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1) EnvironmentalImpactAssessment/001. Chapters 1 to 3 of this report provide further background and introduction to EIA.

2) EnvironmentalImpactAssessment/002.

BOX 1: SIX AREAS FOR ACTION IN EIA¹

EIA Action Areas:

1. Communicating added value generated by EIA
2. Realising the efficiencies of effective EIA co-ordination
3. Developing new partnerships to enhance EIA activity
4. Listening, communicating and engaging effectively with communities
5. Exchanging knowledge and experience to tackle the difficult issues
6. Delivering environmental outcomes that work now and in the future

CONSIDERING ECOSYSTEM SERVICES IN ENVIRONMENTAL IMPACT ASSESSMENT

ENVIRONMENTAL IMPACT ASSESSMENT

Environmental Impact Assessment (EIA) is applied to development proposals that are likely to lead to significant environmental effects. The assessment ensures that potential effects on the environment are considered in decision-making, including natural resources such as water, air and soil; conservation of species and habitats; and community issues such as visual effects and impacts on the population. EIA also provides a mechanism by which the interaction of environmental effects can be predicted, allowing negative effects to be avoided or reduced through the implementation of mitigation measures.

EIA is the main tool acting at the interface between the environment, development design and communities. EIA helps to shape the design and siting of development such that the social value to communities and broader economic value to investors can both be met, without eroding natural capital and

pushing the boundaries of environmental and social limits – a tool that can truly support moves towards sustainability. Considering ecosystem services in EIA can further enhance this role by helping increase understanding of secondary and cumulative effects on ecosystems and the services they provide to society and identifying issues that may otherwise have been missed.

In August 2011 IEMA produced a report on *The State of EIA Practice in the UK*¹. The report identifies six areas where action is needed (**Box 1**) to ensure IEMA's Vision for EIA Practice I is delivered. This briefing note is designed to enhance activity under a number of these areas. In particular by raising awareness of ecosystem services, and providing advice on how to consider them in EIA, it will contribute towards efforts to engage communities in the process of shaping new development to find the best environmental outcomes.

ECOSYSTEM GOODS AND SERVICES

Put simply, ecosystem services are the benefits people obtain from ecosystems. This definition was formalized by the United Nations' 2004 Millennium Ecosystem Assessment (MA)²,

the results of a four-year study involving more than 1,300 scientists worldwide, which reviewed the state of the World's ecosystems and their role in supporting human wellbeing. The MA grouped ecosystem services into four broad categories (**Box 2**), which are now commonly accepted in practice.

BOX 2: THE FOUR GROUPS OF ECOSYSTEM SERVICES – WITH EXAMPLES

Ecosystem Services

1. Provisioning	2. Regulating	3. Cultural	4. Supporting
Food	Climate regulation	Aesthetic	Nutrient cycling
Fresh water	Flood regulation	Spiritual	Soil Formation
Wood & fibre	Disease regulation	Educational	Primary Production
Fuel, etc	Water purification, etc	Recreational, etc	Crop Pollination, etc

The MA also suggested conceptual frameworks for understanding the state of ecosystems, existing pressures on them, their likely responses to planned human interventions and the implications of this for human wellbeing. The MA built on a growing body of scientific literature on natural capital, environmental economics and links between biodiversity, ecosystems and societies which had been developing for over 50 years³.

It should be clear that ecosystem services are not limited to biodiversity. However, there are strong linkages with biodiversity playing a wide range of functional roles in ecosystems and therefore, in the processes underpinning the delivery of ecosystem services. For example: the ecosystem services identified as important in a UK context by the National Ecosystem Assessment⁵ are underpinned by a range of biodiversity groups. Further to this evidence, from this and other studies, has shown that, in general terms, the level of stability of ecosystem services tend to improve with increasing biodiversity.

