

The AECOM logo is positioned in the top right corner of the page. It consists of the word "AECOM" in a bold, white, sans-serif font. The background of the entire page is a photograph of a waterfall cascading down a rocky, moss-covered cliff into a pool of water. The scene is lush with green moss and vegetation. Two white diagonal lines cross the image, one from the top left towards the center, and another from the middle left towards the bottom right.

AECOM

Built to deliver a better world

Natural capital and ecosystem services

Putting nature at the heart of decision making

It is essential for economic prosperity and human wellbeing that we look after our natural assets and maintain the flow of crucial ecosystem services. However, according to the Natural Capital Coalition, natural capital is being drawn down at a rate of 50 per cent more per year than the Earth can replenish, and the rate of depletion is accelerating.

By understanding nature and the benefits it provides, such as food, climate regulation, flood risk attenuation and opportunities for recreation, we can determine its true value and reflect this value in decision making.

What is natural capital?

Natural capital is the world's stock of natural resources, including air, rivers, forests, soil, and all living things. Natural capital is one of the five broad types of capital which underpin the economy.

What are ecosystem services?

Ecosystem services are the flow of benefits that natural capital provides and that are valued by people. These include things like food from plants, flood protection and climate regulation from trees and crop pollination by insects. In addition there are 'supporting' ecosystem services, such as primary production, nutrient cycling and soil water retention, which are necessary for the provision of all other ecosystem services.



Sustaining and enhancing natural capital and ecosystem services

What we do

Our natural capital and ecosystem services team has an in-depth understanding of the benefits we derive from the natural environment.

Working with national and local government, communities and businesses, our aim is to help them identify, account for and ultimately protect or enhance the value of their natural capital.

Reversing the decline in natural capital requires us to think differently about the way we value it and the ecosystem services it provides; and to make sure this value is then used to inform decisions in a wide range

of contexts. Our ecologists, social scientists, economists, planners, engineers and other specialists work together to determine the value of natural capital and embed this in policies, plans, projects and investments, with the ultimate goal of putting the value of nature at the heart of decision making.

We are capable of implementing strategies to protect, enhance and help reverse the decline of natural capital, and generating new business opportunities, such as developing wetlands on underutilised land to support wildlife and provide flood control.

