Managing the NSW coastal zone: Restructuring governance for inclusive development

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ABSTRACT

In 2013 the New South Wales (NSW) Government (Australia) established the NSW Marine Estate Management Authority (the Authority) to improve community engagement in coastal zone management. The outcome has been the coordination of activities and efforts of state government departments to maximize the social, economic and environmental values of the Marine Estate. While much has been written in regard to Integrated Coastal (Zone) Management (IC(Z)M) planning, papers that discuss its actual implementation are far fewer. This paper discusses how, given the minimal guiding literature in this area, the processes of IC(Z)M planning and implementation are being approached in NSW and its success to date. It is not a discussion of research undertaken, but a review and analysis of IC(Z)M in action, contextualized by a number of development approaches and theories that may help explain its emerging success in integrating government agency planning and activities.

With reference to inclusive development and interactive governance theories, this paper discusses the principles and the five steps of the process adopted by the Authority. It reviews the challenges and achievements in developing appropriate and comprehensive consultation; threat and risk assessment procedures; and implementation and review processes. It concludes that the theory of inclusive development and interactive governance are well-founded and worthy aspirations in the IC(Z)M context. However, it also identifies that traditional governance frameworks of developed nation states, such as Australia, challenge the immediate and short term reality of achieving IC(Z)M. It identifies the key to success of IC(Z)M is the meta governance, expressed through the organizational culture of not only departments but their political masters, which need to be open, adaptive and flexible, and that this requires considerable focus as it remains an ongoing challenge.

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1. Introduction

There is an extensive body of literature discussing the background to the development of Integrated Coastal (Zone) Management (IC(Z)M), however it is largely focussed on technocratic and procedural processes that tend to ignore the governing politics. As identified by Glavovic (2016), IC(Z)M is an "inherently political process that seeks to reconcile inherent tensions (e.g. between geographic scales; short and longer-term interest; stability and flexibility; and collaboration and conflict) and take into account the centrality of power relationships and imbalances in coastal governance". Theories such as inclusive development (Gupta et al., 2015) and interactive governance (Kooiman and Jentoft, 2009) which this paper draws upon, shed light on alternative methods to the process and challenges of implementation, and which have been used to varying degrees in the case study discussed here. The paper also draws upon the theory of PDIA (Problem Driven Iterative Adaptation) as developed by Andrews et al. (2013) which, while proposed to be applicable to challenges of governance of issues in developing nations, is discussed here in terms of its offer in resolving governance challenges of IC(Z)M for developed states, and how it has — albeit not explicitly — been used in NSW in the development of modified processes to aid departmental collaboration. This paper, contributes to this Special Issue on Inclusive Development and Coastal Management by examining the extent to

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which experiences in implementation in NSW with coastal zone management, shed light on the challenges for implementing inclusive development utilising interactive governance theories.

The problem of managing increasingly densely populated coastal zones and regions is not new. NSW is attempting to break new ground in Australia with the creation of a multi-agency, overarching Marine Estate Management Authority (MEMA), aiming to improve inter-agency coordination to deliver an integrated 10-year marine estate management strategy. Previously, management of the estate has been managed via a 'silo' approach across four different government departments and associated agencies, with varying areas of focus, from transport, to economic productivity (fishing, aquaculture), to tourism, to preservation of the environment and heritage, with the divergent priorities that those different foci entail. The move to an integrated whole of marine estate management plan that connects and integrates these activities is an innovation for Australia in the shift from an environmental and often conservation-based focus on managing biodiversity in the marine estate[1] (via marine protected areas — MPAs — through a variety of mechanisms including marine parks (6), aquatic reserves (12), and national parks and nature reserves (62). See Fig. 1) to one which seeks to optimise the social, economic and environmental values and benefits (termed 'community wellbeing') derived from environmentally sustainable uses of the resource, across the entire coastal zone.

The endeavour is to manage the whole of the 'marine estate' (the estuaries, coastline and State marine waters) as one continuous unit, in a fair and equitable manner, recognising and responding to sustainability concerns. However, while NSW is fundamentally using an IC(Z)M approach, several factors differentiate this effort from previous Australian attempts. The factors are; the establishment of an overarching body to facilitate coordination between agencies and, more significantly, the explicit acknowledgement that planning should be cognizant of the social values, as well as economic and environmental values of affected communities. The first element recognises the issues raised by interactive governance theory while the second reflects the aspirations of inclusive development theory. However, in order to achieve the organizational environment that facilitates interactive governance- a facilitator of inclusive development - the NSW process has identified a gap in both agency knowledge and practice to be open, flexible and adaptive, which this paper posits, the theory of PDIA provides a tested means to address.

2. Integrated coastal zone management: a background

The concept of IC(Z)M has been around for some fifty years, since the late 1960s (Clark, 1992; Fletcher and Potts, 2008; Misdorp, 2011; Sorensen, 1997; Vallega, 1999). Consequently, while it is not new, IC(Z)M is fundamentally different from the methods of marine or land planning that are most commonly employed as it aspires to be inclusive and consultative and most importantly to manage on a triple bottom line basis, rather than on an environmental or economic basis alone. Significantly, such management is far more challenging, in its consideration of all components - ecological, social and economic - and technically, without significant trade-offs between achieving the objectives of each. However, due to political and economic pressures, trade-offs are often made in favour of

economic goals. In the case of Australia examples of such trade-off's would include channel deepening for shipping despite expressed environmental concerns (both Port Phillip Bay Victoria, and Gladstone Harbour Queensland); trade and transport despite the risk of oil and fuel spills from shipping, (Newcastle NSW); or coastal development (clearing of mangroves) despite environmental effects (benthic, ecosystem and fish stock impacts); social effects on visual amenity, and cultural ones on Aboriginal use of coastal zones.

ICM or IC(Z)M, are the two commonly used terms to describe both applied and academic discussions of coastal management and planning processes (Fletcher and Potts, 2008) where ambitions exist to coordinate and integrate the activities of stakeholders who are significantly affected by, or affect the quantity and or quality of, coastal resources and environments. This is identified as being necessary to coordinate across industry, affected community and NGO sectors (horizontally) and levels of government (vertically) (Sorensen, 1997). IC(Z)M formalised the concept of coastal cooperation and theoretically promotes a structured application of a system to simultaneously manage these cross cutting activities and agencies, that results in "transparent governance and stakeholder involvement" (Misdorp, 2011).

