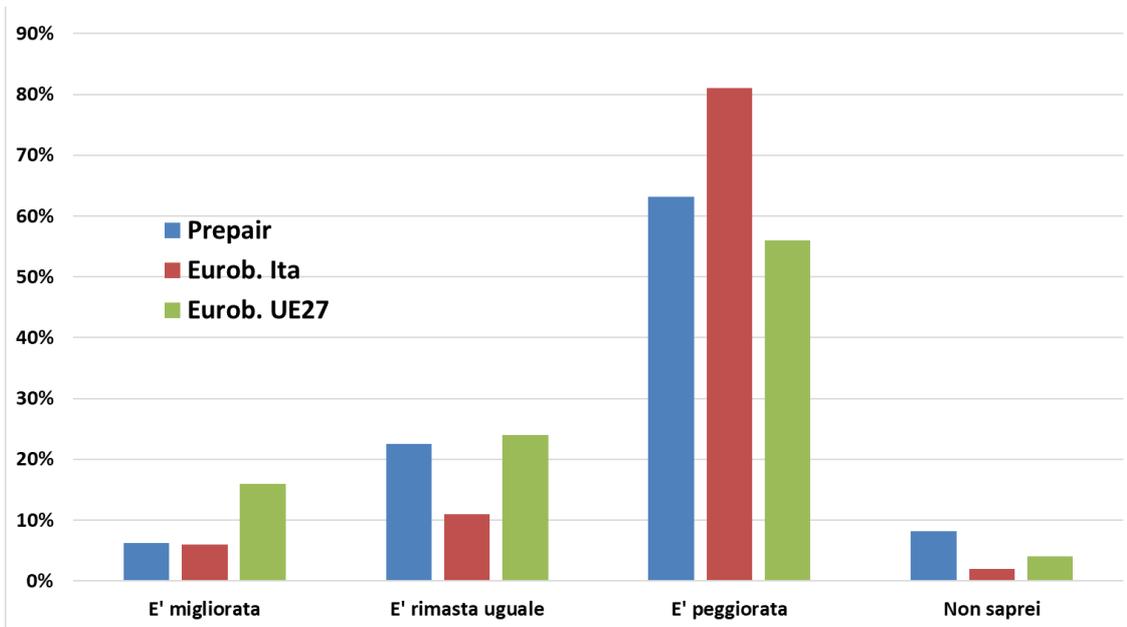
Citizens of the Po basin perceive the air quality as deteriorating. The real data, however, show that in Europe emissions of the main pollutants have actually decreased. The perception of air quality is negative both in the Po basin, Italy and Europe, highlighting that citizens seem to be more influenced by pre-conceived than any awareness based on up-to-date information.

The survey opened with a question on the "perception of air quality trends over the past 10 years". 63.3% of respondents said that it has deteriorated, 22.6% think it has remained the same, while 6.3% say it has improved (Figure 2).



**Figure 2 Air quality trends over the past 10 years**

Compared with Italians and Europeans, the number of Po basin citizens who feel that the quality of the air has improved is the same, whereas in terms of the worsening of air quality (Figure 3), the citizens of the Po basin are more positive compared to the national level (63 % vs 81%) but negative with respect to the European level (63% compared to 55%).



**Figure 3 Comparison between the Po Basin and Eurobarometer Air quality trend over the last 10 years**

The perception of citizens is not in line with actual data from Europe regarding emissions which instead show an improvement, especially for some pollutants whose presence has in fact decreased since 2000 (Figure 4).

