



# The ecosystem services approach as an instrument for action

On the experiences in the United Kingdom, Belgium and the Netherlands



Scientific knowledge about ecosystem services is rapidly being translated into policy objectives, and several EU member states have included ecosystem services in their policy programmes. However, stakeholders are experiencing many problems applying such policies in rural areas. This WOT paper describes early experiences with the ecosystem services approach in terms of opportunities and barriers. It also formulates alternative application pathways that could be supported by the many stakeholders involved.

## Introduction

The Millennium Ecosystem Assessment (MEA, 2005), the Economics of Ecosystems and Biodiversity (TEEB, 2011) and the EU Biodiversity strategy 2020 (European Commission, 2011) are the cornerstones of efforts to mainstream ecosystem services (ES) into policy. Most of the growing body of research on ES has focussed on the scientific evidence base for the concept, including developing indicators for biodiversity and ecosystem services, designing models to estimate physical quantities, valuing ecosystem goods and services and evaluating ecosystem payment schemes (e.g., Braat & de Groot, 2012). At the same time, the notion of the ecosystem services approach (ESA), as an attempt to capture and visualize how natural ecosystem processes provide benefits to human society (e.g., Cowell and Lennon, 2014), has become highly attractive to policy makers by its focus on a broader societal involvement and the use of more market instruments. This, in turn, may give the nature conservation community access to the economic policy agendas (e.g.,

OECD, 2011), an appealing thought for governments eager to reduce their public expenditure.

National governments are currently developing policies to safeguard ES in their national programmes (Verburg *et al.*, 2013). However, very little research has as yet been conducted on policy formulation, i.e. the aims and means, and the translation of the ecosystem service concept into implementation. Much is still uncertain about the uptake and use of the approach and the circumstances under which it can help policy makers and planners to manage ecosystems (e.g., Haines-Young & Potschin, 2014). The limited understanding of how the approach can be used also limits the ability to learn, replicate and communicate its effect on nature conservation (McKenzie *et al.*, 2014).

In this paper we present and discuss findings from three EU member states: United Kingdom (UK), Belgium (Flanders) and the Netherlands. Information was obtained by means of a literature review and interviews. We first present aspects of policy formulation, and then of policy implementation. In addition, we discuss major barriers and opportunities to deliver an ESA, using the conceptual overview depicted in Figure 1. Our research focussed on ways of improving the use of the ESA. The insights gained can also help develop a research agenda that is better able to translate ideas and solutions from the scientific domain into policy praxis.

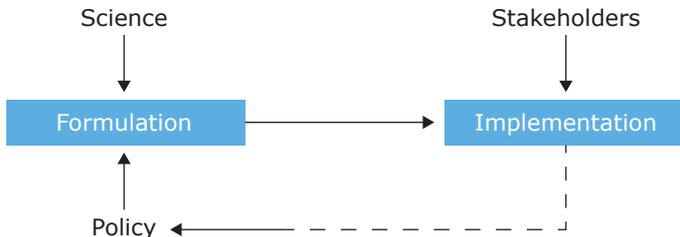


Figure 1. Conceptual overview of the ESA in policy formulation and implementation

## ESA at work: lessons from the UK, Flanders and the Netherlands

### Policy formulation

In the Netherlands, Flanders (Belgium) and the United Kingdom, policy formulation based on ES has been incorporated in current policy programmes, like nature conservation policies and the national implementations of the Common Agricultural Policy. The UK has committed to the ESA in the white paper 'The Natural Choice' (HM Government, 2011) and in a National Biodiversity Strategy (Defra, 2011). In the UK, the ESA is also seen as an approach that can help deliver a green economy, and much emphasis is given to the strengthening of nature conservation as a means for economic development. In

Flanders, the government attaches great importance to knowledge development. Mapping and assessment (MAES), No Net Loss and the Common International Classification of Ecosystem Services (CICES) are topics in policy development there. In the Netherlands, policy formulation first started through TEEB monographs for sectors and areas (e.g., KPMG, 2012a; KPMG, 2012b; Hendriks *et al.*, 2014). The Dutch Government's policy document entitled 'Green growth' (Ministerie van Economische Zaken, 2013a) and the implementation agenda called 'Natural Capital' (Ministerie van Economische Zaken, 2013b) are used to define ES in greater detail, while the private sector is called upon to preserve natural capital.

