

## **PREFACE**

This study was primarily done to find out what would be the overall requirements for a sustainable management of the rural area's landscape. Could they be brought together in a comprehensive system with sufficient consistency to comply with the notion that the landscape is a whole, with character and identity of some sorts and which should be managed accordingly? For this study expertise has been derived from all disciplines and most EU countries. Co-operation of the scientific experts with those from practice and alternating plenary reporting with subgroup visits to farms in the rural landscapes of the participants' countries, allowed for the development of some truly interdisciplinary teamwork. As a second goal of this study, organic agriculture has been included in the theoretical considerations as well as in the observations of practice to find out how organic agriculture contributes to the rural landscape. Including the experience of organic agriculture in the dialogue and looking directly into its contributions to the demanded landscape values, proved a valuable tool to widen the scope of all those involved.

Starting with the idea that the product of this effort could be condensed into a comprehensive set of general standards for rural land-use, we came to realise more and more that the variety of landscape demands a highly differentiated approach. Moreover, we met the increasing wish of European society to elaborate the regional landscape's different identities' characteristics, which we persistently supported. The solution we found was to re-organise the valuable set of targets, criteria and parameters found as a checklist for sustainable landscape management. The main difference between the two options is that the checklist is meant as a tool for those in charge for any kind of landscape management, to screen all aspects of landscape involved in their development, planning and maintenance. The idea is that, in a multidisciplinary team, together with people from actual and future practice, the checklist should be explicitly elaborated, creating transparency and acceptance of all decisions made on the points mentioned. If the environmental targets, as first mentioned in the checklist, are sufficiently warranted then the freedom to choose implementation of the other targets and criteria should be fairly sufficient to allow to pursue different landscape features, which emphasise in favour of the further development of the landscape's typical identity.

From the discussion in the plenary and subgroup meetings it could be concluded that the multitude of targets, as provided from each of the participating disciplines, would not necessarily be incompatible. By careful localisation, temporisation and scaling, more win-win options emerged as feasible than previously presumed by many. Study of the theory and practice of organic agriculture appeared definitely worthwhile to get inspiration on ways many functions could be served in a viable, sustainable way.

The authors are very grateful for the yearlong co-operation of all participants from science and practice that contributed so much of their time and knowledge into this quite demanding effort. They appreciate the support of the EU in general and its responsible officers in charge in particular for their patient and ongoing support. When this study contributes to the dialogue and landscape management in favour of people and nature of the coming generations, it fully serves its purpose. When it is regarded as fairly normative, setting clear targets that may not yet nor easily be reached, it is fully understood indeed. In order to redirect rural development, agricultural land-use and landscape management away from its definitely unsustainable track of the recent past, norms, targets and policies have to be changed definitely. In as far as nature has the character of a chicken with golden eggs, an eternally productive Sampo (from the Finnish Kalevala) or just the source of life on earth, then caring for nature's well being may serve our successors better than killing it. In as far as humanity is invited to develop nature's potential properties according to its own consciousness development, precisely the challenge to make the chicken eager to produce all golden eggs it needs, complies with the previous statement. Learning from nature and one another to develop all human artistic / creative capacities in favour of our common future is still a major challenge for the next century and on.

During the finalisation of this report we were informed on the existence of the Group of Bruges and their report "Agriculture, un tournant necessaire" (1996). Our study adds up to the studies of the European Council for Nature Conservation (ECNC, 1994) and to the demands of the Council of Europe's European Landscape Convention (1998), which are mentioned in the first chapter of the report. It refers to the multiple objectives of the cluster agriculture – land-use – landscape – rural development. More clearly than the other reports it stresses that no particular technical solution, be it agronomic, environmental, financial or juridical, can be enough to redirect agriculture toward the objectives that society now demands. An integrated, comprehensive approach is needed that merges solidarity, diversity, complexity, connectivity and intention: all issues are included in this report together with the draft of a tool for implementation.

The research strategy for the next decade, as developed by the International Conference of the Dutch Association of Landscape Ecology (WLO, 1998) agrees with the Group of Brugge that changes in land-use, resulting in change of landscape, demands a change of society and its institutions. Finding out about the matching of scales and the integration of interacting functions are the crucial themes in their research recommendations. For the cultural landscape they recommend, among others, the "Development of a handbook of the landscape management activities that enhance and safeguard the valuable cultural landscapes of Europe as an integrated part of sustainable land-use". Moreover, they recommend the "Development of a multifunctional approach in landscape ecology, including socio-economics and disciplines that deal with culture, in order to contribute to new concepts for integrated land-use, including optimisation of ecological functioning of mono-functionally orientated land use". This report offers at least a draft tool for precisely those research objectives, in the context of the demand of the Group of Bruges, the Council

of Europe and the EU's revision of its Common Agricultural Policy (CAP). In other words: it offers an interdisciplinary, cross cultural, Europe wide calibrated checklist. One that may serve both as an analytical tool of reference as well as a design tool for local, regional and European policy making on sustainable developments. We hope with this report and especially the checklist to contribute to the dialogue and looks forward for comments that can serve an improved version to appear in the year 2000.

