

## **CHAPTER 6.**

# **Citizen participation and awareness raising in coastal protected areas. A case study from Italy**

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## 1. Introduction

In this chapter, part of the research carried out within the SECOA project ([www.projectsecoa.eu](http://www.projectsecoa.eu)) is presented. Attention is devoted to methods and tools used for supporting the participatory process in a case of environmental conflict related to the definition of boundaries of a coastal protected area: the Costa Teatina National Park, in Abruzzo, central Italy. The Costa Teatina National Park was established by the National Law 93/2001. Its territory includes eight southern Abruzzo municipalities and covers a stretch of coastline of approximately 60 km. It is a coastal protected area, which incorporates land but not sea, characterized by the presence of important cultural and natural assets. The Italian Ministry of Environment (1998) defines the area as “winding and varied, with the alternation of sandy and gravel beaches, cliffs, river mouths, areas rich in indigenous vegetation and cultivated lands (mainly olives), dunes and forest trees”. The park boundaries were not defined by the law that set it up, and their determination has been postponed to a later stage of territorial negotiation that has not ended yet (Montanari and Staniscia, 2013). The definition of the park boundaries, indeed, has resulted in an intense debate between citizens and interest groups who believe that environmental protection does not conflict with economic growth and those who believe the opposite. That is why the process is still in act and a solution is far from being reached. In this chapter, the methodology and the tools used to involve the general public in active participation in decision making and to support institutional players in conflict mitigation will be presented. Those tools have also proven to be effective in the dissemination of information and transfer of knowledge. Results obtained through the use of each instrument will not be presented here since this falls outside the purpose of the present essay. The chapter is organized as follows: in the first section the importance of the theme of citizen participation in decision making will be highlighted; the focus will be on participation in the processes of ICZM, relevant to the management of coastal protected areas. In the second section a review of the most commonly used methods in social research is presented; advantages and disadvantages of each of them will be highlighted. In particular, the history and the evolution of the Delphi method and its derivatives are discussed; focus will be on the dissemination value of the logic underlying such iterative methods. In the third section the tools used in the case of the Costa Teatina National Park will be presented; strengths and weaknesses will be highlighted and proposals for their improvement will be advanced. Discussion and conclusions follow.

## **2. Citizen information and participation in public choices for coastal management**

Citizen participation and search for appropriate tools for citizens' involvement in policy making is an important topic in recent scientific debate. Hanna (2000) sheds light on the issue of information and public participation as essential elements of integrated planning and public policy. Integrated planning implies the co-existence of social, economic and environmental concerns in decision-making. Integration is particularly difficult in coastal areas where the challenges to be faced in terms of contrasting uses are particularly difficult because of multiple jurisdictions, multiple users, and presence of scarce and fragile resources (Kearney *et al.*, 2007). Integrated planning also implies the interaction of policy makers with stakeholders and consideration of their claims in the final decisions. Hanna (2000) points out that integrated planning can be comprehensive (the decision-making process can include and make a synthesis among the various requests of the different players involved), but also strategic, that means not to be the synthesis of the different instances but contemplate, however, a collaboration and communication among decision-makers. We could define the former as a "strong" integrated planning and the second as a "soft" integrated planning. In the first case the element of participation prevails, while in the second that of information does; in both cases, a bottom-up process is accompanied by a top-down one. The first problem that arises, then, is to correctly identify the individuals – or groups of individuals – who should be involved in the informative-participatory processes. In an ideal world, all those whose lives may be affected by the decisions under discussion should be involved (Kearney *et al.*, 2007): this would be perfect democracy. But, how to do it in the real world? The second problem is that the way the information is collected and disseminated and the way stakeholders are invited to participate, is not neutral: they, indeed, respond to the system of values of those who put them in place (Hanna, 2000). But, how to reach neutrality in the practice? This poses a third problem concerning the relations of power among the players involved in participatory processes (Rockloff and Lockie, 2006). Doody (2003) stresses the crucial role of information and participation in the processes of Integrated Coastal Zone Management (ICZM). He considers information as a prerequisite for any decision-making process, and gathering information as a way to encourage and favour public participation. Doody (2003) considers awareness raising as the only way to build consensus and to reach a coastal management that would be truly integrated. He highlights the importance of citizens' involvement from the early stages of the process, as this is vital to create confidence and trust. Geskou (2003) considers participation as one of the three elements characterizing the public

policies for coastal management. She highlights how a real participation is difficult to obtain. She reports a success case (LIFE project, Magnesia, Greece), in which a participatory approach was followed; stakeholders were involved from the initial phases of problem identification and information collection, to the final phase of solutions' proposition. Poitras *et al.* (2003) emphasize the importance and difficulty of building consensus in Integrated Coastal Management (ICM) processes. Consensus is defined as the agreement reached among the different stakeholders involved at the end of a process of discussion, negotiation and participation. The most important problem to be addressed in a process of consensus building is linked to the difficulty of involving representative stakeholders in the negotiation process. This difficulty is due to four main reasons: (i) consensus building is new, it does not belong to the culture of the persons involved; (ii) there are few incentives to negotiate, stakeholders prefer legal solutions or are satisfied with the *status quo*; (iii) there is uncertainty about the success of the procedure, in how high are the risks of not getting results and; (iv) the apprehension of having to negotiate, due to the fear of being overwhelmed and to the unwillingness to put oneself on the same footing with other. Treby and Clark (2004) report only formal application of the principles of participation in the UK context. They stress that participation should not be only a way to lead to a shared decision but that the participatory process has a social value *per se*. According to Rockloff and Lockie (2006) the negotiation process brings a change in the understandings, perceptions, values and beliefs of the stakeholders. Treby and Clark (2004) point out, moreover, that specific cultures and sub-cultures of communities have an influence on the development of participatory processes; they, consequently, highlight the need to design *ad hoc* processes for each national culture and local community. Participatory processes should, also, take into account the different values, experiences, degrees of knowledge, receptiveness, awareness, social roles and economic positions of the stakeholders. There is a difference between simple consultation and participation, the first being just a top-down way to communicate alternatives and ask for comments. Simple consultation presents the risk that the experts take upon themselves the role of educating the community and find a peace between the community and the policy makers; this could correspond to what Arnstein (1969) defined as "manipulation". Treby and Clark (2004) emphasize that a limited participation is as negative as lack of participation; full participation is the way to define sustainable strategies. Rockloff and Lockie (2006) highlight that policy makers tend to include in participatory processes economic players who propose projects of environmental significance and to exclude associations, NGOs, indigenous people, based on the assumption that they are already represented by politicians and state agencies. The result is often

in solutions that reflect needs and interests of some stakeholders and not of the whole community, and therefore are not perceived as fair. In an ideal world, for each community and for each decision to be taken, a tailored process should be designed; it should involve all the local stakeholders, take into account all their needs and values; it should bring to integrated, comprehensive, strategic, holistic, shared, decisions and solutions.

### **3. Methods of social research**

#### **3.1. Classical methods of social research**

##### **3.1.1. Focus Group interviews**

The focus group is defined as an interview style designed for small groups, with the aim to learn through discussion. It can be either a guided or an unguided discussion addressing a particular topic of interest to the group and the researcher. A small group of participants is under the guidance of a facilitator, also called *moderator*, who has to draw out information from the participants. It is a dynamic procedure, where interactions among and between participants stimulate discussion, and this has been described as the “synergistic group effect” (Stewart and Shamdasani, 1990). The main point is that a larger number of ideas, issues and solutions to a problem can be created through group discussion rather than through individual conversations. Just the energy that emanates from the group distinguishes focus group from more conventional face-to-face interviewing approaches. Focus groups have been used for many reasons: to investigate complex behaviour and discover how different groups think and feel about a topic; to understand why people hold certain opinions and suggest potential solutions to problems identified; to inform decision-making and strategic planning but also to add a human dimension to impersonal data. The focus group is useful to obtain detailed data about personal and group feelings and opinions. In respect to individual interviews it is for sure more convenient, both in terms of time and economically. In a focus group there is always the opportunity to seek clarification on the issue discussed.

However, despite these advantages and its many applications, many disadvantages have been highlighted in literature (Stewart and Shamdasani, 1990; Krueger and Casey, 2000; Acocella, 2012). Here are the most important:

- Often during the discussion emerge disagreements and irrelevant discussion which distract from the main focus;

- The discussion sometimes is hard to control and manage;
- The results are difficult to analyze and/or synthesize;
- Some participants may find a focus group situation intimidating, especially when there are situations of hierarchy;
- Participants may feel under pressure to agree with the dominant view, and this triggers the problems of groupthink and spiral of silence (see below);
- The moderator plays an important role during the discussion, but if the moderator is not experienced adequately, it is very easy for the whole discussion to be dominated by a few people;
- Focus Groups are artificial environment, i.e. people are collected in a room thus they might behave differently from how they behave when they are not watched, so the environmental context will affect the quality of research results;
- Since the idea of focus groups is to take advantage of group interactions, it is necessary to use the information at the group level. Consequently, the focus group is not a good instrument to find out valid information about individuals.

A particular version of focus group is the *online focus group*, where a moderator invites participants to log on into a predetermined conferencing software at a pre-arranged time. Like in classical focus group, the moderator guides the discussion. The main advantage of online focus groups is that it allows respondents from all over the world to gather, for a more representative sample. Other advantages are the lower costs and greater anonymity. The principal disadvantage of online focus groups is the absence of one of the main characteristic of the traditional focus group, namely the opportunity to observe interactions among participants. Of course, there can be technical difficulties and, above all, those who are less confident users of electronic devices may be less willing to participate. Moreover, in the online focus groups there are all the drawbacks that we have seen previously for the focus group.

### **3.1.2. Face-to-face interviews**

The face-to-face interview is the most popular and oldest form of survey data collection, and is characterized by the fact that an interviewer is physically present to ask the survey questions and to assist the respondent in answering them.

The main advantage of the face-to-face interview is just the presence of the interviewer, a key figure that gives the respondent the possibility of clarifying answers or the meaning of the items of the questionnaire. In addition, a personal contact is a motivation source and the body language and reaction can guide the interviewer. With a face-to-face interview, we can use a variety of instruments, such as open-ended questions, answer scales, visual aids, etc.

Compared with mail and telephone surveys, face-to-face surveys has advantages in terms of the amount and complexity of the data that can be collected and in terms of data quality.

However, having recalled these advantages, we must keep present that there are also many disadvantages in this type of data collection. The main is the cost time and money, as budget constraints often limit the survey to a small geographical area.