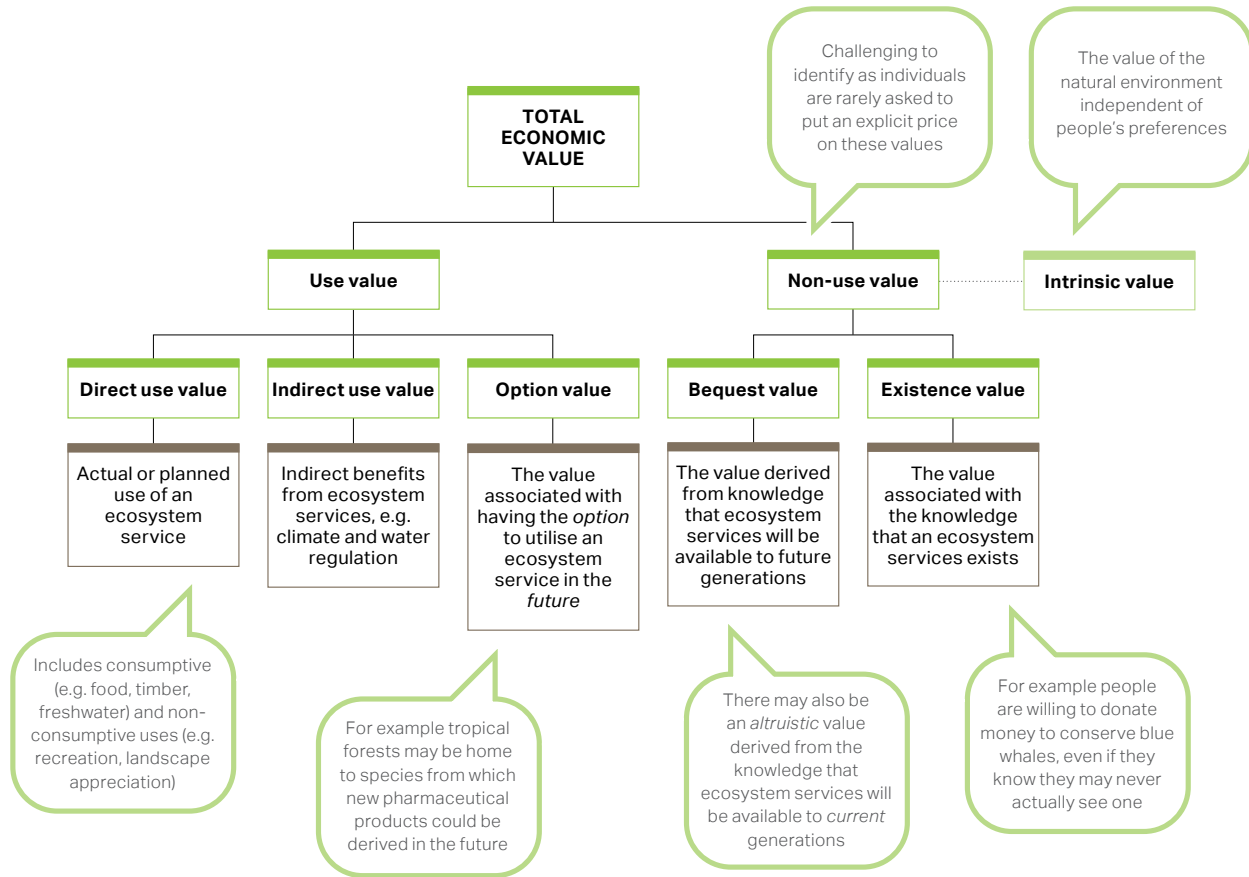
Expertise and project experience

We have expertise and experience in six key areas, each of which is introduced in the sections that follow:

- Environmental valuation
- Ecosystem services assessment
- Cost-benefit analysis
- Natural capital accounting
- Market-based instruments
- Ecosystem-based mitigation and adaptation







Environmental valuation

Some of the goods and services that we derive from nature, such as timber, food and fibre, are traded in markets and ascribed a price. Others, such as clean water, climate regulation and flood protection, are not and are often treated as 'free'.

Environmental valuation assigns monetary values to natural capital assets and ecosystem services – including those not traded in the marketplace – to help organisations incorporate the value of natural capital into decision making processes by using a common and well-understood metric.

We use the Total Economic Value (TEV) framework to identify the value people derive from natural capital and associated ecosystem services.

This ensures that we capture the full range of values associated with any change in ecosystem service provision.

Our natural capital and ecosystem services team has leading edge expertise in environmental valuation. We apply established and innovative techniques for valuing changes in ecosystem service provision. Some of the techniques we use include:

- stated preference (SP), where we use bespoke questionnaires to elicit people's willingness to pay or willingness to accept a particular environmental outcome, e.g. a change in air quality; and
- revealed preference (RP), which assumes that people's preferences can be revealed through purchasing decisions, e.g. preference from home buyers to be close to green space may be reflected in house prices.



Experience

RiverCare/BeachCare valuation project, Anglian Water, UK

We are helping Anglian Water (AW) quantify and monetise the natural and social capital value of its BeachCare and RiverCare programmes, which engage local people in improving their local river and coastal environments. Having established the values associated with these programmes, we have developed a toolkit for AW to identify the values generated by other AW work programmes.

Climate change impact on UK's natural assets, Committee on Climate Change, UK

We supported the Committee on Climate Change (CCC) in compiling evidence to support the 2017 UK Climate Change Risk Assessment with regard to natural capital assets. We assessed the impact of climate change on the provision of clean water, carbon storage, and wildlife under different climate change projections. As part of the research we considered the monetary value associated with changes in clean water and carbon storage that could be attributed to climate change. The research will help the CCC identify priorities for climate change adaptation.

Valuing water in business investments, major oil and gas company, Global

We conducted an extensive review of papers, tools and sustainability reports from industry, government and academics to help a major oil and gas company understand emerging and practical techniques to determine the true cost of water in different geographies and regulatory regimes. This allowed us to recommend an



approach to more accurately reflect the total value of water in their business investment decisions at different stages of the business cycle (exploration, production and refining) including an assessment of indirect costs, risks and opportunities, defining data needs, practicality and constraints and whether the approaches were defensible both internally and externally.

The economic value of quiet areas, UK Department for Environment, Food and Rural Affairs (Defra), UK

The adverse impacts of high levels of noise on health, quality of life and wellbeing have been acknowledged in environmental policymaking in England for over 45 years. However, the benefits of quiet areas are less understood and often overlooked or undervalued in decision making. Our team was commissioned by Defra to identify, quantify and monetise the benefits that people derive from 'quiet areas' to develop a framework or tool to assess the benefits or cost of loss of access to the areas. We conducted

a comprehensive review of over 80 studies including a field survey of people who used open spaces in central London and an online survey of UK-based AECOM employees to identify and quantify in monetary terms, where possible, the extent quiet areas benefit people.

Ecosystem services assessment

An ecosystem services assessment (ESA) helps clients understand how their policy, plan, programme, project, investment or activity will impact on the provision of ecosystem services.

