

Increasing the Policy Impact of Ecosystem Service Assessments and Valuations

Insights from Practice

Augustin Berghöfer, Claire Brown, Aaron Bruner, Lucy Emerton, Ersin Esen, Davide Geneletti, Marina Kosmus, Ritesh Kumar, Markus Lehmann, Fernando Leon Morales, Ephraim Nkonya, Till Pistorius, Julian Rode, Roel Slotweg, Ulrike Tröger, Heidi Wittmer, Sven Wunder, Hugo van Zyl

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53113 Bonn, Germany 65760 Eschborn, Germany

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Contact:

info@aboutvalues.net and teeb@ufz.de

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Increasing the Policy Impact of Ecosystem Service Assessments and Valuations

Insights from Practice

**Requirements and options for enhancing the practical usefulness and
political relevance of ecosystem service assessments and valuations**

Augustin Berghöfer, Claire Brown, Aaron Bruner, Lucy Emerton, Ersin Esen, Davide Geneletti, Marina Kosmus, Ritesh Kumar, Markus Lehmann, Fernando Leon Morales, Ephraim Nkonya, Till Pistorius, Julian Rode, Roel Slootweg, Ulrike Tröger, Heidi Wittmer, Sven Wunder, Hugo van Zyl

April 2016

Executive Summary

Mainstreaming the conservation and sustainable use of biological resources across all sectors of the national economy, society and policy-making frameworks is a complex challenge. It is critical to have a clear understanding of the linkages, impacts and dependencies of human activities on ecosystems.

Society's interdependence with nature is revealed clearly when we focus attention on ecosystem services. Examining ecosystem services can therefore be used to support mainstreaming efforts and to inform development planning and decision-making.

Yet identifying, recording, explaining and understanding these linkages remains a major challenge. Ecosystem service assessments and valuations (ESAVs) are often commissioned, designed and conducted in ways that do not achieve their full potential in terms of practical usefulness and policy relevance.

This report was produced as a collaborative exercise between a number of conservation and development researchers, planners and practitioners, based on their own experience with studying, conducting and/or commissioning ESAVs. It also draws on a review of cases studies from the literature, research, as well as from various on-the-ground initiatives (TEEB, ProEcoServ, CSF, ValuES). The structure, format, content and illustrative case studies to be included in the paper were discussed and agreed at a workshop on the requirements and options for increasing the policy impact of ESAVs, held in Frankfurt in November 2014 and, hosted by the ValuES project.

Three requirements for increasing the policy impact of ESAVs have been identified:

1. **Balance the trio of credibility, legitimacy and relevance:** These key principles for scientific policy advice should guide the ESAV design and process management. However, there are tensions between them which merit attention.
2. **Close the loop between ESAV and policy:** The assessment process needs to be linked clearly to public and private policy-making. Numbers rarely speak for themselves, and without an adequate grounding and links to policy processes, ESAV results will likely be ignored, or – worse – misunderstood.
3. **Tailor ESAV to its practical purpose:** Many different approaches and methods are available which can be used to conduct ESAVs. Study design is not merely a matter of choosing the "best" technical method. To be effective and convincing, ESAVs have to be appropriate and relevant to their practical purpose and intended decision-making target.

There is a great deal of variation in ESAV purposes, contexts and methods. It therefore follows that there is no standard or "one size fits all" assessment approach. To be fit-for-purpose an ESAV often has to go through a series of discussions, negotiations and collective reasoning processes between key players.

Various insights and lessons learned have emerged in relation to these three requirements.

Understanding these options can help tailor an ESAV to the specific needs and circumstances under which it is being carried out, and enhance its likely quality, credibility, acceptability, uptake and – ultimately – policy impact:

1. **Scoping and framing:** It is important to invest in the initial scoping and framing of the assessment. Scoping includes considering (i) the policy issue itself, and the ecosystem services that it relates to (depends or impacts on) (ii) the purpose of an ESAV, (iii) its socio-economic context, and (iv) the political entry point(s) that might be used to leverage change or influence decisions. Framing means translating the purpose of the assessment and the initial context analysis into fit-for-purpose study questions for the assessment.
2. **Fine-tuning ESAV design,** in the light of the situation or challenge that it aims to address or respond to. Key design components include time horizon, geographic scale, methodological approach, degree of precision, (dis-)aggregation of beneficiary groups, value metrics, and communication aspects/output formats.
3. **Managing the ESAV as a participatory and interactive process:** If it is managed well and implemented strategically, the ESAV process can generate political momentum and broader interest in adopting an 'ecosystem service perspective' on the environment. This impact may well extend beyond actually delivering the study results. Tools and issues to bear in mind when managing an ESAV process include (i) being responsive to political change, (ii) maintaining stakeholder engagement, and (iii) thinking through continuous and targeted pathways for communicating results.

Based on these experiences and best practices, a clear recommendation emerges: that substantial efforts should be dedicated to preparing and developing the design of the ESAV and to managing the assessment process in a way which is cognisant of – and responsive to – the context within which ecosystems and their services are perceived, managed and used.

If these options are kept in mind (and integrated into the way in which assessments are designed, conducted and used), an ESAV can be much more than a consultancy commissioned for delivering (exciting) new numbers and statements of "fact". It becomes an opportunity for ecosystem stakeholders and assessment experts to work together, and to take active steps to achieve positive change.

The main potential benefit lies in generating new shared insights and changing common perspectives on the environment. It is therefore a potent vehicle for mainstreaming efforts and for leveraging real changes in the policies and decisions that drive development and conservation.

The authors

Augustin Berghöfer, Helmholtz Centre for Environmental Research - UFZ

augustin.berghoefer@ufz.de

Claire Brown, UNEP World Conservation Monitoring Centre

claire.brown@unep-wcmc.org

Aaron Bruner, Conservation Strategy Fund

aaron@conservation-strategy.org

Lucy Emerton, Environment Group

lucy@environment-group.org

Ersin Esen, UNEP Division of Environmental Policy Implementation

ersin.esen@unep.org

Davide Geneletti, University of Trento - Planning and Design for Sustainable Places Lab

davide.geneletti@unitn.it

Marina Kosmus, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

marina.kosmus@giz.de

Ritesh Kumar, Wetlands International South Asia

ritesh.kumar@wi-sa.org

Markus Lehmann, Secretariat of the Convention on Biological Diversity

markus.lehmann@cbd.int

Fernando Leon Morales, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

fernando.leon@giz.de

Ephraim Nkonya, International Food Policy Research Institute - IFPRI

e.nkonya@cgiar.org

Till Pistorius, UNIQUE forestry and land use GmbH

till.pistorius@unique-landuse.de

Julian Rode, Helmholtz Centre for Environmental Research - UFZ

julian.rode@ufz.de

Roel Sloopweg, Sloopweg en van Schooten natural and human environment consultants

sevs@sevs.nl

Ulrike Tröger, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

ulrike.troeger@giz.de

Heidi Wittmer, Helmholtz Centre for Environmental Research - UFZ

heidi.wittmer@ufz.de

Sven Wunder, Center for International Forestry Research - CIFOR

s.wunder@cgiar.org

Hugo van Zyl, Independent Economic Researchers

hugo@independentecon.co.za

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1. The challenge: Integrating ecosystem services into development decision-making

Policy-makers around the globe frequently seek to develop strategies, policies and plans that explicitly manage the environmental impacts and capture the environmental opportunities that are associated with economic growth and development. In turn, academics and advisers strive to provide decision-makers with the 'right kind of information' that can both convince them of the need to shift towards more sustainable development trajectories, and offer them concrete options and instruments by which to effect these changes.

Ecosystem Service Assessments and Valuations (ESAVs) can help to meet this challenge. They have great potential to influence public perceptions by conveying the importance of functioning ecosystems to all economic sectors and social groups. At the same time they can also provide convincing (and often much needed) evidence about how society and the economy depend on a diverse array of ecosystem services for their survival, security and growth: for example for income, employment, food, shelter, energy, disaster risk reduction, healthcare, cultural and spiritual wellbeing. In other words, ESAVs are founded on identifying, articulating and responding to the opportunities associated with nature's benefits and services.

Adopting a focus on ecosystem services can inform and influence action on diverse issues in a wide range of policy areas (cf. case studies at www.aboutvalues.net). For example:

- In Bolivia, an assessment of watershed ecosystem services informed the decision-making process concerning the design and construction of a new hydroelectric dam.
- In Tanzania, an ecosystem service assessment made it possible to develop an improved entrance fee system for the country's national parks.
- In Germany, a new carbon offset scheme based on emissions reductions from peatland rewetting is based on a specific ecosystem service analysis.
- In Mexico, a participatory ecosystem service needs assessment helped address environmental conflicts and informed regional planning.
- In South Africa, ecosystem service analyses are being used to apply for and justify budget allocations for invasive species removal programmes.

It however appears that, to a large extent, ESAVs are yet to reach their full potential. While they have arguably become a well-accepted part of conservation planning, there remain few cases where their findings (or, indeed, ecosystem services themselves) have been consistently integrated into mainstream development efforts. As a consequence, ecosystem impacts and opportunities tend to continue to be left out of the equation when policies, plans, markets and prices are designed and developed. Such neglect results in key economic and development opportunities being missed and, at worst, substantial costs and losses being incurred.

Why is this so? For many it has remained unclear how to carry out ESAVs in ways that will actually enable them to achieve their practical potential. To date, there has been far more focus in the literature (and concern among researchers and practitioners) about the “best” methodological and analytical tools for assessing socio-economic and biophysical characteristics. The topic of managing the ESAV process in such a way as to generate useful information has received far less attention.