The national governments in the three countries are working on mainstreaming ESA activities, with awareness and communication apparently the most relevant policy outcomes. The practical implementation is being transferred to (decentralized) lower governments and stakeholders from the private sector. This requires engaging new types of stakeholders. Hence, the national policy programmes on ES hardly effectuate policy objectives, but focus on facilitation and the delegation of the approach to others. However, some stakeholders, like those involved in the pilot studies in the UK, are critical about the prospects for the current (spatial, agricultural and environmental) planning system. They argue that it is not very realistic to facilitate the development of a fully integrated approach for different policy lines, as is required in the ESA, as long as the government itself is still working in highly separated 'silos'. Finally, in all three countries there is a call for more research and data. In the Netherlands, for example, a digital atlas needs to be developed for mapping ES.

### Policy implementation

Policy implementation, as referred to here, is the stage of policy making when aims and means are put to together in a practical setting. However, many cases of 'implementation' referred to in the literature are still in a research stage of development. In such cases, there is no real practical and regional application process involving stakeholders. These cases are characterized by the stage of description, identification, mapping and valuation of ES by researchers. Some degree of regional application of the ESA with local stakeholders is taking place in all three countries, although the framing of ES is somewhat different in the Netherlands. The Netherlands has a long standing regional tradition of habitat development, in which various spatial tasks run in parallel. Projects like *Ruimte voor de Rivier* ('room for the river') and *Building with Nature* are examples of the ESA from the time before ES were mainstreamed in policy. Such examples are currently being worked out in the UK as well, characterized as best practices in an ESA agenda. In the Netherlands, the (former) regional agency of the Ministry of Economic Affairs, The Government Service for Land and



Water Management (Dienst Landelijk Gebied), has framed ES as 'sustainability windows' in which the people-planet-profit concept is the main anchor of development. In Flanders and the UK, the ESA is being implemented in line with the work flow described in MEA and TEEB.

In Flanders and the Netherlands, the ES approach is applied to natural areas. In Flanders, a collaborative group involving regional governmental agencies, researchers and local stakeholders is working on the delivery of ES in the *De Wijers* area. In the Netherlands, the approach has been studied in the *Gebrookerbos* area. In contrast, the ES approach within the UK cases was applied to so-called agricultural and forestry commons in the Uplands (*Dartmoor, Exmoor, South Pennines* and *Bassenthwaite*) and the *Parrett Catchment*. In these cases, the ESA is used to reduce external effects of agricultural practices, rather than for nature conservation.

Although there are regional differences between the cases we studied, some common characteristics can be noted. In all cases, stakeholders were involved in every aspect of the ESA process. All cases feature a form of ES selection, in that not all possible ES are taken into account. Reasons for this choice include the difficulty of recognizing some of the services as well as the urgency of addressing certain environmental issues. Stakeholders are actively involved in the selection process.

A crucial aspect of the ESA is the benefit issue: which parties are in need of ecosystem services and which parties can deliver them? Although the ESA can be supported by many different types of instruments, governments tend to prefer market instruments. This would require establishing a marketplace of supply and demand. However, all cases show that there are hardly any private parties requiring services, except for the public interest in general. A more specific example in the UK shows a private

water company demanding higher water quality, which could be delivered by farmers changing their agricultural management towards less fertilizer and pesticide use.

## Barriers and opportunities for implementing the ESA

The cases we studied revealed a number of barriers and opportunities for implementing the ESA. Here, we look closer at three types of aspects that represent themes of great interest regarding the way the ESA is applied in practice: (i) objectives and approach, (ii) participation and language, and (iii) governance and markets.