As human populations have grown, so have pressures on ecosystems. Human impacts now threaten important ecosystem services with potentially serious long term consequences for human wellbeing. The need to consider the implications of planned new development for ecosystem services is gaining recognition. Lending and government institutions, such as the International Finance Corporation (IFC) and the US Council on Environmental Quality, now require the explicit consideration of ecosystem services in impact assessments⁴. To help inform decision-makers, various efforts have been made to develop robust methods for assigning values to ecosystem services, for example The Economics of

Ecosystems and Biodiversity (TEEB)⁵. These have met with mixed success. Other approaches have focused on maintaining services which are valued by communities and stakeholders at levels which they consider to be acceptable. In the UK, the recent publication of the National Ecosystem Assessment⁶ has lent weight to consideration of ecosystem services in planning and environmental assessment

and a new way of estimating national wealth. Whilst the UK's ecosystems are currently delivering some services well (Boxes 3 & 4), the UK NEA also found that others are not (Box 4). Around 30% of the UK's ecosystem services were found to be in decline, with many others already in a degraded state, including marine fisheries, wild species diversity and some of the services provided by soils. Furthermore, demands and expectations on ecosystem services are likely to grow in the UK as a result of climate change and with the population projected to grow by over 10 million by 2033⁸

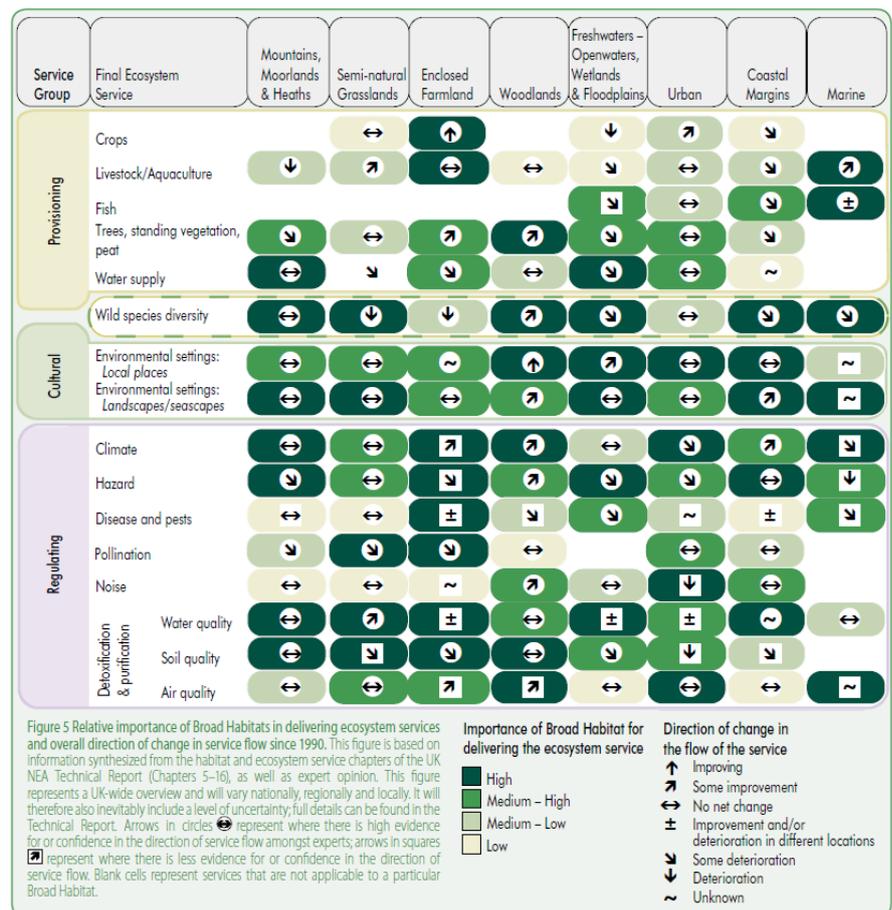
ECOSYSTEM SERVICES IN THE UK

The UK Government has now firmly embraced the concept of ecosystem services in national policy. The Department for the Environment, Farming and Rural Affairs (Defra) is sponsoring a series of research projects into ecosystem services across a wide spectrum of interests. Foremost amongst these is the UK National Ecosystem Assessment (UK NEA), which brought together around 500 experts in the natural sciences, economics and the social sciences. Reporting in June 2011⁷, it provided a comprehensive overview of the state of the natural environment in the UK

The Government has decided to place ecosystem services centre-stage in its policy on the natural environment, with the 2011 Natural Environment White Paper⁹ setting out the following call to action:

"We should set our sights on a vision that inspires us to act now and in the longer term: by 2060, our essential natural assets will be contributing fully to robust and resilient ecosystems, providing a wide range of goods and services so that increasing numbers of people enjoy the benefits from a healthier natural environment".

