

Co-Benefits & Tradeoffs Assessment Matrix

Multi criteria analysis (MCA) is a widely used approach to structure decision-making in a consistent and transparent manner, which allows for the incorporation of diverse criteria together and consideration of trade-offs¹. Our subcommittee can use this approach to consider qualitative factors alongside quantitative data, and effectively guide decisions in a transparent manner. This enables the public to engage at a more detailed and constructive way and will allow policy makers to see how our decisions and recommendations were informed. Also, our sub-committee will have a more structured and consistent way to evaluate options, especially as we divvy up strategy development by work plan task, making for a more cohesive review process at the full subcommittee level.

In summary, the multi-criteria assessment tool which we propose to use allows our decision-making process to:

- Incorporate diverse kinds of criteria together that should be considered into decision-making on behalf of the State of Vermont and Vermonters
- Consider intangible and hard to measure aspects alongside known and quantifiable impacts
- Support communication within our committee conversations about how we are making decisions and
- Provide transparency to the public about our process and recommendations

The Co-benefits and Tradeoffs Assessment Matrix below is the tool we will use for this approach. Decision-making criteria are listed in the rows. Columns 3 and 4 are designed to capture both our qualitative and quantitative assessments. This information will be used to inform an assignment of directionality for each criterion in Column 5, in the form of a +1 for positive impact, 0 for neutral impact, and -1 for negative impact.

Each criterion will be assigned a weight, based on the result of a deliberative process with input from all of our committee members (and ideally, with support from CBI), and that will be entered into Column 6. An overall score will be given to each program, strategy or initiative we evaluate with this tool by multiplying the directionality (Column 5) by weighting (Column 6), and then taking a sum of all.

The weight assigned to each criterion is a very important part of this tool and will influence the overall scores and resulting recommendations. Our suggestion is that facilitated process draws input from every committee member on their perspectives, then some discussion may ensue, and finally a survey will draw votes from each members as to the weight that should be assigned to each criteria. The results of the survey would provide data to determine the final weighting, which we can then use to prioritize our recommended strategies. The “total assessment score” will be added to the larger Strategy Prioritization Framework spreadsheet to be used by the full subcommittee for final prioritization and recommendation to the Climate Council.

¹ Langemeyer, J., Gómez-Baggethun, E., Haase, D., Scheuer, S., & Elmqvist, T. (2016). Bridging the gap between ecosystem service assessments and land-use planning through Multi-Criteria Decision Analysis (MCDA). *Environmental Science & Policy*, 62, 45-56.

Dendoncker, N., Keune, H., Jacobs, S., & Gómez-Baggethun, E. (2013). Inclusive ecosystem services valuation. In *Ecosystem Services* (pp. 3-12). Elsevier.

Co-Benefits & Tradeoffs Assessment Matrix

| Strategy: Net gain wetland policy | | | | | | |
|---|--|---------------------|----------------------|----------------------------|------------------------|--------------------|
| Criteria | Sub-Criteria | Qualitative Impacts | Quantitative Measure | Directionality (-1, 0, +1) | Weighting (multiplier) | Direction x Weight |
| Climate Resilience | | | | | | |
| | Warmer temperatures overall & summer heat stress | | | | | |
| | Increased temperature variability, phenological disruptions & frost damage | | | | | |
| | Precipitation increases overall | | | | | |
| | Increase in extreme precipitation events and associated flood damage | | | | | |
| | Severe wind and storm hazards | | | | | |
| | Increased incidence of drought | | | | | |
| | Increasing pest, disease and weed pressure | | | | | |
| Environment | | | | | | |
| | Water Quality | | | | | |
| | Air Quality | | | | | |
| | Biodiversity | | | | | |
| | Soil Health | | | | | |
| Cultural capital/ Cultural ecosystem service | | | | | | |
| | Identity | | | | | |
| | Sense of place | | | | | |
| | Spiritual | | | | | |
| | Aesthetic | | | | | |
| | Education & Knowledge Systems | | | | | |
| Equity | | | | | | |
| | Uses community engagement | | | | | |
| | Actively anti-racist | | | | | |
| | Serves/targets rural communities | | | | | |

Commented [ACW1]: Solicit input on this from Judy!
 These sub-criteria are drawn from listening to the event hosted by the Just Transitions subcommittee

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| | | | | | | |
|--|--|--|--|--|--|--|
| | Serves/targets disinvested communities | | | | | |
| | Serves/targets BIPOC communities | | | | | |
| | Cultural humility | | | | | |
| Community Cohesion | | | | | | |
| Social Capital | | | | | | |
| Human Capital | | | | | | |
| Public Health | | | | | | |
| Food Security | | | | | | |
| Sustainable Outdoor Recreation Economy | | | | | | |
| Sustainable Rural Working Land Economy | | | | | | |
| Built Infrastructure | | | | | | |
| Total Assessment Score | | | | | | |

Commented [LO2]: Judy – you mentioned social and community cohesion, but I’m not sure how to capture your thoughts best, so please add it where you think it fits best.

Notes on developing subcriteria:

Equity:

- uses community engagement
- actively anti-racist
- serves/targets rural communities
- serves/targets BIPOC communities

Climate Resilience:

1) If we break climate resilience down by **climate impacts** the list in our criteria doc would look like this:

Direct climate impacts in the Northeastern US:

- Warmer temperatures overall
- Increased temperature variability
- Precipitation increases overall
- Increase in extreme precipitation events

Commented [ACW3]: Lauren, Abbie, David and I think the first climate resilience framework, the one focused on climate impacts, will be the most straightforward for our group process. For the asset-based framework, we would need to achieve some shared definitions among the group. And we think there is some overlap with some of the other criteria. This new draft has the asset based framework integrated into the other criteria and, the climate impacts as sub-criteria for climate resilience. I combined some of the direct & indirect climate impacts.

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- Severe wind and storm hazards
- Increased incidence of drought

Indirect impacts:

- Increased flood damage
- Increasing pest, disease and weed pressure
- Increased summer heat street
- Phenological disruptions & frost damage

2) If we break it down into the **assets** that make-up climate resilience it looks like this:

- Natural capital
- Social capital
- Built infrastructure
- Human capital (this is people's skills & capabilities)
- Financial capital

3) If we break it down by **resilience capacity** it looks like this:

- Capacity to absorb climate shocks or stressors
- Capacity to adapt to climate shocks or stressors
- Capacity to transform in the face of climate shocks or stressors

Commented [LO4]: I wonder if this is the appropriate area to explicitly say "invasive species", which are an indirect impact of multiple climate pressures/stressors and their spread/persistence has compounding impacts on other areas (e.g. Japanese knotweed destabilizing river banks leads to increased erosion and decreased water quality).