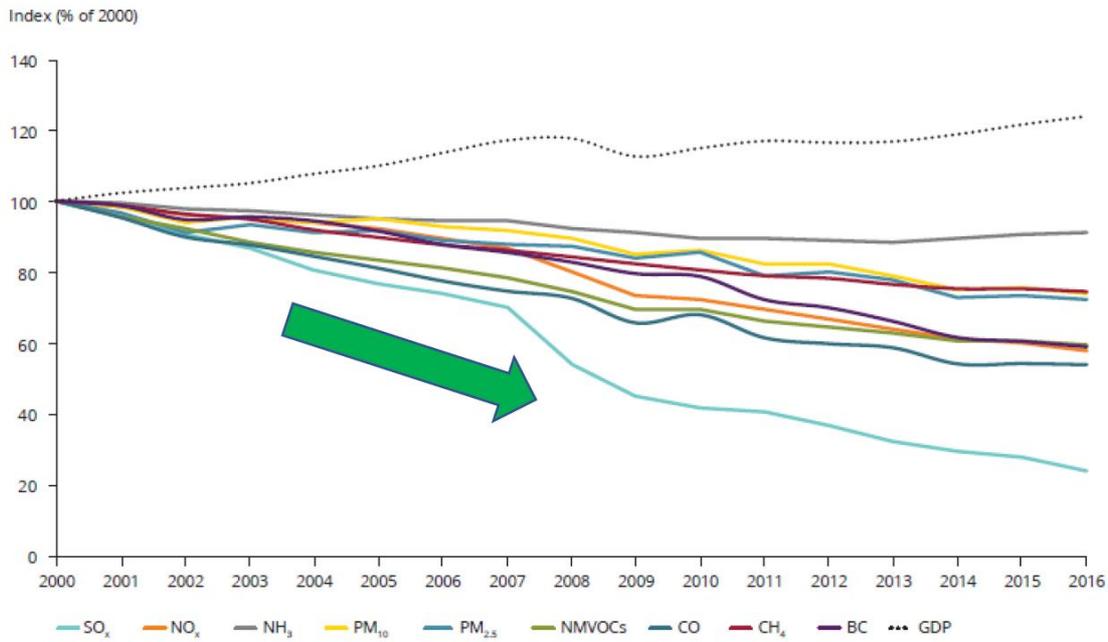


Figure 4 Air quality from 2000 to 2016. EEA source

## FACT 2 - INFORMATION DRIVERS

Citizens appear to derive their main source of information on air quality from the Internet and social media (a total of 66.2% of respondents), but the respondents still use traditional sources such as TV and newspapers (Figure 5). . However, although it is easier to reach citizens via the Internet, there is a risk of "fake news". The communication strategies relating to the Po basin must consider this factor.

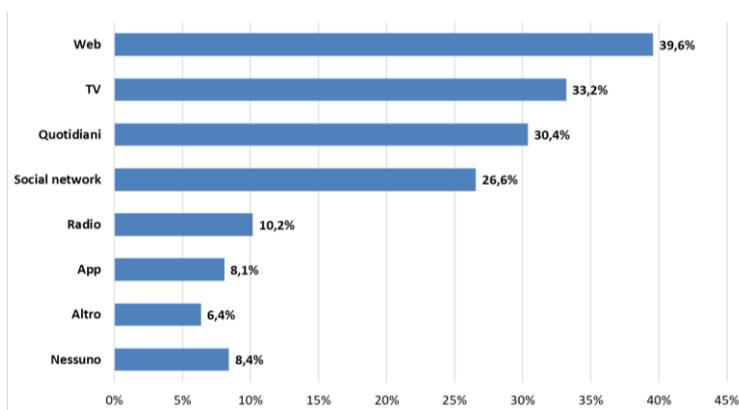


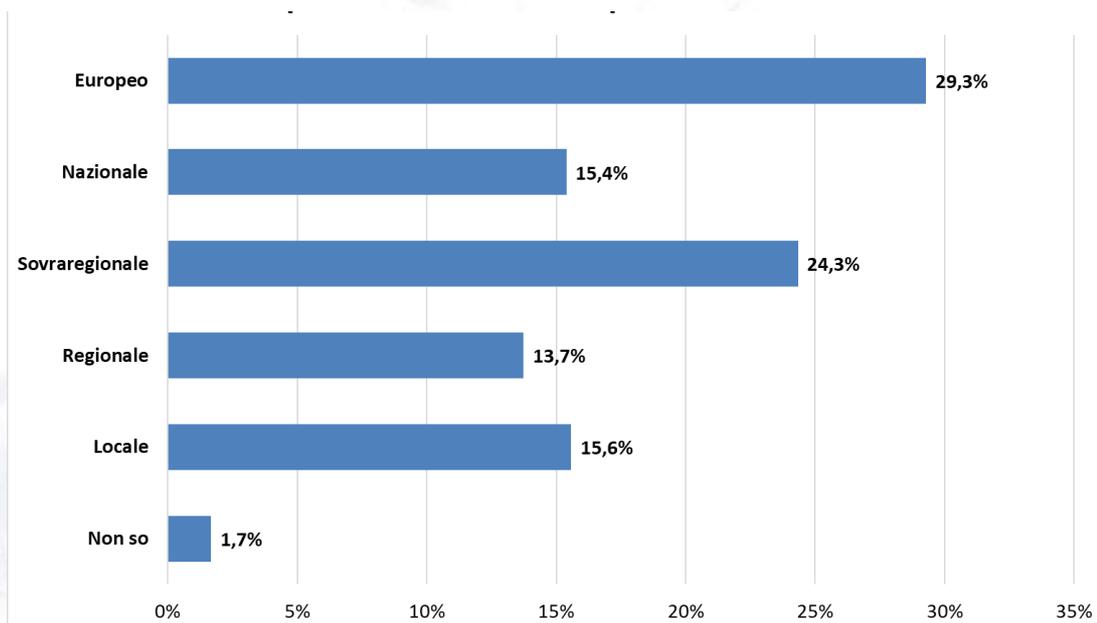
Figure 5 Main sources of information on air quality

## FACT 3 - GLOBAL vs LOCAL

In the Po basin there is the perception that local administrations can improve the air quality more efficiently than Italian and European institutions. Given that promoting a change in people's lifestyles is one of the essential elements for air quality policies, this element of "empowerment" is even more interesting. Furthermore, the citizens of the Po basin see intervening in industrial processes as a priority, but only 11.1% of the sample consider traffic restrictions as an important means for reducing pollution and traffic in reality is a primary cause of pollution (59.8%).

