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**Seeking the factors to stimulate the users in coastal zones planning.  
Case study: Open discussions with mussel farmers in the Axios river (GR)**

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**Abstract**

*In the framework of an integrated coastal zone management, the involvement of users is required and “open discussions” is one of the techniques used for their participation. The authors used this technique during a project for the sustainable development of mussel-culture in the coastal zone of the Axios Delta. Open discussion contributed to the acceptance of the scientific results by the users of the aquatic environment (mussel-farmers) who addressed trade-offs in their own way. The majority of their arguments were incorporated in the formation of the management rules, presented in the final report of this project. The present paper summarizes this experience as well as the existing ways for the involvement of users in a decision planning process and demonstrates how open discussion is a prerequisite factor for the success of sustainable development planning in Greece.*

**Keywords:** Open discussions; Mussel-farmers; Integrated Coastal Zone Management; Decision making process; River Axios.

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**Introduction**

According to the principles of sustainable development, economic growth should respect the balance of the natural environment and support the social welfare. In this concept an integration of environmental and social considerations in all the human activities is required.

The sustainable development of the activities included in the primary sector has been defined by FAO as follows: “*Sustainable development is the management and*

*conservation of the natural resource base and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations. Such sustainable development in the agriculture, forestry and fisheries sectors conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technically appropriate, economically viable and socially acceptable” (GESAMP, 2001).*

In Greece the sustainable management of the primary sector is a priority and especially

in the coastal zones where intensive and competing uses are concentrated.

The coastal zone management should consider both the marine and terrestrial portions of the coastal zone, as well as the river basins draining into it. Since the extent of the zone over which the land and the sea interact is a specific area, it is not appropriate to give a general a priori geographic definition of the “coastal zone”. Indeed, important driving forces or areas of impact are frequently located in other administrative units and possibly far from the coastline as many of the systems influencing the coastal zone are physically dispersed (E.C., 2000).

In order to approach the coastal zone management efficiently we adopted the DPSIR framework<sup>1</sup> (Drivers-Pressures-State-Impacts-Response) describing the interactions and interdependencies between human activities and the natural environment. The objective of this framework is to provide a way of identifying the socio-economic drivers (“D”) which create environmental pressures (“P”). The new environmental state (“S”) has negative impacts (“I”) on environmental and socio-economic systems and leads society to react trying to solve these problems with a policy response (“R”) (Figure 1).

The present article focuses on the part of the DPSIR chain related to “Policy Response-

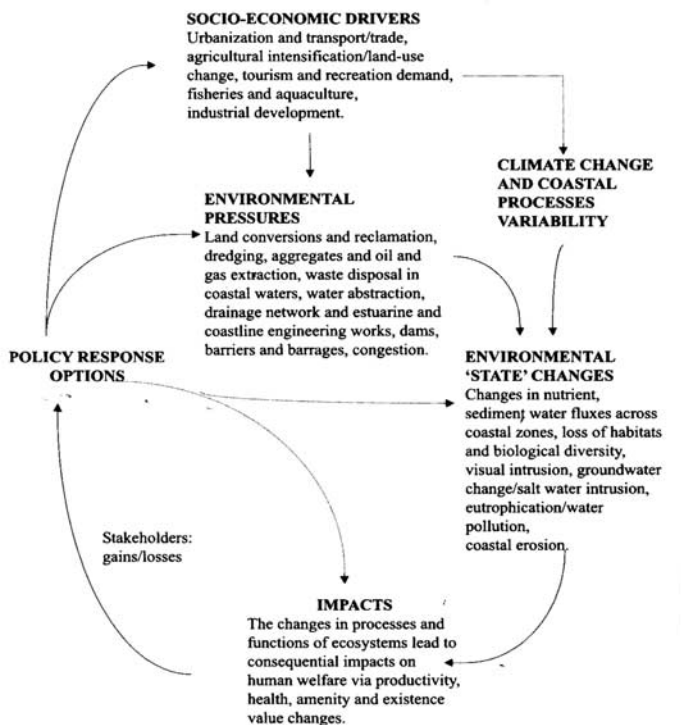


Fig. 1: DPSIR Framework: Continuous feedback process in coastal areas (TURNER, 2000)

<sup>1</sup> The DPSIR framework is used by international organizations [OECD (1994), EEA (1999a;b;c), UNITED NATIONS (1999), EUROSTAT, etc.] for the application of the environmental policy.

