

UNSW Australia  
**ELEC4122**

**Activity Week 7**  
**Preparation**

Analysis of questions about sustainability often uses the so-called three pillars: environmental, social & economic well-being. In New Zealand, planners must consider a fourth element: cultural well-being. This ensures recognition of their Indigenous cultures. In this exercise we will use this fourth dimension, too <sup>1</sup>.

**Instructions**

Think about the four criterion listed: social, cultural, environmental, economic. Which of these categories of outcomes is most important to you? Rank them.

Open the \*.xlsx file. Now you must enter numbers into each of the YELLOW SPACES. To do this, look at the criteria at the side and top of the boxes. Decide how much more (or less) important Criterion A (left) is than Criterion B (top) to you. Use the following scale.

2 much more important; 1 a bit more important; 0 same importance;  
-1 a bit less important; -2 much less important.

Yes, we could have put more numbers on the scale, but we wanted to keep it simple. For example, if environmental is the same as social, choose 0, but if environmental is more important, choose 1 or 2, depending on how much more important.

The grey column will be auto-filled with 4 numbers that indicate—only indicate—how important these criteria are to you when making decisions about implementing systems that will affect people, ecosystems, etc. Each of these numbers corresponds to the consideration at the end of the row.

Copy them down here and bring this to class in week 7. Your values:

environmental:

cultural:

social:

economic:

I think it will be interesting to find the average of how the class ranks these considerations, so please complete the 6 question quiz which is set up simply to record your relative rankings. Thanks.

---

<sup>1</sup>Because this exercise was inspired by a discussion of the Mauri-ometer at the 2013 AAEE Conference. You can explore the Mauri-ometer at [www.mauriometer.com](http://www.mauriometer.com).

**Background**

This analysis uses the *analytic hierarchy process*, which is a tool from the mathematics of decision theory. It is useful when there is a question which has multiple dimensions (categories) of independent considerations to optimise. It provides an estimate of the relative importance of each category to the person who uses it. When multiple people are involved in the decision, it provides them with a tool to describe and identify their individual perspectives and hence differences. It won't solve the differences.

Don't worry about the formulae used here. There are, in fact, various different ways of weighting them but they all give similar (not equal) answers. The numbers are indicative not exact weights of your thoughts. For example, if a different scale were used, then they would be different though still in the same rank order.