VALMER

TOPIC PAPER 1

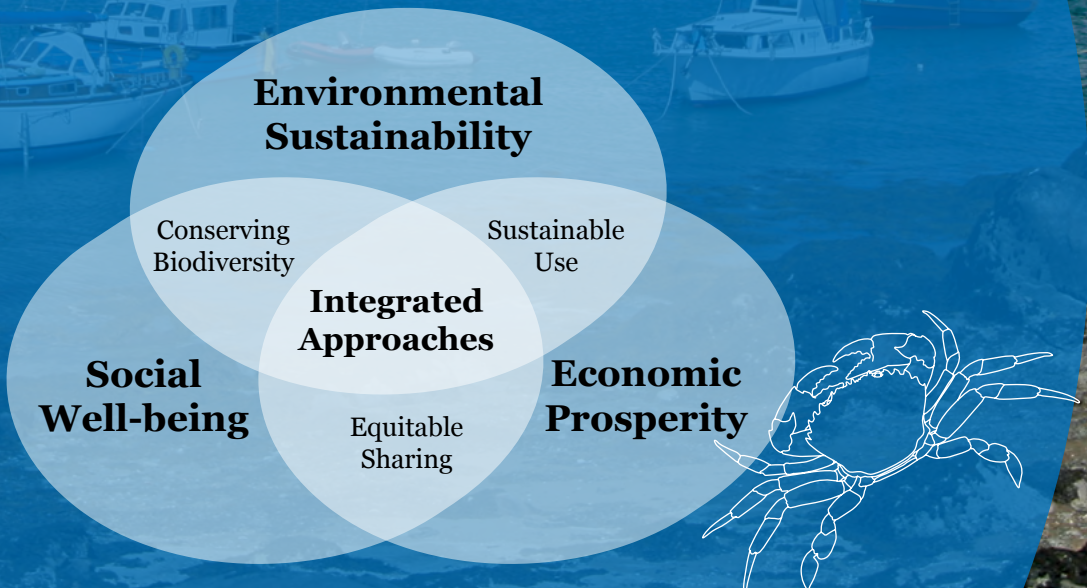
Marine ecosystem services

Introduction an Ecosystems Approach

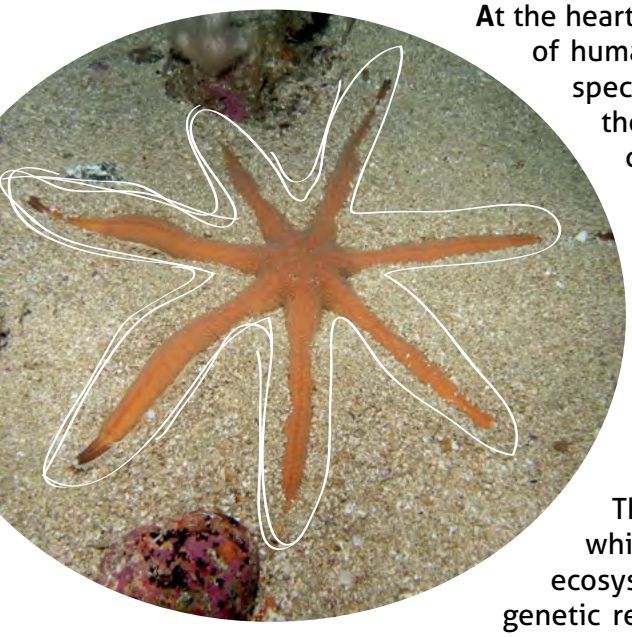
Over the past couple of decades we have begun to think differently about our relationship with the planet we live on. Increasingly nature is viewed not as something to be exploited or controlled but as something we need to work with; humans not as separate or above nature but as an integral part of the earth's environment and ecological systems.

These new ways of thinking have slowly begun to filter through into new ways of managing and governing the natural environment which emphasise integrated, holistic approaches that are able to combine ecological, economic and social considerations and recognise the value of local as well as scientific knowledge. These new ways of thinking about, and doing, environmental management are often referred to as the ***Ecosystems Approach***.

Conceptualisation of the Ecosystems Approach



Ecosystem services



At the heart of the Ecosystems Approach is the idea of the interdependence of human-environment relations. Our own health and well-being as a species and as individuals is intimately connected to the health of the natural environment. Many of us may now live in towns and cities and feel distanced from nature but we are all nevertheless dependant to a significant extent on the services and benefits that nature provides.

These benefits we get from nature, or ***ecosystem services,*** are multiple and varied. A milestone in the development of the Ecosystem Services (ES) concept was the publication of the Millennium Ecosystem Assessment, which had been commissioned by the United Nations.

