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How to Make Natura 2000 Work Properly? Socio-Economic, Legal and Ecological Management

"SELNAT"

V. Grogna, M. Mahy, S. Meuris, J. Taymans, J. Vincke, S. Weyns, Ch.-H. Born, G. Mahy, M. Hermy, D. Tyteca, E. Ameloot, P. Endels, G. Nulens

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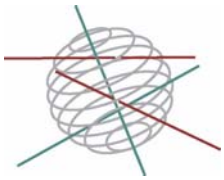

Biodiversity

FINAL REPORT

HOW TO MAKE NATURA 2000 WORK PROPERLY? SOCIO-ECONOMIC, LEGAL AND ECOLOGICAL MANAGEMENT

"SELNAT"

SD/BD/06A

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0 INTRODUCTION

This report includes results obtained from the SELNAT research project, conducted between February 2006 and January 2008, under the auspices of the Belgian Science Policy. The principal subject of this project is the implementation of Natura 2000.

The Natura 2000 network of protected areas, made up of sites designated under the Community Birds (BD) and Habitats Directives (HD), is a key pillar of action for the conservation of biodiversity (European Commission, 2008). It is central to achieve the commitment to reverse the decline of biodiversity in the European Union by the year 2010 made at the European Council meeting in Gothenburg in June 2001. It aims at sustainable conservation of habitats and species of community importance, taking into account (i) economic, social and cultural requirements and (ii) regional and local circumstances. Central to the Directives is the creation of a Europe-wide ecological network of protected sites – the Natura 2000 Network – which is destined to conserve over a thousand rare, threatened and endemic species and some 220 Natural habitats listed in their annexes. Around 24,000 sites have been included in the Network so far. (European Commission, 2008) Now that the network set-up is nearing completion, there is a need to increase the focus on the active management of the sites so as to ensure long-term conservation and the achievement of the economic and social objectives of the network (CEE, 2004.) This in turn also raises the question of finding the appropriate management strategy, instruments and sufficient financing (at all levels). The principal question for Member States is how to manage Natura 2000 sites to reach the (juridical fixed) ecological targets in the most cost-efficient way, taking into account economic and social objectives and constraints. Ecologists and nature organisations often start from an techno-ecocentric paradigm: 'How to conserve and manage species and habitats?', in order to tackle the question mentioned above. The paradigm starts from the opinion that 'diversity of species and habitats' is important as such (while this is believed to be important for several reasons). This approach has been criticised lately for being based on a too narrow set of values. It has not provided enough opportunities for combining nature conservation with other forms of land use such as agriculture, forestry or tourism. In several countries this led to difficulties as regards the co-operation of local stakeholders (Jongman & Kristiansen, 1998). On the other hand, the current biodiversity crisis is a direct result of the way in which society has chosen to interact with its Natural environment. If the causes of the problem are social, it stands to reason that the policies striving to solve the problem will need to be based on a solid understanding of social structures and processes, if they are to have any effect. In this research project we tried to study the management of Natura 2000 sites from a 'sustainability' paradigm, instead of from the ecocentric paradigm. The central research question is therefore formulated as 'How to manage Natura 2000 properly, to contribute to a (local) sustainable society?'

With this research we hope to give decision-makers new insights on the economic, social, and environmental consequences of Natura 2000 management and to guide them in the development of more adequate and sustainable policies for the management of Natura 2000-sites. In the first chapter the general objectives and approach of this project are described. The second chapter gives an overview of some of the current bottlenecks for nature conservation and Natura 2000. The results of the research on the elaboration of strategies for Natura 2000 sites are summarizes in chapter tree. Conclusions and recommendations are presented in the last chapter. More information on the research is documented in the different appendixes.

During the research, we benefited from contacts with many persons, and more especially in the scope of a Users' Committee. Besides the representatives of the Belgian Science Policy, we would like to thank all members of the Users' Committee, among which those who supported us and/or participated in one or several of the meetings,

1. OBJECTIVES AND GENERAL APPROACH

The main aim of the SELNAT project is to perform a multidisciplinary analysis of the management of Natura 2000 sites in order ***"to make NATURA 2000 work properly"***? "Working properly" is defined as the development of efficient strategies for nature areas that contribute to sustainable development in both ecological and socio-economic terms. The effectivity and feasibility of instruments aiming at managing Natura 2000 sites are two key elements in the latter. The initial research hypothesis was: "*An approach based on the principles of the ecosystem approach and the integration of ecological, economical, legal and social aspects is necessary to design management strategies for large nature areas that will create a favourable conservation status and reach Natura 2000 objectives in a robust way*".

The project is divided in three main phases or work packages. The first two phases both contribute to the integration exercise in WP3 where all results are brought together. Recommendations are made for the future implementation of Natura 2000.

The current research project doesn't start from zero. The goal of WP 1 was to perform a structured multi disciplinary analysis and overview concerning different aspects that come in to play with the management of Natura 2000-sites. Each partner was responsible for gathering relevant information in his or her field of competence about the past implementation process of Natura 2000. The current legal, economic, ecological and social problems with the planning and implementation of the Natura 2000 legislation in general (and in the Walloon and Flemish region in concrete) are assessed. This integrated analysis gives an overall image of the current situation in a 'historical' context (of developing legislation, defining policy development schemes, …). The goal was to deepen the interdisciplinary understanding within the research team of the problems that rose during the implementation of the Natura 2000 policy and this in relation with the historical development of it. In a first step each team has made a disciplinary analysis of the current Natura 2000 policy. The second step contains an integrated analysis. This way, within the research team some common knowledge frame could be developed that could be used as starting point for the work in WP 2.

In WP 2 the knowledge and insights gained in WP 1 are incorporated into practical, applied management schemes that can be used for the actual management of Natura 2000 sites in Belgium. WP 1 focuses on the (past) process of policy making, goal setting en site selection. Within WP 2 the research was focused on the implementation process. In Fig. 1, the position of the content of WP1 and WP2 compared to the general context of NATURA 2000 (international and national legislative framework, favourable conservation status, …) is given in relation to the process of the development of Natura 2000. While in WP 1 the different teams worked according to there own approaches, the research team tried to develop a more integrated approach for WP 2.

Within WP 2 first of all a theoretical framework was developed for the building of a sustainable management plan. Besides that the feasibility and effectivity of different kind of instruments to reach Natura 2000 goals was assessed. This was done by literature review, a focus group meeting and tree following surveys. The insights gathered during the research project were used to made up some recommendations and conclusions.

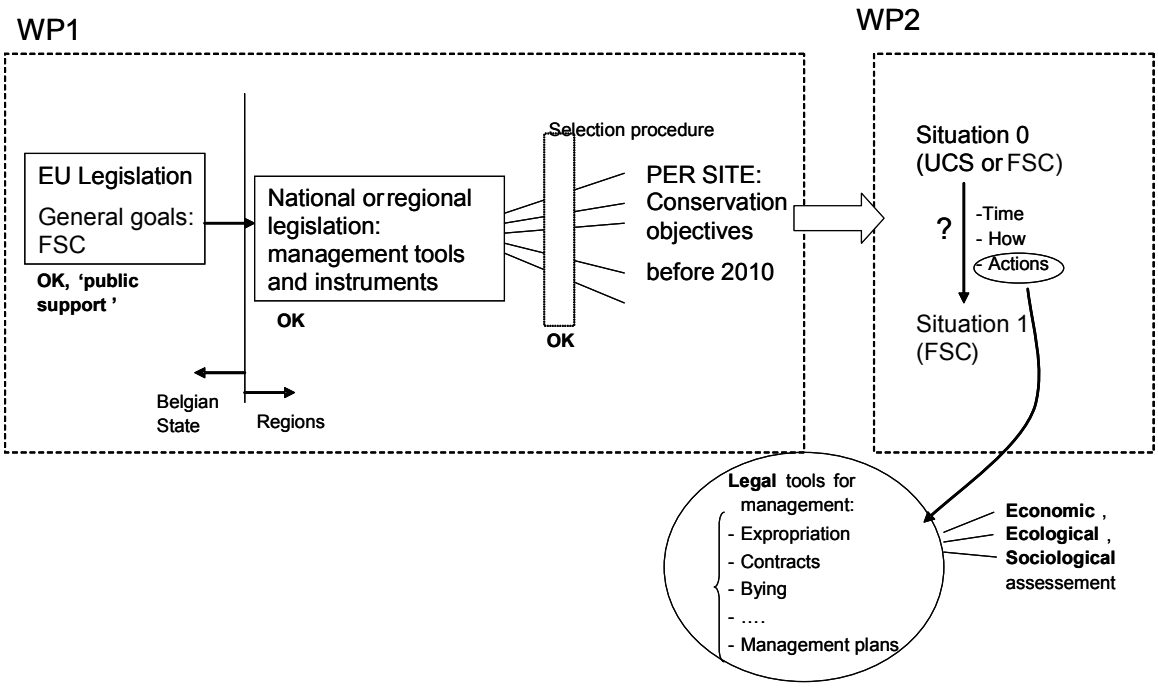


Figure 1: Schematic presentation of the position of workpackage 1 (WP1) and 2 (WP2) in the Selnat research with regard to the functioning and implementation of the Natura 2000 legislation.

FSC : Favourable Stade of Conservation

2. WP1: IDENTIFICATION OF BOTTLENECKS FOR NATURE CONSERVATION AND NATURA 2000

The general framework and the general goals for the European important habitats and species (Favorable State of Conservation, FSC) were developed at European Level. In 1992 the European Commission has adopted the Habitat Directive. The practical implementation of this legislation is the task of the Regions. Besides the translation of the European legislation in there own legislation, the regions had to select some areas as Natura 2000 areas. In most of the European countries these steps are taken. Before 2010 the regions have to develop conservation goals for the different habitats and species. This process is running at the moment. An important issue for the future is then the concrete implementation of the developed conservation goals. (CEE, 2004.)

In WP 1 the current legal, economic, ecological and social problems with the planning and implementation of the Natura 2000 legislation in general (and in the Walloon and Flemish region in concrete) are assessed. This integrated analysis gives an overall image of the current situation in a 'historical' context (of developing legislation, defining policy development schemes, …). The goal was to deeper the interdisciplinary understanding within the research team of the problems that rise during the implementation of the Natura 2000 policy and this in relation with the historical development of it. In a first step each team has made a disciplinary analysis of the current Natura 2000 policy. The second step contains an integrated analysis.

An extended report of the analysis of the research team is presented in Appendix 1. In this final report we give a synthesis of the analysis. First of all we give a short introduction in the central concepts of Natura 2000. In paragraph 2.1 the core concept of Natura 2000, 'biodiversity' is described. The legislative actions and the current state of the art of the implementation of Natura 2000 are presented in paragraph 2.2. In the last paragraph (2.3) we present a summary of our integrated analysis of the current bottlenecks for the implementation of Natura 2000.

2.1 The biodiversity problem as trigger for action

Biodiversity is a contraction of 'biological diversity' and is defined as "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species (genetic diversity), between species (species diversity) and of ecosystems (ecosystem diversity)" (Mace et al. 2005). The term biodiversity is used in different ways, leading to ambiguities and misunderstandings Mayer (2006). For everyone it's clear that biodiversity plays an important role in the way ecosystems function and in the services they provide (Chapin et all. 2000. Mace et al. 2005). We depend on the biodiversity of our planet for the food, energy, wood, raw materials, clean air and clean water that make life possible and which drive our economy. But we also look to our Natural environment for less tangible things such as aesthetic pleasure, artistic inspiration and recreation.

Nevertheless, as shown in a large number of scientific studies and recent research, there is a major problem with biodiversity in Europe and, on a larger scale, in the world. Biodiversity is currently degrading at a catastrophically high rate (Pimm & Raven 2000, Novacek & Cleland 2001).Plant and animal species vanish at a dazzling speed and species might become extinct before they are even described by scientists. Today, scientists believe the observed extinction rate is up to 1000 times faster than the Natural rate Pimm *et al.* 1995).

One of the main reasons for this unNatural fast extinction rate is the impact of man on his environment. All around the world, the ecosystems and Natural resources are used and exploited in a non-sustainable manner, and an overexploitation of species results in a constant pressure on their survival, sometimes causing a collapse of populations. All these pressures combined, one can compose a list of the most important threats to biodiversity: fragmentation of habitats, overexploitation

and transformation of land, chemical contamination (eutrophication and pollution), biological pollution and climate change:

- *Direct destruction of Natural habitats* is clearly of the most drastic and visual threats to biodiversity. In Europe for instance, land use intensified drastically with the industrial revolution (1850) and again after the Second World War (1950) with introduction of machines, fertilizers, … . The conversion of Natural areas into agricultural land and the increased scale of agricultural holdings have led to a huge degradation of nature values. Here, as in other places in the world, the remaining habitats suffer from increased fragmentation, overexploitation and pollution.

- *Habitat fragmentation*, or habitat sub-division, is the subdivision of continuous habitat into multiple patches (Fahrig, 2003) and it is very much related with habitat destruction. Landscape fragmentation results from patch conversion and development of sites, e.g., into urban settlements or intensively used areas, and from linkage of these sites via linear infrastructure such as motorways, railways or others (Harris, 1984; Clergeau & Désiré, 1999). Landscape fragmentation also comprises Natural barriers to animal and plant dispersal such as rivers. Since smaller patches generally support smaller populations, a decrease in patch area may lead to increased extinction risk due to decreasing resistance against stochastic extinction events, typically affecting small populations (Shaffer, 1981; Lande, 1988). It is theoretically expected that a small population size increases the risk of erosion of genetic variation and of inter-population genetic divergence due to increased random genetic drift, elevated inbreeding, accumulation of deleterious mutations, and reduced gene flow (Young et al., 1996). Edge effects play an increasingly more important role for small habitats. Spatial isolation or the degree of connectivity between patches is another important feature of fragmented habitats. The effect of isolation of sites due to fragmentation depends also on the dispersal capacity of the different species. Therefore, a certain fragmentation degree has a different actual impact on different species.

- Not only does the size and diversity of ecosystems diminish, the *inter- and intraspecific genetic diversity declines* as well. Small-sized populations become more susceptible to stochastic (or chance) events like demographic, environmental and genetic stochasticity as well as Allee and edge effects (Lande 1998), in turn leading to smaller population sizes.

    - **Demographic stochasticity** is the variation in population dynamics owing to chance events affecting individuals and it increases extinction risks in small populations only (Menges 2000, Ouborg et al. 2006).

    - **Environmental stochasticity** is the variation in demographic parameters caused by environmental variation (competitors, disease, weather, herbivory, pollinator availability, etc.) affecting whole populations. Increasing environmental stochasticity increases extinction risk (Menges 2000, Ouborg et al. 2006). Environmental stochasticity is believed to be more important than demographic stochasticity and populations need to be larger to be buffered against environmental stochasticity.

    - **Genetic stochasticity** or genetic drift involves the random loss of genetic variants (alleles) from small populations due to the fact that not all of them are represented in the new generations. In the absence of mutation, in a smaller population, the chance that beneficial genetic variants, e.g. resistant genes, disappear by accidence is several times higher than in large populations. This even increased in isolated populations where migration is much less probable than in non-isolated populations. It has recently been established that gene flow has significant effects on population fitness (Newman & Tallmon 2001, Tallmon et al. 2004). In years with for instance extreme drought, loss of genetic variation may occur and the population may

genetically be completely different from the previous year. In large populations, this risk is much smaller.

- **Inbreeding** (mating between close relatives) is obviously much more likely in small populations than in large ones. This does not lead to a loss of alleles, but rather redistributes alleles from heterozygous to homozygous combinations. This may then result in the expression of vulnerable, recessive alleles in the offspring, which are masked in previous, heterozygous state. Inbreeding may result in lower fitness (decreased vitality and fertility) of the offspring and in decreased total population viability and fitness, called inbreeding depression (Crnokrak & Roff 1999).

- Furthermore, the invasion *of exotic, invasive species*, as a result of increased anthropogenic mobility, puts an extra stress on (vulnerable) ecosystems. Most definitions of "invasive" consider a combination of criteria: (1) being an exotic (species, subspecies or lower taxon, introduced outside its Natural past or present distribution); (2) reproduce and increase its range in its new environment; (3) have an important impact on this new environment (e.g. Vanderhoeven & al., 2006). Exotic species are characterized by different degrees of potential for Naturalization and invasiveness. Only a small fraction of exotic species become invasive, and even a small part of those are considered, based on rather subjective criteria, as troublesome or nuisance. For most species the process of invasion is rather poorly documented (Vanderhoeven et al., 2007). While the colonization of new species leads to a momentary increased species diversity or biodiversity, it is case dependent to conclude if the invasion leads to extinction or reduced viability of native species on the long term.

- There is a strong evidence that human activities have resulted in *global warming*: by 2100, global temperatures are predicted to rise by up to 4°C, with associated alterations in precipitation patterns (Thuiller 2007). The scientific world now also agrees that anthropogenic global warming in the 20th century has affected Earth's biological systems. The ranges of species are generally shifting towards the poles and upward in the mountains (Parmesan 2004). Each 1°C of temperature change moves ecological zones on Earth by about 160 km (Thuiller 2007). Due to the speed at which ecological zones shift and due to the reduced colonization possibilities for species to follow these zones, climate change is likely to have an impact on many fauna and flora species, especially the ones that have low dispersal capacities or are dependent on very specific conditions (abiotic, biotic).

The above examples show clearly that the main causes of the decline of biodiversity are the (indirect) result of social and cultural processes. Social changes and societal conditions that induce biodiversity loss are often the result of social, ideological and technological modernization processes. We can distinct demographic, economic, sociopolitical and cultural and religious drivers of change. Examples of indirect economic drivers of change are globalization, trade, market… Examples of cultural and religious drivers are beliefs, consumption choices,… Indirect drivers like population, technology and lifestyle affect biodiversity through direct drivers like for example the catch of fish or the application of fertilizers. Changes in the indirect drivers can lead to changes in the direct drivers, and can lead to changes to ecosystems and the services they provide. On their turn these changes can affect human well-being. These interactions can take place at more than one scale, cross scales and time-scales.

The loss of biodiversity was for a long time a neglected subject in the public debate. Nature conservation and biodiversity have for a long time received less attention then other nature and environmental themes like climate change or small dust particles. Society doesn't experience the loss of biodiversity as an urgent problem and almost never places it in the actual context, but always further away, as well in place as in time. This gave and still gives the loss of biodiversity a minor position on the ranking of important threats for society. The societal appreciation of nature conservation and biodiversity has grown slowly. Several conventions are drawn and engagements have been taken to put a stop to the loss of biodiversity. 'The convention on biodiversity' (Rio de Janeiro, 5 june 1992) probably is the most famous one. On of the key issues in the neglect of the biodiversity problem is the obvious lack of knowledge among the public about biodiversity related

issues. Furthermore, increased knowledge about a biodiversity issue does not necessarily translate into a more positive attitude toward protecting biodiversity (Bright, 2005).

As a conclusion we state that the policy and the management of biodiversity principally have to deal with the relation between man (the human/socio-economic subsystem) and nature (the ecological subsystem). The main causes of biodiversity decline (habitat loss, habitat fragmentation, pollution and overexploitation) are a direct result of social processes (Gilbert & Hulst 2006). If the causes of the problem are social, it stands to reason that the policies striving to solve the problem will need to be based on a solid understanding of social structures and processes. The implementation of biodiversity and ecosystem management policies frequently requires changes in societal systems and structures. They involve a wide variety of stakeholders whose understanding and appreciation of biodiversity is as diverse as Europe's cultural and social matrix. The development of a European Natura 2000 network is one of the measures that society (man) to change social processes and stop the decline of biodiversity.

2.2 Natura 2000 is the centrepiece of EU nature & biodiversity policy.

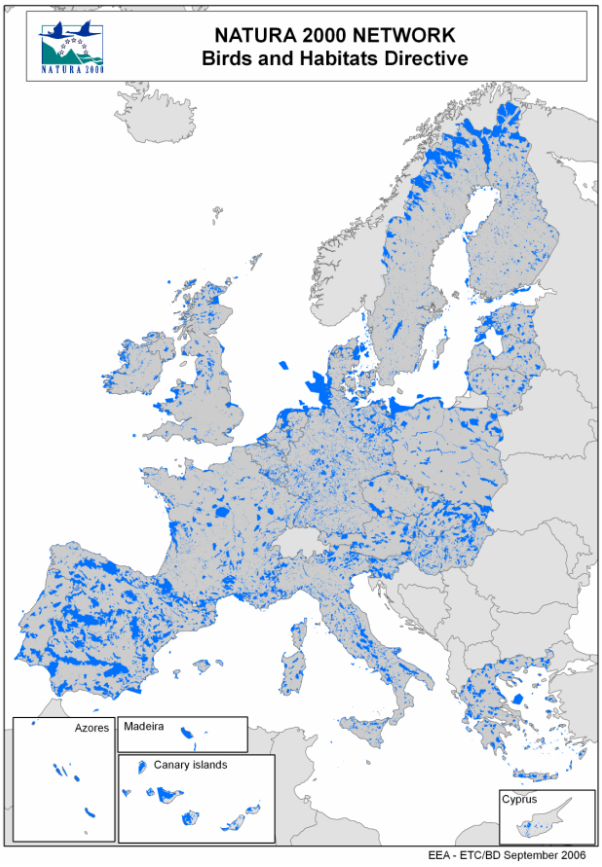
In recent years the European Community understood that more resolute measures are necessary to try to bring this negative spiral of biodiversity loss to a halt. The European Union has set itself the target in 2003 to halt biodiversity decline in Europe until 2010 (Göteborg summit). At EU level, this task has been performed by the so-called 'Birds Directive' (Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds) and the so-called 'Habitats Directive' (Council Directive 92/43/EEC of 21 May 1992 on the conservation of Natural habitats and of wild fauna and flora). One of the main financial instruments for the real implementation and development of European environmental policy became the LIFE-funding, with special attention of LIFE-nature for the realization of the objectives of the Birds and Habitats Directives such as conservation and protection of Natural habitats and species.

Natura 2000 became the network of protected areas with a high ecological value due to their specific habitat and/or the presence of specific species. The areas designated in the Birds and Habitats Directives were the foundation for the delineation of the network. For both, special areas and levels of protection are defined:

- SPAs (Special Protection Areas) for the Bird Directive: 194 bird species and their specific habitats, with special attention for wetland protection

- SACs (Special Areas of Conservation) for the Habitat Directive: obligation of the member states to protect, maintain or restore habitats and population in a favourable state of conservation. Species to be protected are listed in the Directives Annex II.

The selection of Natura 2000 sites is primarily made on scientific (ecological) basis. Only when there are equivalent possibilities from the ecological point of view, a decision may be based on e.g., economical or societal grounds. In Belgium, the Regions (Walloon, Flemish and Brussels Capital) are authorized for nature conservation, except if it considers the North Sea, for which the Federal Government is responsible. In Belgium, two biogeographic zones of the network can be found: the Atlantic zone (the main part) and the continental zone.



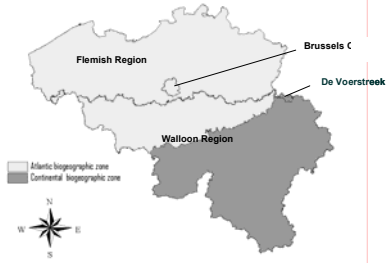


Figure 2: Indicative map of the Natura 2000 sites (in blue) in Europe before the accession of some eastern European countries like Romania and Bulgaria. Below the two Biogeographic Zones in Belgium: the Atlantic and the Continental zone.

The NATURA 2000 legislation determines the translation of the European legislation into 'national' legislation. It also imposes that the deterioration of the biological diversity of ecosystems should be stopped with all means possible. It is thereby for example obliged to have an Appropriate Assessment for any project or program (possibly) affecting a NATURA 2000 site. All negative effects have to be eliminated, mitigated or compensated.

In the following paragraphs two key concepts for the implementation of Natura 2000 legislation are described: the favourable conservation status and the conservation regime. Afterwards we describe the Natura 2000 network in Wallonia and Flanders.

2.2.1 The favourable conservation status

The concept of favourable conservation status is of prime importance in the Natura 2000 structure. It constitutes at the same time the objective to be reached on each site for the species and habitats Natural for which it was selected, and the reference to determine if the obligations envisaged in the law are respected (in particular as regards prevention of deteriorations and the disturbances, and as regards active management). It is an objective and scientific concept, which cannot be the subject of an arbitrary interpretation. It differs according to whether it acts of the state of conservation of a Natural habitat or a species. Born 2005)

Being the subject of a precise definition in the Habitats Directive, the conservation status can be defined, in a simplified way, as the effect on a species or a type of Natural habitat of the influences - biotic, abiotic or human - which act on a habitat or a species and which can affect their long-term distribution and their survival in Europe. It is regarded as favourable if a whole of objective elements indicate that the surface of distribution and the surfaces covered by the habitat or that the dynamics of population of the species are stable or progress, and that the conditions for their long-term

maintenance are met. This means more than only to avoid the extinction of the species: it is necessary that the species / the habitat is "in good health" in the geographical surface considered.(CEE 2005)

This scientific and non-arbitrary concept must be determined, according to the Commission, on the basis of best knowledge available and best judgement of the experts. It recommends establishing, on this basis, measurable values of reference of the favourable state of conservation (surfaces minimum of habitats, minimum level of total population, etc), in order to be able to evaluate if the situation of the species or the habitat is stable or improves compared to the reference situation (Born 2005). Like confirmed by the Commission, the obligation to reach the favourable conservation status can imply in certain cases for the Member State to have to take measures of improvement and restoration in order to reach these values of reference if the species or the habitat is currently in an unfavourable conservation status.

2.2.2 The conservation regime

Article 6 of the Habitat directive constitutes the core of the conservation regime of the Natura 2000 sites. It founds the protection regime which must prevail in the "special areas of conservation" (SACs), and, under certain aspects, in the "special protection areas" (SPAs).

The §1 of this provision states the obligation for the Member States to adopt active, positive measures of conservation (active management of the sites by measurements such as the mowing, the extensive pasture, etc.) in the SACs. The obligation is not applicable in the SPAs, which have their own regime on this point, appreciably comparable. These measurements must at least include lawful, administrative or contractual measurements. They can also include, "if necessary", management plans. The whole structure must in any event fullfil the ecological requirements of the species and the habitats for which the site was designated. The § 2 of article 6 imposes the adoption by these same States, in the SACs as in the SPAs, of suitable measurements to avoid the deterioration of the habitats and the significant disturbance of the species for the protection of which the zones were indicated ("negative" measurements). The § 3 and 4 of article 6, applicable in SPAs as in SACs, define the conditions under which a plan or a project can derogate from the protection regime: any plan or project “likely to have a significant effect” on a declared site of Community importance (and not connected to its management) must be the subject of a “appropriate assessment of its implications” on the conservation status of the site. Whatever are the form and the author, the assessment must be "appropriate as regard with the site’s conservation objectives ", which necessarily implies that it is justified scientifically compared to these objectives. If the conclusions of the assessment are negative, the plan or project must be rejected by the competent national authority, except in case of "imperative reasons of overriding public interest" (and in the absence of alternative solutions).

2.2.3 Implementation of Natura 2000 in Wallonia

Currently, 120.000 hectares (60%) of the 199.757 hectares identified like SPAs correspond to habitats of Appendix 1 of the HD. Only 30% of these, i.e. 120.000 hectares are considered as being in a good state of conservation. The other areas correspond either to habitats of species (including the Birds), or to zones necessary for the spatial structure of the network to ensure a certain continuity or minimum size of certain zones (to be maintained or restore), or to zones of production isolated in the Natura 2000 sites (Dufrêne & Gathoye, 2004b).

The first report about the conservation status of community interest habitats present in Wallonia has been established during 2007. It specifies that almost all these habitats are in a bad, unfavourable state of conservation (Dufrêne & Delescaille, 2007).

The Walloon Region entrusted to several university teams the elaboration of pilot designation decrees. The work of these university teams was to enclose on May 1, 2004. It related to 20 pilot sites. So,

10.000 ha of "pilot sites" have already been the subject of inventories and for those, the designation decrees are being negotiated with the various actors of Natura 2000 (Anonymous, 2005c).

2.2.4 Implementation of Natura 2000 in Flanders

In general, Flanders has to a great extent accepted and applied the ecological principles of the HD. This is illustrated by the fact that Flanders has also included into the network sites 'potentially' including a Natura 2000 habitat type. This may be the result of the fact that (pers. comm. G. Raeymaekers, FOD Veiligheid Voedselketen, Volksgezondheid en Leefmilieu):

- Annex III of the HD was interpreted in a very strict sense (while other countries did not make a total assessment)
- the policy level was planning the Flemish Ecological Network (Vlaams Ecologisch Netwerk – VEN).

In summary, Flanders has delineated sites for the following habitats and species (Anonymous 2002):

- 44 habitat types of Annex I of the HD (Annex I of the Natuurdecreet).
- 18 animal and 4 plant species of Annex II of the HD (Annex II of the Natuurdecreet).
- 66 bird species of Annex I of the BD (Annex IV of the Natuurdecreet).

Furthermore, the Flemish government needs to protect 30 animal and four plant species of communautary importance of Annex IV of the HD (Annex III of the Natuurdecreet, Anonymous 2002).

In Flanders 104.888 hectares are delineated as SPA according to the Habitat Directive, while 98.423 hectares are delineated according to the Birds Directive. The first report about the conservation status of community interest habitats present in Flanders has been established during 2007. It specifies that almost all habitats are in a bad, unfavourable state of conservation (Paelinckx, D. et al. (Ed.) 2008).

Up till now, only for the sites where a Nature Objective Plan (Natuurrichtplan or NRP) has been performed (for six of the Flemish SCIs), the conservation objectives are formulated. In the meanwhile, decision makers make use of the reference work of Heutz and Paelinckx (2005) for assessment of the state of conservation and for setting the conservation goals.

In Flanders, the concept of NRPs has been disputed and the Flemish nature administration decided to not extend this procedure to all SCIs. One is now working hard to list the conservation goals for all SCIs before 2010 (pers. comm. K. Sannen, ANB).

2.3 Assessment of the bottlenecks for the implementation of Natura 2000

Taking in to account the central research question 'how to make N-2000 work properly?' the target of WP 1 was to define the key factors that are important for next steps in the implementation process of Natura 2000. Different perspectives on different scales can be used to assess the current Natura 2000 approach and logic. The definition of biodiversity and the understanding of it by man, takes place at a higher general scale. Together with the definition of biodiversity, the goals in relation to biodiversity are set at a global level. These elements are written down in global, border crossing strategies, conventions and agreements (for example The Convention on Biological Diversity, The Millenium Ecosystem Assessment, Ecosystem Approach,…). The translation of these global definitions and goals in legislations and management tools takes place at national/regional level. Legislation is on the one hand based on general (scientific) information and legislation. On the other hand, it is effected by a local context, where different actors play different roles. On the most local level, different kinds of situational factors play an important role. Local participation and organization of management are of great importance for the successfulness of the N 2000 network.

In paragraph 2.3.1 the problems at the most global scale are described. This kind of problems is linked to the European and Regional policymaking in relation to the Natura 2000 network. In paragraph 2.3.2.

we focus on the problems in relation with the concrete realization of Natura 2000 on the terrain. Finally, we present an integration of the most import bottlenecks in paragraph 2.3.3.

2.3.1 Problems linked to the basic concepts of Natura 2000 and the European and Regional legislation.

Natura 2000 is one of the most important measures of the government to bring the negative spiral of biodiversity loss to a halt. The concept of 'biodiversity' itself is legally, (scientif) ecologically and sociologically used in different ways, leading to ambiguities and misunderstandings Mayer (2006). Mayer (2006) distinguishes three groups of thought styles with different uses of the term biodiversity: (1) Natural history perceives biodiversity as biotic elements of nature that can be described and classified. (2) Science considers biodiversity as a measurable parameter that is relevant for ecosystem processes and functions. (3) In environmentalism, biodiversity is used in the context of concerns about species extinctions and habitat destructions. Nevertheless there is a general support for protecting biodiversity and its many components among the public. At a smaller geographical scale, support for protecting biodiversity is heavily influenced by more immediate economic and social impacts of land management decisions on people's live (Bright, 2005).

The loss of biodiversity was for a long time a neglected subject in the public debate. In the past society doesn't experience the loss of biodiversity as an urgent problem and almost never places it in the actual context, but always further away, as well in place as in time. The societal appreciation of nature conservation and biodiversity has grown slowly. From the eighties on often conflicts have arisen between the economic use and the protection of Natural resources, by which the public participation and active agitation increased. Since the nineties the public awareness of the need to protect biodiversity strongly increased. In addition to this several international conventions are drawn and engagements have been taken to put a stop to the loss of biodiversity. 'The convention on biodiversity' (Rio de Janeiro, 5 june 1992) probably is the most famous one.

Although the implementation of the NATURA 2000 legislation has progressed considerably, its rules and restrictions are still considered to be threatening to private ownership and all sorts of (economic or recreational) activities (Stoll-Kleemann, 2001, Keulartz 2008, Van den Eynde 2007). As a consequence socio-economic arguments are as important in the implementation discussion as scientifically/ecological ones. This is in contrast with the common technocratic, top down way of the nature conservation policies like described in the Natura 2000 legislation (Keulartz 2008)

One of the biggest current problems is the lack in scientific knowledge about some species, habitats and the effects of several management measures on conservation. If one can not prove the management will sufficiently protect a species, it becomes very difficult to convince politicians or affected stakeholders of the necessity and the effectivity of the proposed measures. Also, the delineation of some of the protected areas has been done on the basis of what seem to be subjective criteria. (pers. comm. N. Boone, L. De Beck & D. Paelinckx, *INBO*) This is however partially due to the difficulty on the interpretation of some of the habitat types and the complexity of Natural habitats. Because some important stakeholders or landowners of large property were not consulted during the the development of the European legislation (and delineation), they now feel uncertain about implications and they often oppose against the nature network (Weber N & Christophersen T. 2002).. Moreover, the NATURA 2000 network remains too fragmentary and species are not able to migrate sufficiently enough in order to maintain sustainable populations and attain a favourable conservation status in the long run, as stipulated in the NATURA 2000 legislation. An ecological but also socio-economic problem is that the European legislation does not explicitly consider the principle of evolution and succession. Therefore habitats should be kept in the state as reported to the European Commission. Natural succession towards a climax vegetation is often not allowed for the sites. The consequences of climate change are not included in the delineation of this basically static Natura 2000 network.

An important problem from a socio-economic point of view exists in the fact that different perceptions of and opposition against nature and ecology do exist in our society. Ecologically valuable nature reserves are definitely appreciated by most people but so are other so called 'green areas' like agricultural landscapes, city parks, etc that have a much lower ecological importance. In conclusion it can be stated that 'the' nature does not exist. 'Nature' has a different meaning for different people. These differences deserve particular attention when implementing nature conservation strategies, e.g. restoring and maintaining biodiversity and emphasizes the need for communication. Although nature conservationists seem to agree on the concept of ecological networks as the leading principle of nature conservation, the conceptualisation and (views on the) practical implementation of these networks did develop differently throughout Europe, as a result of different geographical, Natural, economic, political and social conditions.

Restoration measures are experienced to delete one type of nature to replace it with another type. Many people consider this to be a waste of money and poor policy. A number of social and economic stakeholders have opposed to or tried to alter the delineation of the areas for NATURA 2000 mainly because the legislation was considered to be a threat for their activities . (Stoll-Kleemann, 2001, Keulartz 2008). As discussed above, the lack of consultation and participation has often led to opposition. Besides, the lack of scientific consensus about the economic validation of nature results in a reduced leverage of ecological versus economic arguments and the actual economic cost of the realization of the network is never calculated. Furthermore, NATURA 2000 creates confusion about the private property right as the government often decides to acquire areas for the purpose of nature management. Not only is expropriation and management quite expensive, the ones who pay are not always the beneficiaries for whom an economic imbalance arises. In addition, the costs are mostly direct and clearly identifiable whereas the benefits arise on the long term and are more for the society as a whole. As policy levels mostly only consider short term gains, the short term balance indicates high costs and low gains, making the measures less interesting and attractive to implement.