The interviewer, on the one hand is the strong point of the face-to-face, but on the other hand can be an element of distortion. For example, he/she can give advice during the interview. To this, we must add that very often respondents might feel uneasy about the anonymity of their responses. With respect to the focus group, the face to face interview lacks the possibility to observe interactions about the discussion topic.

### **3.1.3. Online questionnaire**

Given the downward trend in costs of computer hardware and software, the research in a variety of disciplines is taking advantage of online technology for conducting survey research. The instrument most commonly used for data collection is definitely the online questionnaire which, apart from the development of technology, has numerous advantages.

One advantage is that it takes benefit in providing access to groups and individuals who would be difficult, or not possible, to reach otherwise (Wright, 2005).

Another advantage is that online survey may save a lot of time. An online survey allows a researcher to reach thousands of people in a short amount of time and, moreover, it is possible to reach people geographically very distant to one another. Finally, online survey can also save money in respect to a traditional survey by eliminating the need for paper and other expenses, like costs for recording equipment, travel and telephone, and transcription costs.

However, even online surveys have quite important drawbacks, as for example the problems related to the sampling. In fact, you may know little about the characteristics of the respondents and, above all, there is no guarantee that participants provide accurate demographic or characteristics data.

Another important limitation is the so called self-selection bias, because it happens that some individuals are more likely than others to complete the online questionnaire, leading to a systematic bias. However, this problem is not unique to online survey research.

## **3.2. Alternative methods**

### **3.2.1. The origins of the Delphi method**

The Delphi method is a technique that uses responses (typically opinions) to a questionnaire by a group of experts or social actors to solve a problem, generally in a decision-making context and/or a forecasting framework. It is developed in a number of iterations, called *rounds*, during which the administrator who manages the process, called *facilitator*, provides statistical summaries of the answers given by all the members of the panel and the reasons for them. Experts communicate with each other anonymously and this aspect solves several problems typical of other methods of group decision-making.

One of the main objectives of Delphi is the convergence of opinions or the reaching of a solution shared as much as possible. The convergence of opinions should be seen as a process of structuring the communication that conveys more thoughts to solutions as possible shared.

There are several methods for the convergence of opinions but, for sure, the Delphi method is historically considered the founder. In 1952, the Government of the United States of America commissioned a group of experts to study the problem of a possible nuclear attack by the USSR. It is in this context that the method was born but only later, in the 60s, it took the name Delphi by the RAND Corporation - a research institute founded in 1946 with the financial support of the U.S. Department of Defence. The first Delphi study was commissioned by the U.S. government and concerned the application of expert opinions for selecting (from the point of view of a Soviet strategist) an American industrial target and the estimate of the number of atomic bombs necessary to reduce the American arsenal by a predetermined amount.

It is interesting to know that the name comes from the famous oracle of Delphi, and was coined by Kaplan, an associate professor of philosophy who worked for the RAND Corporation. According to the oracle principle, his prediction is not falsifiable, namely it is an assertion that has the property of being true or false.

Consider that the methodological alternatives available at the time of the Cold War to solve the problem of nuclear weapons existed and consisted of complex mathematical models that required an enormous amount of data, very long procedures, very sophisticated and expensive computers, and for these reasons, the RAND corporation chose to use the Delphi approach.

In the following years, however, those mathematical methods were applied but the surprise was that the results of the Delphi were better than those produced by sophisticated mathematical models.

This justifies, up to the many current applications, the use of a method that always remains very valid in all situations in which it is very difficult to obtain detailed data, or in cases where the mathematical models require subjective initial settings that the estimation results are heavily influenced by them.

Due to the peculiarity of the first experiment, it is clear that the method is diffused outside the U.S. defence only after several years, and this took place exactly in 1964 with a work of T. J. Gordon and Olaf Helmer entitled "Report on Long-Range Forecasting Study" (Gordon and Helmer, 1964). In that paper, published by the Rand corporation, the aim was to estimate the direction of a number of long-term trends, with particular emphasis on issues of science and technology, as well as on the potential impacts that the planned changes might have on American society and the world.

This publication together with another important work of Norman Dalkey and Olaf Helmer, which describes the methodological and philosophical foundations of Delphi (Dalkey e Helmer, 1963), are considered the basic literature for a large series of experiments of the Delphi method in the course of the sixties. During that decade, the Delphi started to be more and more present in the scientific literature and, in particular, aroused great interest within the aerospace and electronic technologies which were developing at very high speed.

The companies employed in those fields did large investments in research and development. In that context, the forecasts were vital for the planning and for the allocation of funds for research and development. Many researchers began to understand that the extrapolations of the trends of the time series were clearly inadequate for those purposes (Linstone and Turoff, 1975). As a consequence, the Delphi method became the main tool in the context of technological forecasting and has been used continuously until the present day.

At the same time, over the years, the need to exploit the subjective information derived from experts in the field of classical management, and in particular in the context of risk analysis, slowly emerged.

Thus, the Delphi appears in many different fields from those who gave it the light, such as the environment, health and transport. A method born in a particular historical context, that of the Cold War, to solve a very specific problem related to nuclear weapons, becomes in a few decades applied in various fields and by different organizations (businesses, governments and universities). The versatility of this method ensures that its applications are endless. Among the vast literature, here we suggest Brockhaus e Mickelsen (1975).

### 3.2.2. Description of the method

The Delphi method involves the repeated administration of questionnaires and provides both single opinions and the stimulation of a debate around the topic under research. The participants must be experts in the analysed issue, and form the so-called panel, with a cardinality varying from a few units up to fifty people, although in practice the groups are made up of about one or two dozen of participants. The size of the panel can greatly increase and rising the number of members involves an improvement in the quality of the results, even if it is not convenient go beyond a certain threshold, because obtained results improve slightly (Dalkey and Helmer, 1963). After defining the research topic, the first phase of Delphi concerns the choice of panellists. This is a very delicate phase, because it affects the final results, therefore it is recommended to build the panel as accurate as possible. Unlike the statistical sample surveys, in a Delphi it is much more important to choose the right people rather than to choose how many people to include in the panel. While in sample surveys it is assumed that the members of the sample are representative of a broader population and, above all, they are chosen randomly, in Delphi, on the contrary, we make use of individuals with special skills, not representative of any collective and selected in a non-random way (table 6.1).

There are studies that demonstrate the validity of the method independently from the number of the panellists, provided that the choice of experts is as careful as possible (Koch and Prügl, 2011). The panellists shall be selected on the basis of the so-called criterion of *expertise*: given the topic of the research, the participants must have a high knowledge of the studied topic but among them they must have different skills. For example, if the study regards the risk of earthquakes this can be addressed by volcanologists, geologists, sociologists, architects and so on. In this way the panel is composed of people with a wide range of knowledge, and this has the advantage of bringing different opinions on the same issue, with the aim of stimulate an exchange of views and knowledge.

Table 6.1. *Statistical sample surveys and Delphi.*

	Probabilistic sample surveys	Delphi
Selection of the units	Random	Reasoned
Features of the units	No specific characteristic	Expertise in the topic studied
Features of the sample/panel	Representative of a population	Non representative of a population
Size of the sample/panel	As wide as possible with respect to population size	It is decided according to the application
Expected results	Inference on the population	Convergence of opinions and/or debate on the issues discussed

The next step is an exploratory phase, and involves the construction of the first questionnaire to be submitted to the panel, made up of a series of open questions designed to bring out the points of view that, once collected, selected and organized by the researcher, will feed into the following questionnaires. Therefore, at this stage, the research topic is defined and a general problem framework is drawn, in order to precisely define the concepts and issues that will form the basis of the subsequent phases.

The analysis of the responses to this first questionnaire leads to the construction of a second questionnaire, which is administered to the experts in the so called "first round" of Delphi. These initial processings relate mainly the logical and terminological compactions, the elimination of redundancies and the creation of an exhaustive list of points needed in order to analyse the problem. Being self-administered, the questionnaire is delivered or sent to the participants. The delivery of the questionnaire by an expert of the method, if possible, is preferable because it allows, through a talk, to strengthen the motivations of the panellist and provide explanations on how to fill it.

Each expert of the panel will find in the questionnaire both part of his/her concepts (expressed in the previous exploratory phase), and those expressed by other panellists, who remain always anonymous throughout the procedure. In this way, everyone is able to reason about how other forms of expertise have acted in dealing with the problem under study, and this produces both a stimulus to the debate and a reflection on their beliefs that can begin, in whole or in part, to be changed. Consequently, a debate will develop (still anonymous) among the experts. The Delphi allows the creation of a process of communication among the participants, giving the participants the opportunity to express their opinions (expertise) and, at the same time, to review them in the light of the judgments of all the other experts, which are circulated in anonymous and aggregate form (*feedback*).

After the first round, the researcher conducting the survey summarizes the opinions expressed by the experts (Glenn, 2009), by means of statistical summaries. These results are used to build a new questionnaire, administered to the same panel of experts, during what is called “the second round”.

The classic approach provides, as statistical summaries, the calculation of the first and third quartiles of the distribution of responses of the first round, resulting in an interval (called interquartile range) that contains 50% of the estimates. This interval represents a window of response during the second round of consultation.

The choice of the interquartile range is motivated by the fact that it contains half the evaluations made by the panellists, and is a valid approach for reaching a convergence of opinions. So, the second round sees the administration of the same questionnaire, but now enriched with synthetic information of the result of the first round (the interquartile range), thereby triggering the feedback process.

