MASTS RESEARCH FORUM

MARINE PLANNING & GOVERNANCE

POLICY BRIEF

MARINE NATURAL CAPITAL

This policy brief is aimed at practitioners of both public, academic, and private institutions whose work may not specifically involve developing natural capital approaches but want to better understand how these concepts can be applied and the impacts natural capital thinking may have on their areas of work. This brief was commissioned by the Marine Planning and Governance Forum of the Marine Alliance for Science and Technology for Scotland (MASTS).

The aim of this policy brief is to help build a common understanding of natural capital and how it can transform the way we make decisions. Despite often being described as a poorly defined term, natural capital terminology is becoming ever-present within national and international policies and strategies.

In Scotland, there are two key policy drivers driving the development of natural capital approaches. Scotland's Strategy for Economic Transformation, a strategy that commits to an economic approach which restores and invests in natural capital; and Scotland's Blue Economy Vision, which seeks to embed natural capital approaches into marine and coastal management and policy.

Many corporations are also taking up this approach, for example within their sustainability strategies, where it is often considered amongst other types of capital such as economic, human, and social. This makes it crucial for there to be a unified understanding of natural capital and how it can provide benefits to society, economy, and nature simultaneously.

These concepts were not designed to 'commodify nature' or to convert public goods to private assets for exploitation but were born out of the need to shift societal and traditional economic models away from viewing nature simply as a resource to freely exploit, towards a vision that identifies that the economy and society are nested within nature and cannot function without the vital services it provides.

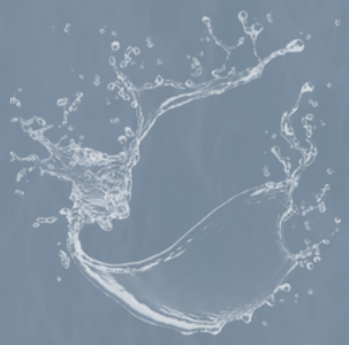
In recent years this vision has gained momentum and has been supported by key publications such as the Dasgupta review on the Economics of Biodiversity, which opened with a clear and powerful message: "Our economies, livelihoods and wellbeing all depend on our most precious asset: nature. We are part of nature, not separate from it" (Dasgupta 2021).

Within the sphere of natural capital, many innovative concepts are emerging such as green finance, payment for ecosystem services, blue finance, carbon credits, biodiversity credits, and many other tools or ideas which are linking economy and nature.

These tools often require a monetary valuation for natural assets to provide a common language for conveying the value of safeguarding nature across the worlds of finance and investment, and nature conservation. However, this approach is often viewed with some scepticism by some stakeholders, due to the perception that monetary valuation can lead to privatising natural goods.

Therefore, this document aims to explain:

1. The origins of the natural capital concept
2. How natural capital can transform decision-making
3. Why monetary valuation can be useful
4. Natural capital approaches using non-monetary valuation
5. Opportunities to embed natural capital approaches



1. The natural capital concept

Natural capital thinking has emerged out of the need to halt the rapid deterioration of the natural environment, which has led to the current twin nature and climate crisis. The current state of natural ecosystems worldwide reflects the failure of traditional economics to fully incorporate the value of nature within decision-making on the use of the environment. Traditional – or neoclassical - economics does not recognise society's dependence on healthy and functioning ecosystems for sustained prosperity and does not readily incorporate the values and benefits of nature that cannot be monetised or quantified.

Political and economic success is conventionally measured by Gross Domestic Product (GDP) increasing year on year. However, the limitation of using GDP as a single measure for success, is that it does not acknowledge the costs associated with its growth, or the degree to which consistent growth is unsustainable.

A large part of those costs can be attributed to losses of nature. To measure and understand the costs of nature degradation, the value of nature must be understood first. By providing a framework for valuing nature, natural capital concepts allow trade-offs and synergies to be reflected in decisions between different economic, social, and environmental factors. Ultimately, this should result in a more sustainable use of resources that optimises benefits for both people and planet. By doing so, natural capital frameworks can play a crucial role in driving the transition towards a wellbeing economy[1] which ensures societal needs are met, but that also functions within nature's boundaries.

Figure 1: Traditional Economics

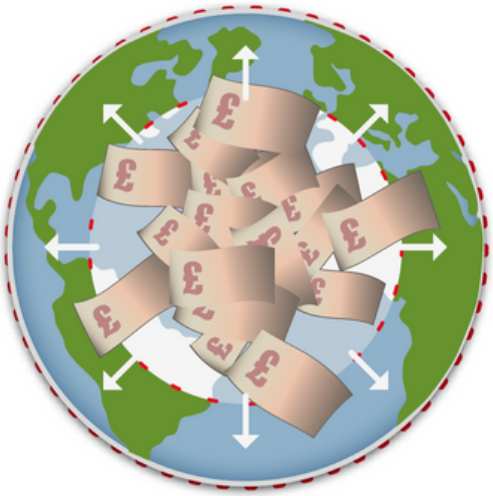


Figure 2: Ecological Economics

Figure 1 represents the neoclassical economic ideology where nature is viewed as part of the economy and as a free resource to exploit. The arrows in this case demonstrate that as the size of the economy grows, it squeezes natural resources into a smaller and smaller space.

