

# Impact Assessment, Uncertainty and Decision-Making: The New Zealand Context

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## Introduction

The sustainable management of the environment is heavily dependent on our ability to foresee implications of our actions (Morgan, 1998). Impact assessment (IA) is a key tool used to inform decision makers of the likely environmental impacts of major proposals on the environment and local communities.

Environmental and resource management decision-making is often complex and challenging. Although decision-makers are inherently more comfortable making decisions based on certain, uncontroversial, unambiguous evidence, this is rarely the case (van Bree and van der Sluijs, 2014). This is due to the fact that foreseeing the implications of proposed actions is difficult - both natural and social systems are very complex and chaotic and often we have an incomplete and imperfect understanding them. Therefore uncertainty is often an inherent and central issue in resource management decision-making (Mitchell, 2002; Balasubramaniam and Voulvoulis, 2005).

It is important that, instead of being thought of as a problem best ignored, uncertainty is recognised and that decision makers determine how to function under the challenge of uncertainty (Mitchell, 2002). Despite this, it is acknowledged that the recognition and treatment of uncertainty in the IA and subsequent decision-making process is not well handled and in many cases, documents, and procedures, is not recognised, managed or taken into consideration (Reckhow, 1994; Geneletti *et al.*, 2003; Lawrence, 2005).

## Management of uncertainty

In order for uncertainty to be acknowledged and managed in the decision making process, the decision-makers must first be made aware of these uncertainties and their implications (Tenney *et al.*, 2006). Following this, it is the decision-makers themselves who chose to acknowledge and accept the presence of uncertainty

Three main ways in which decision-makers who acknowledge uncertainty tend to manage it in resource management problems: reduce uncertainty by gaining more information, or they can accept the presence of uncertainty and use the precautionary principle or implement an adaptive management approach

While the RMA 1991 does not directly refer to the need to consider uncertainty in resource consent decision-making, it is often argued that the Act is inherently precautionary. Despite not being mentioned in the Act, the use of adaptive management has been accepted under the Resource Management Act 1991 (Christensen, and Jennings, 2013; Warnock and Galloway-Baker, 2015).

## Research aims and objectives

The aim of this research is to understand the role of uncertainty, particularly the effects information, in resource consent decision-making. More specifically, it seeks to understand whether decision-makers recognise the presence of uncertainty in resource consent applications and what they perceive to be the main cause/source of uncertainty in resource consent applications. In addition it also aims to characterise and evaluate decision-maker's responses and management strategies to uncertainty

## Methods

An online questionnaire has been developed that aims to understand decision-maker perceptions and responses to uncertainty. The questionnaire has been sent to approximately 400 decision-makers from all over New Zealand who were identified as possible participants in this study.

Although up to 90% of resource consent applications are considered by a local authority officer, consenting authorities are able to delegate their functions and powers to a commissioner who will then carry out decision-making duties on its behalf. Commissioners are used often when there is a need for specialist expertise or when there is a conflict of interest. They may either be elected councillors or community board members (internal commissioners) or non-council members (independent commissioners). The individuals who were sent the questionnaire were identified by consenting authorities as experienced decision makers who were frequently used as internal or independent commissioners.



**References** ■ Balasubramaniam, A. & Voulvoulis, N. 2005. The Appropriateness of Multicriteria Analysis in Environmental Decision-Making Problems. *Environmental technology*, 26 (9): 951-962. ■ Christensen, S. & Jennings, W. 2013. Legal Issues Relating to Environmental Risk Management. In: Minerals, N. Z. P. a. (ed.) *Advantage NZ: Geotechnical Petroleum Forum* ■ Geneletti, D., Beinat, E., Chung, C.F., Fabbri, A.G. & Scholten, H.J. 2003. Accounting for Uncertainty Factors in Biodiversity Impact Assessment: Lessons from a Case Study. *Environmental Impact Assessment Review*, 23 (4): 471-487. ■ Lawrence, D.P. 2005. Environmental Impact Assessment: Practical Solutions to Recurrent Problems, Part 1. *Environmental Quality Management*, 14 (4): 39-62. ■ Magallanes, C. & Severinsen, G. 2015. A Turning of the Tide? Tracking Precaution in New Zealand's Environmental Legislation. *Resource Management Journal*, 1-4. ■ Mitchell, B. 2002. *Resource & Environmental Management*, Essex UK, Pearson Education Ltd. ■ Morgan, R.K. 1998. *Environmental Impact Assessment: A Methodological Approach*, Springer Science & Business Media. ■ Reckhow, K.H. 1994. Importance of Scientific Uncertainty in Decision Making. *Environmental Management*, 18 (2): 161-166. ■ Van Bree, L. & Van Der Sluijs, J. 2014. Background on Uncertainty Assessment Supporting Climate Adaptation Decision-Making. 17-40 ■ Warnock, C. & Baker-Galloway, M. 2015. *Focus on Resource Management Law*, LexisNexis NZ Ltd.