### Objectives and approach

Defining the objectives of any policy is usually related to the choice of approach. In the case of the ESA, the objectives will always involve an ambition to integrate ecological values with economic activities. In the cases we studied, however, particularly in the UK, we observed that there is scepticism among stakeholders concerning the ability of policy makers to actually achieve this integration. In the UK, policy makers at the Department for Environment, Food & Rural Affairs (Defra) have decided to test the ESA as an area-based approach by engaging stakeholders over a considerable length of time. The aim was to learn from these pilot schemes and experiments. Flanders opted for a pilot scheme in one area, with the aim of identifying and generating services from nature for society. The Netherlands have not yet explicitly decided to apply the ESA in pilot schemes in particular areas. Instead, the ESA is a subject that still remains in the research stage. However, it is now on the policy agendas, and a learning-by-doing approach has been announced from 2014/2015 onwards, with the aim of adopting the ESA in the innovation policy known as 'Top Sectors' and to implement it in 'green deals'. It is also part of the policy

program on 'Natural Capital'. Both the UK and Flanders are aiming for an efficient delivery of services on the basis of matching supply with demand. Such an aim produces other aims, as in a cascade of objectives: better awareness, mutual understanding and the identification of sufficient means and opportunities to act as intended. The major change compared with the past is that nature policy is moving from a government directive to a more voluntary society-based mission. This calls for at least some kind of participation.

### Participation and language

Participation is a key element in the three cases, but requires a common knowledge base and language. We found that the language associated with the ESA is not appreciated or taken up by stakeholders. First, the ESA as a concept, with all its implications, is far from being embraced by stakeholders and is perceived as abstract, vague and often too complicated for common understanding (see also UK NEA, 2011). As a consequence, ecosystem services has been replaced in nearly all cases by wording such as 'benefits of nature'. Second, there is hesitation regarding the 'economization' of the debate on the ESA. Valuation is acknowledged, but not the specific monetization techniques. Here too, the valuation using the TEEB approach is too abstract and academic for stakeholders. Although stakeholders understand the importance of services very well, putting money on it is another thing. The regional case studies show that the general TEEB framework needs to be tailored to any practical use. Stakeholders are involved in every aspect, from developing workable solutions to the final implementation. Since the economization of the ESA in terms of monetary valuation of services is not being taken up, further development of local knowledge is needed. In the UK, it has been concluded that the approach must tie in closely with the language used by the stakeholders. In view of this, Natural England aimed for a 'socially negotiated framework' for progress, a bottom-up approach which in turn could result in a specific valuation approach. This may imply that the 'endpoints' of the process are uncertain, but the process itself should have strong public support. The proposed framework was successful, as stakeholders sensed that they were being taken seriously and their solutions were being taken up by the government. The experience in Flanders shows that specific sector concerns were overcome by a shared vision on the future development of the natural area of *De Wijers* through ES.

### Governance and markets

A major challenge for governing the ESA is that of dealing with cultural barriers and the management of expectations. In many cases, groups of actors distrust each other, while the policy depends on some kind of collaboration. In all regions we studied, governmental agencies emphasized the use of market instruments to engage private financing, in view of public budget cuts. This also implies a

voluntary approach to ES. But there is also a widespread aversion towards paying for such services, as stakeholders do not trust the market to provide a well-functioning price mechanism. In practice, however, governmental subsidies seem to be the major financial instrument, while a working marketplace is not (yet) operational. This raises doubts concerning the advantage of the ES approach: people have already become used to public funding, and if this remains a matter of public funding, what is the added value of market instruments in the ESA? Nonetheless, we have seen in the UK cases that private funding does exist in the form of private-private linkages, in which water companies pay for additional farm management to prevent water pollution (see also Perrot-Maître, 2006; Linderhof *et al.*, 2009). In these cases, the price mechanism is used as the basis for contracts.

A major challenge for the government is related to a transparent monitoring of the process. Monitoring is necessary, but comes at a cost. It is a necessity to maintain credibility and a social basis for any Payment of Ecosystem Services (PES) (see also Mortelmans *et al.*, 2013). In addition, governments should develop a clear frame of reference, in consultation with stakeholders, providing the legislative conditions under which a PES instrument can be used (Mortelmans *et al.*, 2013). However, putting too much emphasis on the benefits alone may run the risk that ecosystem managers change their behaviour towards natural assets. The perception of the availability of such natural resources can change into that of a source of income (Mortelmans *et al.*, 2013). Hence, policy instruments do not necessarily need to be only market-driven.

