
“Policies that work” in a context of integrated catchment management for sustainable use of water to enhance rural development

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Abstract

The paper illustrates the theme of policies and especially the ones that could be applied for integrated catchment management and sustainable use of water, in the light of the implementation, in the EU, of the Water Framework Directive, by which, within 2015, all the member States and all the candidates, should reach a “good status” of water resources.

The purpose of the paper is to clarify the double link existing, in complex systems, between policies and sustainable development of rural areas, where sustainability has to do with the conservation of natural resources and, in the specific case, water.

This is also one of the central topics of the EU research project called SLIM. SLIM stands for Social Learning for the Integrated Management and Sustainable Use of Water at a Catchment Scale. It is a multidisciplinary European research project which main theme is the investigation of the socio-economic aspects of the sustainable use of water. Within this theme, its main focus of interest lies in understanding the application of social learning as a conceptual framework, an operational principle, a policy instrument and a process of systemic change.

Keywords: Complexity, multidisciplinary approach, social learning, shared objectives, collective actions, integrated strategy, platform, facilitation.

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1 Systems and complexity

People is nowadays living and acting in systems that are continuously evolving and becoming more and more complex, since they are going through more and more frequent and rapid series of changes. Despite their rapidity, changes could deeply influence and determine transformations of the features of the system itself.

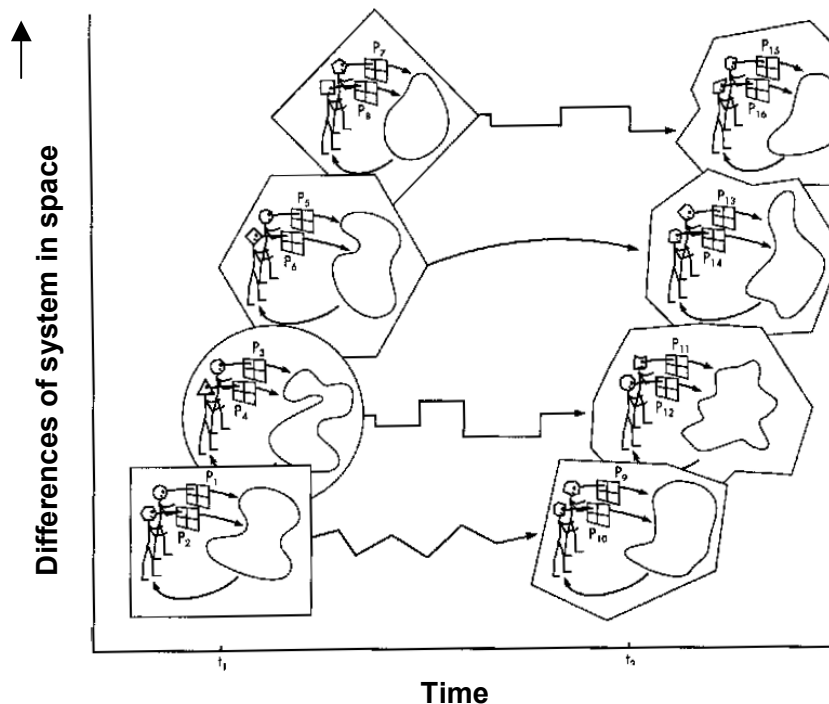
This process tends to affect all the different kinds of systems and so rural systems, which become, as a consequence, more and more difficult to understand and to govern. The rapid changes intervening in any system do not leave to people the necessary time to perceive and to adapt to them and to the system itself and, consequently, to find a 'stable' identity inside it.

The analysis of a system is an essential process to develop, in order to deepen the knowledge of it, in the context of the implementation of policies, which could enhance sustainable development and integrated management of natural resources. This knowledge will facilitate both the process of implementation of the policies themselves and the general agreement of the policies to be implemented, since they are the result of processes of shared decisions and choices.