The concept of IC(Z)M only became embedded in the language of marine managers and academics, seemingly since Food and Agriculture Organisation of the United Nations (FAO) engaged with the concept in the early 1990s. In 1992, the FAO outlined the fifteen principles of ICM (Clark, 1992), which covered all three elements of social, ecological and economic. These principles of IC(Z)M have since been broadly discussed and attempts have been made to implement them by states around the world that have marine boundaries (Sorensen, 1993, 1997). Gupta et al. (2015) posit that the achievement of sustainability is based in a focus on the environment through the lens of social inclusiveness, rather than economic growth. This is based on the most vulnerable of society often being those also most dependent on environmental assets and ecosystem services, and likely to be subject to the negative impacts of local and global changes. These authors (2015) make a case for the ability to strengthen the effectiveness and robustness of IC(Z)M by utilising this 'inclusive development' approach to ameliorate excessive foci on growth and employment which, they claim, has resulted in equity, social inclusivity and environmental elements and opportunities being 'traded-off'. It is undeniable that the issue of trade-offs between economic, social and cultural lifestyle priorities is a key feature, often seen as a stumbling block, in negotiating the priorities of different stakeholders involved in coastal zone management. However, economic outcomes, the benefits of which are often inequitably distributed, are no longer regarded as the only and/or adequate objective of integrated coastal management planning. To this end, NSW has adopted — albeit implicitly — an inclusive development approach in its endeavour to create an integrated marine estate management plan, discussed in detail in Section Three.

Subsequent to the FAO report, the 1993 World Coast Conference in the Netherlands recognised IC(Z)M as the most appropriate concept by which to address current and long term coastal management issues. Building on the idea of inclusive development, it recognised that implementation will, by necessity, consist of both strategic (vision) and operational (tasks) activities in the areas of: problem recognition; coastal system knowledge; public consultations; and education and awareness programs (Misdorp, 2011). Significantly in the four elements outlined by Misdorp, who infers governance (or central management) should be approached only to facilitate partnerships in the process — indicating non interactive involvement of institutions. Conceptually, and in an ideal world, this may be the optimum situation where partners and stakeholders work together, incentivised only by the imperative to

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[1] The 'marine estate' is defined as extending from the coast three nautical miles seaward, and includes estuaries, coastal wetlands, beaches, dunes and headlands along with lakes and lagoons.

[2] http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0009/633582/NSW-marine-protected-area-map.pdf (Accessed Sept. 25, 2016).
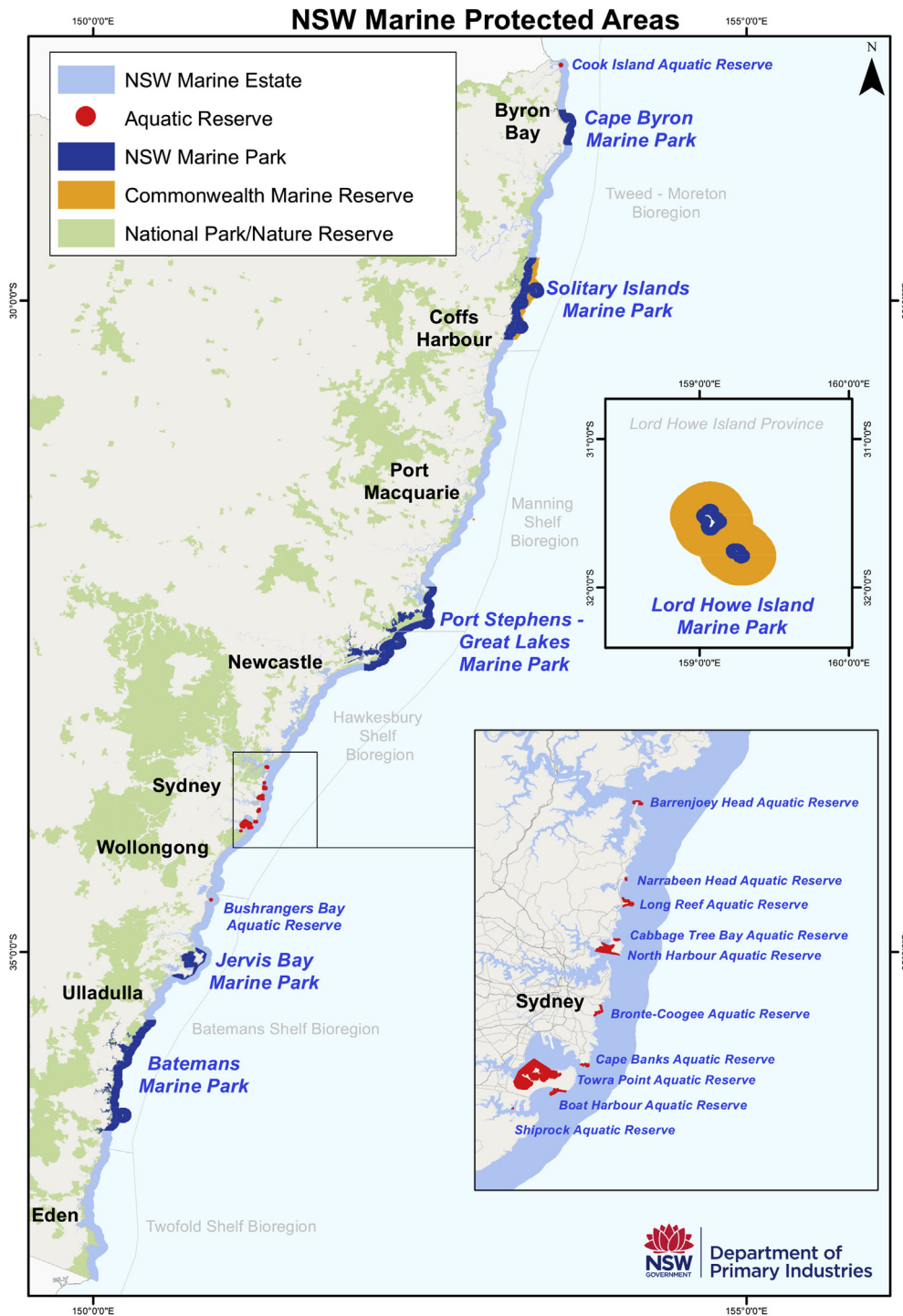
Fig. 1. NSW marine estate.[2]

maintain the health of a publicly-owned resource. However this is rarely the case, as many authors show in their reviews of the outcomes of IC(Z)M (Abelshausen et al., 2015; Bunon et al., 2015; Celliers et al., 2015; Jentoft and Chuenpagdee, 2009; Portman et al., 2012; Wang et al., 2011).