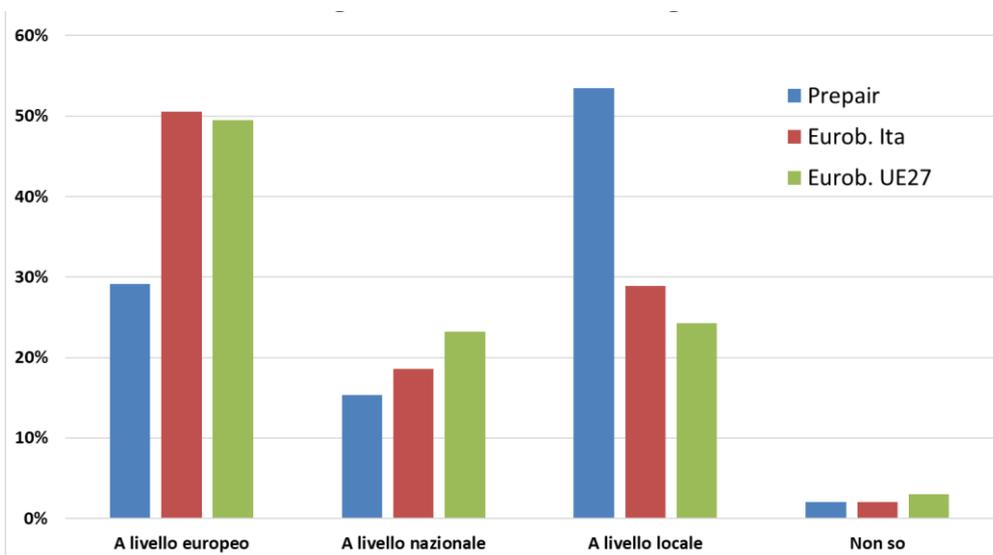
The message seems to be: "involve us directly only once you have done everything possible on the other fronts". Consequently, campaigns aimed at making citizens feel responsible are unlikely to be effective if there is not a system of co-responsibility i.e. that Everyone will do their part to the greatest extent possible.

The survey shows citizens feel that the institutional actors that can do the most to improve the quality of the air. As shown in Table 4, 29% of the sample attributes this role to the EU and 24% to supraregional organisms. Most (54%) of respondents consider the local, regional or supra-regional level to be useful, with the supra-regional level being the most useful (24.3% of respondents).



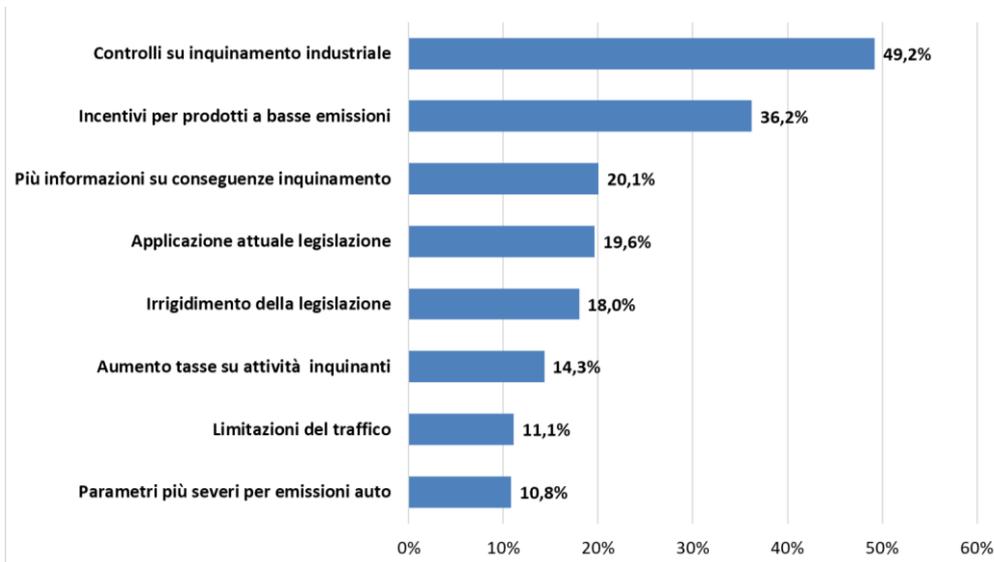
**Figure 6 Institutional level where the sample believes issues regarding air quality should be solved**

