

**PARTICIPATORY APPROACHES TO THE
INTEGRATION OF CONFLICTING LAND USES WITHIN
PROTECTED LANDSCAPES: A CASE STUDY IN THE
PARQUE NATURAL DO SUDOESTE ALENTEJANO E
COSTA VICENTINA, PORTUGAL**

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A dissertation submitted in partial fulfilment of the degree of MSc in
Protected Landscape Management

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University of Wales, Aberystwyth

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DECLARATION AND STATEMENTS

DECLARATION

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

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'Would you tell me please, which way I ought to go from here?'
'That depends a good deal on where you want to get to', said the cat.
'I don't much care where', said Alice.
'Then it doesn't matter which way you go', said the cat.

Alice in Wonderland, Lewis Carroll

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ABBREVIATIONS AND ACRONYMS

AALA	Associação de Agricultores do Litoral Alentejano (Association of Littoral Alentejo Farmers)
AAMA	Auditor do Ambiente do Ministério da Agricultura (Environment Auditor of the Ministry of Agriculture)
ABM	Associação de Beneficiários do Mira (Mira Irrigators Association)
ACL	Associação de Criadores de Limousine (Limousine Breeders' Association)
ADL	Associação de Desenvolvimento do Litoral Alentejano (Littoral Alentejo Development Association)
AHM	Aproveitamento Hidroagrícola do Mira (Mira Irrigation Scheme)
AHSA	Associação de Horticultores do Sudoeste Alentejano (Southwest Alentejo Horticulturists' Association)
APBDA	Associação de Produtores de Batata Doce de Aljezur (Association of Sweet Potato Producers from Aljezur)
CAP	Common Agricultural Policy (of the European Union)
CMO	Câmara Municipal de Odemira (Municipality of Odemira)
CGAP	Code of Good Agricultural Practices (Código das Boas Práticas Agrícolas)
DGDR	Direcção-Geral de Desenvolvimento Rural (Rural Development Agency)
DRAAL	Direcção Regional de Agricultura do Alentejo (Alentejo Regional Agency of Agriculture)
DRAOT-Alentejo	Direcção Regional do Ambiente e Ordenamento do Território do Alentejo (Alentejo Regional Agency of Environment and Land-use Planning)
EC	European Commission (the policy-making institution of the European Union along with the European Parliament)
EIA	Environmental Impact Assessment (Avaliação de Impacte Ambiental)
EU	European Union (formerly the European Community)
GAPs	Good Agricultural Practices (Boas Práticas Agrícolas)
GATT	General Agreement on Tariffs and Trade
ICN	Instituto da Conservação da Natureza (Nature Conservation Institute)
IHERA	Instituto de Hidráulica, Engenharia Rural e Ambiente (Institute of Hydraulics, Rural Engineering and Environment)
IPM	Integrated pest management
IUCN	International Union for the Conservation of Nature and Natural Resources (The World Conservation Union)
LFAs	Less Favoured Areas designated under the EU Agri-environment Regulation
LPN	Liga para a Protecção da Natureza (Nature Protection League)
NC	Nature conservation
NGO	Non-governmental organisation
PA	Protected area
PNSACV	Parque Natural do Sudoeste Alentejano e Costa Vicentina (Southwest Alentejo and Vicentina Coast Natural Park)

POPNSACV	Plano de Ordenamento do Parque Natural do Sudoeste Alentejano e Costa Vicentina (Southwest Alentejo and Vicentina Coast Natural Park Management Plan)
PRM	Perímetro de Rega do Mira (Mira Irrigation Area)
SA	Sustainable agriculture
SACs	Special Areas of Conservation designated under the EU Habitats Directive
SPAs	Special Protection Areas designated under the EU Birds Directive
TAIPA	‘Taipa’ – Organização Cooperativa para o Desenvolvimento Integrado do Concelho de Odemira (Cooperative Organisation for the Integrated Development of Odemira Municipality)
VICENTINA	‘Vicentina’ – Associação para o Desenvolvimento do Sudoeste (Association for the Development of the Southwest of Portugal)

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SUMMARY

This study examines the value of participatory approaches to the integration of agriculture and biodiversity conservation in the Southwest Alentejo and Vicentina Coast Natural Park (PNSACV), Portugal. The conflicting relationship between agriculture and conservation therein results from the increasing intensification of agricultural practices, which is currently one of the main threats to the valuable biological diversity in the area. The main purpose of this study is to analyse the appropriateness and feasibility of developing a participatory approach to address agriculture-conservation issues and conflicts in the area of irrigated agriculture within the PNSACV.

A survey based on semi-structured interviews to key stakeholders was combined with literature and documentary review to enable the characterisation of the issues and interests involving agriculture and conservation in the Mira Irrigation Area (PRM). All the interviewees recognised the importance of agriculture and biodiversity conservation in the area, although 78% of them were not fully aware of the value of biodiversity in the PRM. Sustainable agriculture was defended by 61% of the interviewees, whereas 22% advocated modern agriculture as the best model for agricultural development. All the interviewees agreed on the importance of integrating agriculture and conservation in the area and identified the advantages of undertaking such an approach. Furthermore, the interviewees identified some major obstacles to the integration and also suggested very interesting approaches, mechanisms and measures towards the integration of agriculture and conservation in the PRM. As regards participation, the appropriateness of adopting a participatory approach to agriculture-conservation integration was consensual among the interviewees. Moreover, the interviewees identified the major advantages of participation and also some important obstacles.

The results obtained were used to discuss the most appropriate way to address the integration of agriculture and conservation in the PRM area. Therefore, the need to develop a consensual model for agricultural development is discussed, major obstacles to integration are analysed and a framework for the preparation of a participatory process is presented.

Chapter One: INTRODUCTION

1.1. Problem definition

Worldwide, agricultural practices have often played a central role in creating outstanding and biologically rich landscapes (Lucas, 1992). However, in recent times processes of agriculture intensification and land abandonment are increasingly threatening the dynamical equilibrium of agro-ecosystems (Pain & Pienkowski, 1997). This conflicting relationship between agriculture and biodiversity conservation is particularly acute where the intensification of agricultural practices is taking place in environmentally sensitive areas, such as for instance protected landscapes.

The Southwest coast of Portugal was declared a Protected Landscape Area in 1988 in order to protect the outstanding landscape and the cultural and natural heritage of the coast from strong development pressures. In 1995, the area was reclassified as the Southwest Alentejo and Vicentina Coast Natural Park (Parque Natural do Sudoeste Alentejano e Costa Vicentina, or PNSACV in its Portuguese acronym), a category that must be considered equivalent to IUCN Category V (protected landscapes).

Until recently, the dominant agricultural land-use within the PNSACV has remained in low-intensity levels, maintained through traditional farming practices. Such traditional practices support the high biodiversity of the Southwest coast and have contributed to the conservation of a rich and diversified semi-natural landscape (Beja *et al.*, 1996). Nevertheless, the development of the Mira Irrigation Scheme (Aproveitamento Hidroagrícola do Mira, AHM) in 1967 has provided the conditions for the intensification of agricultural practices within an area of 12,000 ha (Ramos *et al.*, 1988), 9,000 ha of which are included in the PNSACV. For more than two decades the system has been underused, but during the 1990s major economic incentives provided by European programmes prompted the revitalisation of the AHM and the increasing intensification of agriculture practices (ProSistemas & Agro.Ges, 1995a; Faria & Paz, 1999). However, the lack of specific regulations for this area in the PNSACV's Management Plan and the inadequate controls and regulations of agriculture at the

national level are allowing very rapid and drastic changes in farming practices, which is resulting in increasing habitat fragmentation and wildlife disturbance.

Therefore, agriculture intensification is currently one of the main threats to the valuable biodiversity of the PNSACV, including species strongly dependent on traditional low-input farming practices. Actually, given evidence from recent studies (Alcazar, 2001) suggesting that significant biodiversity loss may be occurring in the Mira Irrigation Area (Perímetro de Rega do Mira, PRM) due to increasing intensification of production systems and abandonment of traditional farming practices, there is a pressing need to address agriculture-conservation issues and foster environmentally sensitive agricultural practices within the area.

This project was born out of the realisation that the integration of agricultural development and nature conservation needed in the PRM might be considerably facilitated by the active participation of all the interested parties. Indeed, the widespread recognition that the sustainable management of natural resources and the conservation of biodiversity cannot be achieved without the involvement and participation of those who depend upon these resources (McNeely, 1995a) has led, in recent years, to the development of participatory approaches, tools and techniques (e.g. Wilcox, 1994a; Barton *et al.*, 1997; Borrini-Feyerabend, 1997a, b) that may be used to promote the effective participation of local people.

However, although it is clear that the processes of preparation, implementation and revision of management planning and regulatory frameworks attempting to integrate agriculture and conservation would benefit from the adoption of a participatory approach, the effectiveness of such an approach depends on the level at which it is adapted to local circumstances (Carew-Reid *et al.*, 1994; Borrini-Feyerabend, 1997c). The preparation of a participatory process thus requires a thorough analysis of the issues and interests involved and the assessment of the available participatory tools. This report attempts to make both analyses in order to explore the feasibility of implementing a participatory approach to address the agriculture-conservation integration in the PRM.

1.2. Aims and objectives

This project aims at analysing the appropriateness and feasibility of developing a participatory approach to address agriculture-conservation issues and conflicts in the area of irrigated agriculture within the PNSACV and preparing a participatory approach to be adopted in planning and management processes.

Specific objectives:

1. to identify and analyse key stakeholders involved in agriculture development and nature conservation in the Mira Irrigation Area (PRM);
2. to characterise and assess the values, interests and conflicts involving agriculture and conservation in the PRM;
3. to assess the likely advantages of involving key stakeholders in agriculture planning and management processes;
4. to evaluate the available participatory tools and techniques;
5. to prepare a framework for a participatory process to address agriculture-conservation issues in planning and management processes.

1.3. Methodology – the approach

Given the nature of this project and its objectives, the research was carried out in two stages. The first stage aimed at characterising the interests and conflicts related with agriculture and conservation in the PRM as accurately and completely as possible. Thus, a survey based on semi-structured interviews was combined with a literature and documentary review, in a multi-method approach known as triangulation. This was made in order to cross-check the veracity of some individual accounts (Bell, 1999) and gather additional data. Data obtained through this multi-method approach was carefully reviewed and analysed following a content analysis method, which is described in Chapter 4.

The second stage included the assessment of the available participatory tools. A first selection of the tools based on their suitability to address the PRM case was done, and a set of criteria was defined to enable the assessment.

1.4. Structure of the thesis

Chapter 2 goes further in the presentation of the conceptual framework of the thesis, providing a discussion on agricultural development, its integration with biodiversity conservation and the value of participatory approaches in fostering sustainability. These subjects are also discussed in the context of protected landscapes.

Chapter 3 presents the setting of the study including a brief overview of the biophysical, historic and socio-economic features of the PNSACV. This is followed by a broad description of the evolution of farming systems within the PRM and a review of the relationship between agriculture and conservation therein.

Chapter 4 presents the research methodology which includes the literature and documentary review, the survey based on semi-structured interviews and the assessment of participatory tools. As regards the interview survey, aspects concerned with the selection of key informants, interview framework, survey administration, ethical considerations, quality control and data analysis are addressed.

Chapter 5 presents the results of the survey in four main sections: the first explores key stakeholders' perceptions of agriculture importance and evolution in the area; the second presents stakeholders' perceptions of the importance of conservation; the third discusses the importance, obstacles, possible approaches and relevant contributions to the integration of agriculture and conservation in the PRM; and the fourth examines the prospects for participation in the PRM case.

Chapter 6 provides a detailed discussion on the most appropriate way to address the integration of agriculture and conservation within the PRM area. Therefore, the need to develop a consensual model for agricultural development is discussed, major obstacles to integration are analysed and a framework for the preparation of a participatory process is presented.

Finally, **Chapter 7** presents the main conclusions of the research.

Chapter Two: CONCEPTUAL FRAMEWORK

2.1. Agricultural development: risks and opportunities

2.1.1. Global trends in agriculture

Over the past few decades agriculture has changed dramatically, and rural environments in most parts of the world have undergone massive transformations. Largely driven by the pursuit of increased productivity, agricultural modernisation has been characterised by the increased adoption of external inputs – such as modern varieties of crops and livestock breeds, fertilisers and pesticides – large-scale mechanisation of farming practices and the specialisation of agricultural production (Pretty, 1995).

However, although these changes have contributed to significant increases in food production (World Resources Institute, 2000 in Stoll-Kleemann & O’Riordan, 2002) and improvements in resource conservation (Pretty, 1995), there have also been significant environmental and social costs (Barkin & Levins, 1998).

In fact, there is growing evidence of widespread damage to important habitats, pollution of ground and surface waters, soil erosion and biodiversity loss (McNeely *et al.*, 1990; Fry, 1991; Pretty, 1995; Oskam & Stefanou, 1997). Pretty (1995, 4) further describes the environmental impacts associated with modern agriculture:

- “contamination of water by pesticides, nitrates, soil and livestock wastes, causing harm to wildlife, disruption of ecosystems and possible health problems in drinking water;
- contamination of food and fodder by residues of pesticides, nitrates and antibiotics;
- damage to farm and natural resources by pesticides, causing harm to farmworkers and public, disruption of ecosystems and harm to wildlife;
- contamination of the atmosphere by ammonia, nitrous oxide, methane and the products of burning, which play a role in ozone depletion, global warming and atmospheric pollution;

- overuse of natural resources, causing depletion of groundwater, and loss of wild foods and habitats, and of their capacity to absorb wastes, causing waterlogging and increased salinity;
- the tendency in agriculture to standardize and specialize by focusing on modern varieties, causing the displacement of traditional varieties and breeds;
- new health hazards for workers in the agrochemical and food-processing industries”.

The modernisation process has also been responsible for the disintegration of economic and social conditions of many rural communities. Major social impacts include the loss of jobs, the further disadvantaging of women, the increasing specialisation of livelihoods and the widening gap between the well-off and the poor (Pretty, 1995). Trends of increasing concentration of land in the hands of urban investors, and the resulting radical simplification of the landscape structure (e.g. intensification of practices, removal of hedgerows, ploughing of wetlands), have also been widely documented in both industrialised and Third World countries (Lucas, 1992; Pretty, 1995; Stoate *et al.*, 2001).

2.1.2. Towards a more sustainable agriculture

“During the past 50 years, agricultural development policies have been remarkably successful at emphasizing external inputs as the means to increase food production” (Pretty, 1995, 9). However, a growing debate on the future of agricultural development has emerged during the past two decades to question the suitability of pursuing the path of modern agriculture. Two main reasons underpin this debate. Firstly, there is growing evidence that the productivity of high-input farming systems cannot be sustained at current levels (Hails *et al.*, 1990; Pretty, 1995), which suggests that modern systems may have reached stagnation. Secondly, the natural resource-base underpinning agriculture is being progressively destroyed (Hails *et al.*, 1990; Hagen, 1997), mainly due to perverse incentives (McNeely, 1993; Myers, 2002). In the face of such constraints, modern agriculture is unlikely to succeed in the long term.

However, such unsustainable path caused by short-term economic views of agriculture is not the only option for rural societies. As Odum (1989) puts it, there is an alternative scenario that focus on long-term goals more likely to provide a more favourable survival for all people and for all life.

Actually, it is becoming increasingly clear that a more sustainable agriculture can bring environmental, economic and social benefits (Pretty, 1995). In fact, a wide range of resource-conserving technologies, local institutions and groups and supporting policy frameworks have been specifically oriented towards improving the sustainability of agriculture (Pretty, 1995).

Therefore, the growing awareness of the impacts of modern farming on agricultural ecosystems and on the sustainability of arable systems themselves (Stoate *et al.*, 2001), coupled with the emerging evidence of the wider benefits of regenerative agriculture, is resulting in increasing acceptance and support for sustainable agriculture, even within mainstream agriculture.

Nonetheless, sustainability is a very complex and contested concept, meaning different things over different time frames to different people (Pretty, 1995; Cromwell *et al.*, 2001) Thus, precise and absolute definitions of sustainability, and therefore of sustainable agriculture, are not feasible (Pretty, 1995). Sustainable agriculture is perhaps most adequately perceived as a learning process that aims to achieve the following goals:

- “a more thorough incorporation of natural processes such as nutrient cycling, nitrogen fixation and pest-predator relationships into agricultural production processes;
- a reduction in the use of those off-farm, external and non-renewable inputs with the greatest potential to damage the environment or harm the health of farmers and consumers, and a more targeted use of the remaining inputs used with a view to minimizing variable costs;
- a more equitable access to productive resources and opportunities, and progress towards more socially-just forms of agriculture;

- a greater productive use of the biological and genetic potential of plant and animal species;
- a greater productive use of local knowledge and practices, including innovative approaches not yet fully understood by scientists or widely adopted by farmers;
- an increase in self-reliance among farmers and rural people;
- an improvement in the match between cropping patterns and the productive potential and environmental constraints of climate and landscape to ensure long-term sustainability of current production levels; and
- profitable and efficient production with an emphasis on integrated farm management, and the conservation of soil, water, energy and biological resources” (Pretty, 1995, 9).

2.2. Agriculture and biodiversity conservation: the need for an integrative approach

The link between agriculture and biodiversity conservation is very intimate and delicate. Indeed, biological diversity contributes to agriculture in many ways (e.g. new foods, improved forms of existing foods, disease resistance through wild genes) (Wachtel *et al.*, 1989; Hails *et al.*, 1990), and has thus been valued and maintained throughout the centuries by farmers, particularly by those of traditional and low-input agricultural systems (Pretty, 1995).

On the other hand, “without agriculture many special landscape types valued for their rich biological diversity, scenic qualities or cultural significance, would not exist” (Fry, 1991, 415). Their long-term survival is totally dependent on suitable agricultural management. In other words, many landscapes and biotopes of high nature conservation value depend on low-intensity farming practices, and may be threatened by both increased (i.e. intensification) and decreased production pressures (i.e. abandonment) (Curtis *et al.*, 1991; Bignal & McCracken, 1996; Pain & Pienkowski, 1997). For instance, in Europe, the incentives of the Common Agricultural Policy (CAP) have been responsible for recent modifications to traditional land-use systems and to the patterns of biological diversity either through intensification or abandonment of extensive agro-pastoral regimes (Bignal & McCracken, 1992; Meeus, 1993; Lowe & Whitby, 1997; Pain & Pienkowski, 1997).

Despite this close linkage, or perhaps because of it, the balance between agriculture and nature conservation is very fragile. Indeed, agriculture can be an agent of biodiversity conservation, especially if kept under low-intensity levels (Phillips, 1995), but it can also cause significant environmental damages, affecting biodiversity negatively (Fry, 1991; Meeus, 1993). Moreover, despite growing awareness and recognition of the nature conservation importance of low-intensity farming systems, it is unlikely that there will be fundamental changes to the huge areas covered at present by intensive farming regimes. Thus, given the widespread evidence of the implications of such intensive agricultural systems (section 2.1.1.), it is extremely important that some form of compromise between agricultural production and the maintenance of biological diversity is reached. In other words, there is an urgent need to foster approaches that may effectively contribute to the integration of agriculture and conservation.

As it has recently been suggested, policy integration efforts aimed at enhancing biodiversity “will probably only succeed by establishing nationally based strategies of sustainable rural development, set in a broad framework of reforms to agriculture, fisheries, regional development and social integration” (O’Riordan *et al.*, 2002, 118). Clearly, considering the increasing international support for the concept of sustainable agriculture (OECD, 1995; Hardaker, 1997; Collion & Rondot, 2001; European Commission, 2001) and the current knowledge of policies that can be used to support the transition to sustainable agriculture (Pretty, 1995), there are at present huge opportunities to address the integration of agriculture and biodiversity conservation in rural regions through fresh approaches to sustainable agro-ecosystem management.

2.3. The value of participatory approaches in fostering sustainability

“Participation has become the latest buzz-word in the official discourse of both international development organisations and governments in many developing (and developed) countries” (Zazueta, 1995). However, the idea of involving communities in the management of their own livelihood and social well-being is not new.

Indeed, for many years, people have participated in shaping their societies and development paths (Borrini-Feyerabend, 1997c), although in all too many cases this meant that local people were merely informed about what was about to happen, without

being given the chance to express their opinions or influence decisions. This is currently called ‘passive participation’, and it is just the lowest level of participation.

In fact, the many ways organisations interpret and use the term ‘participation’ resolve into seven main types of participation, from the more common ‘passive participation’ to ‘self-mobilization’, where people share decision-making authority and take independent initiatives (Pretty, 1995) (see Appendix 1). However, only the three top levels ensure a degree of real participation, and truly foster local people’s empowerment (O’Riordan & Stoll-Kleemann, 2002) and inclusive social learning (Pretty, 2002). Moreover, as Pretty (1995, 172) mentioned, “if the objective of development is to achieve sustainable development, then nothing less than functional participation will suffice”.

Nowadays, the active and full involvement of communities is widely regarded as of great significance in the definition and implementation of strategies for sustainable development (Keating, 1993; Carew-Reid *et al.*, 1994; Pretty, 1995; Reid, 1995; Barton *et al.*, 1997). The main advantages of participation include focusing on cultural, social and economic interests of the community; integrating community knowledge, skills and resources; and building more effective and responsive development programmes and strategies (Borrini-Feyerabend, 1997c).

Furthermore, there is also a widespread recognition that the sustainable management of natural resources and the conservation of biodiversity cannot be achieved without the involvement and participation of those who depend upon such resources (Lucas, 1992; Wells & Brandon, 1992; McNeely, 1995a; Borrini-Feyerabend, 1997a). Thus, a wide range of participatory approaches, tools and techniques have been developed in the last decade (National Environment Secretariat *et al.*, 1991; Hughes, 1994; Barton *et al.*, 1997; Borrini-Feyerabend, 1997a, b; NOAA Coastal Services Center, 2001), in order to facilitate the meaningful participation of local people.

2.4. Agriculture, conservation and participation within protected landscapes

Protected landscapes have been designed by the International Union for the Conservation of Nature (IUCN) as a category of protected area (Category V) managed mainly for landscape conservation and recreation (IUCN, 1994). The main purpose of protected landscapes is to maintain resource use patterns that respect the integrity of natural and cultural heritage and the harmonious balance between outstanding landscape and resident populations (Countryside Commission, 1987; Lucas, 1992; Phillips, 1995).

Clearly, the adoption of integrative approaches, aimed at harmonising agriculture and conservation, is especially important in protected landscapes, where agriculture is the dominant form of land-use, and agricultural activities have a pivotal role in the maintenance and enhancement of extremely valuable biological diversity (Lucas, 1992; ICPL, 1995). In fact, the conservation of natural values in protected landscapes greatly depends on the full integration of principles of environmental protection and sustainable development into agricultural policies and on the cooperation of local populations in the maintenance of traditional farming practices that enhance biodiversity and shape outstanding landscapes.

Indeed, “by their nature, protected landscapes involve implementation on a cooperative basis with local government and local people, and effectiveness depends on the degree of support and partnership achieved with them” (Lucas, 1992, 83). Thus, it is now clear that participatory approaches are at the heart of success in protected landscape management. The crucial importance of the participation of local populations living inside and around protected landscapes in the planning and active management of their natural resources has therefore been internationally recognised in the Lake District Declaration (Countryside Commission, 1987) and a special IUCN resolution (IUCN, 1988).

Therefore, adopting a participatory approach must be considered a crucial and challenging option as regards the planning of those key resource uses that can be destructive when insensitively developed, such as agriculture (Lucas, 1992; Keating, 1993; OECD, 1995).

Chapter Three: GEOGRAPHICAL CONTEXT

3.1. Biophysical setting

The Southwest Alentejo and Vicentina Coast Natural Park (PNSACV) is located on the coastal plain of Southwest Portugal (37°30' N, 8°57'W). This is a large protected landscape (89,616 ha) that includes a narrow strip of coast and sea, extending along 130 km from about Sines to Burgau (Figure 1). The climate is Mediterranean with Atlantic influence, comprising a dry season from May to September and a wet one from November to April (Loureiro *et al.*, 1984; Ramos *et al.*, 1988).

In the Southwest coast, the confluence of Mediterranean and Atlantic influences and the interaction of people and nature over time has produced an area of beautiful landscapes and high biological diversity. Indeed, the rich and diversified semi-natural landscape of the Southwest region owes its outstanding natural beauty to coastal landscapes that include high cliffs, sandy and shingle beaches, dunes, coastal lagoons and small rivers. The plateau landscape with its patchwork of wooded, meadow and cultivated areas also add to the beauty of the natural park.

The PNSACV contains a very valuable natural heritage including a high diversity of habitats and several endemic and threatened species. In fact, the Southwest coast holds a rich vegetation that includes a large number of high priority plant species, Portuguese endemisms and local endemisms (Pinto, 1996, 1997; Pinto *et al.*, 1996). Regarding the fauna, some of the most important species recorded in the area include the highly threatened Iberian lynx (*Lynx pardina*), coastal dwelling otters (*Lutra lutra*), endemic species of freshwater fish and some sea cliff nesting species, such as peregrine falcons (*Falco peregrinus*), choughs (*Pyrrhocorax pyrrhocorax*) and white storks (*Ciconia ciconia*). Furthermore, the Southwest coast is a very important corridor for spring and autumn migrations of insects and birds, especially raptors (eg. Egyptian vultures *Neophron percnopterus*, booted eagles *Hieraaetus pennatus*, black kites *Milvus migrans*). Detailed descriptions on PNSACV's biodiversity may be found in Beja (1988) and Pinto (1997).



Figure 1 – Map of the Southwest Alentejo and Vicentina Coast Natural Park (PNSACV) showing the area occupied by the Mira Irrigation Scheme (AHM).

3.2. Human use history

Human use history in the Southwest coast dates back to the Palaeolithic Period, but the area has also been extensively used throughout the Mesolithic, Neolithic, Bronze and Iron Ages, as evidenced by the prehistoric testimonies that have been preserved through the times. Evidences of prehistoric occupation show that sedentary communities that settled along the coast were supported by a dual economy of farming and livestock grazing and fishing. Ruins of fortresses built by the Romans and the Arabs also testify to the importance of the Southwest coast in historical times (Quaresma, 1988, 1989; Silva & Soares, 1993).

In the Southwest coast, the historic linkage between the natural systems and the human use of the resources of land and water, mainly through farming and fishing activities, has resulted in interesting cultural values, such as the traditional farming practices and traditional fishing patterns and gear (Pereira, 1972; Meneses & Mendes, 1996). Until the implementation of the Mira Irrigation Scheme (AHM), the agricultural land use included the extensive production of cereals (e.g. wheat, maize, rye, barley), mixed pastures and some subsistence horticulture (e.g. potato, sweet potato and vegetables) (JCI, 1960).

3.3. Socio-economic setting

The Natural Park has a fairly low resident human population. The most recent estimate accounts for almost 27,000 people living within the PNSACV, and a mean population density of 23.8 inhabitants/km² (INE, 2003). Local populations are predominantly rural with concentrations in several small village communities throughout four municipalities (Sines, Odemira, Aljezur and Vila do Bispo) (see Figure 1).

The level of education of local populations is very low, with 23.4% illiteracy rate, and only 40.1% with more than the primary school level (INE, 2003). In 1991, only 40.4% of the population was economically active, and the unemployment rate was 5.4% (NE, 1993).

The most important economic activities within the PNSACV are: agriculture and livestock breeding, fisheries and forestry, which in 1991 employed 49.0% of the active population, the agro-industry, which employed 27.0%, and commerce and tourism, with 24.0% (INE, 1993).

3.4. The Mira Irrigation Area

The Mira Irrigation Scheme (AHM) was built in the late 1960s in order to harness the most important river on the Southwest Coast of Portugal and to allow the irrigation of the coastal plateau from Vila Nova de Milfontes almost to Aljezur (see Figure 1). The irrigation infrastructures include a large dam (Santa Clara Dam) and a complex network of irrigation and drainage dykes (DGSH, 1969), 598,182m and 100,789m long, respectively (Faria & Paz, 1999).

The Mira Irrigation Area (PRM) comprehends 12,000 ha of lands equipped with irrigation facilities (10,670 ha in the Municipality of Odemira and 1,330 ha in the Municipality of Aljezur) (JHA, 1971; DGSH, 1969), 9,000 ha of which being included in the PNSACV (see Figure 1). The irrigation area extends throughout the coastal plain, excluding only the steep slopes of the River Mira, coastal streams and sand dunes.