The system identified for an analysis is called system of interest (SOI). The choice of the features of a system of interest is, at least in part, arbitrary, thus the observer decides which elements, that are part of the system, are more interesting in the light of the analysis, depending on what are his objectives. This arbitrariness concerns both the elements included in the system and its boundaries, decided by the observer, which, however, could be modified during the process of analysis.

Complexity intervenes in a system when not only physical components are considered (*hard* part of the system), but also the dynamics of interactions among people with different perspectives, the socio-economic relations (market dynamics, labour, production, exchange of knowledge and experiences and so on), the bio-physical elements (water, soil, etc.) and other ones (*soft* part of the system) are examined as variables acting inside it. When also the elements described above intervene in the system, as the change of boundaries or the implications of subjective variables, complexity arises.

Fig. 1: Changes of the systems in time and space



Source: Pearson and Ison, 1997.

Complexity has, hence, to do with subjectivity and the personal point of view of the observer: as figure 1 shows, when the soft part of systems is observed, systems do not appear to be stable, but, on the contrary, they change in time and in space, as a result of the dynamic interrelations among subjects with different perspectives, and the rural space in which they act and interrelate. In this space many elements with different features could be recognised: socio-economic aspects, bio-physical elements, social relations, and so on. Any observer could recognise (or choose to recognise) different elements in the system and define a boundary. This situation generates, during the process, an opportunity to reshape the system (boundaries and/or inside) and new perspectives for the analysis (Pearson and Ison, 1997).

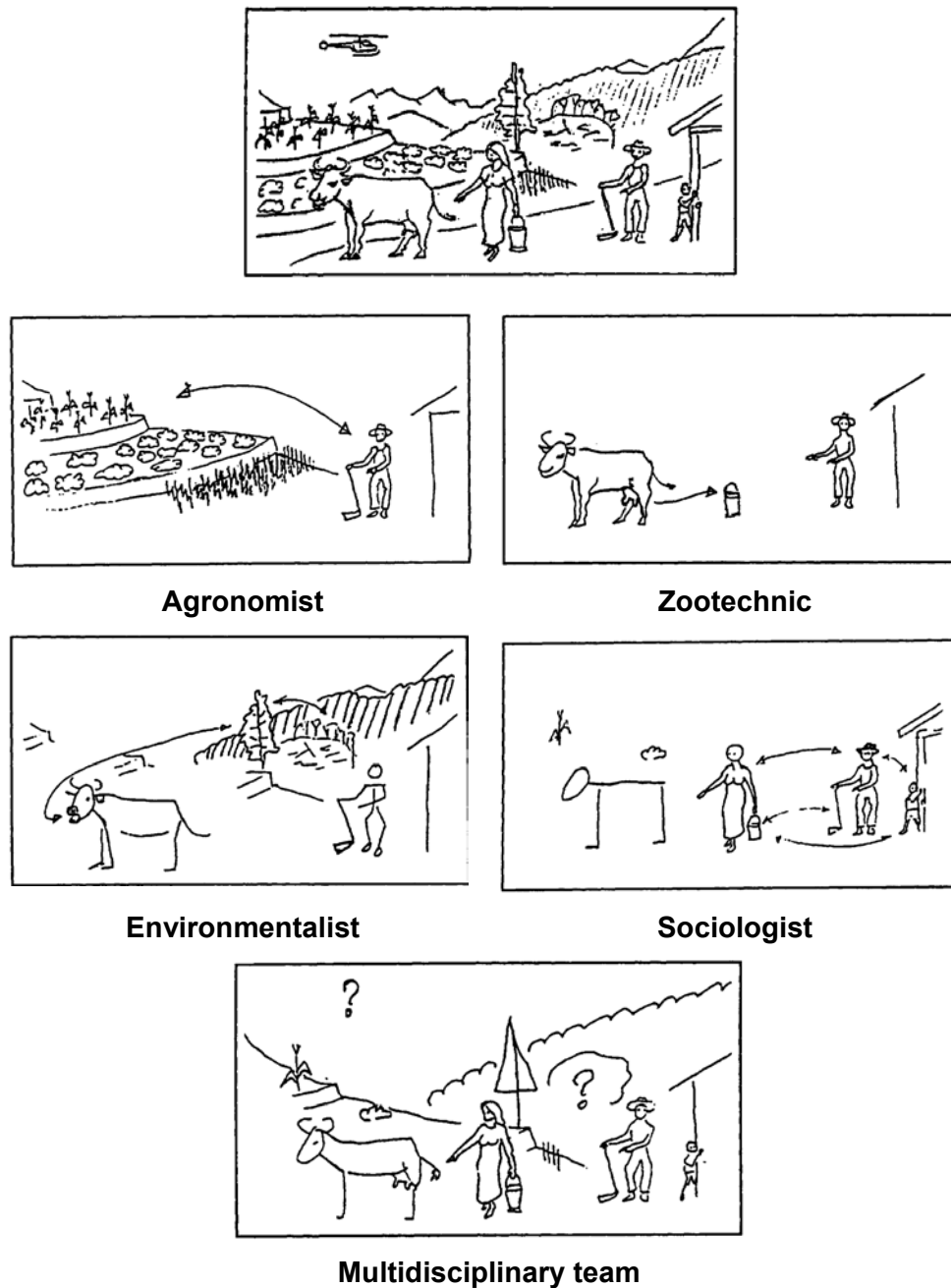
In this context of complexity, it is necessary to find new ways, tools, ideas and new processes which could enable a better understanding, which could enable an improvement in the government of a system, where, the issues arising cannot be faced without “complex” actions.