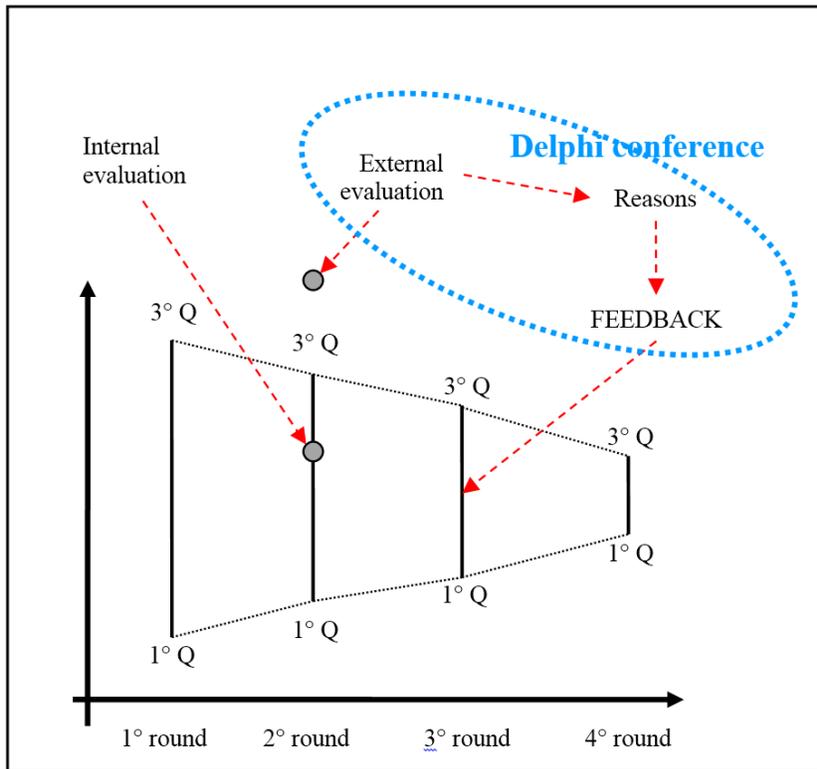
The question (or questions) proposed is always the same, but now each expert is asked to answer inside the window expressed by the interquartile range. In this way, if some experts revise their previous assessments to try to join the proposed range, already from the second consultation begins the process of convergence of opinions.

Inviting the participants to provide estimates within the interquartile range, does not mean to force them to limit their evaluations, but mainly ask those who want to give external estimates to provide written and anonymous reasons. So, if a participant wants to express an external evaluation, he/she is invited to give written explanations. These reasons trigger the so-called Delphi Conference, i.e. the anonymous debate leading experts to think about their previous estimates and, eventually, review their opinions.

The results of the second round are processed again, recalculating the summary statistics (first and third quartiles), so as to prepare the third round. Once again, the panellists are asked to answer the same question(s) trying to stay within the limits of the new interquartile range. But now, the reasons for external evaluation provided in the previous round are circulated, divided into arguments for lower evaluations and arguments for higher evaluations. Proceeding in this iterative way, the interquartile range narrows more and more, until it reaches a value small enough such that the convergence of opinions is considered sufficient (fig. 6.1).

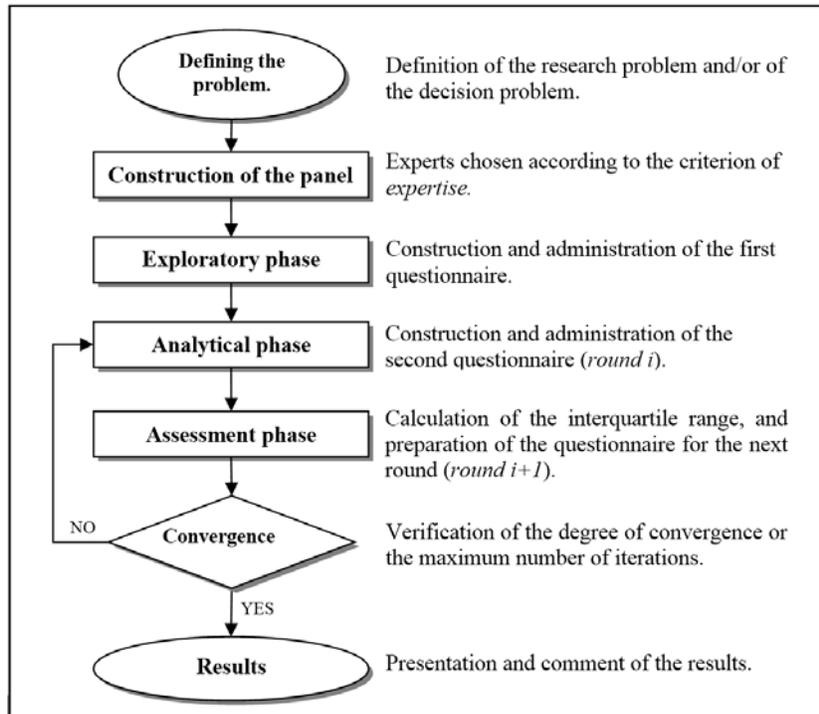
Experts can then review their opinions in light of the reasons, provided anonymously, given by those who have remained outside the interquartile range. But, very important, they can also provide counter-arguments. Thanks to the circulation of reasons, starting from the third round begins a mechanism of “horizontal communication” which, though filtered by the facilitator, generates an anonymous conference, and it is in this sense that we speak of “Delphi conference” (Pacinelli, 1995).

Figure 6.1. *The process of convergence of opinions.*



After a certain number of rounds (usually three to five), the researcher concludes the consultation and proceeds to the final elaborations of the results. The time between two rounds can be very short, but it would be prudent to extend these times so as not to force the participants to review their positions immediately after they are given. The whole procedure ends with the presentation and comment of the results obtained (fig. 6.2). The procedure ends when either the convergence is considered sufficient, or once you reach a certain number of rounds, fixed *a priori*.

Following, Figure 6.1 represents how the different iterations of a Delphi lead to a narrowing of the interquartile range and, therefore, to the convergence of opinions. After four iterations, the distance between the first and third quartile is much reduced, compared to the first round, and this means that 50% of the evaluations is concentrated in a sufficiently small interval. The figure also shows how the external evaluations, argued by the experts, trigger the feedback that stimulate the Delphi conference. The final result of a Delphi is, therefore, not only given by a final interquartile range, but also and above all by the debate which is created among experts during all the procedure.

Figure 6.2. *The phases of the Delphi method.*

The Delphi method offers several advantages when compared to other methods that allow a group communication, such as conferences, brainstorming, focus groups and so on. In short we can say that the benefits derive from the elimination of a series of problems, which we here call *errors*, inherent and inevitable in the other methods. Among the major errors that the Delphi avoids, we mention the following:

- *The error of leadership*: When the highest-ranking person in a group (e.g. in military, political, academic or corporate hierarchies) expresses his/her opinion, the others usually tend to follow him/her. Thus, the risk is that not everyone freely express their opinions for fear of coming into conflict with those who are higher in the hierarchy;
- *The error of the spiral of silence*: Those whose opinions reflect the ideas of the majority are more likely to feel confident in expressing their opinions; on the contrary those whose opinions are in the minority, fear that expressing their views will result in social ostracism, and therefore remain silent. Those perceptions can lead to a spiralling process, in which minority's viewpoints are increasingly withheld and, therefore, underrepresented;

- *The error of Groupthink*: It occurs when the pressure to conform within a group, interferes with the group's analysis of a problem and causes poor group decision making. Individual uniqueness and independent thinking are lost in the pursuit of group cohesiveness. When members strive for unanimity, their motivation to realistically assess alternative courses of action is affected. Therefore, the expression groupthink, indicates the situation in which, in order to minimize the conflicts and reach consensus for a decision, the individuals renounce to their ideas and opinions.

Ultimately, the Delphi method allows a set of people to give opinions around a problem as if they worked in a group, but without the effects of distortion (errors) generated by the simultaneous presence in the same place.

Most of the studies on this method have been carried out during the '60s and '70s, and has been proven as the Delphi is particularly suitable when the goal is to collect the informed judgments of experts, which have an expertise on a particular subject.

Since the procedure involves successive rounds, the researcher which conducts the survey may intervene at any time, to make adjustments and calibrate the procedure if necessary.

Although since its creation in the RAND Corporation many versions of the Delphi method have been invented and applied, we can say that the main steps of its basic version are those outlined above, and that we have schematically summarized in Fig. 6.2.

We can therefore say that the Delphi method, as well as other similar methods for the convergence of opinions, is characterized by three basic elements (Pacinelli, 2008):

- *The iterative structure*: (controlled *feedback*), the collection of the evaluations is carried out in several iterations, so that participants can review at least once their assessments after comparing them with the answers provided, in an aggregate manner, by other experts of the same panel;
- *The anonymity*, which prevents the association of the opinions to those who have expressed them, avoiding the errors arising out from hierarchical structures, leaderships or spirals of silence;
- *The asynchronous communication*, i.e. the possibility for the panel members to interact at a distance and at different times, without the simultaneous presence, thereby eliminating the pressures to decide quickly.

### 3.2.3. Criticisms of the method

The Delphi method has been criticized (especially in the 70s) from various points of view and, in the first place, it was accused of lack of scientific rigor. But, it has not yet been completely clarified why it should be methodologically less valid than other techniques such as the interview, the analysis of case studies or the life histories, which are widely used as instruments of investigation and policy analysis.

One of the main problems inherent in the Delphi, typical of all the methods that use panels, is given by the fact that during the various iterations it is almost inevitable that some participants abandon the analysis. Another disadvantage, which in part can be considered a cause of the previous one, is the long time that this method requires. Considering all the stages of preparation and administration of the questionnaires, a Delphi study with three rounds can last up to three or four months.

There is also a debate, which is still open, on the fact that in some cases the Delphi technique produces a convergence of opinions only because of the pressure that is exerted on the participants. So, it is as if they were “obliged” to reach an agreement, but such considerations certainly require a more thorough research (Rowe *et al.*, 1991; Woudenberg, 1991).

For sure, the method forces the participants with extreme opinions to a more difficult job than others, and this can sometimes lead to a change of opinion rather than writing the reasons for their extreme estimates (Linstone and Turoff, 2002).

Originally, all the research efforts on Delphi focused towards the achievement of consensus, because it was believed that the convergence of opinions among experts was certainly more accurate in respect to a single estimate. Over the years, however, the focus has shifted from the consensus toward the reasons that explain the “dissent”. From the reasoning, it is possible to elicit very useful elements for the study, so that even if in a Delphi the convergence is not achieved, the analysis of the reasons and counter-reasons is always to be considered a useful result.

Since the technique is very simple to apply, it often happened in the past, and still happens, that the Delphi is used too superficially, without considering with due care the various aspects that may affect the results. Linstone and Turoff (2002) in this regard argue that just as there are researchers who have successfully tested the Delphi there are many who have had negative experiences in its use. In this regard, the same authors in the book “The Delphi Method, Techniques and Applications” list a number of reasons that are the basis of the classic failures in the use of a Delphi:

- the imposition on participants of views and preconceptions about the problem analyzed, through an over-specification of the Delphi structure which does not allow contributions from other perspectives;
- the wrong assumption that the Delphi is a surrogate for all other ways of communicating;
- the use of incorrect techniques to summarize and present the results of the survey, and the consequent difficulty of having a common interpretation of the rating scales used in the application;
- ignoring, instead of exploring, the extreme positions with the only result that the experts with extreme evaluations become discouraged and drop out of the panel;
- underestimate the fact that Delphi is a very tiring and requires energy from the experts, so they should be recognized as consultants and somehow rewarded for their work and the time devoted to responses (Linstone and Turoff, 2002).

