



ENVIRONMENTAL ECONOMICS

Investing in solutions to complex environmental problems:

Black & Veatch's proven expertise in applied economic appraisal is used by our clients worldwide to demonstrate the business case for investing in solutions to complex environmental problems; primarily to address exposure to climate change impacts but also as part of corporate social responsibility.

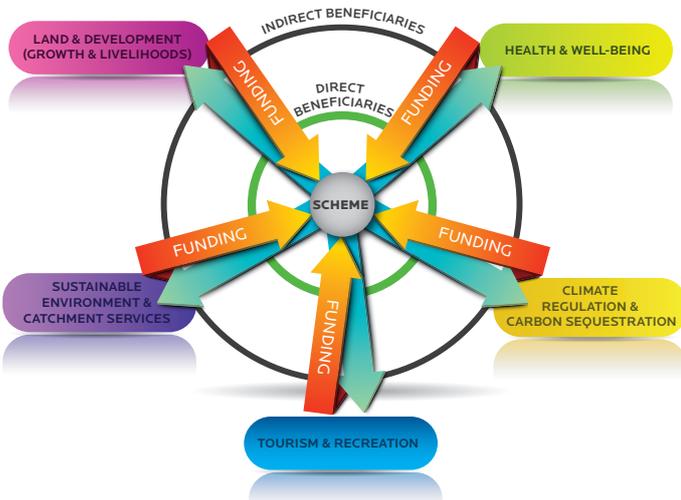
Our work models the benefits of plans, projects & programmes which are increasingly sought by clients & funders to help target their investments.

Cost-Benefit Analysis (CBA) helps our clients to compare the economic efficiency of different resource use options. It quantifies the change in economic welfare (to society as a whole) of a proposal, based on an assessment of market and non-market goods. The generated benefit to cost ratio informs options appraisal, investment planning and the business case for a scheme, in order to understand the merits of implementing a project, policy, programme or not.

Ecosystem Services Valuation (ESV) essentially extends traditional CBA (which generally focuses on market goods and services such as property, goods and infrastructure) to consider the full suite of goods and services provided by the natural environment (market and non-market values) that are likely to be impacted upon by a proposal. Such economic benefits such as nature’s ability to purify water, regulate flooding and store carbon are known as ecosystem services (ESS). This approach helps to identify more sustainable solutions to complex problems that maximise returns to society as a whole, and help to avoid unforeseen future costs (financial, environmental and social).

FLOOD RISK MANAGEMENT: THE RIVER THAMES SCHEME (RTS)

ENVIRONMENT AGENCY, UNITED KINGDOM
 Black & Veatch completed an ESV to quantify the additional ecosystem benefits of RTS. This revealed a ‘hidden’ economic benefit in the region of £45m in present value over 100yrs (PVb). Of this, £39m PVb can be included in the Partnership Funding Calculator to draw down further Flood Defence Grant in Aid (FDGiA) in the region of £1.9m. The Lower Thames area is one of the largest areas of developed floodplain in England, therefore has a history of severe fluvial, surface and groundwater floods. The scheme will decrease flood risk to approximately 35,000 homes and businesses (after climate change) in the area.



DERBY 'OUR CITY OUR RIVER' MASTERPLAN ECOSYSTEM SERVICES VALUATION

ENVIRONMENT AGENCY, UNITED KINGDOM
 At short notice, Black & Veatch completed an ecosystem services valuation for the Environment Agency to inform the economic appraisal of the flood risk management preferred design for this project. This assessment mapped, described, quantified and monetised the additional economic benefits of the scheme such as water quality, cultural and biodiversity enhancements. The assessment helped to draw down an additional £500k in central FDGiA (Flood Defence Grant in Aid) funding towards a £95m scheme.

Benefit: Carbon sequestration and temperature regulation
Ecosystem Services: Climate regulation
Supporting Services: Nutrient cycling, soil formation & retention, water recycling, photosynthesis

Benefit: Reduced risk of surface water flooding / storm water overflows
Ecosystem Services: Water regulation, natural hazard protection
Supporting Services: Nutrient cycling, soil formation & retention, water recycling

Training in ESV We provide bespoke training days and workshops on ecosystem services assessment and valuation. Most recently we provided this to members of CIEEM and NRW. Feedback has included:

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A very good intro to a complex subject”, “A proper teaching course rather than a vague presentation.

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NANT-Y-MOCH WINDFARM STUDY

WELSH WATER, DCWW, WALES
Black & Veatch assessed the economic implications of the construction of a wind farm in a pristine catchment in Wales upon water quality supply. Using ESV, we quantified the future financial risks to Welsh Water’s customers and to society as a whole. This assisted Welsh Water in its negotiations with the wind farm developer.

Payment for Ecosystem Services

Ecosystem services valuation has the added benefit of explicitly linking beneficiaries of services provided by the natural environment, to those who manage and provide these services. This has helped Black & Veatch to identify innovative funding and management solutions, whilst facilitating partnership between project stakeholders by means of novel payment schemes. Such work may include assessment of strategic and funding opportunities, defining and quantifying additionally and implementation studies.

PAYMENT FOR ECOSYSTEM SERVICES SCOPING STUDY

CONFIDENTIAL CLIENT, UNITED KINGDOM
Black & Veatch has researched various payment mechanisms that could be used to incentivise landowners, primarily farmers, to change their land management practices to generate biodiversity and habitat restoration with economic benefits. The research looked at various grant-based schemes and bidding mechanisms and how effective they are likely to be in different contexts.

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NATURAL RESOURCES WALES, WALES
Black & Veatch reviewed the potential for generating payments to landowners in Nant Barrog, a steep sided catchment in North Wales, to change land management practices in order to help provide flood risk protection to a nearby village. A review of enhancements to ecosystem services associated with the measures, potential beneficiaries, agri-environment payments and other funding pots highlighted the potential to develop an innovative and exemplar land management strategy; to complement flood protection measures but also to enhance some of nature’s services such as biodiversity, farm diversification, water quality.

Economic Impact Assessment

quantifies the contribution to economic activity of a plan, project. For example, we used this approach to approve renewable energy development proposals in Armenia for the World Bank. This identified indicative jobs created/MW for different technologies types based on expected generation capacity. We also used this approach to find out whether designating MCZs in the Irish Sea would have a significant effect or not on the Northern Ireland fisheries’ sector.

WINDERMERE DROUGHT PERMIT REFRESH STUDY

UNITED UTILITIES, UNITED KINGDOM
Black & Veatch assessed the impact of various water abstraction scenarios from Windermere, upon the South Lakeland economy for United Utilities using an economic impact assessment methodology. This modelled the likely direct impact of changes in water levels upon lake users (cruise operators and recreational users), their spending and the resulting indirect and induced impacts on the local economy. This described, quantified and monetised impacts and will inform United Utilities’ drought permit application to the Environment Agency.

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