In other words the need is to establish which are the objectives for improving the system. This means, to individuate who should contribute to define which type of improvement should be implemented, if a unique optimal solution, that solves complex problems, exists and if it is predictable only on the basis of a unique perspective or analysis. (Roggero, 2001).

When an analysis is developed over a complex system, it is clear, in the definition of the issues related to its improvement and its sustainable development, that its description changes in relation to the perspective of analysis (Pearson and Ison, 1997). This is well illustrated in fig. 2, which highlights how an agro-pastoral system is differently represented by expertises with a different background. An animal expert will highlight the aspects related to animal management and production; an agronomist will mainly consider the crop system and input/output relations; a sociologist will examine the social aspects and the ones related to behaviour of people involved in the system. An ecologist will mainly pay attention to cycle of substance and to energetic balance in the system, and will not consider important other issues as, i.e., sociological aspects (Roggero, 2001). An economist will instead consider as

more important elements market dynamics, production processes, wealth of the system, leaving out other aspects as, i.e., the zootechnic ones.

Fig. 2: Differences in the perspectives of analysis



Source: Pearson and Ison, 1993

2 Complex system

The analysis of a system developed by a multidisciplinary team, which includes experts in the different disciplines, everyone convinced that their own description corresponds to reality (and not simply to their personal vision of the reality), will result, however, incomplete, since some aspects of the system, that could be essential for the solution of a certain problem, will be, in any case, ignored.

Systems are, as mentioned above, composed not only by their physical elements, but an essential part are also the different relations that people involved in them, establish with the

physical reality in which they are allocated. Following this theory, it is evident that the description of physical elements and processes going on into a system is necessary to represent a complex system, but it is not sufficient if the objective of the analysis is to examine and face a problem arisen in the system itself. A new element plays an essential role here, that is the awareness that the analysis is affected by the subjective vision of the real world of the scientist who develops it (Roggero, 2001).

2.1 Hard and soft systems

Following the theories mentioned above, when studying any system it is essential to distinguish the physical aspects from the ones related to individuals: the former are the *hard* part of the system, while the latter are the *soft* part (Ison, 1993).

Hard systems have well structured features, they can be measured by quantitative methods and tools and processes are described by physical rules. They can be analysed using mathematic models and through *step by step* study methods.