The reasons for this lack of collaboration and/or coordination by partners in coastal management are many, but most often attributed to a conflict of perceived priorities for action. While this is driven by stakeholder voices, it is often exacerbated by governance

structures that are unable to respond to demands of stakeholders, collaborate with allied governance agencies or communities affected by proposed management options, to negotiate prioritization of responses to threat pressures; or any combination of these. Consequently, it is necessary to explore some of the governance challenges that face states seeking to develop and implement IC(Z)M, and the theories that have been developed that offer insights for IC(Z)M implementation. The following table summarises these theories which will be explored in the following section.
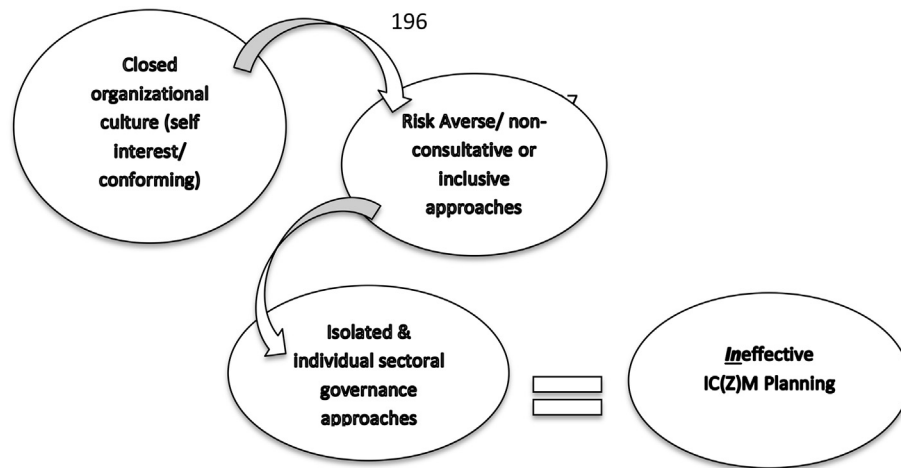
Fig. 2. Disabling governance environment of IC(Z)M.

2.1. Governance challenges of IC(Z)M

The elements at work that potentially confound the focus and ability to progress effective IC(Z)M planning and implementation are two fold; a) the shifts in ideological position around IC(Z)M, that it must be fully inclusive of social and environmental issues, while taking a relational approach to facilitate any necessary redistribution of resources (Gupta et al., 2015); and b) that agencies need to be able to operate in open organizational cultures that allow collaboration and innovation, with less focus on (monetary) justification of actions and more on performance outcomes (Andrews et al., 2013; Glavovic, 2016).

Studies on the use of IC(Z)M in a range of developing and developed countries (Bunon et al., 2015; Celliers et al., 2015; Cornish, 2010; Fletcher and Potts, 2008; Jentoft and Chuenpagdee, 2009; Portman et al., 2012; Sorensen, 1997; UNESCO, 2006; Wang et al., 2011) have identified that in order for IC(Z)M to be successful, two elements have to exist within the governance framework: a) the framework must facilitate intergovernmental (vertical) and inter-sectoral (horizontal) cooperation and collaboration, and, b) be implemented across catchments or regions of the coastal zone. In addition, these authors noted that success factors of IC(Z)M efforts also included: political motivation or leadership; the allocation of funds and resources; and 'capacity' expressed as the education levels of managers and community members in the ideas and aspirations of ICZM. It is suggested that the most critical factor of these, is the need for facilitating institutional arrangements (Cornish, 2010). While this was posited by Cornish to overcome single sector based management, the requirement for a facilitating governance environment is also raised and endorsed in discussions by Bundy et al. (2016) and Glavovic (2016). Kooiman and Jentoft (2009) identify the second order of governance in governing systems (or the structure of instutions that manage agents acting within them) is dictated by the organizational culture (third order or meta governance, (Ibid)) being the elements (people) within the organization that shape, endorse and/or dictate the normative principles by which the organization, and the agents within them, operate. If this culture (third order) of governance is 'closed' and risk averse, it effectively creates an agenda of organizational conformity, which commonly disables the potential of agents to act or effect change at the first order of governance: the front line of actions development and implementation. A hypothetical example of this would be a directive to establish a new coordinated management plan in

collaboration with another department but not providing resources, in either time or human capital, to establish collaborative relationships and mutually agreed priorities. Conversely, when the third order, or organizational culture is 'open', time and resources will be made available, and agency members supported in endeavours to identify, experiment, develop and implement new processes, without fear of retribution or recrimination.

Together, these factors affect the ability of agencies within the overarching governance framework (e.g. state government) to both work effectively together and to establish commonly agreed priorities in the manner of interactive governance. The literature indicates, that it is only if an interactive and open governance framework is established, that organizations can turn to negotiating priorities and methods of implementing IC(Z)M. To focus on implementing IC(Z)M before adopting an open, collaborative and learning operating governance culture, will, by past cited experience, lead the attempt toward failure. This inadequate sequence of behaviours may be expressed as in Fig. 2.

This highlights a gap in the literature that deals with how, in practice, the bridge is made from an existing closed governance organizational culture and structure to that required for developing and implementing collaborative and inclusive approaches per those discussed by Kooiman and Jentoft (2009) and other authors cited here.

Andrews et al. (2013) offers a perspective that may, while evolving from the capability challenges facing developing states, be useful to the implementation of IC(Z)M in developed nations, and beneficial in resolving governance issues that confound the ability to adopt inclusive development approaches. Andrews et al. (2013) refer to a 'Problem Driven Iterative Adaptation' (PDIA) approach to dealing with the 'capability traps' that confound open, learning and flexible governance processes. These 'traps' are those reforms or practices that are traditionally considered to enhance an entity's external legitimacy and support, even when they do not demonstrably improve performance'.[3] Such traps include 'sector wide approaches' or 'best practice models' which are adopted to facilitate easily recognisable evaluations in a short period of time. When applied in situations for which they were not specifically designed however, such practices have been demonstrated to effectively create or contribute to (existing) non-productive or dysfunctional

