

Conceptualization and Operationalization of Context-Based Definition of Cultural Ecosystem Services in Assessment of Environmental Effect with Contribution of Mana Whenua Values

Despite the importance of cultural ecosystem services in decision-making processes, the application of an appropriate methodology for the valuation of cultural ecosystem services among communities with the same and common cultural values has been underestimated.

The intangible characteristics of these services and lack of appropriate valuation indicators in current decision-making, apart from monetization of such values, are creating problems.

This is one of the main reasons for the underestimation of these services in Environmental Impact Assessments (EIA) or Assessment of Environmental Effects (AEE), and therefore, unsustainable use of precious resources.

Ecosystem services(ES) have a contested definition, however, they are intended to capture the benefits of nature to society and human wellbeing through assessing monetary and non-monetary values of ecosystem function. Conceptualizing and operationalizing benefits of nature implies several choices making the procedure of ES basically sociocultural. The subcategory of cultural ecosystem services defined as the nonmaterial benefits people obtain from ecosystem services through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences is considered particularly difficult to operationalize because of intangibility. The launch of the new conceptual framework from the Intergovernmental Platform on Biodiversity and Ecosystem Services(IPBES) shifted their discussion from ES values to nature's gifts and opened up multiple knowledge systems such as those of western science, indigenous and local communities, and practitioners

In this study, we demonstrate a context-based definition of CES with the contribution of *mātauranga Māori*¹ and *tikanga Māori*². Oakley Creek in Auckland is selected for its high urbanization rate and unique characteristics to identify in-depth visions of *mana whenua*³ values for nature and water resources. We aim at recognizing more CESs, more meaningful non-monetary valuation indicators, a more tangible identification understandable for local people, and ultimately the appropriate application to the AEE process.

Our interpretative approach allows us to find some aspects of expressed benefits that are currently not taken into account in the conceptualization and operationalization of values. These expressions are characterized as being axiomatic, indivisible, and incommensurable and include perceiving values through emotions, connectedness, authenticity, and spirituality. These findings can be argued to provide leverage for one part of idea of value elicitation. The basic argument for the valuation of ecosystem services in this study is simplification of the meaning of the values for people. The next stage is coming

¹ Indigenous knowledge

² Traditional indigenous practices

³ Indigenous people (Māori)

back to individuals and listening to their experiences with the collaboration of these simple indicators and questions.

Our findings bring us to suggest that the benefits that humans derive from nature should be conceptualized in a way where meanings can be interpreted as value.