Particular gratitude deems my co-author, Marja van der Lubbe. She, starting early 1998 as an interested outsider to the Concerted Action, helped with the final overall editing and contributed indispensably to clarify many considerations and arguments that had become implicit within the team over the years of the Concerted Action's co-operation. Also Darko Znaor and Juliete Kuiper, who each from their major science realms' backgrounds helped to bring all aspects together, deserve a very special "thank you" for their input to the Concerted Action. Darko Znaor mainly contributed to the writing about the environmental and ecological criteria of sustainable landscape management (section 3.2.1) and to the composition of Annex 2 ("Compliance of the checklist of sustainable landscape management with some other standards for organic/sustainable agriculture"). Juliette Kuiper contributed a lot to the writing of section 3.2.3 (Criteria for the humanity realm: psychology and physiognomy/cultural geography).

Finally it should be stressed that without the dedicated participation of all international experts mentioned in the annex, and the financial support of the EU's commission, this work would have never succeeded.

Who ever benefits form the existence of this report should be aware of the gratitude they all deserve.

Jan Diek van Mansvelt

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## SUMMARY

In the mid-nineties several EU and national institutions published reports demanding full attention for the deteriorating and vanishing European landscapes. Therein, not only industrialisation, urbanisation and increased infra-structural density were at stake but more than before, attention was drawn to the role of agriculture in development and management of the landscape in the rural areas. It was discovered that farmers are neither paid nor educated for landscape production, although they actually manage most of the landscape's surfaces, neither are most of their organisations and institutions. However, it was also discovered that for the population of a country, urban and countryside alike, the rural landscape was important for tourism, sports, recreation, identity development and quality of life. These functions of the landscape were discovered as additional functions, besides the well know commodity production (food and fibre) and the related functions. As relatively new, a set of environmental and ecological functions was described, such as the production of drinking water, rainwater retention, CO<sub>2</sub> fixation and on site preservation of biodiversity.

From all those reports, the need for a new policy favouring the multi-functionality of the landscape emerged. The subsequent demand for redirection of land-use went along with proposals for payment schemes to give farmers incentives for well targeted landscape management. Moreover, such incentives could provide them with income support in a period where food-prices went down because of the opening of the EU market for World Trade. In that situation, a Concerted Action plan was offered to the EU in the framework of their AIR3 Program to bring together an international and interdisciplinary team of experts involved in landscape research and to elaborate a scheme for landscape value assessment that could provide keys for landscape payments. The plan was made by the Department of Ecological Agriculture (DEA) of the Wageningen Agricultural University (WAU), accepted by the EU and started late in 1993 with a first plenary meeting of 25 participants from 9 countries. The Concerted Action was finished with a presentation of the results at the International Conference "Things to do: proactive thoughts for the 21<sup>st</sup> century" of the Dutch association for Landscape Ecology (WLO) organised in Amsterdam 1997. This report summarises the total work done by the Concerted Action *The landscape and nature production capacity of organic/sustainable types of agriculture*.

The objectives of the Concerted Action were:

1. To bring together a group of experts from different European countries to identify and validate agro-landscape and a compliant interdisciplinary set of features that are important for the assessment of sustainable agro-landscape planning and management in the EU.
2. To establish an interdisciplinary list of criteria for the assessment of sustainable landscape management in the EU.

3. To indicate organic agriculture's potential contribution to the sustainable landscape management in the EU.
4. To discuss the established checklist and the assessed performances with experts from different research disciplines, planning and practice.
5. To disseminate the results in oral presentations and (refereed) publications.

The objectives are addressed using an unifying concept derived from Maslow's study on human motivation translated to the landscape and perceived as a reflection of the priorities and motivations leading the actions of the people that were de facto in charge of the landscape during the previous decades. This unifying concept is used as a frame of reference to integrate various disciplines, from the natural, social and humanist science realms, as well as various levels of action and knowledge, from academia to farmers' practice. By always relating parameters with criteria and criteria with targets, specifying the relevant scales in time and space, some comprehensive contextualisation can be achieved. Thereto, iterative alternation of plenary meetings in Wageningen and subgroup meetings in member countries, with visits of some farms in their landscapes, proved to be an excellent tool to bring disciplinary, abstraction level and national perceptions together.

To identify and validate agro-landscape through an interdisciplinary set of features that are important for the assessment of the sustainable landscape planning and management in the EU, an international team of landscape oriented experts from EU-member states, which represent different disciplines, has been formed. By mutual presentation of their (disciplines') perceptions of landscape functions and values, the required qualities and parameters for assessment, common denominators and differences are identified. Mutually questioning and discussing the points of view, positions and value systems underlying the differences, created much transparency and solved many of them. The considerable added value of understanding one another's points of view has been appreciated.

As major realms of a scientific approach natural ( $\beta$ ), social ( $\gamma$ ) and humanist ( $\alpha$ ) sciences are included. In each of those two subsections are discerned:

- Environment and ecology (biosphere) in the  $\beta$  realm, referring to the resource conditions and biological relationships;
- Economy and sociology in the  $\gamma$  realm, referring to the flows of finances and services and the participative procedures;
- Psychology and physiognomy with cultural geography in the  $\alpha$  realm, referring to subjective regional landscape appreciation and objective regional landscape identity.

Further, a checklist with six columns, which are in need of assessment, has been defined with in each column the major criteria for sustainable landscape management.

A summary of the Table of the Checklist is presented below.