Options (R)” where the cooperation of all the stakeholders<sup>2</sup>, involved in the various steps of decision-making, as well as in the relevant steps of policy implementation, is required. This participatory appraisal is introduced by the European Commission (E.C.) and other international organizations and particular attention to the end-users’ involvement is paid<sup>3</sup>, considering that the success of any management measure depends critically on them (E.C, 2001a; OECD, 1999). One way to get them involved is through the use of the open discussions technique.

This technique was used during a project which was elaborated in the year 2000 for the sustainable development of mussel-culture in the coastal zone of the Axios Delta. The exchange of opinions between natural environmental scientists and mussel-farmers has generated the conditions for the common formulation of the required management plans.

## Materials and Methods

Until today most of the policy options were established according to the top-down approach, which has not sufficiently taken into account the social, political and environmental context, in the formulation and implementation of a management measure (WILSON, 1997; MITCHELL, 1989).

The opposite of the top-down process is the bottom-up approach by which goals are formulated by the users and ways to achieve them are sought. What public policy makers

perceive to be “perfect” policies may not be seen as appropriate by those affected by the bottom-up method (WILSON, 1997).

Nevertheless, the combination of top-down and bottom-up mechanisms, which promote participatory planning, is considered as a proper way<sup>4</sup> for the design and effective application of management options.

As is mentioned in an edition of E.C. (1999a): *“Integrated Coastal Zone Management (ICZM) uses the informed participation and cooperation of all interested and affected parties to access social objectives in a given coastal area at a given time and to initiate the actions necessary to move towards meeting these objectives”*.

JENTOFT *et al.* (1998) have argued that fisheries’ management should be a co-management in the perspective of *“a process of social creation through which knowledge is gained, values articulated, culture re-expressed and community created”*.

In the OECD study (1996) it is cited that *“co-management has proven to be a successful approach to management fisheries”*.

Users will be more likely to accept changes to their traditional activities if they have direct participation in the decision-making process with the needed consultation (GILMAN, 2002; CURRY, 1997).

Furthermore, the cooperation of all the parties involved in management plans is an important step for the application of measures in cost-effective ways (ZANOOU *et al.*, 2003).

The end-users’ involvement in water policy projects, is mainly gained with the use of questionnaires, interviews and the focus group

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<sup>2</sup> The term stakeholders includes all organizations and individuals who have management responsibilities or have the power to influence the decision making process or could have a role in the implementation of decisions or will be affected by the resulting management activities (E.C., 1999b; 2001b; GESAMP, 2001; HILL, 1999; GRIMBLE & WELLARD, 1997).

<sup>3</sup> E.C. (1999a; 1999b; 2000; 2001b); GESAMP (2001); European Water Framework Directive (2000/60/EC); L148/24/6.6.2002/EC concerning the implementation of ICZM in Europe; UNEP/MAP/PAP (2001); EEA (1999c); OECD (1999).

<sup>4</sup> RAMSAR CONVENTION ON WETLANDS (1998); VEDUNG (1998); LANE & STEPHENSON (2000); ZANOOU & ANAGNOSTOU (2001).

technique as are presented in the following section.

Open discussions is another technique which is used in the participatory interactive design. The results of our experiment with open discussions between scientists and mussel-farmers in the Axios Delta are analysed.

### ***A. Questionnaires, interviews and focus groups' technique***

With questionnaires, interviews and focus groups' technique, used in water management projects, we may obtain information about:

a) The users' opinion on the drivers of the environmental pressures and the related socio-economic impacts (phases "D" and "I" in DPSIR, see Fig.1) as well as on the alternative proposed scenarios (phases "R" in DPSIR).

b) The factors which influence the users' decision to adopt an environmental friendly practice. A few more details about these factors are presented in the following. This presentation could help the identification of the data needed in order to understand the behaviour and interests of a stakeholder group and organize the appropriate educational or informational programme for their involvement in the management procedure. The user information/education is indispensable before the adoption of a measure as well as during its implementation, whereas through monitoring the needed corrections should be realized to finalise their profile.

### ***Questionnaires and interviews***

Questionnaires and interviews are used in different projects, in the sector of water policy for the study of the farmers' profile, while from the reviewed literature there is no available information for relevant results concerning mussel-farmers. Considering that mussel-farmers have many common characteristics with farmers, the interpretations of farmers' factors could be used in the efforts for mussel-

farmers' involvement in water management projects.

Analytically, with the use of questionnaires and interviews we are trying to understand the factors that may influence the decision of farmers to adopt an environmental friendly practice (MORRIS & POTTER, 1995; PYROVETSI & DAOUTOPOULOS, 1997; WILSON, 1997; KRISTENSEN *et al.*, 2001).