Many writings on ecosystem service knowledge for scientific policy advice discuss this concept from an academic perspective (Cowling et al 2008, Daily et al 2009, Guerry et al 2015). In recent years, field experiences with ESAV in different policy contexts have also attracted research interest (see, for example, Emerton et al 1999, Christie et al 2012, McKenzie et al 2014, Waite et al 2015, Ruckelshaus et al 2015, Geneletti et al 2016). Also, for some time now significant effort has been applied to advance information dissemination, networking and trainings related to ecosystem services assessment and valuation (such as by the Conservation Strategy Fund, or the SGA Network¹, cf. Booth et al 2012). aboutvalues.net, Oppla.eu and IPBES/BES-Net are recent online portals to offer technical and practical guidance.

Nonetheless, there are various common beliefs (and sometimes misconceptions) associated with ESAVs. These pose challenges to those interested in putting this concept into practice, for example:

- ESAVs are widely believed to deliver neutral/objective information, rather as a thermometer measures temperature – yet often they are more like a ‘construct’, an expression of the societal importance of nature, which is heavily shaped and filtered by the perspectives and beliefs of those developing and undertaking them.
- ESAVs are often thought to automatically favour conservation – but, depending on how they are designed, their results can also support or encourage very unsustainable resource use decisions.
- ESAVs are commonly seen as being self-explanatory and convincing to any intended audience, because they describe nature in terms of its benefits to society. The reality is however that ecosystem service studies and documents frequently go unnoticed, and fail to resonate much with decision-makers.
- ESAVs are usually assumed to be useful, applicable and relevant to most circumstances because they consider a broad range of nature’s benefits which span a wide range of beneficiary groups and sectors. Yet poorly designed and/or managed ESAVs can be unnecessary (only re-stating the obvious), inappropriate (not capturing the essence of an issue), or even counterproductive (misleading debates).

The overriding conclusion is that ESAVs require not only sound technical capacity but also demand intelligent and strategic management. Assessments need to be designed and conducted in ways that are appropriate for the policy context they are intended to support, as well as to the social, economic, institutional and cultural setting in which they are carried out.

¹ The SGA Network is a community of practitioners dedicated to creating a common platform for ecosystem assessment practitioners. Through its capacity building activities, the SGA Network gathers lessons learned from different ecosystem assessment processes and disseminates these.

This paper seeks to offer some guidance on these management tasks. It takes a step back from technical issues and methodological questions. It is not about the science underlying the ecosystem services concept. Instead, it focuses on practical aspects of the ESAV process: **How can potential users of ecosystem service knowledge draw practical benefit from engaging in an ESAV exercise?** The answer is that there is no silver bullet or universally-valid recipe. However, with a growing number of assessments for different purposes and in diverse contexts, there are lessons to be drawn from practical experience. This is our objective: to document, synthesise and draw from these experiences.

To begin with, we look at some of the key requirements for effective ESAVs. There is no checklist to follow, but various underlying issues are identified and dealt with – such as credibility, fitness-for-purpose, connection to a policy process. They merit being borne in mind and balanced in light of the specific situation within which the ESAV is taking place.

Second, we describe a range of options for responding to these requirements. These relate to ESAV preparation, design and process management. Understanding these options can help those carrying out ESAVs to tailor them to the prevailing situation, needs and context. In many cases, there are serious choices to be made about how to run an ESAV – ‘serious’ in the sense that such decisions shape assessment results. It is therefore of paramount importance to understand the options at hand.

This paper is targeted towards public and private policy-makers and decision-makers, planners, administrators, as well as researchers and persons engaged in civil society organisations within and outside the environmental sector: The intended readership specifically includes those in charge of commissioning ESAVs (including preparing terms of reference), planning and managing ESAV processes (including signing off on the study design and approving the completed work), and taking up the recommendations of ESAVs (including advising higher-level decision-makers).

The starting point for our discussion is a situation where there is interest in doing an ESAV but the details are still unspecified. People in such situations may appreciate some guidance on how it might best be done.

2. Understanding what is required for an effective ESAV

A number of academic studies and practical assessments of ecosystem services have made a major contribution towards shaping global and national discourses on environment and development, enhancing awareness and understanding of ecosystem dependencies and impacts. However, strong studies do not necessarily translate into policy uptake or impact.

The [TEEB case collection](#) reflects this, making the point that (i) convincing studies exist, even if they have not led to any clearly identifiable policy uptake; (ii) there is anecdotal evidence that back-of-the-envelope estimates have played a major role in some decision-making processes; and (iii) there are other cases where reform processes have advanced successfully without any clear attribution to a particular study.

Irrespective of the unclear overall picture, we believe that ESAVs often have far more potential than has actually been realised or demonstrated to date.

At the conceptual level, various requirements for conducting effective ESAVs have been put forward. The Millennium Assessment Policy Response (MA 2005) details various 'elements', including concern for equity implications, vulnerability aspects, ecosystem complexity and the corresponding incompleteness of available scientific data. Other authors emphasize concern for the institutional set-up within which ecosystem services are managed (see, for example, Daily et al 2009). Awareness of power asymmetries, such as the difference between rights and the de facto restricted access to ecosystem services which many poor people face, has also been argued to play a role (Wittmer et al 2012).

The literature also highlights a number of other factors shaping ESAV quality and success (or lack thereof). Christie et al (2012) identify various barriers to their more widespread use in developing countries, including a lack of technical capacity to develop assessments as well as limited interest and numeracy on the policy-making side to consider the results. On a practical level, the importance of interactions between technical experts, stakeholders and policy-makers throughout the assessment has been emphasized by McKenzie et al (2014). Concern for effective communication is among the success factors identified by, among others, Waite et al (2015) and Booth et al (2012).

For the purposes of this paper, we define 'effective ESAVs' as those which have an impact on decisions in policy or public management. 'Policy impact' can mean various things (Ruckelshaus et al 2015): are we referring to improved environmental outcomes, such as hectares of wetland effectively conserved? Are we referring to the adoption of new laws, or to decisions taken differently in the light of ESAV results? Or are we thinking of changes in the level of awareness and the discourse of key politicians and administrators?

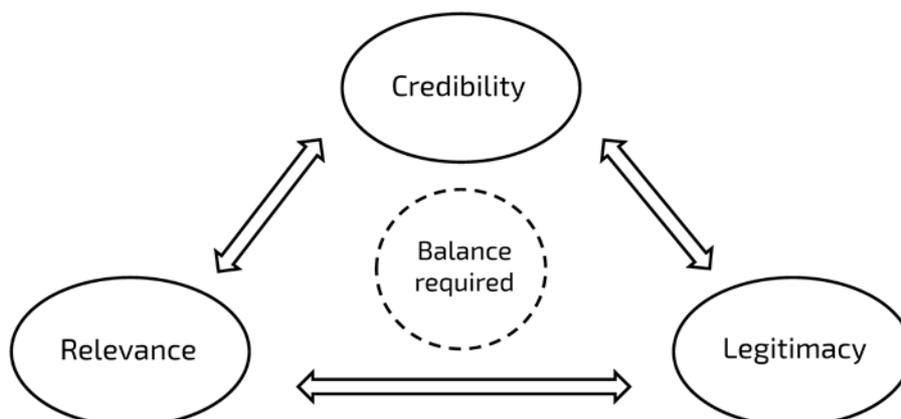
Regardless of which 'level' of policy impact is being considered, we have identified at least three underlying issues which demand attention if assessments are to be 'effective' and to play a practical role:

1. **Balance the trio of credibility, legitimacy and relevance:** these are key principles for developing scientific policy advice. In the case of ESAV, they are particularly important in deciding which is the most suitable of the many different assessment designs that are technically plausible.
2. **Close the loop between ESAV and policy:** the assessment process needs to be connected to public decision-making. Without such a connection, ESAV results run the risk of being ignored or misunderstood.
3. **Tailor ESAV to its practical purpose:** many different approaches and methods are available, and choosing between them based on technical considerations alone is insufficient to identify the most appropriate study design. To be effective, ESAVs have to fit to their practical purpose.

2.1 Credibility, legitimacy and relevance need to be balanced

Credibility, legitimacy and relevance are key principles for developing scientific policy advice. They are important if an ESAV is to generate information that is credible, acceptable and useful to its target audience. Together, they describe the quality of an assessment in terms of appropriate design (not only methodically correct but also well-matched to the situation) and a process which is perceived as fair.

Requirement 1: Balance principles for scientific policy advice



Credibility: Assessment results are precise and trustworthy

Relevance: Results address the right questions at the right moment in the right way

Legitimacy: Assessment is widely acceptable, e.g. it recognizes different views

What do we mean by credibility, relevance and legitimacy?

Credibility is the perceived quality, validity and scientific appropriateness of the people, processes and knowledge involved in an assessment. Are its conclusions backed up by the depth of detail or degree of certainty of the assessment results? Are the assumptions made and the methods chosen suitable to the context? To ensure credibility, scientific robustness is essential and can be achieved by involving experts and state-of-the-art know-how. But this is not enough – how others see the process is vital. It is often crucial that an assessment is clearly independent of vested interests and external control. This should be considered when collaborating with other organisations. Transparency is key, so that the interested parties can understand what assumptions were made, who was involved in what role, how experts were chosen, and what kind of review process was used. A well-documented study process can communicate this information.