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[3] For a full discussion of 'capability traps' and how they are addressed utilising PDIA, please refer to Andrews et al. (2013).
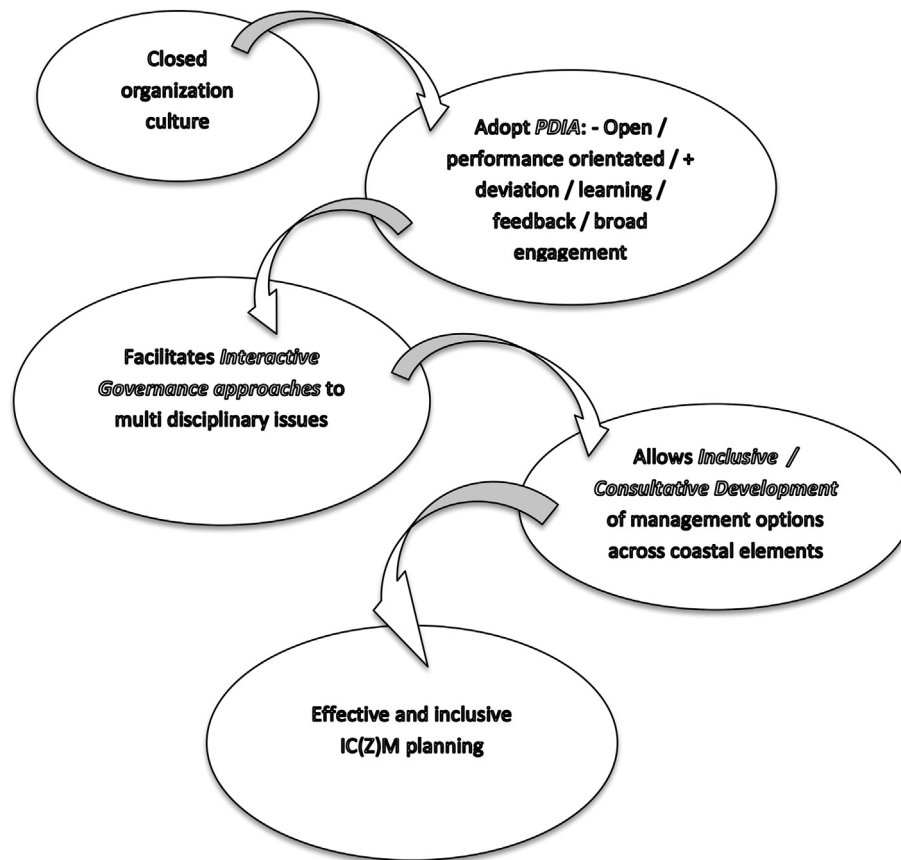
Fig. 3. Enabling governance for the implementation of IC(Z)M.

dynamics, constraining experimentation and the development of locally appropriate solutions. Andrews et al. (2013) discuss this in the same context of the three levels of governance identified by Kooiman and Jentoft (2009: 832) at which constraints can occur: 1) agents (first order); 2) institutions (2nd order); and organizational culture (3rd order). They identify that each of these layers of governance exist along a continuum, from closed/agenda conforming/isomorphic mimicry and self-interested organizational perpetuation; to the other extreme of open systems that encourage experimentation and positive deviation; are performance and value creation orientated, and are able to demonstrate success (Ibid: 236). The closed form of governance systems described by Andrews et al. (2013) is reflected in the discussion of 'bureaupathology'; Caiden (1985) (cited by Colenbrander and Bavinck) where excessively rule-bound organizations tend to become slow moving, indecisive and without the ability to achieve mandates given to them. By contrast, IC(Z)M is recognised as inherently needing a flexible governance approach that can make the required shifts to more sustainable forms of development which, by necessity of evolving environmental and social situations, needs to be creative, adaptive and dynamic and value creation orientated.

A Problem Driven Interactive Adaptation (PDIA) approach is that which encourages stakeholders (particularly government agencies) to work together, shifting the focus to an identified problem, with authorised latitude for moving forwards and backwards in a learning environment of iterative development, rather than being forced to operate only from a perspective of roles and standard operating procedures. The PDIA approach appears to be a key to achieving the state of 'interactive governance' identified by Kooiman and Jentoft (2009) and most appropriate to achieving

improved outcomes in attempts to operationalize IC(Z)M. This alternative approach to achieving successful IC(Z)M may be conceptualised as articulated in the following figure (Fig. 3).

The key challenge in implementing IC(Z)M is the willingness and/or ability of the governance system to deal with the complexities of coordinating and integrating both horizontally and vertically. Often this is delegated as a procedural responsibility to the agent or organizational level. However, the problem actually originates at the higher broader level of the culture of the organization (or third order, meta-governance level per Kooiman and Jentoft (2009)) which facilitates actions. The following case study highlights this; that the confounding elements of effective (inclusive) IC(Z)M are more likely to result from organizational culture (third order) norms, which dictate the structures (second order) which discourage or preclude effective coordination by agents of their governance systems to integrate knowledge and objectives of different disciplines and agencies or organizations. It is in this context that the discussion now turns to the case study of how the NSW government in Australia has sought to approach the challenge of IC(Z)M differently, to address past failures and attempts to adopt an approach to IC(Z)M implementation that more closely resembles a process identified in Fig. 2, above.

3. An australian, New South Wales case study of IC(Z)M planning

In 2013 the NSW Government established the Marine Estate Management Authority (MEMA), and tasked it with developing an overarching 10-year management strategy that addresses the priority threats to the social, economic and environmental benefits

derived by the communities across the whole of New South Wales from the marine estate. The task for the authority was to direct and assist the coordination of activities and efforts of the four primary State agencies involved in coastal management, to achieve a new vision of "a healthy coast and sea, managed for the greatest well-being of the community,[4] now and into the future".[5]

This case study focuses on the 5-step process (see Section 3.3) developed by MEMA for developing a NSW integrated coastal zone management strategy, and considers the relevance and reflection of interactive governance and PDIA theories in the development and implementation of the MEMA steps. This is particularly in relation to the attempts by the NSW government agencies to address the institutional structure (second order) and culture (third order) of the agencies and departments involved in the MEMA process. The discussion considers the process and governance challenges and successes encountered and what they reveal about the approaches that are posited to support and facilitate successful IC(Z)M. It must be noted the planning development and implementation process is still in progress at the time of writing, hence this discussion will focus on the strengths and outcomes of the initial elements - the engagement with the community of NSW and the threat and risk assessment framework - and the opportunities that have been identified to improve the process to date.

3.1. Background to IC(Z)M in Australia and New South Wales (NSW)

In NSW and Australia, IC(Z)M has been explored to varying degrees since as early as 1965, when the Port Phillip Bay Authority was established to facilitate the integration of government unit activity affecting the resources and environment of the Bay (Sorensen, 1997). Unfortunately, as noted by Cornish (2010), this body was abolished in 1984 due to political shifts, culminating in the late 1990s with a move in Australian policy from coastal zone management (and its inherent focus on 'integration' of objectives and efforts) to a focus on 'sustainability' of the ecology - 'ecologically sustainable development'- driven by the National Strategy for Ecologically Sustainable Development 1992 (Ecologically Sustainable Development Steering Committee, 1992). This Strategy identifies sustainable as "using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased" (Ecologically Sustainable Development Steering Committee, 1992). It had the stated objectives:

- "to enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations;
- to provide for equity within and between generations;
- to protect biological diversity and maintain essential ecological processes and life-support systems." (Ibid)

Despite this focus on overall community wellbeing (derived from a healthy biological ecosystem), the direction of Commonwealth and State efforts, with perhaps the exception of the Great Barrier Reef Marine Park Management, progressed down a path of a primary focus on ecological conservation. This was without recognition for the role that communities have in utilising the marine resource for sustenance, and also preserving the environmental assets they depend upon and enjoy. However, this solely

ecological approach in Australia has become untenable due to an increasing coastal population, consequent use of the resources in the coastal zone, and the conflicts that such a single minded focus on ecological conservation is inclined to generate (Beeton et al., 2012).