3.4.1. The evolution of agriculture within the PRM

The development of irrigated agriculture within the PRM area has been particularly slow (ProSistemas & Agro.Ges, 1995a) (Figure 2). Actually, irrigated farming started in the region in 1970, but until the early 1980s only 20-30% of the area was effectively irrigated, and only since 1996 has the irrigated area exceeded 50% of the area equipped with irrigation infrastructures. The proportion of lands in the PRM with irrigated crops increased thereafter to a maximum in 1998, when 75.3% of the area (9,032 ha) was occupied with irrigated crops (see Figure 2).

For many years, the Mira Irrigation Scheme (AHM) has been considered one of the less profitable irrigation schemes in Portugal (Raposo, 1994; ProSistemas & Agro.Ges, 1995b). The poor performance of the AHM during the first 25 years has been mainly associated with the following limitations:

- the existence of large areas that are unsuitable for irrigation (due to the poor quality of the soils and drainage problems) (Hidroprojecto, 1994; ProSistemas & Agro.Ges, 1995a);
- the limitations of the hydraulic infrastructures (Hidroprojecto, 1994);

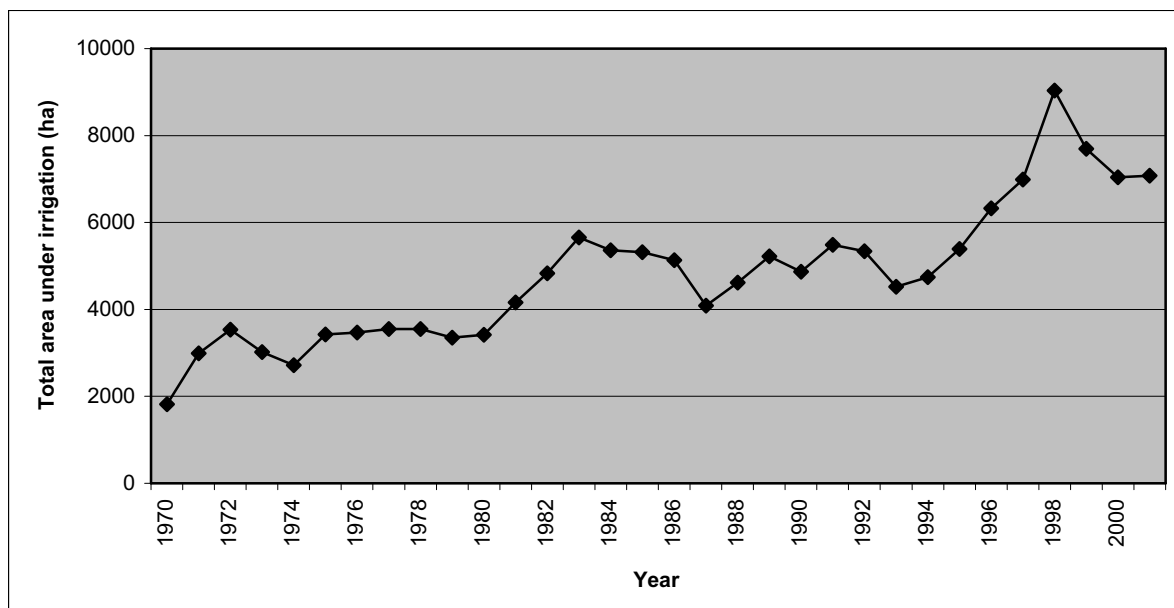


Figure 2 – Evolution of the area of irrigated agriculture in the Mira Irrigation Area (PRM) over the last 30 years. Source: IHERA.

- considerable water loss due to evaporation and seepage caused by cracks in the irrigation canals (Hidroprojecto, 1994);
- the low level of education and professional training of local farmers (ProSistemas & Agro.Ges, 1995a);
- the lack of technical support provided to the farmers (Raposo, 1994); and
- the low financial capacity of local farmers (ProSistemas & Agro.Ges, 1995a).

Indeed, these and other important weaknesses of the AHM significantly constraint the irrigation of many pockets of land within the PRM area (ProSistemas & Agro.Ges, 1995a). For instance, drainage problems are known to affect 6,700 ha, which is 55.8% of the potentially irrigated area (Hidroprojecto, 1994). For this reason, the removal of some unsuitable irrigation lands from the PRM has been proposed as a measure that would contribute to the efficiency of AHM management (ProSistemas & Agro.Ges, 1995a, b, c).

Besides, the recent increase of irrigated areas in the PRM is mainly associated with the establishment of foreign agricultural businessmen in the area. These farmers have introduced new crops (vegetables, fruits and flowers) and modern irrigation technologies, and based their production on the needs of European markets (ProSistemas & Agro.Ges, 1995a).

The evolution of the irrigated areas in the PRM per crop type over the last 30 years is shown in Figure 3. Until the mid 1990s, the dominant crops in the PRM area were summer crops such as rice and maize, and winter pasture and fodder crops (Faria & Paz, 1999). More recently, there has been a steep growth in the production of maize, which is associated with cattle production, and vegetables and flowers for exportation to European markets (Figure 3).

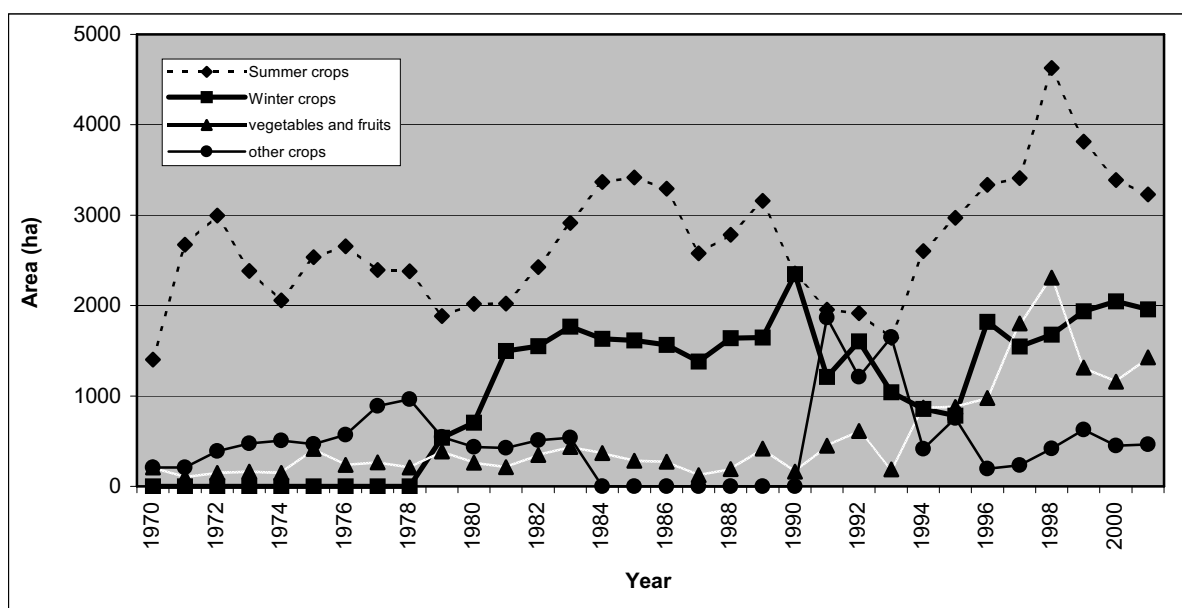


Figure 3 – Evolution of the irrigated areas per crop type in the PRM over the last 30 years (Summer crops = rice, maize, sunflower, peanuts and flax; Winter crops = meadows/fodder and wheat; vegetables and fruits = tomato, potato, sweet potato, beans, lettuce, beetroot, other vegetables and strawberries). Source: IHERA.

3.4.2. The agriculture-conservation relationship within the PRM

The PRM area holds some of the species and habitats with the highest conservation priority within the PNSACV, many of them strongly depending on extensive agricultural practices (Palmeirim *et al.*, 1992; Beja *et al.*, 1996; Pinto, 1997; Alcazar, 2001; Beja *et al.*, 2002). For instance, recent studies undertaken in this area suggest that low-intensity livestock systems are particularly important to maintain the biological richness of many semi-natural habitats interspersed in arable fields (Chaves, 1999; Beja & Alcazar, *in press*). This is the case of temporary ponds and wet heaths, which are particularly interesting and diverse systems that have been classified as EU priority habitats, but are currently threatened by intensive farming practices (e.g. land drainage, ploughing, large-scale use of agro-chemicals) (Beja *et al.*, 2002).

Indeed, the preservation of the dynamic balance of the agro-pastoral systems of the PRM is currently considered a top priority by several authors (Beja *et al.*, 1996; Alcazar, 2001). According to them, the conservation of the valuable biodiversity of the PRM area requires the establishment of mechanisms to maintain the existing matrix of low-intensity farmland biotopes, on which some of the most threatened species depend (Beja *et al.*, 1996; Alcazar, 2001) and the development of good agricultural practices that may preserve the environmental quality of the whole area. Besides, the maintenance of the rich and diversified semi-natural landscape of the PRM area, through the preservation of important natural elements such as temporary ponds, coastal dunes, small woodlands and wind fences, is also considered crucial for the conservation of the PRM's biodiversity (Palmeirim *et al.*, 1992; Pinto, 1996; Alcazar, 2001).

Although the PRM area has been underused for more than twenty years (section 3.4.1.), over the last decade farmers have abandoned traditional agricultural practices, intensified their use of external resources and expanded into previously uncultivated lands, thus increasingly restricting and threatening high priority habitats and species. In recent years, the agricultural intensification in the PRM has also contributed to increased fragmentation and simplification of agricultural landscapes through the removal of hedgerows (i.e. wind fences), trees, small woods and temporary ponds (Beja *et al.*, 2002). These landscape changes, aiming at facilitating large-scale farming operations, and the construction of farm dams, greenhouses and plastic cold frames are

perhaps the most visible signs of agricultural intensification. However, these are not the only impacts of modernisation.

Indeed, the damaging environmental impacts associated with the intensification of farming systems (i.e. increases in inputs) are widely documented (e.g. Fry, 1991; Fuller *et al.*, 1995; McLaughlin & Mineau, 1995; Potter, 1997; Tucker, 1997). As agriculture has increasingly replaced traditional farming practices for high-input ones, so there has been a great loss of natural and semi-natural habitats and wild species (Potter, 1997). Evidence of habitat loss and wildlife declines resulting from the intensification of agriculture have been found across both developed and developing regions in the world (e.g. Fry, 1991; Fuller *et al.*, 1995; McLaughlin & Mineau, 1995; Potter, 1997; Chamberlain *et al.*, 2000; Fuller, 2000). As for the intensification of agriculture within the PRM, little is known about the consequences of such a process to biodiversity, though evidence from recent studies (Alcazar, 2001) suggest that significant losses may be occurring.

However, despite the lack of information on specific biodiversity losses, the widespread environmental degradation and habitat loss associated with two cases of agricultural intensification in the PNSACV justifies a special reference:

- 1. Odefruta** – in the two-year period of 1991-1993, a large estate of approximately 600 ha of sandy soils, located near Odeceixe, was used to produce fruits and vegetables. The implementation of Odefruta's horticultural unit, equipped with high-technology irrigation and drainage infrastructures (Cap.Verde, 1992), was responsible for the destruction of important natural habitats (e.g. temporary ponds) and the large-scale contamination of water and soil. In 1993 the agricultural unit was abandoned. Huge amounts of plastic and metallic cold frames, equipment pieces and packages of agro-chemicals were abandoned amongst the property, and an immense diversity of chemical residues were left in the groundwater and soil in the region. So far, the extent of aquifer contamination and biodiversity loss is not known.

2. **Medo Amarelo** – in 1999, the destruction of coastal scrub on a land plot of about 20 ha, and its subsequent use for the production of potatoes, was considered by the PNSACV as illegal, given the Partial Protection Area status of area, the agricultural activity was impeded and farm machinery was confiscated. This situation was not easily accepted by the farmer and the conflict is currently awaiting a judicial decision.

Finally, it is worth mentioning that although there is some basic scientific knowledge on agro-ecosystems composition and functioning (e.g. Beja *et al.*, 1996; Franco, 1996; Alcazar, 1998, 2001; Chaves, 1999), the dynamics of the PNSACV's agro-ecosystems is still poorly understood. This is particularly worrisome as regards some protected and threatened ecosystems (e.g. temporary ponds and wet heaths) (Beja & Alcazar, *in press*) and species (e.g. bats, Cabrera's vole) (Franco, 1996; Beja *et al.*, 2002). It has therefore been suggested that the conservation of PRM's biological diversity requires the adoption of a precautionary approach to the intensification of agricultural practices and the development of applied research on the effects of agriculture intensification on farmland ecosystems, which may provide practical advice to farmers (Alcazar, 2001).

Chapter Four: METHODOLOGY

Given the nature of this research and its objectives, different methods have been used to obtain and analyse data, in a largely recommended approach known as triangulation (Bell, 1999; Gillham, 2000).

4.1. Literature and documentary review

The collection of conceptual materials was undertaken mainly in academic libraries and public libraries of agriculture governmental agencies. This approach was combined with computer-based searches and meetings with experienced researchers in ecology, sociology and participation fields. All scientific literature was critically reviewed according to research objectives.

The most important sources of information regarding agriculture-conservation issues in the PRM were the technical and scientific reports collected during the interview survey and relevant documents of PNSACV's files. These have been critically reviewed and analysed following analysis guidelines adapted from Bell (1999).

4.2. Survey based on semi-structured interviews

4.2.1. Introduction

In order to gather information on the issues and interests related with agriculture and conservation in the PRM, a survey based on semi-structured interviews was carried out according to the following objectives:

- providing a clear picture of the main values, interests and concerns of key stakeholders, especially as regards agriculture development and nature conservation;
- characterising the real and potential conflicts between the stakeholders;
- identifying the challenges and limitations to the integration of agriculture and conservation in the area; and

- enquiring the willingness of the stakeholders to participate in an innovative approach aiming at the integration of agriculture and conservation in the area.

Focused or semi-structured interviews make use of an interview guide containing previously defined topics and/or questions, though the researcher is free to change the question's order and to add information or new questions (Moreira, 1994; Quivy & Campenhoudt, 1998). Interviews of this nature are very flexible, allowing the adjustment of the interview guide to each interviewee, therefore enabling the informants to provide their own interpretations and perceptions of the topic (Bell, 1999; Furze *et al.*, 1996).

Such flexibility is one of the reasons why the semi-structured interview is widely used in the social sciences (Quivy & Campenhoudt, 1998; Gillham, 2000). This method is particularly appropriate in cases where there is some previous knowledge of the research topic and specific information is required to complete such understanding (Bell, 1999; Ferrando, 2000). Moreover, the semi-structured interview is also commonly used as a participatory technique (Barton *et al.*, 1997; Borrini-Feyerabend, 1997b), which is especially relevant in projects such as this, aimed at designing a participatory approach.

4.2.2. Selection of key informants

One of the basic steps in planning a survey based on semi-structured interviews is to determine the sampling method suitable for the particular research problem being examined (Arbor, 1976). Thus, considering that the main objective of this stage of the project is to characterise the interests and conflicts related with agriculture development and nature conservation in the PRM area which is within the limits of the PNSACV, the use of a non-random sample was judged to provide the most accurate information. Non-random samples are particularly appropriate in cases such as this, where it is possible to select 'key informants' known to be in possession of relevant knowledge and information (Moreira, 1994; Furze *et al.*, 1996). This is usually considered an opportunity or theoretical sample (Moreira, 1994; Bell, 1999).

The selection of key informants was preceded by the identification of the stakeholders involved in areas relevant to the research, such as agriculture and rural development, and nature conservation (Box 1). It was possible to identify at the outset two main groups of stakeholders: stakeholders who are involved in agriculture (ABM, ACL, AALA, AHSA, APBDA, DRAAL, IHERA), and stakeholders who are concerned with nature conservation (PNSACV, LPN), environmental protection (DRAOT-Alentejo) and rural development (VICENTINA, ADL).

Box 1: Key stakeholders in the PRM area	
Associação de Agricultores do Litoral Alentejano (AALA)	Farmers' organisation
Associação de Beneficiários do Mira (ABM)	Irrigators' organisation
Associação de Criadores de Limousine (ACL)	Limousine breeders' organisation
Associação de Desenvolvimento do Litoral Alentejano (ADL)	Development NGO
Associação de Horticultores do Sudoeste Alentejano (AHSA)	Horticulturists' organisation
Associação de Produtores de Batata Doce de Aljezur (APBDA)	Sweet potato producers' organisation
Auditor do Ambiente do Ministério da Agricultura (AAMA)	Environment auditor of the Ministry of Agriculture
Direcção Regional de Agricultura do Alentejo (DRAAL)	Alentejo regional agency of agriculture
Direcção Regional do Ambiente e Ordenamento do Território do Alentejo (DRAOT-Alentejo)	Alentejo regional agency of environment
Instituto de Hidráulica, Engenharia Rural e Ambiente (IHERA)	Institute of hydraulics
Liga para a Protecção da Natureza (LPN)	Environment NGO
Parque Natural do Sudoeste Alentejano e Costa Vicentina (PNSACV)	Natural park
VICENTINA, Associação para o Desenvolvimento do Sudoeste	Development NGO

Key informants were selected on the basis of their positions as representatives of major stakeholders and expertise in such areas. However, although it was attempted to include the major stakeholders in the area, the list of key stakeholders and informants is not meant to be all-inclusive or formally correct. Rather, its main focus is to have a group of key informants that may provide the most accurate and complete characterisation of the interests and conflicts related with agriculture and conservation within the PRM. Therefore, in order to complement the sampling and ensure the inclusion of all stakeholders and individuals that might contribute to such a characterisation, each interviewee was asked whether the 'key informants' list already included all relevant informants (Borrini-Feyerabend, 1997b).

The final list with the 14 stakeholders selected and the key informants actually interviewed is provided in Appendix 2, whereas Appendix 3 briefly presents the profile of the stakeholders.

4.2.3. Interview framework

The interview framework has been prepared according to the survey objectives above mentioned. The interview guide included an introductory section aimed at presenting the study theme and beginning the interview. Besides, the guide included questions regarding the importance of agriculture and nature conservation, the integration of these components, and the usefulness of adopting a participatory approach to address agriculture-conservation issues. The original interview guide in Portuguese, and its English version are provided in Appendices 4a and 4b, respectively.

Questions were carefully designed in order to provide the required information. Special attention was given to question wording in order to avoid double questions, leading questions, presuming questions or questions covering sensitive issues (Bell, 1999). Moreover, the interview guide was reviewed by a zootechnical engineer, an ecologist, a sociologist and a land use planner with expertise in participatory approaches. Suggested changes to the interview questions were carefully considered and incorporated where appropriate.

Additionally, some important concepts were defined prior to conducting the survey and added to the interview guide as an appendix, since it was considered that it would be important to clarify the meaning of some terms. It was considered more useful to have several definitions for each concept, not only because in most cases there is no consensus about a single best definition, but also because in some situations there was the need to explain the concept in several different ways before the interviewee could understand the exact meaning of the question. The actual glossary of important concepts used in the interviews is provided in Appendices 5a and 5b, in its original and translated versions, respectively.

4.2.4. Survey administration

Interviews were scheduled at the convenience of the interviewees after a personal or telephone contact to invite participation on the survey and arrange for a suitable time and place. This previous contact also served to explain the purpose of the survey.

Interviews were conducted from the 24th April 2002 to the 28th May 2002. Upon arrival, an effort was made in order to establish a good rapport with the interviewee and to build a fairly informal atmosphere (Burgess, 1982; Denzin & Lincoln, 1994; Furze *et al.*, 1996). Before the interview, the aim of the project was reviewed with the interviewee and permission requested to tape-record the interview for later transcription and analysis.

Data recording

As far as data recording is concerned, the use of tape recorders is strongly recommended (Burgess, 1984; Gillham, 2000). Indeed, especially in cases such as this, when surveys are based on interviews, using a tape recorder presents many advantages. Firstly, it allows an accurate and complete record of what has been said during the interview (Burgess, 1984; Silverman, 2000), which is particularly important in semi-structured interviews, that preferably use open-ended questions. Secondly, it allows the interview to develop faster and more freely (without the interruptions that would be needed to record the answers if a tape recorder was not used). A third advantage of tape recording is that the communication between the interviewer and the interviewee, and reasoning processes, are greatly facilitated, which allows both to focus on the interview itself (Whyte, 1982).

However, there are important disadvantages in using tape recorders that must be considered. First and foremost, the additional formality provided by the recording equipment is usually pointed out as a serious obstacle to the collection of important information (Whyte, 1982). However, when the interviewees are prominent people in an organisation or community who are used to giving interviews or when the interviewer is acquainted with his/her informants and already has a strong rapport, permission to tape record may be easily obtained (Whyte, 1982).

Another frequently mentioned disadvantage is that interviews that are tape-recorded must be transcribed later on, which, as Whyte (1982, 118) points out, is “an exceedingly time-consuming task”. However, “verbatim transcriptions (are) the essential raw data for qualitative analysis” (Patton, 1990, 379), often revealing important analytic insights and interpretations (Patton, 1990; Silverman, 2000). Furthermore, using tapes and transcripts, unlike notes, allows different levels of analysis, the detailed review of

information (Borrini-Feyerabend, 1997b; Bell, 1999), the improvement of transcriptions and the unlimited analysis of sequences of utterances (Silverman, 2000).

Thus, tape-recording is particularly suitable in cases such as this, when the research is limited to a small number of interviews, many interviewees are well-known to the researcher and 'key informants' are prominent people, likely to accept this recording technique.

Interviewing techniques

The semi-structured interview is flexible enough to allow the researcher to change the order and wording of the programmed questions and to introduce new questions that are relevant to the research problem (Sedlack & Stanley, 1992). This opportunity was advantageously used in the course of the interviews. Occasionally, brief explanations and remarks were provided by the interviewer in order to address interviewees' questions or doubts related with ecosystem composition and management and specific PNSACV's activities. Besides, in order to help some interviewees formulate predictions on the evolution of agriculture, a table showing the recent evolution of irrigated crops in the PRM was provided (Appendices 6a and 6b).

Furthermore, the questions used in semi-structured interviews are mainly 'open', requiring many 'prompts' and 'probes' to clarify the answers (Arbor, 1976; Gillham, 2000). Such interviewing techniques were largely used in order to encourage further clarification and elaboration.

4.2.5. Ethical considerations

The survey was administered according to some survey conduct considerations established prior to the beginning of the interviewing process. Thus, participants were informed of the researcher's professional occupation as an officer at the PNSACV, and that the interview survey was part of an MSc thesis project. Participants were also informed about the purpose of the survey through introductory remarks to the interview, during which care was taken to obtain informed consent before interviewing or tape recording (see Appendices 4a and 4b).

Moreover, when the interviewees were asked whether the ‘key informants’ list already included all relevant informants, care was taken to explain that the selection procedure followed a qualitative approach and that the list was not meant to be all-inclusive (see section 4.2.2.). To avoid misunderstandings regarding key-informants selection, the interviewees were informed of the reasons why certain stakeholders were excluded from the survey (see section 5.1.).

Confidentiality was considered an important issue as regards data storage and presentation (Sedlack & Stanley, 1992). Indeed, given the informal nature of most interviews and the fact that the interviewer knew some of the key informants, some sensitive matters have been disclosed in an almost intemperate manner. Considering the political implications of such ‘pieces of information’, it was decided that the researcher would be the only person with access to the original tapes and transcripts, and confidentiality would be maintained in the final report (see section 4.2.7.). Accordingly, participants were informed that the data would be treated in the strictest confidence.

4.2.6. Quality control

It is commonly argued that “‘reliability’, or the stability of methods and findings, is an indicator of ‘validity’, or the accuracy and truthfulness of the findings” (Altheide & Johnson, 1994, 487). In order to secure the validity of the findings, the interview guide was designed so as to confront each interviewee with a range of related questions that address the same topics in different ways. This strategy was adopted so as to ensure that all key issues would be disclosed by the interviewees. To further guarantee the validity of the interview guide, this was reviewed by a range of professionals knowledgeable about the area or the social sciences (section 4.2.3.).

Many authors agree that the interview is more open to bias than most other research methods (Sedlack & Stanley, 1992; Bell, 1999). In this case the problem assumes particular relevance because of the value orientation of the researcher as regards the issues covered in this project. For this reason, question wording was carefully designed and revised (Sedlack & Stanley, 1992; Bell, 1999), and additional questions were also carefully considered. In addition, an attempt was made to put questions in a fairly natural way in order to minimise interviewer bias. Moreover, as all interviews were

conducted by the same person, the bias was probably consistent throughout (Bell, 1999).

4.2.7. Analysis of interviews

The original tapes recorded during the survey interviews were transformed into raw interview transcripts, which provided the basis for data analysis. In order to guide this, an analysis framework was prepared according to the survey questions designed at the beginning of the research, and amended according to a preliminary review of interview transcripts (Appendix 7).

The transcripts were carefully reviewed and analysed according to content analysis guidelines adapted from Gillham (2000). In short, key statements, issues and patterns of response were extracted in accordance with the analysis framework (Appendix 7) (Borrini-Feyerabend, 1997b), as well as relevant themes that emerged from the data (e.g. impacts, principles, advantages of integration, conflicts). A set of categories was then identified for each of such themes. Finally, each substantive statement of each interviewee was checked against the categories' lists, and these were summarised in analysis grids.

The analysis method just described followed a cross-case analysis strategy (Patton, 1990; Huberman & Miles, 1998). According to Patton (1990, 376), "cross-case analysis means grouping together answers from different people to common questions or analyzing different perspectives on central issues". Thus, in order to preserve the confidentiality of key informants (section 4.2.5.), and still allow comparative analysis, the interviews were grouped, groups being named as follows:

- **AGRICULTURE:** interviews with representatives of governmental and non-governmental organisations that represent agriculture interests (AALA, AAMA, ABM, ACL, AHSA, APBDA, DRAAL1, DRAAL2, IHERA1 and IHERA2);
- **CONSERVATION:** interviews with representatives of governmental and non-governmental organisations that are concerned with nature conservation and environmental protection (DRAOT-Alentejo1, DRAOT-Alentejo2, LPN1, LPN2, PNSACV1 and PNSACV2);

- **LOCAL DEVELOPMENT:** interviews with representatives of local development NGOs (ADL, VICENTINA, TAIPA).

4.3. Assessment of available participatory tools

While reviewing the participation literature available, it was clear that whereas there is plenty of theory about participation, there aren't many step-by-step guidelines available (Wilcox, 1994a). In particular, guidelines regarding how participatory tools should be chosen are all but a few exceptions extremely vague, and it was not possible to find an evaluation for the techniques.

Therefore, the assessment of the available participatory tools has largely followed the approach suggested by Lewis *et al.* (1998). Accordingly, a first selection of participatory techniques based on their suitability to address the PRM case was done, and a set of criteria was defined to enable the assessment (Box 5, section 6.3.7.). A grid was then used to score each technique against the criteria, according to a simple scoring system.

Chapter Five: SURVEY RESULTS

5.1. The survey context

Interviews were conducted with 19 key informants from 14 major stakeholders (see Appendix 2). All the key informants contacted accepted to be interviewed, and only one of the interviewees refused to be recorded on tape, despite the arguments given by the interviewer. In this case, the interviewee's responses were written down as accurately as possible.

Out of the 19 interviews, only one was not finished because the interviewee insisted on that he was not acquainted with the agricultural activities in the area and could not know the relevant interests and problems. Notwithstanding, the general information provided in this particular interview was also considered in the qualitative analysis.

Out of all the new 'key informants' suggested by the interviewees in the original list, as stakeholders or individuals whose contribution might be important to the complete characterisation of the interests and perspectives related with agriculture and conservation in the study area (Box 2), only TAIPA was added to the key informants list. TAIPA was considered an essential stakeholder in the area because of its aims and projects on local development, and also because it was suggested by more interviewees than any other stakeholder.