2.3.2 Bottlenecks for the concrete realisation of the goals of Natura 2000

We identified two main problems in relation to the concrete realisation of the goals of the NATURA 2000 network. First of all, the state of most ecosystems and their functioning is in such a condition that far-reaching measures are necessary in order to reach some results. Secondly, the complexity of the implementation process and the specific interaction between all different stakeholers on all the different levels of policy and actual management demands an approach that is difficult to overview.

2.3.2.1 Problems relating to the current ecological state of the network

Declining biodiversity and disappearing ecosystems are mainly the result of anthropogenic pressures (see above).. As a major impact on the implementation process of protection measures, the bad state of the ecosystems and populations protected by the Directives is considered. The environmental quality of most of the (semi-)Natural habitats in and outside Natura 2000 areas is low (Dumortier 2007). Water quality suffers from past and present nutrient loading and pollution with heavy metals, pesticides and toxic substances. Often in relation to the water system, soils are contaminated with heavy metals and remains of previous (industrial) activities. Due to nutrient deposition and acid rain, the Natural characteristics of a soil are lost, affecting the restoration or conservation of demanding species. The fact that the site characteristics are (permanently) altered, makes it difficult to create the minimum necessary requirements for habitats and species to survive. The total surface area of habitats and ecosystems in general is, due to the high urbanization often, far too small. Moreover, small protected areas suffer from higher external pressures because sufficiently large buffers are lacking. Due to the fact that habitat fragmentation remains high and the reduced connectivity, populations offer suffer from inbreeding, genetic drift and the Allee effect. As many of these influences already started in the 19th century an extinction debt may still to be payed off (Vellend et al. 2006)

These issues are especially a big problem in a small but densely populated country like Belgium where an average of nearly 350 people per square km lives. The dense transport network, poor urban planning and many industrial activities further decrease the size of uniform Natural sites.

Apart from these ecological considerations, nature conservation faces the fact that many protected habitats and their specific species composition, rely on the input of specific humans activities to survive (e.g. heathlands). Because these habitats are semi-Natural and because Natural succession causes habitats to change, conservation is often fighting against nature itself. If Natural succession would take place, important non-forest habitats and specific species would be lost. On average between 46.2 and 69.5% of the plant species would go extinct from nature reserves in Flanders (Claessens & Hermy 2009). Nature conservation officials therefore have to choose what types of ecosystems are protected and what species will be offered an opportunity to survive. This policy does not always seem very transparent and objective for the general public, politicians and officials. It leads to disagreement between stakeholders.

Even though species and habitats are protected in multiple ways in legislation, reality shows that threats are not adequately addressed with this protection. Due to a poor translation of (European) legislation to a local legislative level, policy makers and officials are not adequately aware of the necessary protection measures they are obliged to take. Apart from the fact that the measures are often not taken, effective control mechanisms and responsibilities are often absent. Due to the traditionally poor execution of nature protection legislation, the general public and local officials perceive the legislation as a threat and an unwanted aspect for development planning and project design.

2.3.2.2 Problems relating to the implementation of measures for Natura 2000

The nature management implemented these days, does not prove to be socio-economically sustainable. There are for example too often differences between the parties that pay and the ones that benefit from conservation and ecosystem services. Because of the fact that not all relevant sectors and actors from society were involved in nature management in the past, too few people are willing to pay for nature conservation. Even though there is more attention to participation in recent nature policy processes, there is still a problem of trust between many different stakeholders involved. There is, in other words, no broad call for action and measures in our society. As a result, public awareness and knowledge on ecosystem services and biodiversity in general remains poor.

Another problem for the final implementation of the NATURA 2000 network is the fact that the requirements for effective and good management of nature areas are difficult to define. Good management requires a continued action, sufficient resources and an adaptive management approach that takes future development of the area and society in general into account. From a legal perspective, many bottlenecks arise when designing co-operation and participation processes in the actual implementation phase of the network. Due to a vertical difference in responsibilities and a horizontal diversity of policy approaches, the integrated character of sustainable management practices is never attained.

Effectivity and feasibility are terms that relate to the degree of implementation success of management measures for the Natura 2000 network. These terms are introduced here to properly describe the likelihood for success of management and measures for nature. Effectivity relates to the technical, ecological success and the actual contribution to the management objectives for a site or species. Feasibility relates to the legal and socio-economic success or acceptance of a measure. Both are very important in determining the overall success of Natura 2000 to protect endangered habitats, species and their ecosystems. There is little or no direct use for measures that are not effective and do not have any contribution to the ecological quality and objectives. On the other hand one can try to implement (ecologically) very effective measures but if they are not accepted by society (i.e. are not feasible), the implementation will be very difficult or even made impossible. It is clear that in a country

like Belgium, where many actors and stakeholders are involved in even the smallest areas, effectivity but especially feasibility of a certain management for nature is largely dependent on the acceptance of the management by most stakeholders. Therefore, managers have to consider the ecological aspects of the conservation measures but to the same extent, they have to take into account the societal implications and consequences of these plans. If a management plan causes too much societal problems, chances are high that it will never be fully executed. On the other hand, if a management plan takes too much socio-economic aspects into account, it often does not sufficiently contribute to the ecological objectives.

This local socio-economic context for nature management is in the first place influenced by cultural, demographic and social factors. The implementation of measures always means a change of local context to a certain degree and this can infer a local conflict. Elements that shape these social processes are relational aspects, power balances, perception of each other… But also the process related to the management process, plays an important role for the implementation of measures (see effectivity and feasibility). This process defines how measures arise, how decisions are made, how communication takes place and how it can be better organized. The different aspects are classified into three different groups: context, process and result.

According to the European Commission[1], the Natura 2000 network costs 6,1 billion € per year. For Belgium the situation is different in Wallonia than in Flanders. For Flanders, the Flemish Region was contacted, and the information obtained from Dr. Els Martens (Agentschap voor Natuur en Bos). For the designation of Natura 2000, next to expenses for the staff of the Institute voor Natuur en Bosonderzoek (INBO) and the Agency of Nature and Forest (ANB), there were only internal costs for copies of maps and preparation of CDs sent to the municipalities. A public consultation is also possible for the new designation so there are costs for publications in media, papers and also copies for the concerned municipalities. The personnel of the Agency is charged with the designation of spatial plans and the designation of the VEN (Vlaams Ecologisch Netwerk). They work also for the development of nature objectives plans for Natura 2000, and now for conservation objectives. On the average, there are three persons per province, on the whole 15 persons, but these are not only working for Natura 2000.

For the Walloon Region some interesting information about budgets dedicated to Natura 2000 can be found in a note from the Walloon Government approved the 19th July 2007. The object of this note is the: "Information relating to the financing of the implementation of Natura 2000 in the WR between 2007 and 2009". In 2001, a budgetary assessment has been made: the expenses and losses of revenue were estimated to 10 million € per year. These estimates were analyzed and it was concluded that it was not enough, so figures were reassessed.

Studies permit to draw some temporary conclusions on the financial aspects of the implementation of Natura 2000 (European Commission, 2002). The costs of Natura 2000 include not only the restoration and the designation of sites but also the planification and the execution of their management in the long term.

- Costs associated with sites are likely to be higher in the first few years following their establishment, and are likely to stabilize thereafter.
- Standard management costs tend to be relatively low, compared to land tenure and 'hard' restoration costs, and administration and financial management aspects, although this may be due to fact that the literature has not covered many standard management activities.
- In general, the bigger the area of the site, the lower the cost per hectare, although this will also depend on the types of activities and habitats under consideration.

[1]Source : www.aeidl.be/documents/euclide/fr/2005/hebdo627.htm

In 2004, the Commission published another Communication on the Financing of Natura 2000 with updated figures, clarifying that: "In preparing the cost estimates for Natura 2000, the Commission has drawn on the Report of the Expert Working Group and a questionnaire completed by the Member States. The responses to this questionnaire led to a cost estimate of €3.4 billion per year for EU-15. This valuewas extrapolated to calculate costs for the 10 Acceding Countries and resulted in total costs for EU-10 between € 0.63 billion and €1.06 billion per year, bringing the total cost estimate to €4.0 - €4.4 billion per year for the enlarged EU.

2.3.3 Integration of bottlenecks

The above mentioned bottlenecks for Natura 2000 were, based on internal discussion, integrated in a problem tree (Fig. 3), describing the different levels and disciplines where major constraints for the realisation and implementation were identified. Investigating some of the problems for Natura 2000 could provide us with answers and (partially) solve the problems encountered during the implementation phase.

It's clear that there is a wide range of problems related to the implementation of Natura 2000. Now that the network set-up is nearing completion, there is a need to increase the focus on the active management of the sites so as to ensure long-term conservation and the achievement of the economic and social objectives of the network (CEE, 2004.) This in turn also raises the question of finding the appropriate management strategy, instruments and sufficient financing (at all levels). Therefore the research in WP 2 is focused on these issues taking in to account the general background information gathered in WP1.

The principal questions for WP 2 are:

- How could we develop management strategies that take in to account the socio-economic context, ecological paradigms and the legal context?
- What kind of management measures are effective and feasibility?

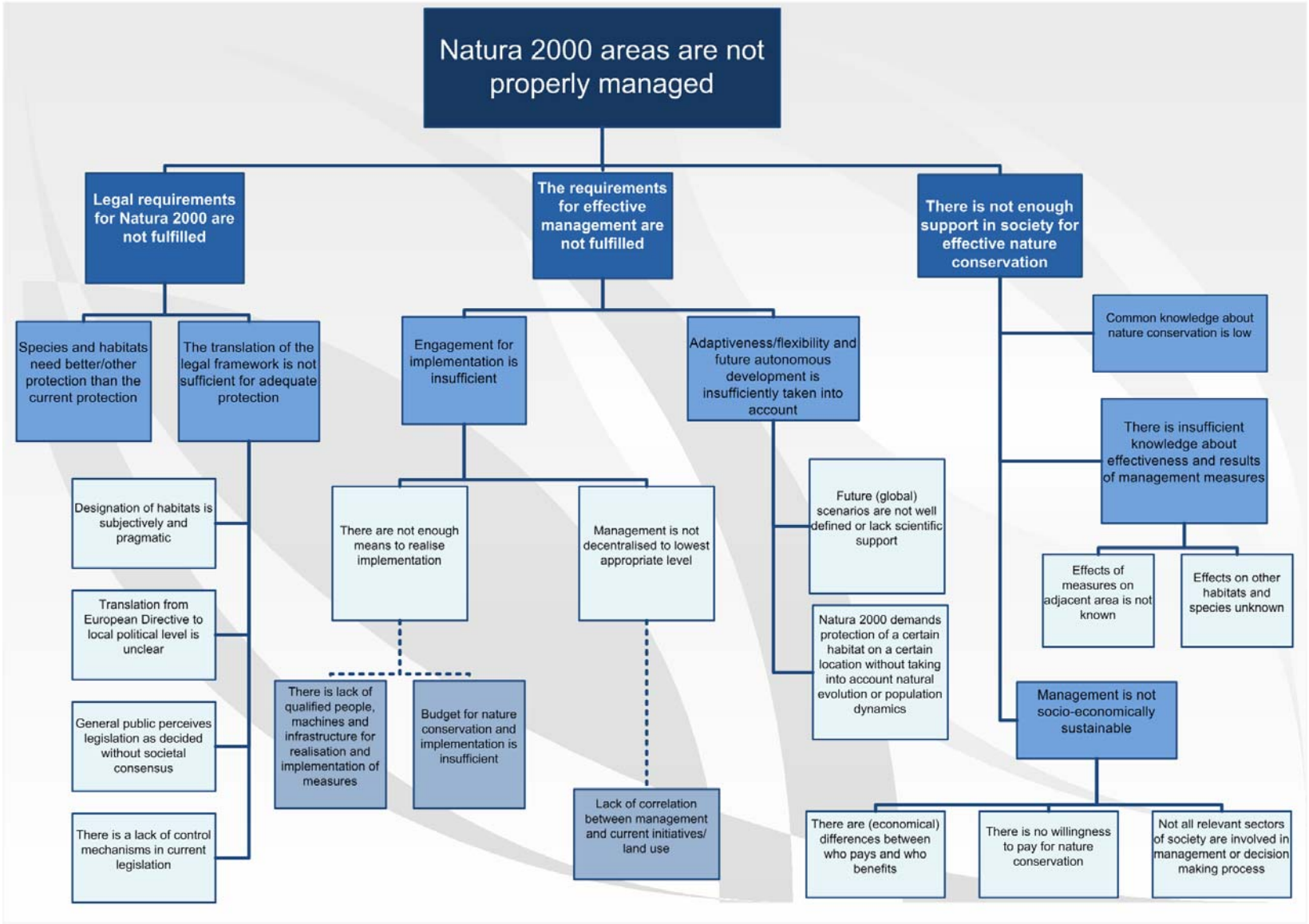


Figure 3: Problem tree with bottlenecks for Natura 2000.

3. WP 2: ASSESSMENT OF IMPLEMENTATION STRATEGIES FOR NATURA 2000 SITES

The activities in WP 1 mainly focus on the development of a better understanding of the current situation. As a conclusion of WP 1 a couple of multidisciplinary bottlenecks were identified. Some bottlenecks are rooted in the past process of development of the EU, National and Regional legislation, the selection of sites and targets etc. At the moment many member states are still busy with the development of conservation objectives and the development of management plans (expected approval Flanders end of 2010)(ANB).

In WP 2 the research was focused on the future, important step of the implementation of Natura 2000, i.e. the development of management plans (see Figure 1). First of all a theoretical framework for the building of a management plan in an interdisciplinary way was setup. The Ecosystem Approach (EA) was used as a general framework (see 3.1). This was enriched with concepts out of the management planning and Integrated Assessment.

During one of the meetings, where the results of WP1 were presented, the members of the User Committee suggested to focus on a more applied and local approach. The users feared that the research would focus too much on theoretical analyses and be too far from practice. Taking into account the suggestions of the users, a new more practical approach for WP2 was developed. Instead of developing new instruments and designing new strategies the research in WP 2 starts from the actual practice. WP 2 focused on the identification and analysis of current and new instruments that could contribute "to make NATURA 2000 work properly"? By doing this we thus focused only on one aspect of 'a management plan'.

In a first step we assessed the feasibility and effectivity of the most relevant and well known instruments currently applied in Flanders and/or Wallonia. This was done by a literature review and through surveys among the members of the User Committee (see part 3.3.1) and among practioners from local administrations, the Flemish and Walloon government, stakeholder organizations and NGOs (see part 3.3.2). In a second step the public acceptance of different kind of implementation strategies was tested for a Walloon and a Flemish case area (see below). In the final discussion of WP3, ecological research has been done on the importance of the different habitat types, their sensitivity to perturbations and their need for conservation or restoration in the current Natura 2000 context.

Brief presentation of case area: Lesse (broad presentation: see Appendix 2)

The Natura 2000 site "Bassin de la Lesse entre Villers-sur-Lesse et Chanly" (BE 35038, 2751 ha of SPA's and 2284.5 ha (+ 307 km of linear habitat) of SCA's) covers a section of the Lesse Valley situated on the edge of the vast Ardennes massif and in the Famenne. Included in the Famenne region, the Calestienne sub-region gives to the site its main original characteristics: the alternation of rocky, calcareous hills (called "tiennes"), and schistous/clay depressions/valleys.

The main N2000 objective here is the conservation of a typical habitat: calcareous grasslands. The Lesse valley is one of the most important areas in Belgium for the conservation of this kind of habitat (e.g. Butaye *et al*. 2005, Adriaens *et al.* 2006, Adriaens 2008). To maintain this habitat in a good status of conservation, restoration measures are required to increase its area and to improve its biological quality and connectivity. After restoration measures, recurrent management measures have to be implemented (e.g. redevelopment of sheep grazing) to guarantee the long term survival of the habitat.

The studied Natura 2000 site covers the four following municipalities: Nassogne (in the west), Rochefort (in the north), Tellin and Wellin (in the south). The site is covered by more than 60% of forests, in which approximately 70% of exotic plantations (mainly Pinus nigra). Less than 10% of the site is composed of semi-Natural open areas. The rest (30%) is mainly intensive agricultural land. The Natura 2000 site of the Basin of the Lesse is a zone with a strong touristic appeal with her Natural richness but also with her heritage as well as her more specific equipment.

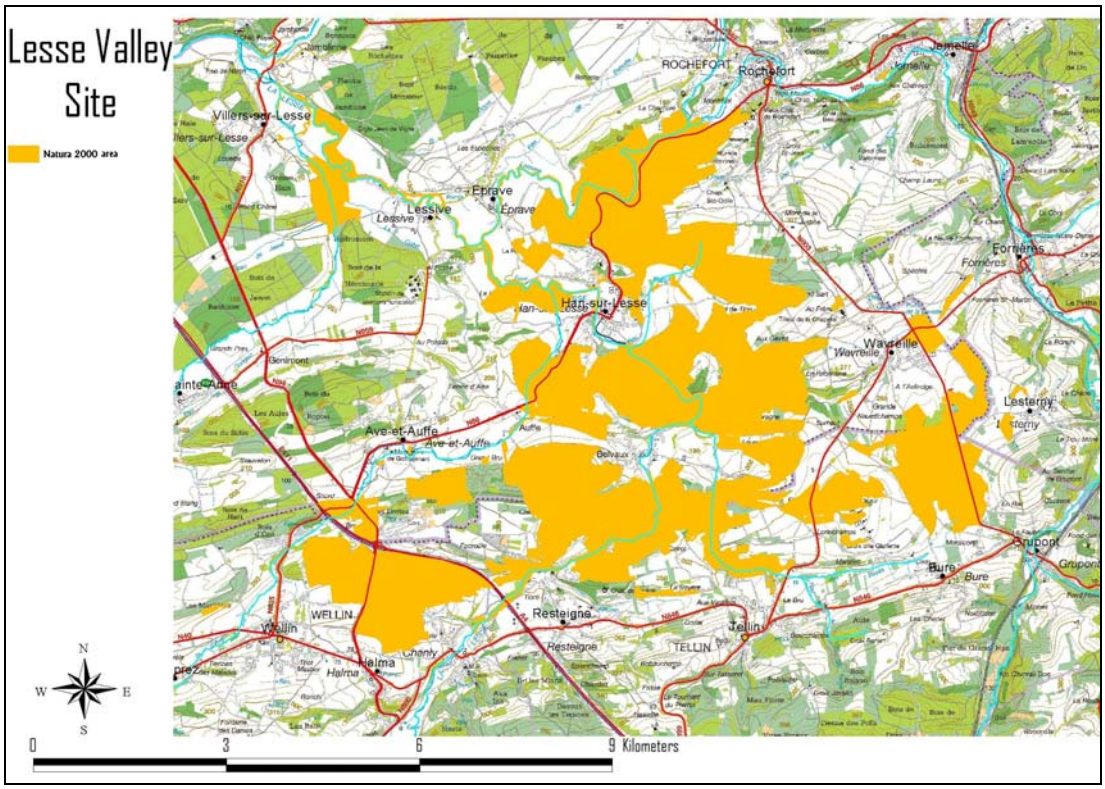


Figure 4: map of the Natura 2000 area of the Lesse valley. Total area under Natura 2000 delineation = 2570 ha (yellow).

Brief presentation of case area: Demer (broad presentation: see Appendix 2)

The valley of the Demer is situated at the eastern part of the Flemish Diamond (Vlaamse Ruit), which comprises the urban centres of Antwerp, Gent, Brussels and Leuven. The valley lies in the centre of the area that connects the Hageland and the province of Haspengouw with the southern Kempen and it forms one of the most important open spaces in Flanders. The plan of designation (Gewestplan) shows that the valley between Diest and Aarschot has a very rural character, with a great share of agricultural area of ecological importance, nature areas or nature areas with scientific value or nature reserves and forest areas (see: Butaye et al. 2000; Martens & Hermy 2000). From Diest in the east till Aarschot in the west, the area is Bird Directive area with pieces of Habitat Directive area in between.

Table 1: surface area, number of inhabitants, population density, evolution of population density and unemployment rate of the 3 most important municipalities of the Natura 2000 area of the Demer valley

Municipality	Surface area (km²)	Number of inhabitants	Population density (#/km²)	Evolution (2007)	Unemployement rate (2007)
Diest	58,2	22.845	392,5	+0,46%	6,46%
Scherpenheuvel-Zichem	50,5	22.100	437,6	+0,16%	5,81%
Aarschot	62,52	28.021	448,2	+0,56%	5,33%

The urbanisation is pushing from south to north up towards the Demer valley. Especially the line south of Hasselt, Diest and Aarschot around the E314. Even north of this route, small communities such as Rillaar and Scherpenheuvel are invading the valley. The basin of the Demer is a complex mix of land use with some major industrial sites along the Albertkanaal (in Tessenderlo). The north of the study area has relatively more agricultural land. On a lower scale, one notices the linear pattern of building. In the north, the study site in the valley is shielded by a green belt of forests and agriculture in the north and by a belt of agriculture in the south.

During the last century, the ecosystem functioning of the Demer-river has been severely disrupted by means of infrastructural works. The straightening and deepening of the river-flow, as well as the dikes and constructions in the river, have put severe restrictions on Natural dynamics of the river and have also dramatically reduced habitat diversity. Since 1976, the relationship of the Demer and its alluvial plains has been interrupted as the water can only flow from the valley into the river, and no more from the river to the valley. Large areas of the valley can therefore no longer flood. Furthermore, as a consequence of the river works, the Demer became situated deeper and deeper in the landscape, causing the ground water level to drop. These factors have caused a serious drought problem, which on its turn, decreased the Natural value of the entire valley. Furthermore, until the early 90's, the Demer was used as an open sewage system. Luckily, since then, water quality has improved and is expected to continue doing so, as the water purification infrastructure has expanded considerably. Although the perspectives concerning the treatment of household waste water are good, the pollution by agriculture, urbanisation and industry remain problematic. For example the disposals by Tessenderlo Chemie in the past and the present have a negative impact on the quality of the Demerwater. All these factors make that in global, the water quality of the Demer is moderate to bad, and the norms for the water quality that were set up are still far from being reached. Efforts for nature conservation are counteracted by several bottlenecks (drought and pollution, fragmentation, disturbance, garden-expansion, etc.) as a consequence of intensive agriculture and forestry, hunting practices and fishery, the lack of nature oriented arrangement and management, illegal constructions and so on.

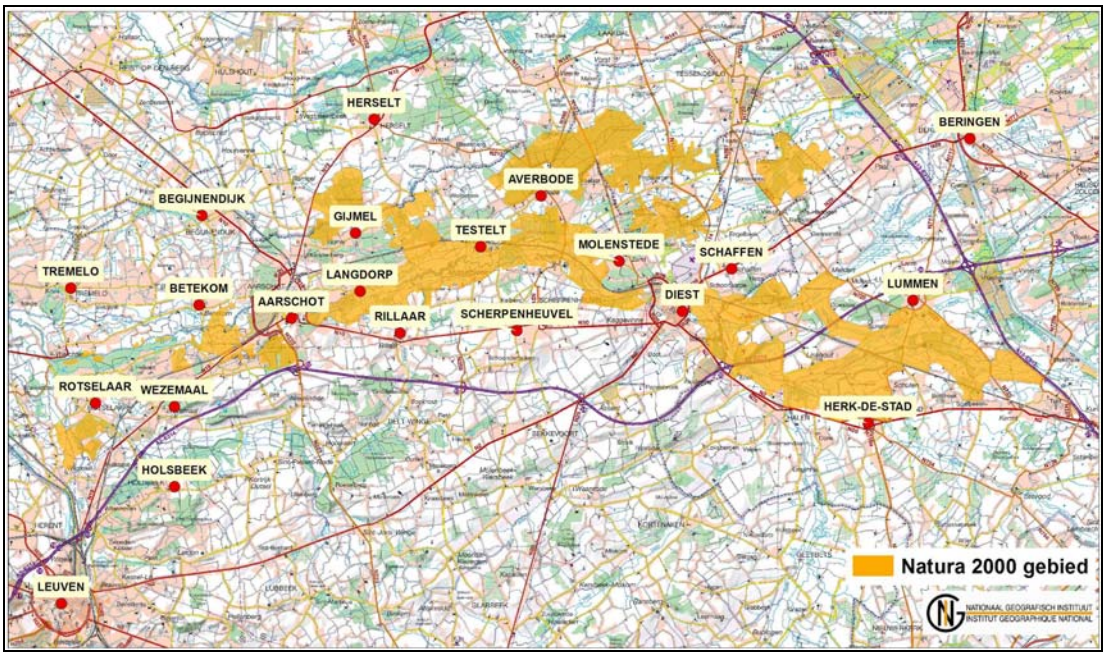


Figure 5: map of the Natura 2000 area of the Demer valley. Total area under Natura 2000 delineation = 6457 ha (yellow).

3.1 Ecosystem approach and building a management plan

The management plan forms the basis for the implementation of measures in the field. As such the development of a management plan traditionally constitutes the start of the management (in the case of a private company) or the policy (in the case of public management) circle. As it is the case for the entire management execution, also the management plan itself is subjected to the continuous process of implementation, evaluation and adaptation (Figure 6).

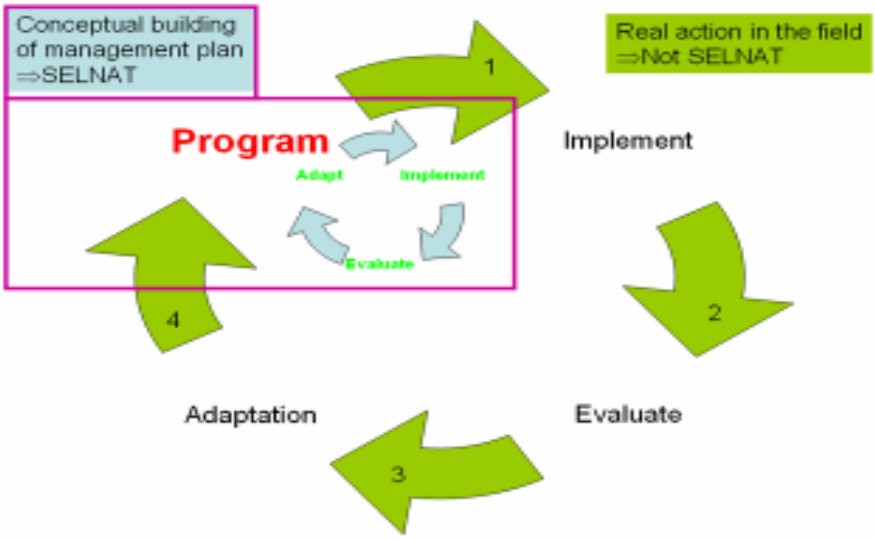


Figure 6: The building of a management plan, as part of the entire management circle, is subjected to the continuous cycle of implementation, evaluation and adaptation.

To have a 'good management plan' at the end of the first phase of the management circle there are basically three crucial aspects (Figure 7).

- First of all it is important that the management plan describes in an integral way the relevant aspects of the current and target situation and the strategy that is proposed. The strategy describes the possible instruments and (technical) measures that will be used in the implementation phase, but also in which sequence and combination they are to be put in.

- Besides that it is important that within the management plan clarity is given about who is responsible for the execution of the plan, the financing of measures and the way in which the management plan itself will be evaluated and if necessary, adapted to new insights and knowledge.

- The third important aspect to obtain a 'good management plan' at the end of the first step of the management circle is to make sure that a qualitatively good development process is established. The process of development of a management plan consists out of several activities, actions and points of interest that have to considered before the product (plan) is ready.

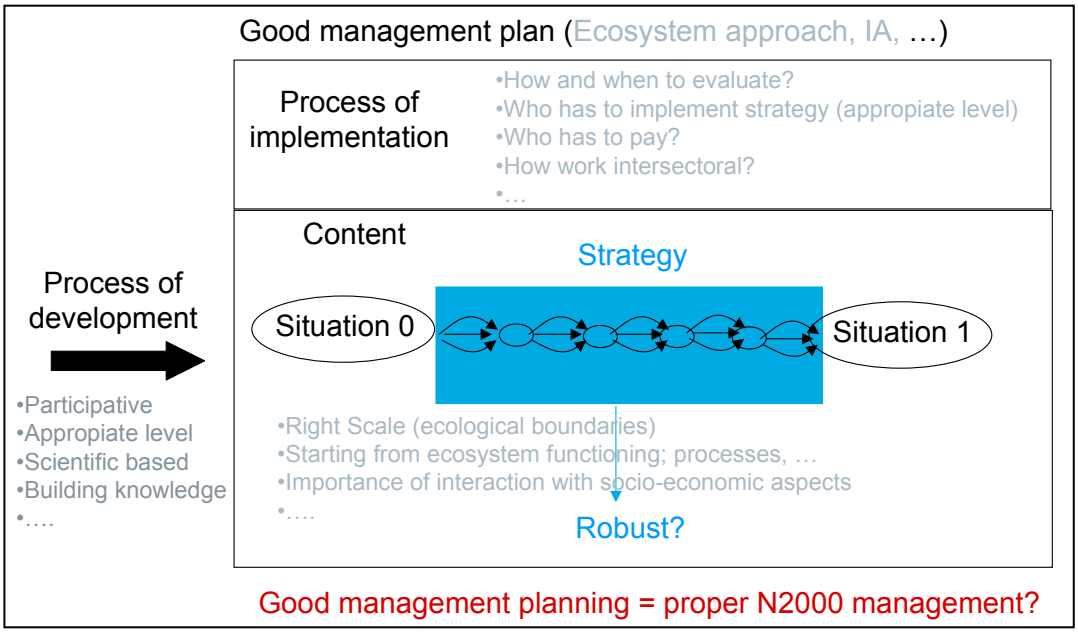


Figure 7: Scheme of the different processes of building a management plan in relation to some principles of the Ecosystem Approach.

When trying to define what "a good management plan" is, one could find many ways to approach this exercise. One possibility is to place the concept of a management plan in the scope of the so called Ecosystem Approach[2] (EA). The EA is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way (see Appendix 3). Application of the Ecosystem Approach will help to reach a balance of the three objectives of the Convention on Biological Diversity (i.e. the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources) (Mcneely 2003). The EA primarily consists out of 12 principles. Those principles give

[2] COP 7 Decision VII/11, *Ecosystem approach*, Kuala Lumpur, 9 – 20 February 2004

different points of attention for the assessment of the three crucial aspects of a 'good management plan'.

3.1.1 Points of attention for the 'process of development'

The development of a management plan starts with the **building of an organizational network** of cooperating administrations, officials and stakeholders. The first step to tackle together is the formulation of general objectives (ecological, economic, social and organizational). The different ecological objectives can be placed in one or several scenarios, presenting the possible development. All relevant partners have to be involved in the development of these objectives in order to know what the aims and the prospects are for the site in which they are involved. They have to understand why these objectives are chosen and what the (scientific) basis is for the scenarios. Moreover, as explained later, all partners have to understand from the beginning their role in this process and why they are involved. **Setting clear objectives** from the beginning is crucial for a successful co-operation.

The inventory phase is composed by the **preliminary analysis of the available indigenous, local and scientific knowledge** on all sorts of socio-economic and ecological aspects. Moreover, one should gain insight in the legal framework relevant to the site and its surrounding area. As it is important to decentralize the management of nature sites to the lowest appropriate level, the understanding of the different levels of relevant administrations is another crucial aspect.

As new inventories and research takes time, one should start up collecting data early in the process when they are not available. The success of the process of developing and implementing and recurrent evaluation of a management plan partially depends on a sound scientific basis and knowledge. As so, the start of the making of a management plan should prioritize **the identification of gaps in our knowledge**. Next to scientific knowledge, it is important to have enough **attention for capacity building**. As some of the stakeholders will have a more limited knowledge of certain (environmental or socio-economic) aspects of a management plan, education on certain aspects will increase the likelihood of a successful co-operation. While scientific insight and monitoring results will gradually increase the knowledge of the site and the impact of management measures, one has to consider in advance that nothing is certain on the longer term. Making stakeholders and the general public **aware of this uncertainty** in management will reduce the chance for lost involvement or co-operation in the future.

Participation refers first of all to the necessity of an equitable involvement for all stakeholders and actors during the whole process of development of the management plan. During the definition of the spatial context of the plan, it can become clear that other actors and stakeholders will have to participate in the process of development. Here, a difficult balance arises between involving many stakeholders and building a plan for a large area or making the perimeter smaller and cooperate with less stakeholders. Therefore, the initiator of the management plan should have a clear view of all relevant sectors and stakeholders. At all times, **flexibility is needed**. Concerning the relevant actors, one needs to ensure that they all have the capacity to become effectively involved. By consulting them, it might become clear that extension of the perimeter is necessary, meaning that other stakeholders have to be consulted as well. Next to changes in spatial scale, the consultation might bring up the need for a change in temporal scale, i.e. phasing of the plan. The role of a stakeholder can change over time, where some will become more and others less important during the process of actual implementation. Stakeholders have to be aware of this and therefore, as part of adaptive management of the site, **participation must be adaptive** as well. The use for all sorts of participation, in both inventory and decision making processes, has to be in balance with the socio-economic context, existing societal mechanism or, if new mechanism are build, managers have to make sure they are compatible with existing societal conditions. This approach is most likely to create more citizen involvement and participation in the project.

3.1.2 Points of attention for the 'content of a management plan'

In short, the content of a good management plan is the part which includes the actual analysis of the current situation (and its threats), the description of the favourable conservation status and the protocol for the action (on and off the terrain) to reach that status.

A general description of the current situation must be established, providing sufficient information about the **main threats and opportunities** to manage the site. This description consists of a physical description on the one hand (including a description of the site limits, the local and regional climate, geology, geomorphology, soil and hydrology), and a description of the ecosystems state on the other. The analysis of the current situation of the protected area is extremely important, as the whole strategy to realize the management goals will be based on this part.

The actual state of the ecosystem is to be described by means of the **appropriate indicators**. In this part, the interrelationship among ecosystem composition, structure and function with respect to human interaction, needs and values (including cultural aspects), conservatory management of biodiversity, and environmental quality, integrity and vitality must become clear. Thus, besides a mere ecological description, also the socio-economic context (hunting, fishery, recreation, historical land use, …) must be taken up in this analysis. The knowledge of the responses of the ecosystem, in terms of changes in composition, structure and function, to both internally and externally induced threats (human use, disturbance, pollution, fire, alien species, disease, abnormal climatic variations such as drought and flood, …) should be assembled here. Traditional knowledge and practice should be used to enable better detection and comprehension of ecosystem change, and to develop appropriate adaptation measures. Usually, there is a need to understand and manage the ecosystem in an economic context. When valuating the ecosystem, appropriate practical economic valuation methodologies for ecosystem goods and services must be applied, and all values should be incorporated (direct, indirect and intrinsic values). It is important that all stakeholders agree on the used methodology for the economic valuation, to avoid discussions afterwards.

Within a second part of the management plan the management objectives are laid out, and a **vision of the future of the ecosystem** is elaborated. Assumptions behind proposed management decisions should be based on the best available expertise, explicitly compared to scenarios of future (land-use, demographic, …) change and including the knowledge and views of stakeholders.

When defining the goals for management, the **appropriate balance between conservation and use of biological diversity** is to be found. Sustainable use objectives are to be determined and defined and are to be used to guide policy, management, and planning, with sufficient stakeholder participation. The management of areas and landscapes has to be carried out in such a way that the delivery of ecosystem goods and services to meet human requirements, as well as conservation management and environmental quality are optimised. **The decided goals must be in relation with the societal choice**.