ESAs can be done discretely or as part of a wider impact assessment, for example, we undertake ESAs as part of broader Environmental and Social Impact Assessments (ESIAs).

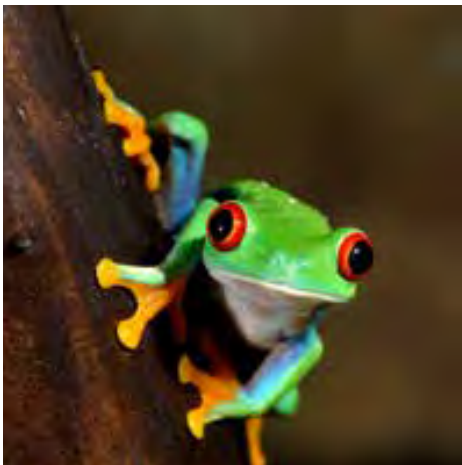
Undertaking an ESA can help foster an ecosystem approach which considers whole ecosystems in decision-making and the value of the ecosystem services that they provide.

Our in-house approach to ESA — ESIVI: Ecosystem Services Identification, Valuation and Integration in decision making — reflects the requirements of the International Finance Corporation's (IFCs) Performance Standards, which explicitly require organisations to assess a project's impacts and dependencies on ecosystem services as part of a wider ESIA.

Applying ESIVI involves identifying:

- the ecosystem services relevant to the project
- the beneficiaries of the ecosystem services, such as local people or a business' customers
- the value of the services to beneficiaries
- the impact of the project on the relevant ecosystem services and their beneficiaries
- any opportunities to enhance ecosystem service delivery
- mitigation measures for any loss or deterioration in service provision to beneficiaries.

Through this approach, we work with clients to help reflect the value of ecosystem services in their decision making.



"An ecosystems approach provides a framework for looking at whole ecosystems in decision making, and for valuing the ecosystem services they provide, to ensure that society can maintain a healthy and resilient natural environment now and for future generations."

Department for Environment, Food and Rural Affairs (Defra)

Experience

Ecosystem services and impact assessment integration, major oil company, Global

We worked closely with a major oil company to develop an online learning module and handbook for integrating ecosystem services considerations into ESIA. This included drafting step-by-step guidance on the approach to conducting an ecosystem services assessment and developing case studies based on AECOM project experience to illustrate good practice, challenges and lessons learned.

South Stream gas pipeline ESIA — Ecosystem Services Assessment, South Stream Transport B.V., Europe

We prepared ecosystem services assessments in support of an ESIA for an underwater gas pipeline from Russia to Bulgaria through the Turkish Exclusive Economic Zone (EEZ). We conducted separate ecosystem services assessments for each of the landfall sites in Russia and Bulgaria including the nearshore environments and for the marine section of the pipeline through the Turkish EEZ. Our team worked closely with ecologists, environmental scientists and social specialists to determine the significance of impacts on ecosystem service delivery, associated effects on beneficiaries, and appropriate impact mitigation strategies and management plans. The ESA was conducted in accordance with the requirements of the International Finance Corporation (IFC) Performance Standards (PS).

Spatial targeting for social programmes, Natural Resources Wales (NRW), Wales, UK

NRW has a remit to deliver benefits to disadvantaged communities in Wales via their investment. We were commissioned to produce a spatial toolkit to help target resources so that disadvantaged groups are better able to share in the intended benefits. The GIS toolkit can be used to visually compare the characteristics of different places in Wales, view combined social and environmental information, determine where to focus effort and resources, provide a basis for dialogue with partners, and provide an evidence base for sound decision making. Opportunities for further developing the toolkit include incorporating NRW flood vulnerability mapping data and adding new 'blue spaces' questions on bathing waters and water quality.

Ecosystem services for local planning, Sustainability East, England, UK

We were commissioned to explore how an ecosystems approach could be used to facilitate public discussions on land use within the Lee Valley Regional Park in the east of England. Our research included two focus groups with local residents, during which we asked them to consider the ecosystem services provided by two of the Park's sites; the level of priority they attached to these; and their alternative future visions for the sites, reflecting on the priorities identified. Feedback from participants indicated a widespread feeling that the ecosystems approach helped them to think differently about the sites and their future use. The majority of participants agreed that the Lee Valley Regional Park Authority should incorporate ESA into its land use planning.

“Performance Standard 6 recognizes that protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living natural resources are fundamental to sustainable development.”

IFC Overview of Performance Standards on Environmental and Social Sustainability

Cost benefit analysis

It can be challenging to incorporate the value of many ecosystem services, such as clean water and flood protection, in decision making because they are not always traded in markets and, as such, their economic value — how much people are willing to pay for them — is not revealed through market prices.