In 2011 an independent audit (the 'Audit') of marine parks was commissioned by the NSW Government to review their relevance and effectiveness, and to determine a balance between sustainable fishing and the conservation of biodiversity (Departments of Primary Industries and Small Business and Environment and Heritage, 2011). The Audit (Beeton et al., 2012) found that the entire marine coastal estate needed to be brought together under one management regime that also aligned with the five catchment management authorities comprising the NSW coastal drainage system. Further to this, it identified the need for a greater emphasis on the social and economic sciences to illuminate these perspectives and priorities as they related to the environment. Fundamentally, the Audit acknowledged (albeit inherently) the need to return to the principles of IC(Z)M in the management of the NSW marine estate, and to increase public engagement and educational strategies. It also noted the importance of providing greater clarity in public communications on actions taken to manage threats to the marine estate and the biological, social and economic justification for these actions (Beeton et al., 2012). In order to achieve this, the report made recommendations to set up an authority that has responsibility to: "assist in ensuring that policies and programs that address priority issues, are well-coordinated, efficient and evidence based and result in positive outcomes.[…]The Authority is jointly responsible to the Minister for Primary Industries and Minister for the Environment and includes representatives of agencies involved in managing the NSW marine estate."[6] Additionally, the Audit directed that such a process must consider social as well as environmental and economic values, which has been embraced by MEMA. The NSW government exhibits not only interactive governance but also inclusive development aspirations in this process.

It was noted in the Audit (2012) that a lack of overarching co-ordination across departments governing activities in the marine estate (the second order or organizational structure) was a fundamental cause of ongoing management issues. As a consequence, MEMA was established in 2013, specifically in response to these recommendations to improve the co-ordination and efficiency of the management of the NSW marine estate. As with all natural resource management, resource use conflicts exist within the NSW marine estate to differing degrees. Such conflicts are potentially exacerbated when managed in isolation by individual departments, due to the singular focus that these departments traditionally have, such as: resource management for optimal industry benefit; transport and trade; infrastructure planning or environmental preservation. MEMA was established to work with the departments to develop the first ten-year Marine Estate Management Strategy that sets the overarching terms for the coordination of NSW government departments and programs, in achieving the objectives of the Marine Estate Management Act 2014 (Jordan et al., 2016). Its primary responsibility is to coordinate activities within the NSW marine estate, and to provide strategic input during implementation of the planning reforms to better integrate land use planning and marine estate management. The Authority operates utilising an independent Chair, and is comprised of senior executive representatives of the respective departments operating within the NSW marine estate. A scientific expert advisory panel, termed the Marine Estate Expert Knowledge Panel (MEEKP), has also been

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[4] 'NSW community' or 'Community of New South Wales (NSW)' in this paper refers to those communities across the whole of NSW (inland as well as coastal and local residential as well as visitors to coastal regions).

[5] www.marine.nsw.gov.au (Accessed 5/4/2016).

[6] http://www.marine.nsw.gov.au/advisory-bodies/marine-estate-management-authority Accessed 24/12/15.

established to provide independent scientific advice to MEMA on the approaches and methods adopted for recommendation to the departments, and how these might be optimised to increase robustness of process and transparency. MEMA does not however, have authority to require actions of the NSW government agencies with jurisdictions over the marine estate; rather its role is to monitor actions to identify coordination and collaborative opportunities, and only advise the Ministers for Primary Industries and the Environment in regard to management options that will best meet the aspirations of the NSW people and government in managing the marine estate. This inability to determine, but rather only influence through recommendations is potentially a key 'capability trap' in terms of achieving integrated governance, and in generating a facilitating organizational environment or culture amongst the four state government agencies responsible for managing the marine estate via the development of an inclusive management strategy. While the process established has every good intention, this lack of actual authority must be recognised as potentially limiting the effective and ongoing development and implementation of integrated management plans. What was not explicitly recognised or articulated was the need to adjust the culture of isolated departmental responses to management pressures, planning and action. However, the requirement that MEMA bring all four government departments together with input from an independent expert panel has had a positive effect on the collaborative culture of the departments.

To this end, the departments have also set up a Steering Committee, comprised of "member agency representatives (preferably Director level or above) with environmental, economic and/or social science expertise" tasked with "provid [ing] leadership and strategic advice to the Project Leaders and supporting Technical Working Groups, on behalf of their member agencies, to deliver on […]key projects in the Authority's Schedule of Works."[7] While this activity has not been undertaken in response to formal analyses and identification of actual or potential 'capability traps', it is an effort to open channels of communication, improve collaborative and experimental cultures within and between the agencies, and improve trust and rapport (addressing the third order or 'meta governance'/organizational culture). These features of coordination between the departments are seen by the government departments themselves as fundamental to achieving the desired outcome of an integrated coastal management plan.

3.2. MEMA principles for IC(Z)M

MEMA's development and implementation of the NSW marine estate reforms program is guided by a set of ten principles. These cover areas including: engagement with the communities of NSW; identification of priority actions based on threat and risk assessments; use of best available information; equity between generations; respect for existing arrangements; transparency and flexible responses to new information; and measurement, monitored and reported information on management performance and information to fill critical knowledge gaps (Marine Estate Management Authority NSW, 2013). However, a tension exists between maintaining strong reporting links to justify actions and expenditure (pre-conditions for capability traps as discussed earlier) and the need to be transparent, flexible and adaptive in the development of innovative responses to new information. Similarly, while MEMA's principles are well founded, when activities are to be achieved across several government departments, open and learning

relationships between them are essential to allow positive interaction in that governance process, but can remain exceptionally challenging to realize. This is demonstrated by the acknowledged need for the agencies within MEMA to set up a Steering Committee to assist in building an environment of cooperation and collaboration, both up and down the levels of governance.

