Assessing the Economic Value of the Western Victorian Coast: Putting our Mouth Where our Money Is

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Abstract

While the triple bottom line is now entrenched in the collective thinking of coastal planners and managers, the actual decisions that balance social, economic and environmental values are few and far between. Yet the majority of national, State, regional and local strategies, such as the Victorian Coastal Strategy (2008), place prominent importance on the proper consideration of the economic, environmental, social and cultural values of the coast. Economic value is a critical consideration in coastal planning and management, and is viewed by many as the "deal-breaker" in the decision-making process. However, the full economic value of the coast is not well understood. This is highlighted by the paucity of economic data on both the use and non-use values that relate to coastal environments, resources and communities. This paper examines this issue by providing a review of the literature on coastal economic values, an analysis of the methodological advancements in estimating non-market values and their relevance to the coast, and an examination of key decision-making processes for which economics values are critical. The paper concludes by suggesting priorities for the research agenda for the work which needs to be done to enhance our knowledge of the economic value of the coast to enable decisions to be made consistent with the intent of our coastal strategies.

*The opinions expressed in this paper are those of the authors and not the opinions of the Western Coastal Board or Deakin University.

1) Introduction

The process of valuation is engaged in every day by everyone in their professional and personal lives. Coastal planning and management is no different, with planners, managers and policy makers engaging in a variety of processes that require some form of valuation, all of which have an influence on the coast and the way in which it is enjoyed. The various processes that require valuation range from the prioritisation of individual workloads through to decisions on large-scale development projects and investment. Essentially, our appreciation of value drives our own decision-making.

Costanza and Folke capture the valuation issue well, and identify that

> *[….] we cannot avoid the valuation issue, because as long as we are forced to make choices, we are doing valuation. (Costanza and Folke 1997)*

The coast is perhaps a place where the need for effective valuation is most evident, given the longstanding recognition of competing interests for resource use in coastal zones (RAC, 1993 p. 24) and its underpinning of integrated coastal zone management (ICZM). This need has likely been heightened by substantial recent changes in coastal resident and visitor numbers and their demographics which have served to change both the behaviours and expectations of those interests and the degree of competition for coastal resources. This is further reinforced by the paradigm shift arising through climate change and approaches to risk management and liability.

A wide range of policy and planning documents in Victoria require a robust approach to valuation in order to deliver balanced outcomes across social, economic and environmental objectives. This is consistent with policy and planning in other States. However, the evidence suggests that both our understanding of total economic value and our appreciation of value across these three themes is poor. Our ability to make the informed choices required by our policies is thus fundamentally compromised, and in this light, there is a clear need to improve our understanding of value. At present, the application of consistent economic valuation techniques appears to provide the only approach that enables an equitable comparison of value across these three themes.

A range of arguments exist for different approaches to valuation. This paper does not seek to outline those arguments. Rather, we accept that there are different needs that should inform the process of valuation, and different goals that people may use to determine the value of different aspects of the coast. However, given the evident tendency of the majority of decision-making processes that influence the coast both directly and indirectly to favour economic value, we believe that an early focus of valuation work needs to be on economic value. Once a broader awareness of the economic value of the coast emerges, there will likely be opportunities to explore other values that inform decision-making. .

This paper seeks to provide a justification of the need for understanding the economic value of the coast and then explores the concept of economic value. It outlines key decision-making processes which require valuation, a brief review of the literature on coastal economic values and an analysis of the methodological advancements in estimating non-market values and their relevance to the coast. We conclude by suggesting priorities for the research agenda required to develop our understanding of coastal economic values.

2. Drivers and Need for Economic Valuation on the Coast

As noted in the introduction, the clearest driver for economic valuation is the need for decisions, and therefore choices, to be made. There are a wide range of other drivers that underpin our coastal decision making, so to illustrate our case we have chosen to focus on some of the key drivers affecting the common challenges of coastal population growth, development and climate change. They include:

- The concept of ecologically sustainable development
- State policy and planning systems
- Natural resource management
- Managing people on the coast
- Risk management

The surface of these issues is scratched below, and we recognise that many other issues affect both decision making and behaviours.

