



Poorly-designed goals and objectives in resource management plans: Assessing their impact for an Ecosystem-Based Approach to Marine Spatial Planning

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ABSTRACT

Planning frameworks such as Ecosystem-Based Marine Spatial Planning are based on socio-ecological systems and require effective design of management goals and objectives, a task often overlooked in conservation and resource planning. This paper discusses research undertaken in a coastal council of Australia, to assess the significance of well-defined goals and objectives as drivers of management plans. SMART criteria and Open Standards for the Practice of Conservation approaches were integrated into a framework to examine management scope of existing plans; assess the quality of stated goals and objectives; analyse the use of natural and socio-economic targets; and provide recommendations for the development of future plans. Findings provided no indication of organizational learning through revision of previous plans, revealing an ongoing planning cycle with ad-hoc reviews frequently driven by policy changes. Main weaknesses identified included linguistics ambiguity; unclear planning hierarchy; lack of clear time-frames; and adoption of highly ambitious plans. The absence of measurable and time-bounded goals and objectives was noted. Additionally, poor definition of targets resulted in goals not meeting the impact-oriented criteria, and objectives were not outcome-oriented. Recommendations drawn in support of mainstreaming the Ecosystem Based Approach in future coastal and marine plans include: explicit definition of societal values; developing complementary cross-realm management goals and objectives; increasing commitment to produce ‘on-the-ground’ outcomes progressively within each planning period; a greater use of pro-active management measures; and providing an economic context to the plans, fostering alignment of financial resources and future investments with the vision developed by the council.

1. Introduction

Increasing coastal populations [1–3] and associated pressures on natural resources are significant drivers of global degradation of the marine environment [4–7]. Addressing these drivers requires holistic forms of resource management [8–10] that can support decision makers in analysing coupled human-ecological systems [11–13], and implementing adaptive planning approaches to better deal with environmental change and uncertainty [14–18]. Several planning frameworks account for socio-ecological systems [13,19–23]; however, their successful implementation relies largely on the definition of effective management goals and objectives, a task often overlooked in the fields of conservation and resource planning [24–26].

Well-defined goals and objectives are key drivers of planning and management [24,25,27–29] and serve multiple purposes including:

delivering high-level planning strategies/principles; clarifying expected outcomes and adopted measures; generating scenarios and evaluating identified options; tracking implementation progress and ultimately, the success of the adopted plan [14,25–27]. These tasks represent key methodological steps in ecosystem-based management frameworks such as Ecosystem-Based Marine Spatial Planning (EBA-MSP) [27–30], Integrated Catchment Management (ICM) [31–34] and Integrated Coastal Zone Management (ICZM) [35,36].

The Ecosystem-Based Approach (EBA) particularly states the need to develop objectives across all three dimensions of natural resources management: environmental, social and economic [10,37–39]. While recent literature expands on the meaning and underlying concepts of EBA [10,24,38,40], as well as several implementation challenges [17,41–45], evidence of successful implementation is still elusive. In the field of conservation science, for instance, a research-

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implementation gap has been noted as conservation assessments and tools have rarely translated into applied conservation actions according to peer-reviewed literature [46–50]. Similarly, previous reviews of EBA, ICM and MSP examples worldwide, have indicated lack of evidence that successful outcomes are being achieved through adopted plans [24,41,43,44,51]. Given the aforementioned roles that sound goals and objectives play within planning and management, it is worth exploring this subject as a potential underlying problem affecting coastal resource management.

Sydney Harbour, in New South Wales, Australia, is an estuary with a rich history of increasing human presence within its natural boundaries, holding high levels of biodiversity [52]. Despite the broad organizational structure in place for resource management, several environmental and social issues are yet to be addressed in the harbour area [52]. Specific short-comings of resource management in the area include a lack of understanding of the unique social-ecological systems operating in the urbanised catchments [53] and illogical or inconsistent decision making processes [54]. These shortcomings might be linked to planning weaknesses within management plans, such as linguistic uncertainties, poor quality or unclear hierarchy among goals and objectives, which then undermine implementation [55].