Relevance is the responsiveness of an assessment to policy processes and societal needs and interests. Assessment results need to be appropriate to the process or arena where the issue is being discussed. Does the assessment ask the right questions? Do the results actually respond to them? Are the results timely and at the right level of detail? Relevance is crucial for motivating others to participate in the process. A policy mandate can significantly enhance its relevance – but it may also limit flexibility for exploring the wider issues and can diminish the perceived independence of an assessment. Relevance also points to the importance of using appropriate language: in some cases this may mean avoiding the term 'ecosystem service' while still aiming to convey the underlying idea of the multiple, distinct benefits provided by ecosystems for different sectors or groups in society.

Legitimacy is the perceived fairness and balance of an assessment process. It is insufficient for an assessment to deliver methodically correct results – if the process is felt to be inappropriate, if key perspectives are neglected or sensitive issues not appropriately recognised, stakeholders may ask: 'Why should I care?' Legitimacy is particularly important when knowledge is contested, when decisions involve winners and losers, and in conflict-prone settings. Considering different perspectives and bringing in people from diverse backgrounds can enhance the overall acceptance, or legitimacy, of an assessment and of its conclusions.

Adapted from: spiral-project.eu/sites/default/files/07_Kepp-it-CRELE.pdf

Credibility, legitimacy and relevance can be considered as guiding principles, rather than as pre-requisites, for organising an effective ESAV. They can rarely all be fully achieved at the same time. For one thing, there are clear constraints with regard to time, capacity and resources. In addition, though, there are often inherent trade-offs between them. One important task is to find the right balance, according to what the situation demands.

In this context, it is obvious that there are trade-offs to be reached in achieving this equilibrium, such as:

- The use of advanced methods and scientific research designs is one important source of credibility – and yet the assessment results may still be questioned if they are based on methods that are too far removed from stakeholders' reality or understanding. If ESAV results appear to emerge from a 'black box' they may not be considered credible. This is one reason for developing simpler rather than more sophisticated models for decision support (cf. Ruckelshaus et al 2015).
- Making the process of designing an assessment and interpreting its results fully participatory can be a key factor in achieving widely accepted conclusions. Yet, in striving to represent diverse viewpoints and reaching some kind of consensus, such conclusions may also become diluted. Windows of opportunity for results to be taken up in debate and (higher-level) policy-making may also be lost due to lengthy processes. Here, concern for legitimacy will have restricted the relevance of the assessment.
- For results to be considered relevant, they often need to be simply-put and well-packaged. . Yet, this increases the risk of misunderstandings and misinterpretations, and can directly affect an assessment's credibility.

Careful reflection is required to translate these guiding principles into case-specific answers to questions such as:

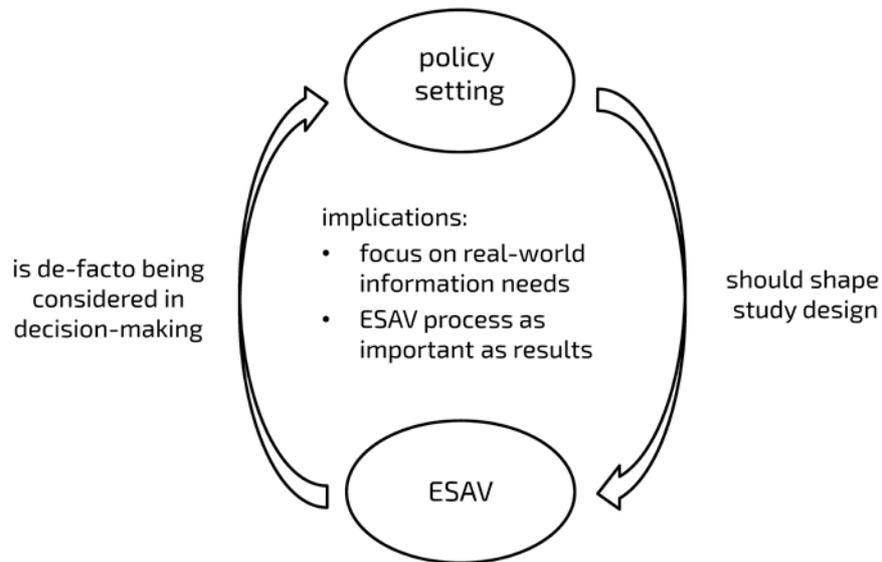
- **Which sources of credibility** should we rely on most: state-of-the-art science? Locally accepted knowledge? A highly reputable messenger?
- **How do we want to be relevant** with regard to policy-making: by pursuing an official mandate for the assessment? By feeding smaller pieces of information into policy processes? By strategically adjusting the assessment to other issues that have political priority?
- **How can we achieve legitimacy**, so as to ensure that key individuals consider this a fair assessment: By informing all of them up-front about purpose and procedure of the assessment? By involving some of them in an assessment advisory board? By documenting the process, or by focusing on broad public communication?

2.2 The knowledge-policy-practice loop needs to be closed

Ideally, an assessment's results will speak for themselves. To do so, they need to either strike a chord with public opinion or meet the knowledge needs of those involved in decision-making – or both. However, many ESAVs are conducted without their practical usefulness in policy and decision-making being known (Laurans et al 2013, Rogers et al 2015). Although practical problems constitute their common starting point, knowledge production (the assessment process) and decision-making (the policy process) do not automatically go hand in hand.

An ideal interaction can be understood as (one of many variants of) a closed loop: a clear and specific mandate for an assessment is formulated in the policy setting, and the assessment then manages to meet such practical information needs in the right way, at the right time and using the right format.

Requirement 2: Close the loop between ESAV and policy setting



The policy setting ideally shapes the design of the assessment, and the assessment results ideally influence decision-making processes.

Example: In [Namibia](#), the Ministry of Environment and Tourism (MET) identified the need for an ESAV as part of preparations for the Strengthening the Protected Areas Network (SPAN) project. The assessment was to show the economic value of protected areas in order to attract increased funding. Although a number of other ecosystem services (such as water regulation) were initially considered, the need to focus on tourism assets was clearly identified by senior officials in the MET in collaboration with other key stakeholders. This resulted in an assessment that was driven by the appropriate authorities and was clearly scoped and had a well-defined, narrow focus. The study was completed in 2004 and the concluding evaluation of the SPAN project found that the study (along with its 2008 update) played a key role in increased investment in protected area management by the government.

For scientific policy advice in general, Pielke (2007) suggests a clear division of tasks between scientific advisers and policy-makers: Experts act as honest brokers presenting the available options and policy-makers then appraise and select them according to their mandate. For example, experts produce assessments which show the probable consequences of three alternative routes for a new road, and decision-makers consider this information and choose the one which best meets their electorate's priorities. However, such a division of tasks is often difficult to achieve. One challenge is to build trustful interactions between scientists and policy-makers given their often different agendas and ways of doing and seeing things (Karrer et al. 2011).

Another difficulty has to do with competing knowledge claims: An engineer's perspective regarding the consequences of a hydro-electric dam may differ substantially from an anthropologist's view of its socio-cultural consequences or a biologist's view of its impact on regional biodiversity. All three may make use of the ecosystem services concept but draw incompatible or

contradictory conclusions, each one valid from its own point of view. So which type of scientific advice should policy-makers call upon?

Furthermore, public decision-making is typically less straightforward than a 'linear model' of policy-making would suggest where an objective appraisal of options leads to a policy decision which is then implemented. Instead, policy decisions and their implementation might sometimes be best described as a 'chaos of purposes and accidents' (Sutton 1999). The box below indicates three different perspectives on how public decisions in democratic societies come about, and the different roles of scientific information within this (see also Laurans & Mermet 2014). All three accounts offer helpful information for exploring the knowledge-policy-practice loop, each emphasizing different aspects. It is beneficial for those tasked with conducting an ESAV to pay close attention to the characteristics of the decision situation to which they seek to contribute.

Different perspectives on policy processes and on the role of scientific advice

1. **'Rational decision-making'**: In this perspective, policy is driven by a process of weighing up different arguments, and any gaps in knowledge are considered to be a major limitation to making optimal decisions (cf. MA 2005). While other factors also influence policy-making, assessments effectively contribute by informing stakeholders about the available options and their consequences. Those involved in policy-making may have interests which conflict with one another, but their focus is primarily on the issue to be resolved. The assessment contributes to a better shared understanding of these issues and thus to finding an acceptable compromise in such cases.
2. **'Political struggle'**: In this perspective, policy is driven by the pursuit of (opposing) political agendas. Scientific advice serves to justify certain decisions or to support certain positions within this struggle (Laurans & Mermet 2014). Here, the strategic interests of the protagonists (for example related to upcoming elections) often outweigh concerns for the issue itself. Assessments provide arguments that can be used as 'ammunition' in the political struggle. One might recall, for example, Kevin Spacey's role in the TV series 'House of Cards'.
3. **'Confluence of streams'**: In this perspective, policy decisions are the result of a certain combination of factors in a dynamic setting. These can be located in three different 'streams' (Kingdon 1984): (i) an issues stream (e.g. 'is the issue of public interest at the moment?'), (ii) a policy/procedures stream (e.g. 'do policy procedures allow for a change in direction?'), and (iii) a politics stream (e.g. 'does the issue fit in with the strategy and interests of a political protagonist?'). Assessments can be intended for a specific purpose, but their influence in policy processes is shaped by the dynamic setting. If the combination of different factors in the three streams is favourable, a window of opportunity for policy change opens up (e.g. for a new government programme) – and if the assessment fits into this window in terms of timing and format, it will be considered carefully, or at least arouse considerable interest, and exert an influence on the policy decision.