BOX 4: SUMMARY FINDINGS OF UK ECOSYSTEM SERVICES SINCE 1990 (UK NEA, 2011)



BOX 3: EXAMPLES OF UK NEA FINDINGS

The UK NEA found that ecosystems are worth billions of pounds a year to the UK, including:

- Supporting the £6.6 billion generated by UK farming each year through water purification and regulation, soil fertility processes, and pollination.
- Providing up to £33 billion of capital savings in coastal flood risk management investment in England through soft coasts.

3) EnvironmentalImpactAssessment/003

4) EnvironmentalImpactAssessment/004

5) EnvironmentalImpactAssessment/005

6) EnvironmentalImpactAssessment/006

7) UK National Ecosystem Assessment (2011) The UK National Ecosystem Assessment: Synthesis of the Key Findings. UNEP-WCMC, Cambridge

8) From 61 million (2008) to just under 72 million (2033), a 17% increase in the UK's population over 25 years

9) HM Government (2011) The Natural Choice: Securing the Value of Nature

THE BUSINESS CASE FOR CONSIDERING ECOSYSTEM SERVICES IN DEVELOPMENT PROJECTS

There are a number of powerful drivers behind the enhanced uptake of ecosystem services in decision-making. These are likely to strengthen the evolving business case for practitioners and developers to adopt an ecosystem services approach leading to greater uptake in EIA practice.

The Convention on Biological Diversity (CBD) forms a core driver behind adopting an ecosystem services approach as a result of the endorsement¹⁰ of the outcome of the United Nations and EU backed TEEB report⁵. As a result, the countries that are signatories of the CBD must consider ecosystem services and their value within their national policy making. In addition the Government's recent Natural Environment White Paper, the EU's 2011 'Biodiversity Strategy to 2020' and the OECD's Green Growth initiative all strongly emphasise the need to value and manage ecosystem services.

Directly linked to this are a growing number of regulations, policies and emerging environmental markets (e.g. carbon trading and biodiversity offsetting) that encourage environmental valuation and the recording of otherwise un-priced effects. Given this growth and the fact that all businesses and developments impact and depend on ecosystem services, it is likely that consideration of such services will increasingly become a part of business risk management.

It is against this backdrop, coupled with the decline in availability, provision and condition of ecosystem services, that the business case for incorporating ecosystem services in EIA is emerging. The potential benefits of adopting an ecosystem services approach are detailed in **Box 5**.

In most projects, financial stakeholders play a key role in decision making. By quantifying effects on ecosystem services as economic values EIA can help to illustrate the 'costs' and 'benefits' of a development proposal on the environment in a language that developers and investors can more easily understand. Defra's website indicates that:

"An ecosystems approach could help you to make decisions that deliver more benefits to society in a more cost-effective way".

BOX 5: POTENTIAL BENEFITS OF INCORPORATING AN ECOSYSTEM SERVICES APPROACH IN EIA PRACTICE

- 1) Demonstrating to both the consenting authority and wider stakeholders that the developer has transparently and comprehensively taken the concept of environmental value into account.
- 2) Evaluating project alternatives to better account for the full range of environmental and social issues.
- 3) Identifying where developments are dependent upon ecosystem services that are under threat or underpriced and thus could pose a material risk to a proposal's short-term viability or longer-term sustainability.
- 4) Enhanced consideration of potential opportunities relating to 'waste products' (e.g. excess soil and rocks) as potential valuable resources.
- 5) Identifying environmental impacts that may otherwise be missed, particularly in relation to regulatory and cultural services.
- 6) Linking environmental, social and economic issues in a more comprehensive and systematic way.
- 7) Evaluating an appropriate level of mitigation measures and compensation payments.
- 8) Identifying and quantifying potential opportunities to raise revenues or save costs through new environmental markets (e.g. gaining carbon or biodiversity offsetting credits through habitat restoration and creation).

Thus a market based approach, whilst not required, may help to provide the case for investment in more environmentally beneficial projects. Evidence¹¹ has shown that operating environmental markets can work for the benefit of the environment leading to overall environmental gain. More simply however, integrating environmental gains and losses in project economics can help provide the context for more robust evidence based decision making.