Box 2: Key informants suggested by the interviewees in the original list

Caixa de Crédito Agrícola Mútuo	banking agency
Associação de Jovens Agricultores do Alentejo Litoral	farmers' organisation
TAIPA, Organização Cooperativa para o Desenvolvimento Integrado do Concelho de Odemira	local development NGO
Instituto Nacional de Investigação Agrária (INIA)	Institute of Agrarian Research
Universidade de Évora	University of Évora
Câmaras Municipais	municipalities
Caprimira, Associação de Criadores de Caprinos da Raça Charnequeira	goat breeders' organisation
Associação de Apicultores do Sudoeste Alentejano e Costa Vicentina	bee keepers' organisation
Direcção Regional de Agricultura do Algarve (DRAALG)	Algarve Regional Agency of Agriculture
Mr. Mário Hilário	individual farmer
Cerne, Serviços Agro-Ambientais Lda.	private company
Direcção Geral de Desenvolvimento Rural (DGDR)	Rural Development Agency
Quercus	environment NGO
Direcção Geral de Turismo (DGT)	Tourism Agency
Associação de Criadores de Raça Frísia	Frísia breeders' organisation

Various were the reasons for excluding the other informants suggested by the interviewees: firstly, the conviction that, at this stage of identification of the main interests and problems related with the issues under discussion, it would not be appropriate to consider private interests such as local businesses (Caixa de Crédito Agrícola Mútuo, Cerne) as key informants, as they have but an indirect participation in farming activities, as a banking agency and agriculture consultants respectively. Secondly, it also seemed inappropriate to interview informants that are known to develop most of their activities in a broader region, and/or different sector, and whose knowledge of specific perspectives and problems related with agriculture and conservation in the study area is probably restricted. Stakeholders such as INIA, University of Évora, Municipalities, DRAALG, DGDR, Quercus and DGT appeared to be in this situation. Thirdly, some producers organisations have also been excluded on the grounds that their activity in the PRM area is reduced (Associação de Jovens Agricultores do Alentejo Litoral, Caprimira, Associação de Apicultores, Associação de Criadores de Raça Frisia). Finally, although there was an individual farmer appointed for his experience and deep involvement in several rural organisations in the area (Mr. Mário Hilário) it has been considered that making an exception in a preliminary study for the preparation of a participatory methodology to address agriculture-conservation issues would not be suitable.

5.2. Characterising the stakeholders

The questions on the stakeholders' responsibilities, assignments and objectives on the medium/long term (Questions 1a, 1b, 1c, 1d, 1e and 2 of the interview guide, Appendix 4b) were used to begin the interview and prompt a rough description of stakeholders' main roles and activities. This information has been synthesised in the brief profiles of the 14 major stakeholders provided in Appendix 3.

The concerns and interests of major stakeholders regarding the PRM area are many and varied. Such diversity of expressed concerns and interests reflects the nature, specificity and scale of the stakeholders, and allows the distinction between those stakeholders that are mainly connected with agriculture and those that are involved in nature conservation and/or sustainable development.

In general terms, the main interests referred to by the interviewees are closely related to the main aims of the stakeholders, as stated in legal documents or statutes, and summarised in Appendix 3.

The different concerns expressed by the stakeholders are to a large extent connected with the limiting factors of agricultural development and with the impacts of agricultural practices on biodiversity. These issues are considered below in greater detail (sections 5.3.3. and 5.5.1.). Furthermore, many concerns are in fact specific constraints to the development of particular sectors of agro-pastoral activities, and have therefore been considered in the analysis of the obstacles to the integration of agriculture and conservation (section 5.5.2.).

5.3. Perception of agriculture importance and evolution in the area

5.3.1. The importance of agriculture

Agriculture has been described by all major stakeholders as a very important activity in the area. The fundamental importance of agriculture is clearly recognised by some interviewees that stated that the region may be characterised as an eminently rural and agricultural region. Indeed, agriculture was pointed out by the majority of the interviewees as the most important economic activity in the PRM, as indeed in the Municipality of Odemira. Two main reasons have been suggested by them to justify the importance of agriculture in the PRM area:

- the long-standing tradition and connection of local people to the land and farming activities; and
- the joint presence of excellent weather conditions (i.e. lots of sunlight and low frost risk) and the availability of land and water.

For most interviewees, agriculture is so obviously a part of the local culture that there was a sense of incredulity that anyone could even ask about its importance. In general, it is recognised to have direct effects on the economic, social and cultural fabric of local communities, and is regarded by some as the land-use that is most compatible with the conservation of natural values (particularly when compared with tourism and industry) and with a more sustainable future for the region. Besides, even though agriculture is not considered by some stakeholders as preferable to industry and tourism for its nature

conservation potential, it is nevertheless viewed as the most promising activity in terms of the medium/long term development of the region, given the land-use restrictions imposed by the natural park management plan.

The values of agriculture in the PRM area identified by key informants are shown in Figure 4. The interviewees identified 6 major values of agriculture, the generation of economic benefits being by far the most frequently expressed value (94.4% of all interviewees). Food production (38.9%), biodiversity conservation (27.8%) and the promotion of community development (22.2%) were also considered important values of agriculture in the PRM. Most importantly, these major values of agriculture were mentioned by all 3 interest groups.

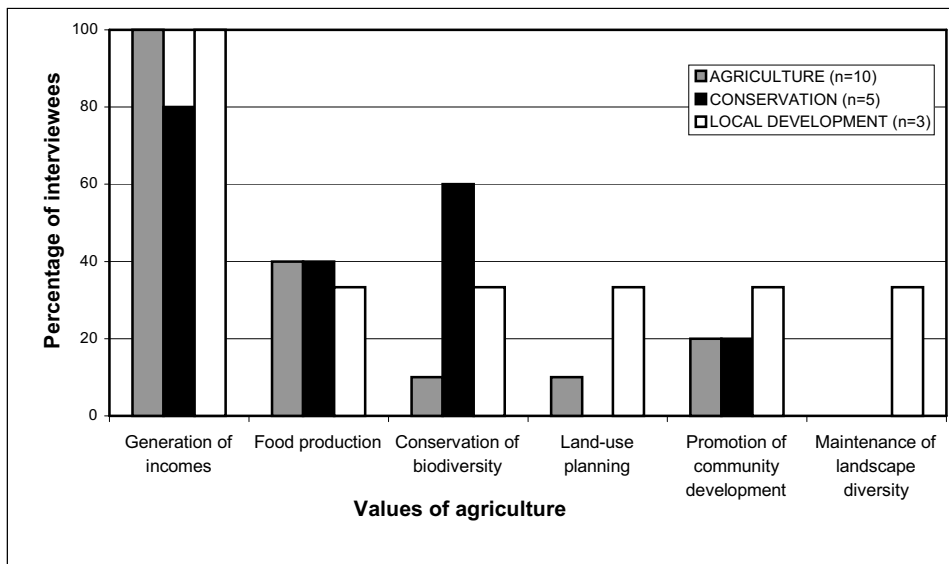


Figure 4 – Interviewees’ perceptions of the values of agriculture in the PRM area by interest group (n = number of interviewees).

The importance of agriculture in the area in terms of generation of economic benefits (income and jobs) was particularly emphasised by many interviewees who advanced some relevant figures. According to their statements, agriculture:

- is the largest employer in the area, employing more than 20% of the economically active population in the Odemira Municipality;

- supports up to a dozen (5-12) business companies (operating in horticulture) employing at least some 50 people each, and 770-780 family units (extensive cattle-breeding) with 2-5 members each; and
- occupies approximately 65% of the PRM area, i.e. 7,800 ha.

Additionally, the importance of horticulture has been especially underlined by some interviewees, who consider this sector as being responsible for the most significant contribution to farmers' revenues and profitability. Horticulture was said:

- to employ approximately 80% of all agricultural labour in the PRM area;
- to generate some EUR € 50 million (PTE \$ 10 billions) annually; and
- to produce goods that fill some 10-15 trucks/day.

Food production was also considered a very important value of agriculture in the area. Indeed, stakeholders perceive the Mira Hydro-agricultural Scheme (AHM), as any irrigation scheme, as a significant investment of the State aiming at expanding the area of land under irrigated agriculture, and thus increasing food production. In fact, some interviewees stressed that it is extremely important that AHM management addresses such objectives, i.e., that the area is used for agricultural purposes. As one would expect, this viewpoint was particularly emphasised by the representatives of governmental agencies responsible for agriculture planning (eg. DRAAL and IHERA), as their main interest.

Another important aspect revealed by the survey is that some of the interviewees who recognised the potential of agriculture to maintain biodiversity clearly distinguished between the intensive systems of horticulture, perceived by them as responsible for negative impacts to wildlife, and the low-intensity farming systems, which support important wildlife populations, valuing the latter only in terms of their contribution to biodiversity conservation. In this regard, the importance of low-intensity livestock systems and semi-natural habitats (e.g. small woodlands, hedgerows, temporary ponds and wet heaths) to maintain the biological richness was particularly emphasised by the conservation group.

5.3.2. Predictions on the evolution of agriculture

Limitations of agriculture development

Though some stakeholders found it difficult to forecast the evolution of agriculture in the area, in general they all advanced some major limiting factors of agriculture development, thus emphasising the fallibility of their predictions (Figure 5).

The market (55.6% of all interviewees) and agricultural policies (50.0%) were the most important limitations, and the only that were mentioned by interviewees of all interest groups. This result suggests that these two limiting factors, and also the quality of local products, are in fact general limitations, while all the other are specific limiting factors, and, therefore, concerned only a few stakeholders. For instance, two representatives of agriculture organisations stated that labour availability may limit the expansion of a specific agriculture sector: horticulture (Hidroprojecto, 1994; Taipa, 2002). In fact, according to one of the interviewees, though the recent immigration of East-European populations has met farmers' labour needs (Taipa, 2002), the labour shortages of the mid 1990s resulted in significant constraints to big horticulture business companies. Another good example is the land tenure regime, which was mentioned only by agriculture stakeholders, who argued that it currently prevents a few young farmers from settling in the region (Taipa, 2002).

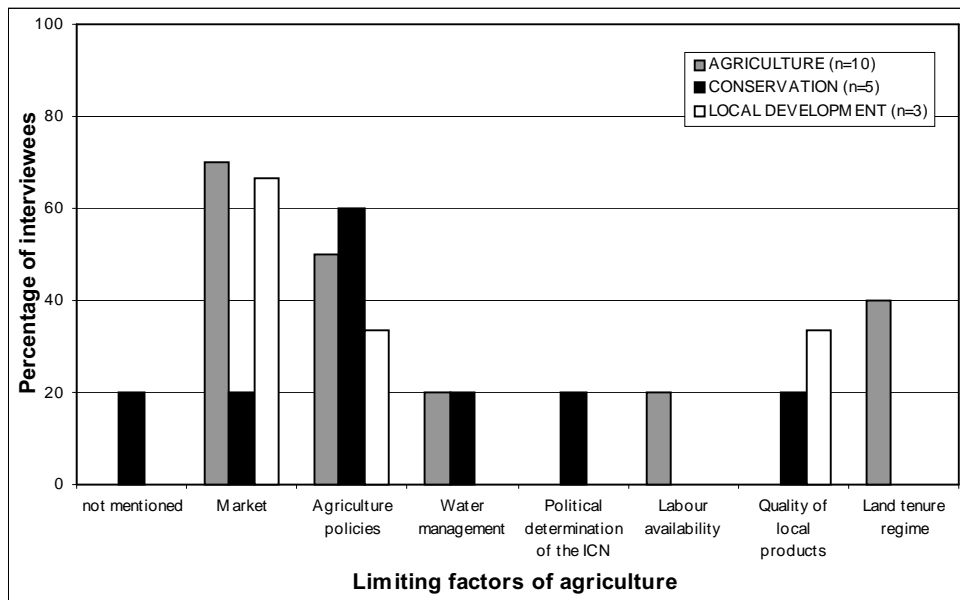


Figure 5 – Limiting factors of agricultural development in the PRM area by interest group (n = number of interviewees).

As regards the limitations at the market level, the stakeholders pointed out the implications of the GATT agreement at the European and national level, and the business capacities of local farmers (e.g. strategic vision, management skills, professional training) as having particular influence on the success of local agricultural units. The agricultural policies, at both national and international levels, were also considered very important limitations by the interviewees, who emphasised the critical importance of the Common Agricultural Policy (CAP) and its financial support for the evolution of agriculture. In this respect, some interviewees showed some apprehension as for the possible consequences of the recent enlargement of the European Union (EU).

Perspectives on agriculture evolution

In order to further investigate stakeholders' interests and concerns and the existence of an agriculture development model, key stakeholders were asked to predict the evolution of agriculture in the PRM area according to four predetermined indicators: farmland areas, agriculture intensification, crop diversification and introduction of organic farming. Since some interviewees had some difficulties predicting agriculture evolution, in some situations a table showing the recent evolution of irrigated areas per crop in the PRM was provided to interviewees (Appendix 6b).

Given the special emphasis of interviewees' statements on the evolution of organic agriculture, this topic is considered separately.

The predictions of the interviewees on the evolution of agriculture in the PRM are summarised in Table 1. There are two **basic perspectives** on the future evolution of agriculture in the PRM area. The first one is that agriculture in the area will increase in farmland areas and/or agriculture intensification. Most interviewees shared this perspective of increasing agriculture modernisation (13 interviewees; 72.2%), though some of them advanced strong criticism to such a path, referring to some of its environmental and social impacts. Moreover, while most of these interviewees suggested that the evolution of agriculture will involve considerable changes in the PRM area, two of them felt that agriculture areas and practices, as well as crop and breed diversity, will change only slightly.

Table 1 – Interviewees’ predictions on the evolution of agriculture in the PRM area regarding farmland areas, agricultural intensification, crop diversification and organic farming, and advocated models of agricultural development by interest group. Interviewees’ predictions are presented by interest group and attributed a code so that individual predictions are not recognisable. Black arrows refer to predictions on the evolution of agriculture and grey arrows to predictions for horticulture. Legend: ??? =the interviewee was not able to predict the evolution of agriculture; ≈ = predicted steadiness; ↑ = big increase; ↗ = small increase; ↓ = big decrease; ↘ = small decrease.

Group	Interviewee	Area	Intensification	Crop diversification	Organic farming	Model of agricultural development
Agriculture	A1	???	↓	???	↗	sustainable
	A2	↑ ↗	↘	↘	↗	modernised
	A3	↑	↑	↑	↗	sustainable
	A4	↑ ↗	↑	↘	↗	???
	A5	↘	↑	≈	↗	???
	A6	↘	↗	≈	↗	sustainable
	A7	???	↑	???	???	modernised
	A8	↑ ↗	↑	↗	↗	modernised
	A9	↑	↑	↘	↗	modernised
	A10	↓	↓	↘	↗	sustainable
Conservation	C1	???	???	???	???	sustainable
	C2	???	???	???	↗	sustainable
	C3	↑	↑	↓	↗	sustainable
	C4	???	???	???	???	sustainable
	C5	↑	↑	↑	↗	sustainable
Local development	LD1	↑	↑	↓	↗	sustainable
	LD2	↑ ↗	???	???	↗	???
	LD3	↗ ↘	↗	↑	↗	sustainable

The second perspective is that agriculture in the area will decrease in farmland areas and intensification. Only two interviewees (11.1%), of the agriculture group, presented this viewpoint, arguing that the CAP direct incentives to production will end by 2006 and, from then on, the CAP will probably change towards extensiveness and sustainability. They further mentioned that there is strong evidence that the market will increasingly demand more sustainable agricultural products (i.e. low-input and organic products that hold a quality certification) (Avillez, 2001).

Furthermore, some interviewees of the conservation group had no idea of how agriculture will evolve in the area (3; 16.7%), given the existence of multiple factors influencing future trends and/or their insufficient knowledge of recent changes in agricultural activities in the area.

As regards **farmland areas**, most interviewees (10 interviewees; 55.6%) believed that farming areas will expand up to the limits of the AHM. However, whereas some stakeholders considered that agriculture will tend to occupy the 12,000 ha of lands equipped with irrigation facilities, 9,000 ha of which are included in the PNSACV, others stated that, even considering that farming areas will probably increase, it will never be possible to irrigate the whole area, given the existing limitations to irrigation in the PRM (see section 3.4.1.).

Some stakeholders (4 interviewees; 22.2%) further agreed that the predicted increase in farmland areas will be mostly due to horticulture expansion, though milk and meat production are also recognised as likely to contribute to greater areas under irrigated agriculture. Such focus on horticulture is usually justified in terms of the suitability of the PRM area for the production of flowers, fruits and vegetables, especially because of good weather conditions (in terms of sunny and frosty days) and availability of good quality water and soil, and also because of the profitability potential of horticulture systems.

Additionally, it is worth mentioning that two stakeholders (11.1%) argued that besides the current process of simplification of rural livelihood and farming systems, there is also a trend towards a **concentration of farming activities** in big industrial farms, i.e. fewer farmers occupying increasingly large areas.

Most importantly, 11 interviewees (61.1%) predicted that agriculture practices in the PRM area will become more intensified. This viewpoint was mainly supported by recent trends of increasing **intensification** in the area, particularly in horticulture units. In fact, some interviewees stated they still expect intensification to increase until it reaches a saturation point and may then become the inversion process.

As regards **crop diversification**, opinions were divided. There were more interviewees stating that crop diversity will decrease as a result of the implementation of the intensification model (6 interviewees; 33.3%) than arguing that some new crops may still be introduced in the PRM (e.g. flowers, ornamental plants, medicinal and culinary herbs) (4; 22.2%) (Table 1). However, two interviewees (11.1%) stated crop diversity will not change much, and six (33.3%) were not able to predict the evolution of crop and breed diversity in the area.

Remarkably, within the group of interviewees that forecast an increase in farmland areas and intensification in the PRM area, there are some who advocate **sustainable** agriculture. Although these representatives believe sustainability is the most appropriate path, they still think current trends of increasing expansion, intensification and specialisation in the area will continue, since the conditions for sustainable agriculture are not yet met.

Trends in organic farming

As far as trends in organic farming are concerned, there was a broad consensus among all the stakeholders regarding the future expansion of organic farming in the area of PRM (15 interviewees; 83.3%). Organic agriculture is generally perceived as an advantageous technology the implementation of which is increasingly demanded by the market forces, thus originating big opportunities (i.e. economic opportunities). Indeed, the pro-organic discourse of farmers' organisations and governmental agencies alike is in itself an indication that a raise in consumers' awareness may result in strong market demands for more environment-conscious practices. This is especially evident because this growing interest towards organic farming is very recent, as one study based on interviews to horticulturists in the PRM revealed that, in 1997, they generally perceived organic farming as little attractive and uninteresting (Ventura, 1997). Remarkably, two representatives of farmers' organisations observed how easy the conversion of semi-intensive and intensive productions (e.g. meat and vegetables) to organic agricultural systems might be.

Notwithstanding, major stakeholders recognised the need to plan a gradual transition from intensive to organic systems, and the wide-ranging advantages of adopting organic farming technologies and systems. Indeed, organic farming is currently considered a cost-effective (since the lower production costs and the higher prices of products compensate for low yields), healthier (food security), non-polluting and sustainable form of agriculture. Besides, some interviewees suggested that this type of agricultural production is the most adequate for the PRM, given the environmental sensitiveness of the area.

Furthermore, although recognising the advantages of adopting alternatively systems of farming that reduce impacts from agricultural inputs, two interviewees of the conservation group pointed out a major limitation of organic farming as regards its benefits to nature conservation. According to them, such agriculture practices may minimise impacts on water and soil quality, but do not prevent the most damaging effect of agriculture, which is the use of more and more areas for agriculture.

5.3.3. Agricultural development models

Although most key stakeholders suggested that agricultural development should become sustainable (11 interviewees; 61.1%), sustainable agriculture cannot be considered a consensual model for agricultural development within the PRM, since some interviewees defended the intensification of agriculture as the best path towards higher profitability (4; 22.2%) (Table 1, Figure 6). However, whereas sustainable agriculture was advocated by interviewees of all three interest groups, including all the interviewees of the conservation group, modernised agriculture was supported only by interviewees with interest in agriculture. These results suggest that sustainable agriculture may be apprehended as a consensual vision for the future of agriculture in the area, but they also suggest the existence of strong short-term interests regarding agriculture development in the PRM.

Particularly in respect of the vision of the representatives of farmers' organisations, there is a clear distinction between the two agricultural development models advocated. Whereas modern agriculture advocates defend the intensification and specialisation of agriculture, aiming to produce more agricultural goods faster, sustainable agriculture

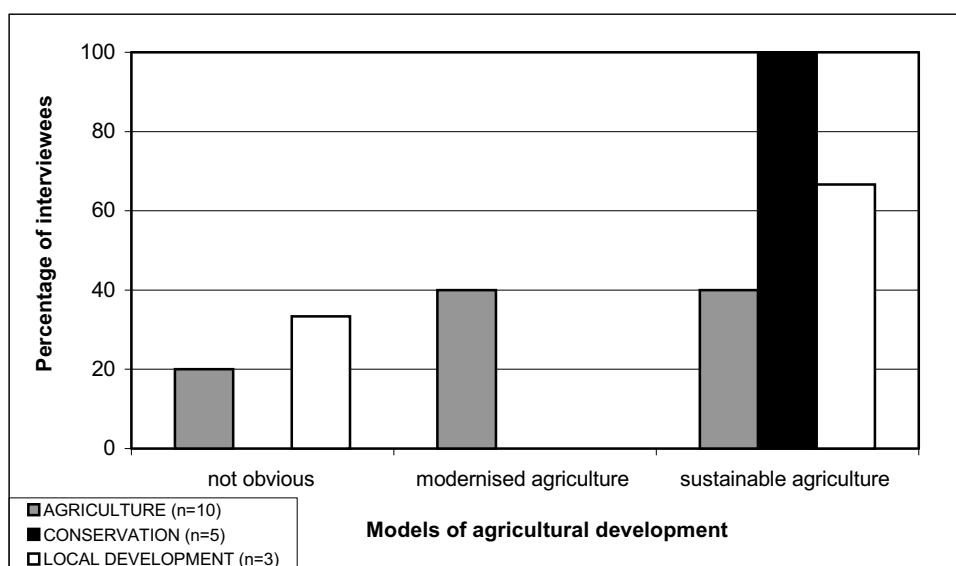


Figure 6 – Models of agricultural development advocated by interest group (n = number of interviewees).

supporters place a strong emphasis on traditional low-input farming practices, resource-conserving technologies and products that are not mass-produced, aiming to meet the interests of modern consumers. In this particular, it is worth noting that the interviewees mentioned frequently the differences between intensive and extensive farming systems (i.e. intensive and traditional agriculture) (Box 3), so as to emphasise the differences between the modernised and sustainable agriculture models.

Box 3: Modern and traditional agriculture: the differences

Modern agriculture

- intensive practices
- monocropping
- intensive use of all arable plots
- mainly computerised drip irrigation, with incorporation of fertilisers in the water
- intensive use of fertilisers, pesticides, sterilisers and antibiotics
- shorter production cycles – with 2 to 3 harvests each year
- most work done by hired labour; high levels of mechanisation
- mainly marketed for exportation, though a part of the production is meant for national market

Traditional agriculture

- extensive practices
- crop rotation and diversity
- some plots are left fallow
- mainly automatic spray irrigation
- low use of fertilisers and pesticides
- longer production cycles – with 1 harvest (or slaughtering calf) each couple of years
- most work done by family living on farm, or nearby, and some hired labour
- mainly marketed in the region

5.4. Perception of the importance of biodiversity conservation

All interviewees stated that it is important that the biological diversity in the irrigated area within the PNSACV is conserved, although perceptions of what biodiversity really is, and why biodiversity conservation is important, differed widely. For instance, some interviewees clearly associated biodiversity only with important natural elements present in the area, such as dunes and temporary ponds.

Some stakeholders recognised that conserving nature within the PRM must be considered a very important issue, assuming that if the area was classified as a natural park, it is because it encloses important natural values at the national level, which must be maintained (4 interviewees; 22.2%). Besides, although the question regarding the importance of biodiversity conservation was not intended for further enquiry regarding the extent or composition of biodiversity in the area, it was apparent from their statements that most interviewees (14 interviewees; 77.8%) are not fully aware of the highly valuable biological diversity existing in the natural park, or the PRM area.

On the other hand, 3 interviewees (16.7%) made specific references to the fact that the PRM's biological values are valued also at the European level, given the existence of priority habitats and species in the area (classified under the EU Habitats Directive), and the designation of a Special Protection Area (SPA) and a Special Area of Conservation (SAC) (to be included in the Natura 2000 network) which include the PRM area.

The interviewees' perceptions of the values of biodiversity in the PRM area are shown in Figure 7. Although, as mentioned above, all the interviewees recognised the importance of biodiversity conservation in the area, most of them (10 interviewees; 55.6%) were not able to explain why biodiversity is important and should be maintained. Yet, the most frequently expressed values of biodiversity (ecological, aesthetic, economic and cultural values) were recognised by all the interest groups.

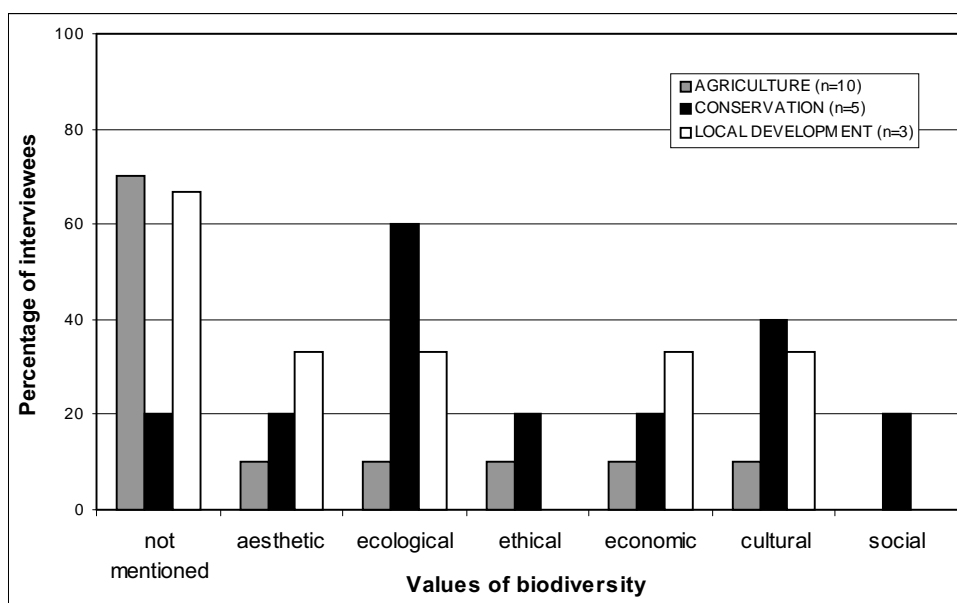


Figure 7 – Interviewees’ perceptions of the values of biodiversity in the PRM area by interest group (n = number of interviewees).

In addition, in respect of biodiversity conservation, some interviewees drew attention to some natural or semi-natural habitats, which are scattered across the farmland (e.g. wind fences, ponds), and also some adjacent ecosystems (e.g. dunes and coastal streams) as biologically rich and diverse systems that must be conserved. Such important natural elements are listed in Box 4.

Box 4: Important natural elements in the PRM area

- sand dunes and cliffs (coastal habitats)
- rivers and small streams (brackish and freshwater habitats)
- temporary ponds and wet heaths
- small woodlands (mainly pinewoods) and wind fences (eucalyptuses and pines)
- cork-oak *Quercus suber* L. forests managed for cork production
- Mediterranean scrub of the Mira slopes

Finally, as for the wider natural resources there was a broad consensus over the importance of conserving water and soil (14 interviewees; 77.8%) (see section 5.5.1.), which are considered essential elements in terms of agricultural productivity.

5.5. Integration of agriculture and biodiversity conservation: opportunities and limitations

5.5.1. The importance of integration

Perceptions of the impacts of agriculture intensification

Most interviewees recognised that current agricultural practices have damaging effects on PNSACV's ecosystems. The damaging effects of agricultural practices are particularly obvious to 14 interviewees (77.8%), of all three interest groups, who mentioned horticulture as a type of intensive agriculture that is based on harmful agricultural practices. According to their statements, the recent increase of horticulture in the PRM is considerably worrisome, since, in their opinion, intensive agriculture is not compatible with the conservation of the natural values that led to the creation of the PNSACV. Moreover, to three interviewees (16.7%), the PRM's biodiversity is being extremely threatened by agriculture intensification.

Overall, most interviewees mentioned the existence of impacts associated with agricultural intensification (Figure 8). In fact, sixteen interviewees (88.9%) stated that some agricultural practices result in different types of impact, and only two interviewees (11.1%) did not mention the effects of agriculture on the environment.

