

Exploring interactions between social, ecological & economic impact assessments in marine ecosystems

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Theme: Concepts and Methods

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- Governments are shifting their approaches in natural resource management (NRM) towards greater emphasis on balancing social, ecological & economic aspects
- The objective is to provide outcomes for society in all areas by including communities' social and economic values as well the environment

But....

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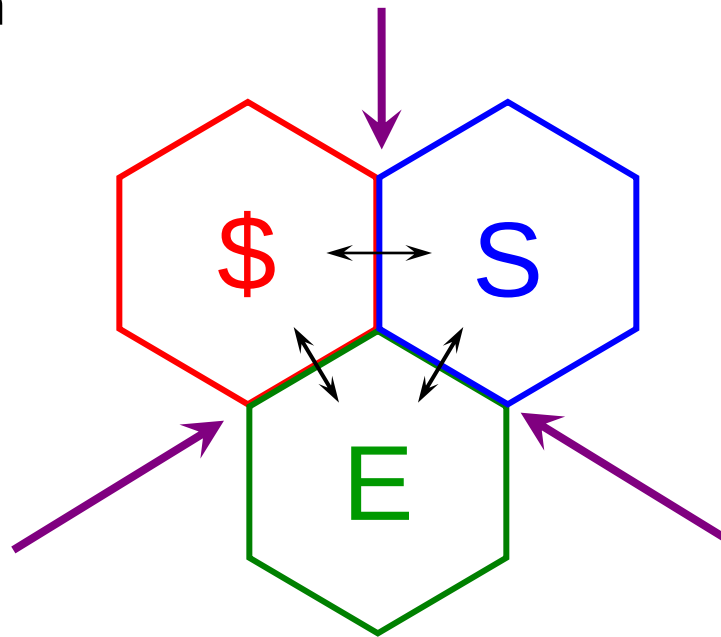
- Achieving such a balanced system is a complex problem & methods for doing so are still developing
- Researchers & managers need to respond to this challenge by developing robust & scientifically defensible integration methods to:
 - a) Inform governments & communities about what a “balanced” NRM approach looks like in practice
 - b) Provide adequate advice for policy making & management strategies

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- Integrating social, ecological & economic systems is particularly challenging in marine coastal ecosystems (e.g. Jentoft & Chuenpagdee, 2009; Redpath *et al.*, 2013)
- Several reviews of socio-economic ecological modelling have pointed to the benefits of integrated approaches including identifying effects not present in separated models (e.g. Cook *et al.* 2009); Watzold *et al.*, 2006)
- Some approaches assess potential impacts of management plans in separate social, ecological & economic assessments and then integrate the results together at the end (e.g. Brouwer & van Ek, 2004)

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- An alternative approach is to examine how the three areas interact with each other & explicitly explore the interfaces between them

