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## **Adapting to a changing environment: learning with the Torres Strait communities to understand future impacts on wellbeing and livelihoods**

**Key words:** Participatory, Wellbeing, Climate Adaptation

### **Abstract:**

In an era of change it is increasingly urgent to practically co-ordinate adaptive responses to currently unfolding and potential future impacts to our environment. This compels the development of effective decision support tools that are practical in tackling the challenges of exploring future natural resource trends in data-poor situations. When data is lacking yet management decisions are required, the development of a co-learning approach provides a way forward. In this study, co-learning was built upon 1) involvement of locals and policy makers, 2) viewpoints elicited from expert knowledge, 3) semi-quantitative valuation of local ecosystem goods and services (EGS) using a livelihood approach, 4) potential for iterative decision-making based on transparency and repeatability, and 5) engagement to allow for scrutinising. Here we present a case study showing how a participatory tool, the Asset Driver Well-being Integrative Matrix (ADWIM), is used in the Torres Strait, Australia, for estimating future impacts on ecosystem services and livelihoods. We use this semi-quantitative tool to conduct a comparative analysis of the potential impact to livelihoods derived from local ecosystem goods and services (EGS) given consideration of cumulative threats. The potential impact scoring is considered in relation to the local stakeholder views and values sought within a participatory workshop. The results produced are used to provide an assessment of the relative impacts on EGS and human well-being under the 'business as usual' scenario of climate change and human population growth. We discuss the relative merits and limitations of the tool for participatory livelihood adaptation planning.