



Deep-sea biodiversity and ecosystems



**A scoping report
on their socio-economy, management and governance**



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HERMES (Hotspot Ecosystems Research on the Margins of European Seas) is an interdisciplinary research programme involving 50 leading research organisations and business partners across Europe. Its aim is to understand better the biodiversity, structure, function and dynamics of ecosystems along Europe's deep-ocean margin, in order that appropriate and sustainable management strategies can be developed based on scientific knowledge. HERMES is supported by the European Commission's Framework Six Programme, contract no. GOCE-CT-2005-511234. For more information, please visit www.eu-hermes.net.

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Foreword

"For too long, the world acted as if the oceans were somehow a realm apart – as areas owned by none, free for all, with little need for care or management... If at one time what happened on and beneath the seas was 'out of sight, out of mind', that can no longer be the case."

Kofi Annan, UN Secretary General, Mauritius, 2005

Billions of people live at, or in close proximity to, the world's coastlines. Many depend on the narrow strip of shallow waters for their food, income and livelihoods, and it is here that most efforts to conserve and protect marine ecosystems are concentrated, including the sustainable management and use of the resources they provide. We tend to forget that coastal waters less than 200 metres deep represent only 5 per cent of the world's oceans, and that their health and productivity, indeed all life on Earth, is closely linked to the remaining 95 per cent of the oceans.

THE DEEP SEA

Remote, hidden and inaccessible, we rely on deep-sea scientists using cutting-edge technology to discover the secrets of this last frontier on Earth. Although only a tiny amount (0.0001 per cent) of the deep seafloor has so far been subject to biological investigation, the results are remarkable: the bottom of the deep sea is not flat – it has canyons, trenches and (seal)mounts that dwarf their terrestrial counterparts. The deep sea is not a uniform environment with stable conditions and very little environmental change, but can be highly dynamic through space and time. The deep sea is not an inhospitable, lifeless desert but teems with an amazing array of organisms of all sizes and types. Indeed, it is believed to have the highest biodiversity on Earth.

One of the remaining misconceptions about this environment – that the deep oceans are too remote and too vast to be affected by human activities – is also rapidly being dispelled. Destroyed or damaged deep-water habitats and ecosystems, depleted fish stocks, and the emerging/predicted effects of climate change and rising greenhouse gas concentrations on the temperature, currents and chemistry of the oceans are proof to the contrary. Further pressures and impacts on the deep sea are looming: with traditional natural resources on land and in coastal waters becoming ever more

depleted and regulated, commercial operations such as fishing, mining, and oil and gas exploration are increasingly taking place in deeper waters.

In the light of these alarming findings and trends, various international fora, including the UN General Assembly, are starting to consider the need for measures to safeguard vulnerable deep-sea ecosystems, especially in areas beyond national jurisdiction, and to ensure their sustainable use. Amongst others, three key questions need to be answered:

- What are key deep-sea ecosystems, and what is their role and value?
- Are existing governance and management systems appropriate to take effective action?
- What are the areas for which we need further data and information?

In order to begin seeking answers, and to establish a direct link between the deep-sea science community and policy and decision makers, UNEP became a partner in the interdisciplinary, deep-sea research project HERMES in October 2006. This report is the product of this fruitful partnership and demonstrates that the findings and discoveries from the deep waters of the European continental shelf can easily be transferred and are applicable to similar deep-sea areas around the world. It also highlights the benefits, and shortcomings, of looking from a socio-economic perspective at deep-sea ecosystems and the goods and services they provide.

The intention of this report is to raise awareness of the deep-sea and the impacts and pressures this unique environment faces from human activities. We are confident that this report provides substantial input to the ongoing discussions about vulnerable deep- and high-sea ecosystems and biodiversity, so that action will be taken to preserve the oldest and largest biome on Earth – before it is too late.

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