### Summary of the Table of the Checklist presented in chapter 3

Criteria for the development of sustainable rural landscape management					
Quality of the (a)-biotic environment		Quality of the social environment		Quality of the cultural environment	
Environment	Ecology	Economy	Sociology	Psychology	Physiognomy
1.1 Clean environment	2.1 Bio-diversity	3.1 Good farming should pay-off	4.1 Well-being in the area	5.1 Compliance to the natural environment	6.1 Diversity of landscape components
1.2 Food and fibre sufficiency and quality	2.2 Ecological coherence	3.2 Greening the economy	4.2 Permanent education of farmers	5.2 Good use of the landscape's potential utility	6.2 Coherence among landscape elements
1.3 Regional carrying capacity	2.3 Eco-regulation	3.3 Regional autonomy	4.3 Access to participation	5.3 Presence of naturalness	6.3 Continuity of land-use and spatial arrangement
1.4 Economic and efficient use of resources	2.4 Animal welfare		4.4 Accessibility of the landscape	5.4 A rich and fair offer of sensory qualities	
1.5 Sustainable, site-adapted and regionally specific production systems				5.5 Experiences of unity	
				5.6 Experienced historicity	
				5.7 Presence of cyclical developments	
				5.8 Careful management of the landscape	

Within each of these columns a number of targets have been defined per landscape aspect, from which criteria have been derived. Where possible appropriate parameters have been indicated to assess the criteria. All in all, some 200 criteria have been identified and discussed. To allow and warrant appropriate use of those criteria, that is a use according to the Concerted Action's team of experts, each of them has been discussed in some detail to indicate its conceptual context including its scale in time and space. Thus, a long checklist with explanations has been established. From that full checklist a dried-up version has been developed showing only the targets, criteria and parameters, to allow a type of scoring as to be chosen by the user.

Subsequent versions of the Table and the Checklist have been established through meetings of subgroups visiting some organic and non-organic farms in their landscapes. In walks over and around those farms and in discussions with the people in charge of the farm management, the checklist was over and again assessed in its

feasibility for quick scans and in depth comparison. Including local experts of agriculture, environment, ecology, landscape etc. in the farm visits and quick scan discussions allowed for a check on the feasibility of the checklist for each of the visited particular European regions. This iterative process of alternating plenary team sessions with local expert meetings, the earlier target of going for a set of landscape management standards has been transformed into the adapted final target of going for a checklist. The difference is that the checklist presumes to be applied and used by local stakeholders and experts from all relevant disciplines, thus relying on local knowledge for the fine tuning of the management within the transparent value system offered by the checklist. As the checklist presented in this report covers such a wide range of comprehensive values, any top-down enforcement would threaten people's fair demand for local empowerment and self-responsible decision-making.

As an interesting spin-off of making and assessing the checklist in practice, the Concerted Action team has found evidence that the targets and criteria, as derived from all participating disciplines, were not necessarily incompatible. There are indications that a certain degree of synergy can be established between all of the targets, which will emerge farm and local management to go for sustainable multifunctionality. In depth analyses and further confirmation in practice is needed to find out about the extend and limits of this synergy.

Based on the comparisons of organic agriculture's landscape performance, although by and large limited to quick scans by international and local expert teams, the Concerted Action's team concluded that in theory and practice organic farming can importantly contribute to the sustainable management of appreciated landscape values. As the standards for organic agriculture do not yet include much specified standards for the landscape as a product of agriculture, the attitude of the farmer is still most decisive in effectively using all the landscape opportunities of that approach to agriculture.

As an additional product of the Concerted Action, an overview of possible uses and users of the checklist is presented in the fifth chapter of the report. As the redirection of agriculture in Europe is in no way a question that can be solely solved by changing some techniques, the use of the checklist, with its elaborated and explained validation system, can very well serve to raise the awareness about the interrelations of landscape functions and features. The wide range of possible uses and users indicates the wide range of stakeholders involved in the landscape use and its management. By offering at least an outline of a unifying concept, the use of this checklist can decrease conflicts and incompatibility of uncoordinated and counter-productive actions.

Systematic evaluations of the use of the checklist will allow for its improvement over the next years, for which the authors would be pleased to serve. Funding for experiments in the use of the checklist for land-use planning and landscape management, now with special attention to the regional identities and qualities, would importantly enhance the possibilities for its improvement through systematic evaluations as mentioned.

The results of the Concerted Action are disseminated through the following sources:

- Proceedings of the plenary meetings
- Journals,
- A publication titled *Checklist for sustainable landscape management* (Elsevier),
- Dialogues and discussions with farmers and regional experts,
- Dialogues and discussions with colleagues at conferences.

In November 1998, the framework and checklist will be presented at the 12th International Scientific IFOAM Conference, titled *Credibility of organic agriculture in the 21st century*, and organised in Mar del Plata, Argentine.

## CHAPTER 1 INTRODUCTION

### 1.1 BACKGROUND AND PROBLEM STATEMENT

In view of the recent discussions in the EU on the need for redirection of agriculture toward extensification and sustainability, increasingly the question is raised whether beside food and fibre, the cluster environment/nature/landscape should or should not be regarded as a valuable product of agriculture. Quite often, the arguments in this discussion are summarised as the segregationist (separation of land-use functions) versus the intergrationist (merging land-use functions). Within the agricultural sector, which, from the 50ties onward has been rather food-production oriented the contribution of agriculture to landscape values must be included now as a valuable asset in its multi-functionality. That is: over-all agro-landscape studies in addition to studies on agriculture performance in environmental issues and its production of 'elements of nature' (Van Mansvelt and Van Laar, 1998).