Thus, we can conclude by saying that the criticisms of the Delphi are directed to the “manner” in which it was applied, rather than to the “method” itself. A Delphi applied incorrectly will not give good results, but if you follow carefully all the recommendations then it can be considered still a good method. Precisely for this reason, in recent times there is a considerable literature that has rehabilitated enormously the Delphi.

### **3.2.4. The Delphi from the 50s to the present day**

The Delphi method has been so widely used that it is now considered the founder of a large variety of methods. We propose in this section a brief description of the most important methods that derive from it, following a chronological order.

After the article by Dalkey and Helmer (Dalkey and Helmer, 1963), Murray Turoff in 1970 proposed the *Policy Delphi* (Turoff, 1970), which is consensus-oriented and is used for the analysis of public policies. The panel is composed mainly of representatives from the community (administrative, political, economic, religious, etc..) and, in general, this method is used as a forecasting tool, a tool for decision-making aimed at finding innovative solutions and to the verification and refinement of consensus on objectives or alternative scenarios (Pacinelli, 2008). The panel should include actors which can influence, at least in part, the future on which they are asked to evaluate certain events. The Policy Delphi differs from Delphi because the panel is larger and more heterogeneous, and because the experts also give proposals and projects. Furthermore, other evaluation criteria than the mere probability are used, such as the desirability, the feasibility, the importance or the validity.

A different version of the Policy Delphi, called *Public Delphi*, is based on the participation of the citizens which want to participate voluntarily.

Soon after, in 1972, Olaf Helmer proposed the *Mini Delphi* (Helmer, 1972), a technique that speeds up the procedure as it is applied for face to face meetings, and in fact it is also known as the Estimate-Talk-Estimate method (ETE). In the first phase, each member of the panel responds in writing and, soon after, all the participants can view the resulting quartiles. This triggers a confrontation among the participants, which start to exchange opinions in the light of the findings. In a later phase, the panellists write new assessments independently to one another, in order to refine the estimates depending on the issues raised during the debate. The last step consists in the calculation of the medians of the answers given by the participants, which represent the final outcome of the consultation. Note that the Mini Delphi violates the rule of experts' isolation, and this could trigger the error of leadership, the spiral of silence or the error of group thinking. However, the main advantage in respect to Delphi is its greater speed and flexibility.

Two years later, in 1974, the theoretical foundations of a new method, the *Markov-Delphi*, were laid in a work of De Groot (1974). By tying the changes in the subjective evaluation of a predictor to a linear combination of the others estimates, this method provides important contributions in probabilistic terms. Moreover, the probabilities are collected in a stochastic matrix that governs a Markov Chain, assuming that all the panellists use, at all stages, the same probability law to change their opinions. According to this approach, the evolution of the matrix provides, at the limit, guidance on the convergence of the opinions. In the approach of De Groot each participant attributes weights to the evaluations of the others, which remain constant in each iteration, while Chatterjee (1975) studied an alternative solution, based on variable weights and Marbach (1980) proposed the adoption of weights that minimize the overall variance of the evaluations.

In 1975 Ford proposed the *Shang method* (Ford, 1975). Some characteristics of the Delphi method - such as the isolation of the participants (anonymity) - are kept in the Shang; moreover, the trouble of asking to rephrase the evaluations at each round is eliminated. The Shang method has the advantage of not anchoring the participants to a position and then, urge them to depart from it. After the selection of the participants and the definition of the problem under study, in the first Shang questionnaire experts are asked to express their opinions about a minimum and a maximum regarding the value to be estimated. The questionnaire has to be equipped with all necessary information and instructions for drawing it up. The first elaboration consists of the calculation of the arithmetic means of the minimums and maximums, which will form the constraints for the next round. As an alternative to the arithmetic mean it can be used other statistical synthesis, such as the "maximum of the maximums" and the "minimum of the minimums", or the "maximum of the minimums" and the "minimum of the maximums". The choice will depend on the type of application. Subsequently a central value between these two extremes is calculated. In the second round, each participant is invited to compare his/her

evaluation with the central value, simply answering “major” or “minor”. If the number of “major” is greater than the number of “minor”, the central value becomes the new minimum of a new range of variation. On the contrary, if there is an overriding indication on minor, the central value becomes the new maximum. So, a new central value is calculated and the method proceeds in an interactive manner until (as in Delphi) a sufficiently small interval is reached. It is evident that in each round the range of variation of the assessments is halved, and this makes the Shang much more fast than the classical Delphi.

In the same year the *Nominal Group Technique* (NGT) was also proposed. A problem-solving process that includes the identification of the problem, the generation of the solution and the final decision (Delbecq *et al.*, 1975). The technique can be used in groups of any size, who want to take decisions in a short time. This technique was created with the intent to exploit the advantages of both the methods in which the participants work in isolation (such as Delphi), and the techniques in which the members of the group interact. Initially, each member of the group provides an opinion on the proposed solution of the problem, accompanied by a brief description. Then, from the list of all the solutions you eliminate the duplicates. The members then proceed to build a list of all the solutions. At this stage, one or more facilitators encourage the discussion and the exchange of opinions with regard to the choices made by each member of the group, thus identifying a plurality of ideas and approaches. Sometimes the diversity of ideas leads to the creation of a hybrid idea, through the combination of two or more of the proposed solutions, which can be considered better than all other ideas initially proposed. After assigning scores to every solution, the solution with the highest total score is selected as the final solution. Even the Nominal Group Technique, such as the Mini-Delphi, implies the face to face meeting among the participants and the anonymity is limited to specific stages of the procedure when, in order to prevent the negative dynamics of the groups, it is necessary to exclude the verbal interaction. Therefore, the main drawbacks of the NGT are attributable to the failure to exploit the benefits of asynchronous communication and anonymity.

Proceeding, we come to 1979 when the *Decision Delphi* (Rauch, 1979) was born. It is a variant oriented to coordinate the decision-making processes of different actors, to the point of correspondence between prediction and action. In this method, the panel is formed solely with representatives of the institutions and its validity depends from the fact that the events may depend (at least in part) on the future behaviour of the participants. The validity of the prediction, in fact, also depends on the relevance of each single expert.

In 1986 the *Abacus-Delphi* seen the light; with the aim of simplifying the feedback, it uses the logic of the colours of the “Abaque” defined by François de Régner (1986, 1987, 1989). A scale of colours measures the qualitative assessments of the experts. Green indicates a very favourable position, the light green quite favourable, the colours orange, light red and red indicate increasing

degrees of disagreement. The black indicates the will of not take a position and the white the inability to make a judgment. The main advantage of this Delphi variant is the simplicity of the responses, which makes the procedure faster than those using probability values, in this way also allowing the consultation of many experts.

During the 90s, although there were numerous applications of the Delphi and its many variants, there are no methodological innovations worthy of note.

We come then to 2006 when Theodore J. Gordon and Adam Pease proposed the *Real Time Delphi* (Gordon and Pease, 2006). The method, which is a computerized Delphi, does not provide for subsequent rounds and therefore leads to a greater efficiency in terms of execution time. Each participant can review his evaluations whenever he wants, while look at the aggregate results of all other participants. In fact, the statistical summaries of the responses given by all the participants, are calculated in real time and automatically updated and displayed on the interface each time an expert provides a new assessment. The Real Time Delphi is a Delphi conducted in the form of on-line questionnaire, but it should not be confused with a normal Delphi conducted on the web, which instead can be called *Internet Delphi*.

The main feature of the Real Time Delphi is that it does not imply specific rounds of iteration, but the process of evaluation, the calculation of statistical summaries, the display of results and revaluations, is continuous. The experts who are invited to participate receive a password to access the online questionnaire and, within a specified period of time (which can vary from a few days up to several weeks) have the opportunity to make their own assessments, write the reasons and re-evaluate whenever they deem it appropriate. The statistical summaries (median, averages or quartiles) are automatically calculated each time, therefore each participant is able to see, in real time, the extent to which its previous assessments remain inside the interquartile range or near the median. So, the main innovations of this method are the real-time calculation of the statistical summaries and the absence of iterations. These elements allow carrying out studies on a large-scale, giving the opportunity to reach experts in any part of the world, and to perform everything in a short time. In order to give the experts the opportunity of written arguments, for each question there is a button that opens a special window, which lists all the comments provided up to that moment, and where the expert can add his/her own point of view. In this way, for each question, together with the average or quartiles, a list of comments is gradually formed, which is very valuable for research purposes. Given that in general in these questionnaires there are several questions (sometimes up to 50 or above) the participant is given the opportunity to abort the compilation at any time, saving the given answers. When the expert decides, it can come back on the questionnaire, continue the compilation and/or revise the previous assessments. This produces another advantage, because unlike the classic Delphi

questionnaires, it does not compel the respondent to complete the entire questionnaire in one sitting and, above all, by a deadline. In other words, the expert feels free to respond also to a part of the questionnaire, to re-evaluate only some of its assessments, to choose the sequence of questions to be answered and, above all, to do it when it sees fit.

A recent innovation among the methods derived from the Delphi is the *Spatial Delphi* (Di Zio and Pacinelli, 2011). Since in many applications there is a problem related to the territory, Di Zio and Pacinelli (2011) have introduced an interesting innovation: when a decision problem involves the choice of a place where a future event may happen, it may be useful to use a panel of experts to identify an area small enough, where the event will occur. The Spatial Delphi is based on the replacement of some of the basic elements of the classical Delphi with analogues that are spatial. After defining the research problem and built the panel, the experts are asked, in the first round, to locate a point on a map (called *opinion point*), denoting the place where it is more likely the occurrence of a future event (for example, in their work the authors have made an application on earthquakes). The result of the first round is represented by a cloud of points in a given territory. On this cloud is calculated a circle, which contains 50% of the opinion points provided by the experts, therefore, the circle is the analogous, in the space, of the interquartile range. In the second round it is asked to the experts to relocate their points, but try to stay inside the circle, as in the classic Delphi is asked to remain in the interval between the first and third quartiles. Anyone wishing to place a point outside the circle can do it, but must provide a written explanation, in order to trigger the Delphi conference. After the collection of the second cloud of points, a new circle is calculated and, as in the classical Delphi, the procedure is repeated for a number of rounds, until you get to a final circle (called the *circle of convergence*) small enough to consider the survey ended.

