

Developing a toolkit for economic instruments to facilitate marine climate change adaptation

Growing evidence suggests that the benefits of early actions on climate change adaptation generally outweigh the costs of adaptation¹. Although the economic aspects of climate change adaptation have gained considerable attention in recent years, our knowledge about the roles of economic instruments in adaptation strategies for the marine environment is still very limited.

There has been little discussion of how economic instruments, institutions and policies can best be designed to incentivise efficient and timely adaptation responses. To facilitate such discussion, the Marine Adaptation Network has developed a web-based toolkit, aiming to provide decision-makers, researchers and interested members of the public with an overview of the ways in which economic and/or market-based instruments and policy can be used for marine climate change adaptation.



directly and indirectly contribute to building social resilience of marine resource users and ecological resilience of fish stocks to climate change (note that social resilience refers to the ability of groups or communities to cope with external stress and disturbance, while ecological resilience refers to the capacity of a system to maintain itself in the face of disturbance²).

The Toolkit

The Markets Toolkit outlines a number of potential adaptation options for the marine environment under the following four broad categories:

1. fisheries management;
2. conservation management;
3. institutional arrangement and
4. adaptation research.

1. Fisheries management

Economic instruments have been used extensively in fisheries management to facilitate the compliance and/or efficient implementation of fisheries regulations. These instruments

following economic instruments commonly used in fisheries management: Individual Transferable Quota (ITQ); Territorial Use Rights Fisheries (TURFs); buyback schemes; and input control measures based on achieving Maximum Economic Yield (MEY). It also contains examples of popular instruments for fisheries risk management, including Ecosystem-Based Fisheries Management (EBFM), adaptive management, and the harvest strategy framework.

2. Conservation management

Economic instruments are also commonly used in the conservation context (conservation management) and in broader natural resource and/or environmental management. For example, so-called market-based instruments (MBIs) are popular tools to provide incentives for resource users to reduce environmental damage. MBIs are designed to internalise the negative environmental externalities, that are not incurred by

producers or users of common pool resources, by creating markets for non-marketable goods and services (such as clean air). Examples of MBIs include charges (penalties), subsidies (rewards), deposit/refund systems, licenses, permits, and cap and trade systems. MBIs differ from regulatory approaches where authorities set regulations and enforce them through command and control, although implementing an MBI often requires some sort of regulation.



need for adaptation investment, and help achieving increased resilience at regional and national levels.

Adaptation research

The economics of adaptation to climate change is a new area of research. Although the scientific community and decision makers are increasingly aware of the need for research on economic aspects of climate

change adaptation, there has been little discussion on the roles of economic tools in climate change adaptation research. The analysis of existing policy and economic tools in the marine environment, as developed in our tool kit, is an important first step, but we anticipate that these tools will be expanded further as our research continues. For example, decision theory and the concept of decision making under uncertainty has a long history in economic research, yet its practical application has been largely limited to the business world. There is further scope to investigate the applicability of the tools currently being used in the business world to marine climate change adaptation.

3. Institutional arrangement

In the marine environment, co-management or co-operative management - where a range of stakeholders share responsibility for decision-making and management of marine resources - can promote building of resilience of local communities to climate change³. Similarly, public-private partnerships are increasingly recognised as an effective mechanism to facilitate arriving at a consensus about the

References

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3. Tompkins EL, Adger NW (2004) Does adaptive management of natural resources enhance resilience to climate change? *Ecology and Society* vol 9, iss 2, 10. <<http://www.uea.ac.uk/env/people/adgerwn/TompkinsAdgerES.pdf>>

View the Markets Toolkit at: <http://www.nccarf.edu.au/marine/>

About the Marine Adaptation Network

The Adaptation Research Network for Marine Biodiversity and Resources (aka. the Marine Adaptation Network) is hosted by the University of Tasmania and convened by Assoc Prof Neil Holbrook. The Network is supported by 14 partner institutions nationwide. It comprises a holistic framework of interconnecting marine themes that cross-cuts climate change risk, marine biodiversity and resources, socio-economics and policy. This interdisciplinary network aims to build adaptive capacity and adaptive response strategies for the effective management of marine biodiversity and living marine resources under climate change. For more information on the Marine Adaptation Network, or to subscribe to become a member of the Network, please visit <www.nccarf.edu.au/marine/>.



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