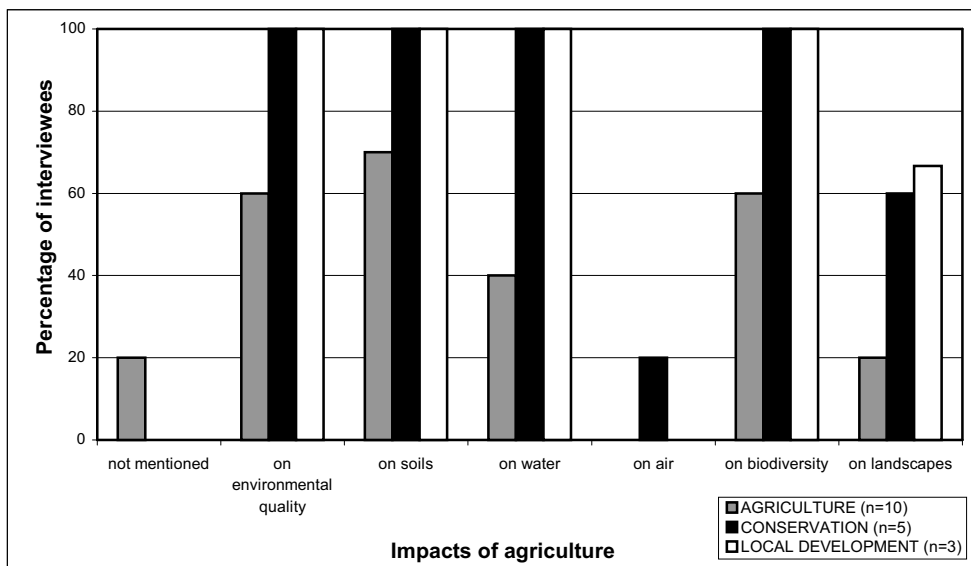


Figure 8 – Interviewees' perceptions of the impacts of agriculture intensification on the PRM area by interest group (n = number of interviewees).

The impacts on soils were the most frequently referred type of impacts (83.3%), although impacts on environmental quality (72.2%), on biodiversity (72.2%) and on water (55.6%) were also considered very important. As mentioned above, most interviewees suggested that the intensive agriculture systems (e.g. horticulture) are especially responsible for severe impacts on ecosystems, either direct impacts on biodiversity or indirect impacts on soil and water. In this respect, 12 interviewees (66.7%) mentioned the use of fertilisers and pesticides, and 7 (38.9%) the waste disposal as widespread damaging practices that are responsible for important environmental impacts. Moreover, the adoption of monocropping systems and high density production systems (2 interviewees; 11.1%) and landscape fragmentation (1; 5.6%) have also been mentioned for their negative effects on wildlife.

The results presented in Figure 8 further suggest that in general the interviewees with interests in nature conservation and local development have a greater perception of impacts. However, although the only two interviewees that did not mention the existence of impacts are related with agriculture interests, this does not necessarily mean that they do not recognise the existence of impacts, as this was not directly asked. Yet, what is more important is that all interest groups showed some perception of the impacts of agricultural activities.

Perceptions of the need for limits and principles to guide agriculture

As expected, all the interviewees that mentioned the existence of impacts associated with agricultural practices, recognised also that agricultural activities within environmentally sensitive locations, such as natural parks, must be restricted (16 interviewees; 88.9%), so as to contain such impacts within acceptable levels. Most of them further mentioned that the conservation of important natural values existing in protected areas requires regulatory approaches that may restrict, for instance, the use of fertilisers and pesticides, and the conversion of natural areas into agricultural fields. In fact, while addressing the need to establish limits and principles to guide agriculture, almost all the interviewees adopted a positive attitude, suggesting some approaches, mechanisms and measures that might be considered in an attempt to integrate agriculture and conservation in the PRM (see section 5.5.3.).

As regards the PRM area, most interviewees (16; 88.9%) pointed up the necessity of reaching a compromise between viable production systems and biodiversity conservation.

The interviewees' perception of the need to have principles to guide agriculture planning in an irrigation area that is included in a natural park was not as good as expected. In fact, although all the interviewees agreed on the importance of establishing such principles, some of them experienced some difficulty identifying them. Actually, half of the interviewees referred the principles embodied in the CGAP (9; 50.0%), but 3 among these did neither provide any supplementary specification nor identify any other principle. In such cases, it was assumed that the interviewees were referring to water and soil conservation principles (MADRP, 1997).

Overall, the interviewees mentioned 8 principles to guide agriculture policymaking in areas of high-conservation value (Table 2). The most frequently expressed principles included the maintenance of soil quality, sometimes mentioned as soil fertility (88.9% of all interviewees), prevention of erosion (83.3%), maintenance of water quality (77.8%) and conservation of species and habitats (72.2%). Moreover, all the principles were mentioned by the three interest groups, except for the conservation of cultural heritage.

Table 2 – Interviewees' perceptions of the need for principles to guide agriculture policymaking in an area of high-conservation value by interest group. Interviewees' perceptions are represented as the percentage of interviewees in each group who mentioned each principle.

PRINCIPLES		AGRICULTURE	CONSERVATION	LOCAL DEVELOPMENT
SOIL	Prevention of erosion	80	80	100
	Maintenance of soil fertility/quality	80	100	100
WATER	Reduction of water expenditure and loss	70	60	67
	Maintenance of water quality	70	100	67
BIODIVERSITY	Conservation of species and habitats	50	100	100
	Maintenance of ecosystems' quality	40	80	67
LANDSCAPE	Landscape conservation	30	80	67
CULTURAL HERITAGE	Cultural heritage conservation	10	0	33

For further analysis, the 8 principles mentioned by the interviewees were grouped in 5 major principles (Table 2). The most consensual principle was soil conservation (94.4%), followed by water (77.8%) and biodiversity conservation (77.8%) (Figure 9). In addition, the conservation and local development groups unanimously referred principles of soil, water and biodiversity conservation, and soil and biodiversity conservation, respectively. By contrast, there was a decreasing percentage of interviewees with interest in agriculture who mentioned soil, water, biodiversity, landscape and cultural diversity conservation principles.

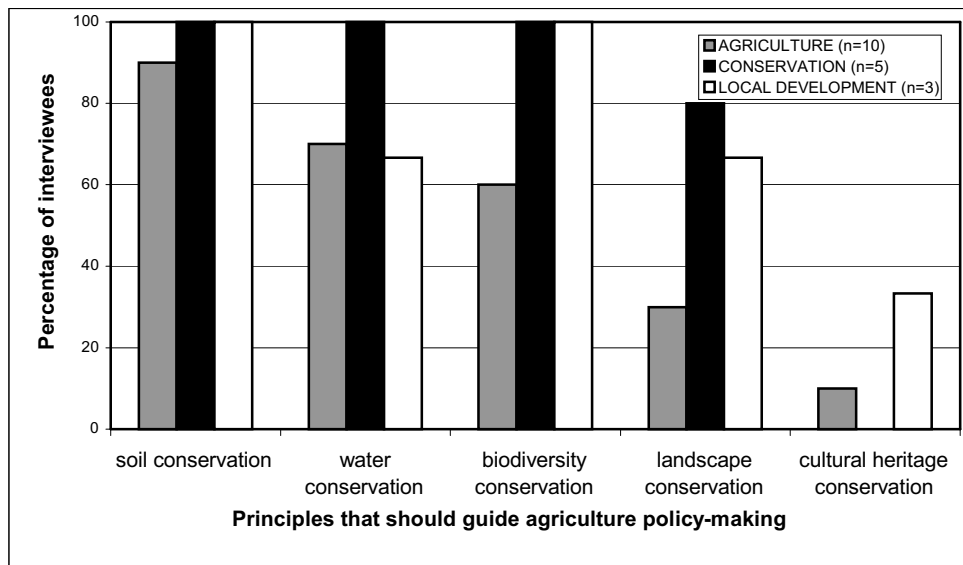


Figure 9 – Interviewees’ perceptions of the need for principles to guide agriculture policymaking in an area of high-conservation value by interest group (n = number of interviewees)

The advantages of integrating agriculture and conservation

All the interviewees agreed that the integration of agriculture and nature conservation in the PRM area is an important issue, and some of them (3 interviewees; 16.7%) even stated that such integration is absolutely necessary. Nevertheless, when asked whether integration is possible, eleven interviewees argued that it is difficult (61.1%), although in the end almost all the interviewees agreed that it is possible to achieve such integration (17 interviewees; 94.4%).

The interviewees identified 18 advantages of integrating agriculture and conservation in the PRM (Table 3). The most frequently mentioned advantages were the maintenance of biodiversity (77.8% of all interviewees) and the maintenance of agricultural activity (66.7%), but the conservation of important natural areas (50.0%) and the improvement

of ecosystems' health (44.4%) were also important. Besides, 55.6% of the advantages were recognised by all interest groups.

Table 3 – Interviewees' perceptions of the advantages of integrating agriculture and conservation in the PRM area by interest group. Interviewees' perceptions are represented as the percentage of interviewees in each group who mentioned each advantage.

ADVANTAGES		AGRICULTURE	CONSERVATION	LOCAL DEVELOPMENT
LOCAL DEVELOPMENT	Reduction of conflicts and misunderstandings	30	20	0
	Improved local development	0	0	33
	Economic opportunities for tourism and recreation	30	0	33
	Reduction of land abandonment and rural depopulation	20	20	33
	Improvement of local people's quality of life	10	0	33
AGRICULTURE	Maintenance of agricultural activity	50	100	67
	Profitable use of the Mira Irrigation Scheme	0	40	33
	Conservation of important agricultural production factors (i.e. soil and water)	20	20	67
	Economic opportunities in terms of agriculture multifunctionality	20	0	33
	Increased valuation of agro-products associated with a preserved area	40	40	33
	Increased valuation of agro-products associated with environment-conscious farming practices	10	40	33
	Prevention of wildlife damages	20	0	0
CONSERVATION	Improvement of ecosystems' health	50	40	33
	Maintenance of biodiversity	70	100	67
	Conservation of important natural areas	30	80	67
	Opportunity for application of conservation measures	10	20	33
	Maintenance of beneficial management of ecosystems resulting from customary agricultural practices	10	20	33
	Conservation of landscape diversity	10	0	33

The 18 advantages of integration mentioned by the interviewees were aggregated in 3 groups: advantages in terms of improved local development, agriculture development and nature conservation (Table 3). Figure 10 presents the perceptions of each interest group of key advantages of integrating agriculture and conservation in the PRM. Remarkably, the most valued were the advantages in terms of nature conservation (83.3%), just followed by the advantages in terms of agriculture development (77.8%). More importantly, whereas the agriculture interest group favoured the advantages for conservation, the conservation and local development groups agreed that the integration of agriculture and conservation would have advantages both in terms of agriculture activities and nature conservation.

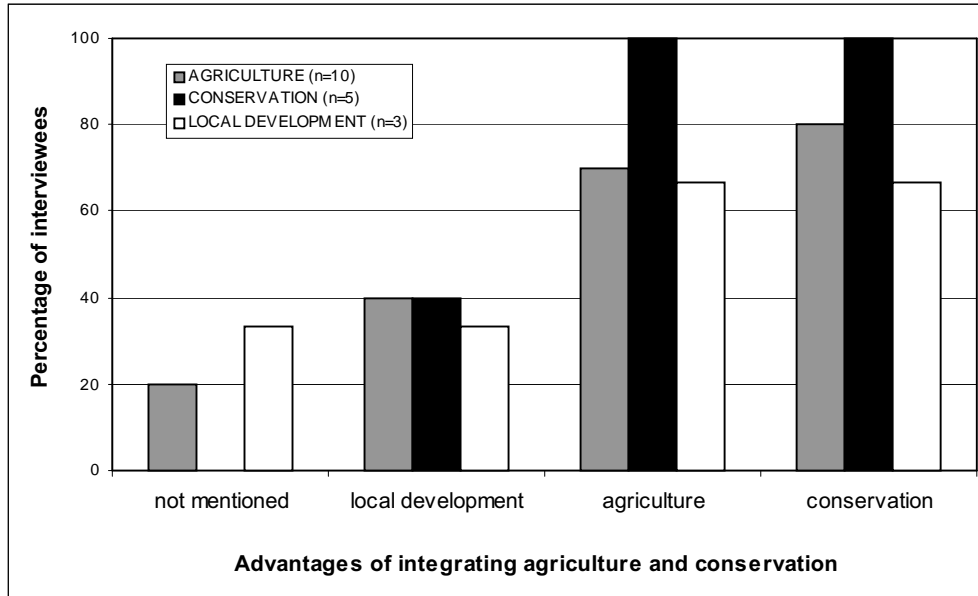


Figure 10 – Interviewees’ perceptions of the advantages of integrating agriculture and conservation in the PRM area by interest group (n = number of interviewees).

5.5.2. Obstacles to integration

Conflicts

The interviewees’ perceptions of the real and potential conflicts between the interests of agriculture and conservation in the PRM are shown in Figures 11 and 12. Twenty-eight percent of the interviewees stated they were not aware of any real conflict, while 55.6% indicated the conflict of Medo Amarelo and 44.4% identified the Odefruta case as a past and severe conflict (these conflicts are described in section 3.4.2.) (Figure 11). Both conflicts were mentioned by all interest groups.

Furthermore, some minor disagreements, mainly related with the regulations of PNSACV’s Management Plan, were pointed out by 30.0% of the agriculture group, but these were not considered as real conflicts because no documentary evidence of the conflicts was found, thus indicating that the disagreements were not very important and the aggrieved parties managed to resolve them.

Latent conflicts, although not recognised or assumed by all stakeholders, are clearly apparent from the statements of some of them and from some technical reports (Hidroprojecto, 1994; Costa, 1999; PNSACV, 2002). However, most interviewees clearly stated the existence of conflicting interests within the area, between conservation

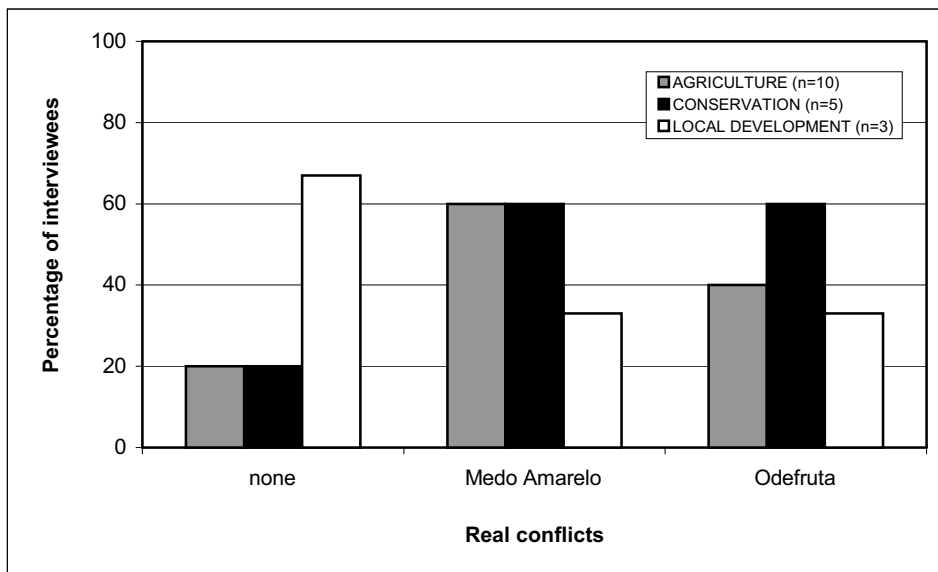


Figure 11 – Interviewees’ perceptions of the real conflicts between the interests of agriculture and conservation within the PRM area by interest group (n = number of interviewees).

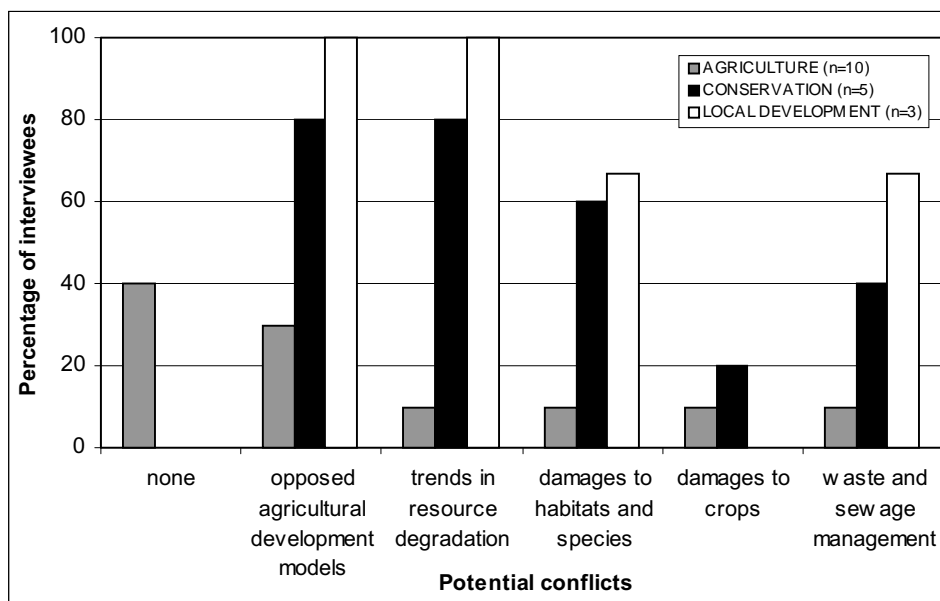


Figure 12 – Interviewees’ perceptions of the potential conflicts between the interests of agriculture and conservation within the PRM area by interest group (n = number of interviewees).

and agriculture stakeholders, and some of them (7 interviewees; 38.9%) even added tourism to the mix, emphasising the impacts associated with the increasing trends of mass tourism (particularly acute during the last decade), and also the incompatibility between intensive agriculture and an emergent form of ecotourism based on the natural values and rural character of the region.

Overall, the interviewees identified 5 different potential conflicts between agriculture and conservation interests in the PRM area (Figure 12). The most frequently quoted potential conflict was the existence of two opposing agricultural development models (55.6%) within the area, one based on extensive farming practices and the other based on agriculture intensification. The potential conflicts were mentioned by all interest groups, except for damages to crops, which was not mentioned by the local development group. Notwithstanding, the interviewees with interests in agriculture showed a strictest perception of the existence of potential conflicts, and 4 among them stated they did not know of any (22.2% of all interviewees).

Another noteworthy result is that the conflicting potential of current trends in resource degradation, damage to habitats and species and damage to crops were recognised by interviewees of both the agriculture and conservation groups. This indicates that both groups have some perception of each others' interests and concerns.

Obstacles

Some of the interviewees had some difficulty mentioning problems and obstacles that might prevent the integration of agriculture and conservation, when requested to do so (interview question 8d, Appendix 4b), although at this point of the interview most of them had already advanced some constraints and even criticism. In such cases, examples of constraints previously mentioned by the interviewee were reminded so as to invite additional comments.

All the stakeholders recognised the existence of constraints to the integration of agriculture and conservation in the Mira irrigation area. Overall, 34 different obstacles were mentioned by the interviewees (Table 4).

The most consensual obstacles were the absence of strategic sustainable approaches (83.3%), the bias towards agricultural development models that overvalue economic advantages (83.3%), the disregard for the environmental impacts of agricultural practices (83.3%), the inappropriate regulations governing farming activities (77.8%) and the low respect for nature conservation values (77.8%) (Table 4). Besides, 79.4% of the obstacles were recognised by all interest groups. In this regard, it is particularly interesting to note that obstacles such as the insufficient participation in decision-making processes, the absence of a regional agricultural policy, the overvaluation of

Table 4 – Interviewees’ perceptions of the obstacles to the integration of agriculture and conservation in the PRM area by interest group. Interviewees’ perceptions are represented as the percentage of interviewees in each group who mentioned each obstacle (CAP = Common Agricultural Policy; NC = nature conservation; PA = protected area; POPNSACV = PNSACV’s Management Plan).

OBSTACLES to INTEGRATION		AGRICULTURE	CONSERVATION	LOCAL DEVELOPMENT
Political obstacles	absence of strategic sustainable approaches	80	80	100
	lack of political support for NC and PA policies	10	80	100
	scant democratic experience and culture	30	0	100
	insufficient participation in decision-making processes	70	20	100
Inadequate legal frameworks	lack of specific regulations for the PRM	40	60	67
	inadequate legal provisions of the POPNSACV regarding agriculture	40	80	33
	inappropriate regulations governing farming activities	80	60	100
	absence of a regional agriculture policy	50	20	100
	inadequate land tenure regime	30	40	0
	absence of integral protection areas in the PNSACV	40	0	0
	inadequacy of the CAP	60	20	67
Deficient enforcement systems	ineffective control mechanisms	50	60	100
	incorrect approaches of law-enforcement officers	20	0	33
Limited financial resources	limited financial resources	70	40	0
Inappropriate institutional support	lack of institutional support for low-yield production systems	40	80	100
	lack of coordination between government agencies and policies	30	0	100
	inappropriate technical support	50	60	100
Cultural and education barriers	lack of social support for the PNSACV	10	40	67
	low respect for nature conservation values	70	80	100
	disregard for the advantages of biodiversity conservation	30	40	100
	modern iconography of agricultural success	30	20	33
	the old age of most farmers	30	40	67
	low educational standards	50	60	100
	individualism and conservatism	60	60	100
	overvaluation of economic advantages	80	80	100
Lack of information and knowledge	disregard for the environmental impacts of agricultural practices	70	100	100
	lack of information regarding PNSACV's natural values	70	40	100
	limited knowledge of the POPNSACV process and outputs	80	20	100
	lack of knowledge regarding resource-conserving technologies	30	20	100
Lack of professional training	lack of knowledge of the environmental effects of agricultural practices	50	60	100
	inappropriate management skills and systems	20	0	100
	low organisation skills	40	40	100
	low level of technical training	40	40	100
	lack of training opportunities	40	20	100

economic advantages and the lack of information regarding natural values included in the PNSACV were mentioned by all interest groups.

The 34 obstacles identified by the interviewees were grouped in 8 major obstacles for further analysis (Table 4). All these major obstacles were mentioned by at least 50.0% of the interviewees, and all but the limited financial resources were recognised by all the interest groups (Figure 13). The most valued obstacles were cultural and educational barriers (94.4%), lack of information and knowledge (94.4%), political obstacles (88.9%) and the inadequate legal frameworks (88.9%). Moreover, there was a perfect agreement within the agriculture group over the lack of information and knowledge, and within the conservation group regarding the inappropriate institutional support and cultural and educational barriers.

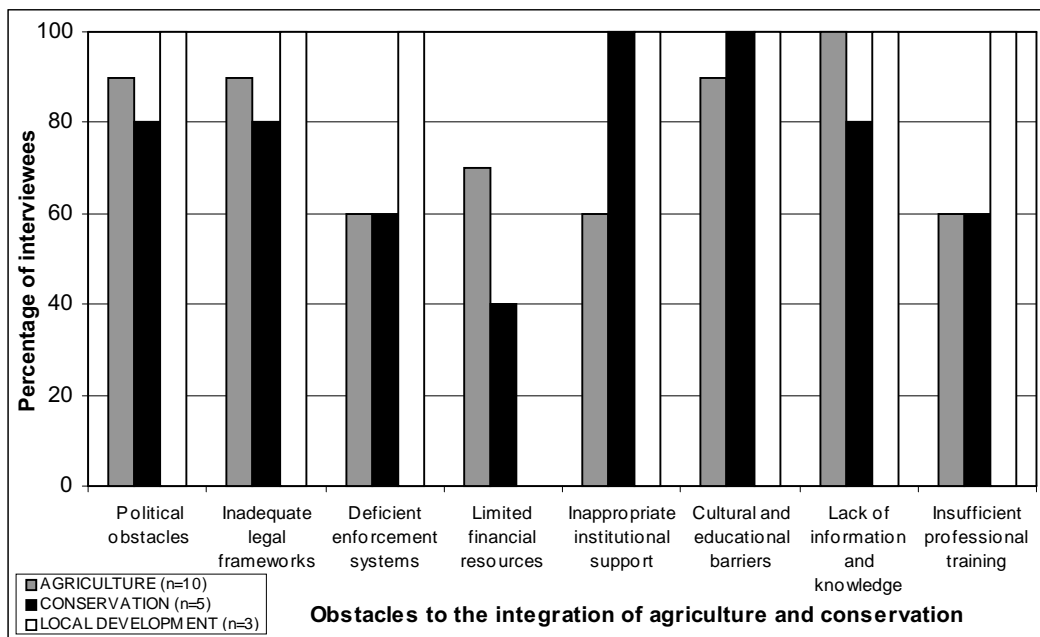


Figure 13 – Interviewees’ perceptions of the obstacles to the integration of agriculture and conservation in the PRM area by interest group (n = number of interviewees).

5.5.3. Possible approaches to integration

It was very interesting to note that many interviewees adopted a constructive and positive approach during the survey, thus making an effort to make positive criticism and advance some alternatives and solutions that may help overcoming the existing problems and obstacles. Content analysis was used to identify such meaningful suggestions, which were organised in sets of approaches, mechanisms and measures to foster the integration of agriculture and conservation in the PRM

Approaches to integration

The stakeholders suggested 7 approaches to the integration of agriculture and conservation in the PRM (Figure 14). Nearly all the interviewees suggested one or more approaches to integration, and only the precautionary approach was not mentioned by the 3 interest groups. Remarkably, the most frequently mentioned approach was participation (66.7%), indicating that the stakeholders have a broad perception of the usefulness of participatory approaches. Sustainable (61.1%), integrative (50.0%) and innovative (50.0%) approaches were also mentioned by a significant percentage of interviewees. Besides, the approach most frequently mentioned by the interviewees in the agriculture group was the participatory approach. By contrast, there was a perfect agreement within the conservation group on the suitability of a sustainable approach, and within the local development group regarding integrative and innovative approaches to integration in the PRM.

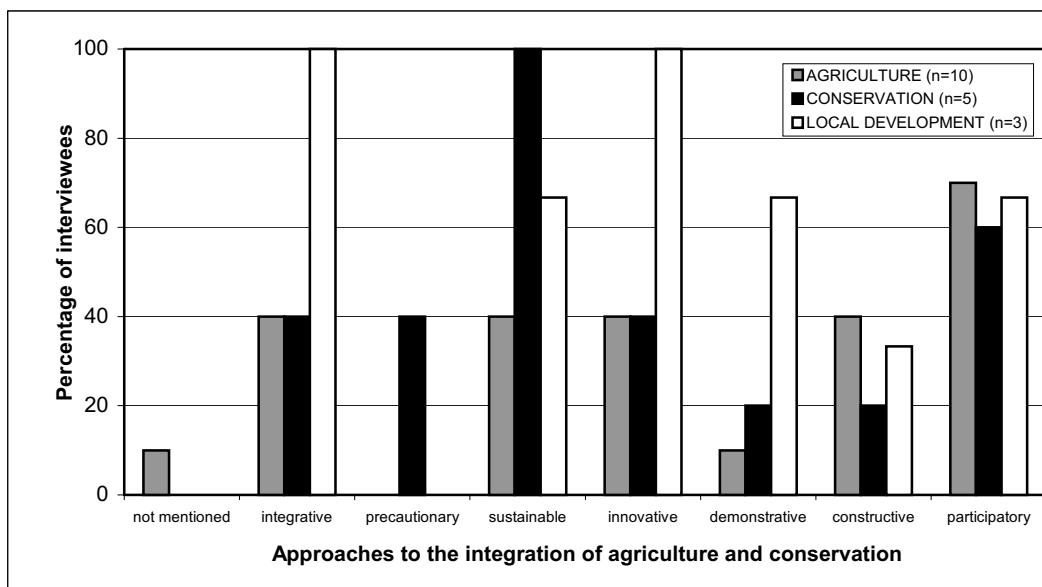


Figure 14 – Interviewees’ perceptions of the approaches that should be adopted to the integration of agriculture and conservation in the PRM area by interest group (n = number of interviewees).

Mechanisms to foster integration

All the interviewees mentioned some mechanisms that might be used to foster the integration of agriculture and conservation in the PRM. Overall, the interviewees suggested 25 mechanisms (Table 5).

The most consensual mechanism suggested was by far the enactment of regulations and controls on agricultural practices for the PRM area (94.4%), but compensations and incentives to low-input production systems (72.2%) and financial mechanisms to enable the implementation of a set-aside regime (66.7%) were also considered useful mechanisms by many stakeholders. Another important result is that 84.0% of the mechanisms were identified by interviewees of all interest groups.