The bridge between the current and favourable status is formed by the management-strategy. Here, **the protocol for the action** (on and off the terrain) to reach the favourable status are worked out. Broadly speaking, the right strategy means using the right instruments and measures at the right time in the right sequence and the right combination. The strategy must therefore consist of the elimination of practices that are not sustainable and the development and application of appropriate mechanisms to improve the status of the ecosystem. These mechanisms must have the ability to be implemented over the long term, but at the same time, must provide the possibility to undergo evaluation and – if necessary - adaptation during the management process. The management of ecosystems must always be carried out **within the limits of its functioning**. As a lot of uncertainties arise concerning those limits, the precautionary approach should be applied. By formulating, reviewing and implementing regulatory framework, codes of good practice and other instruments, the use of ecosystems beyond their limits can be avoided.

At all time, the management of an area has to **take into account the possible effects of their actions on adjacent and downstream ecosystems**. These effects are to be evaluated by all relevant stakeholders and technical experts to make sure adverse consequences are minimized. The assessment of impacts can be done through a scenario development in collaboration with relevant stakeholders. The knowledge gained by this exercise can give input to the set-up of (precedent) monitoring programs. Also Environmental Impact Assessments (EIA's) can play an important role in this phase. Yet, Natural resource managers must also recognize that **Natural and human-induced change and pressure are inevitable** and take this into account in their management plans. When elaborating the strategy to be followed, it is important to keep in mind that management must take place **at the right spatial and temporal scale.** Similar to phasing in stakeholder participation, the management has to recognize the relevance of phasing of the implementation of measures and instruments. As some measures are not feasible or effective in the short term, long term approaches have to be implemented as well (see also EA principle 8, 9). As long term objectives are set, short- and mid-term objectives need attention as well. As much as the temporal scale, management should take spatial scale into account. The management of nature reserves should not stop at the boundaries of the sites and external stakeholders need involvement that is recognized by internal stakeholders and site managers. The choice for the spatial scale of the management plan is affected by the choice for management measures and their effects on adjacent sites and ecosystems.

The management of an ecosystem always takes place in a socio-economic context. Therefore, any ecosystem-management programme should reduce the market distortions that adversely affect biological diversity and align incentives to promote biodiversity conservation and sustainable use. Furthermore, costs and benefits in the given ecosystem must be internalized to the extent feasible with the objective of sharing costs and benefits in an equitable way. Sociological aspects, such as the respect for local traditions are not to be overlooked either.

The last phase in the making of the management plan is the definition of the different aspects that are important for the implementation of the plan. The description of the 'process of implementation' consists of a description and planning of the actual execution of the (measures of the) plan. Here, the process-coordination is worked out. This means that all aspects concerning the distribution of tasks and responsibilities, the functions of managers and stakeholders and the finance questions are handled. Last but not least, a **programme for monitoring and evaluation** must be set up in order to adapt the management to new insights and knowledge.

Once strategies have been developed, the next step is to make sure they are correctly implemented and that their implementation is effective on the long term. An effective implementation cannot stand without co-operation between **multidisciplinary professional and scientific expertise**. From the very beginning of the implementation, it has to be clear who will be involved when and for what purposes. Working out scenario exercises with different groups of stakeholders can provide part of this necessary knowledge. It must be stressed that implementing long-term management **requires stability** of institutions, legal and policy frameworks, monitoring programs, and awareness-raising programs. In order to increase the responsibility, ownership, accountability and participation, **management should be decentralized to the lowest appropriate leve**l. To counteract the fragmentation of decision making and its related problems, the sharing of information and expertise and the nesting and linking of decisions are basic principles to respect. Furthermore, the relationships between all stakeholders are to be encouraged and supported. This takes time, so (financial) resources have to be secured to keep the process going. During the implementation process, possible trade-offs between short-term benefits and long-term goals must be recognized. A clear communication between the different management bodies and between the community and the overall management is indispensable. Only this way, overlap and actions taken at the wrong level can be avoided and intersectoral understanding is maximised.

The establishment and maintenance of feed-back mechanisms, in order to monitor the effects of management practices across ecosystems, forms a key-factor in the implementation process. An appropriate management plan should always be linked to the monitoring of population sizes of

vulnerable and important species as well as to the detection of long-term, low frequency changes in ecosystem structure and functioning. Initial measures are evaluated and will be re-installed or replaced if it becomes clear they lack the desired results or if external effects occur outside the accepted range of impact. This can only become clear if a monitoring program is available. The detection of incapacities and external effects is crucial, as it creates the need for mitigation, alternative measures, or even compensations. The feedback of information to the appropriate persons and institutions must take place at regular intervals. In addition, it is important to be aware of the time lag between management actions and their outcomes. Landscapes can be restored on a short base but this does not mean that the whole ecosystem is restored. For example, after years of agricultural activities, soils need years to recover. Because the realization of the final objectives can take many years, long term objectives must be accompanied by mid-term objectives in order to be able to verify whether the management is going in the right direction.

3.2 Description and assessment of instruments for nature conservation

3.2.1 Necessity for an instrument description

The design of a management plan is useless if it is not implemented in the field. To implement a management plan, there is a need of instruments and tools in order to implement in a concrete way the conservation measures endorsed by the management plan en, thus, to reach the conservation objectives. "Instruments" inevitably means legal instruments, i.e. instruments provided by the legislation. Otherwise, legal security is not guaranteed.

In order to assess the feasibility and the effectivity of available instruments in the Flemish and the Walloon Regions in order to implement Natura 2000 in the field, it is necessary to describe in a minimal way these instruments. The problem is that, as most of the competences relating to ecological network implementation belong to the regions (conservation of nature, agriculture, land-use planning, water management, forest management, etc.), the law differs sometimes greatly between the Walloon and the Flemish Regions. We must thus try to analyse the common characteristics of conservation instruments in order to be able to compare, as much as possible, the situations in both Regions. However, some instruments do exist only in one or the other Region, like, for instance, the Natuurrichtplan in Flanders or the Contrat de rivière in Wallonia. For these instruments, we assumed that they could be considered as options in the region in which this instruments is not in force.

Furthermore, for the websurveys organized with the local stakeholders, it is indispensable to remind them what are the main characteristics of the instruments of which they will assess the effectivity and the feasibility. However, it was not possible to describe the instruments in great detail, as it would have dissuaded the stakeholders to participate to the websurveys.

3.2.2 Actual integrated analysis and assessment

Before trying to assess their effectivity and feasibility with the websurveys (infra), we had to analyse the main conservation instruments with a multidisciplinary focus, at the light of the Ecosystem Approach Principles. Each team established a list of criteria in relation with their discipline to make a first assessment of the available instruments. All criteria are grounded on the Ecosystem Approach, so that each instrument is assessed from a theoretical point of view in regard to its potential contribution to a sustainable strategy for Natura 2000 implementation. Each team made a list of its criteria and gave explanations on what these criteria mean (see Appendix 4). We will present here most important results and discuss them. Some instruments have been assessed but are not included here in order to keep the text in reasonable length limits.

3.2.2.1 Planning instruments

Species protection plan

Many species are threatened and often, their situation keeps getting worse. In many cases, it is not clearly known what measures have to be taken to maintain these species. A possible way out of this impasse is the set up of a species protection plan. Such a plan determines the critical problems that impedes the healthy existence of the species and indicates what measures should be taken to tackle them.

In Flanders, the Natuurdecreet of 21 October 1997 enables the Government to take any measure to conserve "populations of species or subspecies of organisms" (art. 51). Furthermore, this text allows the government to adopt species protection plans within the framework of the general nature policy planning system[3]. However, no plan has been enacted on this basis until now. Out of any legal framework, the Flemish nature and forest administration (Agentschap voor Natuur en Bos) established 12 species protection plans (28 species). In the Walloon Region, no such kind of planning instruments have been enacted by public authorities and no explicit capacitation has been foreseen in the legislation.

Evaluating the concept of a species protection plan is not obvious, as most of the "extra-legal" plans have not yet been translated into action on the field. A few problems have already been determined in Flanders (Dumortier et al. 2005, Dumortier et al. 2007). The choice of species and the method of setting up the plans is done arbitrarily, and above that, the making of these plans is done by different organisations and scientists. Some plans have a more practical approach: others emphasize the ecology of the species without putting concrete recommendations forward. This randomised set up of the species protection plans leads to an inferior effectivity of the concept of a species protection plan. Criteria need to be developed to indicate which species deserve priority. The Flemish, Walloon and European red lists can be used in this scope. Also the feasibility of the possible measurements has to be determined. Next to criteria to determine the urgency for the creation of a species protection plan, also directives concerning the minimum conditions for the set up of such a plan should be put forward.

Furthermore, the setting up of species protection plans is of course insufficient to save a species. These plans also have to be implemented. In Flanders, as only 5 plans have reached the status of implementation, it is clear that more effort is needed to make concrete actions on the field. Otherwise, the whole upset of the species protection plans risks to be lost. Maybe, the obligation of the execution of the species protection plans should be incorporated in the nature legislation.

Forest management plan

Forest management planning should be an effective way to integrate social, economic and ecological functions and long term considerations into forest management.

In the Walloon Region, only public forests of more than 20 ha are subject to a management plan. The new Forest Code (2008) provides that the management plan must encompass, a.o., identification of conservation zones (including historical forests), sustainable management objectives, conservation measures linked to Natura 2000 and protected areas, management actions programme in time and space and biodiversity-related measures[4]. The plan project is subject to a public enquiry and, if need

[3] The "nature policy plan" is an action plan which is a part of the more global "environement policy plan" as provided by the flemish Decree of 5 april 1995 "houdende algemene bepalingen inzake milieubeleid". The Flemish Government decides which parts of the nature policy plan are legally binding for administrative authorities. This plan may contain, a. o., species protection plans.

[4] Art. 57 du nouveau Code forestier.

be, to an environmental impact assessment[5]. No such a plan is required in private forests, although some global biodiversity conservation measures must be enforced in all private and public forests of more than 5 ha.

In Flanders, according to the Forest Decree (Bosdecreet)[6], all forests except private forests of less then 5 ha must be subject to such a forest management plan, possibly in a common plan for several properties. All public forests and private forests (> 5 ha) situated in VEN-area need an *extended* forest management plan, while private forests (> 5 ha) outside VEN-area need a *restricted* forest management plan (not analysed here). The project of extended management plan must be subject to public consultation[7].

The management plan encompasses technical and administrative issues of management, inventory, logging regulation, implementation of conservation and improvement works, sales on wood products, tree clearing, tree plantations, monitoring. It is in force for 20 years. It is binding for successive forest managers as long as it is not revised[8]. The extended forest management plan must satisfy the criteria for sustainable forest management[9]. These criteria subject the forest management to several constraints to guarantee the different forest functions (socio-cultural function, economic function, environmental protection function and nature conservation function). The nature conservation function is to be enhanced by measures for the conservation of habitats and populations of wild plant and animal species, a minimal share of indigeneous species and a diversified forest structure.

Of the 146 000 ha of forest in Flanders (Dumortier *et al.* 2003), about 42 190 ha was accompanied by a forest management plan at the end of 2006. Of these, 13 958 ha have been subject to an extended forest management plan (Dumortier *et al.* 2007). About 30 % of the private forests are now subject to such a management plan. Although private forest owners are obliged to subject their forest management to the criteria for sustainable forest management when their forest (> 5 ha) is lying in VEN-area, that obligation does not count for private forests lying in Special Protection Zones that are not designated as VEN-area. Here, an important chance for a better control of forest management in the scope of Natura 2000 is being missed out (Dumortier *et al.* 2003). Although it was demanded in the Government Agreement of 2004, an analysis of the effectivity of a forest management plan is not possible, for available data are insufficient. Nor is the situation monitored, nor are the goals clearly quantified (Dumortier *et al.* 2007). There is an urgent need for more effort concerning the monitoring and effectivity analysis of forest management plans.

However, for each *public* forest and forest reserve which lies totally or partially within a Natura 2000 site, the conservation measures required by the Natuurdecreet must be integrated into the forest management plan[10]. Existing management plans for these forests must be adapted within two years to match with management plan of the Natura 2000 site ("natuurrichtplan")[11]. In private forests, this is not required, as the existing management plans do not need to be adapted outside the VEN.

[5] Art. 59 du nouveau Code forestier.

[6] Art. 43, § 3 Bosdecreet. See also the execution order: B.Vl.R. van 27 juni 2003 betreffende beheerplannen bossen

[7] Art. 8 B.Vl.R. van 27 juni 2003.

[8] Art. 43, § 5 Bosdecreet.

[9] Art. 41 lid 2 Bosdecreet.

[10] Art. 19, lid 3 Bosdecreet.

[11] Art. 3, § 2 B.Vl.R. van 27 juni 2003 betreffende de beheerplannen van bossen.

Fortunately, the "natuurrichtplan" could compensate this tricky situation as it may impose to the private forest manager some protection measures[12].

From a sociological point of view, these plans are, in Flanders, characterized by citizen involvement only in the VEN and in public forests (were a consultation is organized). In Walloon Region, it is only since 2008 that management plans for public forests have been subject to public enquiry. Moreover, these instruments foster co-operation between regional authorities and private owners, as all plans must be approved by the former. When foresters are explained why they have to take specific measures for sustainable forestry, this requirement will lead to increased knowledge and improved awareness, as well as to increased co-responsability for nature conservation. From an economical point of view, the establishment of a management plan has a significative cost, whether it is of private[13] or public initiative[14].

3.2.2.2 Regulatory instruments

Regulatory instruments are the instruments which impose restrictions for nature conservation to any person who carries out an activity or a project.

Natura 2000 protection regime (interdictions and derogations)

In Walloon Region, a general interdiction to cause deterioration of Natural habitats or significant perturbations of species of CI has been included directly in the Nature Conservation Act (1973)[15]. It will be completed by more specific interdictions and other preventive measures identifying types of activities to be controlled by interdiction, licence or notification, enacted either in a general decree[16] or in the designation decree and specific for each site. Each interdiction may be lifted, in exceptional circumstances, by an individual derogation delivered by the nature conservation administration, at the same conditions as any permit in a Natura 2000 site (appropriate assessment if required, compensation, etc.). Only the most damaging activities are subject to interdictions. Other activities are either subject to a licence (urban or environmental permit or, for the activities not covered by these permits, a specific nature permit) or to notification to the nature conservation administration. This provides three levels of constraint in Natura 2000 sites, according to the foreseeable impact of the concerned activity[17].

This prevention regime has been specifically created to protect Natura 2000 species and habitats. Preventive measures included in it are theorically scientific-based and can be if necessary applied outside the site to tackle broad categories of threats. They are function of ecological requirements of each species and habitats occurring in a Natura 2000 site. Such an instrument can be effective on a

[12] Art. 8 tot en met 18 B.Vl.R. van 21 november 2003 houdende maatregelen ter uitvoering van het gebiedsgericht natuurbeleid, verkort: Maatregelenbesluit.

[13] E.g. buying of maps, services of surveyor, services of an expert, use of a software, costs of implementation and active management, etc.

[14] E.g. inventories, discussion of the possible options, planning of management actions and expenses/receipt, implementation of active management, …

[15] Art. 28, § 1er, de la loi du 12 juillet 1973 sur la conservation de la nature.

[16] See AGW du 23 octobre 2008 portant les mesures générales applicables aux sites Natura 2000 (M.B., 27 nov. 2008).

[17] See art. 28, §§2 à 4 de la loi du 12 juillet 1973 sur la conservation de la nature et AGW du 23 octobre 2008 fixant certaines modalités du régime préventif applicable aux sites Natura 2000 (M.B., 27 nov. 2008).

long term only if the measures are well-respected. So, it depends on an effective control by authorities. However, this prevention regime seems not really flexible ("adaptive"), because the modification of designation decrees will require a heavy legal procedure. It is neither sufficient in itself to reach SCO's, as protection need to be completed by active management measures. From a legal point of view, this system appears to be proportionate as it provides for a graduated level of constraint according to the degree of impact of concerned activities. These latter have been defined in exhaustive lists which reinforce legal security. The long discussions between stakeholder's representatives in order to define the main preventive measures and the organization of public enquiry during the designation procedure of Natura 2000 sites should strengthen the legitimacy of the protection regime. Two payments may be paid to farmers (100 €/ha) and forest land owners (40 €/ha) whose exploitation is situated in a Natura 2000 sites in order to compensate economic losses generated by these restrictions.

In Flanders, no "catch-all" provision forbids to anybody to deteriorate habitats or perturbate significantly species in Natura 2000 sites. Only the general "duty of care" ("zorgplicht") is imposed to any person[18]. However, each Natura 2000 site must be subject to a "natuurrichtplan" which may include obligatory protection measures not only for public authorities (especially when these authorities deliver permits) but also, in protected areas including Natura 2000 sites, for the individuals. Modifying vegetation or small landscape elements in Natura 2000 sites are also subject to a licence (natuurvergunning), which must comply with the provisions of the natuurrichtplan (infra, next point).

From a sociological point of view, one could assert that these kinds of mechanisms do not foster co-operation between stakeholders, nor citizen involvement. However, public enquiry organized during the procedure of designation of Natura 2000 sites (Walloon Region) or of establishment of the natuurrichtplan (Flanders) allows the participation of the public to the definition of specific protection measures. From en economical point of view, protection regime has potentially important consequences for the ongoing economic activity when this is not compatible with the conservation objectives for the site. The compensation for income loss is provided by the rural development scheme in Walloon Region for both farmers and foresters ("paiements Natura 2000") but not for the industry sector. It must be said that, in the Walloon Region, these compensations are added to another kind of compensation, which consists in the suppression of the succession fees attached to real estate located in a Natura 2000 site[19].

Land use and vegetation modification licences

The mechanism of authorization to use a track of land to build a construction or to modify its vegetation is a control mechanism which makes it possible the authority to appreciate the project appropriateness, to authorize it, refuse it or to subject it to operation or building conditions. The authority has a certain margin of appreciation to make its decision. For the private individual that implies to carry out administrative procedures, the preparation of an application form without having the certainty that the project will be authorized, delay, and costs to carry out the environmental impacts assessment.

Most important licence regimes include urban permit and environmental permit and, in Walloon Region, "unique" permits (which integrate both urban and environmental permits when both are required). This regime subjects to urban permit a wide array of physical land-use likely to have an

[18] Art. 14 Natuurdecreet: "*Iedereen die handelingen verricht of hiertoe de opdracht verleent, en die weet of redelijkerwijze kan vermoeden dat de natuurelementen in de onmiddellijke omgeving daardoor kunnen worden vernietigd of ernstig geschaad, is verplicht om alle maatregelen te nemen die redelijkerwijze van hem kunnen worden gevergd om de vernietiging of de schade te voorkomen, te beperken of indien dit niet mogelijk is, te herstellen*."

[19] Art. 55bis du Code des droits de succession.

impact on biodiversity, like construction, significant modification of the relief of the ground, forest clearing and planting, vegetation clearing or modification,… Environmental permits cover an even larger spectrum of activities potentially dangerous or unaccommodating for people and environment, like operating a polluting industry, rejecting dangerous substances into a river, digging a quarry or pumping water in the ground. All these activities have of course consequences for biodiversity, even if they are not performed directly within the concerned site. They are even the main threat to Natura 2000 sites to tackle together with the diffuse pollutions.

Those permits are delivered either by the municipalities (most of them actually) or by the regional authority (Government or delegated agent) (for the public projects or when an administrative appeal has been introduced against the decision of the municipality). The projects which are likely to have significant impact on the environment must be subjected to an environmental impact assessment (EIA) (infra). In this case, environmental authorities and the public must be consulted, what allows a public participation to the decision process, as required by Aarhus Convention (art. 6). In the Walloon Region, the nature conservation administration (DNF) must be consulted when a project subject to permit is listed in a list or (for urban permits) when it is located in the site or if it threats the integrity of this site.

In the Flemish Region, a specific permit ("natuurvergunning") has been put into place in order to control the modification of the vegetation and of the small elements of the landscape. This regime has been enacted by the Nature Act (1997)[20] and its execution decree[21]. Following activites are, for instance, subject to natuurvergunning in somes zones including Natura 2000 sites, the modification of historic permanent grasslands[22] and the modification of small landscape elements like old paths, water sources,… or of vegetation types like heathlands, bogs, marshes, dunes, …[23] The license approval and the registration of the reportings, as well as the enforcement of the licenses is mostly the tasks for the municipalities. The Flemish nature and forest administration (ANB) fulfils an advisory role hereby (Dumortier *et al.* 2005).

From an ecological point of view, the licence mechanism is quite neutral. Actually, its effectivity to take into account functions and integrity of the ecosystems depends on the protection norms that must be respected by the competent authority. In the Natura 2000 sites, these norms are the conservation objectives or any environmental quality norms. To take into account the Natural evolution, there should be a frequent reviewing of norms and rules to respect for new projects, and this is not currently automatic. But for some activities, environmental permits must be reviewed periodically, and this could be an occasion to adapt permits in relation to the evolution of the environment.

From a sociological point of view, this instrument is clearly a regulatory mechanism, which can entail restrictions to the property right and, as such, be perceived negatively. Participation of the public is however provided when a public enquiry is organized and people are confronted with environmental awareness, even if capacity building is not an objective. From an economical point of view, if the costs entailed by the licence procedure are negligible, the realization of an EIA and the implementation of possibly imposed environmental conditions can represent a heavy financial charge to be assumed by the operator. From a legal point of view however, this is consistent with the polluter-pay principle. Nevertheless, the complexity of some licence systems like the "natuurvergunning" in Flanders rises questions about legal security and proportionality of the measure in regard to the property right.

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[20] Art. 13 en 15 Natuurdecreet.

[21] B.VI.R. van 23 juli 1998 tot vaststelling van nadere regels ter uitvoering van het decreet van 21 oktober 1997 betreffende het natuurbehoud en het natuurlijk milieu; Omzendbrief 10 november 1998 LNW/98/01 betreffende algemene maatregelen inzake natuurbehoud (…), *B.S.* 17 februari 1999.

[22] Zie ook art. 1, 14° Natuurbesluit.

[23] Zie ook art. 7, §1 Natuurbesluit.

Environmental impact assessment

The environmental impacts assessment (EIA) cannot be dissociated from the licence mechanisms. It is a procedure in virtue of which the projects which show a significant risk for the environment must be subject to a scientific analysis of their environmental impact and to public participation (according to the European directive 85/337/EEC). Since 2004, plans and programs likely to have significant environmental impact must also be subject to a "strategic environmental assessment" (SEA), including public participation (according to the European directive 2001/42/EC). Coordination between EIA and SEA is provided by this directive. Both these directives have been transposed into regional law.

A specific assessment, called "appropriate impact assessment" (AIA) must also be performed "in view of the site's conservation objectives" for any plan or project "*not directly connected with or necessary to the management of the site but likely to have a significant effect thereon*" (art. 6.3 of the Habitats Directive). In case of risk of significant impact on the site or even in case of reasonable doubt as to the absence of significant impact, the authority can authorize the project only within a strict procedure of exemption, which entails compensatory measures in order to protect the general coherence of the Natura 2000 network (art. 6.4 FFH). This mechanism differs from usual EIA and SEA as it provides not only procedural obligations (to prepare a scientific impact assessment) but also a strict protection norm of the Natura 2000 assets and an ecological compensatory mechanism. This is certainly the masterpiece in the Natura 2000 preventive regime, as it forces all competent authorities to respect conservation objectives when they adopt a plan or grant a permit, except if they comply with the procedure of exemption and compensation.

From an ecological point of view, this instrument is of great importance as it gives a scientific overview of the potential impacts of a plan or a project on biodiversity. It allows thus the competent authority to take into account into her decision the structure and functions of the ecosystem. In SEA especially, this allows the authority to choose alternative solutions which are compatible with the respect of ecological constraints. From a sociological point of view, EIA and SEA don't necessarily always foster co-operation between stakeholders – this happens when a project or a plan creates strong opposition movements, for instance the building of a highway – but well, by means of the participation, their knowledge of environmental issues. From an economical point of view, we already stressed that EIA and SEA represent an important cost for the operator or the public agency which will ask the permit or adopt the plan (supra). From a legal point of view, EIA/SEA is certainly a precious tool to implement the integration principle into most sectoral land-use policies. Legal security must however be better guaranteed when EIA leads to the refusal of a permit although the land-use plan authorise in theory the project. SEA is thus an important step in land use control process, in order to study as upstream as possible all alternatives of development.

3.2.2.3 Voluntary instruments

One classifies here the instruments including protection or management measures for which the private individuals have the choice to engage or not. Without their willingness, the instruments will be without effects for them.

Management agreements

Management agreement is frequently presented as a central instrument for Natura 2000 sites management. It allows to the landowners, the farmers and other operators (including protected areas managers) to participate on a voluntary basis to the realization of conservation objectives of Natura 2000 network, in counterpart of equitable financial aid.

In the Flemish Region, the Nature Conservation Act (1997) and several decrees allow farmers to conclude management agreements with the Government, in order to execute the Flemish Rural

Development Program, which provides financial aid to farmers who engage in activities beneficial for biodiversity[24], like preserving small landscape elements, protection of species, managing for water quality, etc. Up to 90 % of the costs can be compensated in case of private ownership (50 % of costs for local governments) as far as there are no other subsidiary systems for that type of projects.

In the Walloon Region, the Nature Conservation Act (1973) provides an "active management regime" for all Natura 2000 sites which will be primarily implemented by an "active management agreement" ("contrat de gestion active"), a kind of collective or individual administrative agreement between one or more landowners and farmers and the Walloon Government, in which parties agree on the nature, the schedule and the financing of management measures to be implemented in order to reach the conservation objectives[25]. Although it is a voluntary instrument in theory, we must stress that if a landowner or a farmer doesn't want to participate to the active management of the site, the Government must take "all appropriate measures in order to reach" the site's conservation objectives[26]. Other subsidies are made possible by the Nature Conservation Act[27], which could be linked to the conclusion of sui generis agreements, based on the Rural Development Program, like AES (infra).

From an ecological point of view, individual or even collective management agreement seem to be relevant for taking into account structures, functioning and functions of the ecosystems because management measures (and prohibitions) it contains are theoretically based on ecological requirements of species and habitats it aims to protect. Furthermore, such agreements can be adapted to the specific conservation needs of each Natura 2000 site, as its content will be defined on a case-by-case basis. However, flexibility and ability to take into account Natural dynamics depends on the possibility to modify the agreement in function of this evolution. For instance, in the Walloon Region, the "active management agreement" seems not really flexible, as it covers a period of 9 years. However, the Nature Conservation Act provides that this agreement must be re-negotiated each time that the Government, the Conservation Commission or a landowner or a farmer demands it[28]. This could foster an "adaptive" management, if a close monitoring of the evolution of the site is set, what is not provided by the actual legislation.

Anyway, the problem remains that, in practice, management agreements don't seem to get great success. In Flanders for instance, less than 1 % of the SPA/SAC total surface are covered by such agreements[29]. This suggests that these agreements will not be sufficient to manage the part of the Natura 2000 network which is located in private lands.

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[24] B.VI.R. van 21 oktober 2005 betreffende het sluiten van beheersovereenkomsten; M.B. van 21 oktober 2005 betreffende het sluiten van beheersovereenkomsten.

[25] Art. 27 LCN ; AGW du 20 novembre 2003 relatif à la conclusion du contrat de gestion active.

[26] Art. 26, § 4, LCN.

[27] Art. 36 and 37.

[28] Art. 27, § 4 LCN.

[29] Meer bepaald bracht een eerste evaluatie in 2005 naar voor dat de voor de speciale beschermingszones belangrijkste beheerpakketten (weidevogelbeheer en botanisch en natuurbeheer) maar rond 600 ha respectievelijk 2.200 ha halen, waarvan ongeveer 400 ha respectievelijk 1.000 ha binnen speciale beschermingszones ligt (A. CLIQUET, G. VAN HOORICK, J. LAMBRECHT en D. BOGAERT, "Gebiedsgericht natuurbeleid: operationalisering en uitvoering van de Vogelrichtlijn en de Habitatrichtlijn", in: M. VAN STEERTEGEM (ed.), MIRA-BE 2005, Aalst, Vlaamse Milieumaatschappij, 2005, 94).

Agro-environmental measures (AEM)

Agro-environmental and sylvo-environmental measures (AEM/SEM) are public financial aids paid to a farmer or a forester by the Government (and co-financed by the EC) in exchange of the implementation of concrete measures aiming at improving the quality of the environment, and defined in a technical catalogue that must be respected by the farmer/forester. This agreement is concluded on a voluntary basis for 5 or 1 year and goes beyond good (farming or forestry) practices. That is very short-term in regard to the environment requirements/evolution. So, we don't have any guarantee in the long-term.

From a sociological point of view, it seems that when farmers are explained why they have to take what measures, this will lead to increased knowledge and improved awareness. But a major disadvantage of participating in on-farm nature conservation seems to be the huge amount of administrative tasks and the lack of transparency and continuity in the regulations. Poor communication and insufficient information towards farmers is without any doubt a major obstacle for a healthy relationship between farmers and AES (Morris et al. 2000, Toogood et al. 2004). A better use of mass media and generic literature is relevant to the creation of awareness by farmers, but personal contact and demonstration are critical to actually make farmers decide to join AES (Morris et al. 2000). In terms of participation, AEM are interesting as they involve directly the farmer in the management of biodiversity. However, no other stakeholders are involved, except during the procedure of establishment of the Rural Development Program (especially the public enquiry).

From a legal point of view, the fact that the payments are available only to farmers and foresters and not to other landowners or managers (like NGO for instance) rises question about the conformity to non-discrimination principle. The measures seem to be proportionate as the sum paid depends of the nature of the measures to be implemented.

From an ecological point of view, the "adaptivity" of the instrument is truly limited. There is a possibility to adapt the measures to implement during each reviewing of the rural development program (which are in force for 7 years), but it's not easy to do it. At the local level, when an agreement is taken with a farmer, in theory the contract can't be changed during the 5 years, so it's not really flexible.

Furthermore, not all measures focus on biodiversity. And some measures are not well scientific-based nor adequally adapted to improve biodiversity. In literature, the effectivity of AES is however disputed. Although some positive calls in literature do exist, (Maes et al. 2008, Smith et al. 2008), many research papers indicate that so far, the positive effects of AES appear to be limited (Kleijn et al. 1999, Kleijn et al. 2001, Berendse et al. 2004, Kleijn et al. 2004, Feehana et al. 2005). Management prescriptions that have proven to be effective under experimental conditions do not have the desired effects or even have unexpected adverse side-effects when implemented on farms (Kleijn et al. 2001, Willems et al. 2004, Konvicka et al. 2007, Reid et al. 2007). Certainly for endagered (target) species, the results of AES seem to be insufficient (Kleijn et al. 2006, Reid et al. 2007).

Numerous reasons might exist why AES miss their presumed effects. Probably, part of the explanation is to be found in the fact that certain important supporting measures – e.g. increasing the ground water level for wader species (Willems et al. 2004, Verhulst et al. 2007) - are not carried out because they tend to impede the normal agricultural management too much (Willems et al. 2004). Furthermore, when general habitat factors are subject to unfavourable developments (such as the lowering of water tables or the decline of the open landscape by urbanisation and afforestation), the effectivity of a substantial part of the management activities is likely to be reduced (Melman et al. 2004). Another important issue is the fact that what might be good for one species, might work in an opposite direction for another species (Willems et al. 2004, Konvicka et al. 2007, Reid et al. 2007, Olson & Wackers 2007). Also the current link between conservation research and policy might form a problem. Conservation policy is often informed by research but, once a policy is formed, the process may take some time to be reviewed and if necessary adapted (Whittingham 2007).

The last few years, more and more warnings arise that the current application of AES does not sufficiently consider landscape effects on the effectivity of the measures. The long-term sustainability of ecosystems and their services depend on the conservation of biodiversity at a landscape scale (Bengtsson et al. 2003, Swift et al. 2004, Tscharntke et al. 2005). Indeed, the advantage for biodiversity only arises when farmers not only create the good environmental conditions by means of a careful management, but also cooperate on the landscape level. Areal contracts are thus much more preferable than contracts which are set up with individual farmers. Nevertheless, AES are constrained to be applied mostly at field scales because they are based on voluntary agreements with landowners, a fact that strongly limits its potential for increasing landscape complexity. Concepcion et al. (2007) state that compulsory measures applied across the whole countryside rather than voluntary measures applied at field scales appear to be a necessity to enhance the necessary landscape complexity-and with it biodiversity- in agricultural landscapes.

Private nature reserves

Private nature reserves are reserves owned and/or managed by a non public person. Some get a legal status: the "approved nature reserve" ("réserve naturelle agréée »). This is a protected area, managed by a physical or moral person distinct from the regional authority and approve by the Government, on request from a landowner and subject to the agreement of the manager (if he is different from the landowner; in this case, he must get the right to use the land for 20 years). To be approved as reserve, the biological interest of the site must be acknowledged by an expert advisory body in nature conservation. A project of management plan must be proposed by the landowner with his demand. These protected areas are thus created only when a landowner agrees to do so. It is thus a strictly voluntary protection instrument.

The nature reserve benefits a strict protection within its boundaries, as nearly all non management activities are forbidden (except derogations) in the reserve. However, the reserve usually needs important management effort by the manager of the reserve.

From an ecological point of view, nature reserves have a great interest, as they usually constitute core areas of the ecological network. The management plan of a Natural reserve should be based on the structure and functioning of the ecosystem. This powerful instrument is recognized as a good way to reach very specific conservation goals for, provided that management plan is well applied on the field and that external negatives influences on the reserve are fought. It allows the protection of sites of high biological value. However, this instrument is not applicable for a large part of the territory, so it doesn't allow by itself to fight the global loss of biodiversity.

But the scale of application of this instrument (protected site) doesn't allow taking into account some external incidences like water and soil diffuse pollution by fertilizers or pesticides. It requires a more global and integrated approach of the environment of the reserve and its ecological linkages than only focusing on the lands situated within the perimeter of the reserve. Moreover, the flexibility and "adaptivity" of the instruments stay rather low. Indeed, frequently, this statute takes not into account the Natural evolution of the ecosystem, because management plan are established to maintain certain types of habitats, prohibiting a Natural succession. Specific environmental events (like fire, storms) are not always taken into account. Management plans are not very flexible, because of the heavy procedure required to change it.

From a legal point of view, voluntary reserves do no rise question of proportionality or equality, as the landowner subjects himself to the restrictions. Problems of equality could rise if the level of subsidies for management is lower than the subsidies provided to the landowners and farmers on lands which are not under a nature reserve status.

From an economical point of view, many costs are linked to the Natural reserve protection or management. First there is the cost of buying land. There are also the costs of work on the fields, the non-operational expenses of the manager, the loss of earnings or the surplus due to the production

system's adaptation to ecological constraints. This may entail a high cost to create and manage a reserve, especially if the land must be purchased by a NGO.

From a sociological point of view, the creation of a reserve may have positive impact, as it allows, for instance, citizen involvement mainly through several (recreational) possibilities for the reserve. Spreading knowledge can be done through education of visitors of the site.

3.2.2.4 Land property instruments

These are mechanisms that make it possible to transfer the property from a real estate to a public or private person so that this one implement the protection measures and adequate managements. There exist land instruments where the starting owner gives his assent to yield his property, of other where the transfer takes place in spite of its opposition.

Expropriation

On this case, the owner is purely and simply dispossessed. He receives a financial counterpart, either the selling price, or an allowance calculated on the value of the good plus the expenses generated by this dispossession. See Appendix 4 for an assessment of this instrument.