From this it follows that assessment results do not speak for themselves by mere force of argument, quality of technical information or depth of analysis. An ESAV needs to be actively 'fed into' the policy process. This means taking explicit steps to find opportunities and entry points for assessments and their results to be given any consideration. How this might be done will differ according to which of the three perspectives (on the role of scientific information in policy-making) is most appropriate in describing a specific case.

The following questions illustrate how this topic can be explored practically:

- What role does it play in a government's agenda? How does it link to existing policies, programmes and instruments?
- What policy proposals are being promoted, and on the basis of which arguments and evidence? What type of other arguments could inform this debate?
- Which is the appropriate decision-making forum? Which coalition of stakeholders or political protagonists can be identified? And whose other interests are associated with an issue?
- What is the 'entry point' of the planned ESAV into the policy process? What are the resulting time constraints? And which technical requirements should be observed with regard to language, format, and procedures in the relevant administrations?

Delivering practically-useful ESAVs is not only about *understanding* policy processes but about being responsive to them, acting strategically within them and – at the extreme – may even involve taking steps to influence and change them. Closing the loop is therefore about dedicating sufficient resources to recognizing and effectively managing the assessment as a knowledge production process that intersects with the policy process.

Once those tasked with conducting an assessment understand the arguments, dynamics and formal procedures which shape the political process, they gain a better idea of how it could be posed, targeted and communicated.

2.3 An ESAV needs to be tailored to its practical purpose

A wide array of study questions, methods and assessment approaches are available. ESAV methods look at different ecosystem services, different aspects, follow different pathways for generating new knowledge and use different output metrics for their results (see box below).

The table on page 11 summarises typical purposes for which ESAVs have been conducted. (For detailed descriptions and recommendations geared towards specific purposes, see Berghöfer et al. 2015).

Types of methods suitable for conducting ESAVs

- Bio-physical methods focus on ecological, hydrological and atmospheric processes, among others.
- Economic methods consider issues of scarcity, distribution and/or efficiency; often they provide monetary value estimates.
- Social valuation and anthropological methods focus on stakeholder perspectives and non-monetary kinds of value, or value articulations.
- Integrated methods seek to combine data from different sources on ES supply and demand (for example by means of modelling).
- Furthermore, decision support instruments can process diverse kinds of data (including those relating to ES) into scores, ratios or qualitative statements (such as CBA, MCA).

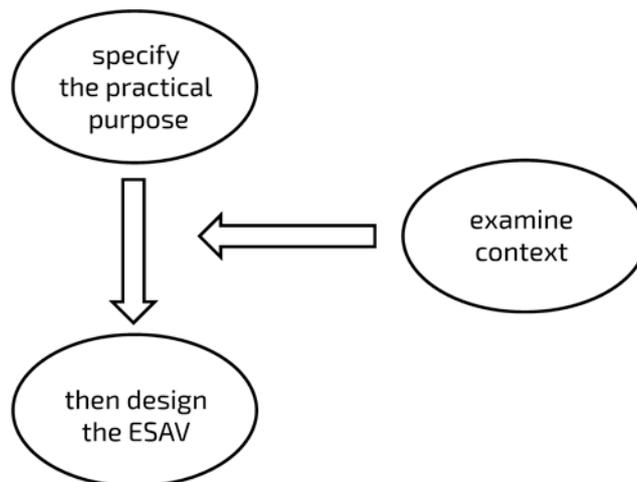
Table: Practical purposes for conducting an ecosystem service assessment

Purpose of assessment	Case study (available at www.aboutvalues.net)
1. Scoping and/or conducting a situation analysis	Columbia: Stakeholders engage in a series of workshops to agree on a water PES for catchment protection.
2. Enhancing environmental awareness or advocating for/against a policy option	Protecting mangroves for local benefits, Philippines: Workshop with stakeholders and (foreign) experts on mangrove loss due to aquaculture convinces local policy-makers to restrict shrimp farming.
3. Comparing alternative policies, programmes and projects	Combining flood protection and habitat restoration, USA: Using cost-benefit analysis, including ecosystem services, helps identify best management option.
4. Identifying livelihood, development and investment opportunities	The value of pollinators in Himachal Pradesh, India: Describing the role of insect pollinators improves apple farming practices and stimulates the setting up of new enterprises.
5. Designing environmental policy instruments and incentives	Assessing climate benefits of peatland rewetting: Estimates of greenhouse gas emissions reductions enable voluntary carbon certificates to be issued in Germany.
6. Tackling environmental conflicts	Multi-criteria analysis in regional planning facilitates understanding of competing environmental needs and related conflicts in Baja California, Mexico.

ESAVs can be used for multiple purposes, each of which requires a slightly different ESAV design. If the purpose is advocacy (for example to gain support for the restoration of a near-urban wetland), the ESAV might focus on certain household-level benefits (such as access to quality drinking water) or on public benefits (for instance reduced water treatment costs), which are easy to communicate and which generally tend to resonate with the target audience. If, instead, the purpose of an ESAV is to provide input to a regional planning process, it would likely be geared towards ensuring compatibility with formal planning procedures and complementing other data already in use. If, in turn, the principal purpose is to support the process of decision-making between a number of options (such as for an infrastructure project), the ESAV would be likely to focus on assessing marginal changes and not average changes or values, so as to elucidate the issues that best highlight the differences between the different options.

Those tasked with conducting an ESAV need to choose which kind of assessment of the many different approaches and methods available best fits their specific purpose (see also the [ValuES Methods Navigator](#), designed to support this task). The purpose of an ESAV needs to be specified according to the situation, in other words with regard to the (political) context for which it is intended and the entry points at which it can intervene. This enables practical information needs to be identified and suitable assessment questions to be developed.

Requirement 3: Taylor an ESAV to its purpose in light of context



In many cases it is questionable to assume that we can first do some kind of standard assessment and then work on the problems that have been identified. To obtain useful outcomes, those commissioning an ESAV need to engage actively in identifying the appropriate assessment design.

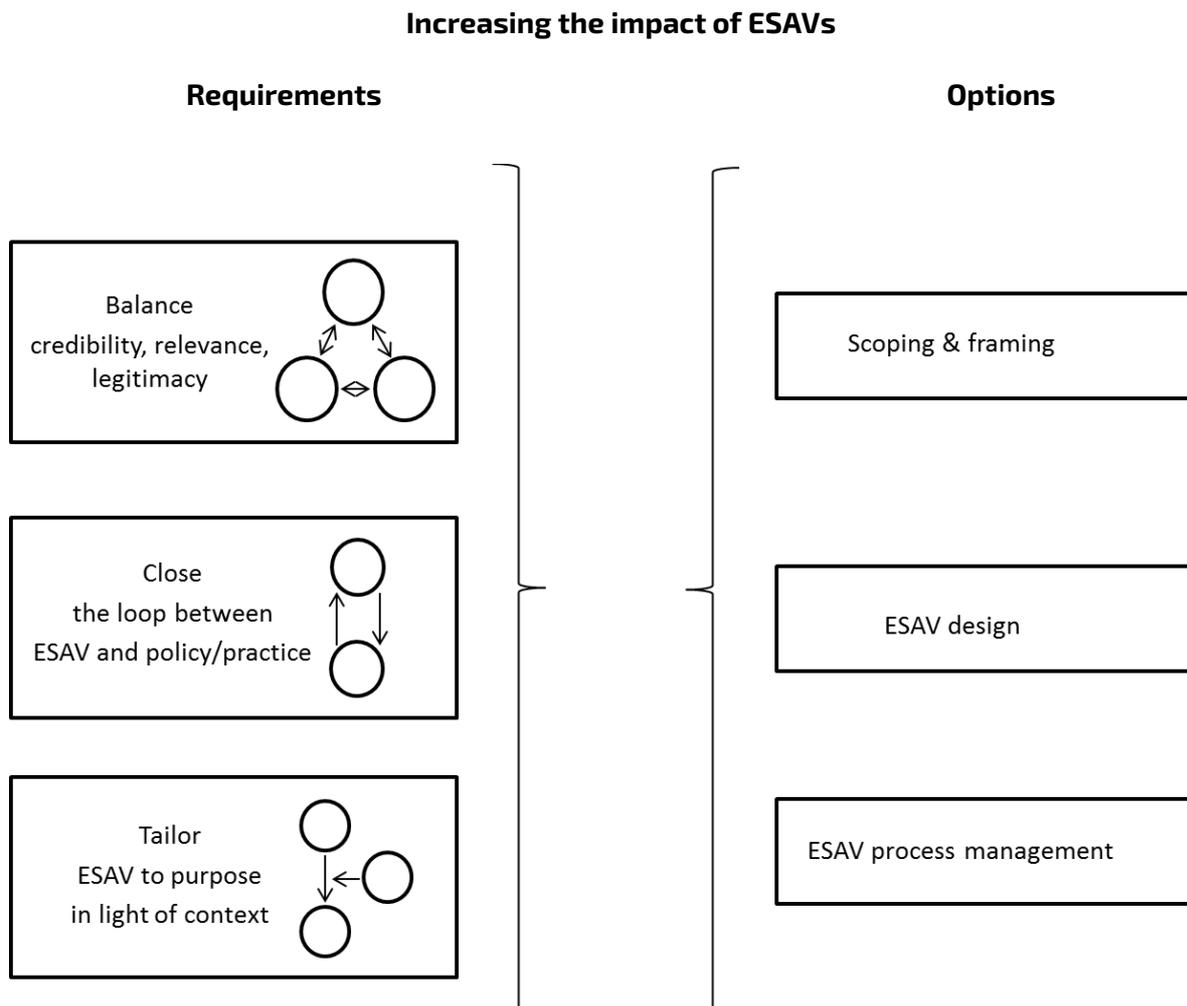
In some cases, different methods need to be employed at different stages of an assessment. A comprehensive study, for example, could first systematize and/or generate data on ecological processes, then consider aspects of scarcity and efficiency, and finally apply a focus on stakeholder dependence and appreciation. However, the more specific the purpose, the less such fully-fledged assessments are necessary.

