

1. ACERA Project No.: 06 / 10

2. Project Title: Methods for adding robustness to multi-criteria decision analysis

3. Theme: Elicitation

4. Rationale: Multi-criteria decision analysis (MCDA) is used to resolve values and preferences in circumstances in which there are competing demands on natural resources. In these analyses, some weights are more likely to reflect social preferences than others. The values and weights are inherently uncertain. Dealing with uncertainty in MCDA trees can be difficult and uncertainty is rarely treated in MCDA in a comprehensive way. A method for dealing with uncertainty in MCDA applications is required. Information gap theory and other uncertainty analysis techniques may be applied to explore the question of how wrong the estimates of values and weights could be, before a decision would change. The analysis would identify sensitive elements in the analysis and prescribe where effort could be devoted to better understanding a system to ensure a more reliable decision.

5. Outputs: The project will develop a report reviewing existing uncertainty analysis techniques relevant for MCDA, matching them with general types of applications and providing advice on how to implement the uncertainty analysis techniques for biosecurity applications. It will draw on published literature and the results of the working group. The working group will trial alternative approaches using case studies relevant to biosecurity applications. The project will also produce a paper for publication in a scholarly journal on uncertainty techniques for MCDA.

6. Time frame: Commencing: *January 2007*, Finishing: *December 2007*

7. Project Leader(s):

Title	Name	Organisation
Prof	Helen Regan	San Diego State University
Prof	Yakov Ben-Haim	Technion, Haifa
Prof	Jean Cross	UNSW

8. Resources

	06/07	07/08	08/09
<i>Salaries and stipends</i>			
<i>Travel</i>	40,000		
<i>Operating and capital</i>			
Project Total	\$40,000		

9. End Users: AQIS, BA, PIAPH, AusBioSec, AHA, PHA