There are some differences between the results of the Po basin survey and the Eurobarometer in terms of the role of the EU in dealing with issues related to pollution: in the Eurobarometer 50% of respondents felt it was the EU's responsibility, whereas only 29% felt this in the PREPAIR survey). This trend contrasts with that relating to the local area, where the percentages go from 29% to 54% (Figure 7)



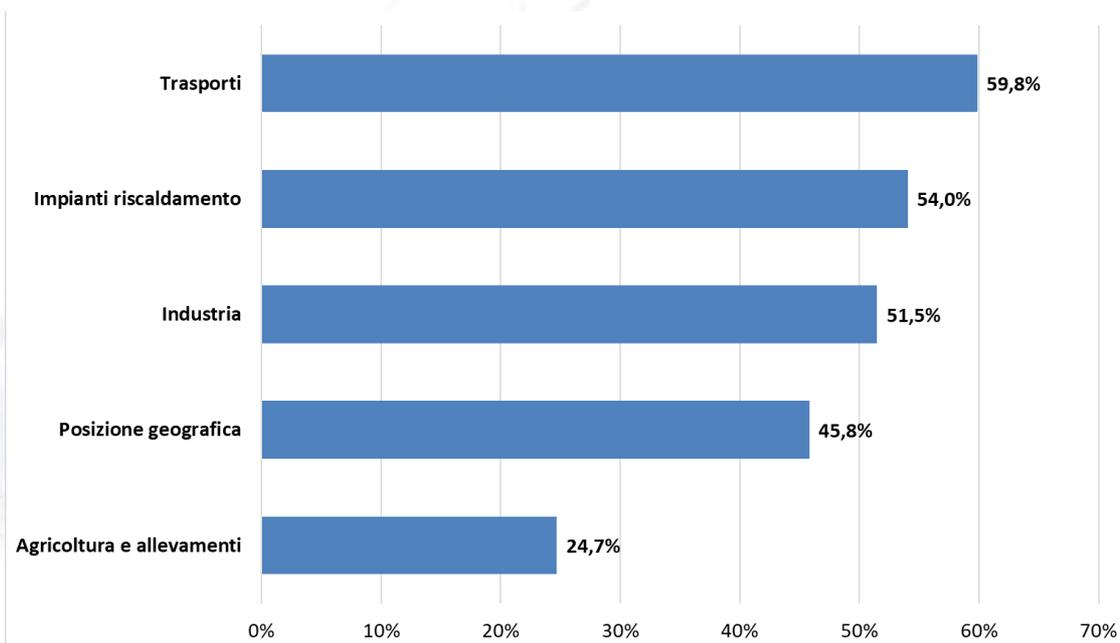
**Figure 7 Best area where to act, comparison with Eurobarometer**

Citizens were asked to evaluate the most effective means to tackle the issue of air pollution (Table 6). Industrial pollution controls were top of the list (almost 50% of respondents), followed by incentives for low-emission products (36.2%). Other initiatives proposed in the questionnaire achieved percentages of around 15-20%. Interestingly, those considered to be least effective were traffic restrictions in the most polluted cities and the introduction of new parameters for the emissions of new cars, i.e. the two measures that directly affect citizens.



**Figure 8 Actions considered most effective to solve the air quality problems**

Considering the causes of air pollution, the sources that citizens believe contribute mostly are clear. Transport is the main one, selected by almost 60% of the sample, followed by heating systems (54%) and industry (51.5%). Geographical position also accounts for 45.8% of respondents, with agriculture and livestock for 25%. This perception is in line with European data which highlight that transport is main cause for NO<sub>2</sub> and PM<sub>10</sub> emissions followed by combustion for heating in commercial and domestic environments.