WILSON (1997), using questionnaires to farmers in ESAs in the UK, has classified all these factors in two central categories: scheme factors and farmer factors. According to the political and socio-economic context, in each case study, some of these factors influence the end-users more. Analytically these factors are:

I. Scheme factors:

a) Payments: in most of the case studies farmers' participation is greatly influenced by payments (e.g. subsidies). As O'CARROLL (1994) cites, choosing the appropriate level of payments is one of the major problems in the effort for the application of an agro-environmental mechanism (see also MORRIS & POTTER, 1995),

b) Scheme duration, c) Scheme information, d) Voluntary nature, and

e) Changes in farm management, required by a scheme: a scheme with the least possible alteration or no changes is adopted easily.

II. Farmer factors:

a) Farmer characteristics:

- Age of farmer. As MORRIS & POTTER (1995) mention the farmers who belong to the youngest age group participate in a new practice more easily.

- Education is one of the strongest variables determining farmers' behaviour. (see also MORRIS & POTTER, 1995; PYROVETSI & DAOUTOPOULOS, 1997).

- Dependency on farm income, i.e. farm households that are not entirely dependent on their farms for income (pluriactivity) may be more willing to adopt environmental friendly farming practices. On the other hand, the farmers who depend entirely on their farm for

their income may be more likely to welcome additional income supports such as subsidies for the application of an agro-environmental scheme.

- Successor factor: The farmers without successors may be more willing to adopt agro-farming (see also POTTER & LOBLEY, 1992).

b) Farm size: The argument was that there were farms of a certain size which fall under the threshold of profitability for scheme participation and others which have the conditions to participate (land eligible for agro-environmental scheme i.e. non-intensively used farmland). In general, larger farms accepted changes induced by the scheme (e.g. lower stocking rates) as the large financial payouts amply compensate them. Furthermore, according to the MORRIS & POTTER (1995) survey results, large farms easily adopt new measures.

c) Information environment: newspapers and other local networks such as TV, radio, etc.

d) Dynamics within the farm district:

- Rate of neighbour participation (see also WILSON 1996)

-Follow the leader mentality (for the influence of community leaders: see also KRISTENSEN *et al.*, 2001).

-Spread of innovation (see also KRISTENSEN *et al.*, 2001).

Nevertheless, according to VAN ASSELT & RIJKENS-KLOMP (2002) *"interviewing can be used for participatory purposes, but is not a participatory method per se. With participatory methods non-experts play an active role in order to articulate their knowledge, values and preferences"*.

#### *Focus group technique*

A focus group is a planned discussion among a small group of stakeholders where scientists play the role of facilitator-moderator and is designed to obtain information about their preferences and opinions in a defined area of interest in a permissive, non-

threatening environment (KREUGER, 1988; VAN ASSELT & RIJKENS-KLOMP, 2002).

DESVOURGES AND FREY (1989) cite: *"While focus groups can provide excellent qualitative data and be very helpful in questionnaire design, there are, however, drawbacks. The researcher, for example, has less control of the interview and response patterns, particularly when compared to individual interviews, Thus, a great deal of the information brought out in the interview may be irrelevant or unusable. ... As a result, outcomes will not accurately reflect the feelings or attitudes of participants"*.

#### **B. Open discussions**

In terms of the literature presented above, related to questionnaires, interviews and the focus technique, we may consider that with these techniques we gather important information about the users' profile, their willingness and ability to adopt a new scheme but, there is no active participation of all the end-users in the formulation of management planning.

For an interactive planning by build understanding different approaches are used such as the "Logical Framework approach" which is developed as a tool for the conceptualisation, design and execution of development projects or the approach "Future search" in which the main objective is the achievement of consensus among stakeholders and usually takes three days' meetings, etc., (IADB, 2002).

Open discussions is a technique included in the context of interaction between experts and users. In the atmosphere of open discussions the users have the opportunity to discuss, understand and support, through their experience, the design of a water planning proposal.

NIELSEN & VEDSMAND (1999) states two case studies where open discussions or "coffee meetings" are organized in the frame of co-management fishery practices. In the first

case study a cooperative management in the Kattegat fishery is examined where open discussions support the development of a learning process. All the participants contributed their particular knowledge and cooperated as a group in order to develop a clear management scheme. The exchange of knowledge and information has been a precondition for implementing a regime of acceptable days-at-sea regulation. In the other case study, concerning delegated management in the Danish matjes herring fishery, a series of weekly “coffee-meetings” is organized which contributed with the exchange of opinions and comments.