The introduction of compensations and incentives to low-input production systems, for instance under the EU agri-environment regulation, was particularly stressed by the interviewees. In this regard, some interviewees of the agriculture group suggested that the creation of special subsidies for traditional low-input production systems based on autochthonous crop varieties and livestock breeds would contribute significantly to the integration of agriculture and conservation.

Table 5 – Interviewees’ perceptions of the mechanisms that might be used to foster the integration of agriculture and conservation in the PRM area, by interest group. Interviewees’ perceptions are represented as the percentage of interviewees in each group who mentioned each mechanism (SA = sustainable agriculture; CGAP = Code of Good Agricultural Practices).

MECHANISMS		AGRICULTURE	CONSERVATION	LOCAL DEVELOPMENT
Policy	financial and tax mechanisms to encourage SA	20	60	67
	compensations and incentives to low-input production systems	60	80	100
	financial mechanisms to enable the implementation of set aside regimes	70	60	67
	financial incentives to organic production	40	0	100
	measures to couple agro-products to the environment	40	40	100
	incentives to distribution	20	20	100
	provision of facilities and services to local populations	10	20	33
Regulatory	regulations and controls on agricultural practices (e.g. CGAP)	90	100	100
	regulations enforced by penalties on agro-chemicals misuse	50	40	67

	restrictions to land-use and polluting or harmful practices	40	80	67
Educational & information-exchange	training and learning programmes on SA technologies and processes	50	40	100
	raising awareness of farmers to the need to change to SA	10	60	100
	information about natural values	30	20	67
	information about rules	50	40	67
	information about (dis)incentives for extensification	20	0	67
	raising public awareness to environmental protection and food security	20	20	67
Institutional	mechanisms that build institutional support and capacity for SA	20	40	67
	raising awareness and training of institutions and officers on SA	10	60	67
	coordination of governmental agencies and policies	40	40	100
Control & enforcement	control and enforcement of land-use and agricultural regulations	40	20	33
	effective control systems of agro-chemicals licensing and use	10	0	33
Research & monitoring	research on resource-conserving technologies and practices	50	60	67
	monitoring of the effects of agricultural practices	40	20	33
	scientific research that supports regulations	40	80	67
	research and management of wildlife	10	20	0

Furthermore, it is worth noting that half of the interviewees suggested some measures to couple agro-products to the environment, emphasising the importance of valuing the food products that result from resource-conserving practices. There were many suggestions, including certification and ‘eco-labelling’ systems that associate the agro-products, and their quality, with environmental protection. Another interesting idea was the certification of conservation-led agricultural products, i.e. a certification system for products that are produced in agricultural units that contribute to nature conservation.

The 25 mechanisms were grouped in 6 major categories for further analysis (Table 5). All types of mechanisms were mentioned by all interest groups (Figure 15). More importantly, there was a perfect agreement of all interviewees regarding the importance of regulatory mechanisms to the integration of agriculture and conservation. Other important mechanisms were policy (83.3%), educational and information-exchange (72.2%) and research and monitoring mechanisms (72.2%).

Besides regulatory mechanisms, the agriculture group also emphasised the importance of policy instruments, while the conservation group valued policy and research and monitoring mechanisms. By contrast, the local development group unanimously agreed on the importance of policy, regulatory, educational and institutional mechanisms.

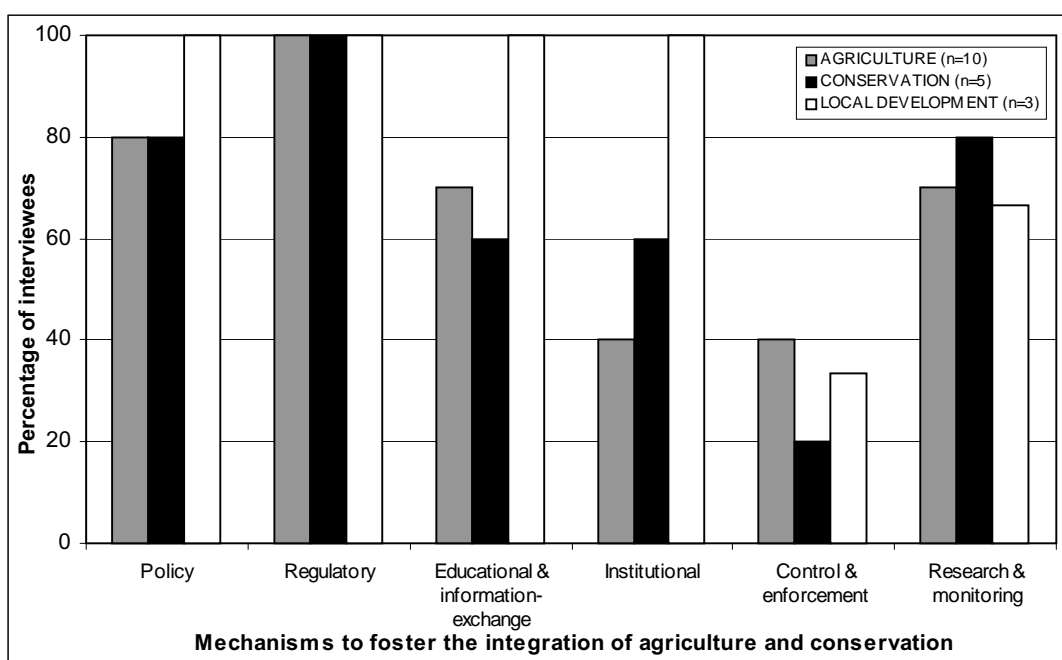


Figure 15 – Interviewees’ perceptions of the mechanisms that might be used to foster the integration of agriculture and conservation in the PRM area by interest group (n = number of interviewees).

Integrative measures

During the survey, most interviewees mentioned some measures that might be advantageous for the integration of agriculture and conservation in the PRM. Overall, 23 integrative measures were pointed out by the interviewees (Table 6).

Table 6 – Interviewees’ perceptions of possible measures to integrate agriculture and conservation in the PRM area by interest group. Interviewees’ perceptions are represented as the percentage of interviewees in each group who mentioned each integrative measure (EIA = environmental impact assessment).

INTEGRATIVE MEASURES		AGRICULTURE	CONSERVATION	LOCAL DEVELOPMENT
Agriculture planning	withdrawal of some areas from the PRM	10	40	0
	any enlargement PRM areas must pass EIA	10	0	0
	mapping according to acceptable land-uses	50	80	33
	preservation of the farmland matrix	50	100	100
	restrictions to intrusive agro-systems	50	80	67
	promotion of agro-pastoral production systems	10	40	67

Biodiversity conservation	set-aside in the farmland	80	100	100
	integral protection areas	60	100	67
	special preservation measures	80	60	33
Resource-conserving technologies and practices	irrigation technologies and management	50	80	67
	conscious soil tillage techniques	20	20	67
	traditional manuring practices	10	0	67
	fallow and crop rotation	30	40	100
	restrictions to the use of agro-chemicals	60	100	100
	alternative resource-conserving practices	30	40	33
	drainage practices that reduce contamination	10	20	0
	water and soil decontamination and restoration	0	40	0
	agricultural waste management plan	30	20	67
Farm management	reservation of part of each property for nature	20	20	0
	maintenance of autochthonous crop varieties, breeds	30	20	100
	restrictions to wind fences harvest	10	20	33
	restrictions to clearing riparian vegetation	30	20	33
	prohibition of the introduction of exotic species	0	20	67

Out of all the measures identified by the interviewees, 16 were mentioned by members of all interest groups (69.6% of the measures). The most consensual integrative measures were the introduction of a set-aside scheme (88.9% of all interviewees), restrictions to the use of agro-chemicals (77.8%), preservation of the farmland matrix (72.2%), designation of integral protection areas (72.2%) and special preservation measures (66.7%) (Table 6). In other words, the 3 biodiversity conservation measures are among the 5 most consensual integrative measures mentioned. Besides, it is also significant that the interviewees, including some from the agriculture interest group, suggested measures such as the withdrawal of areas with poor irrigation suitability from the PRM, the submission of any enlargement PRM areas to Environmental Impact Assessment (EIA) procedures, mapping according to acceptable land-uses and water and soil decontamination and restoration.

The 23 integrative measures were grouped in 4 major categories for further analysis (Table 6). The most important measures for the interviewees were those related with agriculture planning (94.4% of all interviewees) and biodiversity conservation (94.4%), although resource-conserving technologies and practices were also considered very important (88.9%) (Figure 16). Remarkably, there was a perfect agreement within the conservation and local development groups regarding the possible suitability of measures in the areas of agriculture planning, biodiversity conservation and resource conserving technologies. Moreover, there were more interviewees from the agriculture group suggesting agriculture planning and biodiversity conservation measures for the

integration of agriculture and conservation than resource-conserving technologies or farm management measures.

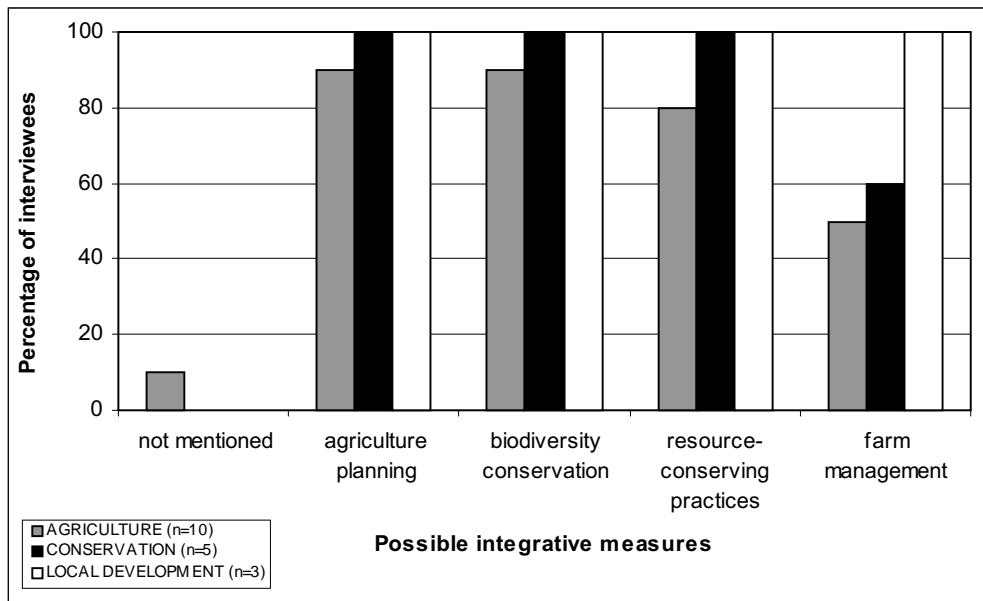


Figure 16 – Possible integrative measures advocated by interest group (n = number of interviewees).

5.5.4. Relevant contributions to integration

During the course of the interviews, many stakeholders argued that, in the past few years, there have been significant efforts, at local and national levels, to address agriculture-conservation issues. The initiatives and attempts described by the interviewees as useful for the integration of agriculture and conservation in the PRM were thus investigated and assigned to 4 major types of initiatives (Figure 17).

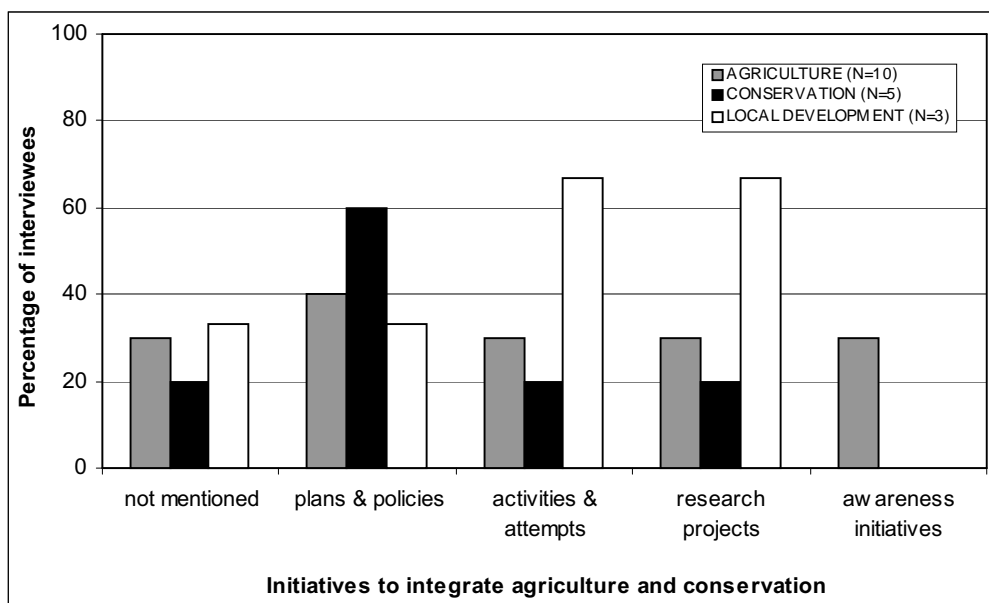


Figure 17 – Initiatives to integrate agriculture and conservation in the PRM area mentioned by the interviewees by interest group (n = number of interviewees).

Twenty-eight percent of the interviewees did not mention any initiative to integrate agriculture and conservation. Nevertheless, the remaining interviewees described many initiatives and attempts that might be considered in future efforts to integrate agriculture and conservation in the PRM. In short, out of the initiatives mentioned by the interviewees, those regarding plans and policies (44.4% of all interviewees), activities and attempts (33.3%), and research projects (33.3%) were pointed out by all interest groups, whereas awareness initiatives were highlighted by only 3 interviewees of the agriculture group (16.7% of all interviewees).

The most relevant contributions to the integration of agriculture and conservation in the PRM area are summarised in Table 7. Out of all the initiatives selected, only the Agri environment Action Plan, research on resource-conserving technologies and awareness initiatives on ‘good agricultural practices’ are nationwide governmental initiatives. All the other contributions are attempts to address local or regional problems and gaps, which have been promoted by single organisations but, in most cases, have benefited from the involvement of other stakeholders at a latter stage.

The first two initiatives presented in Table 7 summarise particularly interesting efforts, because, as strategic initiatives, they may provide building blocks and experience for the integration of agriculture and conservation in the PRM. The PNSACV Zonal Programme and the Agri-environment Action Plan are government initiatives to address the integration of agriculture and nature conservation, at regional and national levels, respectively; their preparation involved the joint efforts of the ministries of agriculture and environment (PNSACV, 1999, 2001, 2002).

It is also worth mentioning that the initiatives regarding the recovery of the 'Garvonesa' breed, the research on natural pastures and the survey on regional varieties might seem as individual actions, but were in fact part of a larger project that aimed to value and promote PNSACV's extensive farming systems and to provide the necessary conditions for more farmers to adhere to such systems. Moreover, by improving farming practices and promoting the production of regional varieties and breeds, the ultimate goal of the project was to improve alternative production systems that may contribute to the conservation of PNSACV's biodiversity (Almeida, 1994, 1995).

The fact that many of these initiatives have not benefited from an integrated, strategic approach has probably contributed to the failure and interruption of some of them. This is clearly the case of the 'Garvonesa', natural pastures and regional varieties projects, which were innovative projects in the area but were suspended due to a lack of management resources. Another example is the lack of success of the organic farming conversion project, which is strongly related with the farmers' disbelief in the practicality and profitability of organic farming (Ventura, 1997; Vacas, 2000).

Table 7 – Relevant initiatives for the integration of agriculture and conservation in the PRM area. The initiatives mentioned by the interviewees are indicated in bold.

PP = plans & policies; AA = activities & attempts; R = research projects; AI = awareness initiatives.

Note: this is not intended to be a comprehensive list, but rather to illustrate the range of initiatives and organisations involved in agriculture-conservation integration, according to interviewees' statements and written reports.

Sources: * = documentary evidence; 1 PNSACV 1996, 1999, 2001 and 2002; 2 Ribeiro 1999a, 1999b, 2000 and 2001; 3 Silva 1998; 4 Vacas 2000; 5 Almeida 1994 and 1995; 6 Durães 1997; 7 Alcazar 1998, 2000 and 2001, Beja *et al.* 1996, Chaves 1999, Machado *et al.* 1999, Magalhães & Collares-Pereira 1999, Palmeirim *et al.* 1992, Reis *et al.* 1997; 8 DGDR & IHERA 2001; 9 MADRP 1997 and 2000.

	Initiatives	Organisations	Aims	Notes
PP	PNSACV Zonal Programme ¹	PNSACV	Maintenance of traditional farming systems supporting landscape and biological diversity	PNSACV Zonal Programme approval
PP	Agri-environment Action Plan *	AAMA, IHERA, ICN	Integration of agricultural systems and practices and the conservation of natural resources, at national level	In preparation
PP	PRM waste management plan * ²	PNSACV, DRAOTAL, ABM, CMO, AHSA	Promotion of an efficient management scheme for the waste resulting from intensive agriculture	Schemes for the management and plastic residues unavailable
PP	PRM water quality monitoring plan * ³	PNSACV, DRAOTAL, ABM	Implementation of a water quality monitoring scheme	A scientific report evaluated and presented in 1998. The scheme depends on the approval of the Ministry of Agriculture
AA	Conversion of conventional production systems to organic production * ⁴	PNSACV, ACL, AHSA, APBDA	Promotion of a profitable and environment-conscious agriculture in the PNSACV	Attempts have been made to convert potato and horticulture to organic, but only some horticulture producers as their production is still organic
AA	Recovery of an autochthonous bovine breed*	PNSACV	Conservation of genetic diversity and maintenance of extensive farming systems	Extinction of the 'Garvão' autochthonous characterised by breeders currently benefited
R	Research on natural pastures ⁵	PNSACV	Characterisation of PNSACV's natural pastures and valuation of extensive farming systems	
R	Survey on regional varieties of cereals, vegetables and fruits ⁶	PNSACV	Characterisation of regional varieties within the PNSACV	
R	Research on biodiversity ⁷	PNSACV, universities	Characterisation of the biodiversity associated with farmland ecosystems, freshwater ecosystems and temporary ponds	

Table 7 (cont.)

	Initiatives	Organisations	Aims	Notes
R	Research on resource-conserving technologies ⁸	DGDR, IHERA	Increase the knowledge of water resources and contribute to their efficient management	
AI	Awareness initiatives on 'good agricultural practice' ⁹	AAMA, farmers organisations	Raising farmers awareness on 'good agricultural practice'	This includes the production of leaflets and meetings with the Ministry of Agriculture

5.6. Participation prospects

5.6.1. The advantages of a participatory approach

Although all the stakeholders had a general idea of what participation is, many interviewees asked what was meant by a participatory approach. Thus, in most interviews, the concept of participation was explained (see Appendix 5b), and examples of participatory tools and techniques were provided.

Not surprisingly, all the interviewees recognised that it might be useful to attempt a participatory approach to the integration of agriculture and nature conservation in the PRM. Some of them (38.9%) even stated that participation is the only way to a successful integration of these interests.

Overall, the interviewees identified nine major advantages of a participatory approach to the integration of agriculture and conservation in the PRM (Table 8). Nearly all of these advantages were considered important by the three interest groups (Figure 18). The most valued advantages were the opportunity for detailed discussions (94.4% of all interviewees), the valuation of opinions (72.2%) and stronger decisions (72.2%). These advantages, and also increased commitment, were particularly emphasised by the agriculture interest group, whereas the conservation group favoured detailed discussions, stronger decisions, fewer conflicts and improved cooperation. In contrast, the interviewees interested in local development unanimously agreed on the advantages of participation to increase the opportunities for detailed discussions, valuation of individual opinions and working towards a common goal.

Table 8 – Description of the advantages of a participatory approach to the integration of agriculture and conservation in the PRM area as identified by the interviewees.

Advantage	Description
Detailed discussions	Opportunity to discuss agriculture-conservation issues and problems in detail
Valuation of opinions	Valuation of people's opinions (interests and concerns) and problems
Commitment	Greater responsibility of the parties for respecting decisions agreed upon
Stronger decisions	Final decisions resulting from a consensus will be stronger, more consistent and effective
Fewer conflicts	Decrease of conflicts and lobbies strength
New ideas	New, innovative ideas and better solutions may emerge
Cooperation	Improved cooperation between organisations and between these and local communities
Common goal	Opportunity to get people to work with a common goal
Multiplier effect	Long-lasting multiplier effect of constructive processes

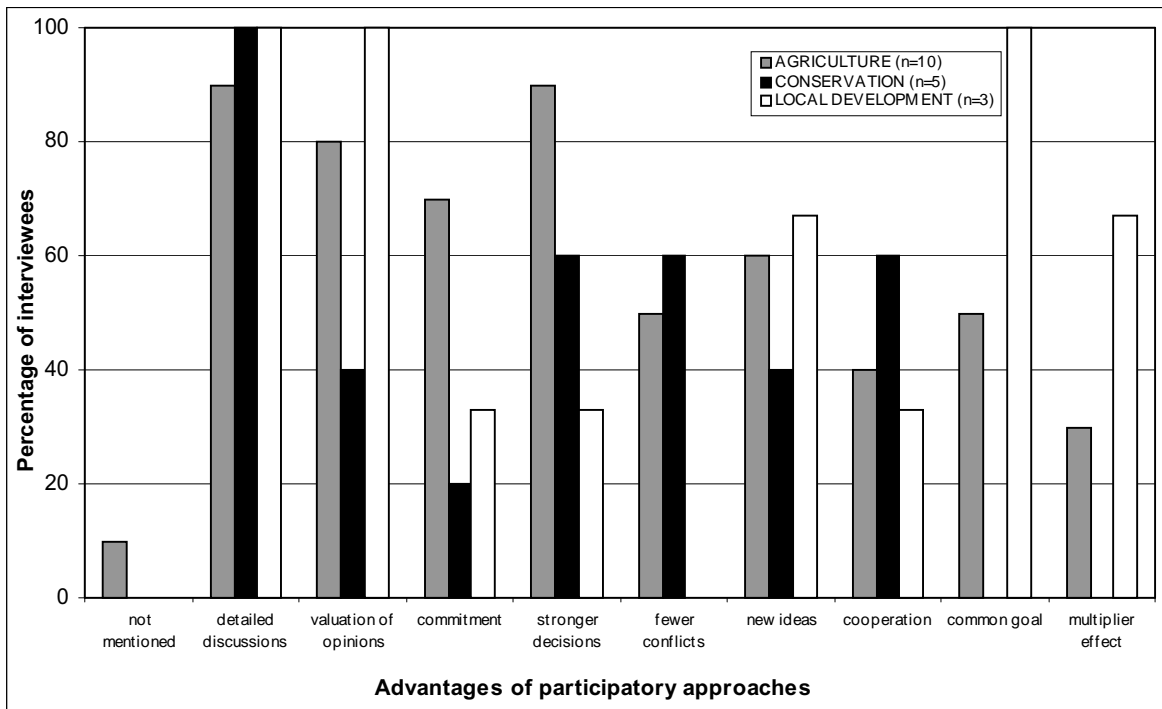


Figure 18 – Advantages of a participatory approach to the integration of agriculture and conservation in the PRM area mentioned by the interviewees by interest group (n = number of interviewees).

Besides identifying the advantages of participatory processes, some interviewees (72.2% of all interviewees) also pointed out the disadvantages of non-participatory approaches (Figure 19) to stress the importance of participation. According to interviewees’ accounts, unilateral decisions may not be followed (44.4%), may result in hostility and violence (27.8%) and have long-term pernicious effects (27.8%).

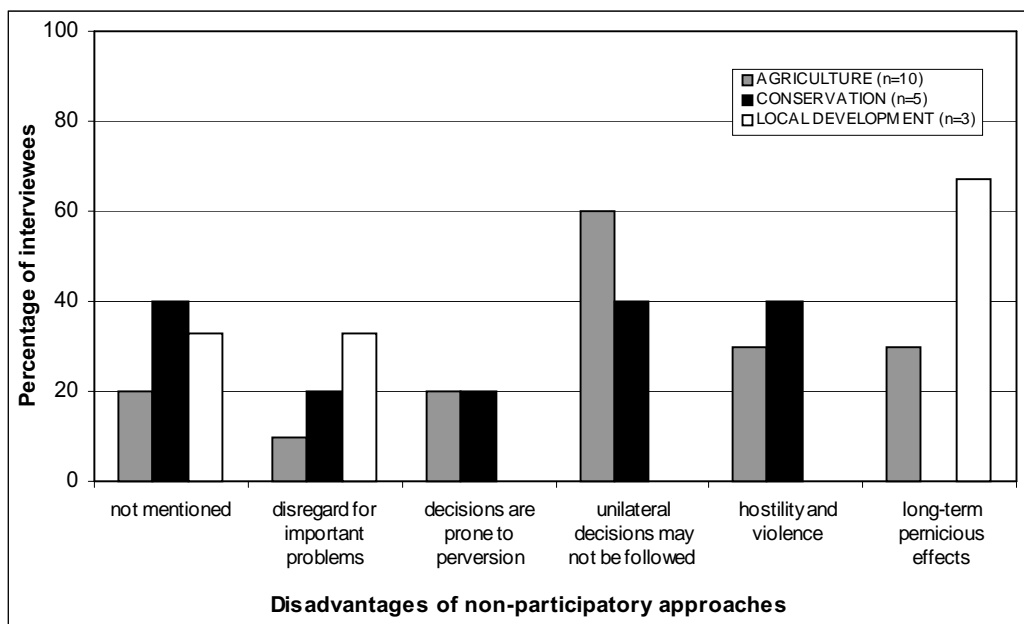


Figure 19 – Interviewees’ perceptions of the disadvantages of non-participatory approaches by interest group (n = number of interviewees).

The interviewees also identified some disadvantages of participation (Figure 20), although some of them stated there are none (16.7% of all interviewees). The three disadvantages of participatory approaches mentioned are the huge requirements in terms of difficult and stressful work (27.8%), time (11.1%) and financial resources (11.1%).

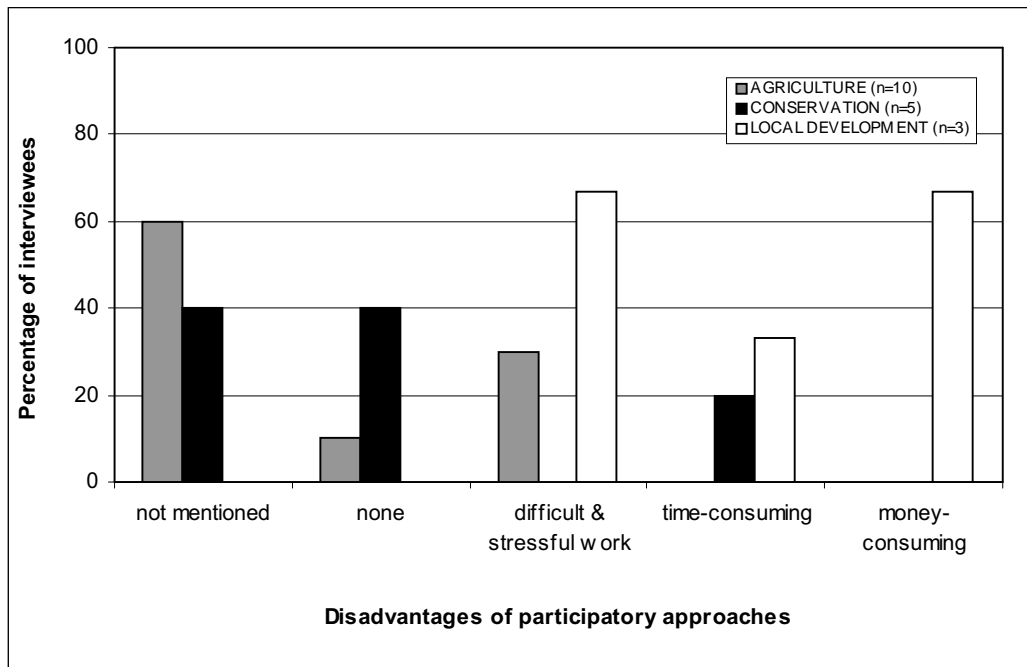


Figure 20 – Interviewees’ perceptions of the disadvantages of a participatory approach to the integration of agriculture and conservation in the PRM area by interest group (n = number of interviewees).

5.6.2. Organising a participatory process

Eight key stakeholders were considered by the interviewees as important participants in a participatory process to integrate agriculture and conservation in the PRM (Figure 21). The most important stakeholders were the governmental agencies responsible for conservation, towards which there was a broad agreement (94.4% of all interviewees), and agriculture (77.8%).

