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Economics of Prioritising Environmental Research

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Background

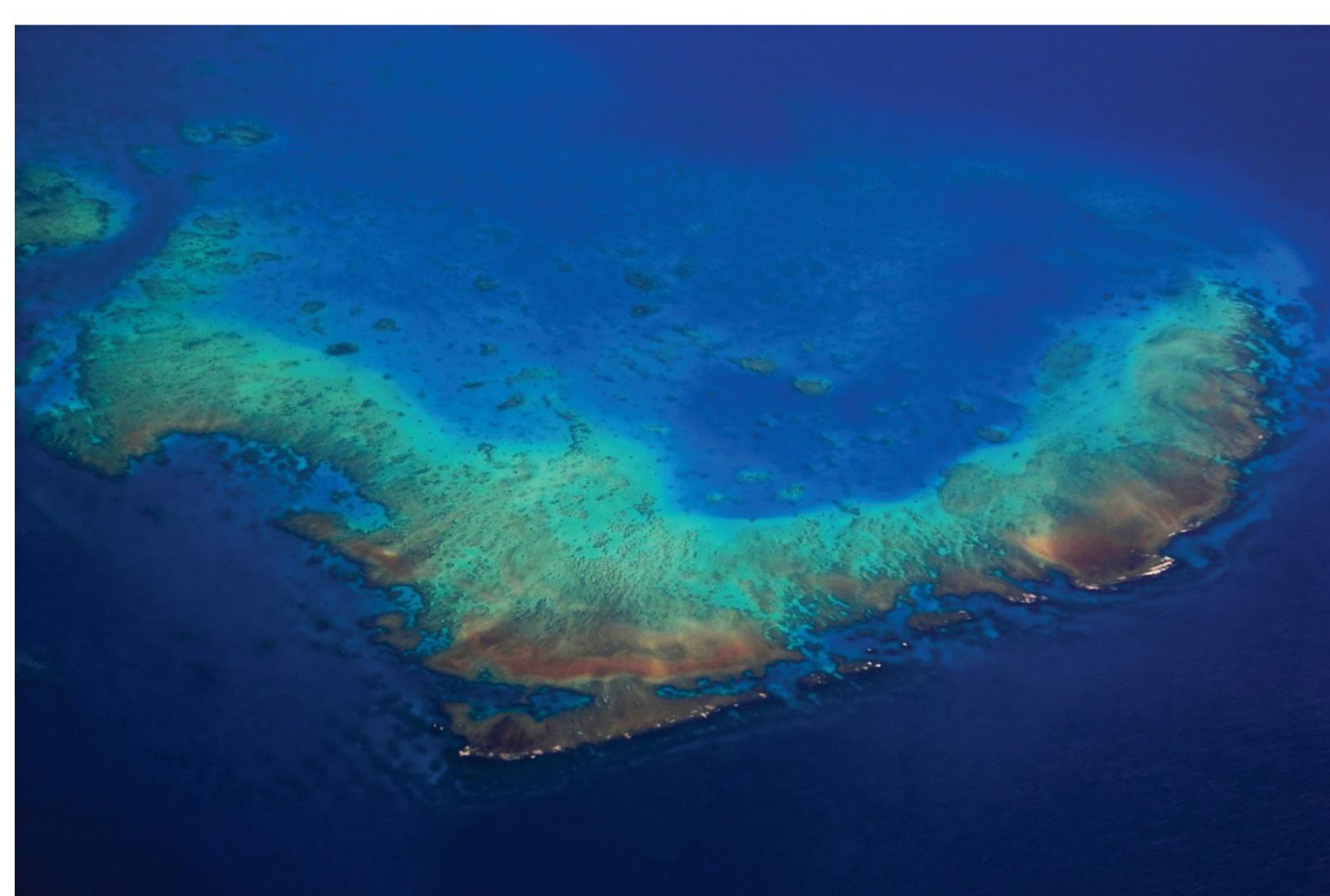
There has been significant investment in programs/projects to enhance environmental quality. However, available funding to support research activities is limited. Prioritisation is required for efficient and effective allocation of research funds, but the literature reveals that *ad hoc* approaches are often used for ex ante prioritisation of environmental research.

Research objectives

- Review the literature on research prioritisation
- Characterise the problem in economic terms
- Propose a rigorous framework for empirical application

Challenges

- Complex biophysical systems
- Varied scale of research
- Multiple objectives (economic, social, compatibility?)
- Often lack of obvious economic “decision variables”
- Externalities (positive and negative)
- Benefits often have non-market values



Prioritisation Approaches

From agriculture, environmental and medical/health sciences literature:

- Economic surplus measures (shift supply/demand curves, welfare measures)
- Expert opinion (e.g. Delphi techniques)
- Gap analysis, from review of literature
- Value of information methods, based on Bayesian decision analysis



Types of Environmental Research

- Discovery (e.g. identify new relationships, threats, opportunities)
- Knowledge (e.g. links between human actions and environmental consequences)
- Decision support
- Technology development
- Human behaviour, motivations, etc.

May require different models/analyses.

Value of Information

- Based on Bayesian decision theory
- Research assumed to resolve uncertainty for relevant parameters at time of decision making
- Extensive use in medical/health research fields
- Holds promise for use where environmental research “decision variables” easily identified



Concluding Comments

- Research prioritisation has received significant attention in agriculture, environment, medicine, ...
- Most environmental studies use *ad hoc* approaches, with no economics
- Given heterogeneity of environmental research, may need a range of analytical approaches
- For some research types, Bayesian approach to value of information appears promising