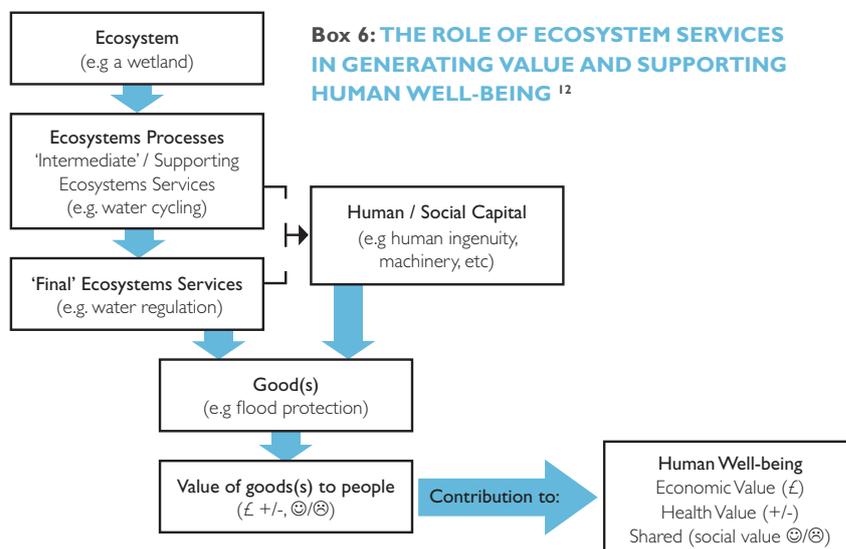
Hence an ecosystems approach may help:

- Identify issues that might otherwise be missed.
- Provide a holistic view of the affect a proposal is likely to have on the benefits and value of existing ecosystem services.
- Increase understanding of secondary, cumulative and inter-relationship effects on ecosystems as a whole, rather than on specific habitat types or individual species.

ECOSYSTEM SERVICES IN EIA

Overview - EIA considers the predicted environmental and social consequences should a development proposal be awarded consent. Current EIA practice identifies issues that are covered within ecosystem services (e.g. effects on habitats, landscape and cultural heritage); however, it does not regularly cover all relevant services.

Inclusion of ecosystem services will help EIA practice to evolve, enabling greater integration and understanding of the value of the environment in both the design and consenting processes of development proposals. Thus an ecosystem services approach can provide the EIA process with a "lens" through which greater focus can be placed on the relationship between socio-economic issues and the environment.



¹⁰) CBD signatories' agreement in Nagoya 2010

¹¹) Ecosystem services Missing Markets workshop (Bangor, 2010) EnvironmentalImpactAssessment/007

¹²) Adapted from Mace, G.M, Bateman, I., Albon, S., Balmford, A., Brown, C., Church, A., Haines-Young, R., Pretty, N.J., Turner, K.Vira, B. and Winn, J. (2011).

Conceptual Framework and Methodology, In: The UK National Ecosystem Assessment Technical Report, UK National Ecosystem Assessment, UNEP-WCMC, Cambridge.

BOX 7: SCREENING DEVELOPMENTS FOR EIA

The EIA Regulations include two lists of different types of development projects:

- Schedule 1: projects where an EIA is mandatory, usually major development projects.
- Schedule 2: projects that only require EIA if they are deemed likely to lead to significant environmental effects.

EIA practice has often struggled to effectively discuss interactions between effects addressed within different topics. Integrated assessment of environmental and social effects has proved particularly challenging, with the financial implications of such interactions rarely identified. By incorporating ecosystem services into EIA, the effects of a proposed development on such interactions and the social and economic consequences of them can be identified.

Addressing ecosystem services in EIA therefore means conducting an integrated assessment across bio-physical and socio-economic disciplines to understand the implications of a proposed development for the well-being of people that benefit from affected ecosystem services. Some ecosystem services are already factored into the EIA for certain development types, for example: Scotland's guidance on *Wind Farms and Carbon Savings on Peatlands*¹³, which considers the loss of carbon sequestration as a result of a development's likely effects on ecosystems that already provide such climate regulating services. Thus far only the World Resources Institute has begun to release a comprehensive guide to assessing ecosystem services in impact assessment practice¹⁴; however, how effectively this approach can be integrated into UK EIA practice is unclear.

Using ecosystem services to help screen development for EIA - Screening is the process which determines whether a development proposal requires EIA (see [Box 7](#)).

To determine if a Schedule 2 development requires an EIA the consenting authority produces a screening opinion. The EIA Regulations provide information about the issues to be considered during screening in Schedule 3. Whilst, there is no reference to

ecosystem services in Schedule 3, it does cover environmental issues of relevance, including: *the regenerative capacity of natural resources and the absorption capacity of the natural environment.*

The EIA Regulations also recognise that even very small scale development may require EIA when it is proposed in certain locations, termed 'sensitive areas'. These include: Sites of Special Scientific Interest, Natura 2000 sites, and Areas of Outstanding Natural Beauty all of which provide a wealth of ecosystem services.