Exchange

In this case, one carries out an exchange of grounds, either between two parts or via a procedure of refitting of the more total territory. See Appendix 4 for an assessment of this instrument.

Land consolidation

Land consolidation aims at regrouping farmlands belonging to different farmers in one single track organized around a farm in order to rationalize the production. In this sense, land consolidation is still mainly influenced by the socio-economic context, more than by nature conservation goals (which do not appear in the legislation). Its legal basis is indeed still to be found in the old Act of July 1970 on rural lands legal consolidation, whose objectives are only of economic nature.

The regrouping operations are based on a land classification according to its farming value, using agronomical criteria (and not environmental criteria). After this classification, a public consultation is organized in order to refine the proposed new land structure. A plan of the future situation is enacted and forms the base of the division procedure and all works on rivers, paths, …

In Flanders, the initial form of land consolidation was mainly an act of increasing field size and areas under cultivation (Bullard 2007). This included removing important ecological structures, such as hedges and water structures, to enhance a more (economically) efficient land management. But now land consolidation policy seems to have understood the fact that nature development should be part of the goals of any land consolidation project. While in 1990 on average 65 % of the Flemish resources for land consolidation were dedicated to agriculture and 35 % to provisions of public use, a decade later, 35 % went to agriculture, 45 % to public use and 20 % to nature development (VLM 2001). Moreover, since 1998, land consolidation projects in Flanders are nowadays subjected to the nature decree (natuurdecreet) and its 'care duty (zorgplicht)'. This means that land consolidation projects must consider the stand still principle, as well as the principle of ecological compensation. An inventory of the present nature conditions must be made, and be compared with the conditions of nature after the land consolidation project is finished. The balance must be at least in harmony and an evaluation wether the projected objectives concerning nature conditions are reached will be made (VLM 2001).

Without a doubt, one of the main advantages of land consolidation is the huge effort spent to make sure every stakeholder can participate in the decision making process. Disadvantages concerning the use of land consolidation are the long term on which the projects are realised and, related to that, the many (social) difficulties that arise during their execution. Strongly participative, the procedure is flexible as it lets the land consolidation committee free to integrate environmental considerations into the plan. As it is based on an equitable exchange of parcels according to their agronomical value, we could assume that this instrument doesn't trespass limits of proportionality, in regard to the property right constitutional protection. However, restrictions to this right may appear excessive in regard to the semi-private goals of this procedure (improve the income of farmers). Above that, its combination with statutory conservation objectives could be difficult and cause legality problems.

Natuurinrichting (Flemish Region only)

Natuurinrichting is a Flemish law instrument that aims at executing measures and works that are meant to establish an optimal organisation of an area for the maintenance, recovery, management and development of nature and the Natural environment. Its legal basis can be found in art. 47 and 47bis of the Nature Conservation Act (1997) and its execution decree[30]. By active interference, natuurinrichting wants to develop nature on places with lots of potential for fauna and flora. It can be applied in those areas designated as being VEN-areas, Special Protection Zones or green-, parc-, buffer- and forest-areas (Kuijken *et al.* 2001). This instrument is inspired on the instrument of land consolidation, but is developped totally in the scope of nature development. Possible measures within the scope of natuurinrichting are amongst others the exchange of parcels, infrastructural works, adaptations of roads and road patterns, stand still measurements, the temporarily abolishment of the authority of administrative governments and public governances, waterworks, groundworks, the building of nature educative provisions and the replacement of firms (Kuijken *et al.* 2001).

As the instrument is developed specifically for nature conservation goals, it can be assumed that the ecological balance of this instrument is very positive. However, a profound evaluation concerning the ecological impact of the instrument is not yet possible, due to a lack of monitoring data (Dumortier *et al.* 2005).

Public participation is a powerful aspect of *natuurinrichting*. Thanks to a thorough communication, the instrument is meant to reach the broader public and its different stakeholders. By setting up natuurinrichtingsproject comitees and – commissions, a broad base for the planning process is realized. Communication happens according to a communication plan, which indicates what stakeholder groups are to be interrogated in what order. By being represented in a commission or committee as well as through informative sessions, meetings and public investigations, all stakeholders receive the possibility to give their own input to the project and defend their positions (Kuijken *et al.* 2001).

The Nature Report of 2003 mentions several bottlenecks for the instrument of *natuurinrichting*. Financially, insufficient resources impede the realisation of projects. The social base is not always sufficient and on the execution level, the strong legislations concerning polluted grounds makes groundworks difficult. Furthermore, the instruments of parcel exchange and firm replacement are badly elaborated, the compensation system is only applicable for owners and not for users, working via smaller part-projects is not allowed and the execution of the projects can only start after the definitive approval of the project execution plan (Dumortier *et al.* 2003).

The procedures are very heavy, which means the instrument is not appropriate for more or less restricted measures such as the local heightening of the water table, the restoration of a meander or

[30] B.Vl.R. van 23 juli 1998 tot vaststelling van nadere regels ter uitvoering van het decreet van 21 oktober 1997 betreffende het natuurbehoud en het natuurlijk milieu.

the creation of wood edges and pools (Ministerie van de Vlaamse Gemeenschap 2003, Ministerie van de Vlaamse Gemeenschap 2004, Van Hoorick G. 2005). As a consequence, many chances for nature conservation are missed out (Ministerie van de Vlaamse Gemeenschap 2003) and the successful execution of the projects can take many years. Above that, *natuurinrichting* cannot be used in combination with land consolidation (Ministerie van de Vlaamse Gemeenschap 2004). A simplification of the rules and a better atonement with other legislation remains a necessity, according to the environmental policy plan (Ministerie van de Vlaamse Gemeenschap 2003). Luckily, in order to counter several procedural and legislative problems, some adaptations have recently been made to the Nature Decree concerning *natuurinrichting*. Amongst others, the possibility for a rapid project execution is given and legislative improvements concerning compensations and the legal certainties for users and owners are worked out (Peeters 2006, Besluit van 2 februari 2007).

3.2.2.5 Economic instruments

One gathers here the mechanisms related to tax premiums or impositions and which allow an environmental appreciation whereas they are at the base completely independent. An environmental objective or a condition is added on an existing tool.

Eco-conditionnality (or "cross-compliance")

Any farmer perceiving direct payments is held to observe agricultural and environmental good conditions (including the maintenance of the grounds devoted to the permanent pastures) as well as legal obligations from environmental (including Natura 2000) and human or animal health legislations [regulation (EC) n° 1782/2003, title II, chapter 1]. The cross-compliance mechanism is in force in the Walloon Region[31], but doesn't seem implemented in the Flemish Region.

The conditionality rules contain some measures to protect small-landscape elements, which are very important in the structure of the ecosystem. There are also other measures linked to Natura 2000. This instrument should be rather flexible, by changing the conditions it contains in relation to the environment evolution, but it needs a modification of the law.

When the conditionality has not been respected, economic sanctions may be imposed: suppression of 3 % of the total of the direct aids (or 5% or 1% according to the scope of the infringement). This can cause conflict between private and public if the farmers think subsidies are withdrawn on discutable basis. The competent administration is the agriculture administration, not the nature conservation one, what could .

From the legal point of view, a problem of proportionality could rise as the sanctions are not correlated to the infringement: actually, the privation of a small amount of public subsidies you depend on could be perceived as excessive. Equality must also be guaranteed (in the use of sanctions a.o.). Furthermore, from a sociological point of view, cross-compliance is not an instrument characterized by citizen involvement nor capacity building.

[31] AGW du 23 février 2006 mettant en place les régimes de soutien direct dans le cadre de la politique agricole commune ; AM du 7 juillet 2006 portant application de la conditionnalité prévue par l'article 27 de l'arrêté du Gouvernement wallon du 23 février 2006 mettant en place les régimes de soutien direct dans le cadre de la politique agricole commune, et relatif aux critères et aux montants de pénalités en cas de certaines irrégularités constatées en matière de régimes de soutien direct dans le cadre de la politique agricole commune.

Tax reductions

They are tax incentives (exemption, reduction) which can be granted linked with lawful protection or management measurements, engagement in this direction or to encourage the private individuals to change their behaviours. See Appendix 4 for an assessment of this instrument.

Compensation for land use restrictions

See above in "Natura 2000 protection regime".

3.2.2.6 Partnerships and other participative instruments

One gathers here the tools which are based on a partnership between the public authority and the public and stakeholders in order to plan and implement environmental projects. We will discuss here the "River Agreement" (Contrat de rivière) in Walloon Region. See Appendix 4 for the assessment of other instruments (Plan communal de développement de la nature: PCDN).

The River agreement is a specific partnership between all users of a river basin, in order to design a program of action – focusing on the preservation and the restoration of the river ecosystem at the watershed scale – and to implement it consensually. Are invited to participate decision-makers, administration, schools, industry, farmers, NGO, scientists, … Since 1993, several ministerial circulars have been defining the conditions to create a River agreement (last circular : 20 march 2001, MB 25 April 2001). The issues covered by the River agreement are numerous. They include: surface- and groundwater quality, flood risks and quantitative water management, land-use planning interactions, wetlands and landscapes conservation, economic use of water, farming and forestry, …

This instrument focus on the river ecosystem and try to manage this ecosystem taking into account all different aspects, influences and externalities of the environment on a river basin scale. The final goal is to obtain a good quality of the river (physical and chemical quality of water and bed and bank of the river). Projects implementation last from 3 to 12 years, with an evaluation every 3 years. Legally non binding, these agreements are quite flexible. There is no sanction provided if the program is not respected, however a follow-up committee may formulate adaptations to the contract according to results and evolution of the environmental or socio-economical context. The river agreement is therefore flexible.

This instrument seems to be the most effective to reach concrete objectives in the scope of rivers and water management because this topic requires to put a large number of stakeholders around the table. The effectivity depends largely on the dynamism of the contract.

It is important to recall that preventive measures for the protection of Nature 2000 areas are not only contractualy driven.

3.2.2.7 Awareness campaigns and education programs

Education and information campaigns may foster public awareness to nature conservation and facilitate the implementation of conservation measures in Natura 2000 sites. See Appendix 4 for an assessment of these instruments.

3.3 Assessment of the feasibility and effectivity of different instruments

Earlier (see 3.1) a theoretical frame of a 'good management plan' taking into account the EA principles is presented. Further research within this project mainly focused on the content aspect of a strategy. What kind of instruments could be used to develop a strategy? What kinds of strategies are preferred by experts, local stakeholder, …

In a first step, an assessment was made of the feasibility and effectivity of the most relevant and well known instruments currently applied in Flanders and/or Wallonia. This was done by a literature review (see paragraph 3.2) and through surveys among the members of the User Committee (see part 3.3.1) and among practioners from local administrations, the Flemish and Walloon government, stakeholder organizations and NGOs (see part 3.3.2). In a second step the public acceptance of different kinds of implementation strategies was tested for a Walloon and a Flemish case area (see part 3.4). The full analysis of the different surveys is presented in Appendix 5,6 and 7.

3.3.1 Perception of the effectivity and feasibility of instruments according to the User Committee

3.3.1.1 Introduction

Besides an integrated literature review an assessment of the effectivity and feasibility of different kind of instruments was planned. The initial thought was to have an in-depth discussion with different kind of users (that were presented in the user committee). As preparation of this discussion we asked the user committee to respond on an online survey.

The online survey was build up out of two parts. In the first part we asked to define the terms effectivity and feasibility. Within the project team the assumption existed that the definition of those two terms could be interpreted in a different way. In the second part each respondent was confronted with 20 existing instruments that are put forward in this project. Every instrument was shortly described and the knowledge level of the respondents was determined for every existing instrument, as well as their appreciation of the effectivity and feasibility of that instrument. Besides that respondents could give remarks on each instrument.

Only 8 valuable responses from approximately 30 people were recorded. Most responses on the web survey were given by people from the nature administrations and NGOs The responses were analysed in a descriptive way and used as starting point for an in dept discussion with a part of the User Committee.

3.3.1.2 Description of the results

One of the first conclusions of the survey is the great diversity in definitions that were used for effectivity and feasibility. Although effectivity for most of the respondents is linked to the reaching of a result ('Reaching the goal', 'sustainable results' or 'efforts in proportion to result', 'allow concrete actions and measures) there are some interesting differences. Some of the respondents stress in there description the direct link with goals that are developed in advance. Others refer more to the nature of the result of the instrument. For them it's important that the result is long lasting (sustainable) or that allows concrete actions and measures on the terrain. Other respondents have stressed the link between results and efforts. They argue that instruments are effective as there is a good balance between efforts and results.

Two groups of responses could be distinguished in relation to the description of the term 'feasibility'. Some of the respondents linked it to (the integration) of other stakes (from other stakeholders). For those respondents public support and acceptance and the integration of socio-economic aspects are

essential parts of feasibility. Some of them refer in this context also to the possibility that instruments give the others users to participate. A second group of respondents stress for most the practical applicability (for nature conservators) when describing 'feasibility'. For them it's import that instruments are technically applicable, easy, simple and realistic.

There was generally no large difference in the assessment of the feasibility/effectivity between the instruments. Most of the instruments are scored at the upper side of feasibility and effectivity. A possible reason could be that most of the people who answered were mainly Naturalist (see Figure 8). The user group suggested to organize a broader survey to have a better view of the perception of other groups.

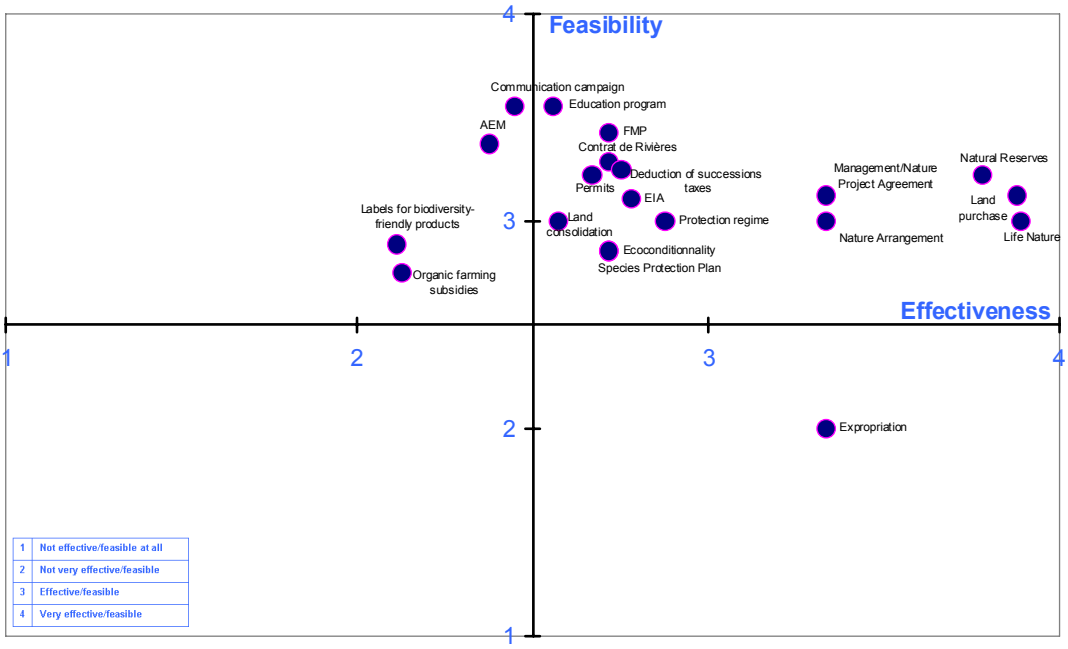


Figure 8: Plot of the mean effectivity scores versus the mean feasibility scores for a number of nature conservation instruments as rated by 9 members of the User Committee.

On the axes of effectivity, there is clearly a cluster of instruments that were considered to be very effective and very feasible (**Land purchase, nature reserves and Life Nature**) . These instruments have quite the same characteristics. All of these instruments give the control over the ground directly to nature (organisations, conservation,..). Feasibility could for those instrument best be interpreted as 'easy to implement'. Important is that the main objective of all of those instruments is nature conservation. Besides that nature minded persons (organizations, government) own the land they have then the power/right to develop it. There is also a kind of guarantee that they can control the development of the area there self. A user agreed: '*the greatest chance to reach nature conservation goals are indeed nature reserves because the management here is a long term case, in contrast with for example AEM. In this case farmers can stop whenever they want with the nature management*' .

For other users an instrument likes 'the creation of nature reserves' is seen as a punishment. Reserves seem for a forest user effective to reach the objectives of Natura 2000 but they aren't feasible.The Walloon forest user explains that it depends on the proportion: 3% of "îlots de sénescence" could be okay but 10% is too much for economical aspects. He stresses that a nature reserve, like management today, doesn't create any money to live from. 'In *a nature reserve there is, for the moment, a constant input of money needed. it's not durable in an economic way*'. And he goes further: '*Even if the bill at the end is kif kif this doesn't feel sentimental the same for a forest user.*

Moreover he find that subsidies aren't durable, there is a constant uncertainty involved, linked with the length of the legislature'.

For the forester it's also a question of liberty of choice, a psychological aspect. '*Private forests in Wallonia are an inheritance/patrimony that you receive and transmit after. There is also a sentimental value. Putting in a Natural reserve in a forest is not only an economic loss, but also a loss of liberty and feeling of property, as the familial choice is restricted'.* A Flemish user states that this feeling is the same in the Flemish Region. He argues also that patrimonial sentiments aren't restricted to certain land use. In relation to the freedom of choice it could be useful to use a different implementation strategy for nature reserves. A nature conservator describes that kind of strategy as follows: '*A good strategy is to begin with a small part. ('You grown at the tempo of the land owners around you'). You gain respect. In the beginning you are 'stupid'. After a while say that they can use the nature reserve (for instance for cattle breeding), that they can collaborate,... When you are accepted by the local community you can start to try to grow. Once you have token an opportunity and establish a nature reserve more opportunities to purchase land arise. Owners of land have to see the opportunities, they have to learn, …In this way nature reserves are very feasible….'.* In the same way local acceptation seems also very important for the success of Life Nature projects. It's important to involve local stakeholders. Otherwise the project does end at the end of the Life Nature project.

Another instrument for land accusation is **expropriation**. In the results the feasibility of the instruments land purchase vs. expropriation is strongly different. Technical and budgetary this seems just the same measures for most of the users. For them, differences in feasibility must be explained by the sociologic acceptance and the legal Framework. Other users stressed also that the budget does differ! Expropriation is more expensive for the authorities: the prices are higher and moreover and most of the time you have to pass by court.

Expropriation is not (often) used for nature conservation goals. The low feasibility for expropriation in this survey is maybe more based on the knowledge of people regarding expropriation for infrastructure then on the knowledge of people regarding expropriation for nature. The government tries to minimalize (not only for nature) the use of this instrument. Most of the times you have more severe protest.

In Flanders, **FMP and deduction of succession rights** are coupled. This is very effective. Large land owners are now actively buying forests in Natura 2000 to benefit of this fiscal advantage. A researcher state that integrated reserves could cost nothing. Studies in the Netherlands demonstrate that estates, land have more value if they are next to Natural reserve. There are also other important revenues possible (e.g. Park Hoge Kempen). So the costs can turn out very different when calculating this in the cost-benefit analysis. A possibility is maybe also the establishment a regime of visitor's payback.

Legal instruments like EIA, protection regime and permits are ranked in the middle regarding feasibility and effectivity. The instrument **EIA** is for most of the users highly effective to prevent damage if the government uses it's strategic. For instance in the port of Antwerp it plays a crucial role. It's a good instrument to help to manage land use in and around N2000 site and to avoid human impact. An extra is the compensation duty. The users stresses that for permits and FMP, often the distance between administration/plan and the field/practices makes that the results are not the one that are expected.

Other instruments on the left hand side of and around the feasibility axes are instruments used in an agricultural context. These are considered to be less effective but they might be more feasible (like AEM) because they are voluntary. Generally **voluntary instruments** can be effective if it goes hand in hand with information programs according to a forest user. He stresses that it surely strongly depends on the kind of information and on the kind of program. Another user believes that the effectivity of voluntary is generally low. Nevertheless it's important because this kind of instruments give to people the feeling. This kind of instrument could for instance be used for the stepping stones between low value and high value nature conservation areas. Another user agrees that it's a good tool on the long term. It's based on the belief of the users that they can contribute to the nature goals. For him this kind

of instruments could be more durable (in the long term) then regulations. Another positive point of voluntary instruments is that you can experiment (as user and as nature policy officer).

Other users that work in the nature sector are more skeptic. For them voluntary tools are good to make people aware of nature but not sufficient to reach the objectives and not really cost-effective. An import aspect for **AEM** is that farmers can stop when they want. The different AEM measures vary quit a bit in effectivity. A suggestion is to fix the results in a contract. There seems to more success in Wallonia for AEM. Fifty percent of the farmers is involved. But it's not clear what surface is under AEM. A proposition for Wallonia, to better valorize the work of farmers, should be to pay a contractual amount and a bonus depending on results for nature. In Flanders this is the case for some kind of AEM's.

A user thinks that it should be better if AEM were thought on a multi exploitation scale. At the moment measures were only taken on the marginal farming lands. A network of patches is not developed. In Flanders firm-planners aid (group of) farmers in the entire region to come to landscape broad measures. One of the main problems is to integrate the rotation system of farming, to change agricultural habits of working, the 'pacht', … . The actual general approach for whole the region is not effective.

The potential impact of an instrument like **labels or organic subsides** isn't not high, according to the different respondents. An important aspect for this instrument is that you need people who want to pay more for 'Natural' products. An user argued that the knowledge of this instrument is rather low. In general people don't want to give money so therefore little potential. This could be the explanation to the low effectivity of this instrument.

The non-conventional instruments like **communication and education campaigns** are considered to be very feasible but only medium effective. They possibly work on the long term. Therefore it's important to work on the long term implementation of education and communication (week van het bos). Besides that communication seems more effective if linked to a concrete project, actions, …

Other instruments that were mentioned during the discussion:

- include destination plan (plan de secteur)
- Natural reserves with visitor payback
- nature park
- National parks can include some N2000 sites (possibility to develop tourism)
- Sylvoenvironmental measures are not sufficiently applied in Wallonia

3.3.2 Survey among practitioners

To get to know better the perception of experts of different sectors towards a number of instruments that could be used in the scope of Natura 2000, an online survey was set up. Stakeholders representatives from different sectors, who are expected to have knowledge about the different instruments, were contacted and asked to answer a questionnaire and send it to all persons within their circle of acquaintances from which they thought they were more or less familiar with the concept of Natura 2000 (for a table with all contacted organizations, see Appendix 5).

The survey started with a short introduction of its goal, followed by a test about the profile of the respondent, where they were asked to fill in the organisations they are active in, as well as their function within that organisation. After that, the level of knowledge about Natura 2000 of the

respondents was determined. People who declared to never have heard of Natura 2000 are left out from the analysis (n=1).

Each respondent (n= 122) was confronted with 20 existing instruments that are put forward in this project, as well as 5 non-existing instruments (see Appendix 5). Amongst the existing instruments, 2 were strictly regional instruments: *natuurinrichting* for Flanders and *contrat de rivière* for Wallonia. For one concept of instrument (nature conservation applied by private persons), both regional versions were put forward in its region of application: *natuurprojectovereenkomst* in Flanders and *contrat de gestion et de protection* in Wallonia. Concerning the non-existing instruments, two (*Natura 2000 balance for municipalities* & *nature co-operation bonds*) were only presented to the Flemish respondents (75 persons), due to technical reasons. All the other instruments were seen by 122 people. First, five aspects that relate to the definition of effectivity and feasibility were put forward and each respondent was asked to rate the importance of every aspect in relation to their perception of the concepts of effectivity and respectively feasibility (see 2.3.2.2). Next, every instrument was shortly described and the knowledge level of the respondents was determined for every existing instrument, as well as their appreciation of the effectivity and feasibility of that instrument. For the non-existing instruments, the respondents only had to rate their (potential) effectivity and feasibility. All these questions were closed-ended ones. At the end of the survey, the opportunity was offered to give comments on the instruments, Natura 2000 and the survey itself by means of 3 open-ended questions.

3.3.2.1 Data analysis

The statistical analysis of the data used SPSS 15.0 (for Windows) (SPSS 2006). For every analysis, besides the unanswered questions, also the responses 'no opinion' were treated as being missing values.

Before drawing firm conclusions, it is wise to note that the analysis of this survey was subjected to a number of limitations, each possibly reducing the robustness of the results. First of all, there was an imbalance in response between the different expert classes. Different sample sizes can give a certain amount of bias to the outcome, and as sample sizes within the classes are too small, infering conclusions about the population remains difficult. Besides that, the distinct classes between the two regions were somewhat different, putting another restriction on their comparability. A lot of missing answers scattered over the entire dataset further reduced the ease of handling the data. Besides those factors, as for every survey, conclusions must be drawn with great care and results must be interpreted with a lack of background information about the respondents.

3.3.2.2 Description of the respondents

The Flemish survey was answered by 75 persons (see Figure 9). From these, 7 people belonged to the forestry sector, 6 to the agricultural sector, 42 were classified under the governmental sector and 16 people belonged to the nature conservation group. The remaining 4 people were classified as 'others'. The Walloon survey was answered by 48 persons. One person indicated he had never heard about Natura 2000. Therefore, this person was excluded from the results. In total, 4 classes were distinguished: regional governmental institutions (7 persons), (local) municipality-representatives (10 persons), nature (ngo) sector (19 persons) and a remaining group 'others' (11 persons).

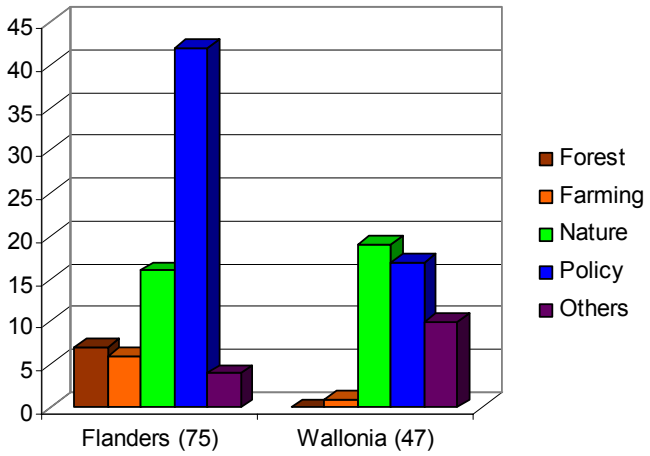


Figure 9: Absolute number of respondents (n= 122) from both regions for the survey, divided in different classes of type of respondent. Policy here, refers to regional governmental institutions (7 persons), (local) municipality-representatives (10 persons)

Concerning the level of knowledge of Natura 2000 (see Figure 10) for the Flemish region, 17 % of the respondents indicated they had "already heard or read about Natura 2000". 44 % indicated they knew the basic principles, goals and legislation of Natura 2000, and 39 % of the respondents said to have been involved in the implementation of Natura 2000. From the Walloon respondents, 60 % indicated they knew the basic principles, goals and legislation of Natura 2000, and 40 % said to have been involved in the implementation of Natura 2000.

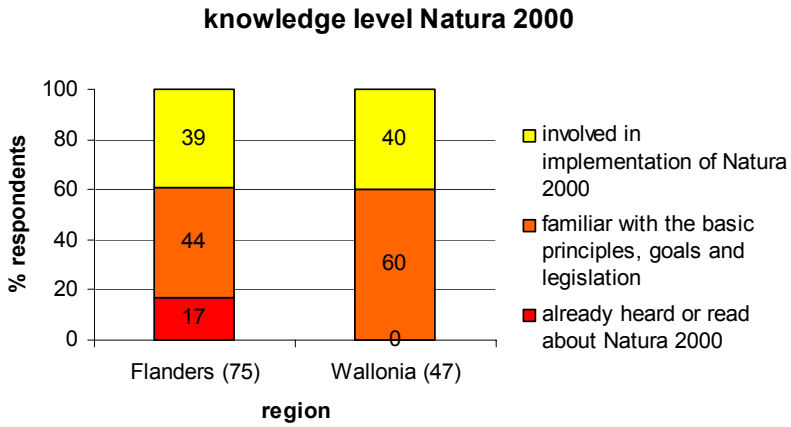


Figure 10: Frequency diagram (%) of the level of knowledge of Natura 2000 for both regions. Percentiles are depicted in every bar, between brackets the number of respondents are given.

3.3.2.3 Definitions of effectivity and feasibility

The results show that all aspects are mostly rated as being important or very important parts of the concepts of respectively effectivity and feasibility (see Figure 11). Only aspect 4 of effectivity ("*The efforts are proportional to the attained results*") showed a relatively meaningful number of respondents who did not rate the aspect as (very) important. This way of responding those two questions might well be the result of the fact that once people read the aspects, they all consider them important without thinking into deep whether they apply to the definition of the concepts of effectivity and feasibility.

Aspect 1: The instrument contributes to the reaching of the predetermined objectives
Aspect 2: The attained results are sustainable
Aspect 3: The instrument leads to concrete (management) actions and measurements on the terrain
Aspect 4: The efforts are proportional to the attained results
Aspect 5: There are possibilities for evaluation and if necessary adaptations

Aspect 1: The instrument is transparant and easily applicable
Aspect 2: There is a social base for the instrument
Aspect 3: The instrument takes its socio-economic consequences into account
Aspect 4: There are enough people and resources to put this instrument into work
Aspect 5: The instrument is technically executable in practice

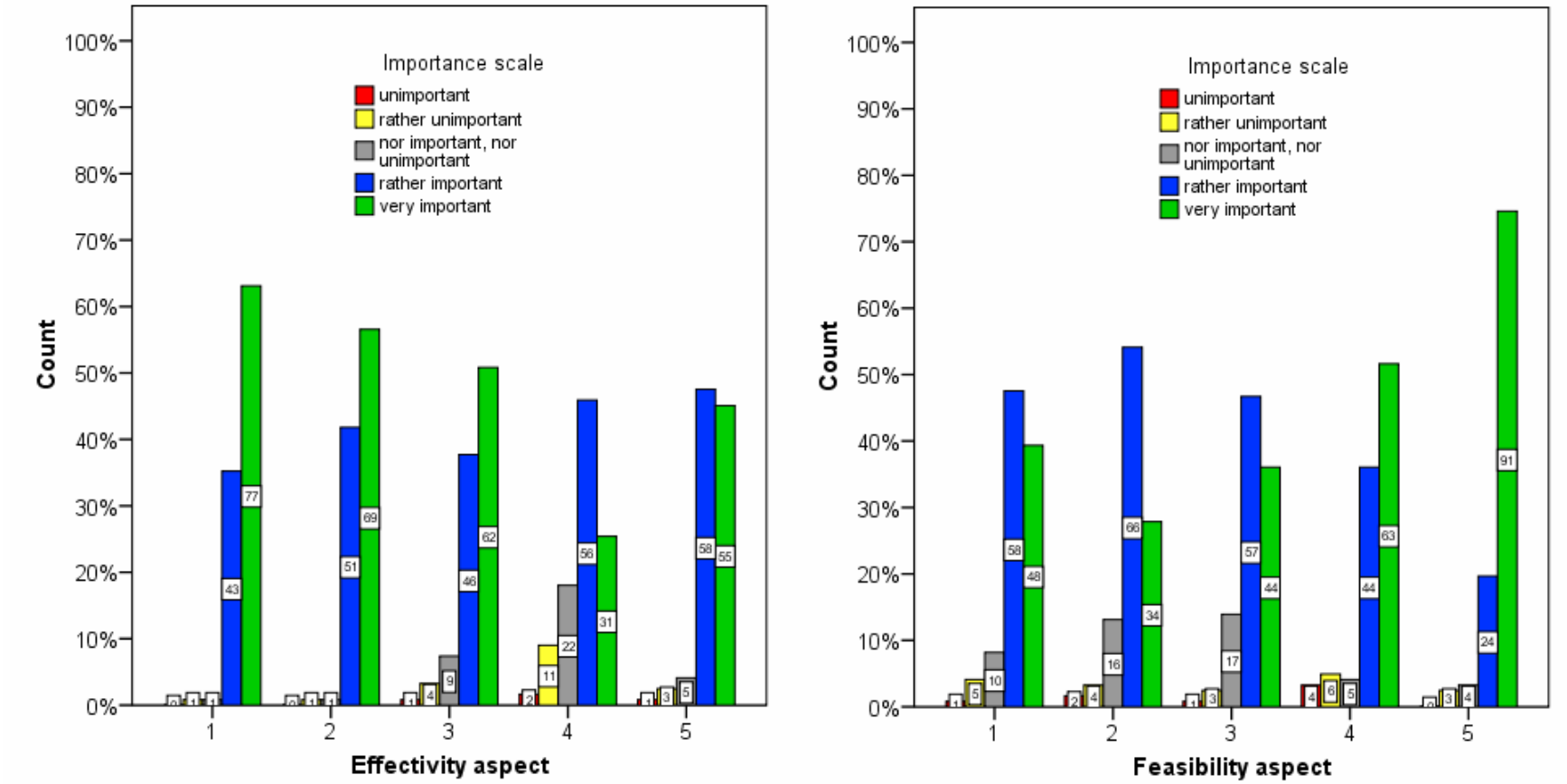


Figure 11: Frequency diagram (%) for the different aspects of the definition of effectivity and feasibility. Counts are depicted in every bar. Total number of respondents: 122

As little difference arises in rating the importance of the definition-aspects over the entire dataset, yet the rating of the instruments in terms of effectivity and feasibility does differ along this entire set of answers, it is straightforward that no significant correlation was found, nor between the rating of the importance of the 5 aspects of the definition of effectivity and the effectivity-rating of the instruments, nor for the rating of the importance of the 5 aspects of the definition of feasibility and the feasibility-rating of the instruments.

3.3.2.4 Overall evaluation of the instruments

Considering the **knowledge level** for Flanders, most instruments scored very well, in that sense that (nearly) everyone declared to know the instrument at least from a theoretical base (see Figure 12). Instruments that had a relative large proportion of people that did not know them were *contrat de rivière, cross compliance measures, education programme* and the *reduction of succession rights*. In Wallonia, however less pronounced, the knowledge level for most instruments also scored very well (see Figure 13). Only for Natuurinrichting, there was a clear lack of knowledge. Other instruments that had a relative large proportion of people that did not know them were *education programme* and the *reduction of succession rights*.