In 1993, the Institute for European Environmental Policy, published a report for the Dutch Ministry of Agriculture, Nature Management and Fisheries, entitled *Nature Conservation and New Directions in the EC Common Agricultural Policy* and written by Baldock and Beaufoy. Their report indicates the general context of the problem statement of the EU concerted action AIR3-CT93-1210 *The Landscape and Nature production Capacity of Organic/Sustainable Types of Agriculture*. Baldock and Beaufoy stated in their report that the rationalised intensive agriculture has often been associated with damage and destruction of the environment, natural and semi-natural habitats and (visual) landscapes. Whereas on the other hand Europe's valuable habitat and landscape diversity is a product of Europe's long time agricultural management in the previous centuries. From this statement it is derived that agriculture should be addressed according to an integrated approach. Thereby it is not only important to prevent the existing and prevent upcoming negative effects caused by agriculture, such as pollution, habitat degradation, noise, smell and soil erosion. But even more to maintain such positive functions of nature and landscape produced by agriculture, as there are the historic creation and management of semi-natural habitats and landscapes of high environmental and amenity value over large areas of the European Community. Baldock and Beaufoy (1993) stressed that maintaining the positive functions of nature and landscape requires more than just financial support to farmers. In fact, it requires steering agricultural development in such a way that farming systems as well as individual farm practices, that is forestry and land-use in general, of each region in the European Union (EU), be in harmony with the integrated nature conservation objectives. This means that integration should not be confined to minimise the negative environmental impacts of agriculture, but also that it should aim to maintain and increase, as far as possible, agriculture's positive nature conservation and landscape functions. People who know about the production standards of organic agriculture, set by IFOAM and the EC-regulation, will recognise and admit that organic agriculture is an interesting basis for the required

integrated approach for agriculture. This, because organic agriculture goes for more of the better instead of going for less of the bad (Van Mansvelt and Mulder, 1993). Realisation of such a new and integrated direction in the Common Agricultural Policy (CAP) of the EU requires a compatible research strategy, that warrants that all parties involved in the new policy work together, instead of competing in a contra-productive way for the best solutions according to their own disciplines. Thus, a scientific approach is needed that integrates all different aspects in a consistent, communicative and convincing way.

Baldock and Beaufoy (1993) mentioned also that, in order to design an appropriate strategy that meets the mentioned objectives of banishing the negative environmental effects and maintaining its positive functions, nature and landscape values of various farming systems throughout the EU should be assessed. The limited perspectives of a largely "N-driven" agriculture are based on the application of high external inputs like fertilisers and pesticides, extremely high stocking rates and the removal of all areas that are monetary non-productive. The rationality underlying this agricultural policy increasingly tends to off-soil production of crops and animals with fully computer controlled environmental conditions. Organic agriculture counteracts and avoids these problems of modern agriculture, by going for co-operation with nature, using its ecosystem's regulating strategies (Lampkin, 1990; Van Mansvelt and Mulder 1993). From this way of thinking about agriculture, through thorough discussions with practitioners from many countries world-wide, a system of clear and consistent standards has been derived, as reflected in the IFOAM standards (IFOAM, 1996) and drawn upon in the EC Regulation 2092/91.

Baldock and Beaufoy (1993) listed nature and conservation implications of various intensive and extensive practices of agriculture. They show that considerable similarity can be found between the practices of farmers licensed as organic and those practices of extensive agriculture that are recommended for their positive effect on nature and landscape. However, so far little research has been done about the actual compliance of organic agriculture and the need for nature and landscape management.

Incentive payments are the predominant mechanism currently used in the EU for the promotion of environmentally sound farming. The new EC Regulation 2078/92 gives considerable additional momentum to the incentive payment approach in the EU. At the moment, agro-environment incentive payments can have various objectives, such as the maintenance of particular habitats or landscape types or the reduction of agricultural pollution (excessive nutrients or pesticides). This can easily lead to incompatible sets of payments, with contra-productive effects, depending on the interests involved in the implementation of the EU 's regulations in its member states. On the other hand, different objectives such as environmental, landscape and habitat protection may not be clearly distinguished, also leading to a decreased effect of the payment schemes.

Some of the objectives of agro-environment incentive payment schemes are summarised as follows by Baldock and Beaufoy (1993):

- Extensification of production practices for a mixture of broad objectives such as reducing agricultural production and lessening the negative environmental impacts of farming, for example overgrazing, high use of chemical inputs, etc.
- Maintenance of existing landscapes and habitats.
- Environmental enhancement of an area.
- Management of abandoned farmland and woodland.

The different options for incentive payments refer to the EC Regulation 2078/92. They propose extensification of few- or single-commodity production systems, in favour of a multi-objective approach and the maintenance of the traditional farming systems that harmonise with nature, and in favour of the re-introduction of valuable landscape management practices in abandoned areas. However, these incentives focus on single objective payments as presently developed in different member states, instead of elaborating the integrated approach as they suggested in other parts of their report. Nevertheless they mentioned organic agriculture as an interesting option for such an integrated approach. Although a license for organic farming does not necessarily result in high nature conservation benefits, as the current standards of organic agriculture are indeed very modest in specifying standards for nature and landscape, the farmers applying for recognition as organic farmer will usually go for it. Thus the organic label tends to provide a sound basis for high natural value (HNV) farming (Van Mansvelt and Mulder, 1993; Van Mansvelt and Stobbelaar, 1997) See also section 4.2 ("Empirical data collected from literature").

