



EERHPOLICYBRIEF

"Yes we can ..." : Dealing with complexity when valuing environmental systems

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Acknowledging people's understanding is important when interpreting the values they hold.

To improve the decision-maker's confidence in results from choice-modelling experiments, and generate values for environmental policy and management scenarios, a greater understanding is needed of how people process information about complex systems. A distinction must be made between people's understanding of system processes and the values they assign to the system as a whole.

The natural environment is a complex system: it responds to change in countless ways. Scientists can document the outcomes of change at different levels and describe change in terms of different system processes. Scientists can also separate a system into its constituent elements, on the understanding that those individual elements are integrated and contribute to the system as a whole.

Representation of multifaceted changes in the environment lies at the heart of choice modelling. Participants in choice-modelling experiments are presented with different policy or management options, and asked to choose between them. Each option is depicted in terms of the consequences for different elements of the environmental system.

For example, a researcher might want to understand people's wetland rehabilitation option preferences. The options could be presented in terms of the type of vegetation reintroduced, the features used to attract native animals and the period of time that water remains in the wetland.

The choice-modelling technique assumes people are able to place a value on individual elements of an environmental system, and are therefore willing to trade losses in some for enough gains in others. However, people may think about these choices in a different way.

What if people have a vision of an acceptable environment in general terms, rather than a vision for each of the individual elements that make up the system? That would suggest, when given a set of specific changes, people will try to construct an image of what those changes mean for the environment as a whole. They then decide how they value that change.

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Thinking about participants making their choices in this way suggests a two-step process in the choice-modelling experiment. First, an individual reconstructs the implications of what is being proposed at the system level; second, the same individual places a value on this perceived change. The first step shows knowledge and understanding of system processes; the second represents their preferences.

Variations between individuals that many choice-modelling experiments observe may not be caused by differences in values. Rather, it may be that individuals have different knowledge sets and understanding of how specific actions may change the environment.

For example, some people may place a lower weight on the importance of a species because they do not understand its role in an environmental system. Improved information and education could therefore contribute to people's understanding of how the system works, while not changing their values for the system.

These considerations also have implications for the role of experts and the contribution of expert knowledge to a policy setting. Scientists are likely to have the best technical understanding of how an environmental system operates and how management actions can bring about change to that system; however, that does not mean their values align with those of the population as a whole. Technical understanding of how best to implement change needs to be combined with the broader values associated with that change.

Further reading

Gibson, F. and Burton, M. (2009). Choice Experiments: Identifying Preferences or Production Functions? Environmental Economics Research Hub Working Paper No. 40.

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