Example: In Ivory Coast, an assessment aimed at consolidating the Tai National Park began with the aim of valuing all the benefits the park generates for the country. After two stakeholder workshops and intensive debate, the small working group commissioning the assessment had identified a shortlist of important services and increasingly specific questions. For example, based on the general understanding that the park's forest cover contributes to regular rainfall and climate regulation in the surrounding agricultural landscape, the consultants conducting the assessment were requested to attempt an approximate answer to the question: How many hectares of cocoa plantation would be affected if the park lost this ecosystem service due to deforestation (Biotope 2015)? A conservative preliminary hypothesis about this climate regulation benefit was considered particularly powerful for fundraising efforts geared to the private sector.

Those who develop an ESAV benefit from interacting closely with the intended users of its results: Jointly they can identify what is both practically relevant for the specific purpose and context and technically feasible given the data, resource and time constraints. We emphasize this because the effort it takes to develop an appropriate study design is often underestimated.

3. Options for increasing the policy impact of ESAVs

So far we have explored what is required for an effective ESAV. In this section we describe a number of options for responding to these requirements, and increasing the policy impact of ESAVs. We focus on options for (i) the initial scoping and framing, (ii) design options, and (iii) process management.



3.1 Preparing an ESAV: Invest in initial scoping and framing of the assessment

Scoping is an essential preliminary stage of the ESAV process. It provides the foundation for a well-targeted study. The aim of scoping is to understand the context, issues and influences that shape the status of ecosystem services, and that are in turn affected by them. Sound scoping requires a significant amount of time and resources, and yet it may be the single most important means to increase the overall effectiveness of an ESAV in terms of policy impact.

While (i) the initial appraisal of the policy issue and relevant ecosystem services is an obvious component of scoping, it is often worthwhile to make efforts (ii) to understand and specify the purpose of the ESAV, (iii) to scope the context (in other words socio-economic and institutional settings), and (iv) to identify the political entry points for the results.

On the basis of sound scoping, an ESAV can be (v) 'framed': its overall shape can be developed, and assessment questions can be formulated which are both useful and feasible. In practice, these aspects take shape progressively, typically in an iterative process of discussion and reflection.

A GIZ [manual on integrating ecosystem services](#) into development planning offers various exercises for scoping. It is available in different languages. Hands-on guidance on scoping & framing is also available in the [manual for TEEB Country Studies](#).

(i) Appraising the policy issue and scoping ecosystem services

What exactly is the policy issue at hand? Which ecosystem services are relevant to this issue? What is their overall state and what trends characterise them? These are the questions to begin with, and [ES overviews](#) can serve as guidance for an initial screening. The usual approach would be to start off with the full range of ecosystem services and subsequently narrow down the analysis to just those services that are important to the issue at hand. At some point, the boundaries for scoping need to be set in terms of the area to be covered, and the stakeholders or sectors involved.

It is helpful, when conducting such an initial scoping of ecosystem services, to obtain the opinions of a wide range of people. Interviews, group discussions with stakeholders and conversations with colleagues provide a rich picture of the overall situation and the critical issues. People from outside the 'environment community' can be sources of unexpected ideas and key information. In this context, technical 'ecosystem service' language can be confusing. Instead, stakeholders can be consulted about how they use, value and perceive the environment, using terms which are meaningful to them.

Example: In [South Africa](#), Cape Town's Environmental Management Department is well aware of the significant benefits which intact ecosystems provide to the city. Many other municipal officials and members of the public, however, are not. With this in mind, an ESAV study process was initiated by the Department in 2008. A key step in the early process was broad-based consultation. Over a period of several months, bilateral talks and group consultations were held with other city departments (including waste water and storm water, solid waste and spatial planning) to find out how their respective tasks depend on a functioning natural environment. For example, if upper watersheds are intact, there is less storm water running through the city and this lowers the maintenance costs of roads, canals and other items of public infrastructure.

In this process, the linkages between ecosystem services and public service provision became more widely understood within the administration – resulting in a joint list of top priority environmental benefits which the city should seek to maintain. An ESAV was designed on this basis (de Wit et al 2012).

(ii) Scoping and specifying the purpose of the ESAV

We have argued that the practical or policy purpose of an ESAV should determine its design. This is due to (i) the huge methodological diversity available for assessing ecosystem services and (ii) the need to close the loop between knowledge and practice.

Understanding and specifying the purpose of the ESAV is a prerequisite for doing this. A policy or management challenge provides the initial motivation for many ESAVs (for example fundraising for conservation, advocacy against ecosystem damage, environmental conflict resolution). However, we have found that the role to be played by the assessment or its specific objective is often only vaguely defined. While this may be the very nature of country-wide assessments, it is not helpful in sub-national or even local ESAVs.

If, for example, fundraising for a national park is the issue at hand, it is not particularly useful when developing an ESAV to describe its purpose like this: 'we need to show the importance of our national park'; more useful would be: 'we want to convince Department X or Company Z that it is in line with their agenda [or interests] to co-finance our national park management costs by at least 20%.' In the former case, all kinds of arguments can be gathered for many different economic sectors, government ministries or groups of beneficiaries (which may be suitable for, say, a general awareness-raising campaign but not for fundraising). In the latter case, the task is to develop a clear understanding of how a fundraising effort for the national park could be undertaken and which items of knowledge, at what 'depth' or degree of detail, would be useful. The more focused the purpose, the clearer the type of insights and evidence become which the ESAV should seek to deliver.

Specifying the purpose of an ESAV makes it easier to use the ecosystem service concept in a pragmatic way: A large amount of information is either already available (even if not phrased in ecosystem service language) or else it is not entirely necessary for pursuing the purpose. Purposes can differ significantly in terms of what outputs are required from the assessment. In other words, scoping the purpose helps ensure that scarce assessment resources are used efficiently.

The following questions can be used as a guide when scoping the purpose of an ESAV: Who will use the assessment and its results? How should they be used? Who else might use the results and with what intention? Which arguments or issues have played a key role so far with regard to the purpose? What are the characteristics of the process to which the ESAV is intended to contribute? (See also Section 3 above for an overview of purposes).

(iii) Scoping the context

Context is a broad term, and should be understood as having many elements. It encompasses the cultural milieu (such as values and beliefs), the socio-economic conditions (for example resource use patterns), and the institutional circumstances (including rules and administrative structures). In other words, it investigates what mediates or drives the relationships between ecosystem services and their users, such as human dependencies on certain environmental benefits. Such scoping provides vital information for designing an ESAV and interpreting its results, as well as for understanding the dynamics of the stakeholders who need to be consulted, involved and informed in the course of an ESAV process.

There are no clear lines to show where 'context' starts or ends. By emphasizing 'context' we are not suggesting that practitioners undertake a huge research effort prior to an ESAV. In many cases, substantial (experience-based) knowledge is available, particularly if the ESAV is commissioned and/or accompanied by (a group of) stakeholders, such as an assessment advisory board. Such implicit knowledge is often drawn upon, for example, in joint discussions about the focus an assessment should adopt.

Where critical aspects appear unclear, the scoping effort should dig deeper. One way to do so is to draw on (elements of) heuristic instruments, such as UNDP's Institutional and Context Analysis (ICA) (UNDP 2012) prior to the ESAV. ICA offers practical guidance for examining issues such as power and incentives, the legal system, political and social structures and outside forces at work.

Furthermore, attention should be paid to identifying all the groups of beneficiaries of ecosystem services and ensuring that differences among stakeholders are sufficiently recognized. ValuES has developed an overview of [methods for stakeholder identification](#) and analysis.

Using Institutional Context Analysis (ICA) for planning REDD+ in Mongolia

An ICA was carried out to assist in planning for REDD+ activities in Mongolia. The aim was to identify strategic options and entry points for mainstreaming financial resources for sustainable forest management (SFM) into sectoral budgets. The study took place at an early stage of Mongolia's REDD+ readiness process.

The ICA was conducted as a rapid assessment, with a strong focus on consultation and participatory methods, involving various government departments, mining companies and local-level pastoralist user groups. It was carried out via a 5-day consultation, a 3-day literature review and a half-day stakeholder workshop, as follows:

- The main sectors and government agencies involved in managing and using forests were assessed, and the processes they use for prioritising and allocating funding 'on paper' and 'in practice' were investigated, so as to understand the actors, rules and motivations that influence budgetary decisions relating to SFM.
- Key stakeholders in forest management and use were then identified. Their main incentives, interests and influence in relation to mainstreaming financing for SFM were analysed, and stakeholder engagement strategies were suggested.
- In the light of this information, potential barriers and opportunities to mainstreaming financing for SFM into sectoral budgets were identified, so as to suggest the most feasible entry points and to identify possible risks. Finally:
- The potential for actual change was assessed, and concrete actions and ways forward to ensure that SFM is mainstreamed into sectoral budgets were proposed and prioritised.

Adapted from Emerton & Bat-Ochir (2013).

(iv) Scoping for entry points into the policy process

Closely associated with scoping the purpose and the context of an ESAV, though with a different focus, is scoping for entry points into the policy process. Scoping the entry point for an assessment means taking a close look at the *political* context.