The participation of farmers’ NGOs (66.7%), farmers (55.6%) and the irrigators’ association (50.0%) was also considered very important. In this regard, it is important to note that a significant number of interviewees agreed that farmers must be informed of and given the chance of expressing their opinions at some point of the process, despite their representation being secured by farmers’ and irrigators’ associations.

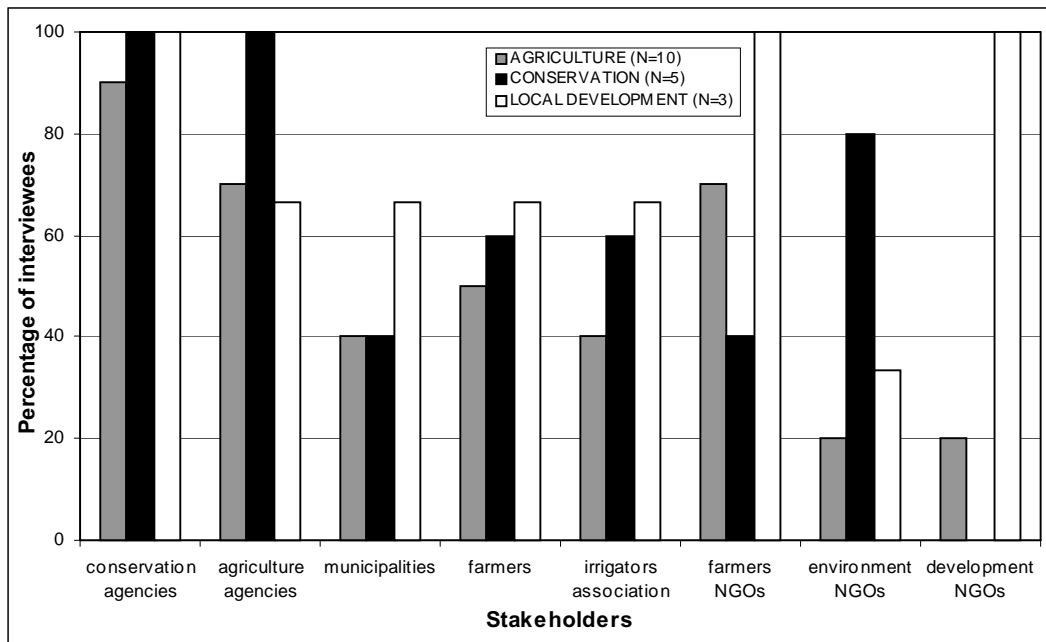


Figure 21 – Interviewees’ perceptions of the stakeholders that should be involved in a participatory approach to the integration of agriculture and conservation in the PRM area by interest group (n = number of interviewees).

As regards the involvement of municipalities, and although 44.4% of all interviewees mentioned the importance of their participation, there was a disagreeing opinion based on the fact that municipalities have only indirect interests in agriculture or conservation.

Figure 21 also shows that the three interest groups valued the involvement of key stakeholders quite differently. Both the agriculture and conservation groups emphasised the importance of involving conservation and agriculture agencies. Not surprisingly, the agriculture group chose farmers’ NGOs as the third most important stakeholder, while the conservation group preferred environment NGOs. The three top stakeholders for the local development group were the conservation agencies, farmers’ NGOs and development NGOs.

The interviewees had divergent views concerning the most appropriate way to organise a participatory process to make agriculture and conservation interests compatible. As regards possible organisers of such a process, many different opinions emerged (Figure 22), but, in general terms, the preferred options were a conservation organisation (38.9% of all interviewees), an outside organisation (33.3%), i.e. an organisation with no direct interests in agriculture or conservation, and an agriculture organisation

(27.8%). However, the only option mentioned by all three interest groups was the outside organisation. It is also interesting to note that the agriculture group's first option was a conservation organisation, whereas the conservation group accepted any organisation, and the local development group preferred an organisation with interests in agriculture.

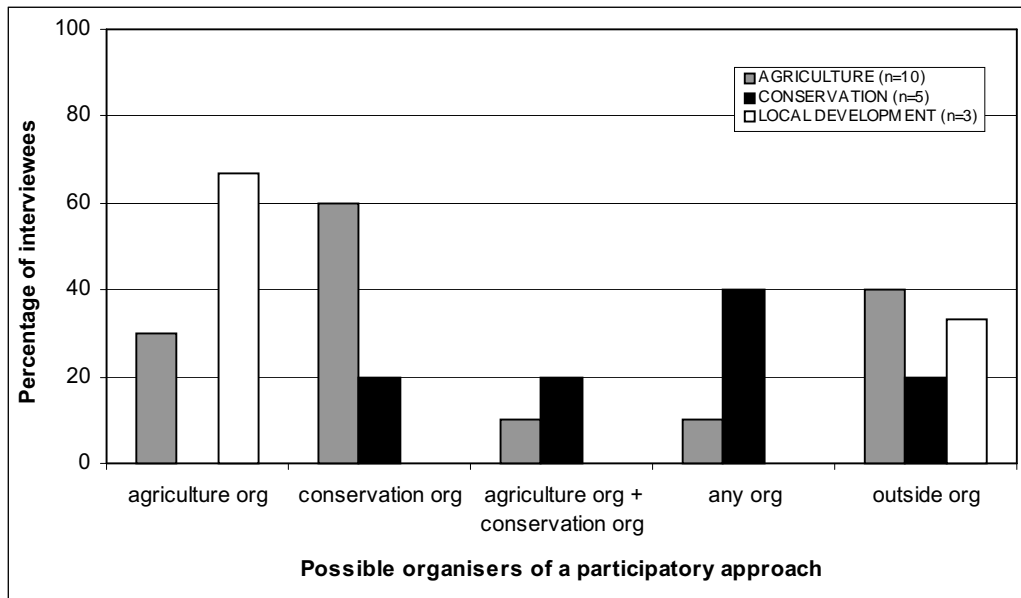


Figure 22 – Possible organisers of a participatory approach to the integration of agriculture and conservation in the PRM area as indicated by the interviewees by interest group (n = number of interviewees).

Notwithstanding, when the interviewees were directly asked whether it would be appropriate for an outside organisation to lead the process, most of those who answered the question agreed (44.4% of all interviewees) (Figure 23), arguing that someone with no direct interests in agriculture or conservation would be in a much better condition to organise and coordinate the process.

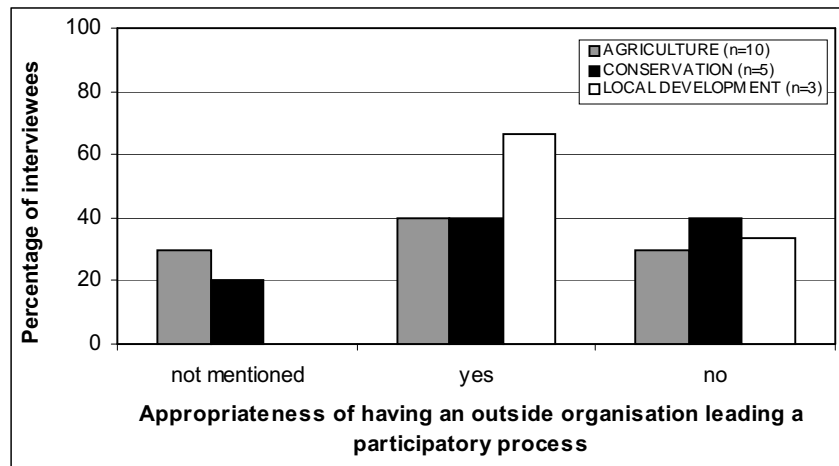


Figure 23 – Interviewees’ perceptions of the appropriateness of having an outside organisation leading the participatory process for the integration of agriculture and conservation in the PRM area by interest group.

In addition, the interviewees made many suggestions regarding the organisation of a participatory process to deal with agriculture-conservation issues in the area, including the following:

- implementing awareness and informative programmes in advance of the participatory process, to provide all participants and local people at large with adequate knowledge and information on agriculture-wildlife relationships; this has been pointed out as a requirement for the effective and useful participation of farmers;
- providing data and information that is presented and interpreted in the appropriate form and language, so that it may be easily understood;
- specific interest issues, with very clear objectives, should be discussed separately in small groups; the small discussion groups might have a geographical correspondence;
- the participatory process should take place locally;
- the participatory process should promote the consultation of local people (especially farmers) on key issues, such as objectives, and integrative measures;
- the participatory process should be organised and coordinated by facilitators with some technical and scientific knowledge of agriculture-conservation issues.

Finally, as regards the stakeholders' availability to become involved in a participatory approach, 16 interviewees (88.9% of all interviewees) said they would be available, whereas 1 (5.6%) said he could not be sure he would still be working on the same organisation at that time. Only one interviewee (5.6%) said he wouldn't be available, given his position as collaborator of an environment NGO. When asked about other stakeholders' interest and availability, 22.2% of interviewees argued that some stakeholders might not be interested or available to participate, while 11.1% stated other stakeholders would not be interested at all.

5.6.3. Obstacles to participation

Although not directly asked, most stakeholders (16 interviewees; 88.9%) pointed out some important obstacles to participation. The 15 obstacles mentioned by the interviewees were aggregated in 3 groups: obstacles in terms of the organisation and implementation of a participatory process, obstacles to individual participation and obstacles to the participation of organisations (Table 9). All three types of obstacles were mentioned by all interest groups. Moreover, the most important obstacles for the interviewees were those at the individual level (72.2% of all interviewees) (Figure 24), with the most valued single obstacle being the scant participatory experience of local people (55.6%).

Furthermore, whereas the agriculture group emphasised the importance of individual obstacles, the conservation group valued equally the obstacles at the individual and group level. All the interviewees of the local development group agreed on the importance of all three groups of obstacles.

Table 9 – Interviewees’ perceptions of the obstacles to a participatory approach to the integration of agriculture and conservation in the PRM area by interest group. Interviewees’ perceptions are represented as the percentage of interviewees in each group that mentioned each obstacle (organisational = obstacles in terms of the organisation and implementation of a participatory process; individual = obstacles to individual participation; group = obstacles in terms of the participation of organisations).

OBSTACLES to PARTICIPATION		AGRICULTURE	CONSERVATION	LOCAL DEVELOPMENT
organisational	short-term, sectorial and authoritarian visions	10	20	100
	restricted financial resources	30	0	33
	lack of facilitators	0	0	33
individual	lack of time	20	20	33
	bad experiences	20	20	33
	scant participatory experience	40	60	100
	difficulties in taking responsibilities	10	0	33
	communication barriers	10	60	0
	intransigent positions	40	40	0
	‘difficult people’	30	20	33
group	organisations overweighting individual interests	10	80	33
	problems within organisations	30	20	33
	lack of representativeness	10	0	33
	lack of decision-making authority	0	0	33
	conflicts between organisations	10	0	100

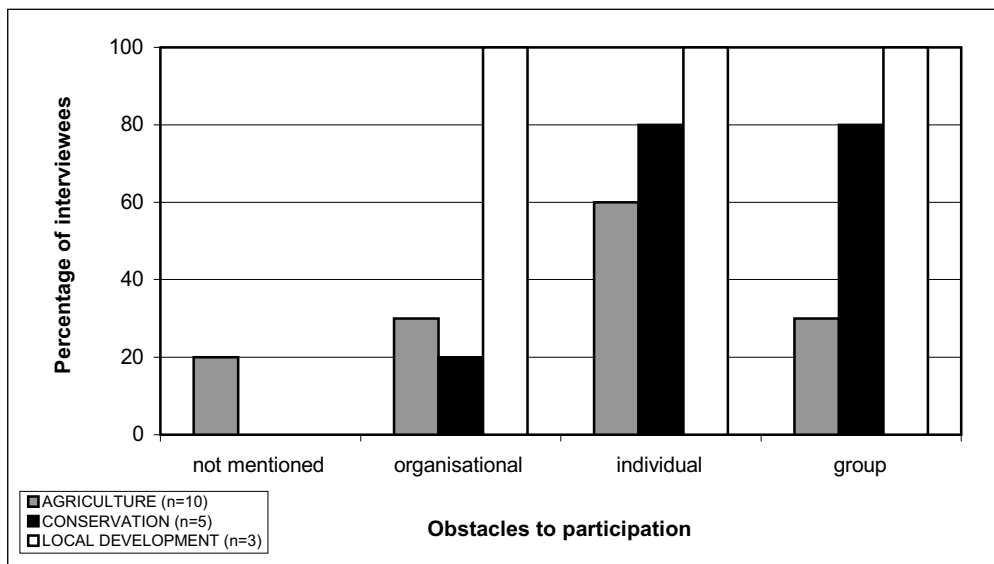


Figure 24 – Interviewees’ perceptions of the obstacles to a participatory approach to the integration of agriculture and conservation in the PRM area by interest group (n = number of interviewees; organisational = obstacles in terms of the organisation and implementation of a participatory process; individual = obstacles to individual participation; group = obstacles in terms of the participation of organisations).

Chapter Six: A PARTICIPATORY APPROACH TO THE PRM CASE – the way forward ...

This chapter provides a detailed discussion on the most appropriate way to address the integration of agriculture and conservation within the PRM area. Such analysis is based on the results of the survey presented in the previous chapter and also draws from relevant up-to-date publications.

6.1. Building a consensual model for agricultural development in the PRM

The results of the survey show that there is a broad consensus among local stakeholders as for the importance of agriculture and biodiversity conservation in the PRM area. As regards nature conservation, and even though most stakeholders presented a superficial knowledge of PNSACV's biodiversity, all of them recognised the importance of maintaining biodiversity (section 5.4.). More importantly, most of the interviewees are aware of the environmental impacts associated with agricultural intensification, and admit that the conservation of biodiversity is not compatible with the expansion of intensive agriculture (section 5.5.1.).

Thus, as concern for PRM's natural values and for the severe impacts resulting from agricultural expansion increases, the need for changes is becoming apparent even among the stakeholders with strong interests in agriculture. Indeed, as survey results show, there is currently a broad consensus among key stakeholders on the importance of making agriculture and conservation compatible. In this respect, the agreement on a zoning system that includes areas for agricultural development and areas for biodiversity conservation was considered particularly important.

However, the challenging work of integrating agricultural activities and nature conservation in the PRM requires the development of a consensual model for agricultural development in the area. Actually, haphazard or piecemeal attempts to integrate agriculture and conservation are unlikely to succeed, because the agricultural practices are changing very rapidly and drastically and the impacts of agriculture are widespread. Thus, unless such impacts are effectively reduced as the result of a more

environment-conscious agricultural development, fragmentation of the rural landscape and habitat degradation and loss will continue.

In this regard, the recognition by most interviewees that the existence of two opposing agricultural development models in the PRM area represents a major potential conflict (section 5.5.2.) further indicates that building a consensus regarding the most appropriate agricultural development model is a priority need for the area and a requirement in terms of the integration agriculture-conservation. Besides, it may provide a very effective way of preventing undesired conflicts. Therefore, considering that a need for change into a sustainable rural development path has already been officially recognised (MADRP, 2000; PNSACV, 2001, 2002) and that most key stakeholders suggested that agricultural development within the PRM should become sustainable (section 5.3.3.), it is apparent that sustainable agriculture stands a good chance of being adopted as the most adequate model for the PRM.

Furthermore, what has been achieved so far by some development NGOs regarding the involvement of many key stakeholders in sustainable development projects for the PRM area (Vicentina, 2001; Taipa, 2002) might provide a good basis for the development of a consensual model for the PRM area.

6.2. Overcoming major obstacles

The integration of agriculture and conservation within the PRM, as any other complex process, is extremely difficult. Noticeably, the survey revealed an extensive list of obstacles to integration (section 5.5.2.). Nevertheless, out of all the major obstacles identified by the interviewees, it seems appropriate to emphasise the importance of political and educational barriers, as all the others are connected with these.

The most serious constraints to the integration of development and conservation are probably those at the political level. As a matter of fact, in Portugal there is still a restricted short-term thinking and a limited political awareness of the benefits of biodiversity conservation that greatly hinders the integration of conservation and development programmes. These political obstacles are strongly associated with the existence of inadequate legal frameworks, deficient enforcement systems, limited financial resources and the inappropriate institutional support. Overcoming these

obstacles is a major challenge demanding the adoption of a shared vision considering not only the social and economic needs but also the importance of environmental protection and biodiversity conservation (Keating, 1993).

The integration of agriculture and conservation in the PRM may face additional difficulties, given the cultural and educational limitations of local populations, the lack of information regarding PNSACV's natural values and the insufficient professional training of farmers. Overcoming these obstacles requires the preparation and implementation of specially designed awareness and information programmes that may explain the importance of natural values to local people and encourage a wider participation in natural resources management (McNeely *et al.*, 1990).

6.3. Planning a participatory process

As mentioned in section 2.3., the active and meaningful participation of major stakeholders and local people in planning and management processes is increasingly recognised for its benefits in terms of contributing to socially acceptable, meaningful and practicable policies (Carew-Reid *et al.*, 1994). This is particularly important when such processes aim to integrate conservation and development in protected areas (Aitchison & Beresford, 1992), as such efforts will succeed only if the needs and concerns of local populations are fully acknowledged and addressed (McNeely, 1995b; Borrini-Feyerabend, 1997a).

In this respect, the unanimous agreement of the interviewees on the usefulness of adopting a participatory approach in the PRM case and the recognition of its perceived advantages (section 5.6.1.) is particularly important. Indeed, most community participation experts agree that such recognition is an essential requirement for effective participation (Wilcox, 1994a; Borrini-Feyerabend, 1997b; Wates, 2000).

Clearly, a participatory approach to the integration of agriculture and conservation needs to be flexible so that it may be adapted to processes with different purposes, requirements and scales. In other words, a participatory approach to the preparation of specific regulations for the PRM must necessarily be different from an approach to the revision of the PNSACV's Management Plan. Indeed, community participation is a major challenge as, even within a specific process, a number of difficulties and conflicts

may arise. Thus, successful implementation usually requires a high level of flexibility and adaptation (Borrini-Feyerabend, 1997b; ICPL, 1998a) to accommodate unexpected situations and suggestions from the stakeholders.

Still, irrespective of the singularity of the approach, some basic principles of good practice regarding the promotion of community participation must be followed (Wilcox, 1994b; Lewis *et al.*, 1998; Wates, 2000). As regards community participation in the integration of agricultural development and nature conservation in the PRM, the following principles (selected from Wates, 2000) should be carefully considered:

- **accepting different agendas and varied commitments** – this is crucial because the low participatory experience and strong individualism of local people (sections 5.5.2. and 5.6.3.) and the deficient communication between local populations and governmental agencies in the PRM area may prevent local people from participating or committing themselves; moreover, the existence of strong short-term interests related with agricultural development (section 5.3.) further recommends careful management of different agendas and conflicting viewpoints;
- **avoiding jargon** – the tendency to use scientific and technical jargon in processes dealing with specific issues must be avoided, so that local people may be able to understand and participate in decisions; this appears to be particularly critical in the PRM case, as most interviewees mentioned the importance of using plain language (section 5.6.2.);
- **building local capacity** is probably one of the most important principles to promote the active participation of local people in the PRM area, given their scant participatory experience, conservatism and low initiative (section 5.5.2.);
- **respecting cultural context and local knowledge** is particularly important to avoid unnecessary conflicts and to establish effective communication with populations that are very sensitive and suspicious regarding outsiders and present a low educational level (see sections 3.3. and 5.5.2.);
- **using experts appropriately** – experts from a range of disciplines and facilitators must be carefully involved in the process so that local people do not feel threatened or put aside;
- **working on location** was specifically mentioned by the interviewees as a very important condition for the involvement of local populations (section 5.6.2.).

Furthermore, before the beginning of the participatory process design, it is extremely important to consider whether it is appropriate to involve stakeholders even at this early stage (Carpenter, 1999; Wates, 2000). In this respect, some community participation experts have noted that “the use of (participatory) techniques is not truly participatory unless all participants can also be involved, if they so wish, in organising the activity” (Lewis *et al.*, 1998, 10). Out of the participatory techniques available, the process planning sessions (Wates, 2000) and SWOL analysis (Wilcox, 1994a) are particularly suited to engage local stakeholders in designing the participatory process. These techniques are considered below in greater detail.

Whatever option is chosen in terms of process design, it is of the utmost importance to create a climate for participation. By involving key stakeholders at this early stage, members of the organising group can improve communication, begin to develop a closer understanding of each others’ points of view and forge a strong, trust-based and long-lasting relationship between parties.

It has often been suggested that effective participation is associated with careful planning of the participatory process (ICPL, 1998a; Wates, 2000). Accordingly, the design of a participatory process to address the integration of agriculture and conservation in the PRM must follow seven key steps. These steps are discussed below.

6.3.1. Deciding on the level of participation

As mentioned before (section 2.3.), there are many different types of participation, ranging from passive participation to self-mobilisation (Pretty, 1994 in ICPL, 1998a). In between these extremes there are various degrees of community participation in planning and management processes (see Appendix 1) (ICPL, 1998a).

Although it has been emphasised by some authors that “there is no ‘best’ place to be in the participation continuum” (Borrini-Feyerabend, 1997a, 20), it remains extremely important to decide which degree of participation is the most appropriate in a given initiative (Wilcox, 1994a). Otherwise, people will not know what is the purpose of their involvement in the initiative, or what is expected from them.

Thus, deciding on the appropriate level of participation at a very early stage of the participatory process design, and communicating this to local people, might be very beneficial in terms of getting their meaningful involvement. In this respect, many community participation experts emphasise the importance of principles of clarity and honesty of the approach (Wilcox, 1994b; Pimbert & Pretty, 1995; Lewis *et al.*, 1998; Wates, 2000).

As regards the choice of the most appropriate participation degree, it is important to consider that the participation of stakeholders, and local people, in a given process must be adapted to the specific needs and opportunities of its context (Borrini-Feyerabend, 1997a). In the case of agriculture-conservation integration in the PRM, a participatory approach should rule out the types 1 to 3 (Appendix 1), because these types have already been used in regional and national planning processes, with bad results (e.g. frustration and hostility) (Pinho, 1994; Jesus, 1998; Vasconcelos & Martinho, 1998; Vasconcelos, 2001) and strong criticism from local populations. Some interviewees mentioned their bad experiences, advancing some criticism to such ‘non-participatory’ processes (section 5.6.1.) and stating they would not be willing to repeat such experiences. In addition, type 4 (participation for material incentives) should also be excluded on the basis of its unsuitability to the regional context.

Thus, a participatory approach to integrate agriculture-conservation in the PRM should focus on one of the top three levels of participation: functional participation, interactive participation or self-mobilisation. However, as Pretty (1995, 23) points out, “if the objective is to achieve sustainable agriculture, then nothing less than interactive participation will suffice”.

6.3.2. Identification of objectives

The definition of objectives in terms of the participation of local people in a given decision-making process is a crucial step of the process design (Wilcox, 1994a; Sanoff, 1999; NOAA Coastal Services Center, 2001). Indeed, it is essential that the objectives of the participatory process are clearly articulated and acceptable to all stakeholders (Sanoff, 1999).

The objectives of the participatory process must be established according to the level of participation that is aimed at, which in the PRM case must be nothing less than functional participation (as discussed above). Further considering the perceptions of the stakeholders regarding the advantages of undertaking a participatory approach (section 5.6.1.), the objectives of a participatory process to the integration of agriculture and conservation in the PRM, irrespective of the decision-making process in which this may occur, may include one or more of the following:

- developing better communication between regional governmental agencies (e.g. the natural park) and local populations;
- providing the conditions for the exchange of information between the stakeholders;
- providing a better understanding among the stakeholders of the relationships between agricultural activities and biodiversity conservation;
- providing the conditions for the interested groups and individuals to communicate on an equal basis and to develop a mutual understanding regarding the desirable future for the PRM area;
- providing an opportunity to discuss key issues regarding the integration of agriculture and conservation and to develop a consensus regarding necessary action for effective integration;
- reaching compromises between the stakeholders in terms of the implementation of agreed measures, for instance through partnerships and collaborative management schemes.

6.3.3. Identification of priority issues

The identification and discussion of priority issues is another important step of the process design, as these are the specific components of the process (Brown *et al.*, 1995a). Indeed, participatory approaches are useless unless the priority issues to be discussed are relevant to the context of decision-making processes and address stakeholders' concerns and interests (Barton *et al.*, 1997; Sanoff, 1999). Clearly, it seems advisable, if not to involve key stakeholders in the definition of priority issues, at least to consult them before embarking on the activities.

The priority issues under discussion may vary according to the nature of the decision-making process (e.g. planning and management processes). However, the results of this research (section 5.5.3.) indicate that, in the PRM case, there is a need to discuss and take action on a number of major issues, if the integration of agriculture and conservation is to be achieved. Thus, an integrative process in the PRM should address the following major issues:

- land-use and agriculture planning,
- guidelines for agricultural practice,
- biodiversity conservation measures, and particularly the set-aside regime,
- resource-conserving technologies and processes,
- information and training needs.

In addition, the survey also revealed a very interesting set of very specific issues, advanced by the interviewees as possible integrative measures (see section 5.5.3.). These might be considered the focus of specific activities.

6.3.4. Selection of participants

A key step in designing a participatory process is the identification of key stakeholders and the selection of participants (Krumpe & McCoy, 1992; Wilcox, 1994b; Carpenter, 1999; Sanoff, 1999). This is particularly important because people will become actively involved only if they see that all major stakeholders are represented in the participatory process (Wilcox, 1994a). In this respect, what matters is that the key stakeholders selected represent as many different interests and concerns as possible.

As regards the PRM case, survey results suggest that a participatory process to integrate agriculture and conservation must include eight key stakeholders:

- conservation governmental agencies,
- agriculture governmental agencies,
- municipalities,
- farmers,
- irrigators' association,
- farmers' NGOs,

- environment NGOs, and
- development NGOs.

Besides the selection of key stakeholders, it is also important to consider the most appropriate form of participation. In conventional planning and management processes, the representative (or indirect) form of participation is usually adopted, not only because of its practicality (Carpenter, 1999) but especially because most modern societies operate in representative democracy systems (O’Riordan & Stoll-Kleemann, 2002). However, in representative participation there is always the danger that some disadvantaged people may not be represented, and chosen representatives may not properly reflect the opinions of their constituencies (Pretty, 1995; Borrini-Feyerabend & Brown, 1997; Wyckoff-Baird, 1997).

In the context of the PRM case, the issue of representativeness is extremely important and must be carefully considered, given that some interviewees alerted to the fact that the leaders of some organisations may not be truly representative of their constituencies. In fact, some interviewees suggested that it might be useful to involve farmers and local people at some stages of the process (section 5.6.2.), so that they would not feel excluded and would be able to contribute to the final decisions. Thus, in this case, an intermediate approach, for instance by opening some activities to all interested citizens (Carpenter, 1999) or by conducting survey questionnaires, may be the best way to secure the acceptance and support of local people in the participatory process.

Furthermore, because communities are very heterogeneous (Pretty, 1995; Borrini-Feyerabend, 1997c), “there will always be various levels of involvement, depending on differences in technical expertise, roles in the community, and willingness to commit time and energy” (Sanoff, 1999, 18). Therefore, the number and type of participants usually changes according to different issues and stages. Still, it is increasingly recommended that local people are given a chance to participate at different stages of the process (Wilcox, 1994a; Sanoff, 1999).

Finally, it is very important to guarantee that the invited participants (i.e. the representatives) are “knowledgeable about the issues at hand, able to work productively with others, supported by their constituency, interested in participating, and available for periodic meetings during the expected duration of the project” (Carpenter, 1999, 93).

6.3.5. Agreement on the organising party

The organising party is the group of people in charge of organising and assisting the participatory process. The organising group may have several members assuming different roles:

- “convenor – invites participants,
- sponsor – helps provide resources needed for the process,
- chair – provides formal leadership of the process,
- facilitator – assists participants in developing and using appropriate processes,
- recorder – maintains a ‘group memory’ and record during meetings,
- staff support – assist other participants with logistical aspects of the process” (NOAA Coastal Services Center, 2001, 115).

Clearly, an experienced trainer or facilitator may be particularly useful as he/she knows how to guide the participants through the activities, ensuring optimum group involvement (Kaner *et al.*, 1996; Borrini-Feyerabend, 1997c), consensual decisions and mutually agreeable outcomes (ICPL, 1998b). Most, if not all, participatory processes are guided by one or more facilitators, especially when more complex methods are used (Wilcox, 1994a). Notwithstanding, “the major challenge of a participatory process is to discern the minimum level of facilitator support that still allows it to be an effective catalyst for self-reliant initiative” (Barton *et al.*, 1997).