The current worldwide financial crisis has also proved to be a major challenge to governments. In the UK, the projects started well before the onset of the crisis, but their continuation is uncertain, due to major budget cuts. The emphasis on delivering a green economy also seems to have diminished. In the Netherlands, there is a process of decentralization in progress, in which the provincial government becomes the main governmental layer responsible for implementing nature policy. A major challenge is that decision making thereby moves from the central state to the regional provincial level. On the other hand, this creates opportunities for more integrated assessments, in which economic development in rural areas can be linked to nature conservation through ES.

## Deconstructing the ESA

The implementation of the ESA in the case studies has led to important additions to the conceptual overview depicted in Figure 1. These additions include different steps that are taken (in the cases) to deliver the ES approach; the resulting framework is depicted in Figure 2 (see also Verburg *et al.*, 2014). Based on this generalization, five steps can be recognized: (1) definition of the study area,

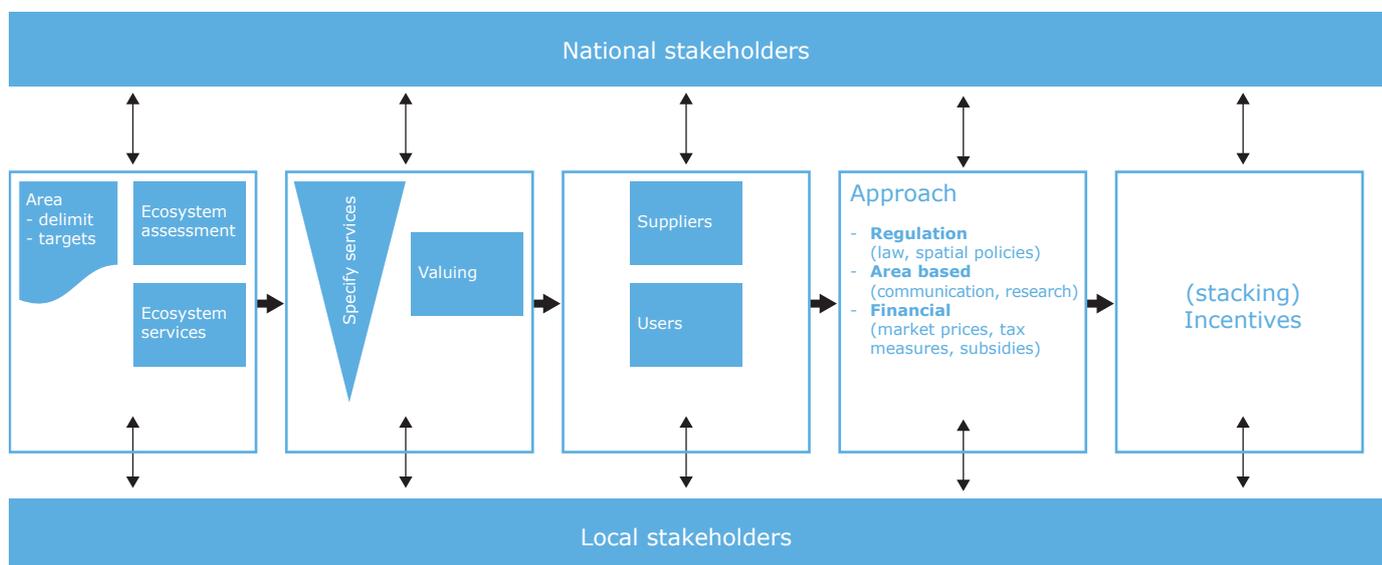


Figure 2. A generalized overview of the regional processes in ESA

(2) specification of the ESs and their valuation, (3) developing a marketplace, (4) instrumental choices and (5) ratification by incentives.

The framework shows that the five phases are not static. Iterations between steps are made by stakeholders to arrive at workable solutions. In addition to the continued involvement of local and regional stakeholders in every step, interactions are recommended with national stakeholders, like national governmental and non-governmental bodies. Such interactions can deliver important feedback for the formulation of national policy and targets.

