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## QUICK GUIDE SERIES: Navigating risk and uncertainty in marine management

# 1 Perceptions of risk and uncertainty influence marine management decisions

This guide is the first in a series of quick guides based on Sustainable Seas National Science Challenge research. The guide explains why perceptions of risk and uncertainty matter and summarises the main research findings.

In Aotearoa New Zealand, we have obligations under Te Tiriti o Waitangi to recognise the unique knowledge and kaitiaki (guardian) role Māori have to care for and protect the environment. In a rapidly changing and complex world, understanding all our different perceptions of risk and uncertainty is vital when trying to agree about decisions that affect the marine environment and the people connected to it.

For example, in Aotearoa New Zealand, mangroves and their ecosystems have been hotly contested. Central to the debate are competing, often antagonistic, perceptions of the perceived risks posed by the presence of mangroves, their removal, or efforts to restore them. This has led to different understandings, with significant knowledge gaps about the risks associated with managing mangroves.

» Read *A socio-ecological appraisal of perceived risks associated with mangrove (Mānawa) management in Aotearoa New Zealand* for more on mangrove management in Aotearoa New Zealand.

Some people view mangroves as an invasive 'coastal weed' that impacts property values, harbour access, and other more 'valuable' coastal plant communities. Others consider mangroves to be valuable natural ecosystems that need protecting. Complicated by gaps in scientific knowledge about the ecological role of mangroves in Aotearoa New Zealand and the impacts on estuary ecosystems of removing them, these contrasting positions and perceptions have played out in the media, local government processes and within communities.

## Why do we argue about risk?

The different ways that people understand and react to risk and uncertainty in the marine environment can cause conflict and differences of opinion. This conflict can limit the possibilities and solutions available for legal and consent processes, resource use changes, and wider resource management decisions.

Our research addresses the question of 'why do we always argue about risk?' and looks at the factors that influence people's perception of risk and uncertainty. Our findings help show underlying reasons for conflict and potential solutions to resolving it.



## Worldviews, education, and experience influence the way people perceive risk and uncertainty

Different ways of understanding the world underpin perceptions of risk and uncertainty. Three important factors influence the way that people understand and expect to experience the impact of a change on something they value (for example on a place, activity, or relationship), or a change to a desired future outcome.

These factors are:

- Beliefs about how the world does or should work (their worldview)
- Previous learning or training (their discipline)
- Experiences and context (their positionality)

Understanding these positions and perceptions can help with a more place-based, holistic approach to risk, which can support ecosystem-based marine management goals. The main lessons from the research into perceptions of risk and uncertainty are set out below.

### Māori knowledge is reshaping risk thinking in Aotearoa New Zealand

Mātauranga Māori is a critical and central element in Aotearoa New Zealand. A Te Ao Māori approach prioritises collective values and mana-enhancing processes, for future generations. A Te Ao Māori centred approach has much to offer risk and uncertainty thinking in natural resource management and aligns with the current environmental policy directions and aspirations of ecosystem-based marine management.

### Decision-makers need to understand invisible shapers of risk perceptions

Our perceptions of risk and uncertainty are shaped by worldview, discipline, and positionality. Each factor is often invisible but has a profound effect on how individuals and groups understand, perceive, and experience risk and how they respond to uncertainty. Making these differences visible in any decision-making is a priority.

### Knowing the makeup of worldviews can improve decision-making

Understanding the differences and similarities amongst worldviews can help with any resetting of the world to work in new ways and improve decision-making processes. The three worldviews explored in this research are the Dominant Social Paradigm, the New Environmental Paradigm and Te Ao Māori worldviews.

## Tools can help people develop practices to grapple with risk and riskiness

To carry out ecosystem-based marine management and honour Te Tiriti partnerships, decision-makers need to think about risk differently and shift to practices that can support this. Quick guide 4 in this series has helpful tools to step through 'risky' decision-making processes.

### Different practices can create different futures

Different practices are needed for a future where a Te Ao Māori worldview has influence, Te Tiriti partnerships are honoured, and ecosystem-based management is implemented. We need to consider the long-term trajectory of incremental decision-making. In two contested consenting processes, the research showed evidence of co-learning among applicants, submitters, and expert witnesses and over successive consents, the tenor of discussions began to shift from adversarial to collaborative.

### Consenting processes are strategic decision-making opportunities

Consenting processes play a major role in shifting towards sustainable resource management outcomes. Unexpected uncertainties can pressure processes to 'know risk' and to 'work out differences', from context to context, and over time. Systematically documenting worldview influences in all consenting processes is fundamental to understanding and improving resource management practices.

### A holistic lens on risk could reimagine resource management policy

Our research showed that a new way of thinking about risk and uncertainty is urgently needed. The risk diagnostic tools in Quick guide 4 can support better collective thinking and collaborative processes.

### What's next?

Find out more about different worldviews that influence people's perceptions of risk and uncertainty in [Quick guide 2: Worldviews influence people's perceptions of risk and uncertainty](#).



» Read the full research document behind these quick guides on the Sustainable Seas website



[sustainableseaschallenge.co.nz](https://sustainableseaschallenge.co.nz)

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