3.3. Five steps to developing and implementing a management plan

MEMA and MEEKP, in collaboration with the participant government agencies, require that the 10 principles be applied in a five-step process. These steps are envisaged to be largely sequential, to ensure that all the appropriate information is gathered and analyzed in the development and implementation of marine estate management plans, to cover both regions and the whole of the State (Marine Estate Management Authority NSW, 2013). The five steps are encompassed in the following table [Table 2]. While these were not developed as a methodology they do reflect elements of the theories and approaches (Andrews et al., 2013; Bundy et al., 2016; Glavovic 2016; Jentoft 2007; Kooiman and Jentoft, 2009) discussed earlier and summarized in Table 1, and represent the attempt to balance a need for process and structure with open, collaborative and learning approaches.

Full details on the community survey can be accessed at http://www.marine.nsw.gov.au/key-initiatives/marine-estate-community-survey.

At the end of 2015, the first two steps had been applied in detail for one of the five marine bioregions identified for the NSW coastline - the Hawkesbury Shelf Marine Bioregion - which includes the most populated coastal area of Australia (the Greater Sydney region) with work having commenced on the third step - the assessment of management options.

The first step, which entailed comprehensive consultation with the NSW community (inland residential with an intrinsic interest in the NSW coastal zone, as well as residents of and visitors to the coast, including Aboriginal communities, businesses and groups with specific interest in or reliance upon, resources of the coastal zone), was a time intensive process, covering the whole of the NSW marine estate. It involved a combination of formative qualitative research comprising in-depth interviews and focus groups, followed by a survey of a representative cross section of the NSW community both statewide (n = 1003) and coastal regional intercept surveys (n = 375 visitors; 352 residents). The intercept surveys were undertaken utilising a probability quota sampling technique to ensure an appropriate cross section of local and tourist respondents across age brackets. The results were then collated according to the benefits derived from the estate that respondents commonly achieved, along with the perceived threats to those benefits.[8] The research also sought input from communities across New South Wales on perceived opportunities to improve the management of the marine estate (Sweeney Research, 2014). Significant work was entailed in untangling the 'values' from the 'benefits'; or how the communities' identities may be caught up in the existence of and/or use of the marine estate. Values identified as common across all community members of NSW, as well as those that were common in a specific bioregion but differed from whole of state values (of which there are three in NSW) were highlighted, and placed at the forefront of the process to develop management options. This process has set it apart from previous marine planning processes in Australia, which had solely relied on scientific and economic indicators and priorities. This aligns strongly with IC(Z)M

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[7] NSW Marine Estate Management Authority Steering Committee, Terms of Reference (unpublished internal document).

[8] See endnote 1.

Table 1
Theories assisting IC(Z)M implementation.

Theory	Proponents	Key elements	Role	Contribution to ICZM/NSW approach
Facilitating Environment	Cornish (2010), Bundy et al. (2016), Glavovic (2016) Jentoft (2007)	Focuses on facilitating institutional arrangements and governing environment as essential success factors in the implementation of ICZM		The underpinning need for political motivation and leadership; allocation of funds and resources; and capacity in the education and culture of managers and affected community members, are all essential to the success of ICZM given its overarching and consequently resource intensive approach.
Orders of Governance and Interactive Governance theory	Jentoft (2007) & Kooiman and Jentoft (2009)	Identifies 3 'orders of governance' within implementing agencies that facilitate or impede change: 1st: agents undertaking actions 2nd: institutional structure within which agents operate. 3rd: Organizational culture that dictates or shapes the normative principles of an organization.		Jentoft identifies the necessity for the 2nd and 3rd orders of governance (appropriate structures and culture) to support and facilitate the development of new approaches. Kooiman and Jentoft draw out the crucial importance of the 3rd order or meta governance, which dictates the culture of organizations. This is a fundamental challenge faced by the agencies in NSW, and why they have modified operational structures to facilitate the new approach.
Problem Driven Iterative Adaptation (PDIA)	Andrews et al. (2013)	Identifies means by which the 2nd and 3rd orders of governance that support 1st orders of governance (agents) can operate to allow and encourage active learning and collaboration across agencies, rather than focusing on reinforcing roles, standard operating procedures, and best practice models ill suited to the context.	Means to adopt ICZM approaches	This theory of policy implementation provides a means to generate new ways of operating and policy development to occur, which is required to develop ICZM and holistic approaches. This reflects elements of the approach adopted by NSW agencies, and articulates the change in culture that is contributing to the progress being made with the NSW marine estate management plan.

principles and an inclusive development approach. 'Time' was the challenge in this step of the process, due to both the time taken to collect, analyze and collate the data as well as (perhaps more significantly) in negotiating the required change to previous departmental 'top-down' approaches to developing plans. Previously plans have largely been directed by expert input, developed, and then communicated to relevant stakeholders, with community comments being responded to with explanations of proposed plans based on scientific expertise. By contrast the communities' values around the marine estate and perceived benefits, threats and opportunities from and to these values, were used as the anchoring point of reference, as those elements of the estate that must also be preserved. The benefits, threats and opportunities identified by the New South Wales' community were subjected to expert analysis (step 2) to identify if additional threats were being perceived that had not been previously identified. These were then examined for scientific (biological/economic and social) substantiation, and where this could not be established, noted for inclusion in ongoing community education programs or approaches to address knowledge gaps. The perceived opportunities were used as inputs to the process of developing future management options. This first critical step, of consulting both directly and indirectly affected community members, the results of which were also open to public comment and scrutiny through the MEMA website before being finalized, has been integral to establishing a community endorsed base line for ongoing guidance and reference for the development of bioregional and statewide plans. Linking all elements of the plan development process to this base line is fundamental to the transparency and credibility of the process, and for MEMA to demonstrate that it is working with and for the whole of the NSW community to maximize their perceived benefits of the marine estate.

The second step in the process was the development of a threat and risk assessment (TARA) framework within which to assess the scientific and evidence-based threats, against the perceived threats identified by the community (NSW and bioregional) to the benefits derived from the marine estate. Understanding the real, compared to the perceived, threats and how these affect the identified benefits to affected communities is the key element in identifying if in fact trade-offs — that is where one group is perceived to, or does, lose access to a resource or benefit - are required, and if so, how

best these might be approached. A comprehensive discussion of this process can be reviewed in Jordan et al. (2016). In summary, the significant challenge is in moving away from a sector-focused approach to one of examining the broad range of benefits and uses of the estate and the threats and/or cumulative risks to those benefits. Two workshops were undertaken to review the identified threats to the environmental and then social and economic, benefits derived from the marine estate at both horizontal (sectors — industry, community and (E)NGO) and vertical (regional levels of government) governance levels. These workshops involved an expert-led (institutional and academic) assessment to review evidence of the threats identified, assigning risk levels based on current management actions and interventions, using a consequence and likelihood approach, consistent with international risk management standards (AS/NZ ISO 31000: 2009) (Fletcher, 2015). This step has allowed MEMA to assess and prioritize the risk of threats being realized to the overall benefits that the NSW community identified they derive from the NSW marine estate. To ensure that this does not become a totally 'smoothed' process it is undertaken at the local, regional and then state scale so that risks that are deemed high, but only to discrete groups or assets, do not get overlooked as the process is 'scaled up'.