This elaborated a classification framework for ecosystem services, which has since been widely used. The framework classified ecosystem services into four types: **provisioning** services (food, genetic resources and other raw materials), **regulating** services (such as climate regulation and water purification) and **cultural** services (which include recreation, education and cultural heritage). The fourth type, **supporting** services, contains those services such as nutrient cycling and primary production, upon which the production of all other ecosystem services depend.

The four types of services proposed by the Millennium Ecosystem Assessment

Provisioning Services

Products obtained from ecosystems

- Food
- Fresh water
- Fuel wood
- Fibre
- Biochemicals
- Genetic resources

Regulating Services

Benefits obtained from regulation of ecosystem process

- Climate regulation
- Disease regulation
- Water regulation
- Water purification
- Pollination

Cultural Services

Nonmaterial benefits obtained from ecosystems

- Spiritual and religious
- Recreation and ecotourism
- Aesthetic
- Inspirational
- Educational
- Sense of place
- Cultural heritage

Supporting Services

Services necessary for the production of all other ecosystem services

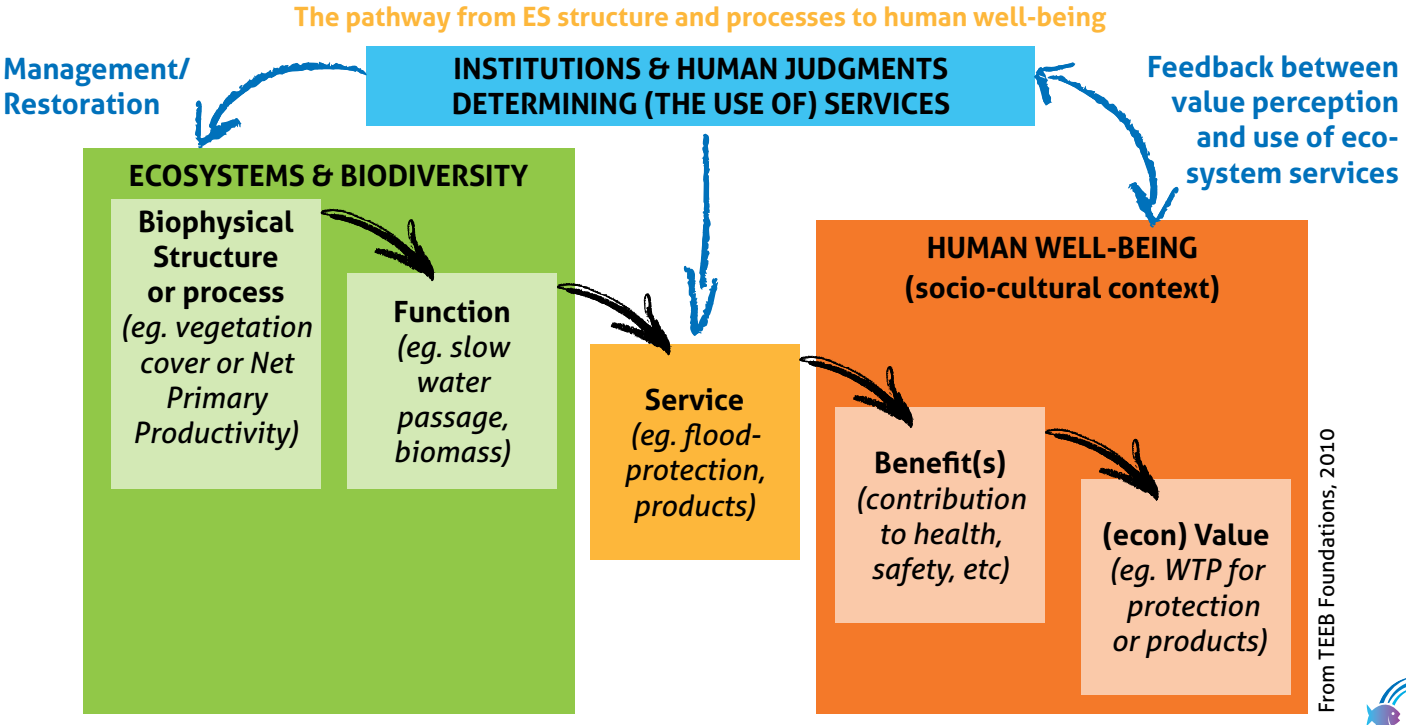
- Soil formation
- Nutrient cycling
- Primary production