When screening a project the key question the consenting authority must answer is: *Will the proposed development be likely to give rise to significant environmental effects?* The challenge in screening is therefore in deciding what 'significant' means. Thinking in terms of provisioning, regulating, cultural and supporting ecosystem services can help authorities in coming to a conclusion on this. By undertaking a brief, but systematic, review to identify the ecosystem services the receiving environment currently provides, or could provide, authorities can make an initial assessment as to whether the proposal is likely to disrupt existing ecosystem services or present opportunities to enhance or restore them. This may be particularly useful when considering those aspects of the environment that are not designated, such as cultural services provided to local communities by green space. However, it must be borne in mind that all types of ecosystem services are provided by many different components of the natural environment, not just designated sites.

Scoping ecosystem services into an EIA

- Incorporating ecosystem services into scoping provides an opportunity for EIA to identify the key services that will be affected by a proposed development and those the project may depend upon. To ensure the maximum value is gained by their inclusion in an EIA they should be considered at a point in design where modification is still practicable and should cover:

- The type or flow of ecosystem services likely to be affected by the proposal, the functioning of ecosystems that underpin these services, and people's access to services that they value.
- Potential effects (positive or negative) on existing ecosystem services and the wellbeing of people dependent upon services that could be degraded.

- Opportunities for the proposal to help maintain, improve or restore ecosystem services.
- How the existing state of ecosystem services may constrain the successful implementation of the development.

Scoping for ecosystem services need not require substantial additional information beyond the data used for a typical EIA scoping process. However, it will require EIA Co-ordinators to generate increased dialogue, both between environmental topic specialists and with the design team, to deliver an integrated assessment of project impact and dependencies. Such dialogue may need to start as early as the identification of the drivers of ecosystem change potentially associated with the project and the definition of the assessment boundaries. Furthermore, greater detail on proposed ecosystem services assessment methodology might need to be provided to the consenting authority where they are unfamiliar with the approach and due to the lack of a proven methodological approach or guidance.

The outcomes of Strategic Environmental Assessment (SEA) and Sustainability Appraisal (SA) may also prove useful in integrating ecosystem services in EIA. Thus when scoping an EIA reviewing the SEA/SA outputs of plans relevant to the location of the proposal may provide useful information on ecosystem services that either the plan-maker or community consider to be important.

Integrating ecosystem services in consultation activities Step 3 in ([Box 8](#)) involves providing information about potential effects on such services during scoping workshops and wider engagement activities. The EIA Co-ordinator should therefore establish clear communication on ecosystem services between topic authors to manage the approach used across the EIA team, including: identifying appropriate stakeholders; determining what information should be collected; and deciding the methods used to assess Steps 1 and 2 ([Box 8](#)). Activity should lead to an understanding of stakeholders' interests in ecosystem services, their links to well-being, and agreement with key parties on which services will be assessed.

¹³ EnvironmentalImpactAssessment/008

¹⁴ Ecosystem Services Review for Impact Assessment – Introduction and Guide to Scoping

BOX 9: THE ECOSYSTEM SERVICE 'SUPPLY CHAIN' -

DEMONSTRATING THE RELATIONSHIP BETWEEN BIOPHYSICAL SYSTEMS, FUNCTIONS, SERVICES, BENEFITS AND VALUES



BOX 8: THREE STEPS TO SCOPING ECOSYSTEM SERVICES INTO AN EIA

1. Identification of ecosystem services that need to be assessed in the EIA based on the proposed development's likely effects, both positive and negative; considering:
 - Which ecosystem services could be affected by the project's predicted effects on the receiving environment?
 - Are any of these ecosystem services of particular sensitivity to disturbance?
 - Are the project's effects likely to limit / enhance the ability of others to benefit from each ecosystem service?
 - If the project is predicted to limit ecosystem services are adequate substitutes available to the current beneficiaries at a reasonable cost and convenient location?
2. Identification of ecosystem services that need to be addressed in detail because of the proposal's dependence on them; considering:
 - Is the development likely to be dependent on ecosystem services for successful performance?
 - If the ecosystem services it is dependent on were to deteriorate could the proposed development find a cost effective way to substitute for their loss in order to maintain performance?
3. Discussing ecosystem services with consultees relevant to the proposed development and its EIA.