Cost benefit analysis (CBA) seeks to establish the costs and benefits of a proposal in monetary terms.

With extensive expertise in valuing ecosystem service, we can provide clients with comprehensive CBAs covering economic, social and environmental impacts, including the value of ecosystem services – so ensuring the full range of potential environmental costs and benefits of a proposal are captured.

We use the TEV framework to ensure that we capture values associated with any change in ecosystem service provision. Having identified any likely changes in service provision as a result of a proposal, we endeavour to quantify these changes and place a monetary value on the costs and benefits of the change.

Our CBA work has provided us with significant expertise in identifying, quantifying and placing monetary values on social impacts, for example gains in health and wellbeing. As such, we can calculate the Social Return on Investment (SROI) of an initiative to assist clients in optimising their social impacts.

SROI focuses on talking to stakeholders and placing a monetary value on the impacts they identify for which market values do not exist. These values can then be aggregated and compared with the scale of investment made. For example, every £1 invested in a programme to involve local people in a community forestry project might yield £3 in health care cost savings.

“Cost Benefit Analysis seeks to assess the net value of a policy or project to society as a whole. The valuation of non-market impacts is a challenging but essential element of this, and should be attempted wherever feasible.”

The Green Book: Appraisal and Evaluation in Central Government
HM Treasury

Experience

Sustainability CBA of subsea cabling, Scottish Hydroelectric Power Distribution (SHE PD), a division of SSE, Scotland, UK

SHE PD, through its subsea cable laying activities, is one of many competing users of the marine environment in the Greater North Sea region. Subsea cable laying and maintenance can impact the seabed, resulting in environmental, health and safety and social impacts. SHE PD has managed these impacts in accordance with its safety, health and environmental policy – however, there is increasing concern from SHE PD’s environmental stakeholders that these impacts can be better managed by burying subsea cables. We have been commissioned to develop a quantitative analytical framework to enable SHE PD to more fully account for the costs and benefits in monetary terms of transitioning to buried sea cables in a robust and transparent way. Ultimately, the framework will allow SHE PD to identify the overall value to, or impact on, society, the economy and the environment before committing to new capital expenditure.

Evaluation of the Environmental Noise Directive (END), European Commission, EU

As a sub-consultant to the Centre for Strategy and Evaluation Services (CSES) and Accon, we are providing technical support to the European Commission to evaluate the END. In particular, we are conducting the CBA of END implementation for a series of test cases across the Member States as well as an EU-wide CBA. The analyses consider the monetary and non-monetary costs and benefits of compliance with the Directive in the different Member States (and extrapolated to the EU) in relation to Strategic Noise Mapping, the preparation of Noise Action Plans and measures implemented to reduce harmful levels of noise. Benefits are expressed primarily in terms of three health endpoints: annoyance, sleep disturbance and cardiovascular diseases and are quantified using established dose-response relationships and the concept of disability-adjusted life years.

CBA for the reintroduction of the lynx to the UK, Lynx UK Trust

We supported the Lynx UK Trust by conducting an impartial and independent analysis of the potential social, environmental and economic costs and benefits of a proposed lynx reintroduction scheme in the UK. Our analysis combined ecological and economic modelling to estimate the Net Present Value of a potential reintroduction at two sites over a 25 year period, focusing on six potential impacts including: predation on livestock; monitoring costs; risks to human health; recreation; tourism opportunities; reductions in deer populations; and existence values. The report will support the Trust’s licence application for lynx reintroduction.



Natural capital accounting

As the demands on our natural resources increase, government and businesses are increasingly recognising the need to reflect the value of natural capital assets in their accounting systems to help support the long-term protection and sustainable use of the natural environment.

Incorporating natural capital into a country's national accounts can help governments recognise and respond to adverse changes in the nation's stock of natural capital assets and maintain the flow of ecosystem services. International drivers include a target adopted by the Parties to the Convention on Biological Diversity to incorporate biodiversity values into national accounting and reporting systems by 2020.

The UN has developed a System of Environmental-Economic Accounting (SEEA) Central Framework and a complementary framework for undertaking ecosystem accounting – SEEA Experimental Ecosystem Accounting (SEEA EEA). A World Bank-led global partnership, WAVES, is providing technical support to a number of countries as they embark on natural capital accounting based on the SEEA Central Framework and the SEEA EEA.

Incorporating natural capital into business accounts can help companies to better recognise and manage risks to their business and promote business continuity. Natural capital accounting can be undertaken for various aspects of a company's operations including for individual operating sites and specific supply chains.

