

Takutai Kāpiti.

Multiple Criteria Decision Analysis

What is the MCDA process?

Multiple Criteria Decision Analysis (MCDA) is a decision-making process used to aide in assessing the pathways and options that came about during the Dynamic Adaptive Planning Pathways (DAPP) process.

The adaptation options differ in how they benefit different criteria. An option that may be beneficial in one criterion may be detrimental for another criterion, so the MCDA tool helps by providing a way to form the list of options in order of preference, from most preferred to least preferred.

What are the steps in the process?

1. **Decision Criteria:** Develop a set of criteria to score potential adaptation options.
2. **Weighting:** Assign weights for each of the criterion to reflect their relative importance to the adaptation area.
3. **Weighted Scoring:** Combine the weights and scores for each pathway to derive an overall value.

Step 1: Decision Criteria

What are the different decision criteria used to score each adaption pathway option?

- **Community, social and economic wellbeing values:** How the pathway options will impact the community and social cohesion.
- **Ecology:** How the pathway options will impact the habitat for indigenous or other species in the area.
- **Landscape:** How the pathway options will impact the natural character and landscape of the area.
- **Public access and recreation:** How the pathway options will impact the public's ability to access the coast and carry out recreational activities in the area.
- **Te ao Māori values:** How the pathway options will impact the relationship of Māori and their culture and traditions, along with maintaining access and enabling the carrying out of customary activities.
- **Effectively manages the risks of coastal erosion:** How effectively the pathway options will manage this risk of erosion. (Technical criterion)
- **Effectively manages the risks of coastal inundation:** How effectively the pathway options will manage this risk of inundation. (Technical criterion).
- **Regulatory consenting and policy risk:** How viable each pathway option is in consideration to consenting and policy processes. (Technical criterion).

Step 2: Weighting

Some of these criteria seem more important than others.

Are they all considered equal or weighted differently? Who decides?

Certain criteria are weighted as more important than others, so the scores given to each pathway on those criteria will be boosted as being more favourable.

Before the scoring process for each pathway begins, CAP decides on the weighting of each criterion to reflect its importance in comparison to the others specific to the adaptation area in focus. The weighting is reflective of which criterion the CAP, given feedback from the community, consider either 'critical', 'important', or 'merely relevant' in deciding which actions are put forward as a recommendation for implementation to Council.

The criteria are all weighted by CAP on a scale from 1 to 3 (1 = Important, 2 = Very important, and 3 = Critical), and help reflect that while all the criteria are important to consider they may not always be equally important.

Step 3: Scoring Pathways

How does the scoring work?

During the MCDA scoring process each pathway is given a scoring between 1 and 5 for each management unit within the adaptation area. The higher the score the better the option is. But the pathways are not just given one overall score, they are scored against how beneficial each pathway is for each of the decision criterion.

The scores that have been given to each pathway are then adjusted according to the weighting assigned to each criterion as done in Step 2 of the MCDA process.

How does CAP know which pathways are best for each of these criterion?

CAP is supported by the Technical Advisory Group (TAG) which include a group of subject matter experts in each of these areas who advise CAP on how each of the criteria will be negatively or positively impacted by the pathways. TAG provided pre-scoring commentary for CAP to consider.

The technical criteria are scored by TAG, and mana whenua score the te ao Māori values criterion, and CAP score the remaining criteria. The CAP can choose different scores based on the technical advice, their own knowledge, and local understanding. The CAP also reflects on the community's values and objectives for each adaptation area when scoring the pathways.

Where is the economic assessment criteria?

There is no cost-based decision criteria included in the MCDA assessment. This allows for the non-monetary elements of different short-listed potential pathways to be assessed separately without financial bias, prior to a separate economic analysis being undertaken of the short-listed pathway. This two-step process is considered important as it ensures that potential pathways can be thoroughly tested in terms of the coastal hazard management objectives without cost factors dominating the MCDA evaluation.