Among the advantages of this method is the fact that the positioning of a point on a map is quick and intuitive, so does not forces the participant to make complex reasoning and cognitive elaborations on the question asked, as happens instead in a classical questionnaires. In the basic version the map is on paper, but in a more advanced version the authors propose a digital map (built by means of a Geographic Information System - GIS), which, therefore, can be sent via web to panellists, greatly reducing the execution time of the survey. In the application on the earthquakes (Di Zio and Pacinelli, 2011) it was found a dropout rate practically zero, so the authors think that the ease in providing answers on a graphical and intuitive interface, reduces or eliminates at all the classic problem of abandon, typical of many Delphi methods.

As a future evolution of this method, it is under study the possibility of integrating the idea of the Spatial Delphi with the logic of the Real Time Delphi, in order to exploit the advantages of both methods. The points on the map can be moved several times, by the same

expert, and the circle of convergence is recalculated (i.e. moved and resized) each time a new point is inserted on the map. This would lead to the development of a new method that can be called *Spatial Real Time Delphi* (Di Zio, 2012).

The last of these Delphi-derived methods is the *Spatial Shang* (Di Zio and Staniscia, 2014). It is a modified version of the Shang method, starting from the assumption that the convergence of opinions involves a spatial context in many applications, like in the Spatial Delphi. The Spatial Shang is based, like the classical Shang method, on judgments of a panel of experts, but is applicable when consultations and consequent decisions concern matters of spatial location. The experts are first asked to draw four points on a map while, in subsequent rounds, each panellist must locate a single point, representing her/his evaluation, in one of four rectangles drawn on the map. The rectangles come out from the identification (like in the classical Shang) of minimums and maximums, both in the sense of longitude and latitude, and from two dividing lines identified through the calculation of two central values, one for longitude and one for latitude. The Spatial Shang has the advantage of being easily accessible and understandable, even for a non-specialized audience, therefore, can be used both with a panel of experts and with a panel of non specialized stakeholders. Like in the Spatial Delphi, the simplicity of the responses reduces enormously the total time of the survey. In a nutshell, we can say that this method combines the advantages of the Spatial Delphi with those of the Shang's,

In Table 6.2 we show schematically the list of the various methods discussed previously, together with the main reference.

*Table 6.2. Chronological evolution of the methods Delphi-derive.*

Method	Reference
Delphi	Dalkey N., Helmer O., 1963
Policy Delphi	Turoff M., 1970
Mini Delphi	Helmer O., 1972
Markov-Delphi	De Groot M. H., 1974
Shang	Ford D. A., 1975
Nominal Group Techn.	Delbecq A., Van Da Ven A., Gustafson D., 1975
Decision Delphi	Rauch W., 1979
Abacus Delphi	Régnier F., 1986
Real Time Delphi	Gordon T. J., Pease A., 2006.
Spatial Delphi	Di Zio S., Pacinelli A., 2011
Spatial Shang	Di Zio S., Staniscia B., 2013

### 3.2.5. Integration with other techniques

An interesting aspect regards the integration of these methods with other methods typically used in a decision-making context. For example, some authors have integrated the multi-criteria technique called AHP (Analytic Hierarchy Process) and the Delphi (Tavana *et al.*, 1993; Di Zio and Maretti, 2013). While Delphi seeks a convergence of opinions among a group of experts, the AHP helps to solve complex decision problems using a hierarchical structure. To integrate the Delphi and AHP methods, Di Zio and Maretti (2013) propose an innovation in the way the feedbacks are circulated among the participants. The experts' judgments are given in a box-plot using a slider, which simplifies the procedure because the respondents have all the most important information on the distribution of responses from the previous round.

When dealing with HAP in a group of experts, one of the main problem is the method of aggregation of the individual assessments. Saaty (1983) describes the advantages of using the AHP in a group setting, which are: a) AHP-based group decision processes can include tangibles and intangibles values and individual and shared values; b) By structuring the discussion, every factor relevant to the decision is considered in turn; c) By structuring the analysis, the discussion continues until all relevant information from each participant in the group has been considered and the choice of the decision alternative is achieved, and; d) In a group context, the discussion can be focused on objectives rather than alternatives.

The main problem when applying the AHP in a group context is that it is necessary to proceed to an aggregation of the individual assessments. Wu *et al.* (2008) summarize the most commonly used techniques. A) Calculate the AHP weights for every expert and then compute the final weights using the arithmetic mean. B) The judgements of each expert are aggregated by the arithmetic mean, and then the AHP weights are calculated. C) The judgements of each expert are aggregated by geometric mean, and then the AHP weights are calculated. The first method is the aggregation of individual priorities (AIP), while B and C are both in the class of methods with aggregation of individual judgements (AIJ) (Wu *et al.*, 2008).

When applying the AHP procedure, the achievement of a consensus of group members in making judgements, or in defining the alternatives, is usually sought when all the members engage in face-to-face and this is a typical aspect of any work group decision. But, as known, often a consensus is difficult to reach, and one possible solution is to vote on each judgement (Lai *et al.*, 2002). However, the group is sometimes unwilling to vote, and, this is a big problem. Though, even more importantly, the majority vote mechanism is not a good choice because, as explained by Saaty and Shang (2007) it "is a winner-take-all outcome". This means that following a vote, the majority

determines the final decision of the group and the minority must unconditionally compromise its position. In other words, the preferences of the losers are not considered important, and are not taken into account at all. This is the reasons why the aggregation of the individual assessments is often achieved by using either the AIP or the AIJ procedures.

Nevertheless, the aggregation methods are all based on averages, which have well known drawbacks, because they do not consider the variability of the judgements within the group. Di Zio and Maretti (2013) explain this point with an example. In a situation A where all the participants evaluate an alternative in the same way and a situation B where the group is divided into two parts, with evaluations contrary to one another, an arithmetic mean provides the same value for both A and B. It is evident that the two situations are completely different, and in particular the variability in the two cases is diverse. We can also say, in other words, that the AIJ and AIP methods provide a synthesis of the judgements but not a consensus. So, the problem of how to aggregate individual judgements into a single representative judgement is solved, but the different opinions of the individuals are not taken into account.

Sometimes, in a group decision context, it is important to find a solution that is shared as much as possible, therefore other methods of aggregation are needed. For this reasons, in literature has been proposed the Delphi method (Tavana *et al.*, 1993; Di Zio and Maretti, 2013).

Instead of using the vote mechanism, or the aggregation techniques, it is convenient to perform a certain number of Delphi rounds to reach a consensus on the judgements of the AHP pair wise comparison matrix. This procedure eliminates the drawbacks of the vote and the problem of the choice of one of the diverse aggregation methods, which are necessary when the AHP is applied in a group setting. It has been demonstrated that, when it is important to find a solution that is as much shared as possible, this methodology is better than the aggregation methods. The drawbacks of the method are given by a combination of the disadvantages of both Delphi and the AHP. Predominantly, the several rounds required by the Delphi and the fact that the AHP, even with few alternatives and criteria, produces a considerable amount of evaluations.

### **3.2.6. The Delphi as a Dissemination tool**

In agronomy, before sowing, a phase of working the land takes place, which is currently made with machinery, with the aim of creating a hospitable environment for the seeds. The process has the purpose of improving the conditions, both physical and mechanical properties, of the soil. In particular, it tends to increase the softness and the permeability of the soil, creating ideal conditions for promoting the expansion of the roots and water infiltration. If the term "dissemination" has a root that comes from the "seed", then it is important the preliminary stage of "preparing the ground"; in order to sow well you

have to first prepare the ground well. The Delphi, and Delphi-derivate techniques have a very important valence in this regard. In fact, the various iterations of the Delphi have a value that goes beyond the simple fact of “change opinions”.

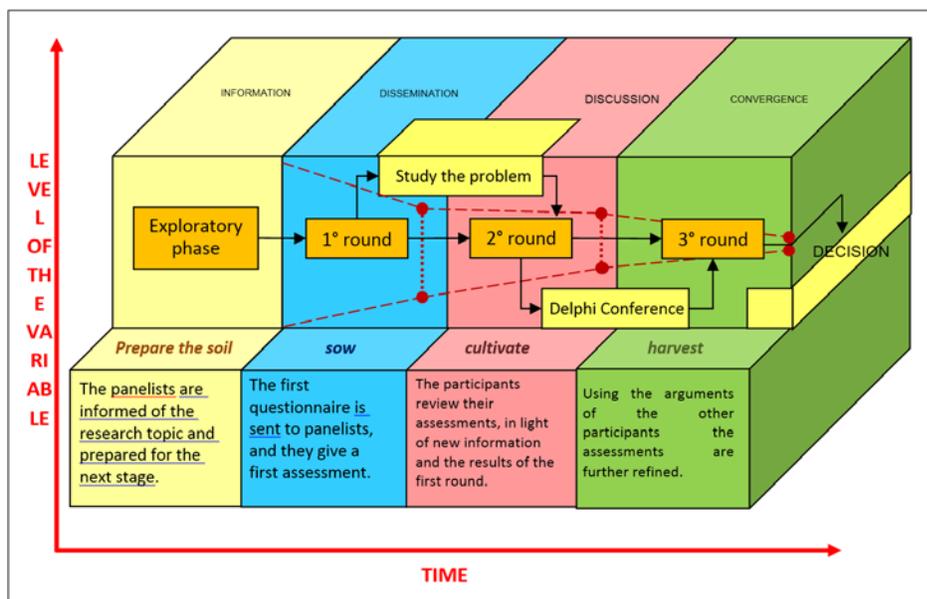
In the exploratory phase, the various points of view of the participants are collected and a general framework of the research problem is outlined. In this way, the panellists are informed on the research topic and they are prepared for the next stage. In other words, it is like “preparing the soil for sowing”.

After, in the first round, the subject of the study is explained to participants, and they give a first assessment. During the time elapsed between the first and second round, participants go in search of information, because (whether experts or not) they are inclined to study the latest developments in the subject matter. In fact, when they change their opinions, very often is not because they are not convinced of their first assessment or because they are forced, but because in the meantime they have acquired new knowledge on the research topic, and also because they receive feedbacks from the exploratory phase. This is like sowing.

After the second round, in addition to the study done by themselves between the 1st and 2nd round, the participants also gain arguments from other panellists, that are circulated anonymously: here the Delphi conference starts.