Conversely, **Figure 2** represents an ecological economics perspective where the economy is nested within nature and is bounded by the finite limits of natural systems. The dashed blue circle in this diagram shows that as the economy grows, it grows within the current available space for nature. However, the economy will only ever be able to grow to the point of nature's boundaries, beyond which we risk total collapse of economy, society and nature.

[1] https://spice-spotlight.scot/2023/04/26/what-is-a-wellbeing-economy/

The natural capital concept creates a framework for better understanding nature's value by viewing nature in an anthropocentric way. Natural capital can therefore be defined as: 'the elements of nature that directly or indirectly **produce value to people**, including ecosystems, species, freshwater, land, minerals, the air and oceans, as well as natural processes and functions' (Natural Capital Committee, 2017).

Beyond the assumption that nature is intrinsically valuable, the value of each natural capital asset can be viewed as the summed worth of the ecosystem services it provides. Ecosystem services are 'the functions and products from nature that can be turned into benefits with varying degrees of human input' (Natural Capital Committee, 2017) and are usually categorised as provisioning, cultural, supporting or regulating services.

Natural capital faces some criticism, including that it is impossible to quantify the full or true value of nature because of its intrinsic value. While intrinsic value is important, history has shown us that this recognition is not sufficient to incentivise the protection and restoration of nature when measured against short-term economic gains.

Consequently, it is essential that we normalise mechanisms for ensuring that nature does not get overlooked within decision-making, instead embedding our dependency on nature for long-term economic, cultural and social stability.

The natural capital framework has purposely adopted terminology commonly used in economics, such as 'assets', 'capital' and 'goods/services', to allow natural capital concepts to be integrated within existing economic frameworks. In a highly simplified way, the overarching concepts behind natural capital can be compared to that of putting money in a bank. The more 'capital' (nature) that is saved or invested, the more interest (ecosystem services) that capital will provide; and when no money is left in the bank (nature), interest (ecosystem services) stops altogether.

Expanding on this simplistic analogy, natural capital approaches identify that there is a stock of natural assets (natural capital) that provide an array of services (ecosystem services), which then interact with other forms of capital, such as human capital to produce a final good or service that provides benefits to human well-being (Costanza et al., 2017).

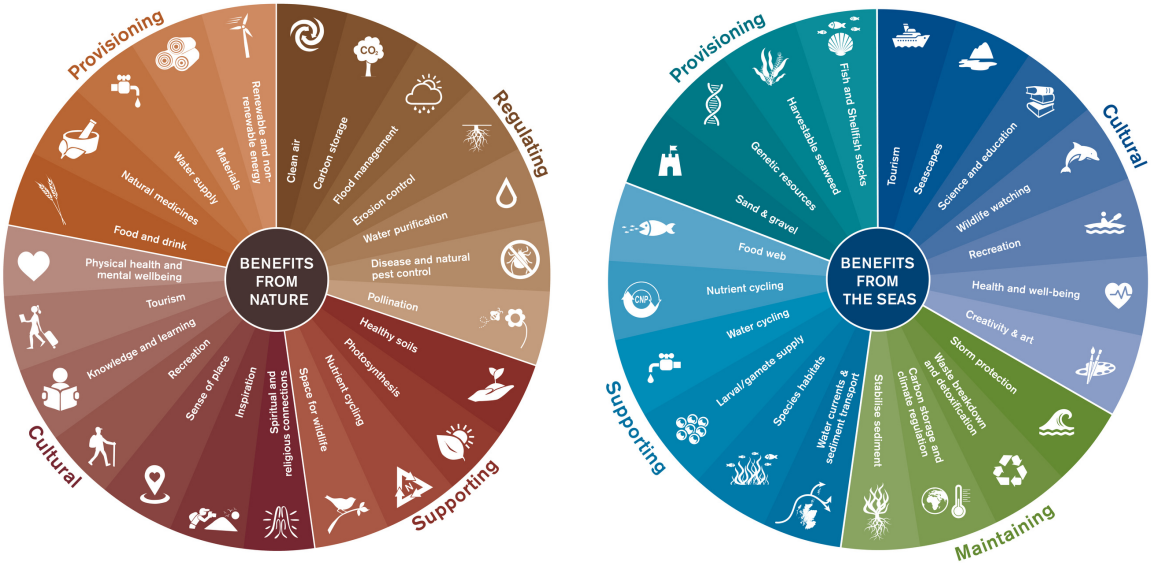


Figure 3: Land and sea ecosystem services

Source: NatureScot - https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy-and-cop15/ecosystem-approach/ecosystem-services-natures-benefits

Framing nature in this way allows for clear pathways to be drawn between nature, economy and societal well-being, allowing a shift in perception from nature only being valuable when extracted as a resource, to one that identifies the value of nature through the functions it provides to society. For example, shifting to a natural capital perspective allows a tree to be valued for the ecosystem services it provides, such as carbon sequestration, habitat provision, water filtration, mental wellbeing and recreation.