Soft systems include also individuals as variables, the situation is not well structured and do not have universal rules to refer to, but on the contrary, contrasting theories. As a consequence, they require the use of a systemic approach, that considers as object of interest, the whole system, while the methodologies for the analysis of soft systems (soft system methodologies) have different characteristics from mathematic or econometric models:

- they take the real world as object for the analysis and not an artificially generated situation;
- their objective is to individuate changes in the system that individuals involved in the system of interest consider feasible and desirable;
- they have a systemic way of observing world and approaching to problems and issues;
- they consider animation of a dialogue among stakeholders of the system as main research strategy.

2.2 Problems and issues

In the context of analysis of soft and hard systems, and in the perspective of the implementation of an integrated analysis, able to manage complex situations, with the objective of the sustainable development of the system, it is also useful to distinguish between the concept of *problems* and the one of *issues*.

Problems are usually generated by physical processes, generally identifiable, for which it is usually possible to individuate solutions that optimise the system, and widely shared and agreed, since based on objective elements. In this situation it is assumed that the system examined is a physical reality, that will be analysed through systematic approaches, where, on the other hand, also the effect of externalities could be considered, using mathematic or econometric models.

Issues are usually generated by the interaction between economic and social processes, for which there is not always an objective optimal solution, or, at least, one that is shared among all the stakeholders.

The analysis of complex issues is not possible only through the use of models, since they necessarily refer to real case studies, characterised by real geographic boundaries and elements that involve more than one discipline at the same time. In this context elements as dialogue, communication, learning play a key role in the definition of the objectives and of the intervention strategies which ensure a sustainable development in the rural system, guiding it towards the sustainable use of natural resources.

The role of experts is essential not only for the technical aspects related to the implementation of a model, but firstly for the creation of effective platforms for dialogue among subjects that contribute to the identification of the problem to be faced. In this way the responsibilities

about the decisions to be taken will be shared among all stakeholders and one of the final objective is social learning. These methods, which enhance the process of social learning among stakeholders, use a series of tools, as techniques for communication and facilitation of dialogue.

3 Theories and concepts about policies

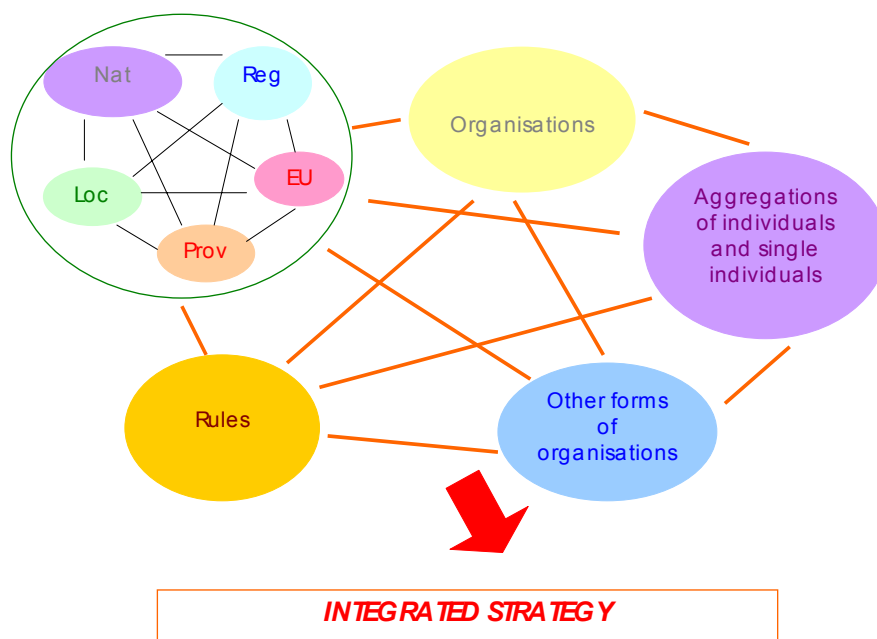
In order to understand and to manage complex systems and, among them, rural systems, and to direct them towards sustainable development it is necessary to build a strategy, or, better, an integrated strategy of development.