While Baldock and Beaufoy (1993) give a general context of the problem, ECNC (1994), a network project of the European Centre for Nature Conservation (ECNC) entitled "*Natural environment and sustainable development: habitats, species and human society*", presents the political context of the problem. There the ECNC stated that: "Since agriculture traditionally depends on sound environmental conditions, farmers have a special interest in the maintenance of natural resources. For centuries they maintained a mosaic of landscapes which protected and enriched the natural environment" (ECNC, 1994). Clearing and levelling of the land, focusing on mono-cultures, together with intensive use of fertilisers and pesticides, have resulted in losses of landscape, habitat and species diversity. A degradation of landscape diversity into rather monotonous and uniform areas of intensive agriculture and on the other hand a-specific wildernesses on abandoned land, are the results of recent policy on the European landscape. Although the CAP included the agri-environment in its 1992 reform, the processes that had been started through previous policies are neither easily re-directed, nor are its damages easily made undone. Moreover, several weaknesses in the phrasing and implementation of the extensification schemes lead for example to losses of diversity in uncontrolled set-asides and single-species reforestation at former agricultural lands (ECNC, 1994). These effects damaged the social, historical and cultural diversity of many regions that until then had been one of the

many strengths of the European Community, providing the citizens with a deep sense of identity. The European community has consistently recognised the need for special efforts to help the less developed regions and to encourage these regions to help themselves. Emphasising regional autonomy, with a relative self-sufficiency in food and fibre per region, is an important theme in this policy. Low external input sustainable agriculture (LEISA), based on the ecological principles of organic agriculture, could thereby used to play a crucial role.

ECNC (1994) wonders if "Natura 2000", the EU strategic plan for nature and landscape diversity throughout pan-Europe, is enough to meet the global requirements for rural development and if not what the alternatives might be. In their opinion, "Natura 2000" is in danger to focus too much on hotspots of natural quality, leaving the wider landscape open to degradation. Another aspect, raised by ECNC, is how to link requirements of the natural environment to the social requirements of employment, tourism, education and training. Here again, organic agriculture, as multifunctional type of agriculture, could be used as a good example for possibilities to link the requirements of the natural environment to such social requirements as employment, tourism, and education. Also the United Nations Economic Conference for Europe (UNECE) stated in 1995 that, recognising the uniqueness of landscapes, ecosystems and species, which include economic, cultural and inherent values, a pan-European approach to the conservation and sustainable use of shared natural resources should be applied. The UNECE invited the Council of Europe and the UNEP, in co-operation with OECD and IUCN, to establish a task force or other appropriate mechanism in order to guide and co-ordinate the implementation and further development of such a strategy.

Also the Pan-European Biological and Landscape Diversity Strategy (PEBLDS, 1995) indicates the political context of the problem of the Concerted Action. One of the challenges to be addressed, according to the PEBLDS (1995), is to prevent further deterioration of the landscapes and their associated cultural and geological heritage in Europe and to preserve their beauty and identity. This challenge goes together with correcting the lack of integrated perception of landscapes as a unique mosaic of cultural, natural and geological features, and with the establishment of a better public and policy-maker awareness together with a more suitable protection status of the landscape and nature features throughout Europe. The following aspects are mentioned by the PEBLDS (1995) to realise the opportunities for the cultural and social commitment to maintain local and regional individuality, as expressed by cultural and geological heritage features in the landscape:

- Compile a comprehensive reference guide on European biological and landscape diversity, to further develop and seek acceptance of criteria to identify priorities for conserving geological and cultural landscape features. Identify traditional agricultural and related landscape management types and assess the effects of marginaliation or intensification of the landscape (1996-1997).

- Establish guidelines, following assessments and evaluation, to address policies, programmes and legislation for the protection of cultural heritage, geological heritage and biological diversity that are mutually supportive and complementary, and use them to their full potential in the conservation of the landscape (1996-2000).
- Set up a code of practice to involve private and public landowners to promote awareness of the relevance for bio-diversity of landscapes traditionally valued and managed for their historical and cultural importance, focusing on historic parkland estates and historic buildings (1996-1998).
- Establish an action plan using awareness techniques, guidelines and demonstration models to safeguard geological features in the landscape, actively involve and consult landowners and the energy, industry and water management sectors in their conservation (1996-1998).
- Investigate the relationship between traditional landscape and regional economy. Develop a framework to stimulate initiatives for regional development based on landscape diversity, involving eco-tourism and traditional crafts. Find successful case studies and set up programmes for exchange of expertise (1996-2000).