**Figure 9 main sources of air pollution**

## FACT 4 - WILLINGNESS, ACCEPTABILITY AND CHOICE OF MOBILITY

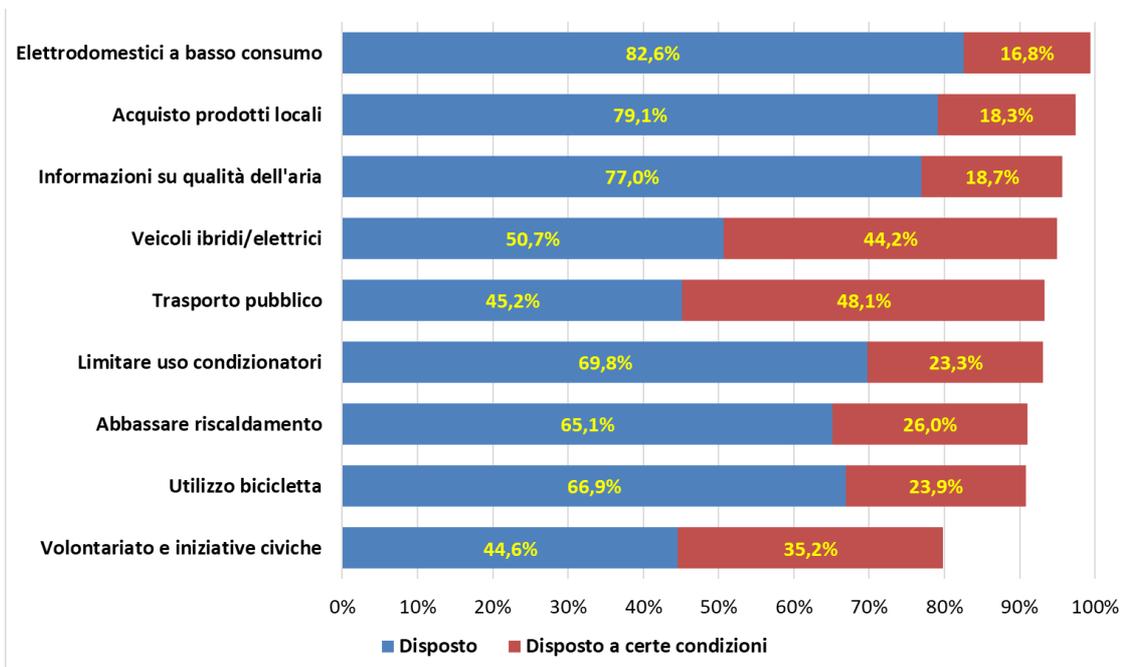
The survey on the willingness of citizens to put into practice behaviors and actions to improve air quality is very interesting; in particular, the percentage surveyed on the basis of limited availability reveals a sort of distrust in the implementation of certain behaviors that are required of citizens.

Public transport with 48.1% of conditional approval is an obvious reminder of the need to improve the service. Hybrid electric vehicles, in turn, with a conditional availability of 44.2% and the purchase price is still considered to be too high. The limited yes seems to be directly proportional to the difficulty and attention with which the topic must be addressed by communication policies (and not only) at the basin level. Even the question on the means of transport used to go to work reveals a clear correlation with the effectiveness and the need for alternative services for mobility.

One of the main topics of the survey was the willingness of citizens to put into practice behaviours and actions to improve air quality.

The questionnaire included a series of good practices which respondents were required to express either i) unconditional availability, ii) only under certain conditions, or iii) complete unwillingness to put them into practice were required. Most respondents (above 90%) were either unconditionally or conditionally willing to consider the good practices proposed, with a decrease only for voluntary activities or civic initiatives (80% of respondent).

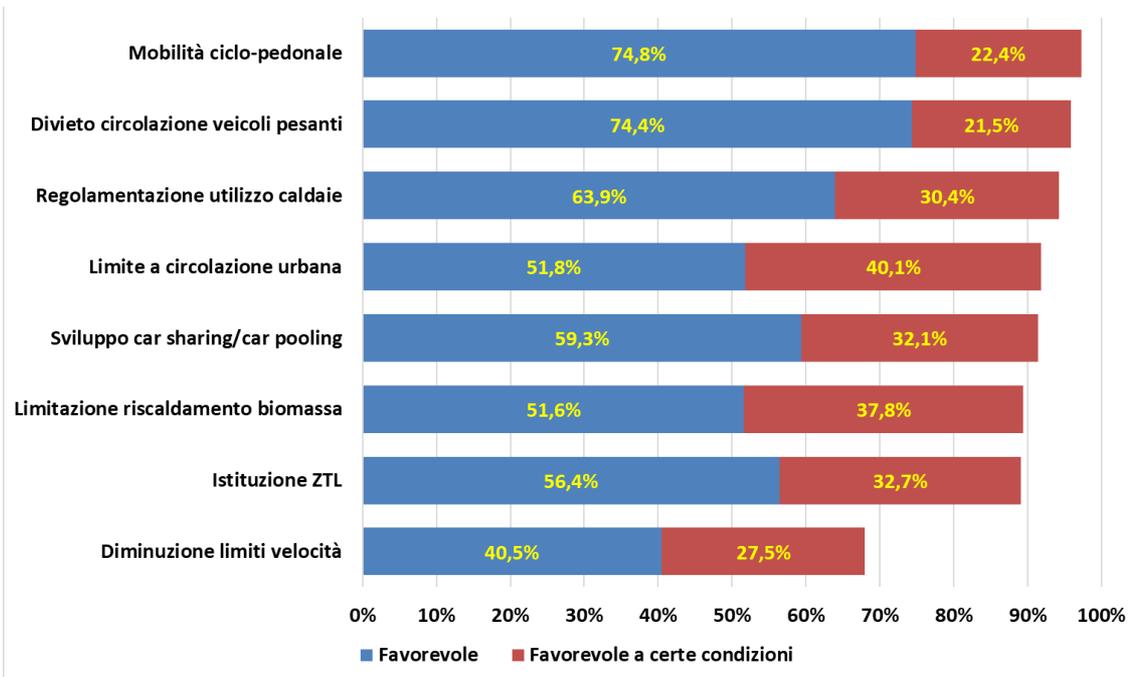
Respondents were more willing to use public transport or purchase a hybrid car than to implement the other good practices. Public transport is not a good option for example for those who do not reside in large urban cities) and represents 48% of those who would be willing this service only "under certain conditions", which probably depends both on the existence of the service itself and how well it meets the real needs of citizens.