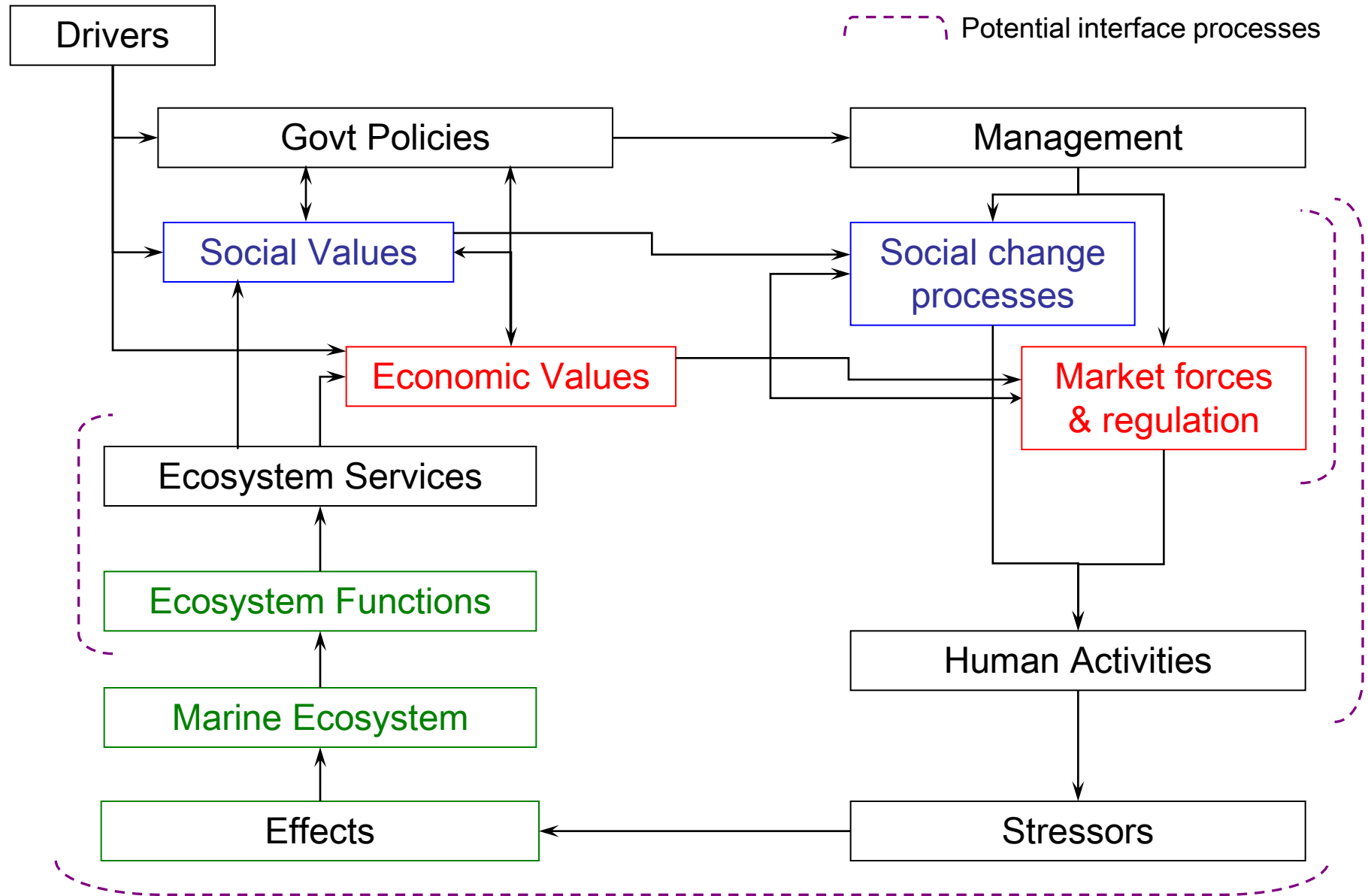


\$ - economic, S – social, E - ecological

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- An interdisciplinary team from the Sydney Institute of Marine Science and Fisheries NSW is currently starting research that explores how these interact and what are the important mechanisms that influence these interactions
- First step is constructing a conceptual model of how the three systems could interrelate
- Then identifying social, ecological and economic processes that operate at the interfaces between them

An Integrated Social-Ecological-Economic Conceptual Model



Pilot study using a seagrass bed in Sydney Harbour

(with Sydney Institute of Marine Science & Fisheries NSW)

- There is pressure on the area to allow anchoring by recreational boats but this conflicts with other recreational uses of the area and management objectives to sustain marine biodiversity
- Anchoring can cause damage to seagrass & affect water quality which has flow-on effects to marine biodiversity it supports
- Changes to marine ecosystem can affect social values of communities who use the area for non-boating purposes

Pilot study using a seagrass bed in Sydney Harbour

Some Key Questions the study is seeking to address:

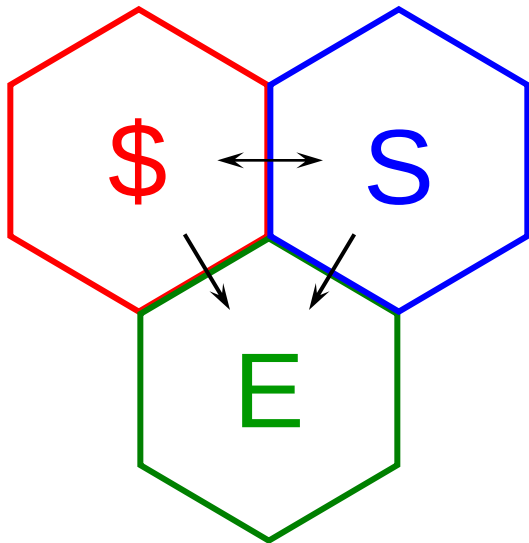
- a) What are the social & economic values of the seagrass ecosystem to communities in the area?
- b) What ecosystem functions support & maintain these values?
- c) What social processes affect how people use the ecosystem?
- d) What market & economic forces affect how people use the ecosystem?
- e) What stressors on the ecosystem are produced as a result of how people use the ecosystem?

Working towards integrated social, ecological & economic risk assessments

- Eventually we want to work towards a more integrated way of doing risk assessments that inform policy-makers & management strategies of what a “balanced” approach to NRM in coastal marine ecosystems looks like

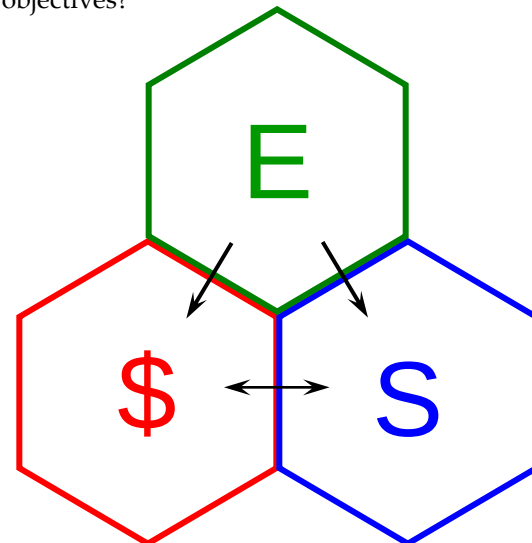
Ecological Risk Assessment

- A. What is the risk to the sustainability of marine biodiversity in pursuing social and economic objectives?



Social & Economic Risk Assessments

- B. What is the risk to the social and economic sustainability of communities connected to the marine ecosystem in pursuing ecological objectives?



References

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<http://www.dpi.nsw.gov.au/fisheries>

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