Also a study of De Putter (1995), entitled *The Greening of Europe's Agricultural Policy*, subscribes the political context of the problem, by mentioning that under the regulation 2078/92 EU-member states have decided upon a structural, premium supported policy in favour of extensification of agricultural practices, environmental protection and nature and landscape preservation. Thereby the member states agree that farmers are no longer food-producers only, but also caretakers of the environment, countryside and landscape. Possible income losses generated by the additional farmer tasks will be compensated by yearly premiums to farmers. Apart from benefits for the environment at large, these regulations are also mentioned to contribute to balance the surplus market of agricultural products. Altogether, the multiple goals of the 2078/92 regulation demand a holistic and consistently integrated approach. However, as such an approach supposes a complicated monitoring system, the commission focuses on (semi-)single target programmes. De Putter (1995) mentions that organic agriculture is a feasible instrument to reduce negative environmental impacts, for instance by reducing external chemical inputs, and that it contributes to balance the market of agricultural products. However, she does not mention specifically that organic farming may and actually does contribute positively to landscape preservation and to the prevention of agricultural decline and natural hazards. Other activities, like environmental practices, maintenance of countryside and landscape, upkeep of abandoned farmland or woodland and set aside (twenty years), are regarded, by De Putter (1995), to cover landscape preservation and to the prevention of agricultural decline and natural hazards. Although many of such practices are actually applied in practice by organic farmers, they are hardly implemented as such in organic production standards indeed. Nevertheless, several authors recognise that organic farmers are positively active in these fields (Beissmann, 1997; Van Mansvelt and Mulder, 1993).

A more scientific context of the problem statement is, for instance, given by Bockemühl (1992), Colquhoun (1997), Giorgis (1995), Naess (1989), Seel (1991),

Stroeken *et al.* (1993), Vahle (1993) and Vos and Stortelder (1992). Holistic approaches elaborated by the above mentioned researchers have been consulted for an integrated approach of the multifunctional landscape validation and assessment. From that consultation it seems that an interdisciplinary approach to meet the requirements of a sustainable landscape management, should include contributions from natural, social and humanistic sciences. Especially the work done by Giorgis (1995) shares our opinion about interdisciplinarity, in an approach that largely complies with the approach developed by the Concerted Action at stake. Giorgis (1995) mentioned that in addition to the objective approach of the ecologist or historian, sensorial perceptions can tell a lot about the landscape. People's appreciation is largely subjective and involves value judgements. The future of European landscapes calls for a wide-ranging debate on ecological, economic and cultural values. The countryside has been created, tended and used as living space by the rural community in addition to the production of food and fibres and these days it also provides city dwellers with recreation and services (Giorgis 1995).

Moreover Giorgis (1995) mentioned four fundamental principles to be abided by in favour of landscape quality. Within those principles there are several aspects that comply with our Concerted Action, viz.:

1. Respect for life and preservation of landscape diversity

- Natural resources should be managed in such a way that it enables present and future generations alike to make a living. Advocacy of sustainable development is therefore essential.
- Maintaining, recreating and increasing the landscape structures, vegetations or mineral structures providing protection against erosion by wind or water.
- Encouraging farm practices that use and nurture the living properties of the soil: rotational cropping, a balanced use of organic manure, reasonable mineral inputs and recycling of healthy organic wastes by composting.
- Promoting balanced utilisation of all productive land to prevent the soil being degraded by over-intensive use or dereliction.

Especially for water quality, the following aspects have to be considered and respected:

- Resource management: water is limited in supply. This means that water should be used economically and managed in an efficient and ecologically sound way. Thus an integrated approach is needed.
- Maintaining water quality: pure water is crucial for a healthy environment. With good knowledge of ecological processes, it is possible to preserve water quality without having to apply chemical treatments.
- Encouraging farm practices using little water and causing little or no pollution and limited soil erosion.
- Developing landscape structures, which help the water self-purification process by restoring and consolidating riverside vegetation and developing wooded strips, grass verges and hedgerows.

- Preserving the visible presence of water instead of converting it into concrete pipes or covering over watercourses and ditches.
- Protecting and restoring natural habitats associated with the presence of water and avoiding the use of non-living materials on stream banks.
- Managing in a sustainable way the recreational and educational potential of water in the countryside.

## 2. Preservation of biological diversity

- Creating ecologically stable landscape structures at two levels:
  - International and national level: natural areas of major biological interest safeguarded by national parks, reserves and various protected areas.
  - Regional and local level: ensuring continuity and liaisons and providing migration corridors between the different natural features of the landscape like copses, haes, waterside vegetation etc.
- Supporting countryside stewardship, by making remunerating of the farmers' labour a condition for the signing of management agreements. In particular such agreements that regard areas and habitats which are totally dependent on such type of management. For example, dry grasslands, wetlands etc.
- Recommending integrated pest control procedures, using natural landscape structures as the habitat of the auxiliary fauna and minimise chemical treatments at crop and timber production plots.
- Developing institutions for the conservation of genetic varieties, promoting and rearing of rustic breeds, and demonstrating the potential economic values of this diversity.

## 3. Development of solidarity

- Demands for space, quality of life and food supplies must be taken into account and shared among all sections of the community. Therefore, productive landscapes accessible for all are necessary.
- Access to water. Everybody should have access to water for enjoyment as long as it is consistent with the principle of wise use.
- Ensuring that the economic and ecological potential within each region are balanced in a such a way that it takes the need for better distribution of wealth and of the environmental carrying capacity of the region into account.
- Supporting locally grown products.
- Supporting certification of quality and guarantees of origin, which associate with specific agricultural practices keeping landscape quality and preserving the environment.

For the accessibility to all, the following aspects have to be considered:

- Maintaining, protecting and developing networks of ecologically acceptable roads and footpaths in the countryside.
- Promoting highway embellishment policies.
- Introducing landscape awareness into the design and construction of all infrastructures.