A strategic review of resource management plans within the harbour area, could serve to clarify links between social and ecological systems and overcome planning inconsistencies, thus creating a better management setting to implement ecosystem-based approaches. Hence, this paper reviews resource management plans within the Manly Local Government Area (LGA) at the mouth of Sydney Harbour. The foreshores of Manly LGA in particular, play a crucial role in sustaining the recreational, commercial and ecological assets offered by this international touristic destination [56]. Manly Council,² as head of local government [58], is responsible for delivering actions and strategies that safeguard Manly's community natural environment and heritage [56]. Accordingly, resource planning by Council is interrelated to several policy plans including the Manly Local Environmental Plan 2013 [59], the Sustainability Strategy 2006 [60] and the Community Strategic Plan beyond 2025 [56]. This review, however, will focus on natural resource management plans, as a case study to enhance understanding, analyse and reflect on the quality of resource planning within the harbour area.

The goal of this review is to assess the quality of selected plans through a process of 'plan evaluation'; further assessment of the effectiveness of each planning process, or 'planning evaluation' [61,62] falls outside of the scope of this paper. Specific aims of the review are to examine the scope of resource management plans; assess the quality of stated goals and objectives; analyse the use of natural and socio-economic targets in connection to proposed goals and objectives; and provide general recommendations for improving the quality of goal and objective setting in future plans. The next section describes the research site, followed by research methods used in the analysis of both empirical data from the case study and information drawn from literature review, as the basis to explore resource planning through an ecosystem-based perspective.

2. Research methods

2.1. Case study characterisation

The research site is the Manly LGA situated less than 20 km Northeast of Sydney, New South Wales, Australia (Fig. 1). The site

² The Manly Council was recently amalgamated into the Northern Beaches Council in addition to the former Pittwater and Warringah Councils, under the 2016 Local Government (Council Amalgamations) Proclamation [57] Australian Government. Local Government (Council Amalgamations) Proclamation 2016. New South Wales: NSW Parliamentary Counsel's Office; 2016. <https://www.legislation.nsw.gov.au/regulations/2016-242.pdf>.

extends over 16 km² with multiple landscapes including bays, beaches, headlands, rugged cliffs, steep slopes and areas of plateau [56]. Natural resources in Manly are under pressure from pollution of waterways and impacts from both recreational and economic activities [60].

The local population was last estimated at 44,994 residents, who together with visitors enjoy the renowned beaches and cultural diversity of Manly [56]. Manly LGA is ranked as the 7th least disadvantaged within the Sydney area, with 31% of its population earning high income, compared with 15.3% for Greater Sydney; main industries in the area include health care and social assistance, accommodation and food services, and wholesale and retail trade [56].

2.2. Methods

This review of resource management plans is part of a larger research framework, being undertaken at Manly LGA to advance efforts of EBA-MSP using sandy beaches as the ecosystem of interest (described in Appendix A1). Fig. 2 presents the methodological framework of this review following three main phases.

2.3. Data collection

Coastal planning in Manly LGA follows a framework that considers three administrative units that correspond to three catchment areas at the research site (Fig. 1). The administrative units are defined as the Middle Harbour Foreshores (Eastern coast), North Harbour Foreshores (Southern coast) and the Coastal Foreshores (Western coast) (illustrated in Appendix A2). During Phase 1 (Fig. 2) data collection included catchment and coastal management plans covering these units, with the addition of documents pertaining to the Manly Coastal Lagoon which drains into western coast of Manly LGA, and terrestrial plans covering local park lands (Step 1.1, Fig. 2).

The complete range of management themes was screened to identify a sub-set of management themes more closely associated to the ecosystem of interest, sandy beaches (Step 1.2, Fig. 2). The following criteria were used:

1. The management theme included environmental and socio-economic targets.
2. The management theme addressed sandy beach ecosystem processes, functions and/or services.
3. The management theme addressed cross-realm connectivity issues related to sandy beaches.

2.4. Assessment framework for management goals and objectives

Phase 2 required designing a framework to assess the quality of stated planning goals and objectives (Step 2.1, Fig. 2). Prior research suggests applying SMART criteria to support development of these elements within the process of resource planning [24,30,63,64]. In this paper, the SMART criteria [65] and the Open Standards for the Practice of Conservation (Open Standards hereafter) [66] were integrated into a single assessment framework (Fig. 3). The Open Standards support conservation planning through providing concepts and terminology to support project design and implementation [66].

The combined framework was subsequently used to determine if management goals and objectives met the following criteria:

- *Includes a natural or a socioeconomic target, with specific attribute(s).* This criterion ascertains if a resource has been clearly identified for management purposes. Likewise, it serves to identify if social and/or economic targets were considered during the planning process, given the interest on advancing an EBA-MSP at the research site. *Natural targets* are defined as specific species or ecological systems/habitats selected to represent the biodiversity within the planning area [66]. *Socio-economic targets* are defined as social or economic

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