The TARA process provides the second foundation stone for the third step - that of assessing and developing management options to address both the priority threats identified by MEMA (in this case those threats that have a 'high' risk of realization as identified by the TARA) while protecting community values and optimizing desired benefits. The current management actions are assessed for relevance in achieving the desired benefits, and options or alternative, more appropriate actions are then also considered, to address the priority threats to broader NSW community values and benefits while also protecting key ecological assets. This process resulted in the release of a discussion paper to communities in the Hawkesbury Shelf marine bioregion for consultation and to receive feedback to inform the development of management initiative options. The discussion paper incorporated an explanation of the steps in the process undertaken to that point (February 2016): The priority benefits and values identified by the NSW community (step one); the evidence-based high and moderate level risk to threats to these values and priorities, from the TARA (step 2); current

Table 2
Five step process for Implementation.[b]

Step 1	How the NSW community benefits from the estate	Identify key economic, social and environmental benefits, and perceived threats and opportunities derived from the Estate[a]	Develop ongoing engagement strategy: • community consultation • expert input • stakeholder surveys	*Principle 1*
Step 2	Assess threats and risks to benefits	Expert assessment of threats and opportunities to the key economic, social and environmental benefits	Prioritize threats based on their likelihood and consequence and consider relevant scale: • local • regional • state-wide	*Principle 2*
Step 3	Assess management options to maximize benefits	Identify and assess current and potential management settings in delivering benefits to the NSW community	Apply values to economic, social and environmental benefits of alternative uses. Assess which options deliver maximum benefit to the communities of NSW.	*Principles 1, 3, 4, 5, 6 & 7*
Step 4	Implement preferred management options	Implement options that maximize overall benefits to the NSW community as a whole	Identify the most efficient and cost-effective management options. Design measurable performance indicators. Develop strategic monitoring program to measure outcomes relative to the vision.	Principles 1 & 8
Step 5	Be accountable	Monitor, measure and report on performance	Report transparently to the NSW community. Promote strategic research to inform management and enhance future outcomes.	*Principles 1, 9 & 10*
		Review progress	*Examine performance, including benefit, threat and risk status periodically.* *Review management arrangements for those not achieving adequate performance.*	

[a] The values the NSW community associated with the marine estate, and the benefits, threats and opportunities that they perceived as being of priority were as follows:
Values
• Identity – that access to this unique, biologically healthy asset was part of people's culture and heritage
• Enabler – it enables people's escape from everyday life through a choice of wide ranging activities that also enabled social connections with others.
• Provider – of food and resources, and economic opportunities; as well as of access both into Australia, but also to the natural environment via infrastructure that exists and is maintained
• The 'great outdoors' – its biodiversity, while albeit wild and unpredictable at times, is valued both intrinsically and also for the source of scientific data and discovery it provides, but that being able to utilise this environment safely was highly valued.
Benefits
• Clean waters to support a varied and abundant marine life
• The natural beauty which is valued intrinsically.
• A safe space to socialise and have an active healthy lifestyle
• Employment income through particularly tourism and seafood related industries
Threats
• Pollution is seen as the major threat; run-off, marine debris, litter, oil, chemical spills, etc.
• Loss of natural areas though pollution seen as a critical economic threat.
• Anti-social behaviour and overcrowding perceived to threaten safety and enjoyment use of the Marine Estate
Opportunities
• Protecting and rehabilitating coastal wetlands through addressing litter and land-based runoff are leading opportunities
• Promoting tourism through marketing the beauty and biodiversity of the estate were seen as an economic opportunity
• Addressing coastal hazards;
• Providing more education programs; and
• Improving public access and environmental action support programs also identified as opportunities

[b] Managing the NSW Marine Estate: Purpose, Underpinning Principles and Priority Setting, 2013, NSW Marine Estate Management Authority, Sydney NSW. http://www.marine.nsw.gov.au/documents/Managing-Marine-Estate.pdf.

management actions that ameliorate or mitigate those threats; and what new or additional suggested actions are proposed to address the threats (step 3)[9]. The discussion paper was released for public comment and feedback sought through either formal submissions, or via a public web portal set up for the submission of comments, suggestions and concerns. This is supplemented by direct and very specific engagement with Aboriginal community members on the TARA findings and proposed management options. MEMA will review all feedback, comments and submissions to inform the final advice to the NSW Government on management options for the bioregion and decisions will be transparently communicated to the NSW community via the public release of the submissions report, final advice and decision of Government.

4. Discussion - lessons learnt so far

The challenges of this process are the inevitable simplification of complex systems (biological, social and economic); lack of availability (in some areas) of comprehensive data upon which to base assessments; scientific uncertainty in relation to both changing states and causal relationships; and the tendency of stakeholders to focus on individual threats in isolation (Jordan et al., 2016). This is exacerbated in an environment of time and resource pressure to deliver finalized plans for both regions and the entire estate, which is in line with managing the coast as one continuous system. Consequently, the process may necessarily be subject to refinement. The key issue identified is the need to adopt adaptive management frameworks at both whole of state and regional scales, where management options are appropriately assessed and monitored to inform continuously improving management responses (Step 5). This reflects the need identified by the authors in Table 1 and illustrated in Fig. 2, for agencies to be open, learning orientated and adaptive for this process to succeed.

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[9] *The Hawkesbury Shelf Marine Bioregion Assessment* (2016) Open for public comment until April 26th, 20016 http://www.marine.nsw.gov.au/__data/assets/pdf_file/0009/595044/hawkesbury-shelf-discussion-paper.pdf (Accessed 31/3/16).