For the observance of democratic procedures, the following aspects have to be considered:

- The landscape is everybody's concern. The standard of partnership, negotiating capacity and interchange among the social groups, creating, managing and using the landscape will be shown in the landscape quality.
  - Global and integrated water management presupposes a concerted approach by everybody affecting landscape with his or her activities, for example local authorities, farmers, angling clubs, conservation organisations, environmental groups, local inhabitants etc. They should together develop a landscape plan.
  - Developing landscape plans, contracts and charters.
  - Changing skills and sensitivities into landscape planning.
  - Developing training in landscape design and making technicians sensitive to aesthetics and artistic considerations.
  - Fostering community involvement.
4. Respect for regional identity and the right to enjoy beauty
- Every society is entitled to express its character, genius and ideas about beauty. Landscape is one of the media, which can be used to express these aspects.
  - Each landscape has a visage with specific features, which make the landscape unique in colour, plant life and minerals. Proportions and distributions of empty and non-empty spaces in the landscape have their particular feelings and atmosphere, situated in time and space and for different life-spans. It is important to understand the perceptions of musicians, painters, writers and landscape artists about the landscape.

Specifications on how to implement these requirements and how to assess the implementations have as yet to be established. In particular the translation to the level of farming practices, for single farms or farming co-operatives, should be elaborated to make them compatible with the landscape requirements as phrased. Apart from landscape researchers working toward a better and more sustainable landscape management, there are also agronomists, who extend their perception of agricultural production in order to include the nature production values of agriculture. For example, Vereijken (1994, 1995, 1996a) has been involved in an EU Concerted Action and designed farming prototypes, which comply with six general and twenty specific social values and interests, as perceived by the researchers and farmers involved in the Concerted Action. The main objectives of the integrated agriculture farming system (IAFS), as mentioned by Vereijken (1994, 1995, 1996a), are basic income/profit, environment and food supply. The representatives of the ecological agricultural farming system (EAFS) rank these objectives as follows: 1) environment, 2) food supply and 3) nature/landscape. Vereijken (1994, 1995, 1996a) concluded that IAFS focus on short time strategies whereas EAFS goes for long time strategies. Agro-ecological criteria for I/EAFS farm layout with clear effects on the landscape are presented by Vereijken (1996b) and show that the agro-ecological unity/identity of farms, together with minimising ecological stress (pest-prevention / infrastructure of pest-predator bio-topes) are leading design motivations.

This approach to agriculture is quite comprehensive for the farming practices, yet the integration of those sustainable farming practices in the land-use and landscape management planning has still to be elaborated.

## 1.2 OBJECTIVES

In the EU's common agricultural policy (CAP), the objectives have been extended to include the landscape production that inevitably goes along with agricultural production. Thus agriculture has become a multitude of objectives as now the environment-, nature- and landscape-production join the production of food and fibre. Landscape production, like any other production, requires appropriate quality standards, which in view of UNCED's global conference (1992), should meet the requirements of sustainable development.

Criteria for the different types and dimensions of landscape quality are found to be scarce and incomplete in literature, especially in as far as the contribution of agricultural land-use to the landscape is concerned. Research about recommendations for landscape and nature production by farmers and how to include these recommendations into standards and payment schemes is strongly needed, but missing so far. Such research, which warrant the necessary integrated multi-objective approach, requires multidisciplinary research covering all relevant aspects of the rural, agro-sylvi-pastoral land-use in the landscape and should include organic types of agriculture into its theory and analyses. The incompleteness of research, so far done, is recognised as a constraint for the development and implementation of a cross-compliant strategy in the supporting agricultural policy. Also the lack of research on the compliance of organic agriculture with the demands for landscape and nature management has to be tackled. In view of the actual performances of organic agriculture, this type of agriculture could be a farming system that fits to cross-compliant rewarding. A cross-compliant approach will better allow for a systems' and goal oriented payment schemes, instead of for single solution oriented payment schemes, based on single, prescribed or solely allowed technologies (Bosshard *et al.*, 1997; Van Mansvelt and Van Elzaker, 1994; Van Mansvelt and Mulder, 1993).

In 1993, the EU Concerted Action *Landscape and nature production capacity of organic/sustainable types of agriculture* (AIR3-CT93-1210) started, aimed at identifying and validating agro-landscape features that are important for the assessment of planning and management. Agro-landscape standards, among others, should help to keep the quality of rural areas on an acceptable level (prevention), or even in due course, to restore them to the desired quality level.

A number of issues that need to be examined in more detail emerge from the foregoing discussion:

1. The composition of a list of criteria to be used for the assessment of all kinds of planned or ongoing land-use activities affecting landscape. Agriculture is explicitly included as a land-use activity affecting the European landscape.
2. The contribution of organic agriculture towards landscape quality.

The Concerted Action has been initiated to discuss standards for the assessment of sustainable agro-landscape values in the EU and how to define criteria and parameters for the development of such standards. The insights gained by this Concerted Action programme may help farmers, policy makers, government and politicians to manage the development of agro- and forestry-landscape toward sustainability and socio-cultural appreciation. The general set of standards and the list of criteria and parameters, including regional specifications and examples, can be used as a guide for agro-landscape production and as a framework for the follow-up and updating of those standards, criteria and parameters

Within the overall objectives of the concerted action, separate goals can be distinguished, which have been tackled during the four years of the Concerted Action:

- To identify and validate agro-landscape and a compliant interdisciplinary set of features that are important for the assessment of the sustainability of landscape planning and management in the EU.
- To establish an interdisciplinary list of criteria for the assessment of sustainable landscape management in the EU.
- To discuss the established checklist and the assessed performances with experts from different research disciplines, planning experts, and experts of practise.
- To disseminate the results in oral presentations and publications.