**Figure 10 Behaviours that citizen would be willing to implement**

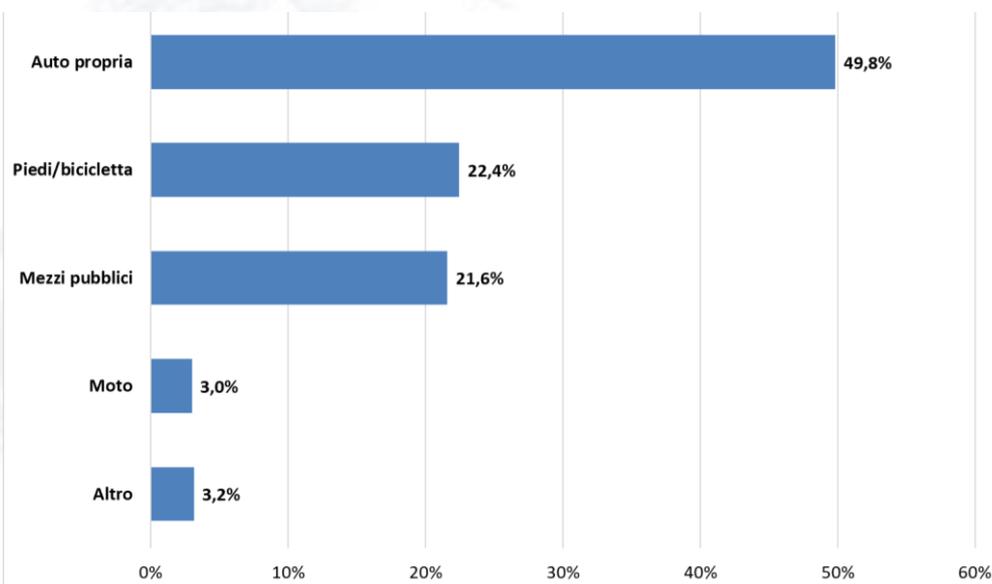
Of the behaviors that interviewees would be willing to adopt, there were no significant differences conditioned by population or geographical aspects, apart from the use of bicycles, which the elderly and residents in the mountain regions (Valle d'Aosta) would obviously not be prepared to use.

Interviewees were given a list of possible initiatives which they were asked to express their willingness to implement. Again, there was a high predisposition (unconditional or conditional) towards all the initiatives where obligations fall on third parties rather than on the citizens themselves. On the other hand, for those initiatives that can have a transversal impact, willingness "under certain conditions" was more significant. For example, the decrease in road speed limits was 40,5% against (Figure 11).



**Figure 11 Citizens opinions of proposed initiatives**

In terms of the means of transport used to go to work respondents mainly used their own car (49.8% of respondents), followed by cycling or walking (22.4%) and public transport (21.6%). A total of 3.2% of cases were classified as "other" and included car sharing, car pooling and others (Figure 12).