The value of the tree has gone from simply the market price of the extracted timber, to the summed 'value' of all the ecosystem services it provides. Although many ecosystem services are difficult to quantify, and many can certainly not be monetised, viewing nature through a natural capital lens helps us unveil the often-hidden benefits that we receive from nature, making it easier to communicate and reflect the value of nature within decision-making.

2. How natural capital can transform decision-making

In a world with finite resources, understanding nature's value is critical for achieving a balanced analysis of trade-offs between different uses or non-uses of natural resources. When considering decisions to either exploit, protect or enhance natural capital, decision-makers are continuously exploring which outcomes maximise societal welfare.

By incorporating the value of the full range of benefits that nature provides, taking a natural capital approach to decision-making provides a framework for simultaneously considering social, economic and ecological factors, and the trade-offs and synergies between them.

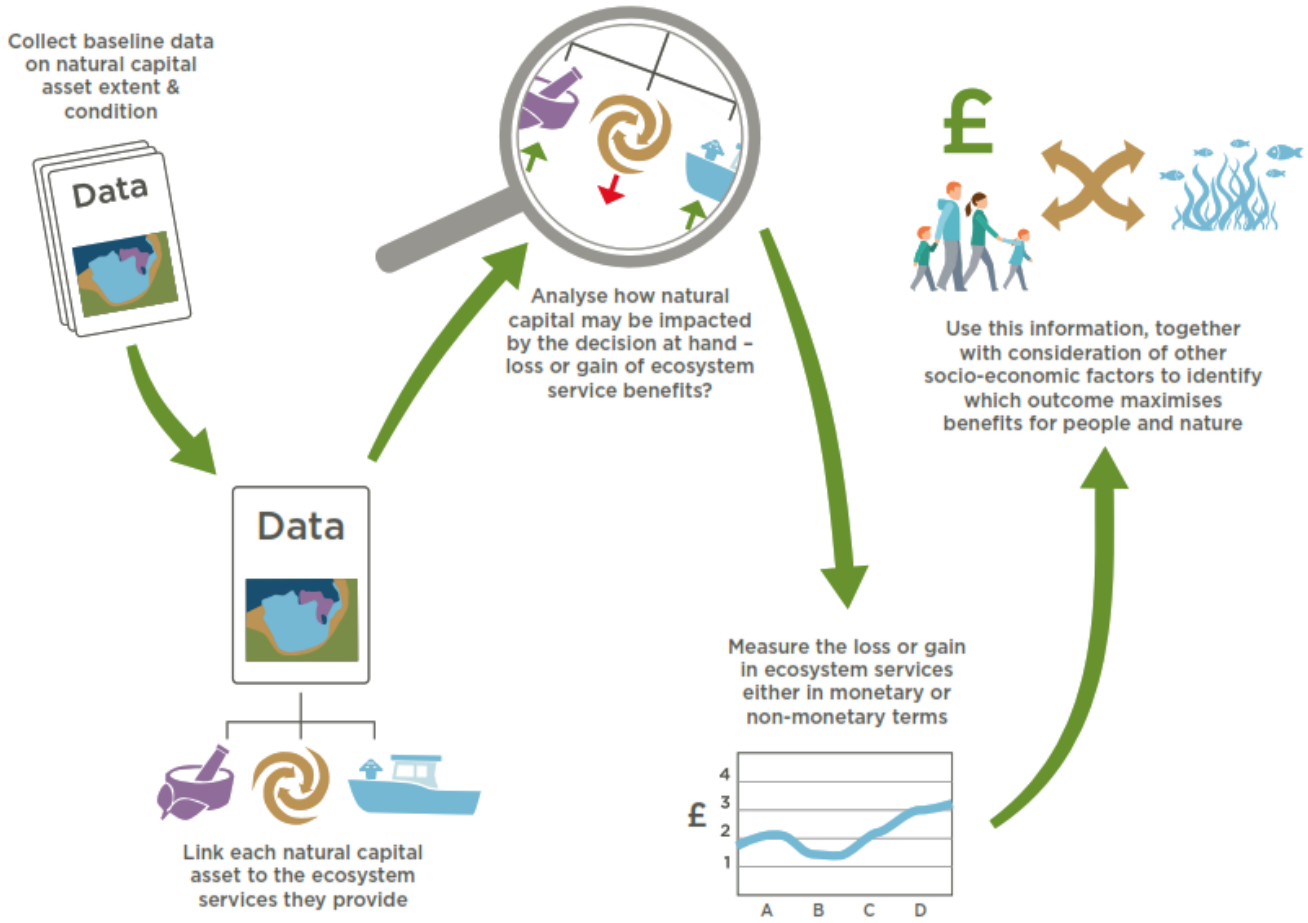


Figure 4: Stages of a Natural Capital Assessment
Original based on https://sweep.ac.uk/wp-content/uploads/2023/01/004-NCA-Final-report-2.pdf