Our natural capital and ecosystem services team has helped governments and businesses incorporate natural capital within their accounts through the development of highly innovative natural capital accounting methodologies.



AECOM lead the Natural Capital Coalition's Operations Group

The Natural Capital Coalition's new Operations Group is designed to share knowledge and promote best practice across the global natural capital community. The group focuses on the practical application of the Natural Capital Protocol, which is being developed by the Coalition. Applicable globally and across multiple business contexts, the Protocol and accompanying sector guides will provide a standardised framework for businesses to measure and value their direct and indirect impacts and dependencies on natural capital. AECOM is responsible for managing the Operations Group, which will provide a best practice forum for Coalition members who together represent a wide range of organisations, including charities, academia, associations, standard setters, finance and policy institutions and business.

"The private sector owns and manages the majority of natural capital (the elements of the natural environment which provide benefits to people) in this and many countries around the world."

www.naturalcapitalcommittee.org

Experience

Developing ecosystem accounts for protected and other areas in England and Scotland, Defra, UK

In partnership with Cumulus Consultants, the University of Exeter, Sustainable Flows and Carl Obst, we were contracted by Defra to develop and pilot a set of ecosystem accounts for six protected and other areas across the UK. The project drew on the UN System of Environmental-Economic Accounting (SEEA) to develop a framework which measures the extent and condition of six ecosystem types, the physical flows of services provided by these ecosystems and the monetary value of these services. This framework was then piloted in four protected areas in England and two key areas in Scotland, working with the protected area authorities and other stakeholders to incorporate both local and national datasets to measure and monitor the ecosystem services provided. The framework will play a crucial role in the successful development of natural capital accounting, one of Defra's commitments under the 2011 Natural Environment White Paper.

Valuing National Grid's natural capital assets, National Grid, UK

We have been working with National Grid to develop tools for quantifying existing stocks of natural capital on their non-operational sites, valuing the ecosystem services provided and identifying management actions to enhance or restore service provision. The approach has been used to develop business cases and secure funding for increasing the environmental and social benefits provided by National Grid's natural capital assets on a number of trial sites and is being integrated throughout National Grid's wider business. We're currently demonstrating how woodland

planting can lead to positive financial returns to the company. The approach was awarded the National Grid Chairman's Award and was shortlisted for the Finance for the Future Awards.

Realising nature's value in UK business, Joint Nature Conservation Committee (JNCC), UK

We were commissioned by the JNCC to explore the motivations of UK businesses, their ways of working, the institutional barriers and constraints they face and, in particular, their knowledge needs with respect to natural capital. The project focused on three business sectors: agriculture, forestry and fisheries, electricity supply and retail and wholesale. The project outcomes are anticipated to inform effective engagement between knowledge providers, such as the JNCC, and businesses. The final report is accompanied by a series of practice notes to assist businesses to develop natural capital strategies.

Measuring the social and environmental returns of woodland creation, Forestry Commission, UK

We worked with the Forestry Commission and EnviroMarket to develop a framework that can be used by corporate investors in woodland creation to report the environmental and social benefits of their investments. We reviewed the leading methods of measuring the multiple benefits of woodland creation to develop a framework that successfully balanced robustness of result with practicality of application for the end user. This was achieved through site visits and meetings with businesses and wider woodland stakeholders. It's hoped the framework will inform the future development of the Woodland Carbon Code, a voluntary forest carbon standard set up by the Forestry Commission.

Natural Capital Asset Check (NCAC), Kent County Council, England, UK

Building on local and national data sources, we developed a NCAC for Kent County Council which provided a baseline picture of the quantity and quality of the county's natural assets to monitor changes in their extent and condition. This indicated the capacity of the natural assets to deliver ecosystem services. The NCAC is a first step towards creating a county-wide natural capital account for Kent which will allow the council to pursue a more sophisticated approach to environmental management that takes into consideration the wider social and economic trade-offs, so supporting sustainable growth and investment.

Natural capital assessment for alternative capital schemes at Rivelin Wastewater Treatment Works, Yorkshire Water, UK

AECOM worked with Yorkshire Water to identify and value the natural capital impacts of alternative capital schemes for a wastewater treatment facility near Sheffield. The assessment, performed post construction, tested how to embed natural capital assessments into Yorkshire Water's standard decision-making practice. AECOM evaluated and valued the natural capital impacts of land use change, operational resource use, and elements of the building design associated with the alternative schemes. We then brought employees together from across the Yorkshire Water business to facilitate a strategy to integrate natural capital considerations with standard business practices. The project was also used as a pilot study to test and help develop recommendations to inform revisions to the draft Natural Capital Protocol.