On the instrumental side, none of the case studies show the use of any type of legislative instruments. Payments for ecosystem services are the dominant instrument, but are almost always focussed on governmental subsidies. In the UK, Natural England wants to combine all types of agricultural subsidies to implement the ESA, such as the *Higher Level Stewardship*, the *Woodland Grant Scheme* and *Farm Futures*. More privately oriented instruments that have been suggested include visitor payback schemes to sustain recreational activities in the UK, and crowd funding in the Netherlands. However, these instruments are still being investigated and none of them are in place as yet. The final step in the ESA praxis, which includes the ratification by incentives, has not yet been taken in any of the areas studied. This step is important, since ratification will effectuate the use of ESA in practice.

## Discussion

### A call for iterative knowledge transfer

The paramount importance of knowledge is undisputed in the debate about ES, but the same cannot be said about the types of knowledge needed. The case studies show that there is a great need for better knowledge transfer between the academic development of the approach, the

policy formulation and the policy praxis. Turnhout *et al.* (2013) state that research '[...] have focused on the generation of ever more precise knowledge with the assumption that if this knowledge is followed by effective communication, it will translate into a particular desirable ordering of social–natural relations.' In the academic community there is a strong emphasis on a better understanding of the approach, regarding both the biophysical and economic aspects. Honey-Rosés & Pendleton (2013) warn against this 'supply side paradigm' in which much less knowledge is developed about information transfer and use by policy makers. They argue that 'better information about ecological processes or abstract [economic] valuations will not spur better decision-making.' In policy formulation, the ideas about ES are seen as a solution within the sustainability debate, in which ES support a green economy. But how to achieve this is much less clear. Decision makers often need information about ES even if they do not use this language to define their policy agenda (Honey-Rosés & Pendleton, 2013). In policy praxis, knowledge is needed to underpin arguments and legitimize decisions. On the other hand, much of the knowledge is also locally produced. This knowledge is highly valuable for both policy development and for academic researchers, but it usually remains informal and implicit. Therefore, practical experiences need to be codified and should be transferred to the academics and policy makers to enable them to develop better solutions.

### Market instruments: weakness or strength?

The non-legal and non-binding character of the ESA is a challenge for policy makers. On the one hand, it fits the timeframe of a green economy. On the other hand, it also calls for an inquiry into the vulnerability of such voluntary schemes. A major challenge is that the outcome of voluntary schemes is uncertain, while experiences with market instruments are premature at best. Muradian & Rival (2012) show that markets can only function properly when traders have full information and will not be locked



out of information. The scientific knowledge about goods and services and how they function is, however, not yet fully understood. In time, this problem might be overcome, but for now it produces a significant barrier to setting up a marketplace. Muradian & Rival (2012) also point out that ecosystems are complex and biological interactions are mutual and non-linear in space and time.

As a consequence, a trader cannot grasp all the consequences. Trading a particular good or service therefore also implies trading ecological relations. This complexity probably explains the emphasis on relatively simple services like carbon sequestration. Displacement of services is another consequence that is not fully understood. Trading carbon sequestration, for example, can lead to maximization of this service by planting fast growing trees. This may come at the expense of other services or other types of nature. A tension may arise between the economic 'maximization' and the ecological conservation objectives. Researchers have emphasized the importance of stacking services, since maximization of one service alone will not be beneficial for a conservation area as a whole (Liekens *et al.*, 2013). This may require additional policies to overcome this barrier. Maestre Andrés *et al.* (2012) discuss such displacement issues as rebound effects. For example, reducing the recreational service in one area may lead to increased activity elsewhere, which is called leakage (Lambin & Meyfroidt, 2011).

A direct consequence of valuing goods and services is that these can be substituted. If any alternative, like a good or service, has an *economic* value, it can be replaced by the cheapest or most cost-effective one. However, from an *ecological* point of view, different alternatives may matter. If we sequester carbon in forest or wetland, the economic perspective favours the most cost-effective alternative, but the ecological perspective may add additional criteria, such

as biodiversity preservation, which are not covered *directly* by the service provided. Harvey *et al.* (2010) have shown that such effects can be found in REDD programmes, where carbon sequestration did not lead to biodiversity preservation. It is striking to note that these issues are barely touched upon in the different TEEB studies. And if these problems can become fundamental, the valuing phase of the ES approach will be challenged as well.