3. Natural capital approaches using non-monetary valuation

As previously mentioned, natural capital approaches can aid decision-making without the need for providing monetary valuations. Such techniques include natural capital assessments, asset and risk registers and asset indexes.

3.1 Large-scale natural capital assessments

Examples of this approach in Scotland are the Orkney Oceans of Value natural capital assessment (Behrendt et al., 2021) and Scotland's Natural Capital Asset Index. Orkney's marine natural capital and ecosystem service assessment aimed to improve understanding of the ecosystem services Orkney's marine natural capital assets provide. Where data was available, the location, extent, and condition of a number of marine habitats and species was identified.

Then there was consideration of which services are most beneficial to the Orkney community and which assets are the most important for maintaining these. Furthermore, it also assessed the condition of each natural capital asset and whether it was being used/managed sustainably. Subsequently, this also helped inform which assets were most vulnerable to impacts of climate change as well as which are most valuable in fighting against climate change.

The collation of this information provided an overview of the ecosystem services provided as well as the effect of some pressures from activities on these services. In this particular case, the

assessment was characterised as providing a first stage assessment of ecosystem services, and to support further assessment at a finer scale for certain habitats. Conclusions drawn from the supporting data were deemed to be to broad scale for informing the marine planning process. However, with improved data and knowledge of the marine environment, natural capital assessments can help guide management of marine resources in a way that maximises benefits for the community and nature. By highlighting the dependency of local communities on the ecosystem services that the marine environment produces, the value of nature can be demonstrated without the need for monetary valuations.

3.2 Asset and Risk registers

There are other examples of large-scale assessments in the UK. Of particular importance is the North Devon pioneer work, in which a novel marine natural capital asset and risk register was developed (Rees et al., 2022). The inclusion of a risk register helped to clearly map which eco-system services were at greatest risk of loss. This provided additional direction as to where conservation efforts should be prioritised. By assigning a risk rating to each asset-service relationship, risk registers can help paint an overall picture of the state and vulnerabilities of the marine environment, and throughout the process can also uncover what underlying issues are impacting the area.

Given that both examples enable a better understanding of a region's marine natural capital, the benefits it provides and the risks of losing these benefits, marine natural capital assessments can be a particularly useful tool for guiding the development of regional or national marine plans.

In addition to serving as a useful tool within natural capital assessments, asset and risk registers have also been adapted and used for guiding management of marine resources, such as fisheries. A study in the Isles of Scilly developed a natural capital asset and risk register to inform the management of their fisheries. Possible future management scenarios were modelled, allowing analysis of trade-offs between social, economic and environmental factors by assessing how the level of risk of losing ecosystem services and benefits changed under each scenario.

A novel approach was also included that identified risks of loss to ecosystem service related to food provisioning by linking commercial fish species to the habitats they rely on throughout their life stages. Consequently, any future management scenario which included an expansion of destructive fishing practices over sensitive habitats translated into a future increased risk of loss of valuable provisioning services. Demonstrating the true cost of expanding destructive activities added great value in avoiding the prioritisation of short-term profits over the sustainability of the fishery (Ashely et al., 2020).

3.3 Scotland's Natural Capital Asset Index

Scotland's Natural Capital Asset Index (NCAI) is a composite indicator which tracks how the capacity of Scotland's natural capital to provide benefits to people changes over time. The NCAI is included as a measure within the National Performance Framework alongside other national performance metrics. This helps create a more holistic understanding of the nation's performance by demonstrating the trade-offs between exploitation of natural capital and losses in nature's capacity to provide essential benefits to society with other aspects necessary for a thriving society and economy.

The performance of the index is dictated by changes in either the quantity and/or quality of habitats. An enhancement in either extent or quality of habitat is translated into an increase in the habitat's ability to provide ecosystem services, and subsequently a higher NCAI value. The increment in the value of NCAI aims to reflect the relative contribution of the habitat to Scotland's wellbeing.

NCAI serves as an example of a natural capital tool which helps to incorporate the value of nature within decision-making without the need to provide monetary values. NCAI is currently composed mostly of Scotland's terrestrial ecosystems with only a handful of coastal habitats included. Further inclusion of marine and coastal habitats can contribute to identifying and therefore addressing declines in ecosystem services provided by coastal and marine ecosystems and enabling comparison in their performance over time.