Assessing effects on ecosystem services -

To integrate ecosystem services within the assessment practitioners are advised to consider the framework set out in Defra's Ecosystem Approach Action Plan¹⁵. The plan indicates that embedding ecosystem services in decision-making relies on developing an understanding of the 'supply-chain'¹⁶ that delivers the benefits humans derive from ecosystem services (see Box 9).

The geographic extent of the biophysical structures to be assessed should be defined during scoping as many operate on a broad scale (e.g. on a landscape or catchment basis). Establishing the baseline for the assessment will develop from the outcomes of scoping that identified the ecosystem service 'supply chains' relevant to the proposal.

Having developed an understanding of these 'supply chains' EIA practitioners should be in a position to assess the extent to which a development proposal is likely to affect, disrupt or enhance, relevant ecosystem functions and therefore the flow of services and subsequent benefits for society. Establishing 'supply chains' for a specific ecosystem service requires input from economic, community and natural resource specialists, and may involve review of economics literature regarding the valuation of services. In practice, the distinction between ecosystem functions and services may be blurred; the important thing is to identify the benefits the receiving environment provides, who the beneficiaries are and the values they place on these benefits (see Box 10).

Stakeholder engagement as part of EIA can assist in identifying different groups of beneficiaries and the values they place on different services. However, EIA practitioners must remember that local people may not necessarily recognise all the services a site provides (e.g. carbon storage or erosion control). Input from technical specialists may be required to ensure services are not missed by the assessment or undervalued.

In general, an impact can be considered to be potentially significant if it disrupts the provision of an ecosystem service that clearly provides benefit to society. However, evaluating the significance of effects on ecosystem services will inevitably involve value judgements and practitioners should be careful to record the reasoning behind these. As with all EIA practice, ecosystem services have two over-arching approaches

that can be taken to evaluate the significance of the effects that are identified – qualitative and quantitative. Initially the identification of effects on ecosystem services and the evaluation of their significance is likely to follow qualitative techniques (e.g. based on professional judgement), outside of small number of topic specific assessments (e.g. carbon calculators). In many cases such qualitative assessment may prove sufficient for the EIA of development proposals ensuring that ecosystem services are considered in decision-making.

Over time quantification and valuation of effects on ecosystem service is likely to be incorporated, as relevant, in EIA as the skills, knowledge and confidence related to the economic valuation of the environment become more established. However, current practice has limited experience of quantifying effects on ecosystem services, particularly in terms of determining significance, as such this approach is likely to prove challenging in the short-term and where applied will require specialist technical input.

BOX 10: EXAMPLE OF ECOSYSTEM SERVICES BENEFICIARIES

A publicly accessible green space may provide a variety of health, cultural and educational services to local people. However, the benefits that accrue may largely be gained by certain groups in the community (e.g. families with small children, older people, etc), who consequently place a relatively high value on them, whilst other groups may associate less value with the same resource.

¹⁵ Defra (2010). Delivering a healthy natural environment - An update to "Securing a healthy natural environment: An action plan for embedding an ecosystems approach" EnvironmentalImpactAssessment/009

¹⁶ Haines-Young, R. and M. Potschin (2008). England's Terrestrial Ecosystem Services and the Rationale for an Ecosystem Approach. Full Technical Report, 89 pp. plus excel spread sheet as appendix. (Defra Project Code NR0107)

Over time quantification and valuation of effects on ecosystem service is likely to be incorporated, as relevant, in EIA as the skills, knowledge and confidence related to the economic valuation of the environment become more established. However, current practice has limited experience of quantifying effects on ecosystem services, particularly in terms of determining significance, as such this approach is likely to prove challenging in the short-term and where applied will require specialist technical input.

Measures to mitigate adverse impacts on ecosystem service provision or enhance the flow of ecosystem services are likely to be similar to those generally deployed as part of EIA. For example the following commonly used EIA mitigation measures already act to provide support to ecosystem services:

- Installing sustainable drainage systems
 - regulating water timings and flows, as well as water purification and providing habitat to support species populations and resilience.
- Planting indigenous vegetation
 - support to pollinating services through provision of food, shelter and structure for reproductive cycles to pollinator species.