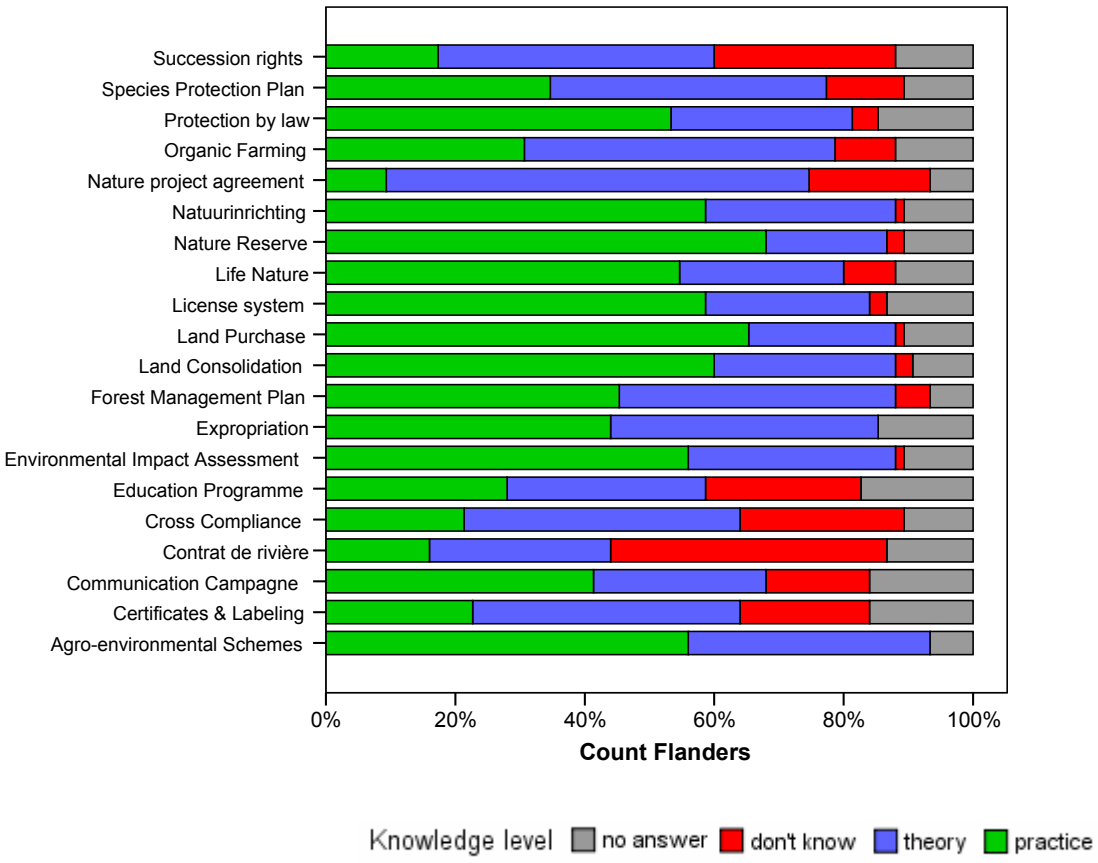


Figure 12: Frequency diagram (%) for the knowledge level in Flanders of the 20 existing instruments. Total number of respondents: 75

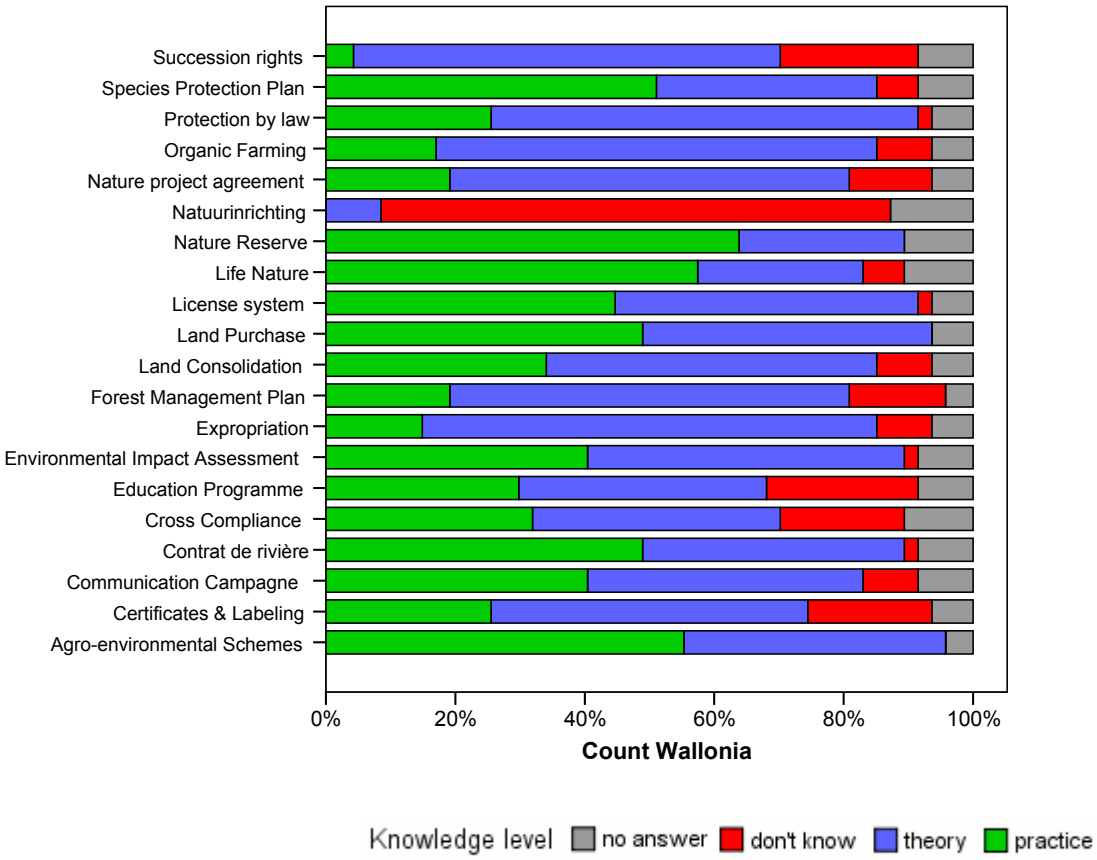


Figure 13: Frequency diagram (%) for the knowledge level in Wallonia of the 20 existing instruments. Total number of respondents: 47

When looking at **the results for effectivity** (see Figure 14 and Figure 15), one can see that for both regions, most instruments are mainly seen as (rather) effective (for levels of effectivity, see Appendix 5). The instruments that are regarded as being mostly effective in both regions are the *use of nature reserves*, *Life Nature projects, land purchase, expropriation* and *forest management plans*. In Flanders, *natuurinrichting* is also seen as very effective, while in Wallonia the non-existing instrument *'changement of the destination plans'* as well as *nature project agreements* and *agro-environmental schemes* score relatively well.

For both regions, the 2 non-existing instruments *'voluntary access pay for Natura 2000 areas'* and *'a tax for horeca facilities in or nearby nature areas'* are seen as the least effective instruments. In Flanders, also *certificates & labeling*, *environmental impact assessments* and *organic farming* are regarded as being non-effective, while in Wallonia that was only the case for *land consolidation*.

Also for the **feasibility aspect** (see Figure 14 and Figure 15), most instruments were mainly given a positive evaluation *Nature reserves*, *Life Nature-projects*, *forest management plans*, *communication campaigns and agro-environmental schemes* were seen as most feasible in both regions. In Flanders, this list was completed with *natuurinrichting*, while in Wallonia *license system*, *land purchase* and *environmental impact assessment* had to be added. For *education programmes, communication campagnes and agro-environmental schemes*, the voluntary character will at least partly explain this (see also further). It is less clear why the other three are perceived as being so feasible.

The least feasible instruments according to the total group of respondents were *expropriation*, as well as the 2 non-existing instruments: *'voluntary access pay for Natura 2000 areas'* and *'a tax for horeca facilities in or nearby nature areas'*. In Flanders, *'Natura 2000 balance for municipalities'* was also often regarded as unfeasible, while in Wallonia this was the case for *land consolidation*. For expropriation and 'change of the destination plans', this was a straightforward result. Both are subjected to a heavy procedure and often involve a lot of public resistance. Public resistance can also be expected for the execution of a 'Natura 2000 balance for municipalities' and 'a tax for horeca facilities in or nearby nature areas', but why a 'voluntary access pay for Natura 2000 areas' is perceived as being rather unfeasible is not immediately clear.

Finally, it was investigated whether the two instrument characteristics 'freedom of choice' (voluntarily/compulsory) and the compensation (payed/not payed) were related to a significance of difference in effectivity and feasibility scores. The Wilcoxon-Mann-Whitney test showed that, for both regions, there is no difference in the perceived effectivity of voluntary or non voluntary instruments (Flanders: $Z = -0.34$, $p > 0.05$; Wallonia: $Z = -1.79$, $p > 0.05$), but that voluntary instruments were seen as significantly more feasible (Flanders: $Z = -4.87$, $p < 0.001$; Wallonia: $Z = -4.60$, $p < 0.001$). Concerning the difference between payed and not payed instruments, instruments that were financially compensated were rated significantly higher in terms of both effectivity and feasibility. Also these findings were valid for both Flanders and Wallonia (Flanders effectivity: $Z = -8.43$, $p < 0.001$; Flanders feasibility: $Z = -3.60$, $p < 0.001$; Wallonia effectivity: $Z = -6.47$, $p < 0.001$; Wallonia feasibility: $Z = -2.29$, $p < 0.05$).

When plotting the relative total effectivity scores versus the relative total feasibility scores (relative to the possible maximum score over the number of respondents) of the different instruments, the differences in the perception of the different instruments are shown for Flanders (Figure 14) and Wallonia (Figure 15).

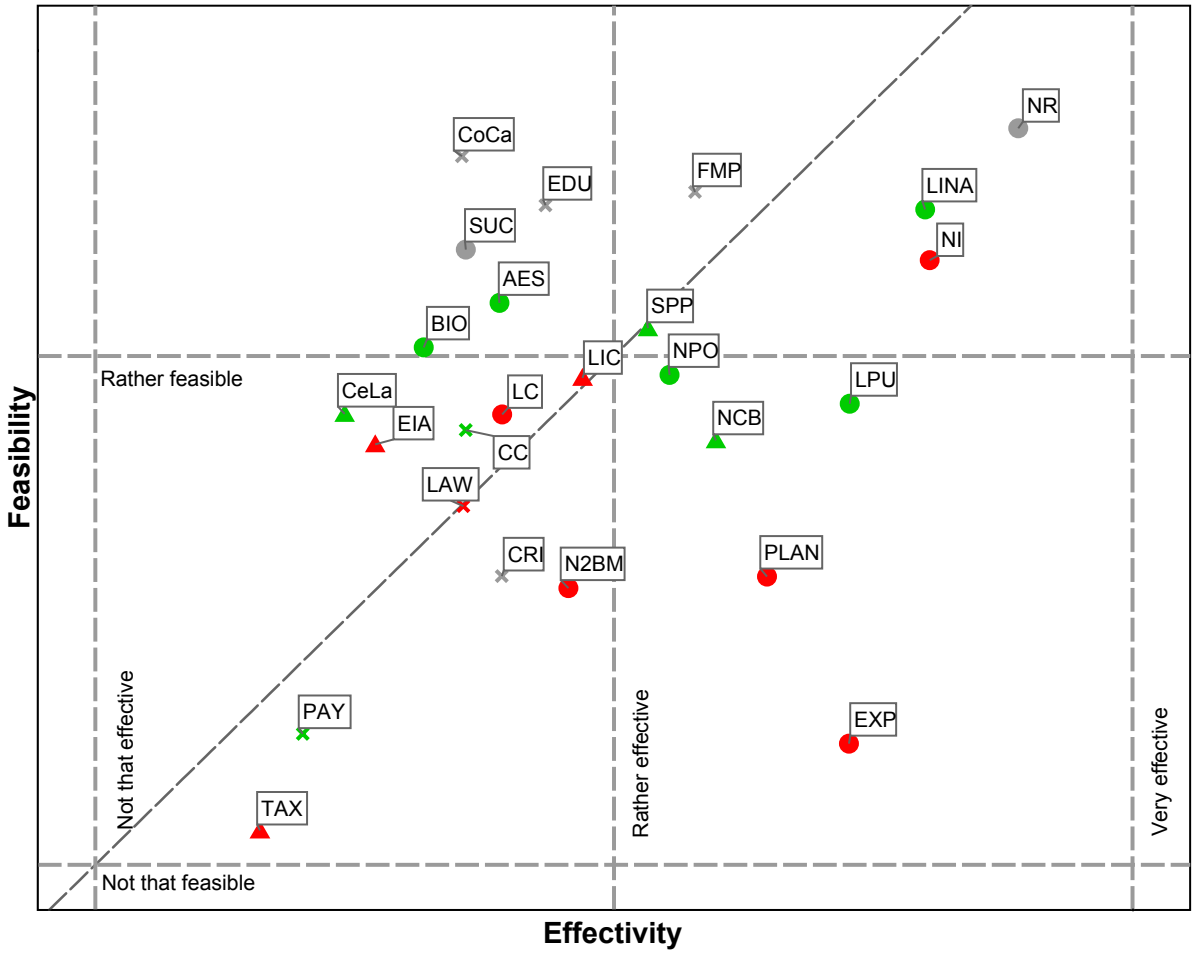


Figure 14: Plot for Flanders of the relative total effectivity scores versus the relative total feasibility scores (relative to the possible maximum score over the number of answers) for the 20 existing instruments and 5 non-existinging instruments.

Voluntary instrument Compulsory instrument Choice of participation not straightforward

Compensated instrument Non-compensated instrument Compensation not straightforward

AES = Agro-environmental Schemes, BIO = Organic Farming, CC = Cross Compliance, CeLa = Certificates & Labeling, CoCa = Communication Campagne, CRI = contrat de rivière, EDU = Education Programme, EIA = Environmental Impact Assessment, EXP = Expropriation, FMP = Forest Management Plan, LC = Land Consolidation, LIC = License System, LiNa = Life Nature, LPU = Land Purchase, LAW = Protection by Law, NI = Land development for nature (Natuurinrichting), NPO = Nature Project Agreement, NR = Nature Reserve, PAY = voluntary Access Pay, PLAN = Change of Destination plans, SPP = Species Protection Plan, SUC = Reduction of Succession Rights, TAX = tax for Horeca facilities inside or nearby green areas

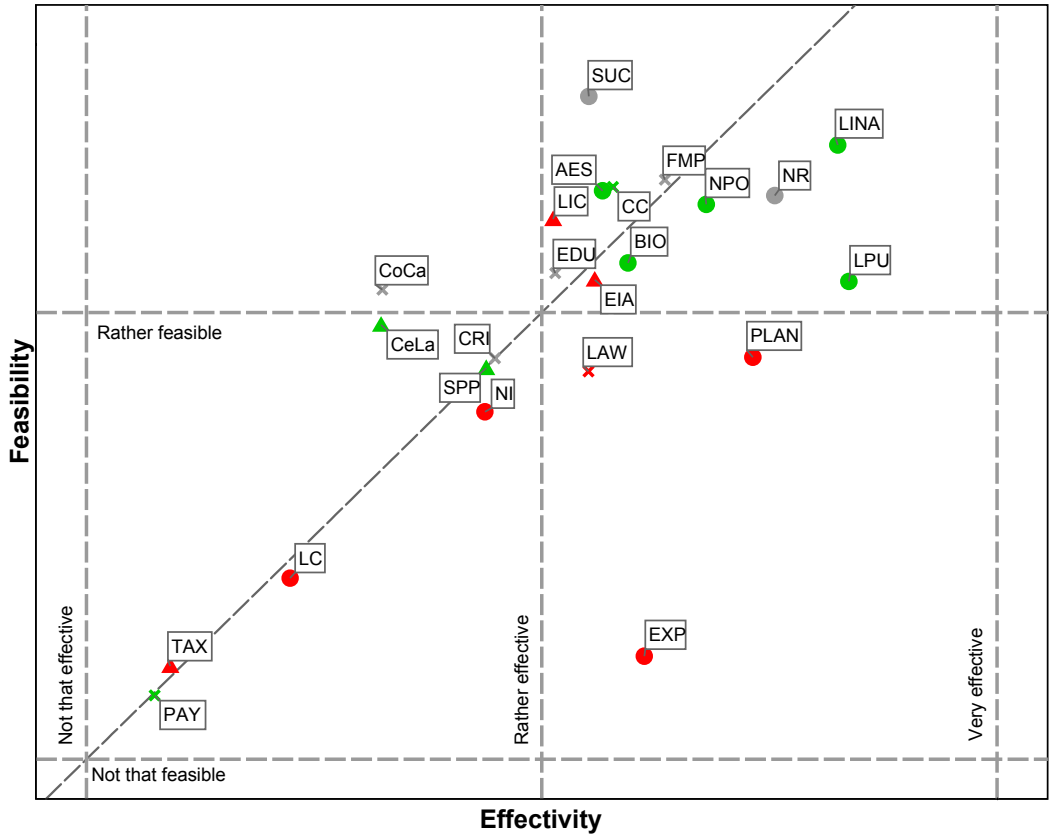
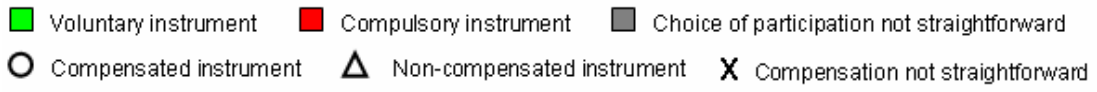


Figure 15: Plot for Wallonia of the relative total effectivity scores versus the relative total feasibility scores (relative to the possible maximum score over the number of answers) for the 20 existing instruments and 2 non-existing instruments. Abbreviations of the instruments: see legend Figure 14.



3.3.2.5 Analysis of the differences between the respondents

The results indicated that there was a positive relation between the level of knowledge of Natura 2000 and the level of knowledge of the different instruments (r_s= 0.16 ; p < 0.001). That means that, in general and as expected, people who are more aware of Natura 2000 and its scope, are also better informed about the different nature conservation instruments. Interesting was also the positive link between the level of knowledge of an instrument and the way it was rated in terms of both effectivity (r_s= 0.12 ; p < 0.001) and feasibility (r_s= 0.13 ; p < 0.001). Furthermore, respondents who give an instrument a high score for effectivity, also tend to score it high on feasibility (r_s= 0.45 ; p < 0.001).

When looking at differences between certain groups of respondents in terms of knowledge of Natura 2000, instrument knowledge and effectivity and feasibility rating, the limitations of the study as mentioned above must be kept in mind. Between the two regions, no clear differences could be found. According to the Kruskal-Wallis test, within the Flemish region, there is a tendency for the forestry sector to be a bit less abreast of Natura 2000 (Z = 9.24, p < 0.05) and the different instruments for nature conservation (Z = 8.59, p < 0.05) than the other sectors. Within the Walloon region, this is the case for the municipalities (knowledge Natura 2000: Z = 11.19, p < 0.01, knowledge instruments: Z = 11.66, p < 0.01), perhaps indicating an insufficient passing of information through the hierarchical

levels of policy. Furthermore, the Walloon government seems to be more sceptic about the effectivity ($Z = 9.29$, $p < 0.05$) and feasibility ($Z = 7.56$, $p < 0.05$) of the different instruments than the municipalities and the nature sector. Finally, within the Flemish government, experts from the ANB appear to be more familiar with Natura 2000 than those from the VLM and VMM ($Z = 10.89$, $p < 0.01$).

Furthermore, it was worth looking at the answers on the open-ended questions at the end of the websurvey. Out of the 123 respondents to the second websurvey, a relatively high number of people made the effort to answer these. Nevertheless, they not always answered at each question. From the 75 Flemish respondents, we received 51 questionnaires useful for the analysis (it means that people answered at, at least, one open question and that they know Natura 2000) and out of the 48 Walloon respondents, 44 questionnaires could be used. Results of this are presented in regard to the process of building a management plan (see Figure 7).

Note that there were a lot of free comments coming from every sector, very relevant remarks sometimes but never supported by more than five or six people. It means that there are not big trends but rather a long and varied checklist to be taken into account for a better implementation of Natura 2000.

For the Walloon part, 19 people knew the Lesse and 25 did not. Out of the 44 useful questionnaires, we found 26 remarks on instruments, 31 on the designation decree, 30 people presented chances & problems for Natura 2000 and 19 people made remarks on the survey.

About the process of **development**[32], it is suggested mostly by municipalities to better target the public to give information, i.e., to work at a more appropriate level. Moreover, for some instruments (like taxes on Horeca – added by 1 person - or entrance fees) the image of Natura 2000 to the general public is not positive enough to allow increasing constraints; measures can only be put in practice after some more effective realizations. We also have to take into account that there is a difference between "engagement" (people are convinced by what they do, and do more than what we demand), and "participation" (people do what we tell them to do). Also important is the fact that in the theory of engagement (Joule & Beauvois 1987), one shows that engagement is inversely proportional to the perceived remuneration.

About the process of **implementation** the most important aspect emphasized by municipalities and nature sectors is the need of control and follow-up on the field. It is also important that the authorities in place perceive the problem appropriately and adopt the appropriate measures: conservation of nature must become a priority; hence there is a need of financing to have efficient results, and the general public also has to support the management cost of Natural zones, because everybody has to be responsible for nature.

There is considerable restraint with respect to the implementation of many instruments; some of them imply heavy administrative procedure and are subject to pressures. In theory, these instruments can act for nature conservation but in practice, either the project does not come to an end (the project is rejected), or it is not useful (compensations are paid but nothing comes).

About the **content** of a good management plan, one repeated suggestion made by public authorities and municipalities (2 remarks) is to make a revision of the 'plan de secteur' and to convert every core Natura 2000 area into Natural zones.

Some instruments are only efficient in the medium or the long term (especially education); there is a necessity of stability in time. In general instruments need to be better known and explained to people who care about nature conservation, it will be efficient only if instruments are well used. There does not exist only one perfect tool but a whole set of tools to combine in relation to the rarity of a habitat or

[32] Process of development, of implementation and content as defined in the scheme of a "Good management plan".

to the time scale (more concretely for example, for habitats under 1000 hectares in Wallonia, the acquisition is the best way to protect them; for widespread habitats (such as beech forests), voluntary measures can be better). Some measures have to be imposed because they are not a "plus" for nature but a necessity, an act of sustainable logic. Finally, there exist other legal/incentives instruments at the municipality level that could be used (e.g. water management).

As a whole, the existence of instruments is one thing, implementation is another: impacts will vary in function of actors on the field and the degree to which each individual person is sensibilized. We have also to take into account that some instruments are only known by few people and that some instruments have never been implemented.

Remarks have been formulated, taking all sectors together, for some special instruments; they are synthesized below:

- There were 5 remarks concerning the agrienvironmental schemes: they are potentially and locally interesting but effects are not always sustainable or biodiversity-friendly (e.g. organic farming does not mean "respect of nature": permanent meadows are sometimes ploughed to put organic cereals). The commitment is on five years and there are delays (almost systematically) for the payment of indemnities. Moreover a lack of transparency (no explanation on the amounts paid) can discourage farmers. There are internal constraints due to administration and in general it is a heavy administrative procedure: effectivity and feasibility will depend on political willingness about their implementation. There is serious discrepancy between the vision of services in charge of control and the vision of the supervising agents; this is detrimental to farmers. For some, the management of the rural space is not always considered as being part of agriculture[33].
- Two people made remarks on organic farming: for this instrument, it is obvious that it is can be positive for the environment but one has to be careful that pressure of big distributors does not reduce the requirement of the specifications sheet for organic production.
- Concerning (eco)conditionality (3 remarks were made), one can note that it is an instrument with a big potential for agricultural zones. Unfortunately, it seems that the Walloon Region does not have the same ambition as some neighboring countries. Currently, it is a matter of respecting minimal standards and more can be made to have more results (a simple link established between the rate of habitat structuring elements in any given agricultural exploitation, and the rights to perceive one unique global subsidy, might prove highly effective, feasible and equitable).
- With regard to communication and education (at least 5 remarks were made – often comments were made for both instruments in the same time), it is said that general campaigns are not efficient if they are not associated with a real effort of education. Unfortunately, this effort of education requires huge means to have efficient results (according to answers, the accumulation of leaflet and flyers does not bring much result).
- The rivers agreement ('contrat de rivière') is a participative process that could serve the objectives of Natura 2000 (remark of one person).
- For the labels (1 remark), the major difficulty noted is the control of the specifications sheet respect.

As we can see not every instrument received a remark and for the ones who received some, there were not so much! Agricultural-related instruments received remarks and also the problem with information and education was pointed out.

Another tackled subject was the designation decree. About 75% of the respondents gave some remarks about it. More than 20 comments were globally negative against only 5 strictly positive. The remarks only reflect the situation in the process of development of the designation decrees, as the implementation of these designation decrees is currently still goin on. The major comments are

[33] The case of the AEM 8 "Prairie de haute valeur biologique" (tool actually used for the management of Natura 2000 meadows) is enlightening: some traditional humid meadows are often arbitrarily "drawn back" from agricultural land, which has the effect to cancel the AEM contract on these lands.

summarized hereafter. The designation decrees are not widely known up to now; so it is difficult to make comments but a priori they might be a good solution. Much time has been devoted to their elaboration, but this was necessary to incorporate proper management in the field; people say that there is not enough communication or bad communication around them. Moreover some people think that they have been realized too fast and without a previous consultation of local owners (when speaking about sites selection). People find them not so much restricting and not so much sustainable: the Walloon Region has to listen to scientists and has to impose valuable constraints to maintain habitats. On the contrary, others remarks say that it is important that designation decrees be made not only by nature specialists because it can serve as a door to a dialogue thank to public enquiries (like a working basis for a management plan devised with the different stakeholders). Additionally, some people find them too much subject to lobbuying at this stage of the process and that the level of details expected is too ambitious in relation to the delay for the creation of designation decree. The question of the financial and human means confronted to the huge number of owners for some sites has also been mentioned.

Finally, we can briefly comment on **opportunities/chances and problems** due to Natura 2000. Only 30 people left comments. 13 are strictly presented as opportunities and 12 as problems for Natura, the others were mixed. Some persons hope that constraints of Natura 2000 will allow understanding the utility of nature protection to people who are less sensitive on this subject; in a way Natura 2000 is seen as a tool of consciousness-raising. People also think that Natura 2000 is a good tool for nature protection and that preservation of nature means a better quality of life (also a possibility to develop green tourism). Moreover people recommend the use of Life projects and agrienvironmental schemes to render the protection of species in difficulty even more efficient in Natura 2000 sites. Conversely, with respect to some people the major problem will be the fact that constraints for farmers will complicate (more constraints, more work and more control!) the relationship with them. The question is laid: will constraints be accepted by stakeholders?

Another noted point is the question of information and communication. Clearly, there is a lack of communication or bad information given and it implies wrong ideas on the subject. There will be a lot of work with participation and consciousness-raising. For political representatives at the local level, the question of compensation is worrying, as in general the question of permits.

For the Flemish part (25 people knew the Demer Valley, 25 do not and 1 person did not answer), subjects of open questions were quite different. Firstly, 16 people filled in the question: proposition of new instruments. Nevertheless, it is not 16 new instruments because often, it was just improvement of existing ones or solutions to better use them. Some **new instruments** are proposed by the respondents, taking all sectors together. A first possibility is to make a Natura 2000 tax reduction. The idea is to reduce tax for a nature-friendly management, if the owner manages his land according a certain vision for Natura 2000 management; he is eligible for a tax reduction. It can also be seen as encouraging citizens when cooperating actively; they would benefit from a reduction when they can show they have contributed to Natura 2000. Another possibility is to make local land banks to proceed to land exchange. Similarly, for agriculture, the idea to develop a kind of agricultural business that can really specialize in extensive agriculture (using adapted stock races, adapted production methods) is pointed out in the results. Finally, there is the possibility for the farmer to sell his products with label at a higher price.

About the process of **development**, various ideas were presented coming from the different sectors. The major one, coming from the agricultural sector, suggests that best results can be gained if farmers participate on a voluntary basis with corresponding compensations. Respondents from public authorities sector asked for the involvement of third parties for the realization of the objectives and for professional consultancy. The point is to widen the participation around nature conservation, by making people more responsible and working in an integrated manner (involving other sectors). Another point is the claim for concrete conservation objectives for each Natura 2000 site; on the basis of these objectives, conservation measures that emphasize public-private partnerships should be developed custom-made, through a well focused management plan. There is also a wish for clear

participation procedures and consultation before decisions are taken. A final remark for the process of development was made by a hunting stakeholder: the difference between objectives and measures is not always clear to everyone and the fact that hunting has a negative influence on biodiversity (thus on Natura 2000 objectives) seems to be a widespread opinion. It is about time that the positive contribution from the hunting sector be acknowledged and appreciated.

About the process of **implementation**, there are only few remarks. One general point comes out from nature and farming sectors; there are in fact enough instruments, but it is just a matter of using them appropriately (among others they have to be applicable in practice, there must be control on the proper execution). The follow-up is also important! A downside of projects is that once the term of the project has passed, the people involved are left to take care of things themselves. The money of the project has usually been spent and the farmers involved are "up to their ears in water". New projects should not be started until the current ones are completed and compensated. Clearly, there is also a need of sufficient funds. Moreover, as suggested by Bemelmans-Videc *et al.* (1998), policy instruments should be evaluated on other dimensions; i.e., effectivity (degree of goal-realization), efficiency (input-output/outcome ratio), legality (equity and motivation of decisions), democracy (degree of participation) and legitimacy (acceptance by target groups and politicians).

About the **content** of a good management plan, we have first to keep in mind that a good instrument is clear, simple, without suffocating administration and has a wide local social support. It is also suggested to work with concrete measures and to apply on a larger scale harder instruments such as land banks, purchases, expropriations or urban regulations.

The efficiency – and partly the feasibility – of an instrument depend of course on the objective for which it is used. The conservation and restoration of very critical species or habitats can only be achieved efficiently through "heavier" instruments such as the creation of reserves etc. For less critical species/habitats the use of management agreements (comment added by one person) can offer a way out if linked to a result commitment, a good evaluation/monitoring and a sound preservation. On the other hand the feasibility is partly dependent on the objectives. In this regard, the use of the "reserve" instrument is quite feasible for highly valuable habitats (heathland, peatland ...), whereas it is less feasible, e.g., for hamster habitats. In a nutshell, the efficiency and feasibility of instruments is no black or white story and can only be assessed "efficiently" if tested vs. the concrete desired objectives. Theoretically instruments are effective and feasible to realize the management of Natura 2000 areas. In practice however this is not the case, because some objectives are perceived as measures and the measures do not always contribute to the objectives. The objectives of the other sectors are not sufficiently taken into account. Thus, measures which are taken are in conflict with the objectives of other sectors and moreover, the measures in that case do not contribute to achieving the Natura 2000 goal.

Another tackled subject was the **Natuurrichtplan**. On this there were 44 comments of which 19 were positive, 16 negative and 9 were mixed. When one says positive, it means that generally people found the NRP effective and feasible even so they add a "but" … and they presented lots of improvements. For this instrument there were not really positive remarks but rather remarks, coming from the different sectors equally, to take into account better implementation of the Natuurrichtplan. A first point to improve is the question of financing and compensation. It is said that in practice it will only work when many more financial means are provided for the elaboration of the plan. If an adequate budget can be provided for the compensation of active management performances then perhaps there is a possibility that the policy is effective. Financial stimuli, apart from a simple package of basic rules, are much more useful and act in a less antagonizing way (i.e., they favor an encouragement policy more than a penalizing policy). Secondly, feasibility is strongly linked to the extent of the consultations with the current users in the area (mainly farmers and foresters) and with the inhabitants. According to ministerial guideline, the nature sector should reach a consensus with all other sectors. However consensus leads to paralysis, participation to results.

In addition, the process seems too slow for the overall realization of the conservation objectives. It is a slow and time-consuming procedure linked to something complex: local users/owners, target groups often consider it a threat because it creates an extra layer between the destinations and the execution level. Local participants do not always understand the abstraction level of an area vision. Most local target groups lack some ecological knowledge to understand the conservation objectives.

Finally, several measures can be added and we have to be careful to the fact that there shouldn't be any overlap with existing regulations and other instruments such as nature design and land design.

Some **remarks** have been made as well for some specific instruments. 23 people left some remarks, generally improvements to imply for a better application. We can present them briefly:

- Organic farming (one comment) probably has a positive effect on insect populations, but by mechanical shuffling a lot of field birds nests are destroyed. So there is rarely a straightforward and simple answer to give on effectivity.
- For one person, land consolidation is considered as a good instrument but still too much focused on agriculture and found as a very hard and time consuming procedure.
- The purchase of the sites and the management (linked to design) by competent authorities (government and acknowledged site managing associations) are seen as the most important guarantee for the preservation of nature values for two people. Especially expropriation (commented by one person) - which can be very effective and easily feasible to achieve the intended objectives in the scope of Natura 2000 - is a one-sided act of management, often considered less popular (it should be the last resort) with parties involved and with policy, and therefore considered to be less feasible. However a lot of other mentioned instruments (prohibitive rules, permits...) from the survey are one-sided acts of management as well, which are established without consent of the person involved. On top of that, those measures are often embedded in administrative processes a normal citizen has no control over. The benefit of the expropriation procedure is that it is a clear-cut defined procedure, with defined professional procedures for parties involved, at a reasonable compensation, and with very sustainable and effective results.
- Concerning forest management plans (comments made by two people), their effectivity for Natura 2000 will differ in function of the habitats and species for which the area is designated. From the point of view of the conservation objectives, a forest management plan will not be very effective in a coniferous area where the objective is heather or other open vegetation. On the contrary this is not the case for example in the Meerdaalwoud where the area is designated for its forest habitats. Additionally, it has to be sufficiently tested by practical experience to be practically oriented.
- Nature project agreements, according to one person, will be effective, as long as the procedure is not too time-consuming and does not discourage private owners from submitting a file. On top of that, an adequate budget should be made available
- Requesting entrance fees to Natura 2000-area visitors or imposing taxes on catering establishments around Natura 2000 areas, according to one respondent, will rather create resistance, especially because nature conservation in Flanders is mostly financed by government money. With nature conservation initiatives largely financed by private money, as it is the case for instance in Great Britain and South Africa, such resistance will be a lot smaller, or even inexistent. Means from the tourist sector as a whole should however be used for co-financing of the recreational aspects of nature conservation (for instance construction and maintenance of pathways).

37 comments were made for opportunities (18) and problems (28) on Natura 2000. We could also see that some people have mixed feelings about Natura 2000 because they pointed out both opportunities and problems. **As a whole**, Natura 2000 is seen as a great opportunity for effective nature policy in Flanders. The application of Natura 2000 will contribute to the creation of social support and consultation platform. There is a hope for enlargement of social support for nature design and then a possibility to concretize what nature policy wants to achieve in Flanders: offer to society a long-term framework. Moreover, Natura 2000 is an opportunity to explain to Flemish people that nature is really important. It can also stimulate private owners to take up their responsibility and come to a balance between the different actors in a given territory. Finally, Natura 2000 will have a large role in the scope of the adaptation to climate change and will work intimately with Life support.

Conversely, some people, from all sectors, are less positive and see some **problems** arising with the coming of Natura 2000. A first point is the additional obligations that will create additional work pressure. This makes people go sour and this will lead to a decline of social support and results in a lack of sustainability. Secondly, there are some matters of concern for the agricultural sector: agriculture is seriously burdened and they are not exactly the demanding party. For possible compensations the agricultural sector feels disadvantaged.

Linked to technical criteria, some people are afraid that not enough means will be available (financing and work force). Additionally, there are also uncertainties around Natura 2000 areas; the question is, what is the destination from spatial planning of these areas?

Finally, there seems to be too little political support and insights about the necessity of Natura 2000 – political decision making and putting personal interest first – as well as about the conservation of ecosystem services that benefit the general socio-economic framework. Society is not aware of the social benefits and only considers the costs; it is still too abstract and people do not really understand what is about.

3.4 Local public acceptance of different kinds of implementation strategies

The bridge between the current and favourable status is formed by the management-strategy. The strategy describes the possible instruments and (technical) measures that will be used in the implementation phase, but also in which sequence and combination they are to be put in. In the previous part the analysis of feasibility and effectivity of different instruments as perceived by experts is described. In this part we present the results of a survey that was executed among local stakeholders in a Walloon and Flemish case area.

In the past different kind of strategies were developed to protect and further sustainable nature development. They include legislation as well as economic incentives. It has become clear that just to have a few laws and to spend money on subsidies is not enough. Factors other than legislation are also essential to further the sustainable development of landscapes. It is shown that perception, communication, and possibilities to participate are the most decisive driving factors influencing the formation of a long-lasting acceptance. Furthermore, acceptance may be based mainly on economic criteria, on usefulness, on ecological or even aesthetic aspects. One of the basic factors affecting the success or failure of nature conservation strategies is public acceptance of the developed strategies. Focus of this survey was to get a better insight in (and of) the views of the actors of different kind of global strategies.