While these five steps appear straight forward, the NSW experience mirrors those of other regions and nations that have attempted to implement IC(Z)M comprehensively across environmental, economic and social elements: that is, the challenge of integrating the analysis and prioritization of threats. However, the NSW approach differs in avoiding previous mistakes in Australia of focusing IC(Z)M, on primarily managing risks to environmental assets, and rather framing the process around the outcomes of Step 1; effective NSW and bio regional community engagement to establish the social benefits and priorities, assessed and measured in the context environmental sustainability. The primary foci of both the threat and risk assessment (Step 2), and development of the subsequent management initiatives (Steps 3 and 4) is the optimization of the community benefits identified in Step 1. Threats to environmental assets are not disregarded in any way, but are contextualized by the social and economic benefits that the community derives from these assets. Ultimately, steps two through to five are driven by the outcomes of step one, which contextualizes, prioritizes and forms the basis for communication of management plans and outcomes against the priorities identified by the NSW public. In this context, while not the conscious intent of MEMA, significant elements of an inclusive development approach have been adopted, via an evolving interactive governance framework. The lessons learnt to date undoubtedly vary according to the perspectives of different stakeholders in the process. The experiences of the City of Cape Town and of those in Italy, in implementing IC(Z) M (Bunon et al., 2015; Celliers et al., 2015), together provide a good summary of the difficulties also encountered elsewhere including this instance, in NSW. The key factor confounding other regions has been the "lack of a centralized forum in which departments can interact with each other and with 'big picture' […] coastal management strategy, province and national government as well as no existing mandate between departments on a consistent and agreed coastal management vision" (Celliers et al., 2015). Although this has been attempted in NSW through the establishment of MEMA, this did not extend to engendering MEMA with direct management authority. MEMA's lack of management control means that the problems experienced elsewhere of a disjuncture between centers of control for environmental resource management (land or marine based), spatial planning and urban design, do fundamentally remain. However the ability of MEMA to provide a central forum for the open communication and interaction to establish and maintain operating parameters, combined with the cross-departmental Steering Committee, has allowed significantly more progress than would otherwise have been possible.

While MEMA and the cross-departmental Steering Committee create opportunities for shifts in culture, time is required for the culture within departments to also adapt to this new approach. Departmental ownership of management initiatives and actions can impede the creation of cross-departmental responsibilities required to manage marine resources in an integrated manner. An element of this is likely related (although unstudied in this particular situation), to the experiences of those in Asia where "analysis showed that in practice a great reluctance for change affects the implementation of ICM" (Abelshausen et al., 2015) regardless of directives or imperatives. The key element of this in NSW (and other regions in Australia) is the tendency to retain a culture and focus on ecological and conservation as an overriding priority (an outcome of events noted previously and referenced by Cornish (2010)), diverting goals and objectives from those of community wellbeing, to that of wellbeing of the ecology. This has been addressed in the MEMA environment through the Steering Committee of senior management set up to address breakdowns in communication, prioritization and any singular focus on ecological priorities to the exclusion of considering community values and benefits. This issue reflects 'capability traps' in current governance arrangements and can only be addressed with on-going efforts to break down and re-establish new departmental operating cultures (at the third order of governance), allowing for a maturing of relationships amongst agencies within MEMA over time.

Without doubt the biggest challenge for all those involved, and one which potentially underpins all others, has been the constraints of time, and pressures to produce outcomes to meet political imperatives. As noted by Kooiman and Jentoft "… interactive governance is an approach to problem solving and opportunity creation that stresses the need to involve people in a participatory process that allows collective reasoning and interactive learning to occur." (Kooiman and Jentoft, 2009). Unfortunately, such a process requires both time and physical resources to both engage and provide feedback to community members and stakeholders to generate collective reasoning and allow for interactive learning. Overall, and as identified by others attempting to implement IC(Z) M, it is the adequate allocation of resources; be they time, human or, to a lesser extent, financial resources that impede the comprehensive development and implementation of interactive governance processes such as those being embraced by the NSW government's marine estate planning. This situation is generally attributed to the political need to achieve an outcome (regardless of its effectiveness) within a political cycle. An example of this in NSW, was the pressure to develop a management strategy for the Beaches and Headlands assets of the NSW Marine Estate, to align with parliamentary performance requirements, but prior to the full five step process being developed. This component was consequently developed as a stand-alone element, for which a process to reintegrate it into the overall process will need to be undertaken via a planned review of marine park management planning in NSW.

Issues of political timing and resourcing pressures resonate with the concept of 'capability traps' and how the organizational culture often confounds attempts to institute interactive governance frameworks that can create integrated and inclusive outcomes. When actors are constrained by time and resources, the ability to innovate, experiment or draw upon new or unfamiliar knowledge or processes, is significantly impeded despite the best of intentions. In this vein, a future resourcing issue is also envisaged to be associated with monitoring and assessment of the instituted management plan, affecting the establishment of sustainably long term IC(Z)M. To that end, resources will also continue to be required for ongoing capacity building and educational programs for affected communities to facilitate agreement on both continuing development options (between government organizations, community and managing agencies), and for the devolution of responsibility for implementation and stewardship for IC(Z)M plans, in ways that encourage continued collaboration.

The community consultation that was undertaken across the state as well as in the coastal zone generally and bioregions specifically, to comprehensively understand the values held for, and benefits achieved from, the marine estate, established fundamental parameters that have guided the entire process. This is a significant step forward for Australian coastal management, toward an inclusive development approach. Most importantly, these values and benefits identified by the process provide essential context for the protection of environmental and ecological assets, in a manner that the public and industries of NSW can identify with given their use, dependence upon and interaction with, those assets.

The two significant outcomes of the initiatives that have been taken in this NSW initiative are: the establishment of MEMA to provide a central point of coordination, reflecting an acknowledgement of the need to create an environment and culture of interactive governance. The second is the comprehensive level of community consultation undertaken at the outset, setting the

scene to move toward a model of inclusive development.

5. Conclusions

Three elements stand out in this case study of IC(Z)M in NSW: a) the need to restructure governance effectively to allow for coordinated planning and action — a move toward interactive governance, which requires a significant shift in organizational culture; b) the provision of methods to establish management priorities and actions that address both perceived and scientifically established threats to environmental assets, based on social values and benefits with economic drivers being explicitly recognised; and c) adequately resourcing these actions in both physical and temporal aspects to avoid 'capability traps'. Significantly, assessment of the risk to the benefits enjoyed/achieved by the NSW community from the marine estate remains the touchstone of the entire process, and is an achievement in the global context of examples of IC(Z)M attempts. The experiences demonstrated by this case study both benefits from and validates an inclusive development approach and interactive governance theory, with potential benefits from models such as PDIA, in developing a robust evidence-based and integrated, inclusive marine estate management plan.

The crucial element to the success or otherwise of this process, and we suggest any similar ones, is recognition of the need to create organizational cultures that facilitate agent innovation and collaboration, as being fundamental to the development of an interactive governance environment. This precondition has been essential to the inter-agency collaboration required to achieve any form of inclusive development in this 5-step process. While all steps in this process are yet to be completed, and the cultural change required for it, is a long term and ongoing process, it is most certainly a move forward in IC(Z)M attempts within Australia. The implementation of the finalized management plan and achieving accountability for it through monitoring and evaluation, will be the test of the effectiveness of the first steps in this process of IC(Z)M planning. Regardless, this process makes a worthwhile contribution to the knowledge of integrated coastal and marine management processes both in Australia, and elsewhere.

Acknowledgements

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