Needless to say, the group of people organising and facilitating the participatory process must be acceptable to all parties. They will most favourably come from a known and respected organisation, either outside or not, and they must be considered credible (Lewis *et al.*, 1998), respectable and honest (ICPL, 1998b).

Survey results show that the interviewees had very different opinions of who might organise a participatory process to address agriculture-conservation issues in the PRM (section 5.6.2.). The options advanced by them comprised:

- an agriculture organisation,
- a conservation organisation,
- an agriculture organisation together with a conservation organisation,
- any organisation,
- an outside organisation.

According to the statements of the interviewees, these organising parties would have credibility among all the stakeholders and local people, so long as they would demonstrate some technical and scientific knowledge of agriculture-conservation issues. On the other hand, neutrality, which is usually referred to as a fundamental personal quality of the facilitating party (South Florida Regional Planning Council, 1989; Brown, 1995; Barton *et al.*, 1997; Elliott, 1999), was not considered a necessary condition by key stakeholders in the PRM case. Actually, whatever organising option is chosen, it is essential that every stakeholder accepts it.

6.3.6. Establishing ground rules

It is increasingly recognised that the establishment of ground rules at the process design stage is particularly important to the success of the approach (South Florida Regional Planning Council, 1989; Wilcox, 1994a; Susskind *et al.*, 1999; NOAA Coastal Services Center, 2001). Ground rules are most needed in longer-term processes (NOAA Coastal Services Center, 2001), and when parties are less familiar with participatory methodologies and the issues are complex (Carpenter, 1999). This is clearly the case of the integration of agriculture and conservation in the PRM.

Moreover, the mutual agreement by all the participants on a set of ground rules is essential in the process of building trust and respect among all parties (ICPL, 1998b). Thus, it is usually considered advantageous that the participants are involved in the definition of guidelines at an early stage of the participatory process (Krumpe & McCoy, 1992).

The ground rules must describe the participants' roles and responsibilities, and the basic procedures and behaviours all participants are expected to follow (Carpenter, 1999; NOAA Coastal Services Center, 2001). Rules determining how decisions will be made and how information will be shared are particularly important, because conflicts often result from disagreements over decision-making procedures and misinformation (ICPL, 1998b). Again, these recommendations are particularly relevant in the PRM case, as some interviewees pointed out the vagueness of decision-making procedures as the cause of the Medo Amarelo conflict (section 3.4.2.), and the lack of information is clearly a major obstacle to the integration of agriculture and conservation in the PRM (section 5.5.2.).

6.3.7. Choosing appropriate participatory techniques and processes

As mentioned in section 2.3., in recent years a wide range of participatory techniques and processes have become available to facilitate the involvement of local people (Wilcox, 1994a; Pretty, 1995; Barton *et al.*, 1997; Borrini-Feyerabend, 1997b; Lewis *et al.*, 1998; Wates, 2000). Indeed, the range of tools is myriad and the selection therefrom very difficult. However, as a general rule of thumb, techniques must be closely related to the aims of the participatory process and to the political and social context of the region.

Thus, a first selection of the participatory tools available in a wide range of contexts was made according to their suitability to the specific context of agriculture-conservation integration, i.e. to a rural context with high conservation value. In fact, many methods were originally proposed as a way of improving citizens' participation in urban planning, and although most of them have already been adapted to wider contexts, some are very specific and unlikely to suit integrative processes such as the PRM one.

The selected participatory tools are presented in Table 10. The usual grouping according to the purpose for which they are most commonly used (Borrini-Feyerabend, 1997b) was largely maintained for easy reference.

Table 10 – Scoring matrix of the participatory techniques and processes appropriate to address the integration of agriculture and conservation in the PRM area. The techniques are grouped according to the purpose for which they are most commonly used.

Ranking system: suitability – 0 = slightly suitable, 1 = suitable, 2 = very suitable, 3 = extremely suitable; resources – 0 = low, 1 = medium, 2 = high; experts – 0 = not needed, 1 = important, 2 = essential; complexity – 0 = simple, 1 = partial, 2 = complex; flexibility – 0 = low, 1 = medium, 2 = high; cooperation – 0 = minimum, 1 = medium, 2 = maximum; literacy – 0 = no, 1 = yes; triangulation – 0 = may be used in isolation, 1 = may benefit from triangulation, 2 = requires triangulation.

Sources: 1 Wates 2000; 2 Borrini-Feyerabend 1997b; 3 Wilcox 1994a; 4 Lewis *et al.* 1998; 5 Barton *et al.* 1997; 6 Pretty 1995; 7 Morris 1996; 8 ICPL 1998a; 9 Hughes 1994; 10 National Environment Secretariat *et al.* 1991; 11 Tewdwr-Jones & Thomas 1995; 12 Brown *et al.* 1995b, ICPL 1998b, Elliott 1999; 13 South Florida Regional Planning Council 1989.

PARTICIPATORY TOOLS	suitability	resources	experts	complexity	flexibility	cooperation	literacy	triangulation
Preparation of the participatory process								
Process planning session ¹	1	1	2	2	2	1	0	0
Communication and community involvement								
Audio-visual presentations ²	1	2	1	2	1	1	1	2
Briefing workshop ^{1,3}	3	1	1	0	2	1	0	2
Community and public meetings ^{2,3}	1	0	2	1	0	0	1	2
Icebreakers ³	0	0	1	0	2	1	1	2
Newspaper supplement ¹	2	2	1	2	2	1	0	2
Open house event ¹	1	2	1	2	2	1	0	2
Participatory editing ¹	0	2	0	0	1	0	0	2
Participatory theatre ⁴	1	2	2	2	2	1	1	2
Picture stories (flip charts and flannel boards) ²	0	1	1	0	2	1	1	2
Radio programmes ²	2	2	2	2	2	1	1	2
Role playing ^{1,3,5}	0	1	2	1	2	1	1	2
Street or village theatre ²	1	2	2	2	2	1	1	2
Talkworks ⁴	1	2	2	1	2	2	1	2
Information gathering and assessment								
Focus groups ^{2,3,5,6,7,8}	2	1	1	1	2	1	1	2
Historical mapping ^{1,2,5,6}	2	1	2	2	1	1	1	2
Land-use mapping ^{1,2,5,6}	2	1	1	1	2	1	1	2
Photo appraisal and slide language ^{1,2,5,8}	2	2	1	2	1	1	1	2
Problem and solution mapping ²	1	1	1	0	2	1	1	2
Questionnaire surveys ³	1	1	2	1	2	1	0	2
Seasonal calendars ^{1,2,6}	0	1	1	1	2	1	1	2
Semi-structured interviews ^{2,5,6}	1	1	2	1	2	1	1	2
Transect walks and diagrams ^{1,2,5,6}	2	0	1	0	2	1	1	2
Trend analysis ^{2,6}	3	1	2	2	2	2	1	2
Planning								
Action planning ^{1,4}	3	2	2	2	2	2	0	0
Assistance team ¹	3	1	2	0	1	1	1	2
Choices method ⁴	2	2	2	2	2	1	0	0
Citizens' juries ^{4,7}	0	0	1	0	0	1	0	0
Community appraisal ^{1,3,4,7,9}	1	1	1	2	1	1	0	0
Community indicators ⁴	1	0	1	0	1	1	0	2
Community planning forum ¹	1	1	1	2	1	2	0	0
Future search ^{1,4,7}	3	0	2	1	1	1	1	2
Group brainstorming ^{2,3,5,8}	3	0	1	0	2	1	1	2
Guided visualisation ^{2,4,7}	2	0	2	0	1	2	1	2
Microplanning workshop ^{1,3}	2	1	2	2	0	1	0	0
Nominal group technique ^{2,3}	2	1	2	2	1	1	0	2

Table 10 (cont.)

Open space workshop ^{1, 3, 4}	2	2	1	2	2	2	0	1
Participatory appraisal ^{3, 4, 5, 10}	2	2	2	2	2	2	1	0
Participatory strategic planning ⁴	3	1	2	2	1	2	1	0
Past and future ³	2	0	1	1	2	1	0	2
Planning day ¹	1	1	2	2	1	1	0	0
Planning for real ^{1, 3, 4, 6, 7, 8, 11}	2	1	2	2	2	2	1	0
Planning weekend ¹	3	2	2	2	1	2	1	0
Priority-setting exercises ^{1, 5, 6}	1	1	2	2	1	1	1	2
Ranking exercises ^{2, 5, 6}	1	1	2	1	2	0	1	2
Risk assessment ¹	1	1	2	2	1	1	0	1
Round table workshops ^{3, 4, 7}	3	1	2	1	1	1	0	1
Strategic Assumption Surface Testing (SAST) ³	1	0	2	1	2	1	1	1
Time lines ³	2	0	1	0	2	1	1	1
Conflict management								
Facilitation ^{7, 12}	1	1	2	1	2	1	1	1
Mediation ^{2, 3, 6, 7, 12, 13}	1	1	2	1	2	1	1	1
Negotiation ^{2, 3, 12}	1	1	1	0	2	0	1	0
Evaluation								
Review session ¹	1	1	1	1	1	1	0	0
Stakeholder accounts ²	1	0	1	1	1	1	0	1
Strengths, weaknesses, opportunities and limitations (SWOL) analysis ^{2, 3, 5}	1	0	2	1	1	1	1	1

In order to facilitate the choice of the most adequate participatory tools, a set of criteria was defined (see Box 5) and then used to score the techniques and processes (Lewis *et al.*, 1998) (Table 10).

Box 5: Criteria for selection of participatory tools

Suitability	assesses the appropriateness of a given tool to be used in the specific context of integrative processes
Resources	judges the financial requirements of a given tool in terms of materials, transportation and venues
Experts	judges the need to have experienced practitioners facilitating the use of a given tool
Complexity	assesses the degree of complexity of a given tool, for instance whether it requires the preparation of specific materials, or specific training of project managers and/or participants
Flexibility	assesses the degree to which a given tool can be adapted and used with groups of different sizes and characteristics
Cooperation	assesses the likelihood that a given tool promotes the cooperation between the participants
Literacy	assesses the suitability of a given tool to be used with illiterate people
Triangulation	judges the need to combine a given tool with other tools

Overall, the participatory tools assessed in Table 10 fall into two distinct categories. Firstly, simple techniques, which comprise communication and community involvement, and information gathering and assessment techniques (e.g. picture stories, land-use mapping, ranking exercises), usually need to be combined with other tools to produce effective results. Clearly, it is important to recognise that participation cannot be achieved in one survey, mapping exercise or workshop. Rather, effective participation requires a planned and structured process (Wilcox, 1994a) that allows people to establish meaningful relationships, generate information and make decisions. Thus, combining simple techniques with original approaches adapted to local characteristics is usually recommended as the most effective way to involve local populations in the planning and management processes (Wilcox, 1994a; Pretty, 1995; Borrini-Feyerabend, 1997b).

By contrast, ‘model approaches’ (e.g. community appraisal, planning for real, review session), also named participatory processes, consist of carefully structured events that are usually planned over a long period of time. Most of these processes “combine group working and group interaction techniques with data collection and presentation techniques” (Wates, 2000, 42). However, although such approaches may be successfully used as single participatory exercises (ICPL, 1998a), in most cases they still need to be adapted to the requirements of particular cultures (Borrini-Feyerabend, 1997b).

As regards the selection of participatory techniques to address integrative processes such as the PRM case, it is essential that the methods relate closely to the aims and objectives of the process, the level of participation and the available skills and resources (Wilcox, 1994a).

Clearly, given the high rates of illiteracy in the PRM area, the use of techniques that have a strong element of oral and visual communication is strongly recommended. Accordingly, techniques such as historical and land-use mapping, trend analysis and future search, which are designed to promote the assessment of changes over time and the agreement on a shared vision of the future (Borrini-Feyerabend, 1997b; Wates, 2000), may be particularly appropriate. In fact, given the lack of information regarding the natural values of the area, and the uneven recognition of the environmental impacts produced by agricultural activities (sections 5.4. and 5.5.2.), the use of such techniques may provide a firm basis for the development of a common understanding, language

and action (Sanoff, 1999). Yet, their success may depend on the preparation of an integrated approach that combines these mapping and visioning exercises with appropriate community involvement and action planning techniques.

A good alternative to the approach just described might be the implementation of a 'model approach'. Action planning, participatory strategic planning, planning weekend or round table workshops might be particularly suitable in the PRM case, since these tools aim to involve all parties in generating a shared vision and producing a feasible action plan (Table 10) (Wates, 2000). Nevertheless, the improvement of communication between the stakeholders and the active involvement of local populations in the participatory process may still require the implementation of specific techniques.

Finally, it is worth mentioning that a participatory process to integrate agriculture and conservation in the PRM area must foresee the need to manage conflicts between the stakeholders and revise action plans as new information becomes available and basic conditions change. Thus, Table 10 includes some participatory techniques that may facilitate conflict management and process evaluation in the PRM case.

Chapter Seven: CONCLUSIONS

7.1. The integration of agriculture and conservation in the PRM

The evidence from the PRM case study shows that using a participatory technique to assess agriculture-conservation issues may create a climate for the development of a participatory approach. In particular, the advantages of using a participatory technique were that it raised awareness on the participatory options available, predisposed key stakeholders to become involved in a participatory process, encouraged a constructive and positive approach and enabled the sharing of interesting ideas and solutions for the agriculture-conservation conflict.

One of the most important results of this research is that all stakeholders agreed on the need to integrate agriculture and biodiversity conservation in the PRM. This consensus results from the recognition of the importance of maintaining both agriculture and biological diversity in the area, and reflects the awareness of the need for some form of compromise between viable agricultural production systems and biodiversity conservation. The underlying challenge is, of course, how to define and achieve such a compromise.

As regards the definition of a compromise between agriculture and conservation, the principles advanced by the interviewees (e.g. soil, water and biodiversity conservation) assume particular importance, given their focus on the long-term maintenance of natural resources upon which both agricultural production and biodiversity depend.

Furthermore, considering the measures suggested by the stakeholders, it is evident that any effort to integrate agriculture and conservation within the PRM must consider a regime of set-aside in the farmland, restrictions to the use of agro-chemicals, the preservation of the farmland matrix, the designation of integral protection areas and special preservation measures, as these were the most consensual integrative measures. Clearly, according to the interviewees' testimonies, the integration of agriculture and conservation within the PRM requires the agreement on a zoning system that includes

areas for intensive agricultural use and areas to be devoted to biodiversity conservation, either through their preservation in a state as undisturbed as possible or through the maintenance of traditional low-intensive practices upon which some valuable species and habitats depend. Another important issue in terms of the integration agriculture-conservation that must be discussed and agreed upon by key stakeholders concerns the restrictions to the use of agro-chemicals. This has been mentioned by a significant number of interviewees as a measure of the utmost importance regarding the maintenance of environmental quality and conservation of biodiversity.

However, it is unlikely that the challenging work of integrating agricultural activities and nature conservation in an environmentally sensitive area equipped with irrigation facilities can be effectively addressed just by agreeing on a set of principles or measures. Rather, effective integration must be based upon a consensual model for agricultural development in the PRM. Actually, the changes required are profound and cannot be achieved overnight or through haphazard or piecemeal attempts. In fact, what is urgently needed is a strategic approach that may guide the process of the necessary incremental change and overcome the many obstacles to the integration of agriculture and conservation in the area.

As mentioned above, the ultimate challenge in integrating agriculture and biodiversity conservation is probably the accepted change to a vision that considers not only the social and economic needs but also the importance of maintaining the environmental quality and biodiversity in the area. To achieve this it will be necessary to reinforce the dialogue between all sectors and to enable the meaningful participation of key stakeholders and local communities in the planning and management processes that will shape such a common vision.

Clearly, a participatory approach to the integration of agriculture and conservation needs to be flexible so that it may be adapted to processes with different purposes, requirements and scales. Therefore, the option has been to present the main steps in preparing a participatory process and discuss the available alternatives, keeping these open so that the most adequate ones may be chosen and adapted when the time comes.

Noticeably, the results of the survey show a broad consensus among key stakeholders regarding the appropriateness of developing a participatory approach to address agriculture-conservation issues and conflicts in the PRM area. As regards the feasibility of implementing a participatory process, a number of points emerged from the study. Firstly, given the cultural and educational limitations of local populations, there is a pressing need for education and information programmes that may build local capacity and enable the active participation of local people. Secondly, it is also extremely important that the cultural context and local knowledge are respected in order to establish effective communication and to involve local people in setting goals and strategies.

In short, whereas it is clear that key stakeholders within the PRM area widely acknowledge both the ethical and practical value of involving local communities and key stakeholders in the integration of agriculture and nature conservation in the area, the implementation of a participatory approach remains a major challenge. By characterising major issues, interests and conflicts involved in the debate on the agriculture-conservation relationship in the PRM and by proposing a framework for a participatory process in the area, this study may be seen as a starting point in the process of preparing a participatory approach. An underlying purpose is that, if appropriate, this project may lead to the development of a participatory approach that might contribute to the effective integration of agriculture and conservation in the PRM.

7.2. The value of participatory approaches in the integration of conflicting land uses within protected landscapes

Nowadays, there is a widespread recognition of the benefits of involving communities in management and development processes (Borrini-Feyerabend, 1997c). Indeed, the adoption of participatory approaches may improve the communication between the stakeholders and enable the development of more appropriate and effective programmes and strategies (Borrini-Feyerabend, 1997a). This is particularly important as regards the integration of conflicting land uses, as such processes require the establishment of strong, long-lasting relationships between the conflicting parties, the development of

common visions regarding the desirable future for the area, and the building of consensus regarding the necessary action for effective integration.

Moreover, the adoption of participatory approaches may be particularly useful in the context of protected landscapes, where the conservation of natural values greatly depends on the maintenance of the harmonious balance between outstanding landscapes and resident populations (Lucas, 1992; Phillips, 1995) and the management of key resource uses that can be destructive when insensitively developed. Indeed, the development of participatory processes may help reach consensual visions for the future of protected landscapes that integrate economic activities and biodiversity conservation. Clearly, the active and full involvement of local populations in the integration of development and conservation within protected landscapes must be regarded as a crucial and challenging task.

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APPENDIX 1: A typology of participation

Typology	Characteristics of each type
1. Passive participation	People participate by being told what is going to happen or has already happened. It is unilateral announcement by an administration or project management without any listening to people's responses. The information being shared belongs only to external professionals.
2. Participation in information giving	People participate by answering questions posed by extractive researchers and project managers using questionnaire surveys or similar approaches. People do not have the opportunity to influence proceedings, as the findings of the research or project design are neither shared nor checked for accuracy.
3. Participation by consultation	People participate by being consulted, and external agents listen to views. These external agents define both problems and solutions, and may modify these in the light of people's responses. Such a consultative process does not concede any share in decision-making and professionals are under no obligation to take on board people's views.
4. Participation for material incentives	People participate by providing resources, for example labour, in return for food, cash or other material incentives. Much in-situ research and bioprospecting falls in this category, as rural people provide the fields but are not involved in the experimentation or the process of learning. It is very common to see this called participation, yet people have no stake in prolonging activities when the incentives end.
5. Functional participation	People participate by forming groups to meet predetermined objectives related to the project, which can involve the development or promotion of externally initiated social organization. Such involvement does not tend to be at early stages of project cycles or planning, but rather after major decisions have been made. These institutions tend to be dependent on external initiators and facilitators, but may become self-dependent.
6. Interactive participation	People participate in joint analysis, which leads to action plans and the formation of new local groups or the strengthening of existing ones. It tends to involve interdisciplinary methodologies that seek multiple perspectives and make use of systematic and structured learning processes. These groups take control over local decisions, and so people have a stake in maintaining structures or practices.
7. Self-mobilization	People participate by taking initiatives independent of external institutions to change systems. Such self-initiated mobilization and collective action may or may not challenge existing inequitable distributions of wealth and power.

Source: ICPL, 1998a, modified from Pretty, 1994.

APPENDIX 2: List of stakeholders and key informants

Associação de Beneficiários do Mira (ABM)

Eng^o Manuel Amaro

Associação de Criadores de Limousine (ACL)

Eng^o António Samora

Associação de Agricultores do Litoral Alentejano (AALA)

Eng^a Ana Pinela

Associação de Horticultores do Sudoeste Alentejano (AHSA)

Eng^o Sérgio Nicolau

Associação de Produtores de Batata Doce de Aljezur (APBDA)

Sr. António Henriques

Direcção Regional de Agricultura do Alentejo (DRAAL)

Eng^o Guerreiro da Silva + Eng^a Conceição Pessoa

Auditora do Ambiente do Ministério da Agricultura

Eng^a Teresa Avelar

Instituto de Hidráulica, Engenharia Rural e Ambiente (IHERA)

Eng^a Glória Diniz + Eng^o João Bragança

Direcção Regional do Ambiente e Ordenamento do Território do Alentejo (DRAOT-Alentejo)

Dr. Contento Mota + Eng^o Jorge Garcia

Parque Natural do Sudoeste Alentejano e Costa Vicentina (PNSACV)

Dr. João Serranito Nunes + Eng^o Armando Almeida

Liga para a Protecção da Natureza (LPN)

Prof. Jorge Palmeirim + Dr. Manuel João Pinto

Vicentina – Associação para o Desenvolvimento do Sudoeste

Eng^o Pedro Dornelas

Associação para o Desenvolvimento do Litoral Alentejano (ADL)

Dr^a Ana Ventura

Taipa – Organização Cooperativa para o Desenvolvimento Integrado do Concelho de Odemira

Eng^o Helder Guerreiro

APPENDIX 3: Stakeholders' profiles

Associação de Agricultores do Litoral Alentejano (AALA)

Association of Littoral Alentejo Farmers

AALA is a private, independent, non-profit organisation that aims to protect farmers' interests and to provide technical and administrative support to agriculture development on the Alentejo coast (municipalities of Odemira, Sines, Santiago do Cacém, Grândola and Alcácer do Sal). This farmers' organisation was founded in 1992, but it was not until 1997 that the organisation began to develop a range of activities, currently congregating approximately 600 associates. Its main activities comprise the promotion and implementation of training, research programmes and recreational initiatives, participation in and implementation of economic policies regarding agro-silvo-pastoral production and rural development, as well as encouragement of rural associativism.

Associação de Beneficiários do Mira (ABM)

Mira Irrigators' Organisation

ABM is the private organisation that is responsible for the management of the Mira Irrigation Scheme (AHM), including the provision of water for irrigation and public use, and the management of the irrigation and drainage networks, a small power plant, and the pine and eucalyptus wind fences. This farmers' organisation was established in 1970, but only in 1992 was it entrusted with the management of the irrigation scheme by the irrigation governmental agency. Currently, ABM has approximately 400 associates, although it provides water to more than 2,500 users. The responsibilities of ABM include securing the management, conservation and improvement of the irrigation scheme, collaborating with governmental agencies in regard to the technical, economic and social development of the irrigation area, promoting the establishment of farm and industrial cooperatives, promoting changes to the irrigation infrastructure that may lead to a reasonable use of natural resources, encouraging the use of soil and water conservation technologies and preventing any damages to the irrigation networks.

Associação Portuguesa de Criadores da Raça Bovina Limousine (ACL)

Portuguese Association of Limousine Bovine Breeders

ACL is a private, non-profit organisation that seeks to represent and protect the interests of Limousine bovine breeders regarding the breeding, preservation, enhancement and commercialisation of Limousine bovines. This cattle breeders' organisation was set up in 1989 and currently has 100 associates, which include nearly all the breeders of this race in Portugal. The specific objectives of ACL include creating and managing the Portuguese Herd Book of Limousine Breed, establishing partnerships with governmental agencies, cooperating with similar organisations at the national and international levels, promoting professional training and showcase opportunities, and providing technical, financial and administrative support to its members.

Associação de Desenvolvimento do Litoral Alentejano (ADL)

Littoral Alentejo Development Association

ADL is a private, non-profit organisation that seeks to foster a dynamic approach to rural development on the Alentejo coast, thus improving the capabilities of the municipalities of Odemira, Sines, Santiago do Cacém, Grândola and Alcácer do Sal. This development non-governmental organisation was established in 1994 and currently congregates 24 members: individual members and local private associations, including

farmers' organisations, farm cooperatives, municipalities, a governmental agency and a local development association. ADL's main objectives include promoting and supporting local development initiatives, providing local populations with adequate training and opportunities, preparing innovative strategies regarding the development of the Alentejo coast and fostering the participation of local populations in the development process.

Associação de Horticultores do Sudoeste Alentejano (AHSA)

Southwest Alentejo Horticulturists' Association

AHSA is a private, non-profit organisation that aims to protect the professional, economic, social and cultural interests of the horticulturists established in the Southwest Alentejo. This farmers' organisation was founded in 1997 in order to group the producers of flowers, fruits and vegetables that benefit from the Mira Irrigation Scheme (AHM), but to date it has only 10 associates. The specific objectives of AHSA include representing its membership, establishing partnerships with governmental and non-governmental organisations, providing technical and financial support to its members and collaborating with similar organisations at the national and international levels.

Associação de Produtores de Batata Doce de Aljezur (APBDA)

Association of Sweet Potato Producers from Aljezur

APBDA is a private, non-profit organisation that aims to represent and protect the interests of sweet potato producers established in the municipality of Aljezur and its bordering municipalities. This farmers' organisation was founded in 1997, and currently has 30 associates established between Odeceixe and Aljezur. APBDA's main activities focus on the promotion and valuation of the sweet potato, the implementation of research programmes regarding the sweet potato production, the improvement of sweet potato production techniques and the quality certification of the sweet potato produced in Aljezur.

Auditor do Ambiente do Ministério da Agricultura

Environment Auditor of the Ministry of Agriculture

In 1996, a restructure of the Portuguese Ministry of Agriculture, Rural Development and Fishing led to the creation of a central governmental department named Environment Auditor of the Ministry of Agriculture. This department is responsible for the coordination of the ministry's activities that link agriculture and/or fishing with the environment. The main roles of the Environment Auditor include securing the collaboration between the Ministries of Agriculture and Environment, participating in the preparation of strategies and policies, promoting the integration of environmental concerns in the ordinary activities of the ministry's institutes and departments, following up the development of common policies and legislation, providing relevant information regarding sustainable agriculture and fishing to all ministry's institutions and departments and collaborating with organisations that share the same concerns at the national and international levels.

Direcção Regional de Agricultura do Alentejo (DRAAL)

Alentejo Regional Agency of Agriculture

DRAAL is an autonomous governmental agency of the Ministry of Agriculture, Rural Development and Fishing operating in the Alentejo region. As a regional agency, DRAAL coordinates several local administrative agencies operating at the municipality level. DRAAL is responsible for the preparation and implementation of the food

production and rural development policies at the regional level, planning and implementation of training and research programmes and management of public forests. DRAAL's main roles include collaborating with governmental and non-governmental organisations involved in agriculture, cattle breeding and forestry development, providing technical and financial support to farmers, promoting new crops and improved farming technologies, encouraging rural associativism and enforcing legislation related with agro-silvo-pastoral activities (i.e. implementing quality controls and inspections of agro-silvo-pastoral activities).

Direcção Regional do Ambiente e Ordenamento do Território do Alentejo (DRAOT-Alentejo)

Alentejo Regional Agency of Environment and Land-use Planning

DRAOT-Alentejo is an autonomous governmental agency of the Portuguese Ministry of Environment and Land-use Planning operating in the Alentejo region. DRAOT-Alentejo is responsible for ensuring the environmental protection (specifically regarding air pollution, noise, wastes and sewages) and the reasonable land-use planning in Alentejo. DRAOT-Alentejo's main roles include implementing the national environment and land-use planning policy, promoting and participating in land-use planning processes, developing information systems regarding the environment and land-use planning policy, coordinating environmental impact assessment procedures, enforcing legislation related with environmental protection, participating in training activities towards environmental education and collaborating in the preparation of programmes for regional integrated development.

Instituto de Hidráulica, Engenharia Rural e Ambiente (IHERA)

Institute of Hydraulics, Rural Engineering and Environment

IHERA is an autonomous public institute of the Ministry of Agriculture, Rural Development and Fishing responsible for the reinforcement of the national policy of water conservation and use in agriculture and for the development of hydro-agricultural schemes. IHERA's main roles include developing information systems regarding the needs and uses of soil and water resources in agriculture, preparing the irrigation development national plan, participating in national water resources planning processes, participating in land-use planning processes, preparing a sustainable agriculture strategy, suggesting technical, economic and legal measures to improve the management efficiency of major irrigation schemes, promoting the execution of irrigation and drainage works and providing technical support to the regional agencies of agriculture.