Identifying and assessing opportunities for forest-based Payment for Ecosystem Services (PES) in Ethiopia.

Well-functioning forests provide a range of ecosystem services including consistent and clean flows of water, productive soils, carbon storage, timber and a home for wildlife. Forest-based Payments for Ecosystem Services (PES) schemes involve the beneficiaries of these ecosystem services making a financial contribution to those responsible for forest management in order to ensure the continued flow of ecosystem services. The forests of the Ethiopian Highlands are particularly important in providing ecosystem services related to hydrologic functions and the support of agriculture in lower lying areas. The Global Green Growth Institute (GGGI) has commissioned AECOM and partners to explore the potential for establishing forest-based PES schemes in the Ethiopian Highlands in order to promote sustainable forest management and contribute to economic growth in Ethiopia.





Market-based instruments

Measures to protect and enhance natural capital and ecosystem services can take several forms:

- regulation, e.g. to remove phosphate from detergents to improve water quality
- voluntary efforts on the part of government, business and communities, e.g. codes of practice
- the provision of services directly by government, e.g. government-owned and managed green space
- market-based mechanisms

Market-based mechanisms provide innovative ways of incentivising individuals, communities and businesses to protect and enhance natural capital. In particular, there is a growing interest in using market-based mechanisms to manage environmental impacts at the lowest economic cost. This is particularly the case where regulatory approaches have failed to slow the rate of ecosystem degradation or where

the cost of traditional policy tools is prohibitive to government or society in general.

These mechanisms include:

- charges and taxes
- subsidies/subsidy reform
- liability and compensation
- environmental bonds
- marketable permits and trading systems, e.g. markets for trading biodiversity offset credits
- certification schemes (e.g. eco-labels)
- payments for ecosystem services (PES)

Payments for ecosystem services (PES)

PES schemes involve payments to land or natural resource managers in exchange for ecosystem services, such as clean water, carbon storage and biodiversity. Payments are made by the beneficiaries of the ecosystem services, such as communities and businesses, or governments acting on their behalf. Importantly, payments are made for services over-and-above those that would otherwise be provided, i.e. the services would not have been provided without the market incentive. Our team has significant PES experience: we can advise both land and natural resource managers who are interested in generating and selling additional ecosystem services, as well as buyers, including government, businesses and communities, who are interested in purchasing ecosystem services.

Experience

Promoting green urban development in African Cities, World Bank, Africa

We have been working with the World Bank to improve understanding amongst city-level managers and planners of the impact of urban development on natural assets and ecosystem services in Africa and to enhance the ability of national and local governments to make well-informed strategic, planning, land-use, budgetary and investment decisions to promote green urban development. Our team is leading the development of a policy, process, planning and management instruments toolkit, which can be used to mitigate the deterioration of urban natural assets and ecosystem services and promote green urban growth in African cities.

This has involved a review of the instruments that may be used to address environmental degradation in urban areas, assessing these against a set of criteria, such as environmental effectiveness, economic efficiency, administrative feasibility and cost, institutional capacity, acceptability and macro-economic impact, and then selecting a long-list of instruments to be discussed with city-level managers in three African cities: Kampala, eThekweni and Dar Es Salaam. The toolkit will present a description of each instrument, the environmental externalities each seeks to address and will include case study examples to illustrate how the instrument might be applied under different institutional and regulatory settings.

PES best practice guide, Defra, UK

Our natural capital and ecosystem services team supported the UK Government in developing its Best Practice Guide on Payments for Ecosystem Services. The guide includes an overview of key concepts and principles as well as step-by-step advice on designing and implementing a PES scheme. Publication of the guide fulfilled a key government commitment in the 2011 Natural Environment White Paper.

Encouraging PES participation, Defra, UK

We investigated how to encourage wider PES participation with a focus on how the potential beneficiaries of PES schemes could be better identified and engaged. The research developed approaches for identifying business sectors dependent on natural capital/ecosystem services and local authorities who might procure ecosystem services for local residents and businesses, and engaged with them to identify barriers to and opportunities for PES scheme development. The final report to Defra made a series of recommendations on how participation in PES could be increased through new approaches to beneficiary identification and engagement.

Scope for payments for ecosystem services in the English uplands, Natural England and Defra, UK

AECOM — in partnership with the Crichton Carbon Centre, the IUCN Peatland Programme and Birmingham City University, with advisory inputs from the Environment Bank — investigated how PES could be applied in upland areas. The research focused on how payments for multiple ecosystem services could work in one place, using the South Pennines in England as a case study. The report was accompanied by a technical appendix which focused on how peatland carbon could be valued and potentially traded, as part of a PES scheme.