A different methodology for the survey was used in the Walloon and the Flemish Region. The context of the implementation of Natura 2000 is at the moment quite different in both regions. In the Flemish case area a broad information and consultation process about the development of conservation objectives and management measures is ended. We presumed that more people would be aware of Natura 2000 and the related consequences in the Flemish and the Walloon region. Besides that the research team could use in Flanders the network of several important stakeholder-groups. This gave the opportunity to reach a wider target public with a written survey then in the Walloon region. In the Walloon region we choose to use an in-dept-inquiry. This gave the opportunity to give information about Natura 2000 during the survey itself.

3.4.1 Results of the Walloon survey

This survey was led in the Lesse Valley at the end of September 2008. The goal was to have a view of the implementation of Natura 2000 at a local level. We met 27 people in the following sectors: agriculture (7), forestry (7), municipalities (4 municipalities and 5 persons), firms (7) and tourism (1) (see Figure 16).

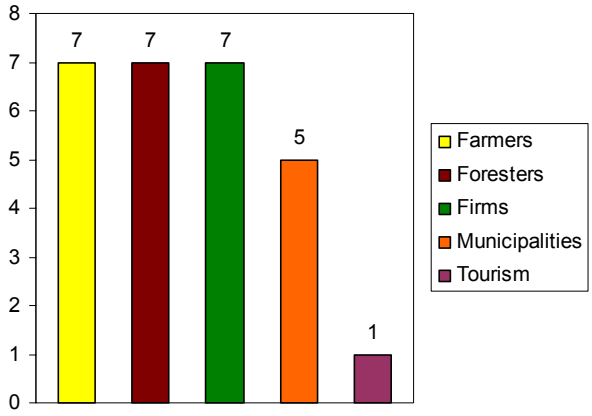


Figure 16: Graph of the number of people and groups of users interviewed for the strategy assessment.

The interview began with a general overview of respondents' knowledge on Natura 2000. When we speak about Natura 2000 to the stakeholders, two types of answers came to their mind. First, answers "pro nature"; i.e., protection of nature, fauna & flora and biodiversity, also an idea of conservation and the fact that it is a good thing. Conversely, there were also more negative words like constraints, questions, lack of information and also restrictions. When we asked the question what is exactly Natura 2000, we see that the goal seems clear, the protection of nature in protected zones (especially for the municipalities which have precise knowledge on Natura 2000). Some people talked about the European Union and about directives. Also, some people thought that Natura 2000 is an organization of nature protection.

As to the question "are you implicated in Natura 2000?", farmers and municipalities answered yes. Farmers are implicated because they own land in Natura 2000 and municipalities, because a part of the municipality territory is also designated. Conversely, the foresters, the firms and the tourism sector are not implicated because they didn't receive any information. Moreover, Natura 2000 is perceived as generally positive for nature and negative for the activities of the stakeholders.

Most of the interviewed persons think that it will be possible to implement Natura 2000. Also, in general people think it is possible to stop the decline of biodiversity, provided specific constraints are implemented in the field and also because it is the goal of Natura 2000. Finally, at the question "does your opinion change about Natura 2000?", answers are very divergent, there is no general trend. The views vary from positive to negative or negative to positive with some graduation.

After these few questions we made a general presentation on Natura 2000, the objectives and the measures in function of the represented sector.

The next section concerned the conservation objectives. A majority of people accept these to be defined by the European Union and the Walloon Region. If people don't accept this situation, it is because they would like to see it at a more local level. To the question "do you think that conservation objectives have to be defined at a local level?", farmers, firms and foresters answered 'yes' because they have an impression of "office work" and that the work was performed too far from the field with no knowledge of the local situation. Conversely, farmers do not want conservation objectives to be defined at a local level. They know that the objectives are defined by experts, so it is well accepted. A majority of persons prefer to keep flexibility in the definition of the objectives, to have the possibility to adapt in particular case and because the world and nature change quickly. Additionally, this would allow negotiating constraints. Finally, the constraining character of the objectives is seen as a good tool to have results on the field for most people. For the others, they cannot give an opinion because these people think they do not have the knowledge to answer to this question.

Following the conservation objectives, some questions on the site protection were presented. Most people agree to reduce the intensity of their activities to achieve the conservation objectives on the site. Some legal means were presented and people ranked these as follows:

1. adoption of positive economic incentives (subsidies and agrienvironmental schemes),
2. adoption of negative economic incentives (like ecoconditionnality),
3. submission of the activities to a permit,
4. interdictions,
5. or a combination of these measures.

Real estate measures are preferred by a few persons (generally old people at the end of their activities. They accept to sell their lands but with a good purchase price), but most people are against.

Concerning the question of the impacts management outside the site, we received few answers so it is difficult to draw general trends. We can nevertheless say that people are okay to use firstly interdictions and then agrienvironmental schemes.

Finally we also asked if the revenue losses due the implementation of Natura 2000 have to be taken in charge by the community. Most people agree that the revenue loss due to the reduction of activities intensity and the loss of real estate value have to be taken into account. For the cost of opportunity (i.e. the cost of passing up the next best choice when making a decision) due to restrictions coming from Natura 2000, opinions vary: municipalities are for the incalculation of this cost while two foresters are strictly against, because they think it is not justified as people should be aware of these restrictions when buying real estate in Natura 2000 area. None of the farmers gave his opinion about this aspect.

Next, a part on active management was submitted. Legal means proposed to manage actively the site are as follow:

1. management contract
2. agrienvironmental schemes
3. substitution by public authorities or NGOs (i.e. the acceptance of the owners or usual managers of the site that public authorities or NGO's take over (part of) the management of these terrains)

Again, people are against the use of real estate measures but marginally some are for.

In case of the non-respect of the commitment people agree to put a penalty. Firstly they advise to suppress the subsidies (the money received in counterpart of performing the management), secondly put an administrative sanction (a fine) and then suppress all the other subsidies. Nevertheless people ask to put first a warning and to be careful in case of non-voluntary fault.

For the part restoration of habitats, most people think it is necessary and legitimate to do restoration on deteriorated parcels. Some people (farmers, municipalities and firms sectors) have mixed feelings; i.e., either they think it is enough to do active management or it is important to assess the need case by case (with the object of not spending money and add constraints for small/useless parcels).

For people who agree, the best means to perform restoration are, successively:

4. management contract
5. substitution by public authorities or NGOs (i.e. the acceptance of the owners or usual managers of the site that public authorities or NGO's take over (part of) the management of these terrains)
6. agrienvironmental schemes

In this case nobody is for the use of real estate measures.

A part was also dedicated to the information and education instruments. People think that information is an important instrument, useful for managers on the site and also for the general public. Nevertheless most people find that there is not enough information given and, in particular, farmers and foresters ask to know what they can exactly do on their lands. One other important remark is, for the management, first to have the support of the site managers, because they are always on the field and they are the ones who will build the positive image of Natura 2000. Education is also seen as important. People mentioned the good work made at school (in a way the parents are educated by the children). One suggestion is to begin at school by including some courses on environment in the programs.

To involve the general public in the process of Natura 2000, it is advised to give more information, at school for children but also with the media, e.g. TV spots, and no paper, which are immediately thrown away. A few people agree to pay entrance fees in Natural reserves. Just a little amount to know that we "have nothing for nothing". Moreover some people are okay to pay for nature but most are against because they already pay for a lot of things. Similarly, people disagree to put a tax on the Horeca sector: it is not a good idea, they have already the value added tax and other expenses to pay.

Finally, to present a global strategy to achieve the conservation objectives on the site in a sustainable way, people advise to use orderly:

7. a mix of consensual and constraining measures
8. strictly consensual measures
9. and not real estates measures.

3.4.2 Results of the Flemish survey

To get to know better the perception of local users towards different kinds of strategies for the implementation of the Natura 2000 network in the Demer valley, an internet survey was set up. Stakeholders from different sectors in the Natura 2000 area of the Demer valley (local users) were contacted and asked to cooperate with the survey (online and on paper).

The survey started with a short introduction of its goal, followed by a sound of the level of knowledge of the respondents about some nature policy concepts and especially Natura 2000. After that, each respondent was confronted with 6 statements about the possible implementation of Natura 2000 and each had to point out whether he/she agreed or disagreed with it (or had no opinion). From these, 3 statements concerned a rather rigid way of implementation, while the other 3 determined a more flexible one. Furthermore, 12 concepts of implementation strategies were put forward, from which 7 belonged to a more or less rigid way of implementation and 5 supported a rather flexible implementation manner. Each respondent had to indicate whether he/she totally agreed, agreed, disagreed or totally disagreed with these strategies (or whether he/she had no opinion).

Next, the profile of the respondent was determined (e.g. whether they are owner of real estate in the Natura 2000 area of the Demer valley or elsewhere, whether and what kind of user they are in the Natura 2000 area of the Demer valley).

Finally, respondents were given the opportunity to give comments about the opportunities Natura 2000 offers for their use and about the most important problems its implementation involved. Also general comments or questions could be posted.

3.4.2.1 Data analysis

For statistical analysis, SPSS 15.0 (for Windows) (SPSS 2006) was mostly used. For every analysis, besides the unanswered questions, also the responses 'no opinion' were treated as missing values. The open questions were classified and described in a non-statistical way.

The analysis of the open answers was done by categorising these remarks into positive and negative reactions and classifying reactions regarding specific issues such as a lack of information, …

3.4.2.2 Response level

After omitting the respondents with too many (> 25 %) missing values, 119 persons were retained. From these, 13 belonged to the agricultural sector (11%), 11 to the forestry sector (9%), 18 to the nature sector (15%), 8 were classified under the hunting sector (7%) and 33 people belonged to the recreation sector (28%). All these (n= 83) were considered as users. The remaining 36 people were classified as 'non-users' (30%), as they had no direct interests in the Natura 2000 area of the Demer valley (Figure 17).

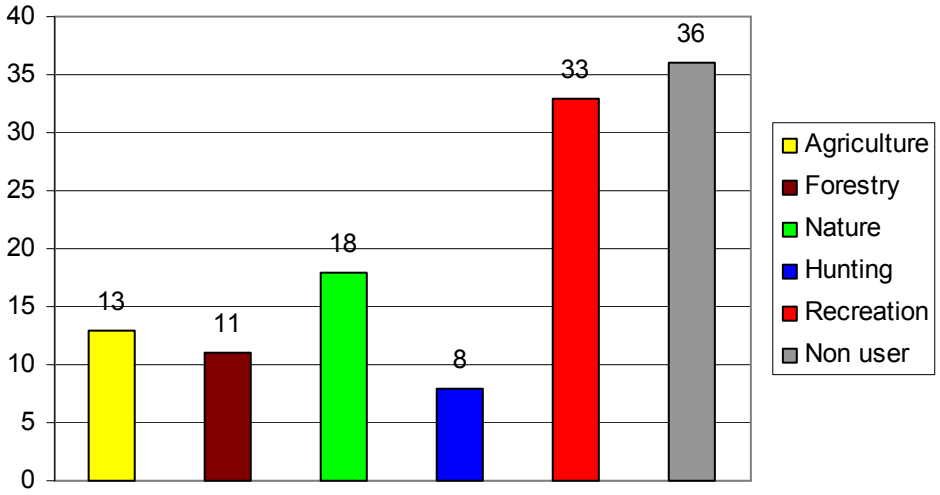


Figure 17: Frequency diagram of the response level for all user and non user classes. Counts are depicted above every bar. In total, 119 respondents were used in the data anlysis.

Out of 148 registered respondents for the survey, a relatively high proportion of people (about 28 %) made the effort to answer the open questions at the end of the survey on the chances and bottlenecks for Natura 2000. From these respondents, we received 37 remarks on the question if Natura 2000 offered any opportunities for them, 53 remarks on the question about bottlenecks for the users and 32 answers on the open question of about general remarks to the questionnaire.

Analysis of the knowledge of the respondents and their information demands

First, it was investigated whether significant differences could be detected between the user classes in terms of the nature policy knowledge, the familiarity with Natura 2000 and the knowledge level of the Natura 2000 concept. Most of the respondents (79%) were familiar with the general nature policy in Flanders and Natura 2000. Only within the recreational group a higher percentage (33%) never heard of Natura 2000. Statistically there were no significant differences between the different user classes in terms of the nature policy knowledge, the familiarity with Natura 2000 or the knowledge level of the

Natura 2000 concept. The level of knowledge of Natura 2000 was also tested by means of six statements witch could be rated as 'true', 'false' or 'I don't know'. This test gave the same results. Most of the respondents gave the correct answer for the different statements. For the statement '*Natura 2000 areas are extra protected European nature reserves',* the overall score was much lower than the average, possibly due to the dubious way in which the word extra could be interpreted (extra protected or extra nature reserves). For none of the statements there was a significant difference between the different user classes.

Despite the relative high knowledge level, most of the respondents would like to have more information on different aspects of Natura 2000. In the survey the respondents could indicate wether they would like to have more information on 7 aspects concerning the Natura 2000 matter. Figure 18shows the results for each aspect (over all respondents together), while Figure 19 shows the result for every user class (over all aspects together).

For all aspects the demand for information (over all respondents together) is higher then 60%. Respondents were especially interested in the location and the local goals. The demand for information for the most abstract aspects (legislation, ecological principles and European targets) is generally less high. A more detailed analysis showed that there are some interesting differences between the different user classes about the information demand for some aspects. People from the nature sector are for instance more interested (and demand relatively more information) in the abstract aspects. People of the nature sector also more often state that they have enough information. On the other hand we could see that especially farmers, foresters and hunters ask relatively more information than the others user classes on the location of Natura 2000 areas and the local goals and the consequences of Natura 2000. Its worth to mention that a large group of the farmers (> 20%) isn't at all interested to know the consequences of Natura 2000. This could be interpreted as a signal that they can't agree with any measure. Especially farmers (+ 30%) aren't interested in the global European goals or the ecological principles of Natura 2000. Recreational users are especially asking more information on local aspects like the location of Natura 2000 areas or the local goals. They are the less interested group to know more on the consequences of Natura 2000, the way they could contribute and the general legislation.

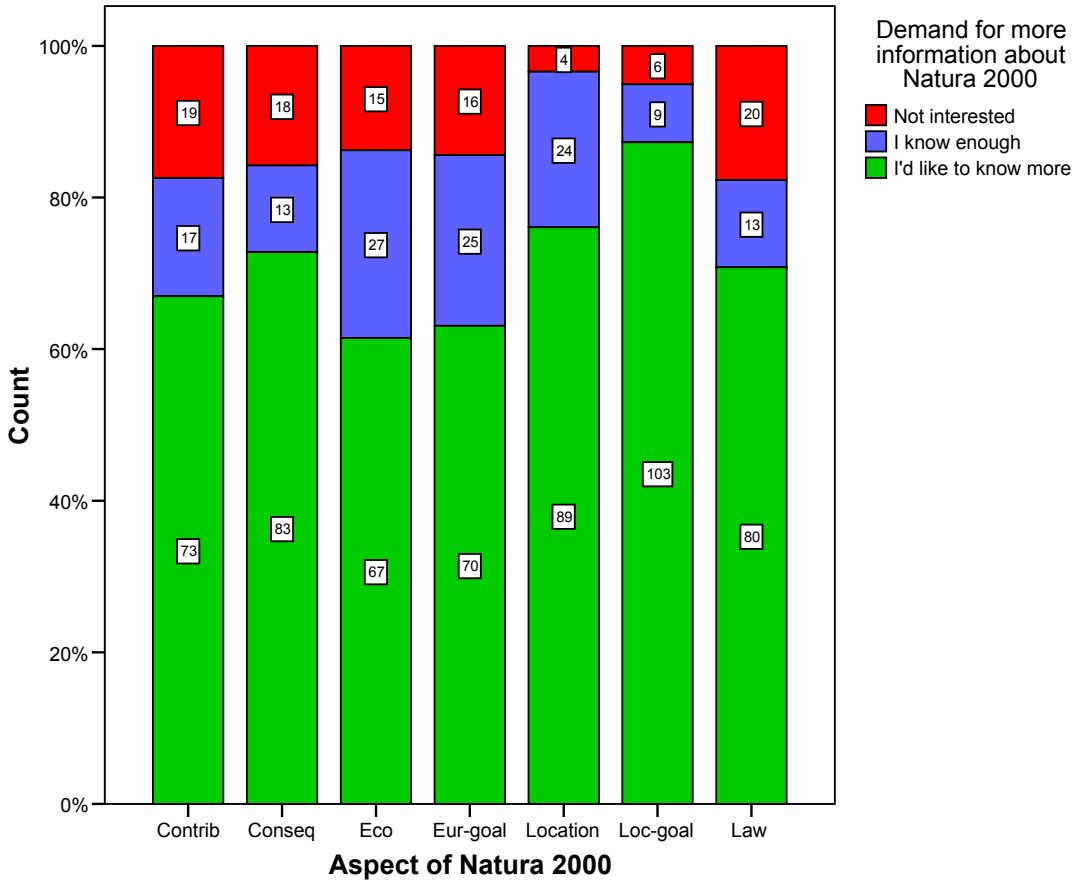


Figure 18: Frequency diagram (%) of results for the demand for more information about Natura 2000. Contrib = the way in wich I can contribute to Natura 2000

Conseq = the concrete consequences of the Natura 2000 implementation for my activities; Eco = the underlying ecological principles of Natura 2000; Eur-goal = the global goals on European level for Natura 2000; Location = the location of the Natura 2000 areas in my neighbourhood; Loc-goal = the Natura 2000-goals for the areas in my neighbourhood; Law = legislation of Natura 2000

Although there are some differences between the different user classes in relation to the information demand for the different aspect there is statistically no significant difference between the overall information demand of the different user classes (over all aspects together). The demand for more information is overall higher than 60% for all user classes (Figure 19). Generally the results in relation to the demand for information seems logical as it is expected that at a local level people are especially interested in practical local information. The kind of information people want is generally the same for all user groups (except for the users of the nature sector).

This analysis is also reflected in some of the comments that were given for the open-ended questions. People clearly took the effort to ask for more information and participation in the Natura 2000 process. People who are "against Natura 2000" focussed very much on the practical implications and consequences for their activities and property (future activities, value, …). People who are "in favour of Natura 2000" are much more looking at the objectives for nature protection and they care less about the practical consequences on the terrain (or at least they did not express their concern in this survey). From a large group of people (+10) we received extra questions and remarks regarding the need for more information and consultation of stakeholders. It is very clear that a lot of people are not really familiar with the principles of Natura 2000 or want to be involved in the process. One landowner who owns more than 400ha in this area said he was never even consulted in the process of designation on his own property.

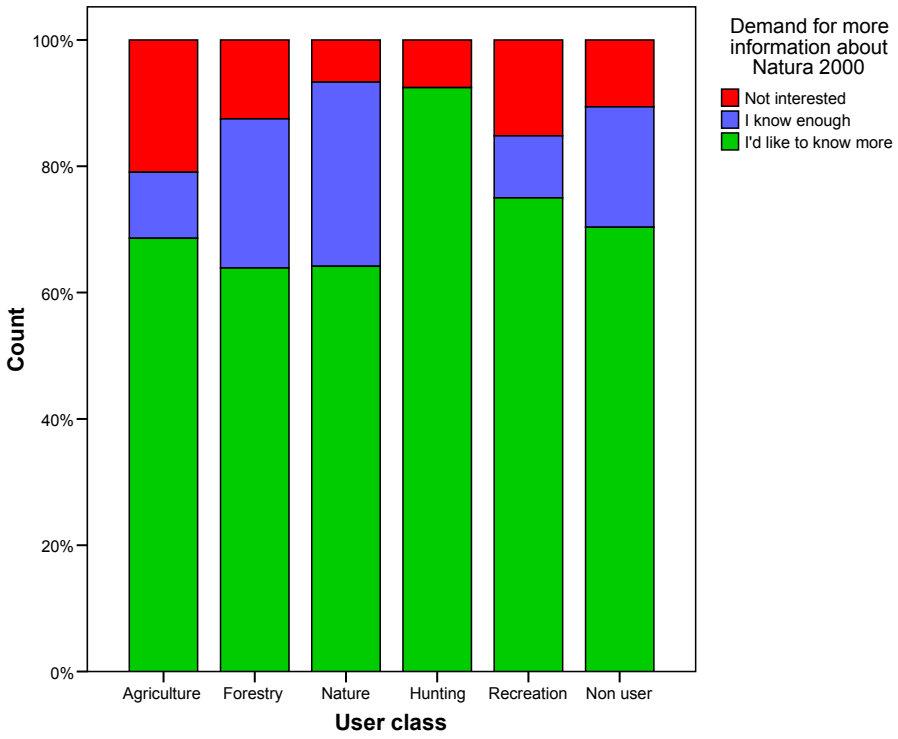


Figure 19: Frequency diagram (%) of results for the demand for more information about Natura 2000 for every user class.

Preferred strategies for the implementation of Natura 2000

The primary goal of this survey was to investigate whether different users prefer different kind of strategies to implement Natura 2000. First of all the preferences of the different users in relation of different aspects of implementation strategies was tested by 6 statements. Each of the statements expressed one aspect of an implementation strategy like financing, setting targets, evaluation, the way users should be involved etc.

Figure 20 and Figure 21 show the results of the responses of the different user classes on the 6 statements. Globally most of the respondents chosed for an implementation strategy with adaptive (statement 2) and scientifically based goals (statement 6). Most of the respondents also don't agree that the government is responsible for the management of Natura 2000 areas (statement 3). For those aspects there seems to be no big differences between the different user classes. At first sight, this result could be surprising particularly for the last statement of these three. It would be expected that people from the nature sector agree that the management of Natura 2000 areas is done by the government. This survey gives another (explainable) insight. The result could be interpreted that people who are involved with nature management want to continue with this. The government can manage certain areas but not all.

This explanation also corresponds with the results of the nature sector for statement 5 (users should take part in the management of Natura 2000 areas). Overall most of the respondents agree with this statement. Also most of the respondents of the nature sector found that users must be involved. It's not clear what kind of users they have in mind. Could it be that they refer to them self? All other user

classes are bit less convinced that users should be involved. A possible answer for this could be found in the very negative attitude of some respondents towards nature management. Maybe they don't want to be involved in it at all. Another explanation could be that those respondents find it not there task to manage nature.

The difference between the views of the different groups is a bit more logical in relation to the aspect of financial compensation. Respondents of the nature sector are more in favor for compensation according to the results user obtain. Farmers and foresters on the other hand are a bit more in favor for compensation related to the efforts of a user.

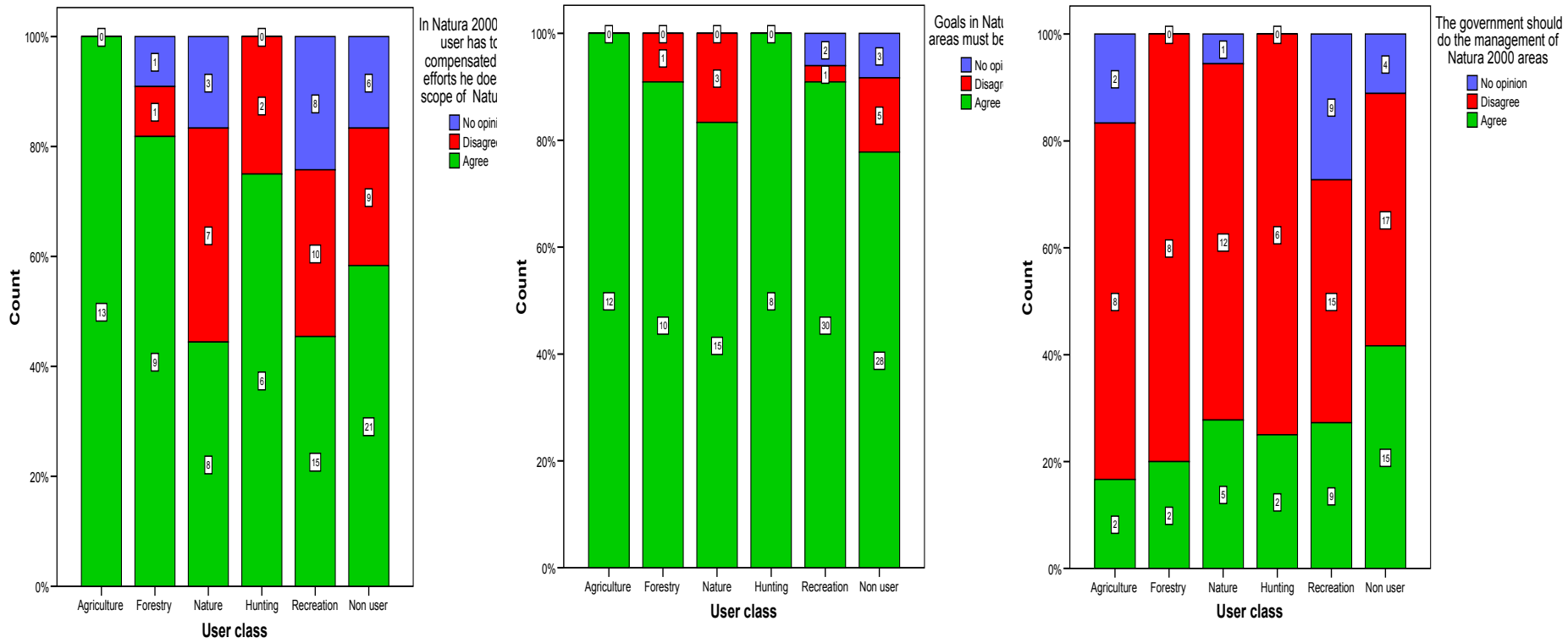


Figure 20: Frequency diagram (%) of results for the different statement about the implementation of Natura 2000. Counts are depicted in every bar.(part 1)

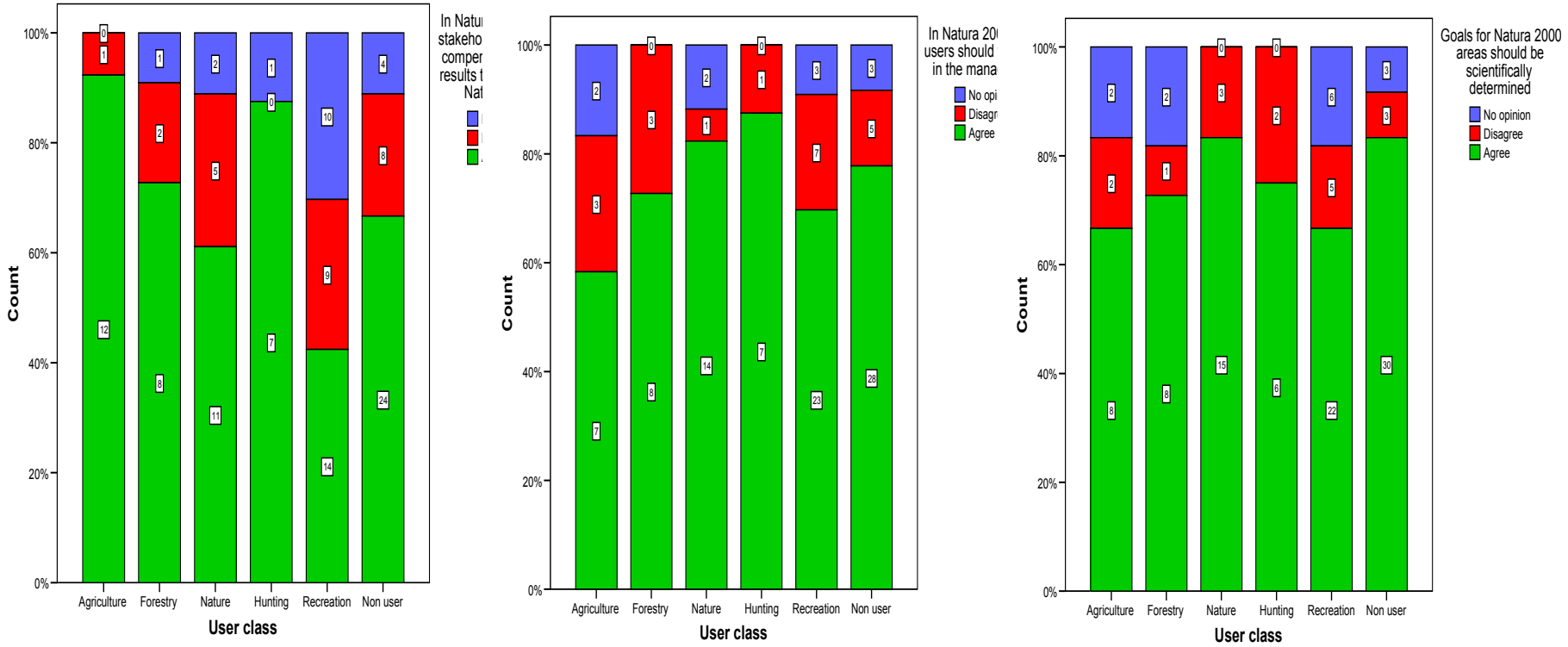


Figure 21: Frequency diagram (%) of results for the different statement about the implementation of Natura 2000. Counts are depicted in every bar.(part 2)

Besides simple statements, the preference of the users in relation to 11 global and more complex strategies was analyzed. These strategies were build up of different aspects. Within each strategy the consequences for the users were described. 7 Strategies belonged to a more or less rigid way of implementation and 5 supported a rather flexible implementation manner. The different strategies are described in Table 2.

Table 2: Description of the strict (S) and flexible (F) strategies presented in the survey for stakeholders and users on the terrain.

'Strict Strategy'	**'Flexible Strategy'**
Key aspects: • *Scientific based strict goals* • *Legislative measures, government control, focus of government on acquiring and managing most important nature areas* • *Financial compensation for users if targets are reached.* • *Co-operation on basis of mistrust. Belief of government that money is the key to success/acceptance* • *Efforts of users on individual basis within perimeter.*	*Key aspects:* • *Adaptive goals developed together with the local users, integration of local knowledge* • *Voluntary measures, self control, government facilitates (communication, education, general frame, …)* • *Measures/efforts within and without perimeter together with all users on mutual basis* • *Financial compensation for the efforts and financial loss* • *Co-operation on basis of trust*
S1: It is not the task of the users to aid at helping reaching the Natura 2000 goals, even this might mean that users within Natura 2000 zones must hand over their grounds to the government.	**F1:** The government should determine goals in consultation with the users. If users make sufficient efforts but the goals are not reached, then these goals must be able to be adapted after an evaluation.
S2: Nature goals in Natura 2000 zones can only be reached if these areas are managed by nature organizations and/or the government. The best protection for nature values is the purchase of land by these organizations and/or the government.	**F2:** The government should particularly dedicate itself at informing and coaching the users. Users can manage and develop nature values themselves together with the least economic loss for their activities.
S3: Users making efforts within Natura 2000 zones must receive compensation according to the reached goals. When the goals are not reached, the government is allowed to impose extra measures within these zones without providing financial compensations.	**F3:** Users are able to choose themselves whether they make efforts for nature in or outside the Natura 2000 zone. They must be compensated for the efforts made.
S4: The government should impose strict rules to the users within the Natura 2000 zones in order to protect certain nature values. The loss of income shall be compensated. If the rules are not respected, the government must intervene.	**F4:** Users that make efforts in or outside Natura 2000 zones in order to reach the goals for a Natura 2000 area are to be guaranteed they can compensate their income loss elsewhere so their possible loss is reduced to a minimum.
S5: The goals and rules within Natura 2000 areas should be set for the long term. Only then, users will adapt their activities because they have the certainty that these goals will not change on the short term.	**F5:** A number of minimal restrictions should be in force for all users within the Natura 2000 zones. Users from in or outside Natura 2000 zones are compensated for the efforts they made that contribute to reaching the Natura 2000 goals.

S6: To be sure something happens on the terrain, the government itself must impose measures to the users. The efforts and income losses will be compensated and grounds will be purchased by the government.	
S7: Users receive compensation if the agreed results are reached. If these are not reached, the government can impose additional rules without having to compensate the users.	

The categorization of strategies made by the research team was strongly reflected in the response data. The Spearman rank correlation test revealed that near all of the strict strategies were mutually well correlated, as it was also the case for most flexible strategies. Furthermore, it became clear that the overall strict (flexible) strategy rating score was highly positively correlated with the strict (flexible) strategies individually.

Within the strict strategies S2 has the strongest positive correlation score (r_s= 0.82, $p < 0.001$). Within this strategy a strong and dominant role is given to nature organisations and the government. This strategy strongly reflects the vision of a large group of people actively in the nature sector like demonstrated in the discussion within the user committee (see part 3.3.1). Strategies S3, S6, S7 and S4 also are strongly positive correlated with the overall score for the strict strategies. Common aspects within these strategies are the dominant role of the government (as imposer of goals, as controller of the results) and a compensation for users. Strategies S1 and S5 are less positively correlated with the overall score for the strict strategy. Within S1 the governments is in full (dictatorial) control with no spaces for users to assist in the management. A possible explanation for the lower correlation could be that this strategy is been interpreted as too strict. Most of the respondents agree that users in some way should be included in the management (see Figure 21). S5 (r_s= 0.48, $p < 0.001$) is the least clear strategy with only a strict aspect in relation with the definition of the goals. The power of the government is less direct described. Besides that it's only strict strategy where the result for nature is strongly dependable on the (voluntary) co-operation of other stakeholders.

Within the flexible strategies the correlation scores are generally spoken lower and less pronounced. This could be explained that the respondents on these strategies have less diverse visions (in pro or contra). F2 and F3 are the most positive correlated with the overall score for the flexible strategies. In both strategies the role of the government is restricted and the freedom of choice for the management is also given to the non-nature stakeholders. Those strategies reflect strongly the vision of for instance foresters (see part 3.3.1). F5 is less correlated with the overall score for the flexible strategies. This is the only strategy where the government has some power.

Figure 22 shows a graphic presentation of the position of all the strategies in a 2-dimensional space, after all answers were subjected to a Non-metric Multidimensional Scaling Ordination (n x m). The correlations between the different strategies are visualised by means of connection lines. This graph confirms that the clustering of the strategies was relatively well clear in the responses. Strict strategies correlate well with other strict strategies (green lines) and negatively (red lines) with flexible strategies. Besides that it gives an idea of the interrelations between the different strategies.

The figure illustrates in a very clear way that S1 is somewhat different appreciated than the other strict strategies. It's only strongly correlated with S2. These image correspondents with the correlation analysis we described above. Like state above this could mean that this kind of strategy is to extreme for most of the users. S2 on the other hand is clearly the most strongly correlated with all other strict strategies. It's also one of the strategies that is clearly negative correlated with the dominant flexible strategies. The figure illustrates that all other S strategies are closely related. S3, S6 (and somewhat less S7 and S4) are the most related to S2.

The positive correlations between flexible strategies are less strong. Graphically two groups could be distinguished (F1, F2 and F3 vs F4 and F5). Within the first group some power is clearly given to the users. F2 is clearly the most dominant strategy. This strategy is (strongly) negatively correlated with the different strict strategies. Between the two groups of flexible strategies F1 and F4 are strongly positively correlated. F4 but especially F5 seem to fall in between of strict and flexible. This could be caused by the fact that F5 mentions 'restrictions', which is often interpreted as 'strict management'.