Communicating ecosystem services through EIA - Previous sections of this briefing have illustrated that ecosystem services should not be treated as a sub-category of an EIA's consideration of ecology / nature conservation effects. By definition they are benefits flowing to people from nature, requiring integrated assessment of ecological, social and economic aspects. Framing the effects of a development proposal in this way may help to communicate them in a more engaging and understandable manner. Ecosystem services may therefore prove a useful way of engaging stakeholders, including local communities, in the EIA process as benefits to society are more explicit; such action may also help further align EIA with the localism agenda. The use of ecosystem services terminology in EIA could also help to enhance community's knowledge of natural capital and build understanding of the concept of environmental limits.

Where ecosystem services are incorporated into EIA outputs (environmental statements, scoping reports, etc) the document should include a brief

introduction to the concept of ecosystem services, explain their relationship to traditional topic areas and provide links to documents where the reader can gain a better understanding of them (see References). A number of organisations have established projects to increase the public's awareness of the importance of ecosystem services, such as TEEB and the Ecological Society of America (ESA) (**Box 11**), the latter having developed Tool Kits for use with non-technical stakeholders¹⁷.

Communicating the assessment of ecosystem services and its findings in an environmental statement must be done in a clear manner that avoids the use of unnecessarily complex terminology and jargon. Whilst findings can be pulled together to improve sections in the environmental statement on inter-relationships between environmental topics, it is also logical to avoid duplication or repetition and therefore discuss services under the topic headings to which they most closely relate. For example, presenting findings related to effects on cultural services in the section of the environmental statement related to cultural heritage and archaeology.

When communicating an EIA's findings related to a development proposal's likely ecosystem service effects there may be advantages in producing quantified economic valuations, particularly as project finance has significant influence over the design and potential modification of a development proposal. However, financial costs should not be confused with significance and environmental statements will need to continue to clearly present the significance of environmental effects, in line with legislation.

CHALLENGES OF INTEGRATING ECOSYSTEM SERVICES IN EIA PRACTICE

The incorporation of ecosystem services within EIA practice poses a number of challenges, but these are not insurmountable and are likely to reduce over time. This briefing has already identified the need to build an effective business case to justify the inclusion of ecosystem services in a specific EIA and provided advice on how this can be achieved. Another key challenge that must be overcome is that of awareness and knowledge of ecosystem services both amongst EIA practitioners and other parties involved in the consenting process.

A 2009 IEMA survey into awareness of ecosystem services amongst professionals involved in EIA found that less than 40% had heard of the term and only 16% had considered how they might be applied in EIA. Encouragingly, of the respondents that had heard of ecosystem services the vast majority (95%) showed a good understanding of its concepts. The following year IEMA assisted the World Resource Institute with a similar survey¹⁸, which appeared to find a higher level of awareness of ecosystem services (70%). However, only just over 40% of the IEMA member respondents that started this survey attempted to complete the more detailed questions, suggesting that further work is still needed to raise awareness amongst EIA practitioners.

IEMA's research also found that where practitioners had considered links between ecosystem services and EIA there was a considerable range of views. These ranged from support for their inclusion in EIA's toolkit of assessment methods, to concerns both in relation to increasing the complexity of the EIA process and that the economic values assigned to ecosystem services could act to undermine the evaluation of significance. These findings indicate that even amongst those EIA practitioners with a good working knowledge of ecosystem services there is little consensus on how the approach could be applied in practice. The above issues will need to be overcome if ecosystem services are to become a regular feature within UK EIA practice.

It is not just EIA practitioners who will need to understand ecosystem services if they are to be a regular feature of EIA practice. Consenting authorities (planning authorities), developers, stakeholders and the public will need some understanding of the concept in order to engage with their assessment and understand its findings. Building wider understanding of ecosystem services is necessary if EIA is going to effectively identify, evaluate and communicate:

- Which stakeholders rely on which ecosystem services and to what extent.
- The changes in ecosystems which can be expected as a result of proposed development and how this will translate into environmental, social or economic effects.
- The costs of substituting one service with another, or of substituting ecosystem services with alternatives created by humans (societal services).

¹⁷) EnvironmentalImpactAssessment/010

¹⁸) EnvironmentalImpactAssessment/011

BOX II: ESA VIEW ON THE VALUE OF ENHANCED PUBLIC KNOWLEDGE OF ECOSYSTEM SERVICES

When the connection is made between people's everyday lives and the ecosystem services upon which they depend, they are likely to be motivated to protect and enhance those ecosystems... The science behind ecosystem services helps elucidate the connections between actions taken by people and the results these actions have on those things that they care about... building on the scientific underpinnings currently established, we can make this information accessible and engaging to the public.