4. Why monetary valuation can be useful

Part of the reason why the importance of nature has been overlooked, is the difficulty of finding a unit for expressing its value, which can be translated across different disciplines. Consequently, it has been very difficult for decision-makers to analyse the trade-offs between exploiting/impacting or conserving nature, often leading to outcomes that prioritise more easily measurable (financial) and short-term benefits. Assigning a monetary value is one way of making like-for-like comparisons of different use or non-use options.

However, advancements in environmental economics over the past few decades have significantly improved our ability to measure and quantify the monetary value of some ecosystem services. Expressing the value of ecosystem services in monetary terms helps incorporate the costs of exploiting nature (diminished ecosystem services) and the benefits of conserving it (enhanced ecosystem services) into decision-making frameworks.
This facilitates a more explicit, transparent and comparable assessment of trade-offs among various policy or development outcomes.

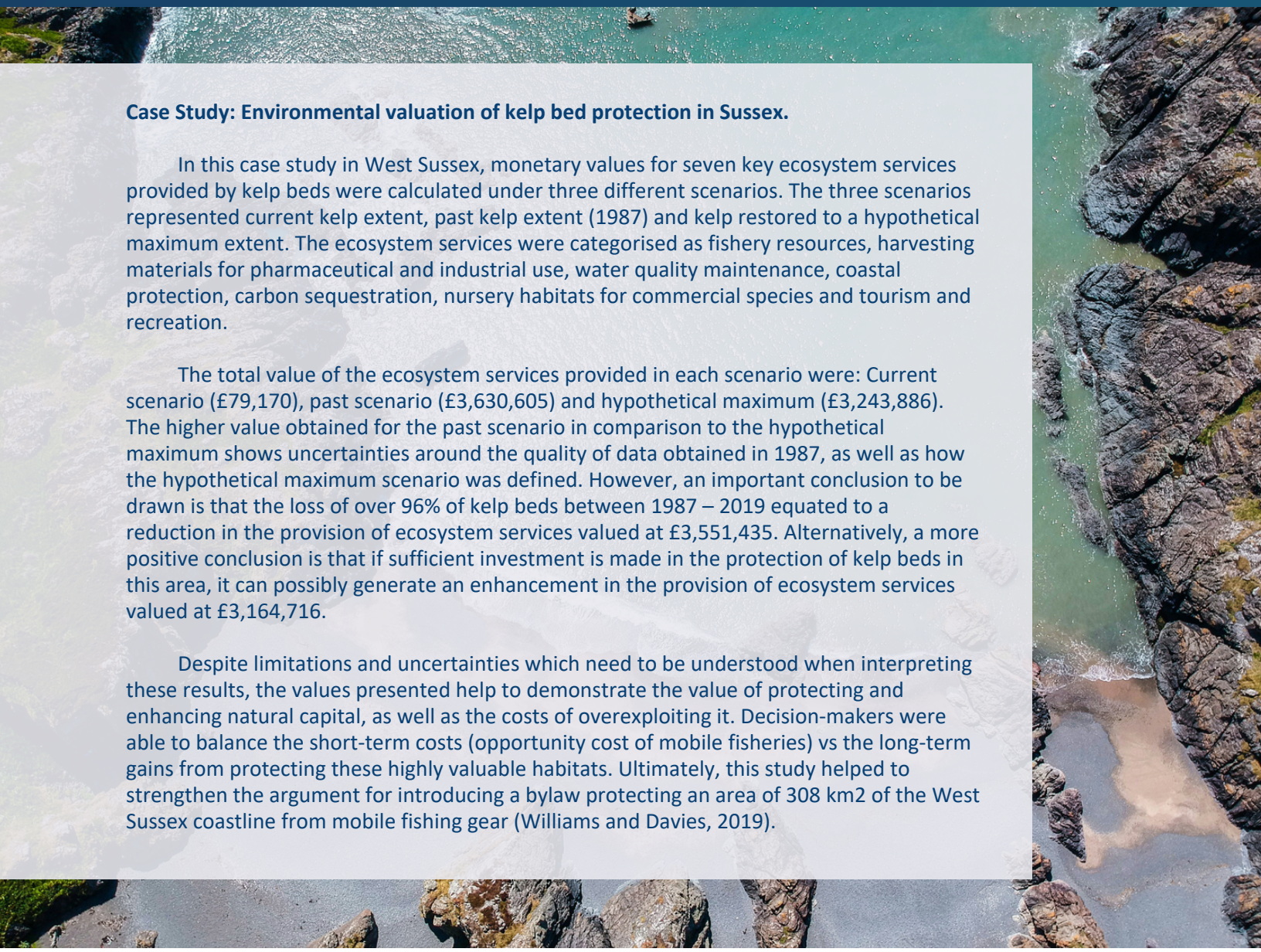
Overall, being able to communicate the value of natural capital assets in monetary terms is particularly useful for enabling environmental cost-benefit analysis and is an essential tool for facilitating investment in nature.