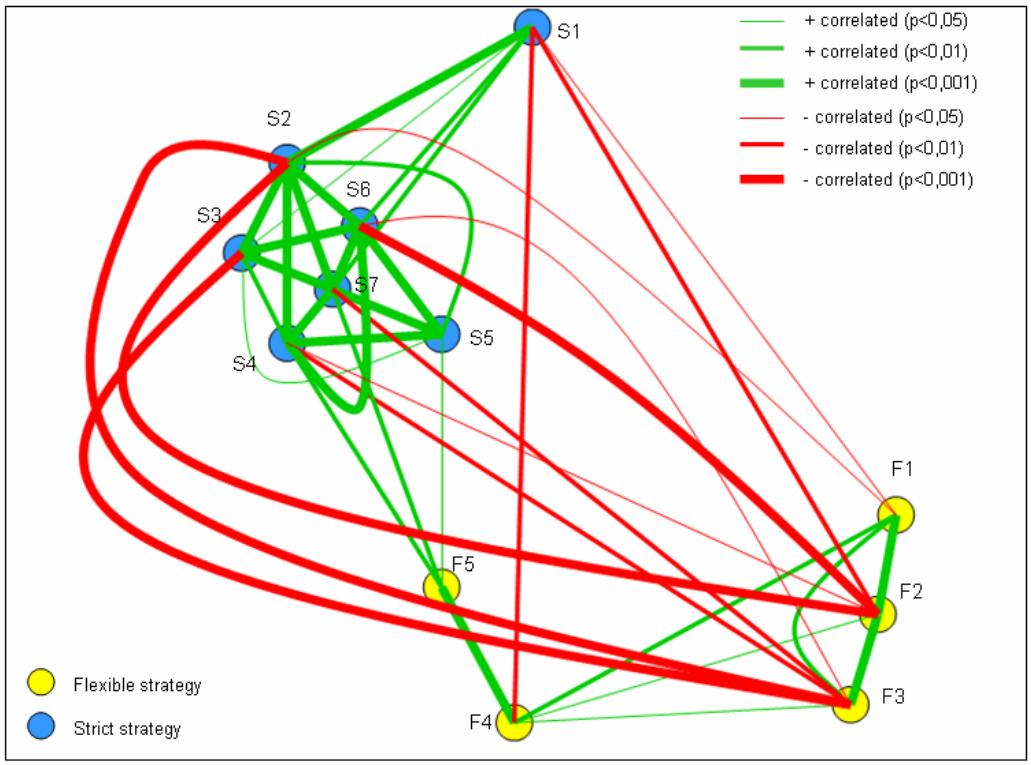


Figure 22: Visualisation of the different strategies in a 2 dimensional space. Intercorrelations of the strategies are given by connection lines. Abbreviations of strategies: see Table 2

Taking into account the scores on the different strategies an 'overall strict strategy rating' and 'overall flexible strategy rating' was developed for every respondent. The Kruskal-Wallis test showed some significant difference between the different users groups for the overall strict and flexible strategy rating scores. Farmers and hunters preferred a significantly less a strict implementation strategy than respondents from the nature sector ($Z = 20.90$, $p < 0.001$). Foresters and recreants have a more dispersed appreciation. They don't differ significantly from the other groups regarding their answers on the strict strategy. . The median score is somewhat different for those two groups. Foresters tend more to farmers and hunters (they have a overall negative appreciation for the strict strategies) while recreational people tend more to the nature sector. Farmers on the other hand prefer a significantly more a flexible implementation strategy than the nature user class ($Z = 17.02$, $p < 0.01$). All the other user groups do not differ significantly. Different from the responses on the fix strategies all user groups have a more (forestry) or less (hunting, recreation, nature) positive appreciation for the flexible strategies. When setting out the respondents of each user classes on a biplot with their overall strict and flexible strategy rating scores on the axes, a visualization of the results from this analysis is obtained (Figure 23).

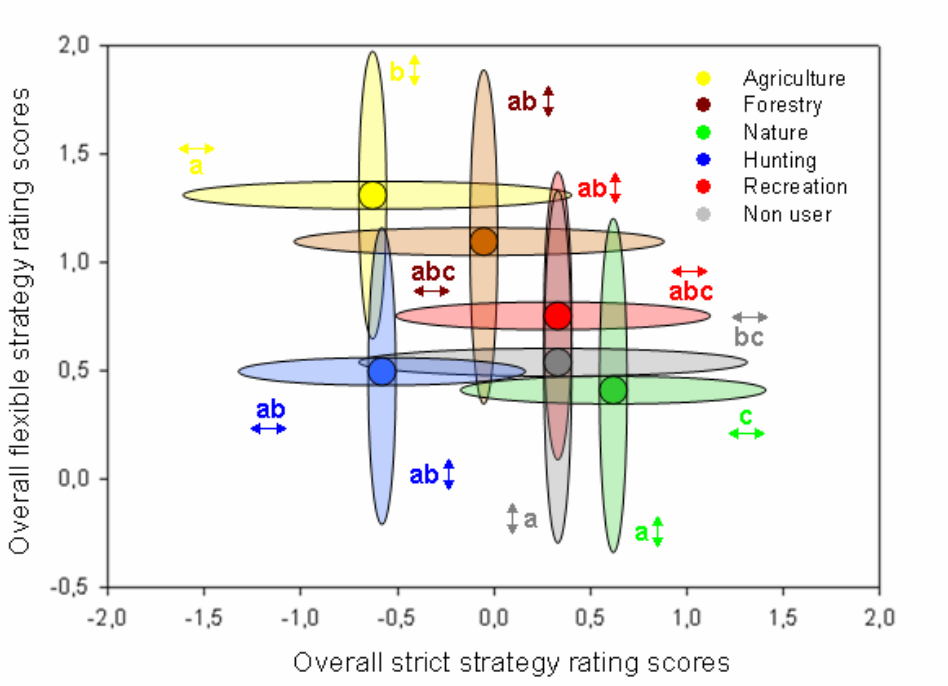


Figure 23: Relationship between the mean overall strict and flexible strategy rating scores (full coloured) and their standard deviations (transparent colours) of each user class. The overall strict (flexible) strategy rating scores were obtained by dividing the sum of the scores for all strict (flexible) strategies by the number of strict (flexible) strategies for which an answer (besides "no opinion") was given. They can thus be seen as an appreciation score for the whole of strict (flexible) strategies. Superscripts a, b and c show the significant different classes with a ≠ b ≠ c and ab not ≠ from a or b, bc not ≠ from b or c, abc not ≠ from a, b or c. The supercript a stands for a lower appreciation of the strategie then the superscript b, which on its turn stands for a lower appreciation of the strategie then the superscript c.

The Wilcoxon-Mann-Whitney test that was carried out to investigate differences between the owners and non-owners of real estate in Natura 2000 areas in terms of the overall strict and flexible strategy rating scores pointed out that owners of real estate in Natura 2000 areas have significantly lower appreciation scores for the strict implementation strategies than non-owners ($Z = -2.70$, $p < 0.01$). No differences were found for the flexible implementation strategies. When setting out the owners (n = 52) and non-owners (n = 56) of real estate in Natura 2000 areas on a biplot with their overall strict and flexible strategy rating scores on the axes, the following visualisation is obtained (Figure 24).

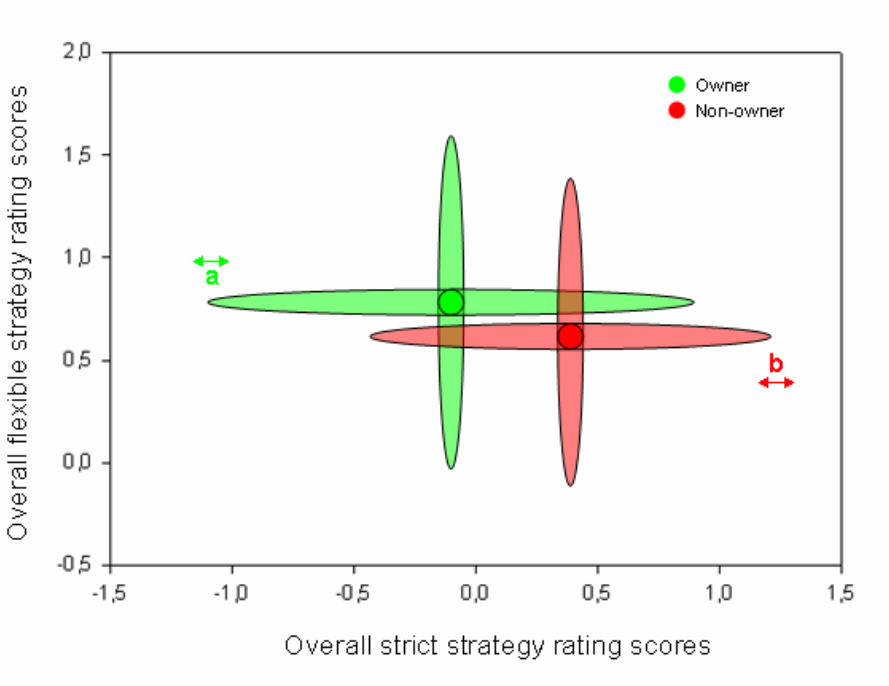


Figure 24: Relationship of the overall strict and flexible strategy rating scores for each owner and non-owner of real estate in Natura 2000 areas. The overall strict (flexible) strategy rating scores were obtained by dividing the sum of the scores for all strict (flexible) strategies by the number of strict (flexible) strategies for which an answer (besides "no opinion") was given. They can thus be seen as an appreciation score for the whole of strict (flexible) strategies. Superscripts a and b show the significant different classes with a standing for a lower appreciation of the strategie then b.

Also in the open answers we could distinguish a clear gap between the vision of people who are against and people who are pro. In total we received more than 20 negative responses about Natura 2000 against just under 20 positive responses. Many people were very clear or practical when describing the bottlenecks for Natura 2000 ("the green danger", "with our money", "we are punished", "my current activities will become impossible", "overload of regulations", "what about financial losses"). It is clear that many users (mainly farmers, foresters and landowners) are afraid of loosing their current activities and income. Another issue that is considered to be a problem is the lack of control mechanisms and enforcement. The people who responded in a positive way were somehow less practical in their responses ("possibilities for large scale management", "finally real protection of nature", "preservation of nice nature in my neighbourhood").

Although the Demer region is a region with a long nature conservation tradition whereby much effort is put in communication reactions were sometimes very emotional, especially from people against the process of Natura 2000.

4. WP 3: DISCUSSION OF THE RESEARCH

4.1 Introduction

The main aim of the SELNAT project is to perform a multifunctional effectivity analysis of the management of Natura 2000.

In WP 1 the current legal, economic, ecological and social problems with the planning and implementation of the Natura 2000 legislation in the Walloon and Flemish region are evaluated. This integrated analysis gave an overall image of the current situation in its 'historical' context.

WP2 provided a focus on the practical implementation. What kind of instruments/strategy are needed to realize the plans and projects and how are they perceived by users and non-users in both regions.

In this work package, all results are brought together into an integrated discussion, that should lead to useful conclusions towards the Natura 2000 matter. This way, a piece of the puzzle that leads to the question - how to make NATURA 2000 work properly?- should be solved.

4.2 Umbrella for this research

An important issue for the future of Natura 2000 is the concrete implementation of the developed conservation goals. As member states will have to report to the European Commission about the state of the environment and its relation to the objectives, a management plan for every Natura 2000 site should be developed in order to reach the national objectives. This means that the initial ideas and concepts behind the development of the Natura 2000 network work properly. "Working properly" means developing of a robust policy strategy in a way that the conservation goals are met while taking into account the existing and future legal, economic, ecological and social circumstances. Therefore, one or more strategies have to be built for the development and implementation of a nature management plan. As part of the management plan, instruments are developed and implemented along a timeline to realize parts of this strategy and to reach the conservation objectives starting from an existing situation.

As described earlier, the so called Ecosystem Approach (EA) is proposed as an assessment frame for the development of a successful strategy. The EA provides principles for a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. Application of the Ecosystem Approach will help to reach a balance of the three objectives of the Convention on Biological Diversity.

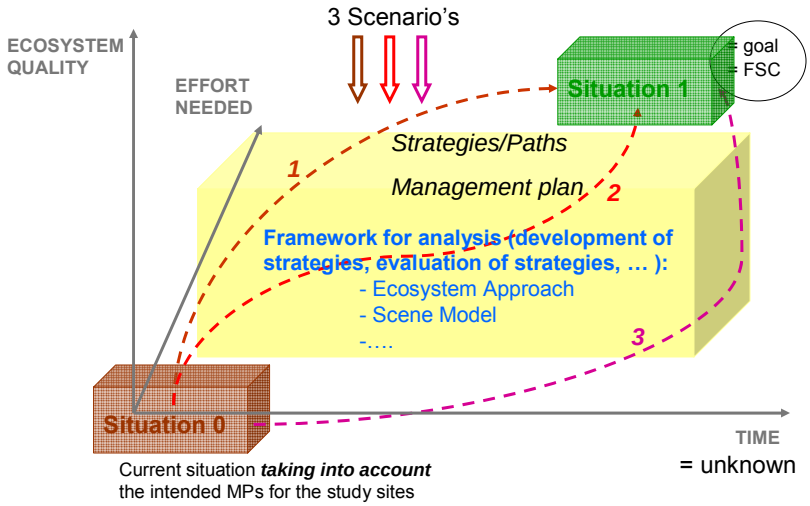


Figure 25: Schematic overview of the development of the current situation 0 towards a favourable state of conservation situation 1 by implementing 3 different strategies where variants are time (X-axis), ecosystem quality (Y-axis) and effort needed (Z-axis).

First of all, the making of a management plan starts with its **process of the development** . Here, aspects like participation, collaboration in goals setting and mutual understanding are important. This means that equal levels of knowledge, sharing ideas and knowledge are very important and that all stakeholders are recognized according to their relevance in the strategy. The process of development consists of several activities, actions and points of interest that have to be taken into account before the actual composition and building of the plan.

The next step is the **composition of the content** of the management plan. Here, special attention has to go to the description of the relevant aspects of the current and target situation. There should be a major contribution of the authors of the management plan for the description of the strategy towards its objectives and there should be consensus or understanding about the reasons why and how the targets should be reached. The bridge between the current and favourable status is formed by the management-strategy. Broadly speaking, the right strategy means using the right instruments at the right time in the right sequence. The strategy must therefore consist of the elimination of practices that are not sustainable and the development and application of appropriate mechanisms to improve the status of the habitat under question. These mechanisms must have the ability to be implemented over the long term, but at the same time, must provide the possibility to undergo evaluation and – if necessary - adaptation during the management process. The strategy describes the possible instruments and (technical) measures that can or will be used in the implementation phase, but also in which sequence (in time and place) and in what combination they are to be implemented.

Finally, the **implementation** is the last phase of the management plan. It consists of a description of the actual execution of the plan. Furthermore, the financing of the measures is depicted and there has to be sufficient attention for the way in which the instruments and actions of the plan will be implemented. Last but not least, the implementation and the plan itself have to be evaluated and if necessary, adapted to new insights and knowledge.

Of course, no clear boundaries can be identified between these stages and some steps of the management plan can not be pinpointed to one of them. The role of stakeholders and the site managers will differ in the different steps, like their level of participation, the level of information needed, etc. The interaction with all the stakeholders during these processes has to be identified and communicated somewhere within the strategy as well. Nature management doesn't only comprise the management of nature but equally important is the collaboration between people. That's why the processes between the different stakeholders are of great importance for the success of the management. Next to the perception local actors have of nature and nature conservation, the 'coloured' perception actors have of each other (for example farmers versus nature managers and otherwise) plays a prominent role in the feasibility and management of ecological networks. This observation determines partly the attitude and willingness of different stakeholders to work together. Precisely this public involvement and support are necessary conditions for sustainable ecological networks (which cover multifunctional land use) and for the balance between local interests on short term and collective interests on a long term.

From the principles of the Ecosystem Approach, an external, participative and open strategy can be derived and opposed to an internal, strict and government controlled strategy. They are in this exercise called strategy 3 and strategy 1 respectively (see Figure 26). Many intermediary strategies can be derived and one of such a strategy can be identified as strategy 2. These are the ones further discussed in the effectivity and especially feasibility analysis of the last survey and interviews of stakeholders and users on the terrain.

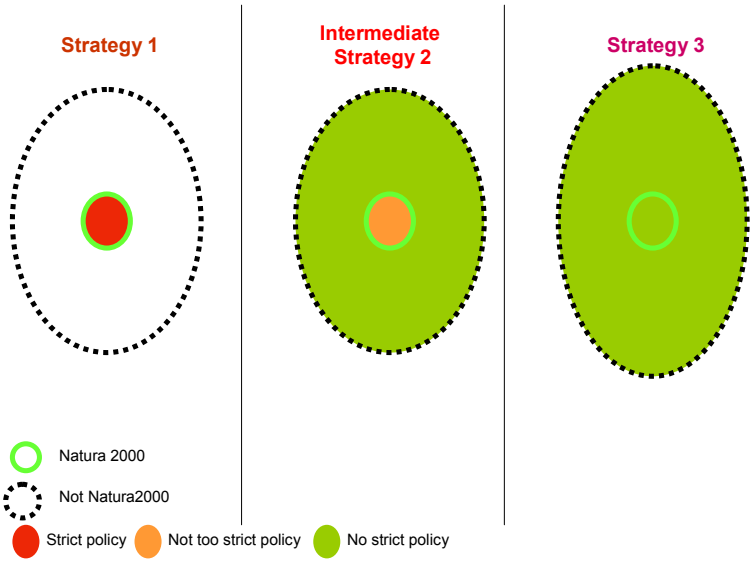


Figure 26: schematic overview of the different strategies that can be implemented for the realisation of the favorable conservation status in the central Natura 2000 site. Red: strict, orange: medium strict, green: flexible strategy.

4.3 Difficulties and limitations of our study

4.3.1 Interdisciplinary research remains a great challenge

Our research had to cope with difficulties when trying to realise the approach mentioned in the project proposal. Seen afterwards, the ambitions mentioned in the project proposal were certainly aimed too

high or were too abstract and exceeded the available means of the research team. It is clear that not all goals were achieved.

Like the ECONET-project (Endels et al, 2006), our research process was characterized by multidisciplinarity instead of interdisciplinarity. The fact that the partners work from an entirely different background and therefore have different perceptions on the issue, impeded an efficient fully integrated approach. Difficulties to understand technical and discipline-specific terms, as well as difficulties to agree on a common approach or methodology, slowed down the research process, as a lot of time was consumed in mitigating these problems. Although the language barrier cannot be held as an excuse, it did not facilitate the expression of our opinions when discussing complicated matters across disciplines. More importantly, working across the border of both regions also meant that we had to deal with two different legislations and different institutional structures concerning environmental matters. Measures taken to overcome these problems were the establishment of a glossary (one language for key terms), schemes to illustrate our reflexions about the methodologies/approaches adopted, but above all the attainment of frequent meetings Despite these efforts, the establishment of a fully completed integrated research process as projected was only partly reached.

Besides the interdisciplinary difficulties, research had to be re-orientated on demand of the User Committee halfway the two year project. The User Committee generally approved to assess the applicability of a number of nature conservation instruments, but also recommended to describe local socio-economic indicators and to talk with people in the field who are confronted with instruments in a rather applied level. After all, an often heard criticism states that many discussions are held between representatives of different organizations but never with people in the field. This re-orientation took time, as the research strategy had to be altered in some ways[34].

An important remark is the conclusion that the drawbacks and difficulties mentioned above, are partly due to a lack of time that was available for the research project. The remark that an interdisciplinary project needs more then 2 years, preferably with a full time involvement of all partners, was already mentioned before by ECONET (Endels et al, 2006). We can only confirm this statement. Without a doubt, in an interdisciplinary research the co-ordination needs more time. The difference in working environment between the partners (universities versus private company) was an enrichment for both sides, but it is not always compatible to work in an integrated way. When looking back, more concrete final objectives as well as more intermediate objectives after the change of focus of research could have partially mitigated the problems we faced in this project. Despite this critical self-reflection and critics from an intermediate evaluation by an expert panel, we do believe the project has attained significant results.

4.3.2 Transposing of the results

Before drawing firm conclusions out of the results, it is wise to note that the analysis of this research was subjected to a number of limitations, each reducing the robustness and/or representativeness of the results that were obtained.

In our study, we used both quantitative and qualitative methods to gain insight in the perception of people concerned with the Natura 2000. Both methods have their constraints. A quantitative approach to analyse surveys requires a methodology relying on standardization. This forces the researcher to develop rather general questions that limit respondents' answers to the survey. Survey research can seldom deal with individual contexts. People's real feelings are therefore hard to grasp in closed-ended questions. Undoubtly, lots of information is missed that way. Open-ended questions on the other hand allow respondents to include more information, including feelings, attitudes and

[34] The project team had to cope with the departure of some key-figures within the team halfway (Els Ameloot, Patrick Endels, Greet Nulens) and at the end (Jan Vincke) of the project. Their departure inevitably hampered the continuity of the project.

understanding of the subject. Therefore this double approach has been followed. This allowed researchers to better access the respondents' true opinion of an issue. In-depth interviews are however much more time consuming and much less easy to analyse. Therefore, sample sizes are sometimes too small to make representative samples, as it was also the case in this research. Rather then being used to detect general trends, the objective with in-depth interviews is to gain insights and new information. Another issue with in-depth interviews is the fact that the responses are partly influenced by the behaviour of the interviewer (De Leeuw et al 1998). Which questions are asked, and the way how this is done, can lead to a biased response. Furthermore, when interrogating people, by means of a qualitative or quantitative approach, it is never completely certain that people really respond out their own personal opinion. Often, it is unsure to which extent respondents represent the organisation or stakeholder group they belong to instead of expressing their own feelings. The respondent's incentive to give a certain answer can never be fully determined.

The problem of the self-selecting sample will also be something to keep in mind in this research. When the response rate is rather low, the responses received may only be the opinions of a very highly motivated part of the population concerned (i.e. people with strong opinions who make the effort to complete a survey). The fact that not the entire population is covered, is another point of attention. Although not the only way of spreading the surveys, the main focus made us prefer the use of the internet. Online surveys limit the sample of respondents to those people who have access to the internet. This creates a certain bias, as it leads no doubt that for example older people are less familiar with this network but probably also with relatively recent legislative issues like the Natura 2000..

Furthermore, there was often an imbalance in response between the different respondent classes that were distinct. Different sample sizes always increase the biase to the outcome. Concerning the survey on the expert opinion about nature conservation instruments, the distinct classes between the two regions were also quite different, and thus limiting their comparability.

A final remark to be mentioned regards the problem of 'missing values' in the survey-datasets. Usually, there are differences between the ideal sample pool of respondents and the sample that actually responds to a survey. As for almost every survey research, non-response biase was also a problem in this study. A number of missing answers appeared over the entire dataset, further reducing the ease of handling the data. Non-response biase inevitably negatively affects most survey research by creating errors in a statistical measurement. The variance estimates and confidence intervals become greater as the sample size is reduced, and it becomes more difficult to construct confidence limits.

All these factors mentioned above lead to the remark that, as for every survey-research, results must be interpreted with a lack of background information and therefore conclusions must be drawn with great care.

4.4 Discussion on our findings

4.4.1 Nature conservation instruments – a closer look

By means of an online survey (see part 3.3.2), it was tended to obtain a better understanding of the perception of experts from different sectors towards the effectivity and feasibility of the available and some new nature conservation instruments that can be used in the scope of the Natura 2000 network.

4.4.1.1 Effectivity and feasibility – a not so clear delineation of both concepts

Our study pointed out that the terms 'effectivity' and 'feasibility', although clearly different, are no concepts that are uniformly defined in people's minds. When trying to identify the importance of different aspects of the definitions of these two terms, the results show that for both effectivity and

feasibility, all aspects (like 'possibility for evaluation', 'result oriented', 'social acceptance', 'easy implementation and transparent', etc…) are mostly rated as being important or very important. This might well be the result of the fact that once people read the aspects prescribed, they consider them all important without thinking too deep whether they apply to their definition of the concepts of effectivity and feasibility or without properly ranking them in order of importance. If this is true, the assumption can be made that people handle these concepts with a certain degree of nonchalance, which needs to be kept in mind when discussions about instrument-effectivity and -feasibility are held. This is emphasized by the finding that respondents who give an instrument a high score for effectivity, also tend to score it high on feasibility. Rather than drawing the conclusion that effective instruments are in fact also more feasible, one can assume that once people perceive an instrument as being 'good', they tend to associate it with being as well effective as feasible, without thinking to deep about these aspects.

4.4.1.2 Knowledge is power

Although most of the respondents were familiar with the nature conservation policy and implementation (+80% Flanders, 100% Wallonia), not all instruments are equally well known by the respondents. This is of course of no surprise. Yet, it is more difficult to find out why a particular instrument is less known than another. For the instruments *natuurinrichting* and *contrat de rivière*, this is easily explained by the fact that they represent typical regional instruments (respectively Flemish and Walloon). Within their regions, the instruments are after all very well known, although both are relatively recent. Concerning the reduction of succession rights, its unfamiliarity is clarified by the fact that it is a legislative instrument that works in a rather indirect way and therefore it remains more 'hidden' in its use. The finding that instrument knowledge differs among respondents does have its consequences. As it was shown that there was a positive relation between the level of knowledge of an instrument and the way it was rated in terms of both effectivity and feasibility, one can assume that not all instruments are rated with the same standards. Clearly, here, the proverb "unknown, therefore unloved" is true. People tend to rate higher those instruments they are more or less familiar with, and the other way around, in stead of giving an unbiased opinion. This knowledge based bias goes even further, as results indicated that the level of knowledge of the different instruments was on its turn positively related with the level of knowledge of Natura 2000. That means that, in general, people who are more aware of Natura 2000 and its scope are also better informed about the different nature conservation instruments that were put forward in the survey. This finding can also hardly be seen as unlogic, but it does further indicate that a far reaching sensibilisation in all sectors can put things in a different light and perhaps partially counteract the sceptism that some instruments have to cope with.

4.4.1.3 Qualification of instruments

Not all instruments will be discussed here in detail. We therefore refer to the appendix (Appendix 4), where more information and a critical review about some instruments can be found. However, some major remarks should be mentioned, partially resulting from the meeting with the User Committee.

When looking at the results for the different instruments, it becomes clear that, in the scope of the Natura 2000 network, experts from both regions tend to see the use of *nature reserves* and *Life Nature* projects as very successful, both in terms of effectivity and feasibility. In Flanders, also *Natuurinrichting* is rated very high on both characteristics. All these instruments put a prioritizing emphasis on the nature function, thus explaining their high effectivity score. The use of *nature reserves* provides a protected status to the terrain, thereby preventing (direct) damage induced by human actions. Moreover, the management is a long term case here, and therefore, the chance on success is much larger. From all the instruments characterised by regular nature management, the use of *nature reserves* (in a broad sense) probably does have the most positive effects on the nature values present on the concerning terrains (see also Verheeke 2008). However, as it is also the case for a more multifunctional management and for *agro-environmental schemes*, the success of *nature*

reserves depends a lot on the present environmental quality, the spatial cohesion, the time perspective and whether precedent execution of nature development and/or nature restoration works have found place (Verheeke 2008). Another instrument that scores well for both effectivity and feasibility is the concept of *land purchase*. Of course, in practice, this instrument is often used in close connection with the previous tools. In Wallonia, it is seen as slightly more feasible compared to the Flemish situation, probably because scarcity of ground, and therefore prices, are lower in the Walloon region. The majority of the instruments mentioned above are well linked to the possession of terrains. Obtaining the property rights of the land seems to be perceived as a decisive criterion for the effectivity. Owning the land for nature management purposes is important for amongst others the preservation of plenty of vulnerable species and habitats from the Bird and Habitat Directive as 'a dedicated management must compensate the disturbances from the outside' (Decleer et al. 2005). For the same reason, *expropriation* is appointed a high effectivity score, but for straightforward reasons in a country where most of the land is owned privately, the feasibility of this instrument is rather low. Besides the generally low sociological acceptance of this tool, other reasons, such as the complexity of its use and the higher costs in comparison to land purchase, further explains its low feasibility score (User Committee meeting).

In both regions, the non-existing instruments '*tax on Horeca facilities lying inside or nearby green areas*' and 'a *voluntary access pay for the visit of nature reserves*' are seen as not so feasible, nor effective. Apparently, it remains difficult to ask people to pay in a direct way for nature. In Belgium, like in the rest of Europe, environmental concerns remain far behind other considerations like the buying power or the criminality, when looking at citizens preoccupations (Müller 2008). This same conclusion impedes an effective impact from the *instrument certificates* and *labelling*. To let this instrument make a difference, it is required that people want to pay more money for nature friendly products or products that incorporate ecological costs. As long as this is not the case in general, too little potential is left for this kind of instruments to really make a difference. Furthermore, raising money to be used for nature conservation is probably not promising enough on itself, explaining the low effectivity score for the non-existing instruments *'tax on Horeca facilities lying inside or nearby green areas*' and 'a *voluntary acces pay for the visit of nature reserves'*. This issue can be seen in practice when looking at for example the Flemish "*forest compensation fund*" (boscompensatiefonds). This fund is a Flemish instrument that gathers money for reforestation. For every licensed deforestation in Flanders, one has to compensate the cutting of trees by planting a new equal area of forest or by contributing a certain amount of money to the forest compensation fund. The fund should then be used by the government itself to establish new forest area. Until now, the forest compensation fund has mainly missed its purpose, in that sense that people do contribute their pays, but the turnover of money into forest has largely failed. In other words, 'the forest is on the bank' (Dumortier et al. 2005, VBV 2008).

Concerning the instruments *communication campaign* and *education programme*, it is necessary to mention that their implementation is necessary, given the climate of distrust that is linked with the nature-policy (cf. Verheeke 2008). While instruments like *land purchase* and the use of *nature reserves*, or compensationary tools like *agro-environmental schemes* are focusing on concrete measures on the terrain, these instruments aim more at the networking, valorising and explicatory aspects of the nature-policy. As we will see further on in this research, the importance of these aspects are too often underestimated. *Communication* and *education* are also mentioned in the Ecosystem Approach as one of the basic principles. Sharing knowledge and information, capacity building, as well as building mutual respect and trust through participation and co-operation seem evident parts of a management plan, but too often, they are overlooked or neglected or not enough energy/effort is invested in it..

The survey revealed furthermore that instruments that are executed on a voluntary base are not necessarily seen as more effective, but are however perceived as being more feasible. This result is not unlogic. People don't like to be forced into something, and therefore, having the choice whether or not to begin/carry on with the application of a certain instrument increases its acceptance. The traditional command-and-control approach is criticized by economists for being inefficient, unnecessarily intrusive and unduly expensive to administer. Some regulations limit innovation and

discourage people from searching for new, more efficient ways to achieve the intent of the regulation (Van Gossum et al. 2008). A more self-regulatory approach might well be wishful. Further in this study, more focus is given to this aspect. The effectivity of voluntary instruments strongly depends on the provision of the right information. People should be aware of what they are doing and for what purpose. But even if the wanted effectivity level is not fully reached, voluntary instruments can play an important role in increasing the public awareness and acceptance of a nature policy. Therefore, on the long term, voluntary instruments can prove to be more durable than a mere regulatory approach (User Committee meeting). Certainly, voluntary instruments can be used for a 'stepping stone approach of nature management' between low value and high value nature conservation areas. The realization of nature patches, even on a small scale, by using voluntary measures outside nature reserves will undoubtedly contribute to the ecosystem.

Another result coming forward was the conclusion that instruments providing a financial compensation are not only perceived as more feasible, but also as more effective. Compensation measures are known to raise people's participatory behaviour, explaining the positive relation with the instrument's feasibility-character. Furthermore, as compensation is only given when more severe measures or restrictions are executed, the link between compensated instruments and effectivity is also not far away. However, one must be careful not to generalize these findings. For example, the instrument *agro-environmental schemes* is a very popular tool for nature conservation within the whole European Union. Yet, although lots of money is spend on an annual base to finance this instrument, some severe critics can be made concerning its effectivity. We therefore refer to the appendix (Appendix 4).

4.4.2 Social acceptance - Flanders

By means of an online survey, it was endeavoured to get a more clear view on the perception of local users towards the implementation of the Natura 2000 network in the Demer valley.

Our study confirmed the fact that the Natura 2000 concept can lead to very emotional reactions and that it creates a feeding ground for a clear division of nature conservationists and local land users into two camps. These findings are not uncommon for nature policy measures (e.g. Stoll-Kleeman 2001, Rosa & Da Silva 2005, Schenk et al. 2007). The most active groups against Natura 2000 are known to be land users such as farmers, forest owners, and hunters (Rosa & Da Silva 2005). This trend is also more or less reflected in our study, with an emphasis on the distinction between farmers and nature conservationists.

4.4.2.1 The negative impact of restrictions and regulations

When talking about the implementation manner of the Natura 2000 network, our study revealed that strict implementation strategies, with a more compulsory/ governmental interference are less appreciated by landowners, farmers and hunters than by nature conservationists. The opposite is true for the more flexible strategies: here, farmers clearly rate such implementation manners higher than nature conservationist. These findings do not break new grounds. It is a common fact that people don't want to be controlled. Imposing decisions is likely to trigger problems as the local people feel disempowered (Eurosite 2003), as also suggested by some remarks from the hunting sector:

"Eventually, we, as hunters, will once again be subjected to a whole bunch of administrative works and enforced regulations which have little or no sense at all, so we fear to get little opportunities in these areas."

"At this moment, we see no opportunities rising from Natura 2000, we only see an ordonating and regulating factor. We see that by designating these areas, the government will impose owners and users severe restrictions. The owners and hunters, who are already nature lovers, are dictated from out the government about what has to happen. If these owners and users would not already be doing for decennia what they should be doing, nature would already be harmed in those areas."

For farmers, this sense of being over-controlled has already been mentioned before by some authors. Farmers often feel that they are being curtailed in their entrepreneurship. In many cases, farmers do want to participate in on-farm nature conservation but they want minimal governmental interference (Morris *et al.* 2000, Lütz & Bastian 2002, Cliquet *et al.* 2005, Berentsen *et al.* 2007). Emotional drivers such as the impression of facing restrictions on day to day decisions due to nature conservation regulations, and cultural drivers, such as the challenge to traditional values and habits, influence the perception and communication of those involved in and affected by the protected areas (Stoll-Kleemann 2001). In protected areas, people can feel restricted in many aspects of their lives, like their leisure activities, the way of using land, their professional activities, … Therefore, on the local community level, the Theory of Psychological Reactance (Brehm & Brehm 1981) can help to explain the opposition against nature protection activities (Stoll-Kleemann 2001, Weber & Christophersen 2002). In general, this theory states that people resist attempts to constrain either their thoughts or their behaviour. The violation of a freedom motivates the individual to restore that freedom. Reactance arises when personal rights to decide and act are threatened, reduced, or eliminated (for example via regulations, prohibitions and controls). Opposition to protected areas comes primarily from local social and political interests intent on safeguarding what they regard as their traditions and their liberties (Stoll-Kleemann 2001).

4.4.2.2 Social competition and differing views on the importance of nature conservation

Of course, the feeling of disempowerment is not the only plausible reason for the critics against the Natura 2000 network. Without any doubt, internal bonding processes within social groups may also account for a powerful rejection of protected areas (Stoll-Kleemann 2001). The Social Identity Theory can be seen in this light. It states that social categorization results in social discrimination. Because people need to provide themselves with a positive identity, they make social comparisons between in-groups and out-groups. These comparisons lead to social competition, reflecting the desire people have to put the groups they identify with in such a light as to believe their group to be `better' than the out-group (Tajfel & Turner 1979). Eventually, this leads to stereotyping, which further negatively affects communication among opposite groups. Sometimes conservationists face disapproval even before they have any direct contact with residents (Stoll-Kleemann 2001). In our research, signs of such stereotypical thinking were certainly present as a remark from farmer suggested: "*Let the farmer do his job, he has more sense than all these green boys together who think they know it as long as they can work with our money. Everybody co-operating on this should be placed without food for a week, then they would think*."