In practice, the early stages of a Delphi can be compared to the preparation of the soil and the dissemination. Therefore, we believe that, given a certain research topic, the Delphi, can be thought of as a dissemination tool (fig. 6.3), due to its iterative nature.

Figure 6.3. *The Dissemination valence of the Delphi.*



## **4. Tools for raising participation and mitigating conflicts in the Costa Teatina National Park**

The environmental conflict involving the Costa Teatina National Park dates back to the year 2001, when the Park was legally instituted. It became more acute, urging a solution, when the problem of defining its boundaries was posed. The local debate has been going on with some phases which have aroused very high interest and attention.

During the two-year research period, several activities were implemented and developed in order to support citizen participation and involvement, awareness raising, and conflict mitigation. Those activities included: (i) direct and constant contacts with local stakeholders, (ii) publication of articles in local newspapers, (iii) active participation in a public conference, (iv) definition and implementation of the *Spatial Shang*, (v) development of explanatory maps, (vi) ideation and implementation of a video, (vii) preparation of a webpage, (viii) preparation and implementation of an online questionnaire.

### **4.1. Contacts with local stakeholders**

The involved stakeholders were contacted and interactions have been developed in several ways. The first contacts were taken *via* attendance in seminars, workshops, and conferences locally organized. Those initiatives provided opportunity to personally interact with a wide audience. After those preliminary, informal contacts, the local stakeholders were contacted in order to investigate about their positions towards the ongoing conflict. This was done with an explorative purpose, and it was useful for the conflict analysis. The second step, implemented only with some of the stakeholders, consisted in an active collaboration with them. The collaboration had the aim of raising awareness among the citizens about the national park issues and of getting support in the implementation of the *Spatial Shang* (cfr. below) and the online questionnaire (cfr. below).

### **4.2. Publication of articles in local newspapers for public awareness raising**

Several months were invested in field research. The publication of popular articles in the local press (*il Centro*, the most widely read regional newspaper) was a way to directly intervene in the debate concerning the park that was, in that period, a very important topic, intensively discussed. The articles had the purpose of making the general public aware of the ongoing conflicts; they also aimed at making the arguments used by the stakeholders involved in the conflicts to be

clearer for a non-specialized audience. The impact of the articles was high and stimulated the direct reaction of some of the public players; the Regional Minister for Agriculture – in charge of the coordination of the activities for the definition of the park boundaries –, for instance, intervened in the debate hosted by *il Centro* (Febbo M., 14.09.2011) as a reply to the article published by Montanari A. (13.09.2011) (fig. 6.4).

Figure 6.4. Article published by Montanari, A., *il Centro*, 13.09.2011.



In the three articles (Montanari A., 25.08.2011; Montanari A., 13.09.2011; Staniscia B., 10.03.2013) the SECOA project, its methodology and its aims were presented, and the issue of environmental conflicts in coastal areas was introduced; the concepts of sustainable development – and its three pillars –, of subsidiarity, of collective responsibility were evoked; the idea that the protection of landscape, biodiversity, ecosystems have an international (not just national or local) importance was evidenced, as much as the role of the European Union in this matter; the importance of providing a transparent, neutral and correct information to citizens in order to allow a fair and aware decision-making process was highlighted; the history of the Costa Teatina National Park was recalled, national and international comparisons were proposed; the concept of zoning was introduced, the possible interactions with other regional parks were explained as much as the possibilities offered by ecotourism.

#### **4.3. Participation in the public conference “Parco e Territorio. La strada dello sviluppo”**

SECOA team members<sup>1</sup>, were invited to participate and intervene with structured presentations, in the public conference “Parco e Territorio. La strada dello sviluppo” (Fig. 6.5) organized by one of the local political parties (Democratic Party) with the aim of raising awareness about the park’s related issues.

Given the scope of the conference, the presentations provided information about protected areas and natural parks, and the conflicts potentially linked to their presence; besides, the SECOA project methodology and preliminary results were presented, including the *Spatial Shang* method (cfr. section 3.2.4. and subsection 4.4. below). Attention was devoted to international and national examples of natural parks, to ecotourism and wine-and-food tourism connected to cultural heritage as potential resources for local natural parks; the history of development of the region was also explained.

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<sup>1</sup> Montanari A.: <http://www.youtube.com/watch?v=UBy0yeA9oJo>;  
 Staniscia B.: <http://www.youtube.com/watch?v=0wHwAf8o2eU>;  
 Di Zio S.: [http://www.youtube.com/watch?v=LHI\\_Bopmi88](http://www.youtube.com/watch?v=LHI_Bopmi88).

Figure 6.5. Conference poster, Fossacesia (Costa Teatina National Park) 2011, July, 29<sup>th</sup>.

convegno  
**PARCO E TERRITORIO**  
**LA STRADA DELLO SVILUPPO**  
venerdì 29 luglio, ore 18.00  
Baia verde, Lungomare Sud FOSSACESIA (CH)

**PROGRAMMA**

moderatore  
Rossano ORLANDO, Giornalista quotidiano "Il Centro"

*Gli amministratori al servizio dello sviluppo sostenibile del territorio*  
SINDACI DELLA COSTA TEATINA

*Aree protette, Parchi nazionali, sviluppo locale: teorie ed esperienze internazionali*  
Armando MONTANARI, Università degli Studi di Roma "La Sapienza"

*Il Progetto Europeo (FP7) SECOA (Solutions for Environmental Contrasts in Coastal Areas. Global change, Human Mobility and Sustainable Urban Development) Conflitti ambientali e aree costiere: il Parco della Costa Teatina*  
Barbara STANISCIA, Università degli Studi di Roma "La Sapienza"

*Una versione territoriale del metodo Shang per la delimitazione dei confini del Parco della Costa Teatina*  
Simone DI ZIO, Università "G. d'Annunzio" Chieti - Pescara

Proiezione video "Un progetto che vale 100 anni" a cura di FEDERPARCHI

le buone pratiche  
**IL PARCO NAZIONALE DEL GARGANO**  
"Il Parco come risorsa per l'agricoltura"  
Matteo FUSILLI, Past-president Parco nazionale del Gargano  
Past-president Federparchi  
Leonardo SANTUCCI, Imprenditore agricolo nel Parco nazionale del Gargano

**AREA MARINA PROTETTA TORRE DEL CERRANO**  
"La tutela del mare"  
Benigno D'ORAZIO, Presidente Area marina protetta Torre del Cerrano

**IL PARCO SIRENTE VELINO**  
"Dentro o fuori dal Parco: limite o opportunità per le attività agricole"  
Luigi LOGIUDICE, Responsabile agricoltura e foreste del Parco Regionale Sirente Velino  
Adriana TRONCA, Imprenditrice vitivinicola nel Parco Regionale Sirente Velino

interventi  
Gianfranco GIULIANTE, Assessore ai Parchi Regione Abruzzo  
Camillo D'ALESSANDRO, Capogruppo PD Regione Abruzzo

DIBATTITO su prenotazione all'inizio del convegno

conclusioni  
"Lavoriamo insieme per il futuro: la "rete" per il Parco dei Trabocchi"  
Giovanni LEGNINI, Senatore della Repubblica

Proiezione documentario "Quel vecchio tracciato in riva al mare" di Matteo SIMONE

Nel corso del convegno sarà proposta l'applicazione del Metodo Shang che prevede una serie di round e si prefigge lo scopo di ottenere una convergenza di opinioni sul problema oggetto di studio. Esso è un derivato del metodo Delphi e, come questo, si avvale del parere di esperti. Sarà applicato al caso del Parco della Costa Teatina al fine di supportare i decisori pubblici nel compito di delimitarne i confini.

segreteria organizzativa evento [reteparcotrabocchi@gmail.com](mailto:reteparcotrabocchi@gmail.com)

**LAVORIAMO INSIEME al FUTURO** rete per il parco dei TRABOCCHI

The conference was addressed to a wide audience and more than two hundred persons participated. The presentations received appreciation and criticism by some of the participants. These latter were strongly opposing the park's existence and, thus, trying to exacerbate the conflict. Democratic Party, the conference organizer, is, officially, in favour of the park's existence. In within the party there are heterogeneous ideas about the park boundaries. The conference had the aim of making the citizens aware and informed about the park issues. The conference was opened to the general public, the entrance was free.

Many were the active participants and the debate that followed the presentations was very vivid. Some of the participants had their *a priori* ideas and did not participate to get information but to express their protest. Many of the participants, on the contrary, participated with the aim of improving their knowledge about the park.

#### **4.4. Spatial Shang as a tool to facilitate the boundary definition**

A special tool was developed, the *Spatial Shang*, in order to support decision making about the delineation of the limits and to mitigate the conflicts. The *Spatial Shang* is an *ad hoc* tool, customized to deal with the specific issue of defining the Costa Teatina National Park boundaries (Di Zio and Staniscia, 2014).