An integrated strategy is originated from a series of interactions among stakeholders, at the purpose of achieving shared objectives. This could be favoured by the presence of a solid structural basis exists, or, in other words, by the existence of a favourable context in which stakeholders interact and interrelate in the system.

In this context it is essential to enhance concerted actions at local level, both because all stakeholders involved in the system are more aware about the local problems and issues to be faced and are also more involved in the rural system and so more interested in facing and solving the problem. Consequently the actions realised will be more structured and more specific for the local context, since they will be directly addressed to face local issues. This he integration could be considered strategic, since it is aimed to focus on the local issue, with the main objective of sharing choices and concerting actions.

As figure 3 shows, in any system many kinds of relations can be built at many different levels of decentralization: it depends on which are the stakeholders involved and on the difficulties and obstacles encountered in establishing those relations. Since such a situation is particularly unstructured, an analysis of such a kind of system, that considers also the variables of the relations among stakeholders, cannot be carried out without the intervention of a multidisciplinary team.

Fig. 3: Strategic integration



Source: artwork by the author, 2003

Through a strategic integration stakeholders define common objectives and establish a series of concerted actions that, in such a context, should be the natural consequence of shared choices.

The structural context that a system should have, in order to “accept” the implementation of an integrated strategy, is not simple to achieve: it depends on both exogenous and endogenous variables.

The former are elements proper of the territory (governmental class, social relations, wealth, presence of natural resources, economic development, historical facts) that create a kind of path dependency, addressing the system through a certain kind of dynamics and a certain way of acting and evolving.

The endogenous variables are not well structured, they could result from the multiple relations established and evolving among stakeholders and so from the implementation of an integrated strategy.

If the objectives are shared and the actions are concerted and collective, directed to achieve the common objectives, these elements are sufficient to initiate a sort of “self-feeding” process of the system, that could enhance a diversion from the “path”, which means a stimulation to become more dynamic and to evolve through sustainable development, even if, of course, it is unavoidable that there will be adverse forces redirecting the system towards the path.

In rural areas the presence of an integrated strategy is essential to enable the definition and the implementation of integrated policies and, consequently, to create the conditions for rural sustainable development. It is widely recognised that rural development does not only mean agricultural development, so that it is not sufficient to enhance the improvement of the agricultural policy.

On the contrary the process of implementation of policies should include all policies that regulate a rural area: all them should act together, co-ordinately, in order to impact on the area and not only on the interested sector.

If policies are concerned in an integrated way, each one will benefit from the action of the others and the result will be the creation of synergies on the territory. As a consequence, the process towards the sustainable development will be quicker.

In other words, to go towards the sustainable development of rural areas, it is not sufficient to focus on a sector, but, on the contrary, it is necessary to think to policies for the whole territory: “policies that work” for the sustainable development and the sustainable management of natural resources should be addressed to the territory.

Especially when concerned with rural areas, sustainability and sustainable development assume meanings strictly related with the natural resources: in this context, to enhance a sustainable and so durable development, the agricultural policy could not stand without the environmental policy, which concerns the use of natural resources. At the same time, these should be projected in relation to the other ones, as the transports policy, the industrial policy and so on. As a consequence sustainability cannot stand without concepts as multiple perspectives, shared objectives and collective action.

3.1 Building platforms for collective action

Platforms play an essential role in complex systems, in order to enhance an integrated strategy, finalized to the sustainable use of natural resources and hence, to rural development.

A platform is concerned with the concepts of sharing knowledge, experiences, opinions and ideas. It could be a (physical) point meeting for the stakeholders of a rural system, finalised to the development of a process addressed to achieve a shared objective.