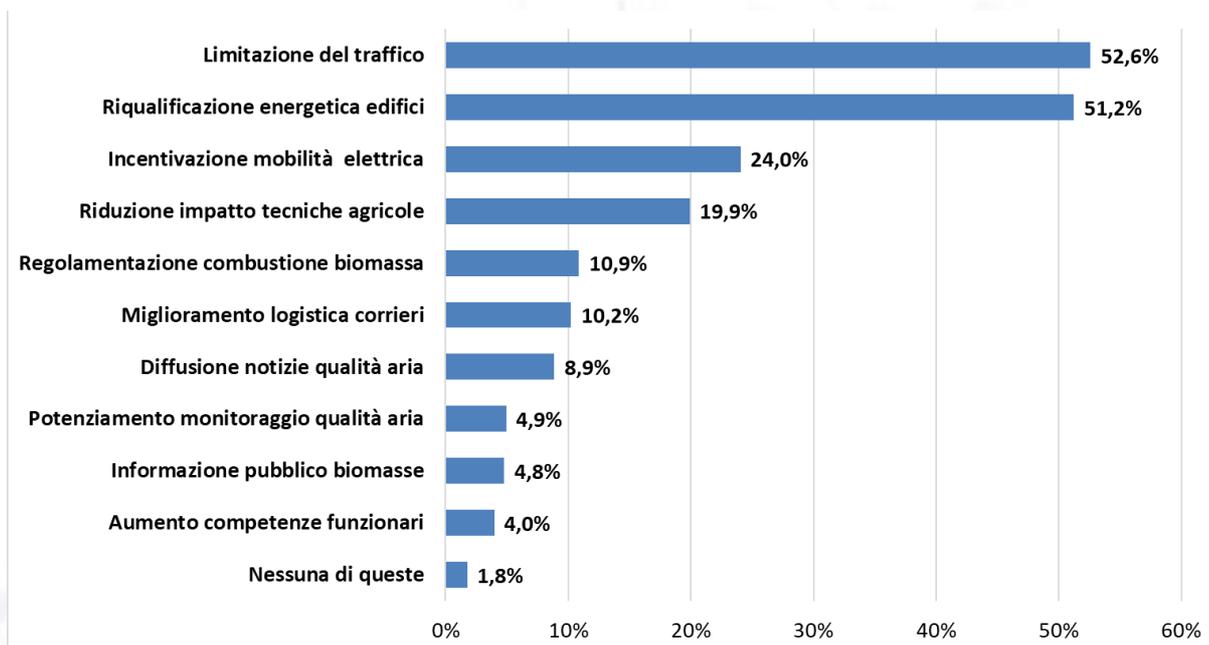
## Figure 12 Means of transport to travel to work

An analysis of the means used to go to work in the municipalities involved in the survey, revealed that as the size of cities increases, the use of cars decreases from 68.8% for smaller municipalities to 38.7% for those over 300,000 inhabitants. In Milan stands car use was only 11.9%, whereas public transport was 66.3%. In Turin around 36.7% of respondents use a private car to go to work. In Bologna, however, 43.6% of residents use a bicycle or go on foot. In Bologna and Turin, 63.8% and 60.7% of respondents answered that they were more willing to use bicycles than public transport to get to work.

## FACT 5 - YOUR FEEDBACK

Traffic restriction (52.6%) and energy requalification of buildings (51.2%) were the most widely considered initiatives in the context of the activities started with the PREPAIR project. Also noteworthy is that 24% of citizens considered the incentive of electric mobility to be important. This data confirms the interest in a sector that is still underdeveloped (there are few hybrid and electric cars) but which is perceived as growing and with great potential.

Regarding the initiatives considered most effective in the context of the PREPAIR project (Figure 13), the highest (over 50%) were combatting traffic in the most polluted cities and upgrading the energy efficiency of public and private buildings, also through financial incentives.



**Figure 13 Activities considered most effective within the PREPAIR project**

The correlation between the actions and a coordinated communication between the results of the various areas of intervention, between the various geographical areas and among the instruments promoted by government bodies (local, regional, national) represent the real challenge from this point of view.

## FACT 6 - PROFILE OF THE RESPONDENTS

The multivariate analysis highlighted four clusters of citizens divided on the basis of proactivity / availability to implement virtuous behaviours to improve air quality: "Committed and proactive", "Willing but ...", "Hesitant", " Not willing"

To stimulate a change in the lifestyles of large sections of the population, precise strategies must be adopted and there should be a clear "pact" where each actor plays their part according to their own resources and capacities.

The target of a communication campaign could be to raise the current percentage of 16% of citizens currently "committed and proactive" to 36% (thus affecting the 20% who are "wiling, but ...").

On the other hand, involving up to 68 (including the 32% "hesitant"), would be much more demanding and in this case the communication campaign should be accompanied with other improvement policies such improving the efficiency of local services as well as air quality policies in general. The "unavailable" remain instead a significant and perhaps intangible hard core, if not through compulsory policies or at least a joint effort by all the actors.

It is also clear that the cost of the actions will probably be incremental and proportional to the level of involvement that an individual citizen wishes to achieve and consequently, in a cost-benefit analysis, it might be useful to focus on a target that can be reached, for example by mainly influencing the "willing but ... " group and giving up on the idea of trying to influence the "unwilling".

Using many of the variables used to isolate our five 'events', a cluster analysis was carried out which made it possible to identify the prevailing profiles of citizens with respect to the issue of air quality. A cluster analysis is a statistical technique that identifies groups of units similar to each other with respect to a set of variables. The objective of this cluster analysis was to classify the 7,331 respondents into a limited number of groups so as to be able to reveal the prevailing profiles. The analysis was therefore aimed at detecting similarities and significant differences between the respondents in terms of:

- perception of air quality,
- areas where the challenges can best be addressed,
- sources of information,

- behaviors and initiatives to be implemented to improve air quality.

These aspects were investigated through nine variables leading to the classification of four groups on the basis of their commitment to reducing air pollution. In fact, the study confirms that citizens tend to be more proactive when they are asked to put into practice virtuous behaviors and initiatives that could affect the quality of the air making it better.