In TURKELBOOM & WANGCHUK (2002) it is cited “*with open discussions a productive interaction was created between different sources of knowledge and a general increased awareness about land conservation was obtained*”.

## Results

### *Open discussions with mussel-farmers in the Axios Delta*

Two thirds of the total Greek mussel production (*Mytilus galloprovincialis*) is concentrated in the area of the Axios Delta. For this reason a sustainable mussel farming plan in this area is a priority.

In this context the HCMR elaborated a relevant study (NCMR, 2001) for the regulation of the potential production, in accordance with the local environmental indicators and the ecological-economic carrying capacity.

The HCMR research team were seeking efficient ways to communicate with mussel farmers in order to learn their opinion on the proposed management plan and on the other hand, to explain to them why a new procedure of production is needed.

At first the research team organized, in collaboration with the mayor, a workshop day in the region where the mussel-farmers live

and invited them together with representatives of the competent public authorities.

The workshop programme included a presentation of scientific proposals, for the operation principles of the mussel culture units in the Axios Delta with a discussion after the presentation.

Unfortunately, from the 200 mussel culture farmers only 10% came, in contraposition to the many researchers and representatives of the public authorities.

Many of the mussel-farmers were close at hand though, in the local cafes. Some of them were acting as messengers between the discussions in the workshop and the cafes.

After this unsuccessful attempt, the research team looked for other ways to stimulate and persuade the farmers to participate in a discussion.

In this concept a new meeting was organized. Its difference being that the farmers would be the speakers and the researchers would be the recipients in the atmosphere of an “open discussion”.

The mayor was again asked to take on an active part in this new meeting to convey the message of this reversed system to the mussel-farmers.

The argument presented to the mussel-farmers was that in this new meeting everyone would have the opportunity to express their opinions and experiences, needed to support a new mussel farming plan in their units. The discussion would take place among all of them and not only with representatives of their association. The principal role of the scientists would be to facilitate the discussion and to respond to their questions.

As a result of this new effort to communicate with the mussel-farmers 90% of them came and there was a very interesting discussion lasting about 4 hours. In the frame of their active role they took a great responsibility for their opinions and some of them had proposed management scenarios for the general “good” even to the detriment of their personal interests.

This open discussion provided the conditions for interactively exploring the mussel planning issue in the Axios Delta.

The outcome of this exchange of opinions was new information to scientists, gathered from the users as well as management proposals based on those acceptable to the users. These outputs were incorporated in the management report of HCMR (NCRM, 2001), which was submitted to the public policy makers.

## Conclusions

In the reviewed literature particular attention is given to the involvement of users of the primary sector in the sustainable development process.

Their participation is gained with the use of techniques such as questionnaires, interviews and focus groups.

These techniques mainly aim at the understanding of the factors which influence user position in registering their opinion about the drivers of the environmental pressures and socio-economic impacts, as well as considering their position about the alternative proposed scenarios.

Unfortunately, the use of these techniques is not a common practice in the water management process, especially in Greece.

Nor is much attention paid to find ways for a cooperative nature of discussions and stimulation of an active dialogue with the users, for the formulation of the management measures.

“Open discussions” is a technique included in the active participatory ways during the decision-support processes. This method was proved as an efficient way for the formulation of management planning for the mussel culture units, in the Axios river Delta.

The communication with mussel farmers was organized in a free-format process by giving the users the possibility to express their views on the proposal plan.

The discussion was based on the interaction and mutual learning between scientists, administrators and users.

The results of this way of participatory design were new information to scientists, gathered from the users’ experience, which were added to the report to the public policy maker as well as more scientific arguments presented to users, building their consensus to management proposals.

As IADB (2002) suggests the chosen participatory process depends on the cultural and social environment in which it is to be employed.

Considering that in Greece there are not many water management projects where questionnaires and the focus group technique are applied, the end-users are not familiar with these techniques. In this concept we believe that “open discussions” are an appropriate, useful and successful way, in order to approach these users and to involve them in the management perception and consensus.

With open discussion there is the opportunity to disseminate the scientific knowledge and to enrich this, through users’ experience. This process could support sustainable water management scenarios.

However, there is a question for the possibility to have in the future a new successful open discussion with mussel farmers of the Axios river. This question is based on the event that none of the proposed measures, included in the final report of HCMR submitted to the competent authority in 2001, was applied until 2004.

The result of this inactivity is continuing mussel-farming production without a required management plan as well as to create disbelief from mussel farmers to public authorities and scientific community.

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