### **The importance of an empty signifier and the need to influence convictions and interests**

The ESA was originally developed in the academic research community as a way to achieve a scientifically based policy development regarding environmental issues and subsequent notions of managing economic development under the concept of sustainable development (Braat & De Groot, 2012). The use of ES requires precise definitions and a concise design of scientific methods and tools. When definitions are too loose, misunderstandings often occur, as shown in the field of sustainable development, where scientists regard this as a 'container concept'. The policy praxis in our case studies, however, indicates that the approach can be used without a major debate about its definition. In the policy praxis, different stakeholder discourses are introduced that go along, and these may deviate from the original intent of ESA, as described in MEA and TEEB. Research may run a risk by investing much energy into informing and educating stakeholders so as to narrow down the application of the ESA to its original intent, which may run the risk that it may silence any further engagement and development. What ESA does in practice is bring together stakeholders that would not have collaborated in previous spatial planning processes, where the problems were segregated along traditional policy lines, such as the traditional antithesis of economy versus nature conservation. The ESA concept can therefore bring stakeholders together so they can converge towards joint

solutions, without an intense debate about ESA's meaning and definition. To become successful, ESA might serve as a so-called *empty signifier* (i.e., Mehlman, 1972): it is a concept without any referents, it does not carry strong fixed meanings and as such it does not refer to any established interests. It is therefore suitable for mobilizing the stakeholders to join forces and search for common solutions. At this stage, ESA will have a different meaning to different stakeholders, but as the concept and all its meanings are elaborated, the stakeholders involved will gradually start to recognize the full consequences of the concept. At that moment, it becomes important to trigger some joint sense of urgency based on mutual convictions and interests. The challenge is to find a common ground where the actors perceive a carrot that works as intended by the ESA.

## Towards a new research agenda

### Present research: counting the countable – ignoring the rest

The strong emphasis on 'what is counted, counts' in ES research may run a risk of ignoring important aspects that are less countable (e.g., Turnhout *et al.*, 2013; Turnhout *et al.*, 2014). The UK case studies, for example, showed that biodiversity issues were hardly touched upon, and it is not clear how biodiversity can be preserved by valuing services such as carbon sequestration. The great risk of such an approach is that it nurtures a narrow focus that might soon be perceived to be a dead end, with the argument that it is the Ecosystem Services Approach (ESA) itself that is failing, and not the narrow definitions used by a few dominating actors.

### Ecosystem Services: part of a larger framework for societal involvement

The conclusion here is that the ESA deserves a much more prominent position within a larger framework for societal involvement in the protection of ecosystems. According to Turnhout *et al.* (2013), societal involvement is a crucial element, but is indeed ignored in much ES research. The role of real people and their concerns, hopes and interests must be fully recognized as a part of the research agenda. Too much emphasis on singular issues that are quantifiable will not do the research agenda any good. The research agenda should recognize the need for a more 'people-inclusive' approach that takes into account the different perspectives of stakeholders on the benefits of nature. This is crucial for the survival of the ESA. In the UK cases, the broad perspective of stakeholders on cultural services included other aspects than nature alone. In Flanders, a strict monetary valuation was abandoned in favour of a multi-criteria approach. Stakeholders were engaged using a cardboard game on prioritizing ES, which proved to be very effective. Such an approach requires a much more fuzzy setup in which various types of valuation, both in terms of priority setting and of physical units, comes to the fore.

In the end, ESA is not solely about valuing, but is in essence about power and interests. The shift from an 'ecologically dominated' agenda towards a more economic perspective has everything to do with this. Actors do perceive nature and natural capital in different ways. To commercial companies, natural resources are important production factors. Forests, for example, are a stock of resources that can make a profit. But to other actors, the existence of that same forest is a value in itself. A framework for societal involvement should therefore include various types of public and private stakeholder engagement. Research that can make better use of these different interests should be part of this framework.

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## Colofon

The detailed information and results on which this paper is based can be found in the WOT-technical report 4: Verburg, R.W., Selnes, T., M.J. Bogaardt (2014). Van denken naar doen: Ecosysteemdiensten in de praktijk. Case studies uit Nederland, Vlaanderen en het Verenigd Koninkrijk. WOT Natuur & Milieu, Wageningen UR, Wageningen.

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