Also opposing views on the adequate hierarchy of property rights values and nature conservation values can probably explain much of what lies behind the contrasting attitudes of the land use sector and the environmental sector in relation to Natura 2000 (Rosa & Da Silva 2005). It is a common fact that while nature conservationists tend to regard nature as an equal value besides economical and social aspects, land users often find it of a subordinate importance. Examples which illustrate this:

"Fanatically being busy with nature is bad for the economy. Since nature has become important, everything has gone worse." (recreant)

"Terrible how often the term 'compensation' is mentioned in the enquiry. It is our duty to take care of nature and the environment of people." (nature conservator).

4.4.2.3 Financial considerations

In the survey, many users (mainly farmers, foresters and landowners) mentioned to be afraid of loosing their current activities and income. Therefore, the coverage of conservation costs is likely to increase with reduced acceptance of Natura 2000. However, while economic factors and subsidies are important aspects towards a broader acceptance of nature conservation measures, our results

indicate that the financial side is certainly not the only aspect that has to be taken into account. Schenk et al. (2007) already found that other aspects are even more important. In other words, authorities cannot simply 'buy' acceptance. Complementary measures are necessary.

4.4.2.4 A clear lack of information

It is very clear from our results that a lot of people are not really familiar with the principles of Natura 2000. We found there was a severe lack of clear basic information about the Natura 2000 structure towards the general public.

Example: "This project raises many questions. What will be the consequences? At the moment we cannot make any judgement about Natura 2000 as we weren't aware of its existence and I assume this will be the case for many others that are involved. Therefore, we'd like to have more information about this." (landowner)

It is however shown that information should be widely disseminated in order to reach as many recipients as possible and not only as an compulsory act (Schenk et al. 2007). If information is not provided in a sufficient way, the path for resistance is easily paved. Conflict usually starts with (a threat of) change and a lack of information about how this will affect people. If people are not enough involved and/or informed about structures like the Natura 2000 network, the information-gap can be filled with misinformation based on rumour, assumptions, prejudice and stereotypes (cf. Eurosite 2003, Schenk et al. 2007). This will lead to an escalation of anxiety and so hostility, resulting in the perceived conflict situation (Figure 27). Different sectors opposed the Habitats Directive on the basis of misunderstanding of its objectives and implications. Many delays, and opposition, to the implementation of the Directive result from the lack of information about the Directive among the general public, stakeholders and decision makers (Krott 2000).

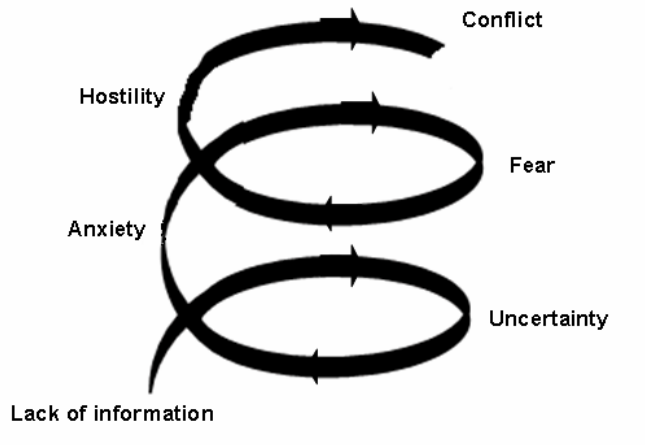


Figure 27: Lack of information escalates into a conflict situation. (Source: Eurosite 2003)

4.4.2.5 A clear lack of participation

Our results indicated a lack of the participatory aspect within the Natura 2000 structure. A great deal of people clearly took the effort to indicate their willingness for more participation in the Natura 2000 process.

Example: "Why is the government repellent towards other organisations (then nature organisations) like fishermen associations that want to co-operate in the management like waterside management, control of invasive exotic plant species, …?" (landowner and fisherman).

The relevance of participation has been emphasized in many other studies (e.g. Higgs 1997, Krott 2000, Ludwig 2001, Stoll-Kleemann 2001, Swart et al. 2001, Eurosite 2003, Tress & Tress 2003, Niemelä et al. 2005, Opdam et al. 2006, Schenk et al. 2007, Alexander 2008, Henle et al. 2008, Reed 2008). Thus, although participation has been found to be a key factor for the acceptance of nature conservation measures, it seems that a participatory approach is insufficiently elaborated in the Natura 2000 network. Structures like the Natura 2000 network and its management are very complex, multi-scale issues that affect a broad range of actors. If these actors are not taken into account in a proper manner, problems are unequivocable. This is exactly what happened during the first phases of the establishment of the network. The designation of Natura 2000 areas was pursued in a 'top-down approach' partly without means of participation for the people who finally have the responsibility to manage these areas (cf. Krott 2000). For example, one landowner who owns more than 400 ha of Natura 2000 area said he was never even consulted in the process of designation of his own property. Currently much of the decision making for the management of Natura 2000 sites is based on scientific knowledge of habitats and the structure and function of the site. There has been a low input from local knowledge for both the habitat and the socio-economic context (cf. Eurosite 2003). Local actors are not sufficiently taken into account. The experienced opposition against Natura 2000 can be partly explained by this lack of participation of landowner interest-groups (Weber & Christophersen 2002, Hiedanpää 2005). The most plausible explanation for the neglectance of the participatory aspects by the authorities is that they fear the interference of nonexperts on a technical level. However, according to Schenk et al. (2007), this fear is largely unfounded since those affected rarely want to co-operate extensively, but only want to be sure that they can co-operate if they wish. But also many people (e.g. governmental policy makers) are or were often not familiar with participative approaches.

Proposal: Providing information

It is more than clear that much effort should go to a better sensibilisation and distribution of information towards the general public. The way how this is done is thereby very important. Although public meetings are often seen and recommended as a good way to communicate at the local level (e.g. Eurosite 2003), Schenk et al. (2007) found them to be not as successful as expected. These meetings might hinder acceptance building, as not everybody is capable of retaining and/or correctly interpreting the (overload on) information provided. Information that is poorly understood can lead to conflict, as seen above. Face-to-face contacts therefore create a better base for acceptance building (Schenk et al. 2007). Also the message that is carried out is of great influence. The emphasis should not only lie on restrictions, but certainly has to entail the opportunities Natura 2000 can mean for each stakeholder. These might not yet be clear for the authorities themselves. However, it is quite straightforward that recreational aspects will play an important role here. Within our study, more than once people gave way that recreation and Natura 2000 can form a good combination, good partnership although some concerns about severe restrictions in this matter were also put forward.

Proposal: Providing participation

One has to realise that the capacity to appreciate and enjoy Natural values and not simply to regard them as an essential resource, is often restricted to individuals who do not have to depend on these areas for their livelihood (Alexander 2008). However, although environmentalists and land users probably have distinct conceptions of nature, stewardship, and sustainability, there are reasons to believe that the positions of rural stakeholders and of environmentalists are much less incompatible than they may seem (Rosa & Da Silva 2005). By creating the right conditions, many seemingly intractable conflicts can be worked through towards a mutually acceptable conclusion (Stoll-Kleeman 2001, Eurosite 2003, Rosa & Da Silva 2005). Keeping in mind (as seen above) that social categorization is sufficient to cause discrimination between different groups, it can be assumed that if

members of these different groups could redefine themselves as belonging to a single superordinate category, then the members of the out-groups would be recategorized as fellow members of the new larger in-group and a more favourable attitude towards them should ensue (Brown 1996 in Stoll-Kleemann 2001). A core factor which brings people to regard themselves as part of a larger group is working together co-operatively (Gaertner et al. 1990). A helpful strategy may therefore be to develop common interests and to build up informal contacts between conservationists and those affected by nature conservation measures in order to remove the communication barriers (Stoll-Kleemann 2001). More egalitarian and network-based communication among all parties may well increase acceptance of protected areas. Such participatory structures are best established at the planning stage of a protected area, since decisions about acceptance or rejection of a protected area are usually made then. Positive relationships and confidence can be fostered in this initial phase (Stoll-Kleemann 2001). Landscape preservation associations (cf. regionale landschappen) are one way to realise this. They join together conservationists, farmers, and communities for the purpose of caring for a certain Natural habitat or communal area. Co-operation through these associations may lead to contacts among different groups, which would make it easier to take the interests and needs of persons concerned into account and to harmonise them with nature conservation measures (Stoll-Kleemann 2001).

Consensus building and participation of local people will be particularly important when coming to the establishment of management plans for Natura 2000 (Krott 2000). As many disputes over nature conservation issues are rooted in social conditions and attitudes shaped by social networks, protected area policy has to be much more sensitive to the `human factor' in designing planning and management procedure (Stoll-Kleemann 2001). Relationships with stakeholders are so important that they should be dealt with explicitly within the planning process. A management plan should therefore contain an objective for stakeholder relationships, followed by the activities that are necessary to meet the objective (Alexander 2008). For some sites with sizeable resident populations, or sites surrounded by densely populated areas, this section can even be larger than the rest of the plan (Alexander 2008). In this light, it is worth mentioning that Hein et al. (2006) found that stakeholders at different spatial scales can have very different interests in ecosystem services. As the formulation of management plans that are acceptable to all stakeholders requires the balancing of these different interests, it is highly important to consider the scales of ecosystem services when valuation of services is applied. If an optimal management strategy is based on the interests of one particular scale alone, this may lead to unacceptable solutions for stakeholders at other scales. Elaborating a bottom up approach in stead of a top down approach for the Natura 2000 implementation is a key factor for the success of the concept. Without an increased involvement of local stakeholders, the whole upset is doomed to fail. In this scope, developing the necessary skills for planning and implementing nature conservation measures in a participatory way should be a standard training for all employees of the involved administrations (Stoll-Kleemann 2001). Furthermore, establishing an adaptive vision for the protected sites, without of course damaging the mandate and intent of the Natura 2000 structure, will also appear to be a necessity.

It can be concluded that to be successful in nature management, one should not pass over the positions and views of ordinary people who are involved. Knowing and respecting these views is necessary (Swart et al. 2001). Nature projects where besides nature goals also social and economic goals are integrated, offer a greater chance for multiple advantages on the long term (Dumortier et al. 2005). Adapting the nature conservation policy in the scope of these findings may well result in a more successful outcome. For example, Paloniemi & Tikka (2008) found that a multilateral policymaking process has been able to overcome a national nature conservation conflict in the Finnish forestry sector and achieve results more widely accepted than those achieved by authoritative policy-making procedures. The following statement of Swart et al. (2001) summarizes these findings in a nice way:

"Ecologists are surely the experts on ecology, but on nature there are many more"

4.4.3 Social acceptance - Wallonia

This discussion is largely based on the interviews taken from users of Natura 2000 terrain in Wallonia.

4.4.3.1 Information about nature conservation

At this local level, a first important thing is that interviewed people know that Natura 2000 is linked to protected areas: we made nature protection on designated-protected areas. So we can assume that basic information reached the users of this site. Maybe this situation is due to the fact that the Lesse valley site was a pilot site for which some information was given some years ago. It is not sure that this would be the same for another site.

Although people have some notions about the network, they ask for more information and particularly more precise information on what they can do or not. It is particularly the case of farmers and foresters who will have to face Natura 2000 in their day-to-day work.

Remarks from a forester and a farmer:

"There are big gaps in the process of information! We hear about Natura 2000 for a long time but up to now we still don't know what we can exactly do!"

"There is a lack of technical information! I need to know what I can do or not, I don't need information on species and on the reason of the network."

This feeling of insecurity is legitimate because of the current process of implementation. The perimeters have been defined some years ago. This delineation makes some measures of protection compulsory, the obligation to make an impact assessment, and some conditions the farmers have to respect to receive their payments. This new protection status puts thus a risk on the legality of number of activities and authorizations and on the incomes of people even before the government decree.

In the Walloon Region the situation differs for foresters and farmers: authorities know well who the owners for agricultural lands are and someone from the administration meets them to present Natura 2000 but it is not the case for foresters. We can see from the results that in general, the farmers have a better acceptance of the network than the other groups. These private meetings with explanation on their own exploitation is certainly an element that lead to this result. We can also see that with some farmers speaking about information received by the Fédération Wallonne de l'Agriculture (Walloon farmer's syndicate).

People are aware of Natura 2000 but some amazing comments show that there still remain a big job to do for some more recalcitrant farmers and foresters:

Comment of a farmer:

"If "bugs" are there, why do we have to change our behaviour?"

4.4.3.2 Participation in nature conservation

As well people think that the implementation of Natura 2000 will allow stopping the decline of biodiversity. When we speak more largely with respondents we understand the reason is because professionals are behind Natura 2000 and people assume it will work.

Comment of a forester:

"It is made by experts and if they say that it will work so I think it will work!"

This result is in contradiction with the response people gave to the question on the definition of conservation objectives. Generally people think at "an office work". They say that the work of definition is made too far from the field and then they are less incline to accept.

Comment of a forester

"Of course! Bureaucrats have certainly never put their feet in a forest!"

So, on the one hand they trust experts to define the framework for the implementation of Natura 2000 and on the other hand they have the feeling of a theoretical work and they do not trust it. Maybe this can be explained by the level of the question. The first question (stop the decline of biodiversity) concerned a general view, and at this scale, people have the feeling of something quite technical which is the job of the experts. The second question concerned the conservation objectives which is something more concrete and sometimes linked to their own practices.

If a majority of people find Natura 2000 positive for nature, they see it negative for their own activities. We can try to link it with the syndrome *Not In My Back Yard* (Nimby): people agree that something has to be done for nature but not on their own land. But it is not so obvious because people recognize that many things were done wrong in the past, and they agree to repair as well as they find legitimate and necessary to do restoration. And the results show also that farmers and foresters generally agree to reduce their activities on the site in certain conditions.

With the results we can also see that not all people think they are implicated in Natura 2000. The simple fact to own a parcel in Natura 2000 is not sufficient. There is a clear need for doing active things to enhance the feeling of implication.

At the local scale, on their fields, we can assume that people request that their knowledge be taken into account, and that a process of capacity building be implemented.

4.4.3.3 Measures for nature conservation

This will to be given a real place in the process of implementation is also perceived in the responses concerning the measures and the instruments.

People ask for flexibility in the definition of the objectives in order to permit adaptation linked to the situation on the fields. This goes in the sense of an adaptive management.

Examples:

"We need flexibility because nature changes on her own!"

"We have to keep flexibility in the definition of conservation objectives to have the possibility to give our opinion later."

Generally they reject constraints and they always prefer the instruments which are contractual, and particularly those who give a place for the negotiation.

Concerning the sanction in case of non respect of the commitment in Natura 2000, people agree to give administrative sanction. No one talked about legal sanction and it seems that people are not aware of this fact: they can be judged for their eventual mistakes and non-respect. For them administrative sanction constitutes already a big sanction.

Comment of a forester:

"I prefer the suppression of subsidies because a fine it's directly 'Craque dedans!'".

So, maybe it is not the degree of control that explain the agreement or the reject of the users for an instrument, because even if this instrument is contractual the control exist and the financial sanctions linked to these instruments can be more serious than a penal one.

Again we can assume that people are asking for instruments adapted to their own situation and that their knowledge of the fields is integrated in the plan, and that they can discuss about it.

Mostly people are against the use of real estate measures; the ones who are for are generally old and at the end of their exploitation. There is then two possibilities, children follow with constraints of Natura 2000, if not, they agree to sell their land against a good selling price. We can see the 'ambition level' vary with age of respondents.

Comment from a farmer:

"Real estate measures? Never! Farmers are necessary for food production. If we have to do something on an environmental point, we have to do it together with a contract. Real estate measures have to be used against urbanization!

Generally (some cases are reported of successful land consolidation) they do not want because they want to keep the property of their land. But in some cases land exchange/consolidation could be good: farmers could exchange land with bad productivity against ones with higher productivity (a small patch with high productivity is sometimes better than few ones with low productivity).

4.4.3.4 General views

As said before generally people want minimal governmental interference. In the Lesse site, interviewed people mostly agree to do something for nature conservation on their land but they do not want to have the feeling "not to be the master on their own property".

People agree to protect nature however if they experience this protection as a restriction for their activities, they can turn against nature protection activities (see Theory of Psychological Reactance (Brehm & Brehm 1981)).

"I have a philosophical pleasant impression of Natura 2000 but you don't have to prevent me to do things I found as normal!" (a forester).

4.4.3.5 Drivers for acceptance

Firms do not accept: their activities are not directly linked to nature and the implication is different. Nevertheless, some accept to adapt the way of production in function of Natura 2000, but with some limits.

Moreover, authorities have to spread a positive message for the scientists and other intermediaries before going on the field. You have to spread a positive message to the users before touching the general public.

Finally people mostly do not agree to pay for nature. They already pay for a lot of things and this crisis-time does not help to care for environment and nature in priority.

4.4.4 An habitat's comprehension framework as a decision making tool

It is necessary to adopt a strategy that is adapted to the local context. In particular, the strategy has to be adapted to the habitat concerned by the protection measures. Each habitat does not require the same level of protection or management. But how can we define this level? In textbox below we propose a tool for decision makers aiming at choosing the best strategy in regard to the local context. This choice can be based on ecological and socio-economic aspects. For ecological aspects, this tool permits to assess some parameters concerning 15 important categories of habitats. These parameters are explained in the box as well. The evaluation of conservation value, conservation status, protection level required and the need for human intervention for each habitat can justify the need for constraining measures and for restoration measures. This need can be balanced by economical aspects like the economical value of the land which is the reflect of the social sensitivity in regard to the habitat.

The framework proposed here is only a draft that should be completed in the future with further research, but not in the scope of the SELNAT-project (see Appendix 8).

An habitat's comprehension framework as a decision making tool [35]

This comprehension framework is a proposal aiming at guiding politicians making decisions about the different strategies to adopt in order to achieve conservation goals for each big kind of habitat. Very briefly, it gives some information about the habitats, like ecological functioning, requirements, status of conservation, patrimonial value and level of protection required, and it tends to estimate the economical potential value of each habitat, which is the reflect of the social sensitivity in regard to the habitat.

[35] Habitats not taken into account: coastal & estuarian habitats (1130, 1140, 1310, 1320, 1330, 2110, 2120, 2130, 2150, 2160, 2170, 2180, 2190), marine habitats (1110) & petrifying springs (7220)

Kind of habitat	Eunis correspondance	Patrimonial-conservation value	Conservation status		Sensitivity to human perturbations - protection level required	Effort for conservation (Need for human intervention)	Need for restoration measures	Effort for restoration	Economical value for landowner/user
			Area	Quality					
		(1:low - 2:medium - 3:high)	(A: good - B : medium - C : bad)	(A : good - B : medium - C : bad)	(1:low - 2:medium - 3:high)	(1:low - 2:medium - 3:high)	(1:low - 2:medium - 3:high)	(1:low - 2:medium - 3:high)	(1:low - 2:medium - 3:high)
extensive meadow	6410, 6430, 6510, 6520	2-3	C	C	2	2	3	2	
dry grassland	5110, 5130, 6110, 6120, 6130, 6210, 6230	3	C	C-B	3	2	3	2	
peatland	7110, 7120, 7140, 7150, 7210, 7230	3	C	C-B	3	1	3	3	
heathland	2310, 2330, 4010, 4030	3	C	C-B	3	2	3	2	
caves	8310	3	A	A	2	1	1	1	
rocks	8150, 8160, 8210, 8220, 8230	3	B	C	2	1	2	2	
N2000 forest	9110, 9120, 9130, 9150, 9160, 9180, 91D0, 91D0, 91E0, 91F0	2-3	A-C	C	2	1	2	1	
other broadleaved forest	species habitat	2			1	1	2	1	
exotic forest	species habitat	1			1	1	1	2	
oligotrophic rivers	3260, 3270	2	C	C	3	1	2	2	
eutrophic rivers	3260		A	B-A	2	1	1	2	
oligotrophic body of water	3110, 3130, 3140, 3160	2-3	C	C	3	2	3	3	
eutrophic body of water	3150		A	C	2	2	2	2	
crop land	species habitat	1			1	3	1		
intensive meadow	species habitat	1			1	3	1		
		*1	*2	*2	*3	*4			
References *1 *2 *3/*4/*5/*6		Habitat Directive + expert judgement Evaluations of conservation status from both walloon and flemish regions Cahiers habitats							

Explanation of different columns

Kind of habitat : This column gathers all the main terrestrial habitats concerned by Natura 2000 into 15 global kinds of habitats (which are described below) in order to simplify the analysis.

Eunis correspondence : This column mentions the correspondences between the global kind of habitat and the Eunis codes (European based).

Patrimonial-conservation value : The patrimonial value (or conservation value) of an habitat depends on its biological value, but this concept takes also into account its importance into the global ecological network in term of content of biodiversity, its originality, the history of land use and vegetation evolution,… It reflects a priority for conservation and protection. Especially in Belgium, an habitat of high patrimonial value is an habitat which has a high level of rarity in the regional context, which is endangered, which is the biotope of endangered, rare species and/or which is sometimes culturally significant.

Conservation status : These 2 columns mention the conservation status (in regard to the habitat area and quality) as defined by the Habitat Directive (Art. 17) and calculated for the first report about conservation status to the European commission (2007).

Sensitivity to human perturbations - protection level required: This column aims at estimating the protection level required, in relation to the sensitivity of each habitat to human perturbations and activities. This information is inspired from the habitats books.

Effort for conservation (Need for human intervention) : This column gives an estimation of the human efforts required for the conservation of the habitat, to keep it in its current state, taking into account all different technical measures which are necessary to maintain it (see specific column). This effort could be valued in money.

Need for restoration measures : In regard to the current conservation status, the protection level required

and the patrimonial value, this column informs if the restoration of the habitat is a priority or not at the country scale.

Effort for restoration : This column gives an estimation of the human efforts required for the restoration of the habitat taking into account all different technical measures which are necessary to maintain it (see specific column) and the different states of initial habitat. This effort could be valued in money.

Economical value for landowner/user : This column aims at evaluating the economical value which the habitat represents for the landowner or the land user.

Recurring active management measures : This column gives a non-exhaustive list of active management measures that can be set up to manage the habitat.

Restoration measures : This column gives a non-exhaustive list of restoration measures that can be applied to restore the habitat.

Big kinds of habitats selected

extensive meadow: This term includes the following Natura 2000 habitats : 6410, 6430, 6510, 6520. This habitat includes grasslands/meadows which are mowed, grazed, fertilized extensively. These are generally rich-flowered grasslands.

intensive meadow: This habitat is not of community interest but it includes species habitats, for example, birds like Lanius excubitor, Saxicola rubetra, bats like Myotis dasycneme,… These meadows are intensively used (mowed more than 2 time a year, or intensively grazed, fertilized).

dry grassland: This term includes the following Natura 2000 habitats : 5110, 5130, 6110, 6120, 6130, 6210, 6230. Dry grasslands are open, herbaceous vegetations occurring on poor soils (acid or calcareous). They are the biotope of a lot of endangered plants and animals species.

Peatland: This term includes the following Natura 2000 habitats : 7110, 7120, 7140, 7150, 7210, 7230. Peatlands are open habitats occurring on poor, wet and organic soils. The level of organic matter increases with time and so this habitat has a high capacity for water retention. Acid peatlands are characterized by large populations of Sphagnum species. They are the biotope of a lot of endangered plants and animals species.

Heathland: This term includes the following Natura 2000 habitats : 2310, 2330, 4010, 4030. Heathlands are open vegetations occurring on poor, wet or dry soils. Their existence is mainly due to ancestral activities like sod-cutting, sheep grazing, fire management, etc… So they have most of time an anthropogenic origin. They are the biotope of a lot of endangered plants and animals species.

Caves: This term includes the following Natura 2000 habitats : 8310. These caves are not open to the public and are of great interest for the conservation of bats.

Rocks: This term includes the following Natura 2000 habitats : 8150, 8160, 8210, 8220, 8230. This habitat includes rocks outcrops, cliffs, rock falls, rock cracks,… It can be the habitat of some birds species like raptors (peregrine falcon,…)

Natura 2000 forest: This term includes the following Natura 2000 habitats : 9110, 9120, 9130, 9150, 9160, 9180, 91D0, 91E0, 91F0. the three last habitats are of community interest. This term includes a large diversity of forests of community interest, like dry and wet forests (of beeches, oaks,…), slope forests, alluvial forests, boggy birch forests, etc… These forests are of great interest for a large diversity of animals like insects (lucanus,…) , bats, birds (woodpecker, raptors,…).

other broadleaved forest: This habitat is not of community interest but it includes species habitats, rather similar to the previous.

exotic forest: This habitat is not of community interest but it includes species habitats. Potentially, this habitat is able to be restored into broadleaved, indigenous forests, or into open semi-Natural habitats (depending on the historic).

oligotrophic rivers: This term includes the following Natura 2000 habitats : 3260, 3270. These rivers are characterized by a low concentration of nutrients and a weak colonization by aquatic vegetation. These rivers are the habitat of a lot of species like kingfisher, fish, bats, otter, pearl mussels, etc…

eutrophic rivers: This term includes the following Natura 2000 habitat : 3260. These rivers are characterized by a high richness in nutrients and a colonization by aquatic vegetation. These rivers are the habitat of a lot of species like kingfisher, bats, fish, etc…

oligotrophic body of water: This term includes the following Natura 2000 habitats : 3110, 3130, 3140, 3160. This habitat includes bodies of water, ponds, that can be very small, with a low level of nutrients. It also includes banks vegetation like Carex sp. and low-marshes vegetations. This habitat is also a species habitat for a some birds and other animals (bats, fish,…).

eutrophic body of water: This term includes the following Natura 2000 habitat : 3150. This habitat includes bodies of water, ponds, with a high richness in nutrients. It also includes banks vegetation like reeds and Carex sp. vegetations. This habitat is an important species habitat for a lot of aquatic birds and some other animals like fish and bats.

crop land: This habitat is not of community interest but it includes species habitats

4.5 Recommendations for appropriate implementation of Natura 2000

The conclusions of the performed research are gathered in the previous parts. Taking into account the literature and the performed surveys we conclude the research with a set of recommendations for decision makers.

Recommendation 1: Differences in definition of effectivity and feasibility of instruments for nature conservation have to be recognized in processes of participation and collaboration.

SELNAT showed slight differences in the appreciation of the different definitions about effectivity and feasibility presented to the expert respondents. However, differences are smaller than expected and probably the experts considered most aspects as being important due to the way they were presented. The experts considered instruments as effective when they contribute to the reaching of the objectives, when results are sustainable and when they lead to concrete (management) actions and measurements on the terrain. Instruments are feasible when enough people and resources are available and when they are technically executable. Instruments modifying property rights on natural assets for example are very effective in the opinion of the administrative level but much less in the opinion of actual private users, due to the absence of freedom of choice. Other aspects like the proportionality with the efforts, social base and the level of taking the socio-economic context in consideration were much less important for the appreciation of instruments.

In the discussion about the implementation of instruments and composing strategies, it is therefore important to know and recognize that different definitions are used by all stakeholders and users. In (large scale) processes, people use Natura 2000 sites differently, have other involvements, they are affected on different levels and in different ways by the implementation and they have different, sometimes opposing, (personal) appreciation of instruments. Moreover, their knowledge level and experience differ, putting everybody in a different position in the process of development and implementation of a nature conservation strategy. The absence of a common language will make participation difficult, if not impossible. Collaboration will be constrained if different perceptions and appreciation of instruments and strategies are not recognized. Therefore, the process should work on finding common appreciation and objectives for often opposed stakeholders. Working from here and on the appropriate level will improve mutual understanding, will be a base for trust and sustainable collaboration, and in the long run will yield more sustainable & feasible goals.

Recommendation 2: The introduction/implementation of instruments must be accompanied with a transfer of knowledge

The SELNAT survey among practitioners made very clear that there is positive correlation between the appreciation of the feasibility and effectivity of instruments and the knowledge of the instruments by the respondents. Instruments that were well know in practice generally scored better. Consequently, new instruments like 'horeca tax' and 'voluntary access fees scored surprisingly bad on feasibility and effectivity. Besides that they are already well know and used in other countries like the USA. The lack of current practical knowledge of these instruments could be an important reason for the low scores.Another reason could be that respondents consider these instrument less effective because they are not directly linked to land use regulation. Further research on this aspect could be interesting.

Taking into account the results of SELNAT we recommend that the introduction and implementation of new instruments should be accompanied with a transfer of knowledge about the effectivity and feasibility of the instrument. Implementation in pilot areas offers an opportunity to test them. This could be supplemented with information on the experiences gained with the instrument in other areas or even countries.

Recommendation 3: Using flexible strategies, including adaptive conservation goals, instruments and measures

As we can conclude from ecosystem approach, instruments analysis and surveys, there is scientifically and socially a lack of flexibility and adaptivity in the currently used strategies. Establishing an adaptive vision for the protected sites will also appear to be a necessity. Adapting goals and measures to specific and local contexts and to the evolution of the ecosystems and species populations dynamics is a recurrent request on behalf of the surveys respondents. A critical point is either to use flexible instruments, or to adapt those which are not flexible to be more adaptive, in order to better take into account future natural and societal trends in the concerned Natura 2000 areas.

Recommendation 4: Pilot case studies should be promoted to identify the best processes for building flexible strategies

SELNAT results pointed to the need for volunteer participation and flexible strategies for Natura 2000 implementation. However, SELNAT results also pointed to the detrimental effects of the lack of knowledge on both the willingness of actors to be involved in the process and their acceptance of new innovative instruments. Furthermore, SELNAT clearly pointed to the different perception of Natura 2000 by the different actors and the lack of exchange on those different perceptions and personal experience linked to implementation of instruments.

Pilot case studies should be promoted in real field conditions to provide concrete examples of flexible strategies built by local actors based on:

- exchanges of knowledge on Natura 2000 and implementation instruments among actors (What can I tell you on N2000? What can I learn from you on the way to manage such ecosystems?, Why do you think new instruments can be used in our local context?, …);
- the definition of common and consensus objectives and strategies;
- the monitoring of the implementation of the strategy and the way it fulfills, or tends to fulfill objectives;
- when needed, the adaptation of the strategy;

Such pilot case studies should be monitored by independent observers from different scientific fields to foster a general synthesis and identify concretely the best processes that promote flexible efficient strategies

Recommendation 5: Put more efforts in social acceptance building, by providing the right information, the formation of landscape associations and well-elaborated management plans.

SELNAT showed that much more effort should go to a better sensibilisation and distribution of information towards the general public. There is, according to the surveys in both case areas, a stringent need for more information on the concrete objectives, the delineation of the site and the way stakeholders can contribute to implement the conservation objectives. Face-to-face contacts hereby create the best way for acceptance building (cf.Schenk et al. 2007). Furthermore, the emphasis should not only lie on restrictions, but also has to entail the opportunities of the Natura 2000 network. If this is done correctly, it is likely that the positions of rural stakeholders and ' conservationists' are much less incompatible than they may seem in the first instance. By creating the right conditions, a mutually acceptable conclusion can be found.

In order to avoid social categorization resulting in conflicts, it is important that different stakeholders are able to see themselves as part of a larger group working together co-operatively towards the same basic goals. A desirable strategy may therefore be to develop common interests and to build up informal contacts between conservationists and those affected by nature conservation measures in order to remove the communication barriers. More egalitarian and network-based communication among all parties may well increase acceptance of protected areas. One way to realise this is the establishment of landscape associations joining together conservationists, farmers, and communities for the purpose of caring for a certain natural habitat or communal area (cf.Stoll-Kleemann 2001). Co-operation through these associations may lead to contacts among different groups, which would make it easier to take the interests and needs of persons concerned into account and to harmonise them with nature conservation measures. The "river agreements" and the concept of natural park in the Walloon Region could be adapted in order to integrate Natura 2000 in the partnerships they put in place.

Consensus building and participation of local people will be particularly important when coming to the establishment of management plans for Natura 2000 (Krott 2000). A management plan should thus contain an objective for stakeholder relationships, followed by the activities that are necessary to meet this objective (cf. Alexander 2008). Hereby, one must consider that different interests in ecosystem services appear at different scales (Hein et al. 2006). The elaboration of a bottom up approach instead of a top down approach for the Natura 2000 implementation will be a crucial factor, as well as a standard training for all employees of the involved administrations concerning the acquirement of the necessary skills for planning and implementing nature conservation measures in a participative way. Furthermore like stated before, establishing management plans that entail an integrated and adaptive vision for the protected sites, without of course damaging the mandate and intent of the Natura 2000 structure, will also appear to be a necessary challenge.

Recommendation 6: For a better functioning of instruments for Natura 2000, it is important to build up capacity about nature management besides financial remunerations.

As seen in the SELNAT web survey among practitioners, and also with the results of the survey at the local level, most stakeholders ask to be compensated for the loss of actual income and payed to perform the active management on the field. Conservationists tend more to pay only for active management linked to the achievement of concrete goals Nevertheless it seems that this is not sufficient as local stakeholders ask also for more information, especially on what they can do exactly (see 3.4.1).

If stakeholders only receive money without knowing the goal of the measures or the details of the instruments to apply, in the long term it seems difficult to imply them more deeply in nature conservation. They will always "run after money" without seeing the legitimacy of their actions. We know with the theory of engagement (Joule & Beauvois 1987 & 1998) that engagement of people is inversely proportional to the perceived remuneration. So in the equation something is lacking, i.e., a proper and complete information, motivated by the goals that should be reached on the field. More than simple information, it also influences the awareness of people concerning the topic of conservation.

It can thus be concluded more generally that if an instrument is to be implemented, one has to give information to sensibilize people to nature conservation and to educate them to the use of tools/instruments. In a final step, they can then be granted with subsidies or a compensation, counterpart of their efforts.

Recommendation 7: perspectives for instruments, take inspiration from the other Region

For a proper management of Natura 2000 areas SELNAT found that there is not only one perfect instrument. A succesfull strategy is build up with a whole set of instruments taking into account the rarity of a habitat or the time scale considered.

Some instruments do not exist in both regions or are better adapted to nature conservation in Flanders or in Wallonia. We recommend the authorities to inspire from each other for instance for the following instruments:

- Land consolidation
  In the Walloon Region we would strongly recommend to "green" the objectives of this old legislation (1970) in order to take into account nature conservation in all land consolidation operations. A small modification of the objectives of the legislation could be sufficient and open this instrument to the nature conservation policy. We plead for a reflection on the opportunity to introduce mechanisms like "natuurinrichting" in Walloon law, as this instrument is really adapted to large scale nature conservation.

- Forest management plan
  This instrument could be introduced into the Walloon legislation for private forests of more than 5 ha, following the model of Flemish "bosbeheerplan". The forest management plan ensures an integrated forest management taking into account ecological, social and economic aspects. In Flanders the forest management plan is also strongly linked to other instruments like the reduction of succession rights and different kind of subsidies.

- Natura 2000 protection regime (interdiction, licence, notification)
  This instrument could be interesting for Flanders because it has been specifically created to protect Natura 2000 species and habitats against categories of land use traditionally not subject to any control by the administration (farming and forestry practices), while ensuring that all constraints are proportionate to the degree of threat of the concerned activity. The measures are also function of ecological requirement of each species and habitats occurring in a Natura 2000 site.

- Rivers agreement
  This instrument could be used in Flanders on the basis of the Walloon mechanism to achieve social support for the implementation of ecological goals for river habitats at the scale of the river basin.

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6. OVERVIEW OF DOCUMENTS IN APPENDIX

Workpackage 1

A.1 Identification of bottlenecks for nature conservation and Natura 2000

Workpackage 2

A.2 Information on the Case study sites

A.3 Discussion on ecosystem approach and good management plan

A.4 Assessment of instruments

A.5 Description of approach and results Survey among practitioners

A.6 Description of approach and results of Survey among local users: Flanders

A.7 Description of approach and results of Survey among local users: Wallonia

Workpackage 3

A.8 Habitat framework

Diverse

A.9 Congress

A.10 Users' Committee

A.11 Dissemination of documents

A.12 Others