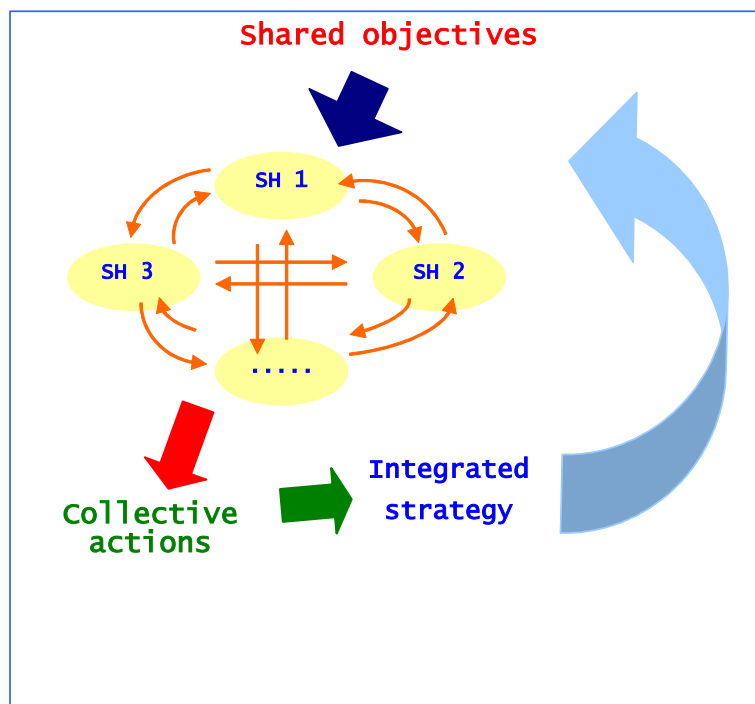
The apparently easiest way to enhance such a process is to stimulate the existing platforms. This is easier when there is a favourable context in the sense illustrated above, that is the existence on the territory, of the conditions for the development of collective actions. This conditions, on the other hand, are not essential, and, in some cases, could represent also an obstacle: it depends on the kind of relations already existing among the stakeholders involved.

When these conditions do not exist, that is when stakeholders do not interact, do not manage to find common interests on which build collective actions, a first step to run could be to try to highlight a common objective, or, in other terms, to arise a common issue.

This element could become a “decoy” to enhance a series of interactions resulting in the formation of a new platform for discussion and for collective action.

Figure 4 shows how the continuous interactions among stakeholders, when there is a common objective, could enable the definition of collective actions which result is an integrated strategy, that is the first basis on which to build integrated policies. The implementation of the new shared policy could cause a new start of the process, at an upper level of wellbeing of the system.

Fig. 4: Process of an integrated policy



Source: artwork by the author, 2003

To achieve this result it is necessary to act at local level, arising a strong issue for the area (i.e. the sustainable use of water), able to involve all stakeholders of the system and to redirect all their individual interests, which become of secondary importance, towards the common objective.

3.2 Facilitation as tool for social learning

The process that will result from in collective actions should start with the highlighting of a common issue, able to arise a shared objective.

As mentioned above, the issue represents a “decoy” that stimulates stakeholders to interrelate to each other, in order to face the problem.

In this context, anyway, the intervention from an outsider becomes essential to bring into the system a “breaking” element, able to arise an issue in the system.

This “figure” could be an authoritative stakeholder, trusted in the system, or an exterior individual, unknown in the system. His objective is to keep the different stakeholders together, using a series of tools and methods, by which he facilitates the dialogue and stimulates the discussion among them, enhancing a process that will bring to shared choices and consequently to collective action.