Based on the values of the nine variables selected, four citizen profiles were identified (Table 1):

- *Engaged and proactive*: very willing to implement virtuous behaviors to improve air quality;
- *Available, but ...*: quite willing to implement virtuous behaviors;
- *Hesitant*: generally unwilling to implement virtuous behaviors
  - *Not willing*: very low level of willingness to implement virtuous behaviors.

**Table 1 Classification and number of the four clusters**

Citizen profile	Description of profile	% of each cluster
Engaged and proactive	Citizens who want to take action and encourage others to take action to improve air quality	16%
Available but..	Citizens willing to do something to improve the current situation	20%
Hesitant	The situation is getting worse but I am unwilling to do much to change the situation	31%
Not available	Although the situation is getting worse, I don't care	33%

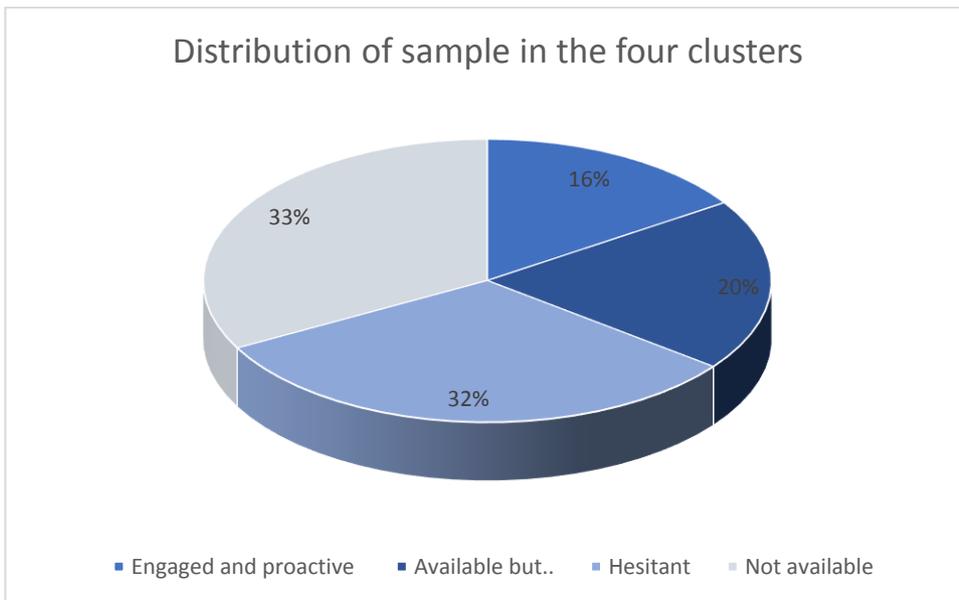


Figure 14 Dimension of four clusters in percentage

A detailed analysis of the four clusters reveals some substantial differences:

1. *Engaged and proactive*. This is the least numerous cluster (16%), representing those citizens who are most willing to engage in the improvement of air quality. They generally feel that it is up to EU institutions to tackle the challenges of improving air quality. These citizens are willing to invest in sustainable mobility, responsible behaviour and promotion of sustainability even in their most private sphere such as the use of private transport and the efficiency of heating.
2. *Available, but ...* The citizens that make up this cluster (20%) are slightly more worried about air quality than those in the "Engaged and proactive" cluster and see supra-regional and regional institutions as the actors who should do more to achieve the goals.  
The cluster is composed of citizens who show that they want to commit themselves, albeit in a generic way, without identifying with determination the behaviors and initiatives to be implemented.
3. *Hesitant*. This cluster brings together citizens who show little willingness to act to improve air quality. These citizens see the European institutions as the actors who should do more to improve air quality. Although this group is more concerned about the quality of the air than those of the other clusters they are not willing to engage in the initiatives and in the proposed behaviours, particularly sustainable mobility.
4. *Not willing*. There is no commitment to improving air quality by the citizens in this cluster, which is unfortunately the most numerous even though they perceive a continuously deteriorating quality of the air. The citizens of this cluster are essentially unwilling to engage in any the proposed activities particularly sustainable mobility such as traffic free zones (resident traffic only), traffic restrictions etc.

## CONCLUSIONS

The six factors described represent a simplification and an interpretation of the research and for this reason they can already be considered a conclusion. However, it is clear that there are many considerations that could be made and for these we refer to the investigation document in its entirety. Interestingly, some (though not the majority) citizens of the Po basin already appear to be willing to change their lifestyles. To achieve real change, the unity of purpose and clarity with which actions and proposals are presented to citizens appear to be key elements. Even the most responsible and aware citizens, in fact, assesses how much they are subjected not only in terms of technical information but also through their own emotional sphere. The greater the transparency of the process and the commitment of the parties involved, the greater the effectiveness of communication policies.



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