4.1 Monetary valuation is a key instrument to incentivising investment in nature

In the UK, and beyond, there is now a widespread acknowledgment that public finance alone will fall significantly short of the investment needed to restore nature at a scale that can help reverse the current nature and climate crisis. This means that there has never been more pressure or need for developing mechanisms that can facilitate private investment into nature conservation.

Nature markets, such as voluntary carbon markets, play a fundamental role in creating the necessary framework for enabling the private sector to invest or 'pay nature' for the services it provides. A useful analogy can be comparing paying nature a salary for its services, as you would with an accountant. Beyond the value an accountant provides as a person who may also be a father/ mother, friend, community member etc., a company is interested in hiring this accountant for the specific professional skills this person has. This service has a value x to the company, therefore this accountant is paid a salary for these specific services. Natural capital valuation allows nature to be viewed with a similar lens. If we can identify and value specific services nature is providing which have value to private corporations, this enables a mechanism for the private sector to 'pay nature' for its services. This 'payment' or investment ensures that nature is being protected or restored at a rate which guarantees the provision of these services into the future.

For instance, climate change is currently the largest threat to the global economy. Nature is capable of significantly reducing the risks of extreme climate change impacts, through both mitigation and adaptation services, therefore having an important value for both public and private sectors. Using ecosystem service valuation, we can identify the value of this particular service, and hence incentivise investment towards protecting and restoring the very supplier of these services: nature.



Case Study: Environmental valuation of kelp bed protection in Sussex.

In this case study in West Sussex, monetary values for seven key ecosystem services provided by kelp beds were calculated under three different scenarios. The three scenarios represented current kelp extent, past kelp extent (1987) and kelp restored to a hypothetical maximum extent. The ecosystem services were categorised as fishery resources, harvesting materials for pharmaceutical and industrial use, water quality maintenance, coastal protection, carbon sequestration, nursery habitats for commercial species and tourism and recreation.

The total value of the ecosystem services provided in each scenario were: Current scenario (£79,170), past scenario (£3,630,605) and hypothetical maximum (£3,243,886). The higher value obtained for the past scenario in comparison to the hypothetical maximum shows uncertainties around the quality of data obtained in 1987, as well as how the hypothetical maximum scenario was defined. However, an important conclusion to be drawn is that the loss of over 96% of kelp beds between 1987 – 2019 equated to a reduction in the provision of ecosystem services valued at £3,551,435. Alternatively, a more positive conclusion is that if sufficient investment is made in the protection of kelp beds in this area, it can possibly generate an enhancement in the provision of ecosystem services valued at £3,164,716.

Despite limitations and uncertainties which need to be understood when interpreting these results, the values presented help to demonstrate the value of protecting and enhancing natural capital, as well as the costs of overexploiting it. Decision-makers were able to balance the short-term costs (opportunity cost of mobile fisheries) vs the long-term gains from protecting these highly valuable habitats. Ultimately, this study helped to strengthen the argument for introducing a bylaw protecting an area of 308 km2 of the West Sussex coastline from mobile fishing gear (Williams and Davies, 2019).

To date, the scope of nature markets has been mainly limited to voluntary carbon markets, selling carbon credits generated by terrestrial ecosystems. However, the same principles can be applied to marine ecosystems and other markets, such as biodiversity credits or nutrient credits. The first step to developing such markets, is to establish the correct incentive mechanisms. There are two main avenues for incentivising investment in nature. The first is through the introduction of policies which create the need to offset impacts on nature, and the second is created by making investment in nature attractive, not only as a means for improving corporate responsibility or image, but because it can also provide tangible economic returns. We can see an example of the first avenue, through the Defra biodiversity metric, and biodiversity credits as a last resort option where on- or off-site options to deliver biodiversity net gain.

Further development of high-integrity nature markets, informed by Scottish Governments[2] interim principles for developing socially fair markets for natural capital, will also create multiple avenues for investors to monetise their return on investment. For example, imagine an investor looking to finance a native oyster restoration project. We know that oyster beds provide a wide range of ecosystem services, from water filtration, to habitat provision, coastal protection and more.

[2] https://www.gov.scot/news/promoting-responsible-investment-in-scotlands-natural-assets/

With the right evidence and data, the monetary value of the services that a restored bed provides can be calculated. The development of markets for biodiversity and nutrient credits would then allow the investor to sell the ecosystem services that the oyster bed provides, generating tangible financial return on investment.