## 1.3 APPROACH

The EU Concerted Action programme entitled *Landscape and nature production capacity of organic/sustainable types of agriculture* (AIR3-CT93-1210) started in 1993 and continued for four years. Some twenty scientists from 11 EU and neighbouring countries have met in several subgroups in nine different countries to discuss their targets and to compose a set of criteria and parameters, as well as the way in which these can be merged in one structure.

To achieve the above mentioned objectives, the following aspects are taken into consideration:

- An international group of twenty European scientists has been invited to contribute their national and international expertise in order to compose a

comprehensive and consistent list of criteria, which fit to the whole European Union.

- A comprehensive multidisciplinary attitude is expected and required from the international group of experts in order to warrant that the developed criteria will fit and be useful in the rural, agro-sylvi-pastoral landscape, which they are meant to serve.
- The expertise of the international and multidisciplinary research team should include sufficient knowledge about the basic concepts, the implementation, and the actual performances of organic agriculture in order to warrant the relevance of criteria for further development of organic agriculture.
- Bring the various opinions, positions and experiences of all participants together and discuss the compatibility or incompatibility of their perceptions. From each partner of the expert team, ability and willingness to get involved in an open-ended discussion with experts from other countries and other disciplines, with other points of view, philosophies and attitudes were required, allowing for relevant co-operation toward the objectives of the Concerted Action

An iterative alternation between plenary and subgroup meetings of the international and interdisciplinary team has been used as a method to reach the research objectives, taking into consideration the above mentioned aspects. During the yearly plenary meetings, organised in Wageningen, participants present their landscape perceptions and experiences, which are discussed in view of society's demand for a shift toward sustainable landscape management. These perceptions and experiences should be specified into the important landscape functions and the landscape qualities, necessary to provide the landscape functions. Relevant scales, necessary for the landscape functions, and the parameters used to assess the landscape qualities and the desirable ranges of those parameters should also be specified by every participant. Participants used examples from their own research to present the required information. A preliminary list of criteria and parameters has been composed from these presentations and the discussions afterwards. Gradually, the list of criteria and parameters has been upgraded over the subsequent meetings.

Every year, two or three subgroup meetings were organised by one of the EU participants in co-operation with the other participants of the Concerted Action. During the subgroup meetings, quick scans on some farms were performed in the landscapes of the participating countries, to check on the spot the feasibility and (in)completeness of the list of criteria. Organic farms were purposely included in the quick scan performances. The subgroup meetings were dedicated to common and team-wise agro-landscape observations. The on-site discussions on the criteria and parameters during the subgroup meetings facilitate mutual understanding among the participants representing various opinions, disciplines and countries. Observing,

working and discussing together on a common interest object, is a perfect tool to overcome misunderstanding and disciplinary biases. It also balances lob-sided points of view of the various participants. The discussion rounds during the subgroup meetings were done in three sections, viz. one for the natural science oriented aspects, one for the socio-economic science oriented aspects, and one for the human science oriented aspects. Subsequently, in a plenary meeting the three different sections report their findings and discuss the compatibility or incompatibility of their criteria and parameters for the agro-landscape management. Several papers have been produced, based on the subgroup meetings, discussing the landscape values of various farming systems observed during the quick-scan approach and elaborated afterwards. See for instance, the proceedings of the four plenary meetings of the Concerted Action done in 1994, 1995, 1996, and 1997 and the special issue of *Agriculture, Ecosystems & Environment* (1997). Another special issue of *Agriculture, Ecosystems & Environment* is in preparation.

In 1995, the list of criteria and parameters reached a certain point at which the participant of the Concerted Action felt the need to discuss its feasibility with local experts from outside the Concerted Action team, to receive second opinions. With permission of the EU-officers, local and regional farmers, extension workers, policy makers and nature conservation experts were invited and participated in the Concerted Action meetings of last two years. Their observations of the agro-landscape and their opinion about the criteria and parameters have been taken into consideration as well. At the meetings with local experts, the issue regarding the type of users and the kind of uses is envisaged and has resulted in additional workshops and a special chapter in the final report of the Concerted Action.

The list of criteria and parameters produced by the Concerted Action, the so-called "checklist", is extensively compared with existing sets of standards for sustainable agricultural land-use, such as the basic standards for organic agriculture of IFOAM (1992) and the European Union (Regulation 2092/91. Also the criteria of I/EAFS (Vereijken, 1994, 1995, 1996a; Kabourakis, 1996) for sustainable farming are included in the comparison.

## 1.4 STRUCTURE OF THE REPORT

After the introduction, the research methods are described in chapter 2. The study is based on Maslov's theory about human motivations and on an interdisciplinary approach concerning environment, ecology, economics, sociology, psychology and humanities. This theory and its compliant interdisciplinary approach will reappear in chapter 3, which presents the results of this study, viz.: a checklist with criteria for the ecological realm, the social realm and the humanities' realm of sustainable landscape management. To improve the collection of targets, criteria and data of sustainable landscape management, an overview of the various criteria has been developed. This overview or table with criteria for sustainable landscape management is presented in chapter 3 as the Table of the Checklist (Table 3.1). It is produced in an