Liga para a Protecção da Natureza (LPN)

Nature Protection League

LPN is a private, independent, non-profit organisation that aims to contribute to the conservation of the natural heritage and the diversity of species and ecosystems. Established in 1948, this environment non-governmental organisation is the first of its kind in Portugal, and currently has 5,400 associates nationwide. Furthermore, LPN seeks to encourage greater public involvement in nature conservation, to prevent the destruction and degradation of natural and cultural heritage, to participate in land-use planning processes, to contribute to the reversal of environmental degradation processes and to collaborate with similar organisations at the national and international levels.

Parque Natural do Sudoeste Alentejano e Costa Vicentina (PNSACV)

Southwest Alentejo and Vicentina Coast Natural Park

PNSACV is the governmental agency of the Ministry of Environment and Land-use Planning responsible for the management of the Southwest Alentejo and Vicentina Coast Natural Park. This local administrative structure was established in 1988 as a regional arm of the national executive agency responsible for protected areas management and nature conservation, the Institute of Nature Conservation (Instituto da Conservação da Natureza, ICN). The specific objectives of the natural park authority include the sound management of the natural, landscape and socio-economic resources that characterise the natural park, the development of initiatives to protect landscape, geologic, geomorphologic, flora and fauna elements of the park, the promotion of the harmonious economic development and welfare of local populations, the protection of the architectonic, historic and traditional heritage through the rehabilitation of valuable heritage elements and the promotion of an architecture type that is integrated in the landscape, and securing the active participation of all public and private organisations in issues related to the natural park.

Taipa, Organização Cooperativa para o Desenvolvimento Integrado do Concelho de Odemira (TAIPA)

‘Taipa’ – Cooperative Organisation for the Integrated Development of Odemira Municipality

Taipa is a recent non-profit organisation that aims to promote the involvement of local stakeholders in the economic and social development of the Municipality of Odemira. This development non-governmental organisation was founded in 2000 and currently congregates some individual members and local private organisations working in a number of areas critical to local development, including social work, youth support, integrated development and producers’ support. Taipa builds on the strength of its members to enhance their capacity, to implement local projects and to support partnerships at the national and international levels. As a cooperative, Taipa also seeks to encourage and support associativism initiatives, to promote innovative participatory approaches to local problems and needs and to establish partnerships with local and central government agencies and organisations of the civil society to promote local development.

Vicentina, Associação para o Desenvolvimento do Sudoeste (VICENTINA)

‘Vicentina’ – Association for the Development of the Southwest of Portugal

Vicentina is a private, non-profit organisation that aims to promote the rural development, training, cooperation and the improvement of cultural, social and economic welfare of the communities living in the Southwest Alentejo and Algarve regions. This development non-governmental organisation was founded in 1992 and currently has approximately 50 members, including individual members and some local private associations (e.g. farmers’ organisations, farm cooperatives, heritage protection associations). Vicentina’s main objectives include encouraging and supporting local development initiatives, promoting new professional and recreational opportunities for local people, fostering the participation and involvement of local populations in meaningful partnerships, contributing to the preservation of traditional practices and cooperating with other organisations working in local development initiatives.

APPENDIX 4a: Interview guide (Portuguese version)

ENTREVISTA

Introdução

A entrevista que lhe solicito corresponde a uma parte dum projecto de investigação que está a ser desenvolvido no âmbito duma tese de mestrado. O principal objectivo do projecto é a preparação duma metodologia participativa para a compatibilização da agricultura e conservação da natureza na área do Perímetro de Rega do Mira (PRM) inserida no Parque Natural do Sudoeste Alentejano e Costa Vicentina (PNSACV). Tal metodologia poderá ser adoptada no âmbito de processos de planeamento e gestão, como por exemplo na revisão do Plano de Ordenamento do PNSACV ou na preparação de regulamentações específicas para o Perímetro de Rega do Mira.

Gostaria pois de obter a sua colaboração neste projecto, garantindo desde já a confidencialidade do tratamento das suas respostas. Antes de começar gostaria ainda de pedir a sua autorização para gravar a entrevista.

Perguntas

- 1a. quais são as atribuições e competências da entidade que representa?
- 1b. quais os sectores abrangidos pelas actividades desenvolvidas pela entidade?
- 1c. qual a área abrangida pelas actividades da entidade?
- 1d. quantos sócios tem a entidade (no caso de ser uma associação)? diria que inclui quase todos os produtores (no caso das associações de produtores)?
- 1e. quando é que foi criada a entidade?

2. quais são os objectivos da entidade a médio/longo prazo?

3. quais são os principais interesses, preocupações e valores da entidade que representa relativamente à área do perímetro de rega do Mira abrangida pelo parque natural?

4. qual é, na sua opinião, a importância da agricultura na área abrangida pelo perímetro de rega do Mira?

5. qual é a sua previsão relativamente à evolução da actividade agrícola na área abrangida pelo perímetro de rega? por exemplo, em relação às áreas ocupadas, intensificação do cultivo, diversificação de culturas, introdução de práticas biológicas?

6. qual é, na sua opinião, a importância da conservação da diversidade biológica na área do perímetro de rega do Mira abrangida pelo parque natural?

- 7a. na sua opinião, como deve ser preparado o planeamento da agricultura numa área de regadio que se encontra classificada como parque natural?
- 7b. parece-lhe importante que a preparação do planeamento agrícola numa área com essas características tenha em consideração alguns princípios ou cuidados especiais? quais?

- 8a. considera importante compatibilizar agricultura e conservação da natureza na área do perímetro de rega do Mira? porquê?
- 8b. que vantagens e desvantagens poderiam advir dessa compatibilização?
- 8c. acha possível fazer a compatibilização da agricultura e conservação na área do perímetro de rega do Mira?
- 8d. identifica algumas ameaças, problemas e/ou constrangimentos na compatibilização da agricultura e conservação nesta área?
9. conhece alguns conflitos (conflitos reais ou potenciais) entre os interesses da agricultura e da conservação na área do perímetro de rega do Mira?
- 10a. na sua opinião, seria útil tentar uma abordagem participativa para a compatibilização da agricultura e conservação da natureza na área do perímetro de rega do Mira?
- 10b. que vantagens e desvantagens encontra em tal abordagem?
11. que actores identifica como intervenientes fundamentais num processo participativo para a compatibilização da agricultura e conservação da natureza na área do perímetro de rega do Mira?
- 12a. na sua opinião, quem deveria liderar/coordenar/organizar tal processo participativo? ou seja, que entidade/individualidade estaria em condições de credibilidade e neutralidade à vista dos actores principais e poderia conduzir com sucesso tal processo? porquê?
- 12b. como é que equaciona a hipótese de ser uma entidade exterior a liderar o processo participativo? poderia ser uma entidade exterior aos interesses da agricultura e da conservação que esteja instalada na área, por exemplo uma associação de desenvolvimento? ou, poderia ser uma entidade exterior aos interesses e à área, por exemplo a entidade responsável pelos processos de avaliação de impacte ambiental, o actual Instituto do Ambiente?
13. estaria disponível, enquanto representante ou colaborador da entidade, para participar na procura de um consenso relativamente à compatibilização da agricultura e conservação na área do perímetro de rega do Mira?
- 14a. acha que os outros actores terão interesse em participar em tal processo?
- 14b. e acha que terão disponibilidade?

No âmbito deste estudo já foram, ou vão ser, entrevistados os seguintes representantes dos actores principais (mostrar lista)

15. na sua opinião, existem outros actores (entidades/individualidades que conheçam bem a área, e os interesses e problemas existentes) que possam dar contributos relevantes no planeamento deste processo, e que por isso devam ser entrevistados no âmbito deste estudo?

16a. conhece alguns documentos ou estudos relevantes (que estejam relacionados com as questões da relação agricultura/conservação) que devam ser consultados e analisados no âmbito deste estudo?

16b. seria possível disponibilizar uma cópia dos estatutos/lei orgânica da entidade que representa?

Muito obrigada pela sua colaboração!!!

APPENDIX 4b: Interview guide

INTERVIEW

Introduction

This interview survey is part of a MSc thesis research project. The project aims at preparing a participatory methodology to address the integration of agriculture and nature conservation in the area of the Mira Irrigation Plan (PRM) which is included in the Southwest Alentejo and Vicentina Coast Natural Park (PNSACV). This methodology may be adopted in planning and management processes, such as the revision of the PNSACV's Management Plan or the preparation of specific regulations for the Mira Irrigation Plan.

Thus, I would like to require your cooperation in this project. The information you may provide during the interview will be carefully treated. Before we begin, I would like to require your permission to tape-record the interview.

Questions

- 1a. what are the responsibilities and functions of the organisation you represent?
- 1b. what sectors are involved in the activities developed by the organisation?
- 1c. what is the area comprised by the organisation's activities?
- 1d. how many associates does the organisation represent (in the case of private organisations)? would you say the organisation groups most producers (in the case of producers' organisations) in the area?
- 1e. when was the organisation founded?

2. what are the organisation's objectives in the medium/long term?

3. what are the main interests, concerns and values of the organisation you represent in regard to the area of the Mira irrigation plan included in the natural park?

4. in your opinion, what is the importance of agriculture within the area of the Mira irrigation plan?

5. what is your prediction regarding the evolution of agriculture in the area of the irrigation plan? for instance, as far as farmland areas, agriculture intensification, crop diversification, and the introduction of organic farming are concerned?

6. in your opinion, what is the importance of biological diversity conservation in the area of the Mira irrigation plan included in the natural park?

- 7a. in your opinion, how should agriculture planning be prepared in an area of irrigated agriculture that is classified as a natural park?
- 7b. do you think it is important that the preparation of agriculture planning in such an area takes into account any special considerations or principles? which ones?

- 8a. do you consider the integration of agriculture and nature conservation an important issue in the area of the Mira irrigation plan? why?
- 8b. what advantages and disadvantages could emerge from such integration?

- 8c. do you think such integration of agriculture and nature conservation in the area of the Mira irrigation plan is possible?
- 8d. do you identify any threats, problems, and/or constraints to the integration of agriculture and conservation in this area?
9. do you know of any conflicts (real or potential conflicts) between the interests of agriculture and conservation in the area of the Mira irrigation plan?
- 10a. in your opinion, would it be useful to attempt a participatory approach to the integration of agriculture and nature conservation in the area of the Mira irrigation plan?
- 10b. what advantages and disadvantages do you identify in such an approach?
11. what stakeholders do you identify as important participants in a participatory process to integrate agriculture and nature conservation in the area of the Mira irrigation plan?
- 12a. in your opinion, who should lead/coordinate/organise such a participatory process? in other words, what organisation/individual would be considered credible and neutral by key stakeholders and could successfully lead such a process? why?
- 12b. how do you consider the hypotheses of an outside organisation leading the process? could it be an organisation external to the interests of agriculture and conservation that works in the area, for example a development NGO? or, could it be an organisation external to the interests of agriculture and conservation and to the area, for instance the agency responsible for environmental impact assessment processes, the current Environment Institute?
13. would you be available to participate, as a representative or collaborator of the organisation, in a consensus-building approach to the integration of agriculture and conservation in the area of the Mira irrigation plan?
- 14a. do you think the other stakeholders would be interested in participating in such a process?
- 14b. and do you think they would be available?
- During the course of this project, the following representatives of key stakeholders have already been, or will be, interviewed (show list)
15. in your opinion, are there any other stakeholders (organisations/individuals that may know the area and the existing interests and problems well) that may have relevant contributions to the planning of this process, and should therefore be interviewed during this survey?
- 16a. do you know of any relevant documents or reports (related with agriculture and nature conservation issues) that should be consulted and analysed in the course of this project?
- 16b. can you possibly get me a copy of the statutes/organic law of the stakeholder you represent?

Thank you very much for your cooperation!!!

APPENDIX 5a: Glossary of important concepts used in the interviews (Portuguese version)

CONCEITOS

Interesses: as preocupações, razões, necessidades ou valores básicos dos actores relativamente a determinado assunto e que estão subjacentes às posições ou exigências por eles manifestadas.

- : as preocupações básicas dos actores que estão relacionadas com as suas necessidades fundamentais (ICPL, 1998b);
- : as preocupações ou necessidades fundamentais dos actores relativamente a determinado assunto e que são importantes para a resolução satisfatória desse questão (NOAA Coastal Services Center, 2001);
- : interesses é o que cada participante num processo de grupo procura alcançar. Interesses não são o mesmo que posições ou exigências. Exigências e posições são o que as pessoas dizem que precisam de ter, mas os interesses são as razões, necessidades ou valores que estão subjacentes a essas posições ou exigências e que explicam as posições tomadas. Os interesses podem mudar em função de nova informação ou do aprofundamento do conhecimento de um problema. Os interesses apenas reflectem convicções profundamente enraizadas (Susskind *et al.*, 1999).

Posições: iniciativas ou propostas sugeridas pelos actores para satisfazer os seus interesses;

- : iniciativas ou propostas avançadas pelos actores com o objectivo de promover os seus interesses (ICPL, 1998b);
- : uma posição é uma forma de alcançar um interesse subjacente (...) tal posição pode, ou não, ser a única ou a melhor forma de alcançar o interesse do actor (NOAA Coastal Services Center, 2001).

Valores: convicções relativamente àquilo que é mais ou menos importante, relativamente ao que é certo ou errado (NOAA Coastal Services Center, 2001).

Conflito: uma divergência de interesses entre dois ou mais actores relativamente a um assunto específico que ocorre durante um longo período de tempo;

- : conflito é uma diferença de interesses que ocorre durante um longo período de tempo (ICPL, 1998b);
- : qualquer situação em que há um confronto de interesses ou ideias (Lewis, 1997);

Conflitos reais: conflitos que de facto existem, ou seja divergências de interesses entre os actores que se revelam através de confrontações;

Conflitos potenciais: conflitos que estão latentes, ou seja pontos de atrito entre os interesses dos actores que podem tornar -se conflitos reais;

Participação: um processo através do qual os actores partilham, toma m parte e agem em conjunto relativamente a um assunto de mútuo interesse (Borrini-Feyerabend, 1997c);

: Participação é um processo no qual indivíduos ou grupos trabalham em conjunto com um propósito comum de perseguir activamente uma finalidade partilhada (Hughes in ICPL, 1998a);

: Participação é um processo durante o qual grupos ou organizações são consultados, ou têm a oportunidade de se envolver activamente num projecto ou programa de actividades (Wilcox in ICPL, 1998a);

: Devemos definir participação de uma forma que realce o envolvimento activo e significativo das comunidades locais no processo de desenvolvimento e nas decisões com ele relacionadas” (Furze *et al.* in ICPL, 1998a).

Abordagem participativa: uma abordagem em que todos os actores com interesses nas questões em debate participam num esforço conjunto de compatibilização da agricultura e conservação da natureza no PRM, no âmbito dos processos de planeamento e gestão.

Processo participativo: também conhecidos como processos colaborativos, ou processos de decisão em grupo, são processos que juntam indivíduos e grupos com diferentes perspectivas, e que os ajudam a trabalhar em conjunto em função de objectivos comuns ou compatíveis (NOAA Coastal Services Center, 2001);

Actores ou agentes (stakeholders): indivíduos, grupos ou instituições que têm um interesse específico em determinado assunto, que neste caso é o planeamento da agricultura na área do PRM abrangida pelo PNSACV.

: “entidade com um interesse específico em determinado assunto” (Vasconcelos & Martinho, 1998, 302);

: pessoas ou grupos passíveis de virem a ser afectados por uma decisão (Susskind *et al.*, 1999);

: indivíduos, grupos ou instituições que têm um interesse directo, significativo e específico num determinado território ou conjunto de recursos naturais. Este interesse pode resultar da proximidade geográfica, associação histórica, dependência para sobrevivência, mandato institucional, interesse económico ou de uma variedade de outras preocupações (Borrini-Feyerabend & Brown, 1997).

Construção de consensos: um processo em que os actores são encorajados a não divulgar as suas posições mas sim a expressarem os seus interesses, o que permite construir soluções que procuram potenciar interesses comuns.

: é um processo de procura de concordância unânime. Este processo envolve um esforço de ‘boa fé’ para satisfazer os interesses de todos os actores. Considera-se que se encontrou um consenso quando todos concordam que podem viver com o que quer que seja proposto depois de terem sido realizados todos os esforços para satisfazer os interesses de todos os actores intervenientes (Susskind *et al.*, 1999);

: é um processo em que “os participantes são encorajados a não divulgar as suas posições mas sim a expressarem os seus interesses. Isto permite uma procura de plataformas comuns baseada nesses interesses, e evitam-se discussões frequentemente infrutíferas de posições ignorando os interesses que lhe estão origem. Com base nisto são construídas soluções procurando potenciar interesses comuns” (Vasconcelos, 1997, 28-29);

: envolve todos os que compreendem claramente a situação ou problema que está para ser decidido, analisem em conjunto todos os factos relevantes e então desenvolvam conjuntamente soluções que representem a melhor compreensão de todo o grupo sobre a decisão mais favorável. O consenso é caracterizado por ouvir muito, debater saudavelmente e testar as opções. A solução é aquela sobre a qual todos dizem, ‘Eu posso viver com isto’ (NOAA Coastal Center, 2001).

APPENDIX 5b: Glossary of important concepts used in the interviews

CONCEPTS

Interests: the fundamental concerns, reasons, needs or values of the stakeholders regarding a given issue, which constitute the basis of their positions and demands.

- : “the basic concern of a party or stakeholder, relating to their fundamental needs” (ICPL, 1998b);
- : “An interest is a participant’s underlying need or concern that is important to a satisfactory outcome on a given issue” (NOAA Coastal Services Center, 2001, 16);
- : “what each participant in a group process seeks to achieve. Interests are not the same as positions or demands. Demands and positions are what people say they must have, but interests are the underlying reasons, needs or values that explain why they take the positions they do. Interests can change in light of new information or a deeper understanding of a problem. They only reflect deeply held beliefs” (Susskind *et al.*, 1999, 6).

Positions: initiatives or proposals suggested by the stakeholders in order to address their interests.

- : “initiatives or proposals put forward to try to further interests” (ICPL, 1998b);
- : “A position identifies one way to meet an underlying interest (...) This position may or may not be the only or best way to address the (stakeholder’s) interest” (NOAA Coastal Services Center, 2001, 16);

Values: “beliefs about what is more important or less important, about what is right or wrong” (NOAA Coastal Services Center, 2001);

Conflict: a divergence of interests between two or more stakeholders regarding a given issue that continues for a long period of time;

- : “conflict is used to describe a difference of interest(s) over a long period of time” (ICPL, 1998b);
- : “any situation in which there is a clash of interests or ideas” (Lewis, 1997, 62);

Real conflicts: conflicts that actually exist, i.e. divergences of interests between stakeholders that reveal themselves as confrontations;

Potential conflicts: latent conflicts, i.e. frictions between stakeholders’ interests that may become real conflicts;

Participation: “a process in which stakeholders share, take part, and act together in dealing with issues of common interest” (Borrini-Feyerabend, 1997c, 26).

- : “Participation is a process in which individuals or groups work together with a common purpose to actively pursue a shared goal” (Hughes in ICPL, 1998a);
- : “Participation is a process during which individual groups or organisations are consulted about, or have the opportunity to become actively involved in a project or programme of activity” (Wilcox in ICPL, 1998a);
- : “We must define participation in a way that highlights the active and meaningful involvement of local people in the development process and in decisions related to it” (Furze *et al.* in ICPL, 1998a).

Participatory approach: an approach in which all the stakeholders with interests in the issues being discussed participate in a joint effort to integrate agriculture and nature conservation in the PRM, within planning and management processes.

Participatory processes: also known as collaborative processes, “or group decision-making, are processes that bring individuals and groups of differing perspectives together, and support them in working together toward common or compatible goals” (NOAA Coastal Services Center, 2001, 16).

Stakeholders: individuals, groups or organisations that have a specific interest in a given issue, which in this case is the agriculture planning in the PRM area that is included in the PNSACV;

- : organisation which has a specific interest in a given issue (Vasconcelos & Martinho, 1998);
- : “persons or groups likely to be affected by (...) a decision” (Susskind *et al.*, 1999, 12);
- : “the individuals, groups and institutions (...) who have a direct, significant and specific stake in a given territory or set of natural resources. This may originate from geographical proximity, historical association, dependence for livelihood, institutional mandate, economic interest or a variety of other concerns” (Borrini-Feyerabend & Brown, 1997, 3);

Consensus-building: a process in which the stakeholders are encouraged not to disclose their positions but to express their interests, which enables them to find solutions that seek to maximise common interests;

- : “a process of seeking unanimous agreement. It involves a good-faith effort to meet the interests of all stakeholders. Consensus has been reached when everyone agrees they can live with whatever is proposed after every effort has been made to meet the interests of all stakeholding parties” (Susskind *et al.*, 1999, 6);

- : a process in which the participants are encouraged not to disclose their positions, but to express their interests. This enables the search for common ground based on such interests, and avoiding discussions of positions that ignore the underlying interests, which are frequently fruitless. This process allows the construction of solutions that search to maximise common interests (Vasconcelos, 1997);
- : “involves everyone clearly understanding the situation or problem to be decided, analyzing all of the relevant facts together and then jointly developing solutions that represent the whole group’s best thinking about the optimal decision. Consensus is characterized by a lot of listening, healthy debate, and testing of options. The solution is one about which everyone says, ‘I can live with it’” (NOAA Coastal Services Center, 2001, 65);

APPENDIX 6a: Recent evolution of irrigated crops in the PRM (Portuguese version)

Evolução da ocupação cultural nas áreas do Aproveitamento Hidroagrícola do Mira (hectares regados)

Culturas regadas	Anos										
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Milho	1546	1378	976	821	1032	1978	2185	3036	2749	2519	2773
Arroz	326	400	243	231	230	244	195	185	136	115	67
Tomate	234	139	0	7	16	1	159	29	0	0	0
Batata	0	198	188	175	337	409	539	846	539	355	366
Batata doce	0	0	0	0	0	0	151	176	161	147	166
Feijão	176	217	0	235	130	105	117	130	101	85	92
Hortícolas	0	0	0	449	394	464	629	839	423	388	586
Prados/Forragens	1211	1603	1040	856	782	1820	1276	1579	1488	1477	1645
Amendoim	83	38	20	19	10	12	0	0	0	0	12
Girassol	0	101	405	1531	1700	1100	648	790	673	537	241
Alface	41	57	0	5	0	0	0	0	0	0	0
Morangos	0	0	0	0	0	0	110	178	91	103	132
Beterraba	0	0	0	0	0	0	97	110	0	79	84
Trigo	0	0	0	0	0	0	270	99	449	569	314
Linho	0	0	0	0	0	0	383	617	256	217	135
Outras	1867	1211	1651	416	756	194	232	418	628	451	464
TOTAL	5484	5342	4523	4745	5387	6327	6991	9032	7694	7042	7077

Source: IHERA

Área total beneficiada: 12 000 hectares

no concelho de Odemira: 10 670 hectares

no concelho de Aljezur: 1 330 hectares

APPENDIX 6b: Recent evolution of irrigated crops in the PRM

Evolution of the irrigated areas per crop in the Mira Irrigation Scheme (hectares of irrigated lands)

Irrigated crops	Years										
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Maize	1546	1378	976	821	1032	1978	2185	3036	2749	2519	2773
Rice	326	400	243	231	230	244	195	185	136	115	67
Tomato	234	139	0	7	16	1	159	29	0	0	0
Potato	0	198	188	175	337	409	539	846	539	355	366
Sweet potato	0	0	0	0	0	0	151	176	161	147	166
Beans	176	217	0	235	130	105	117	130	101	85	92
Vegetables	0	0	0	449	394	464	629	839	423	388	586
Pastures/Fodder	1211	1603	1040	856	782	1820	1276	1579	1488	1477	1645
Peanuts	83	38	20	19	10	12	0	0	0	0	12
Sunflower	0	101	405	1531	1700	1100	648	790	673	537	241
Lettuce	41	57	0	5	0	0	0	0	0	0	0
Strawberries	0	0	0	0	0	0	110	178	91	103	132
Beetroot	0	0	0	0	0	0	97	110	0	79	84
Wheat	0	0	0	0	0	0	270	99	449	569	314
Flax	0	0	0	0	0	0	383	617	256	217	135
Other crops	1867	1211	1651	416	756	194	232	418	628	451	464
TOTAL	5484	5342	4523	4745	5387	6327	6991	9032	7694	7042	7077

Source: IHERA

Total equipped area: 12 000 hectares

in the municipality of Odemira: 10 670 hectares

in the municipality of Aljezur: 1 330 hectares

APPENDIX 7: Analysis framework

RESEARCH aims: to analyse the appropriateness and feasibility of implementing a participatory approach to address agriculture-conservation issues and conflicts in the area of irrigated agriculture within the Southwest Alentejo and Vicentina Coast Natural Park (PNSACV) and to prepare a proposal for a participatory approach to be adopted in planning and management processes.

RESEARCH objectives:

1. to identify and analyse key stakeholders involved in agriculture development and nature conservation in the Mira Irrigation Plan area (PRM);
2. to characterise and assess the values, interests, problems and conflicts involving agriculture and conservation in the PRM area;
3. to assess the likely advantages of involving key stakeholders in agriculture planning and management processes;
4. to evaluate the available participatory tools and techniques;
5. to prepare a framework for a participatory approach to address agriculture-conservation issues in planning and management processes.

.....

SURVEY aim: to characterise the interests and conflicts related with agriculture development and nature conservation in the area of PRM which is within PNSACV.

SURVEY objectives:

1. to provide a clear picture of the main values, interests and concerns of key stakeholders, particularly as far as agriculture planning and nature conservation are concerned;
2. to characterise the real and potential conflicts between the stakeholders;
3. to identify the challenges and limitations to the integration of agriculture and conservation in the area; and
4. to enquire after the willingness of the stakeholders to participate in an innovative approach aiming at the integration of agriculture and conservation in the area.

Specific survey questions:

AGRICULTURE

Is agriculture perceived by key stakeholders as an important activity in the PRM? How important is agriculture to the socio-economic and cultural fabric of the communities living in the PRM area? And how important is agriculture to the maintenance of environmental assets and the conservation of biological diversity? Questions 3, 4, 5 (from the interview guide).

What are major stakeholders' predictions on the evolution of agriculture within the area? Questions 2, 3, 5.

Is there any consensual model of agriculture development for the area of PRM? If not, how contradictory are the models advocated by major stakeholders? Questions 3, 4, 5, 7a, 7b, 8a, 8b, 8c; also insights from questions 1a and 2.

NATURE CONSERVATION

Do major stakeholders perceive nature conservation as an important issue in the area? Questions 6, 7a, 8a, 8b, 8c, 9.

How do major stakeholders value natural resources? Do they perceive any need to use natural resources and ecosystems sustainably? Questions 6, 7a, 7b, 8a.

Do major stakeholders perceive any need to conserve natural resources, biological diversity or landscapes? Questions 6, 8a.

AGRICULTURE-CONSERVATION INTEGRATION

How do key stakeholders view agricultural activities as an effect on the ecosystem? What is their perception of the impacts of intensified agriculture on the area's natural values? Questions 5, 7a; also insights from question 3.

Do key stakeholders feel a need to set limits of acceptable impacts? Do they feel agricultural policies for protected areas should be more environmentally-conscious? Are there any principles that should guide agriculture policy-making in an area of high-conservation value? Questions 5, 7a, 7b; also insights from question 3.

Do key stakeholders think it is important to reach a compromise between viable production systems and biodiversity conservation? Do key stakeholders identify any mechanisms (regulatory, financial, information, monitoring, etc.) to promote agriculture-conservation integration? And do they identify any major constraints and/or obstacles to agriculture-conservation integration? Questions 7a, 8a, 8b, 8c, 8d, 9.

PARTICIPATION

Do major stakeholders perceive participatory approaches as possibly advantageous approaches to address agriculture-conservation issues in planning and management processes? What might be the advantages (and disadvantages) of involving key stakeholders in planning and management processes? Questions 10a, 10b

What is the stakeholders' perception of how a participatory process to integrate agriculture and conservation in the area should be organised? And what is their perception of who should be involved in the process? Question 11, 12a, 12b

How willing are key stakeholders to become involved in a participatory approach to address agriculture-conservation issues in planning and management processes? Questions 13, 14a, 14b