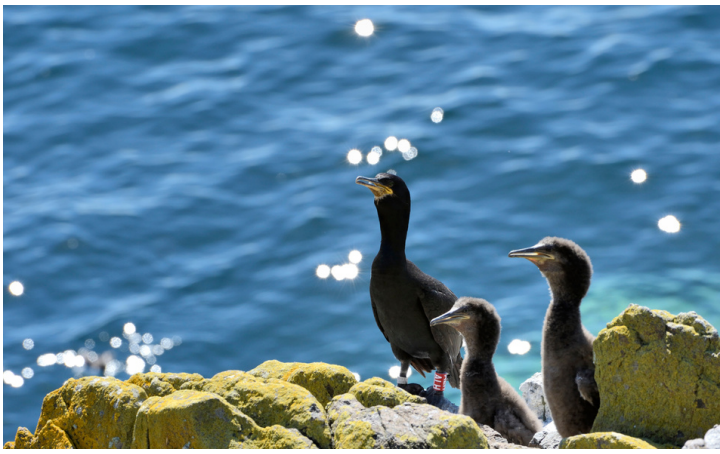
If properly regulated, community-driven and backed by solid scientific evidence, these mechanisms for investing in nature can help unlock significant financing for nature protection and restoration, generating multiple social, economic and environmental benefits including: halting biodiversity loss, improving water quality, enhancing coastal protection, amongst many others.

4.2 Risks of prioritising monetary valuation of natural assets

Despite the merits of environmental valuation enabling investment in nature, there is an inherent risk of nature restoration being biased towards prioritising habitats that provide ecosystem services which are better understood and easier to quantify.

When considering investing in nature, incorporating social and cultural values into decision-making is crucial for ensuring that protection and restoration of nature is being inclusive of the full spectrum of benefits that can be achieved by local communities for the benefit for society. However, given that social and cultural values are often hard to identify and even harder to quantify, makes them particularly susceptible to being undermined.

There have already been examples, such as the planting of forest monocrops for carbon sequestration, which have been shaped by the ability to maximise return on investment, rather than optimising benefits for people and the environment. Taking a natural capital approach that considers the full range of benefits that nature provides, including social and cultural values, can contribute to avoiding these risks. In order to identify cultural services and incorporate social and cultural values within natural capital assessments, engaging with stakeholders throughout the process is a must. Integrating methods such as



participatory mapping can help to identify and quantify cultural ecosystem services and helps improve understanding of how the benefits provided by nature are distributed amongst communities (Burdon et al., 2022). However, there is much work to be done to progress our ability of identifying and measuring social and cultural benefits, and most importantly how to represent these values in decision-making frameworks alongside other quantifiable benefits.

4.3 Monetary valuation leading to suboptimal outcomes

An important risk to manage, when designing and implementing natural capital and monetary valuation in decision-making, comes with attempts to value what may be regarded as 'irreplaceable habitats' (i.e. those that are highly sensitive to damage/loss and would take a very long time to recover, such as maerl beds).

A misguided valuation framework may guide harmful activities to go ahead as long as they are compensated by creating habitats of equal 'value' elsewhere. Rather than rejecting natural capital concepts as a whole, we should manage these risks, and acknowledge that environmental valuation is a tool that may not be fit-for-purpose for all decisions. This scenario exemplifies that introducing further considerations, such as defining irreplaceable habitats, may be needed to prevent negative outcomes.

There is already existing and ongoing work in defining irreplaceable marine habitats, and will be a key piece of work in relation to marine developments licensing and nature protection policy (Tillin et al.,2022). The given scenario only represents one of the many reasons why natural capital valuation should not be used as a standalone piece of evidence for decision-making, instead it should be considered as a tool within a more holistic approach.

5. Opportunities to incorporate natural capital approaches

The Blue Economy Vision for Scotland sets our six outcomes which it aims to achieve. Core to delivering this, is the move away from the prevailing neoclassical economic approach, to 'shared stewardship' of our marine and coastal environments resources. Natural capital approaches are a valuable tool in furthering evidence-informed decision making. There are various routes and mechanisms to implementing natural capital approaches, and some of these are highlighted below.

MARINE PLANNING

Taking a natural capital approach to marine planning could be done through natural capital assessments which would provide evidence for policy development process. This would link the condition of habitats and species in a given area, with the provision of ecosystem services, providing a basis with which to guide where and how certain activities take place. Using natural capital assessments to assist weighing-up different trade-off and options could help enable determination of spatially specific policy or for example which activities are best places in certain locations. Natural capital approaches can also identify the dependencies of different marine activities on marine natural capital such as fishing, aquaculture, renewable energy etc., Allowing for the identification of where investment in natural capital is needed to ensure that such sectors can continue operating in the future. Adopting this approach for Plan monitoring and evaluation can also provide valuable evidence for assessing Plan implementation and the effectiveness of policy.

MARINE PROTECTED AREA

Natural capital asset and risk registers can be used to identify which natural capital assets are at greatest risk of deterioration and degradation and also which human impacts are contributing most to the increased risk of loss of ecosystem service benefit. Ultimately, these tools can identify areas where investment in marine protection or restoration is needed in order to safeguard provision of ecosystem service benefits into the future.