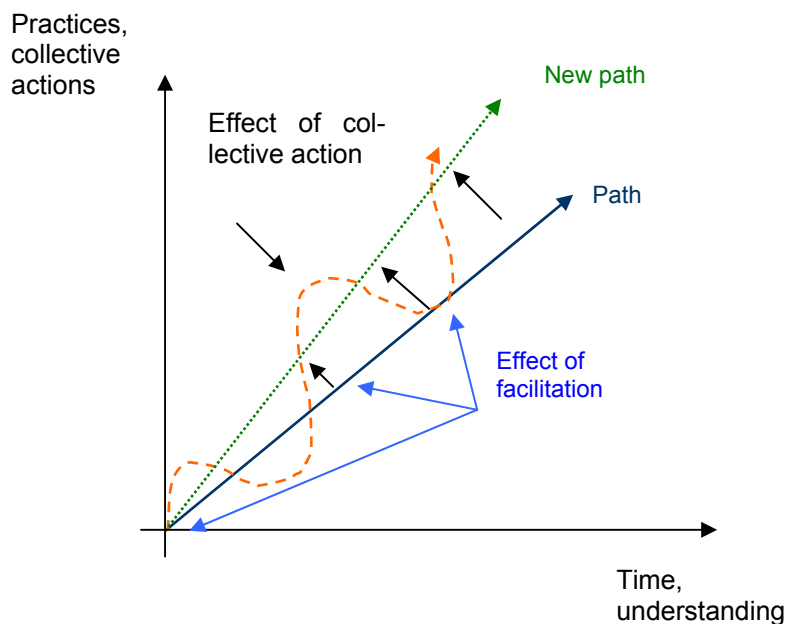
This is the role of the facilitator and facilitation can be used as a tool, also recommended by the EU, for public participation to implementation of policies resulting from a process in which every stakeholder has the responsibility for the decision taken. The policy implemented is the result of a process of dialogue, confrontation, exchange of knowledge, experiences, opinions and ideas among all stakeholders, who, through this tools, develop and run a process of social learning.

This is a complex concept which has a lot of definitions that change depending on the point of view of the observer and on the situation. The process of social learning should bring to a situation in which the learning process of every stakeholder is improved as the result of the interactions and the sharing of knowledge and experiences.

In the context of sustainable use of water and natural resources the process of social learning should be finalized to develop the awareness of stakeholders involved in the system about these issues and to stimulate them to consider it the common objective and to finalise their actions to the improvement of the situation around the natural resources, and in this particular case, water.

As figure 5 shows, through the continuous stimulations enhanced by facilitation it is possible to create the conditions to improve the situation of the system, defining a new path, that is the result of the “self-feeding” effect of the system given by the process of social learning. In other words, the effect of collective action stimulates stakeholders to change their “habits”, redirecting their choices and their actions, that determine a process of social learning.

Fig. 5 : Social learning process finalised to sustainable development and management of natural resources



Source: artwork by the author, 2004

4 The SLIM experience

SLIM stands for Social Learning for the Integrated Management and Sustainable Use of Water at a Catchment Scale.

The SLIM project is a multidisciplinary EU research project which main theme is the investigation of the socio-economic aspects of the sustainable use of water. Within this theme, its main focus of interest lies in understanding the application of social learning as a conceptual framework, an operational principle, a policy instrument, and a process of systemic change.

The objective of the project is to give suggestions to policy makers about ideal tools and processes to use and develop for the implementation of policies finalise to integrated catchment management and sustainable use of water.

Social Learning in recent years has attracted interest as a different way of conducting public business, alongside regulation, compensation, stimulation, and the operations of the (free) market. It also has been promoted as essential for the management of complex natural resource dilemmas, and a key process in adaptive management. The SLIM project investigates these claims and expectations. The introduction into national law of the Water Framework Directive, and the requirement for public participation in its implementation, adds relevance to the research.

The research teams are working with case study partners at various sites in England, Scotland, the Netherlands, the Atlantic coast of France and the Marche Region of Italy. The research has been conducted in part as a process of co-learning and action researching. The contribution of all the project partners to the material presented in this paper is gratefully acknowledged.

Water is considered all over the world one of the most important resource to be managed and preserved; it has been recognised as a transversal issue, since it concerns many different aspects of everyday human and natural life and activities and, of course, of their development. That is the reason why local, national and international institutions, associations, single individuals, and so on, are all concerned with water. The issue of sustainable management of water resource and of water pollution is, therefore, of crucial importance and also a topical question to be analysed.

The Italian experience within the SLIM research project is being conducted by the SLIMAN team, a group of researchers from the University of Ancona, with different backgrounds, who chose as a case study the rural area of the two rural communes of Serra de' Conti and Montecarotto, in Marche Region. The choice of the system of interest has historical and geographical reasons.