Ecosystem-based mitigation and adaptation

The threats posed by ongoing and accelerating climate change and accompanying losses in biodiversity have led to growing interest in ecosystem-based mitigation and adaptation (EbMA). Healthy and well-functioning ecosystems can both help sequester carbon and improve communities' resilience to the effects of climate change. The adoption of EbMA approaches can also deliver wider benefits, including increased biodiversity and enhanced flows of ecosystem services.

Given the wide ranging benefits that can be secured through EbMA, investments in such 'green infrastructure' approaches to adaptation and mitigation can often offer competitive returns when compared to more traditional 'grey infrastructure' approaches. This is especially important in the context of resilience, as many of the communities most severely threatened by climate change are least able to bear the costs of adaptation.

AECOM has valuable expertise and experience in identifying opportunities for EbMA, implementing EbMA in practice, offering strategic insight to improve project success, and monitoring and evaluating project outcomes. In particular, AECOM has experience in creating mechanisms for real-time evaluation to ensure that projects are achieving desired outcomes, and which can assist clients with adaptive management and timely and targeted investment in EbMA.



Evaluation of the Government of Norway's International Climate and Forest Initiative (NICFI), NORAD, EU

The Government of Norway has pledged \$500m per year to support efforts to Reducing Emissions from Deforestation and forest Degradation (REDD+), an ambitious global ecosystem-based mitigation (EbM) scheme that is focused on limiting deforestation and delivering associated reductions in carbon emissions. REDD+ provides incentives for forest conservation and protection in emerging economies, encouraging economic growth through reduced impact development pathways rather than through deforestation. Crucially, forest conservation both prevents the release of stored carbon, and enhances the planet's capacity to sequester it. However, REDD+ faces numerous challenges with respect to governance, financing, and evaluation.

AECOM is leading an international consortium to review and summarise the extensive literature focused on REDD+ and identify knowledge gaps and further research critical to the success of NICFI. The consortium is also analysing existing interventions implemented through the initiative in order to establish the extent to which they have been evidenced. Based on the outcomes of this research, the AECOM led consortium is developing a new framework to facilitate the real-time evaluation of NICFI. The framework places emphasis on high quality monitoring and assessment of project outcomes, enhancing accountability, knowledge sharing, and real-time feedback to relevant stakeholders to encourage adaptive management.

Climate change adaptation and PES, Defra, UK

The UK government has committed to both promoting adaptation to climate change and the development of Payments for Ecosystem Services (PES) as a mechanism for reversing environmental degradation and enhancing natural capital. To investigate the potential role of PES in facilitating ecosystem based adaptation (EbA), Defra commissioned AECOM to identify natural environment solutions to the challenges posed by a changing climate and explore the scope for PES to help deliver these solutions. Through both secondary research and extensive engagement with experts in the fields of climate change adaptation and PES, AECOM developed a suite of recommendations for Defra. These recommendations were ranked according to both the likely significance of their outcomes and the extent to which these claims were supported by evidence. The highest priority recommendation for PES-supported EbA was investment in wetland and floodplain restoration to mitigate anticipated increases in flood intensity and frequency.

“Ecosystem-based adaptation... includes the sustainable management, conservation and restoration of ecosystems to provide services that help people adapt to the adverse effects of climate change.”

Convention on Biological Diversity

Investigating the cultural and social impacts of ecosystem-based mitigation, Natural England, UK

The Cumbria Bog LIFE+ project is a five year EU-funded project to restore three lowland raised bog sites within the county. In addition to being one of Europe's rarest and most threatened habitats, lowland raised bog also contains significant amounts of carbon within their soils. As degraded raised bogs can be a substantial source of carbon emissions, the restoration of these bogs is an important ecosystem based mitigation (EbM) measure. Restoration activities can also impact both positively and negatively on the lives of local communities and other users of the project sites. To capture these impacts and so evaluate the overall performance of the Cumbria Bog LIFE+ project, Natural England has commissioned AECOM to design an evaluation methodology capable of capturing the social and cultural impacts of the restorations. This evaluation will explore the attitudes of project stakeholders from multiple perspectives, including the recreational and aesthetic value of the restoration, and will be tailored to the rural context in which it will be undertaken.