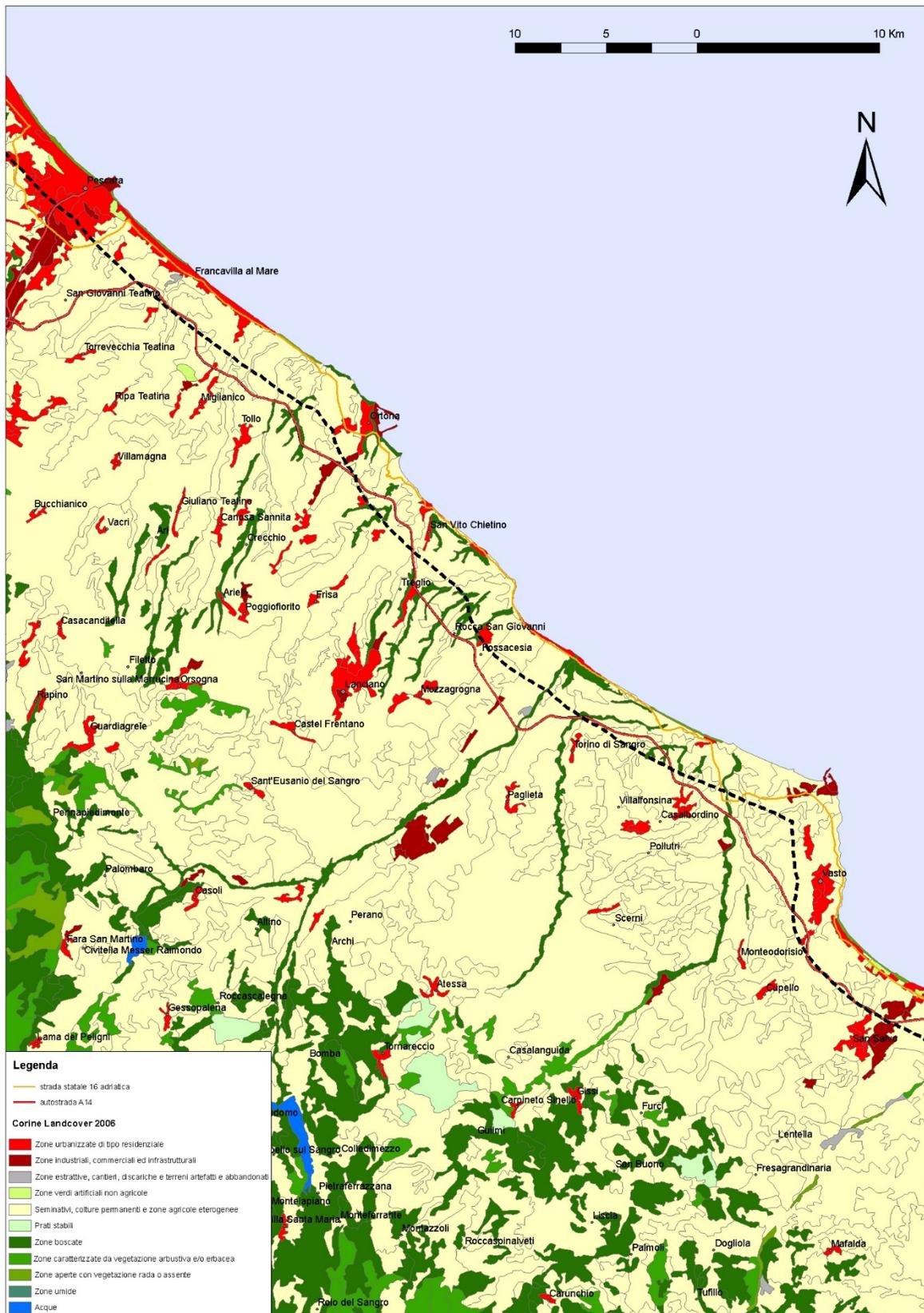
The *Spatial Shang* was used as a tool to support local stakeholders in the decision process and it was able to guarantee the convergence of their opinion. The spatial problem that was posed to their attention concerned the definition of the park boundaries or, alternatively, the definition of a territorial buffer small enough to later define the boundaries.

Sixty-two representatives of all the stakeholders, representing the whole community from different perspectives, being able to give voice to a plurality of opinions and interests, were involved in the process. They represented local public bodies (mayors, city and provincial councillors), national institutions (MPs), political parties, the church (parish priests and representatives of the bishop's court), trade unions (general secretaries of the provincial bodies), entrepreneurs and producers' associations (in the agriculture, handicraft, commerce, tourist sectors), entrepreneurs operating in the environmental field and in the third sector, citizens' associations and NGOs, environmental and cultural associations, local media, local development agencies, schools and universities.

Three main criteria guided the stakeholders' selection process: (i) had a deep knowledge of the territory and were aware of the on-going conflicts; (ii) had the capacity to represent a clear and transparent position in the conflicts; (iii) had the ability to give voice to the general interest of the specific category they represented.

Since the problem of the park boundaries could be reduced to the definition of a line at a certain distance from the shoreline (more or less parallel to the coastline), the *Spatial Shang* could be reduced to one spatial dimension in its application. Given that the Adriatic coast extends from north to south, the analysis was conducted only in the direction of the longitude (East-West) (Di Zio and Staniscia, 2014). Operationally, the *Spatial Shang* was conducted by submitting to the local stakeholders maps (fig. 6.6) on which they could locate their choice for the park limits. There were two iterations that brought to the convergence of the experts' opinions.

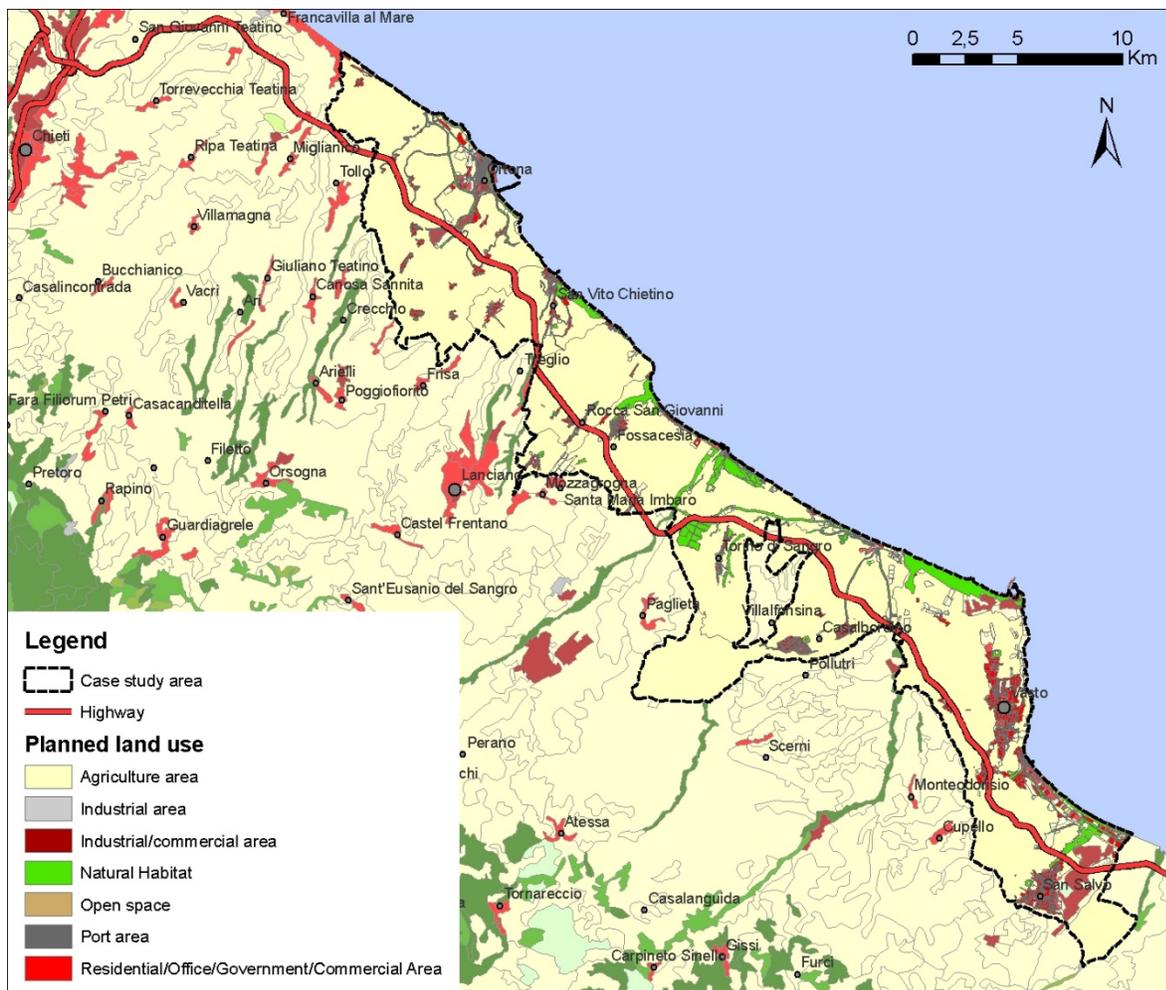
Figure 6.6. The map used in the second iteration of the Spatial Shang.



#### 4.5. Maps with alternative development scenarios

Maps of the area showing different development scenarios for different alternatives for park boundaries, were prepared (SECOA D4.3, 2012). The three proposed scenarios were: business as usual, development-based scenario (Fig. 6.7), and nature-based scenario. The maps showed the land use change in the alternative situations. They have been used as a support during the contacts with the stakeholders and in their participation in public events. The “business-as-usual scenario” was built through a projection into the future of the land use changes that had occurred in the past, since the year 2000; the “development scenario” was built taking into consideration the planning tools operative in the area at the time of the research; the “nature-based scenario”, was built taking into consideration the two alternative park boundaries, previously defined through the *Spatial Shang*, and the only proposal for the park zoning existing at the time of the research.

Figure 6.7. Map of the land use changes in the “development” scenario.



#### **4.6. The video**

Furthermore, a video<sup>2</sup> was produced, in order to present the SECOA project and to make the general public aware of the ongoing conflicts. The video has been prepared by researchers with the collaboration of communication specialists, technicians and actors. The video is in Italian and is on line. It has been, so far, viewed by 293 users.

The video introduces the Costa Teatina territory using images and maps. It explains the importance of natural and cultural resources characterising the region (olive groves, ilex wood, Cistercian abbey) and some peculiarities like the “trabocchi”, light temporary structures on the sea rocks, once used for fishing, today used for tourist purposes. In the video, a reference is made to Gabriele d’Annunzio (1863-1938), a famous Italian poet, who was born in the region and who was spending time in the Costa Teatina territory in his adult age. There are several, specific, references to that territory and to the “trabocchi” in d’Annunzio work. The video explains the origin of the Park and summarizes its recent history in highlighting the on-going conflicts and the different interests of the local stakeholders.

#### **4.7. The webpage**

In cooperation with one of the most active citizens’ associations (Nuovo Senso Civico), a webpage<sup>3</sup> (fig. 6.8) has been created to be used as a tool to inform citizens about the ongoing conflicts, and their possible solutions. The webpage is in Italian and contains: (i) a presentation of the SECOA project, (ii) the above-mention video, (iii) the online questionnaire (described in detail below, in this section).

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<sup>2</sup> [http://www.youtube.com/watch?v=xBVf2Qp\\_9Zo](http://www.youtube.com/watch?v=xBVf2Qp_9Zo)

<sup>3</sup> <http://www.nuovosensocivico.it/secoa/index.sp>

Figure 6.8. *The main webpage.*

2

## Parco della Costa Teatina

### Questionario

Home
Questionario

### IL PROGETTO DI RICERCA EUROPEO SECOA E IL PARCO NAZIONALE DELLA COSTA TEATINA

La Sapienza Università di Roma, presso il Dipartimento di Studi Europei, Americani e Interculturali, è titolare del Progetto Europeo SECOA – Solutions for Environmental Contrasts in Coastal Areas ([www.projectsecoa.eu](http://www.projectsecoa.eu)). Il Progetto è coordinato dal Prof. Armando Montanari che – oltre ad essere esperto delle tematiche ambientali, urbane e della mobilità umana – può avvalersi della sua esperienza di Presidente dello European Environmental Bureau (Ufficio Europeo per l’Ambiente) sviluppata nel corso degli anni Novanta. Il Progetto è stato finanziato, a seguito di bando pubblico, dalla DG Ricerca della Commissione Europea, nell’ambito del Settimo Programma Quadro per la Ricerca. E’ iniziato a dicembre 2009 e terminerà a dicembre 2013.