STRATEGIC ENVIRONMENTAL ASSESSMENTS (SEA)

Adopting a natural capital approach for such assessments can support a systematic and structured analysis of baseline environmental information. The approach also supports use of the five capitals (human, social, natural, financial and manufactured) approach, which is relevant to the features which are assessed as part of the SEA process.

Further Reading

Key concepts surrounding natural capital and natural capital accounting:

- Enabling a Natural Capital Approach (Defra) - https://www.gov.uk/guidance/enabling-a-natural-capital-approach-enca
- Natural Capital Committee (various publications) - https://www.gov.uk/government/groups/natural-capital-committee
- Nature's Values: From Intrinsic to Instrumental: A review of values and valuation methodologies in the context of ecosystem services and natural capital (NESC). https://www.eesc.europa.eu/ceslink/sites/default/files/document-file-uploads/research_series_paper_10_cbullock_naturesvalue.pdf
- Capitals Coalition Natural Capital Protocol. https://capitalscoalition.org/capitals-approach/natural-capital-protocol/?fwp_filter_tabs=guide_supplement
- Local Natural Capital Accounting: does it deliver useful management information? - A case study of Dartmoor and Exmoor National Parks (Sweep). https://sweep.ac.uk/wp-content/uploads/2023/01/004-NCA-Final-report-2.pdf

Applications of marine natural capital approaches:

- SWEEP Impact Summary - https://sweep.ac.uk/wp-content/uploads/2023/05/002-Phase-2-Impact-Summary.pdf
- Marine Pioneer: Information on the pioneering new approaches (including natural capital) to the management of the marine environment - https://www.gov.uk/government/publications/marine-pioneer
- Pilot Highly Protected Marine Areas: de minimis assessment (Defra). https://www.gov.uk/government/publications/highly-protected-marine-areas/pilot-highly-protected-marine-areas-de-minimis-assessment#:~:text=HPMAs%20allow%20marine%20ecosystems%20to,social%20benefit%20of%20the%20policy

Nature markets:

- Governing high-integrity ecosystem markets (Reed et al., 2023). https://eartharxiv.org/repository/view/5247/

References

Ashley, M., Rees, S., Mullier, T., Reed, B., Cartwright, A., Holmes, L. & Sheehan, E. 2020. Isles of Scilly Natural Capital Asset and Risk Register to inform Management of Isles of Scilly Fisheries Resources. A report by research staff the Marine Institute at the University of Plymouth.

Behrendt, K., Tillin, H., Langmead, O., Taylor, F., Parker, P., Bradshaw, K., Harding, N., Want, A., Mieszkowska, N., Lewis-Reddy, L., Taylor, P., Bendell, A. and McFarland, T. (2021) Natural Capital Assessment of the Orkney Marine Region Area. Report for Scottish Wildlife Trust.

Burdon, D., Potts, T., Barnard, S., Boyes, S.J. and Lannin, A., 2022. Linking natural capital, benefits and beneficiaries: The role of participatory mapping and logic chains for community engagement. Environmental Science & Policy, 134, pp.85-99.

Costanza, R., De Groot, R., Braat, L., Kubiszewski, I., Fioramonti, L., Sutton, P., Farber, S. & Grasso, M. 2017. Twenty years of ecosystem services: How far have we come and how far do we still need to go? *Ecosystem Services*, 28, 1-16.

Dasgupta, P., 2021. The economics of biodiversity: the Dasgupta review. HM Treasury.

Natural Capital Committee 2017. How to do it: a natural capital workbook. 31pp.

Natural Capital Committee 2014. State of Natural Capital: Restoring Our Natural Assets. London: Natural Capital Committee.

Rees, S. E., Ashley, M., Cameron, A., Mullier, T., Ingle, C., Oates, J., Lannin, A., Hooper, T. & Attrill, M.J. 2022. A marine natural capital asset and risk register-Towards securing the benefits from marine systems and linked ecosystem services. Journal of Applied Ecology, 59, 1098-1109.

Tillin, H.M., Watson, A., Tyler-Walters, H., Mieszkowska, N. and Hiscock, K. 2022. Defining Marine Irreplaceable Habitats: Literature review. NECR474. Natural England.

Williams, C. and Davies, W., 2019. Valuing the ecosystem service benefits of kelp bed recovery off West Sussex. *Report for Sussex IFCA. London: New Economics Foundation*

About this Policy Brief

This Policy Brief is part of a series aiming to inform policymakers on current knowledge and practice in areas of marine research relevant to decision making. This Policy Brief can also be found online, see QR Code below. This publication was commissioned by the Marine Alliance for Science & Technology for Scotland (MASTS) and produced by NatureScot.

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