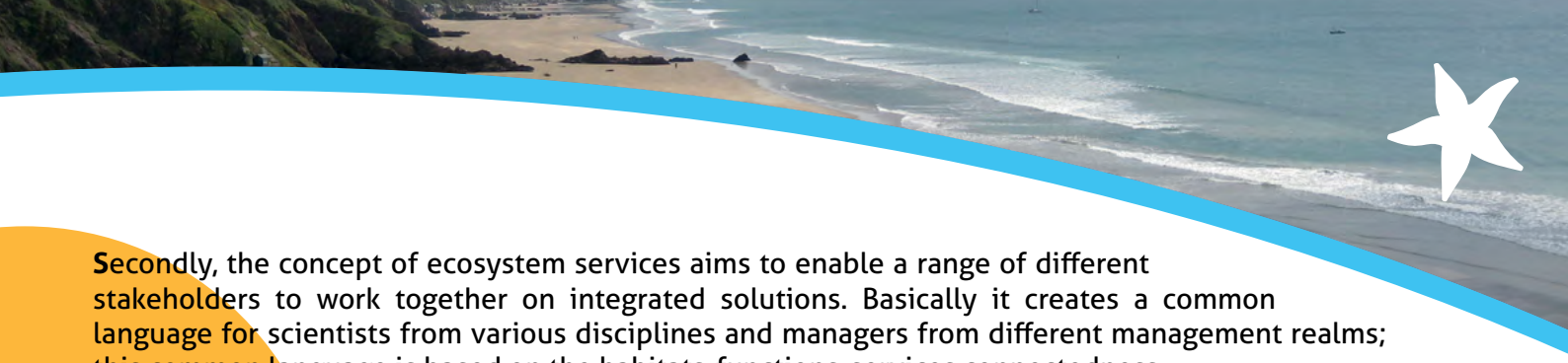
Marine ecosystem services

The marine environment covers two thirds of our planet and we are increasingly aware of the scale and scope of the services and benefits that this precious natural resource provides: from fish stocks, fossil fuels and aggregates; through carbon capture, waste disposal, and nutrient recycling; to providing the setting for cultural and spiritual fulfilment and an ever increasing variety of leisure and recreational activities. We depend on the marine environment therefore in a multitude of ways, which is why it is so important that we use and manage this resource in a sustainable and equitable way.

Ecosystem services assessment and valuation

One of the reasons we have often failed to manage the natural environment sustainably is because the benefits we receive from it are not always as obvious as the benefits we get from economic development. It is also very difficult to make decisions about how to use our natural resources when the environmental, social and economic changes that would result from particular actions are all measured in different ways. The ecosystem services approach attempts to address these problems in a number of innovative ways. Firstly, it aims to assess and communicate the connection between human well-being and ecosystems by linking the benefits that we obtain back to the environmental processes that provide them. This relationship is schematically represented in the diagram below:





Secondly, the concept of ecosystem services aims to enable a range of different stakeholders to work together on integrated solutions. Basically it creates a common language for scientists from various disciplines and managers from different management realms; this common language is based on the habitats-functions-services connectedness .
One step further, the valuation of ES is now considered as potentially helpful for improving ecosystem management. It is about showing how important, how valuable, the environment is to our health and well-being.

Most obviously value can be measured in monetary terms. Putting a price on the benefits we get from nature can help when making trade-offs between ecosystems and economic development. For example, such as weighing up whether the economic benefits that result from the construction of a ferry port in terms of job creation and increased tourism are worth more than the economic costs of reduced ecosystem service provision where the accompanying loss of coastal margins may lead to reduced bird habitats, natural flood defence capacity, carbon sequestration, and loss of the waste decomposition function that saltmarshes provide.

Putting an economic value on the services nature provides has the potential to revolutionise how we think about and manage our environment but it may not always be possible to fully express the contribution nature makes to our well-being in purely monetary terms. Measuring in pounds and pence many of the more intangible benefits we get from the nature like aesthetic pleasure or a sense of place is difficult and cannot capture the full contribution and meaning that environments and landscapes make to our lives.

Ecosystem services – an evolving concept

The monetary valuation of ecosystem services is therefore not perfect.
More work is needed to determine the value of all the different benefits we receive from nature, but also to make sure that ES assessment will provide metrics and indicators which would be meaningful and helpful for stakeholders. Crucially, too, if the ecosystem services concept is to lead to more sustainable management of natural resources we need to work out how the concept can make the difficult transition from academic model to practical management tool. The VALMER project aims to make a significant contribution to the development of the ecosystems services concept by addressing the problem of valuation and examining how improved marine ecosystem services assessment can support effective marine management and planning.

As the demands and pressures we exert on the environment increase, it becomes ever more critical that we find a way of working sustainably within the limits of nature. The ecosystems approach and the concept of ecosystem services, and ecosystem services valuation provide not only a new way of thinking about our relationship with nature but also potentially provide a new set of practical tools for the effective management of the earth's finite resources.

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