The results of an ESAV can be fed into decision-making or policy at various points within the policy process. This use of ESAV results cannot always be planned beforehand, as the political windows of opportunity may change. However, it can be useful to be aware of different phases within a policy cycle such as agenda setting, deliberation of policy options, implementation or evaluation of policy instruments. It may also be useful to consider which particular individual, institution or policy instrument the ESAV should be geared to. As various options exist – and these may change over time – scoping and reflection is needed on what could enable the link-up between assessment results and the policy context.

Table: How can ESAV results feed into a policy process? Examples along the policy cycle

Policy cycle stages	Examples of entry points for ESAV results
Agenda setting	An ESAV describing the status of a country's wetlands can be used to awaken public interest in the issue.
Policy formulation	An ESAV exploring changes expected in ecosystem service distribution can be used in workshops to develop policy options or to feed into negotiations with stakeholders.
Decision-making	An ESAV pinpointing the size of the population affected by the potential loss of a wetland's ecosystem services can be used to compare policy options in a high-level briefing.
Implementation	An ESAV identifying the priority areas for ecosystem restoration can support planning for implementation (for example a new wetland conservation programme).
Evaluation	An ESAV examining changes in ecosystem service provision over time can complement information on a conservation programme's activities to evaluate its impact.

Sometimes, the results of an ESAV come at the right moment and can be fed into a policy process as planned. They can also develop momentum, with initially unintended users picking up on them.

Exploring at an early stage the potential opportunities for having expected ESAV results considered in policy processes can provide valuable information about how they should later be packaged, communicated and linked to other policy issues. In addition, insights about entry points can also shape the design of the ESAV itself as well as the way the assessment process is managed.

Questions for identifying entry points include:

- What are the key features of the decision process and what kind of evidence and arguments will play a role?
- Who are the protagonists, what are their agendas?
- What kind of role might an ESAV play in the process, e.g. an advisory role, and which features does it need in order to do so convincingly?

Example: Maps can demonstrate a society's dependence on ecosystem services in a powerful way and can support specific actions. In the [South African ProEcoserv project](#), maps of strategic water source areas were developed by disaggregating streamflow data to a much finer grid cell resolution. The map of strategic water source areas clearly showed that only 8% of the land area of South Africa secures the provision of a staggering 50% of the country's total water resources. These areas collectively support about half of the national population and contribute to more than 60% to the national economy, though only 16% of their surface area is legally protected.

The maps and statistics provided a very compelling message for national politicians and decision-makers: that managing this 8% of South Africa's land contributes vitally to the country's water security, population and economy. This message found traction in national development planning and national water resource management. Beyond that, interest in using the ecosystem service maps grew rapidly, and several organisations asked to use them as communication tools in their negotiations with funders and decision-makers. Examples of these maps include the map of water provision services used by WWF (SA), SANBI, and several provincial agencies to make a case for better catchment management. Originally, the maps had been developed as part of a scoping and situation analysis – they then became an important tool for enhancing environmental awareness and designing policy instruments.

(v) Framing the study

'Framing' here means ensuring that the ESAV is designed to respond to the knowledge needs identified in the scoping process.

Advice that is tailored to knowledge needs is often 'thin' in some parts and 'in-depth' in others. The bundle of different ecosystem services and their respective related issues (such as status, threats, distribution) can be broken down into subsidiary questions which then need to be prioritised: 'what evidence and arguments do the intended users of the results need precisely'?

This practical/political need for evidence or arguments needs to be translated into pointed (yet technically feasible) assessment questions. An assessment question, in turn, can be approached using various methods. But we cannot jump directly from the knowledge needs to the assessment methods. If we do so, we risk the methods determining the assessment questions – and not vice versa. Questions should be informed primarily by their practical/political relevance.

Box: Three different framings for a study on a wetland's benefits

This is a fictitious example, inspired by a case in the late 1990s in Kampala, Uganda (Emerton et al 1999): An urban wetland under severe threat of conversion has recently witnessed increased drainage for the construction of housing and industrial facilities. Imagine your goal is to convince the municipal authorities of the need to invest in more effective wetland conservation. The wetland acts as a natural filter for most of the city's waste water discharges. The wetland flows out into a large lake, from which the city gets its main drinking water supply. How could you frame your ESAV to provide adequate arguments and strong evidence in favour of conserving the wetland?

- The ESAV could be framed to focus on the endangered species and habitats, biodiversity and the international conservation commitments endorsed by the government.
- Alternatively, the ESAV could focus directly on the public health risks associated with losing 'natural' water treatment infrastructure. To what extent will the risk of attracting diarrheal diseases increase if the natural waste water purification function of the wetland is lost? How many people are likely to be directly exposed to this threat? What will be the associated health costs? What are the social consequences?
- Alternatively again, an ESAV could be framed in economic terms: What would be the cost of establishing and running a waste water treatment plant with a capacity equivalent to the lost wetland? What would be the costs of relocating the drinking water intake away from the wetland outflow into the lake? How do these costs compare with the value added by wetland conversion? Which groups of urban dwellers would bear the costs of wetland loss and which sectors would reap the benefits?

Each of the three ESAV framing options would imply different data needs and assessment methods, even though they could each be developed to provide maps, monetary estimates, and/or narratives. They would potentially also target very different groups of decision-makers in terms of the arguments they provide and how convincing these might be.

Strategic thinking is required to determine which study question is the more promising one, given the current phase of the policy process, the available data, existing stakeholder positions and wider public opinion on the wetland: for example, should the focus be on the people currently benefiting from the wetland's services and on the extent of their dependence on them? Or should the emphasis be instead on the future potential of an intact wetland, drawing on illuminating examples from elsewhere? Alternatively, how should the costs of wetland degradation be calculated? In terms of jobs? GDP? Or health risks? Which arguments and pieces of new information would best inform the decision-making process?

Assessment methods do not provide answers to such questions. Those tasked with conducting an ESAV and those who want to use its results need to decide jointly which kind of framing to adopt. Only once such issues are clear can suitable methods be identified.

Framing involves asking:

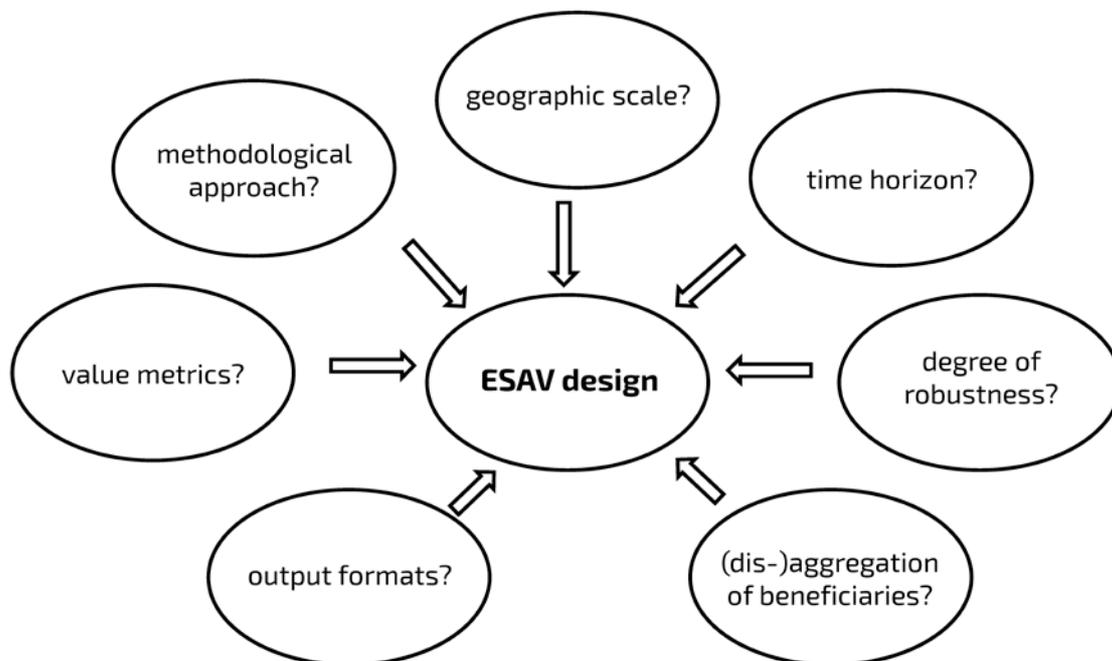
- Which assessment questions would provide new insights?
- Which assessment questions would resonate with the target audience?
- With what other issues should the topic be linked (for example equity concerns, resilience, cultural values, development goals)?

In summary, scoping helps in specifying the practical purpose of an ESAV, understanding the wider conditions and identifying exactly what is needed in terms of knowledge and stakeholder engagement when developing an ESAV. It should also feed into a preliminary strategy for presenting and communicating the ESAV results. Framing refers to translating these needs into 'intelligent' study questions for the assessment. This is where creativity and strategic thinking, as well as close interaction between the users and producers of the assessment, can make a difference.

3.2 Developing an ESAV: Choose from among the assessment design options

We have argued that, for ESAVs to have policy impact, it is not enough just to produce comprehensive and methodologically robust assessments. It is above all about conducting studies that are appropriate for a given purpose, context, target audience and policy process.