That area has been the first in EU in which a particular measure of the EU Reg. 2078/92 has been implemented for five years between 1997 and 2001. This concerned the low environmental impact in agriculture since the area is affected by the problem of nitrates in the water, for which agriculture is considered one of the main responsible. There have been different studies over that event and in particular bio-physical data to study water conditions have been collected starting from 1997 and this is still in progress.

The geographical reasons have been determined through a socio-economic and a territorial analysis of the rural area of the two communes and of the inland hilly area of the Marche Region, which presents particular characteristics at socio-economic level, for the presence of particular elements on the territory, related both to the structural and to the soft part of the system.

The research team recognised the system as complex and concluded that the territorial analysis, or the bio-physical monitoring alone were not sufficient to completely understand the system so that a multidisciplinary approach has been introduced, even considering the social implications determined by the analysis of the soft part of the system.

As a consequence, three different paths of research have been defined and integrated to each other: the bio-physical monitoring data, the territorial analysis, the action research.

In this context a series of actions have been prepared and realised in the system, determining a new way of researching, the action research, by which researchers decided, in an experimental way, to directly intervene in the system, in order to determine an "irruption", which could have brought it to a change. This was projected to be realised through the involvement of stakeholders, to enhance social learning processes, finalised to integrated catchment management and sustainable use of water .

The team, after defining the boundaries of the system, individuated the stakeholder involved and contacted them in order to experiment a platform, organising occasions for meetings among all the different types of stakeholders individuated in the local system. They were farmers, citizens, practitioners, politicians, policy makers, tourist operators, representatives of the local and regional farmers' unions.

One of the meetings have been organised with the local operators in the tourist sector, as local owners of farmhouses, restaurants, hotels, representatives of local associations for the promotion of tourism and of the territory, a photographer of the territory, local councillors for territory, agriculture, environment, culture, and so on.

Before the meeting every participant had been asked to take pictures of the positive and of the negative aspects of the territory, that have been discussed during the meeting.

After meeting all stakeholders separately in different dates, a last meeting have been organised, trying to put all them together. The most interesting output have been that farmers have had the opportunity to meet directly politicians, as stated by farmers themselves. Another important result have been the level of discussion emerged, the subjects discussed and the sharing of knowledge.

Another kind of intervention has been made using other tools for dialogue facilitation, as focus groups, individual or group semi-structured interviews, together with informal meetings and discussions.

A different tool used by the Sliman team, but for the same purposes, has been a theatre event. The objective of this event was to capture the attention of a wider range of people on water issues related to the rural area object of study, but also on the "trasversality" of these issues, in the sense that they concerns also other areas, other realities and not only the case study area. In this context all people become potential stakeholders not for the event or for the system under analysis, but for the system they live in.

The event has been projected to be a sort of "irruption" in an already established occasion, a festival celebrating a typical local product (cicerchia, which is a legume), which usually attracts lots of people especially from all over the region, but also from other parts of Italy (and also some foreigners who know the place and the tradition). The play did not take place inside a theatre, but all around the small village of Serra de' Conti, during the festival, it was planned to be interactive with people and it consisted on five different scenes in which also local people were involved to play. The script has been prepared by the producer, who, in the months before, established in Serra de' Conti, in order to get familiar with people, history, traditions and opinions about the issue.

During the plays stakeholders who were assisting have been interviewed at the purpose of trying to capture eventual indicators of the social learning process that was eventually in act.

At the same purpose, all the event organised within the action research path have been analysed by the research team afterwards, through debriefing sessions, in order to capture the most meaningful indicators of the intervening process of social learning among the stakeholders (researchers included).

Some results obtained from all the intervention research events, at least at experimental level, are positive, in the sense that stakeholders who participated declared to be satisfied to have had an opportunity to meet other stakeholders which usually do not meet for this objectives.

This is considered, by the research team a positive result in the light of the concepts of platform, collective actions and social learning, even if, at least for the moment, at experimental level.

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