Links to AECOM reports

Climate change and natural capital report for the Committee on Climate Change (CCC):

www.theccc.org.uk/publication/aecom-assessment-of-climate-change-impacts-on-uk-natural-assets/

Lynx reintroduction scheme report:

www.aecom.com/uk/wp-content/uploads/2015/09/Cost-benefit-analysis-for-the-reintroduction-of-lynx-to-the-UK-Main-report.pdf

Realising nature's value in UK business report:

http://jncc.defra.gov.uk/pdf/Report%20558_web.pdf

JNCC practice notes to assist businesses to develop natural capital strategies:

<http://jncc.defra.gov.uk/page-7097>

PES best practice guide for Defra, UK:

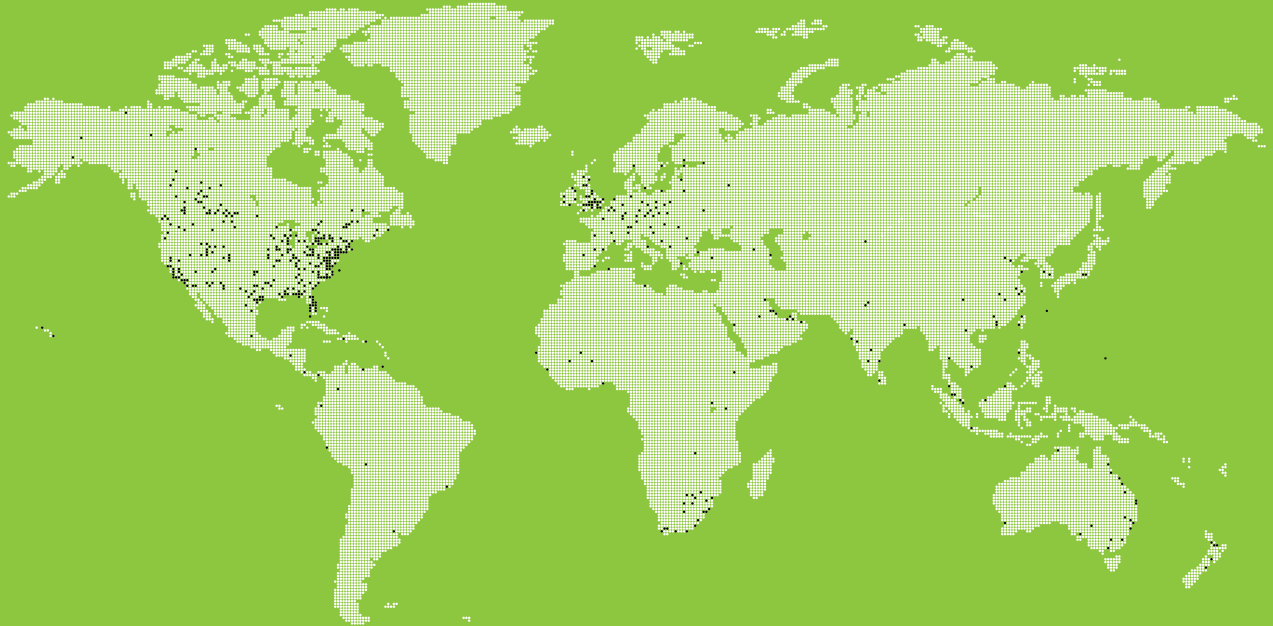
www.gov.uk/government/publications/payments-for-ecosystem-services-pes-best-practice-guide

Valuing nature's services: moving towards payments for ecosystem services and conservation credits in the English Uplands report:

<http://publications.naturalengland.org.uk/publication/6620042472980480>

Developing ecosystem accounts for protected and other areas in England and Scotland:

<http://sciencesearch.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=19271>



450+ offices worldwide

150+ countries in which we operate

Our related services

- policy research, analysis and evaluation
- environmental valuation
- ecosystem services assessment
- cost benefit analysis (CBA)
- natural capital accounting (NCA)
- stakeholder engagement using an ecosystems approach
- design of payments for ecosystem services (PES) schemes
- biodiversity offsetting and ensuring 'no net loss/net gain'
- ecosystem mapping
- green infrastructure planning
- catchment management
- sustainable drainage systems design
- environmental impact assessment
- strategic environmental assessment
- habitat creation and restoration
- ecological management plans
- ecological surveys

About AECOM

AECOM is built to deliver a better world. We design, build, finance and operate infrastructure assets for governments, businesses and organizations in more than 150 countries. As a fully integrated firm, we connect knowledge and experience across our global network of experts to help clients solve their most complex challenges. From high-performance buildings and infrastructure, to resilient communities and environments, to stable and secure nations, our work is transformative, differentiated and vital. A *Fortune 500* firm, AECOM companies have annual revenue of approximately US\$19 billion. See how we deliver what others can only imagine at aecom.com and [@AECOM](https://twitter.com/AECOM).

For further information please contact:

Dr Steven Smith

Technical Director, Policy and Appraisal

T +44 (0)20 7798 5121

M +44 (0)7773 804 662

E steve.smith02@aecom.com

aecom.com



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