Option 2: Choose an appropriate ESAV design



The design of an ESAV can be fine-tuned in many ways so as to respond strategically to the situation. The design components which need to be determined include the following:

- **Methodological approach:** Qualitative, quantitative or combined? Field research, model-based or literature-based data?
- **Value metrics:** How should we articulate the importance of ecosystem services for people – by means of arguments, quantitative estimates, monetary estimates or indices?
- **Time horizon:** How many years are we considering when thinking of the future benefits of a current ecosystem? Do we want a comparison of two scenarios? A status quo assessment?
- **Geographic scale:** How do we delimit the area of analysis – by administrative boundaries or by ecological units ('ecosystem', 'ecoregion')?
- **Degree of precision:** How certain and how detailed do we want/need to be?
- **Aggregation of stakeholder/beneficiary groups:** Which (sub-)groups of beneficiaries or economic (sub-)sectors can we consider together? Where do we need more in-depth distinctions between them?
- **Output formats:** Which output best fits the intended use of results – stories, aggregate results, detailed numbers, maps?

What makes this a delicate issue is that decisions in study design can substantially affect the assessment results. It is important to recognise that different study designs can in principle deliver hugely divergent results even while being equally plausible in technical terms.

Example: The time horizon considered for estimating future gains or losses in ecosystem services can make a big difference. This is illustrated by an assessment conducted on the effects of different land-use policies on multiple ecosystem services in the Araucaria region (Chile) (Geneletti 2013), which took account of different time horizons. Depending on the time horizon concerned (10, 25 or 40 years), different land-use policies outperformed each other, particularly in terms of the trade-offs between ecosystem services.

While there are evolving best practices in the scientific literature on how to assess or attribute value to ES, there are equally convincing critiques of such practices. There is no definitive or universally valid justification for thinking 25 rather than 40 years into the future, or for considering future gains at a 7% discount rate rather than 1% (TEEB 2008). In many cases we cannot fall back on any type of 'standard assessment approach' without closely cross-checking whether this makes good sense for our specific situation.

Furthermore, the principal merit of an assessment is perhaps determined by the poignant questions it raises, rather than by any precise answers it may give to questions that are not necessarily relevant. Instead of ecosystem service quantities or their so-called total economic value, it is often more relevant to the intended purpose to focus on the causes and effect of changes in the supply, demand and appreciation of ecosystem services for particular groups, sectors or goals. ESAVs can focus attention on areas where new insights can be expected, rather than merely re-confirming what is already known. The ecosystem services framework promotes consideration of all kinds of benefits derived by humans from nature. But in most cases this does not mean that everything needs to be covered in equal depth.

A further point to consider with regard to assessment design is this: By defining the way we measure values we define much of the character of these values. More than observations, they are constructions of societal relevance or importance. Diverse methods not only produce diverse results but articulate value in different ways.

Example: An anthropological research protocol of [the cultural relevance of insects](#) in northern Colombia produces a rich expression of the value local forest dwelling communities attribute to them. This is arguably more appropriate if the task is to identify possible community conserved areas, than, for example, a survey which elicits willingness-to-pay estimates for conserving such insects. The former *describes* meaning and cultural value, the latter *estimates* value in terms of a monetary unit, without those local meanings becoming apparent.

Hence, rather than asking 'What is the best measurement of reality out there?' one could ask 'which approximation to societal importance may be most appropriate in this case?' Appropriateness refers to the issue, to stakeholder perceptions, as well as to what resonates with the target audience or decision-maker.

From a policy impact point of view, presenting the importance of ecosystem services in a single dollar-based estimate may not always be the most effective strategy. If an ESAV delivers disaggregate results on ecosystem services in diverse output metrics, these can support various arguments relating to different stakeholder groups. It also substantially enhances the meaning and transparency of results (compared to total value estimates) and acknowledges the co-existence of multiple perspectives and value systems.

Ultimately, choosing a method and making other design decisions always implies that some aspects are in focus while others are put to one side. For example, a study design which distinguishes more precisely between different groups of beneficiaries can better capture distributive effects, and with more detail, than a study working with more aggregate categories.

Example: [Kanwar Jheel](#), a large floodplain in Northern India, is undergoing a gradual transition to permanent agriculture, leading to a drastic decline in capture fisheries, groundwater recharge and shrinkage of biodiversity habitats. ESAVs were used to inform site management planning on the extent to which the inundation regime is to be restored so as to secure ecosystem services and biodiversity values naturally provided by the wetland. Assessments of values reinforced the fact that the transition from a multifunctional wetland towards permanent agriculture was economically inefficient.

However, after distributive issues were taken into account, the recommendation was to restore the inundation regime to a moderate state rather than a near natural state, as there were expected to be considerable impacts on farmers' livelihoods as a result. The management plan has built in zoning strategies so that both conservation and livelihood needs associated with the wetland can be balanced (MoEFCC and GIZ 2014).

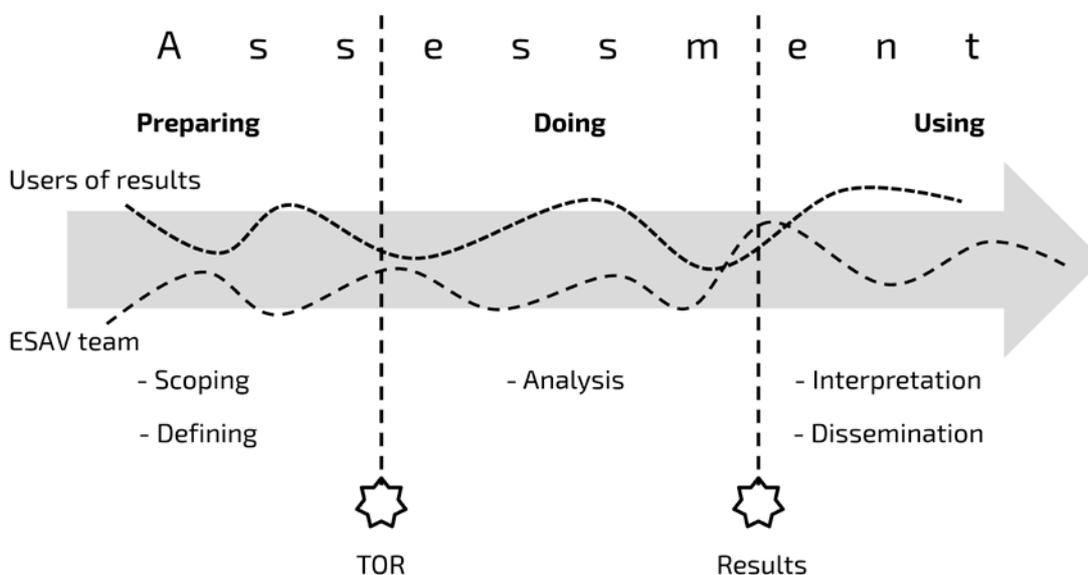
Thus, ESAV designs which are developed, understood and adopted jointly with key stakeholders will likely be less prone to misunderstandings and misinterpretations than a fully outsourced expert document.

3.3 Managing an ESAV: Options relating to the process

A well-managed assessment process is of critical importance, for three reasons. First, it helps ensure that the assessment is developed on time and is of high quality, given the data and resource constraints and other potential practical difficulties. It ensures that the content of the assessment is based on careful scoping and framing (see above). Second, it ensures that the issue being considered becomes more widely known and that the ESAV results are understood and taken into consideration by others. It also helps to ensure that this occurs at the right moment in the policy process and in the relevant policy arena. Third, well-managed, more interactive or participatory assessment processes also provide opportunities for people outside the environmental arena to gain a better understanding of the 'ecosystem service perspective'.

Disseminating and promoting the adoption of an ecosystem service perspective (for example to finance or agriculture departments, or to other sectors that particularly depend or impact on ecosystem services) is a key ingredient for supporting long-term change in policy and decision-making affecting the environment. This makes the assessment process just as important as its findings.

Option 3: Manage the ESAV as a 'social' process



There are various options related to process when it comes to managing ESAVs, and these can be reflected upon and adapted along the way. They include:

- **Responsiveness:** when to open up the study process to strategic re-adjustments of the focus.
- **Stakeholder engagement:** whom to inform, consult, engage and collaborate with; on which issues and at what point in the process.
- Active and differentiated **communication:** what, when and how to communicate to each of the different stakeholders, at which stage and by whom.

When considering these options it can make sense to distinguish between three phases of an ESAV, as depicted in the diagram. Circumstances, priorities and focus can change over time: different stakeholders can become critical for the process, or different activities become a priority. While each case is unique, it helps to conceive the ESAV in a broad sense (in other words from the initial preparations right through to the much later use of results) so as to avoid planning, managing and financing only the middle phase.

(i) Responsiveness to the policy process

Ecosystem service assessment and valuation processes can be either more or less alert to changing inputs, demands and conditions in the policy process. Typically, once the Terms of Reference have been agreed, the ESAV roadmap is fixed, including milestones, the interim report and the final briefing. For the experts and consultants conducting the ESAV, this roadmap is not easy to change because they need to plan their time and organise their team. The fewer interruptions there are along the way, the easier it is to get the study done on time.

But, in addition to developing results, the assessment process can be seen as an opportunity to connect with both the protagonists and antagonists in the policy arena, and use workshops, bilateral meetings and alliances to advance towards the policy objective. In this regard, small, flexible and timely analyses, managed to coincide very closely with the policy process, can be much more effective in their impact on policy than larger assessments.

Example: In [Egypt](#), a rapid qualitative inventory of ecosystem services linked to the Rosetta branch of the Nile identified all the potential stakeholders of a major water diversion programme for irrigation purposes. They were invited to participate in workshops for a strategic environmental assessment of the programme. Their contribution resulted in significant changes to the design and phasing of the programme as well as built-in safeguards (Slootweg et al 2010).

How can responsiveness be organised? For example, in the Terms of Reference, work days can be dedicated explicitly to interacting with policy-makers. Days can be allotted for (i) explaining and jointly finalising the ESAV design, (ii) exploring additional questions/aspects which may crop up in meetings, or for (iii) producing on-demand outputs (policy briefs, press releases, brochures) when a policy opportunity arises.