To communicate ecosystem services effectively, practice will require increased levels of collaboration between social, economic and environmental specialists. Access to sufficient professionals with the necessary skills and knowledge will undoubtedly be a challenge. Specialists are available and effective EIA co-ordinators are already adept at managing inputs and dynamic interactions needed between such specialists during the iterative assessment and design process.

Alongside the challenges of raising awareness of ecosystem services and ensuring an effective team is in place to deliver the assessment there will also be a need to build stakeholder confidence in the findings. Whilst some methodologies exist to provide quantitative and financial assessment of effects on ecosystem services, the regular inclusion of them in EIA practice in the short-term is likely to prove expensive. As a result it is unlikely that the inclusion of fully quantified and costed ecosystem services will be a regular feature in UK EIA practice in the next few years. However, the incorporation of qualitative consideration is far easier and can provide a platform upon which quantified and costed approaches can be developed and included in future practice.

THE FUTURE OF ECOSYSTEM SERVICES IN THE UK'S DEVELOPMENT CONSENT REGIMES

The on-going reform of the planning system by the Government will create a more permissive structure, encapsulated in the presumption in favour of sustainable development, as set out in the draft

National Planning Policy Framework (NPPF). It is notable that the draft NPPF made no mention of ecosystem services, despite the recent publication of the Government's Natural Environment White Paper¹⁹ and the UK National Ecosystem Assessment²⁰ - two major documents with the concept of ecosystem services at their core.

It is clear that the assessment of ecosystem services have the potential to inform design modifications or planning agreements/ conditions. In this way, the ecosystem services approach can provide a tool for local communities to maximise the benefits they receive from development in their area, and may even promote growth by incentivising local communities to accept new development through contributions that enhance the local environment and services it provides. As such, it can help broaden the basis upon which opportunities and benefits might be realised to ensure that both communities and the environment are treated holistically by developers.

By ensuring EIA considers the broader frame of reference covered by the ecosystem approach, a more comprehensive picture of the effects of a development proposal can be produced, including identification of economic costs and benefits. This approach could both indicate the enviro-economic cost of a proposed development and also provide an indication of the economic value that the development would provide via the provision of enhanced or restored ecosystem services.

The draft NPPF states that: *"Those responsible for bringing forward development are expected to play their part by recognising and responding to the needs of communities"*.

For a local community, the ability to understand, prioritise and allocate values to the ecosystem services that are important to them can provide a tool with which to inform discussions with developers about an appropriate package of community benefits funded by developer contributions. Furthermore, given that much of this is likely to be delivered at a local level, within communities, it provides opportunities for local environmental enhancement.

Finally, it is clear that the application of ecosystem services at the strategic level offers substantial opportunities to improve decisions related to development planning. The application of an ecosystems

approach in the development of such plans and assessment, through Strategic Environmental Assessment (SEA) and Sustainability Appraisal (SA), should form the starting point for the integration of ecosystem services in development planning and consenting. It follows that the application of an ecosystem services approach in SEA/SA should form the basis for helping identify reasonable alternatives and sustainable preferred options in plan-making. If such an approach were to be embedded in the development planning system it would provide the robust environmental and social evidence base required to enable developments with positive sustainability outcomes.

FURTHER INFORMATION ON ECOSYSTEM SERVICES

Millennium Ecosystem Assessment:
[EnvironmentalImpactAssessment/016](#)

The Economics of Ecosystems and Biodiversity (TEEB):
[EnvironmentalImpactAssessment/017](#)

European Commission briefing on ecosystem services:
[EnvironmentalImpactAssessment/018](#)

Defra ecosystem services pages:
[EnvironmentalImpactAssessment/019](#)

UK National Ecosystem Assessment (NEA):
[EnvironmentalImpactAssessment/020](#)

Environment Agency – ecosystem services case studies:
[EnvironmentalImpactAssessment/021](#)

Ecosystem services research project – a Defra funded study:
[EnvironmentalImpactAssessment/022](#)

USEFUL GUIDANCE

World Resources Institute – Ecosystem services review for impact assessment:
[EnvironmentalImpactAssessment/014](#)

Defra - How to start valuing ecosystem services and undertaking value transfers:
[EnvironmentalImpactAssessment/015](#)

¹⁹⁾ [EnvironmentalImpactAssessment/012](#)
²⁰⁾ [EnvironmentalImpactAssessment/013](#)