Il Progetto SECOA studia 26 conflitti ambientali in 17 aree costiere di 8 Paesi europei (Belgio, Inghilterra, Italia, Portogallo, Svezia) e asiatici (India, Israele, Vietnam). Per conflitti ambientali si intendono tutti quei contrasti che si sviluppano sui territori quando vi sono delle risorse scarse, fragili e deperibili contese tra diversi attori territoriali.

Il caso del Parco della Costa Teatina è uno dei 26 conflitti ambientali di cui SECOA si occupa. Si tratta, infatti, di un caso paradigmatico di diverse prospettive di sviluppo immaginate e desiderate per la costa teatina da diversi attori (istituzionali, economici,

#### **4.8. The online questionnaire**

With the support of one of the most active citizens' associations (Nuovo Senso Civico), an online questionnaire<sup>4</sup> (fig. 6.9) was prepared. The association has its own website and a blog. The blog has got 100,000 contacts during the year 2012. This provided the opportunity to reach a large audience even though - given the association's inspiring principles - strongly characterized by a focus on environmental protection and landscape. This aspect was taken into account when the results of the questionnaire were interpreted.

The questionnaire had the aim of collecting citizens' perceptions and reactions to a series of tools designed by the SECOA project to manage environmental coastal conflicts. Citizens were invited to express their opinions about the usefulness of those tools for the management and mitigation of the ongoing conflict in the Costa Teatina National Park. The questionnaire proposed ten questions in the form of statements; citizens could participate choosing one of the following answers: full agreement, partial agreement, neutrality, partial disagreement, total disagreement. Citizens were also invited to indicate their gender, age, place of living, job sector and working condition. Those information were helpful in elaborating the questionnaire results.

The proposed questions concerned the following themes: (i) problems, challenges and possible contributions of the stakeholders to conflict management and mitigation; (ii) evaluation of SECOA methods and tools. The tools proposed included maps, videos, databases, websites, open forums, handbooks.

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<sup>4</sup> <http://www.nuovosensocivico.it/secoa/questionario.asp>

Figure 6.9. The first page of the online questionnaire.

## Parco della Costa Teatina

### Questionario

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QUESTIONARIO

1	Uso di mappe che rappresentino scenari alternativi di sviluppo del territorio del Parco (es. Piani Regolatori Generali, Piani del Parco, Piani di tutela ambientale)	<input type="text" value="Seleziona un valore"/>
2	Diffusione di video in cui si spieghi quali sono i costi per la comunità locale conseguenti ad una gestione sconsiderata del territorio (es. a seguito di calamità naturali)	<input type="text" value="Seleziona un valore"/>
3	Diffusione di video in cui si evidenzino le pressioni che le popolazioni e gli insediamenti produttivi esercitano sull'ambiente e le risposte che l'ambiente dà (es. DPSIR)	<input type="text" value="Seleziona un valore"/>
4	Diffusione di video in cui si evidenzino le conseguenze di diversi meccanismi di gestione della costa (es. uso di limitazioni all'uso della fascia costiera, uso di barriere fisiche per evitare l'erosione, uso di piani marini)	<input type="text" value="Seleziona un valore"/>
5	Diffusione di video nei quali si spieghino le situazioni di conflitto, la loro origine, le diverse posizioni assunte dagli attori locali	<input type="text" value="Seleziona un valore"/>
6	Diffusione di dati aggiornati e organizzati per garantire la trasparenza dell'informazione	<input type="text" value="Seleziona un valore"/>
7	Diffusione di documenti in cui si riportino esperienze di altri conflitti	<input type="text" value="Seleziona un valore"/>
8	Diffusione di manuali ad uso di non esperti per spiegare i fenomeni naturali e le loro conseguenze	<input type="text" value="Seleziona un valore"/>
9	Predisposizione di siti web continuamente aggiornati sull'evoluzione del conflitto	<input type="text" value="Seleziona un valore"/>
10	Predisposizione di un forum aperto di discussione tra i rappresentanti delle istituzioni, delle imprese, della comunità locale	<input type="text" value="Seleziona un valore"/>
	Sesso	<input type="text" value="Seleziona un valore"/>
	Età	<input type="text"/>
	Posizione nella professione <input type="text" value="Seleziona un valore"/>	
	Altra professione <input style="width: 90%;" type="text"/>	
	Settore di attività lavorativa <input type="text" value="Seleziona un valore"/>	
	Altro settore <input style="width: 90%;" type="text"/>	
	Città di residenza	<input style="width: 90%;" type="text"/>
	Note <input style="width: 95%; height: 40px;" type="text"/>	
		<input type="button" value="Invia i dati inseriti"/> <input type="button" value="Annulla"/>

In Table 6.3 a summary of the strengths and weaknesses of the tools introduced and discussed in this section is presented.

*Table 6.3. Strengths and weaknesses of the tools*

Tool	Potentials	Risks/Pitfalls
Contacts with the stakeholders	New opportunities for the research team to better focus the problem/conflict.	High risk of getting influenced by the stakeholders opinions and points of view. Risk of losing the neutrality underlying a scientific research.
Articles on local newspapers	Possibility of reaching a wide and non-specialized audience. Good opportunity to stimulate the debate at local level, contributing in the conflict definition.	Risk of being exploited by the local stakeholders for their specific points of view and interests. Risk of being confused with policy-makers. Risk of being considered not neutral to the topic.
Public conferences	Good opportunity of providing details about the problem/conflict analyzed in an interactive way. Good opportunity to establish new contacts with the local stakeholders. Good opportunity to get feedbacks and reactions from the public at large.	Risk of being exploited by the local stakeholders for their specific points of view and interests. Risk of being confused with policy-makers. Risk of being considered not neutral to the topic.
Spatial Shang	Good opportunity to make a specialized audience more aware of the problem/conflict. Good opportunity to involve a specialized audience in the decision making process. Good opportunity to test a methodology that could be used in similar cases.	Risk of choosing non appropriate stakeholders and getting results that do not represent the point of view of the majority of the stakeholders in the area.
Maps with scenarios	Good opportunity to inform a specialized audience of the possible consequences of alternative choices	None
Videos	Good opportunity to reach a wide audience	None
Webpage	Good opportunity to reach and inform a wide audience	None
Questionnaire	Good opportunity to involve a specialized audience in the decision-making process.	Risk of getting non-representative results because of the self-selection of the respondents.

## 5. Discussion and Conclusions

All the strategies and tools discussed in this chapter could be further developed in collaboration with stakeholders. None of them should be used as it is in other situations, since they were customized to a specific time and purpose. However, some general remarks can be made:

- The strategies and tools that were chosen to work with, are adapted to the Italian and local socio-cultural environment; they will probably be useful in similar situations, in other Mediterranean countries, for instance;
- They had the interaction between researchers and stakeholders as a rule;
- They had the participation of the widest possible public as one of the main aims;
- Some of the tools used are typical of the researches carried out in social sciences, some others were pure dissemination tools;
- They did not intend to solve the conflict; they intended to support the local stakeholders in the conflict mitigation process; in some cases they failed in this purpose.

All the strategies and tools discussed have been thought and designed for understanding and analyzing the ongoing conflicts and for supporting the local stakeholders in the process of conflict resolution. This could be a contribution for improving the still underdeveloped (Integrated) Coastal Zone Management Mechanisms.

Italy is currently facing a severe economic crisis. This is occurring in a socio-cultural context that has never been very conscious and aware of the environmental issues; in a political context that has never been very much oriented to environmental-led policies. In Italy, the institution of protected areas and national parks, traditionally followed a top-down approach. Our research has shown that a bottom-up approach, through the process of experience-sharing and active participation, is needed for (hoping in) the success of such initiatives. The best approach would be a mix of top-down and bottom-up strategies, supported by appropriated tools.

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## Acknowledgements

The research leading to these results has received funding from the European Union's Seventh Framework Programme FP7/2007-2013 under grant agreement n° 244251 (SECOA project).

The authors would like to thank the citizens' association "Nuovo Senso Civico" for having hosted the SECOA video and questionnaire on its website and for the technical support provided. They would also like to thank the numerous stakeholders who devoted their time to support the development of the SECOA research.

## Notes

Although this chapter is the result of a joint work by the two authors, Simone Di Zio wrote section 3. and Barbara Staniscia wrote the rest.



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Di Zio, Simone, Staniscia, Barbara, "Citizen participation and awareness raising in coastal protected areas. A case study from Italy". In: Armando Montanari (ed.), *Mitigating Conflicts in Coastal Areas through Science Dissemination: Fostering Dialogue between Researchers and Stakeholders*. Cap. 6. SECOA FP7 Research Project, Vol. 7. Rome: Sapienza Università Editrice, 2014. <http://digilab-epub.uniroma1.it>. DOI: [10.13133/978-88-98533-25-1](https://doi.org/10.13133/978-88-98533-25-1). Web. 14 July 2014.

**ABSTRACT:** The chapter analyses and discusses methodologies, techniques and tools, used in a research carried out within the framework of the SECOA project. The focus of the paper is the participatory process that took place in one case of environmental conflict: definition of boundaries of the Costa Teatina National Park, along the coastal area of the Abruzzo Region, central Italy. Attention is given to how the general public was actively involved in decision making and how institutional players were supported in conflict mitigation. Some classical methods of social research (such as focus groups, face-to-face interviews and online questionnaires) are discussed, and compared to alternative methods. In particular, the Delphi method is analysed in depth as much as Delphi-derived methods. Special attention is paid to two recent methods that take into account the territory as a key element in a decision-making process: the Spatial Delphi and the Spatial Shang. Those tools have been proven to be effective in the dissemination of information and knowledge transfer.

**KEYWORDS:** Dissemination, participatory processes, environmental conflicts, coastal areas, conflicts' mitigation, Delphi, Shang.

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Submitted	24 <sup>th</sup> February 2014
Accepted	06 <sup>th</sup> May 2014
Final Revision:	07 <sup>th</sup> June 2014
Published:	14 <sup>th</sup> July 2014