Another option is to make use of, or seek to fit an ESAV into, existing planning and decision-making procedures and protocols. This can ensure the consideration of ESAV results. Formal procedures often also regulate important issues such as disclosure of information, public involvement and independent review procedures. Examples include regulations for spatial planning, environmental impact assessments and strategic environmental assessments. For example, in many countries, strategic environmental assessment is a legally required procedure (as is the case, for example, in all EU countries) which provides an integrated approach to regional, spatial or land-use planning and is highly suited for making use of ecosystem service knowledge.

If those conducting or commissioning an ESAV are not directly influential or well-connected in the policy process concerned, it is important to make sure that some group involved is (such as a local civil society organisation or government body), so that via such connections the consideration of the ESAV in the process can be promoted.

(ii) Stakeholder engagement

Whenever stakeholders are involved in co-producing ESAV knowledge, their awareness of the issues involved is likely to grow. This informs the way that they engage in debate about options which may ultimately inform decisions for better ecosystem service outcomes (Ruckelshaus et al 2015). The ESAV process can be used as a tool to engage with stakeholders and policy-makers, from the initial planning through to the final interpretation and dissemination of the assessment results. Regular interactions have been found to be beneficial to stimulate interest, generate commitment and trust in the process, build consensus and support an understanding of diverse positions and rationales (<http://www.spiral-project.eu/>).

Example: In the [Aral Sea](#) Wetland Restoration Project, a multi-criteria analysis involving several rounds of consultation was used to assess the value of different degraded wetlands and to generate different restoration scenarios: The approach was found to meet the decision-makers' information needs best and to convincingly accommodate multiple stakeholder perspectives.

The practical implications of a highly participatory assessment are that the process may be slowed down or may change direction along the way in response to stakeholder influence. Managing the expectations of those who are willing to collaborate is typically a major task. This can be stressful for the people who are managing the assessment, and are responsible for the timely delivery of outputs. One way to cope with this is by managing the process in a transparent manner, although this may result in being less responsive to practical problems or opportunities along the way.

A well-managed ESAV study process has its own merits, beyond merely being an instrument for producing study results. **An ESAV can be conducted as a 'social' process.** Developing a shared understanding of the issues and the influence this can have on relationships among the stakeholders are often just as important for policy impact as are the study results themselves.

Note also that 'managing an ESAV as a social process' is different from seeking to 'educate stakeholders' – a view which can lead experts to disregard the quality and relevance of stakeholder knowledge.

Example: In Uganda, plans existed to convert the Mabira forest into an area for sugar cane farming (Akaki 2011). Communities surrounding the forest opposed the plans, claiming that their spirits lived in the forest. The spirits would retaliate by bringing flooding and other natural calamities if they lost their home. An ecologist assessing the ecological impact of the loss of Mabira forest reported that the likely consequences were comparable to those feared by the local communities. While the language was different, the conclusions were similar.

The study process can thus serve to mobilise stakeholders, such as when a (public or stakeholder) debate is hosted about how to do the study, or which assessment questions to focus on. Stakeholder engagement can be formalised by creating, for example, an official advisory body to the ESAV that meets regularly, endorses the overall direction of the ESAV and discusses which conclusions should be drawn from its results. In practical terms, this can be organised in such a way that the study's authors present the results at the penultimate stage, allowing changes to be subsequently included in the report and other outputs.

In contrast to a participatory process, ESAV managers can opt to pursue a more confidential approach. This may be necessary in order to ensure that the study can proceed on technical grounds, to ensure that the results are not leaked prematurely, or to protect the analysis from being 'hijacked' in a conflict-prone setting.

Example: In [Jamaica](#), the Conservation Strategy Fund conducted an economic analysis of the expected impacts of a major port being planned. Although the government, private sector, media and NGO's had all been informed about the study, the authors and their local collaborators opted to stimulate open debate only once the findings had been firmly established, given the high stakes and divergent interests involved.

(iii) Communication

Raising awareness and changing perceptions about the importance of ecosystems and their services is often the first step in a series of efforts to integrate knowledge about ecosystem services into policy. Communicating information about ecosystem services involves conveying a message about society's multiple (and varying) dependencies on a healthy and functioning natural environment. This can be linked to one or several topics of political priority, such as sustainable development, job creation, adaptation to climate change or water security.

Example: The [ProEcoServ South Africa](#) project recognised the need for a new language and set of communication tools with which to 'make the case' for biodiversity and ecosystem services beyond the environmental sector. At the centre of its communication strategy was a slogan that was developed for use by a variety of institutions and individuals in the biodiversity and environment sectors – and hopefully also beyond. The slogan was 'promoting equity by investing in ecological infrastructure'. It connects environmental benefits with social equity, which is a top priority issue across all policy areas in the country.

Successful communication relies on strong ESAV management capacity: Innovative messages and robust results are most likely have a major impact on policy if they are voiced by a suitable 'messenger' or 'champion', at the right moment, and if they are addressed to the correct audience. Much of the credibility of an assessment can be lost if the person presenting the results is questioned on technical or personal grounds. Otherwise 'good' ESAV findings may fail to resonate or stimulate change if the wrong moment or the wrong audience is chosen.

Successful communication starts long before the results are presented. In many cases, interest can be stimulated and nurtured by telling people about the ESAV's objective and perspective

right from the beginning (see also the section on stakeholder engagement above). Intermediate results can then be used to keep up the momentum.

Example: In the [Peruvian Amazon](#), Conservation Strategy Fund conducted an analysis of the expected costs and benefits of a hydroelectric project on the Inambari River, revealing a highly unequal distribution of those costs/benefits between different beneficiaries and society at large. The authors participated in numerous forums during the course of study, presenting results and ideas at various stages. This fed into an existing process organised by a civil society group, 'colectivo inambari', which, prior to the study, had been working for years on disseminating information and raising awareness. The study had a major impact because it fed into the existing process.

Many opportunities for communication cannot be anticipated, as they are unplanned, opportunistic or simply arise due to being in the right place at the right time with the right people. However, it helps to think through communications issues right from the first planning steps of the ESAV: Which framing of the issue is suited for my key audiences? Which communication channels and formats are fit-for-purpose (brochures, workshops, blogs, TV/radio appearances, newspaper articles, thematic maps)? Good preparation makes it possible to improvise when the opportunity arises.

To manage an ESAV process successfully, in many cases it is more appropriate to set up a multi-disciplinary team, including communications experts, than to assign the responsibility for communication to the technical ecosystem service experts who have undertaken the assessment itself.

From this follows, process management is also a funding issue: assessments can only be organised flexibly and used strategically to advance the policy objective if the considerable process-related efforts are recognised and funded.

4. Conclusion

We have examined the requirements and the options available for increasing the policy impact of ESAVs. We conclude that ESAVs can have a major impact if form follows function: Those involved in conducting an ESAV can tailor their assessment to its intended purpose, to specific information needs and to the target audience. Well-tailored assessments have a much greater chance of delivering on their promise.

For this to occur, a careful scoping and framing of the assessment is required. This makes it possible to connect practical concerns and political insights with the technical and methodological issues involved in ESAV design. A further prerequisite is skilful and strategic management of the assessment process. Concerns of credibility, legitimacy and relevance should provide guidance on how to steer this process. The degree of responsiveness to the policy arena and the different forms of stakeholder engagement and communication are key process-related options to be chosen when managing an ESAV.

When seeking to enhance an ESAV's role in policy and decision-making, these options cannot be simply seen as a check list or series of tick-boxes. A far more sophisticated and thoughtful approach is required, which explicitly responds to (and makes the best use of) political processes. The art is in developing the right mix of options for a situation, rather than in trying to pursue all aspects with equal effort.

In consequence, the overall budget for an ESAV needs to be balanced between different tasks: from scoping and framing the assessment, designing and conducting the study, to managing the ESAV process from initial consultations to the final use and dissemination of the results. The idea that a comprehensive or even a compelling study will speak for itself leaves many ESAVs under-funded with regard to scoping/framing and process management. Reflecting on the budget allocation for different ESAV components is a starting point for increasing the policy impact of ESAVs.

As a final word, it is clear that ESAVs provide a useful set of tools for making more equitable, sustainable and informed decisions, but they are not a silver bullet. ESAVs are part of a larger jigsaw puzzle for achieving policy change. They are one in a series of several steps towards a fuller appreciation of nature's benefits in development decisions. Nonetheless, the process of producing an assessment and its results can be a powerful vehicle for mainstreaming concerns for the sustainable use of biological resources beyond the environmental sector.

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Requirements and options for enhancing the practical usefulness and political relevance of ecosystem service assessments and valuations (ESAV)

Three requirements for increasing the policy impact of ESAVs have been identified across diverse cases:

- i. **Balance the trio of credibility, legitimacy and relevance:** These key principles for scientific policy advice should guide the assessment design and the process management of an ESAV. However, there are tensions among them which merit attention.
- ii. **Close the loop between ESAV and policy:** The assessment process needs to be linked in with public policy-making. Numbers do rarely speak for themselves, and without adequate interaction, ESAV results will likely be ignored, or – worse – misunderstood.
- iii. **Tailor ESAV to its practical purpose:** Many different approaches and methods are available, and technical aspects are insufficient for identifying the most appropriate study design. To be effective, ESAVs have to fit their purpose.

This report is based on a review of past assessments and builds on the authors' practical experience. It examines these requirements and explores the options for practitioners to respond to them.

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