2.1 Ecologically Sustainable Development

Ecologically Sustainable Development (ESD) generally emerged in Australia through the National Strategy for ESD 1992 and was then enshrined through the Intergovernmental Agreement on the Environment in 1992. Four central principles of ESD were included, including the precautionary principle, the conservation of biodiversity and ecological integrity, intergenerational equity and recognition of the need for improved valuation, pricing and incentive mechanisms.

Despite the concept of sustainability suffering substantial dilution in recent decades due to its popularity, it has retained its focus on achieving equitable outcomes across social, environmental and economic themes. This triple bottom line is firmly established in the policies that drive most decision making processes on the coast, such as the Victorian Coastal Strategy 2008 (VCS) and the NSW Coastal Policy 1997. Indeed, the VCS has been successful in retaining its references to ESD through revisions in 2002 and 2008 in the face of the popularity of the more constrained concept of environmental sustainability and its adoption in other strategies.

While the intentions of sustainability are broadly understood, it is the delivery of it through the decision making process that requires an understanding of value across the three themes and the competing demands affecting them. The NSW Coastal Policy 1997 admirably identified ESD as "…a framework for reconciling or making choices between these competing demands." Yet making choices requires information that supports an appreciation of value, and we cannot know whether we are achieving ESD without sufficient information on values across the three themes or a mechanism to bring that information together.

While there have been significant developments in assessing value across social, environmental and economic themes, such as in Western Australia through the State Sustainability Strategy 2003, there appears to be no accepted methodology to make balanced decisions nor the necessary parity of information inputs to decision-making processes. This is exacerbated by an apparent expectation from many stakeholders that an environmental assessment provides most of the information required for consideration of sustainability. Economic valuation may play a significant role in generating parity of inputs across the three themes.

2.2 Policy and planning systems

The main decision-making frameworks that drive outcomes across social, environmental and economic areas on Victoria's west coast require a balancing of the triple bottom line. In this section, we attempt to identify key drivers and their requirements.

2.2.1 State and Regional Development Policy

Decision making for regional development on the western Victorian coast is influenced by a range of policy documents that require an explicit balancing of social, economic and environmental objectives or aspiration towards sustainability. These policies provide important strategic direction for investment and population growth, and promote regional approaches. Examples include:

- Growing Victoria Together (Department of Premier and Cabinet 2005) outlines a vision for Victoria to 2010 and 10 themes that "… balance social, economic and environmental considerations".
- The Great Ocean Road Regional Strategy (GORRS) (Department of Sustainability and Environment 2004) focuses on the sustainable development of the region through balanced and managed growth of selected towns along the coast and inland.
- The Barwon South West Regional Strategic Plan (Regional Development Australia and Regional Development Victoria 2010) supports sub-regional planning for the Geelong and Great South Coast regions. The G21 Geelong Region Plan "….is a sustainability plan for the region that looks toward 2050. It identifies and addresses the challenges the region will face in the areas of environment, settlement, land use, community strength and economy as well as the need for change in the way we make things happen." (G21, 2011). The Great South Coast Regional Strategic Plan "…is a strategy for the long-term sustainable growth of the Great South Coast. The plan addresses the challenges and opportunities that the region will face in the areas of economic development, connectivity, environment, health and wellbeing, land use and liveability and presents new ways of working together to achieve a shared vision for the future."

2.2.2 Victorian Coastal Strategy 2008

Coastal policy in Victoria is explicitly contained in the Victorian Coastal Strategy (VCS) 2008 which cites ESD as an underpinning concept and deals explicitly with the need to integrate social, environmental and economic values and issues in several sections. It outlines the ecological, social and cultural, and economic values of the Victorian coast, and used a broad ranging investigation by consultants URS in 2007 titled *Assessing the Value of the Coast to Victoria* to generate information on the economic values.

Most importantly, the VCS contains a Hierarchy of Principles for decision making that includes 4 Principles and a number of matters that the principle seeks to achieve. These are required to be implemented through the State Planning Policy Framework at Clause 12.02-1. Of particular relevance are the following two examples which appear as the first matter under the relevant principle:

<u>Principle 2. Undertake integrated planning and provide clear direction for the future</u>:

- Ensure ICZM takes into account the environmental, social and economic implications of decisions

<u>Principle 3. Ensure the sustainable use of natural coastal resources</u>

- Ensure an integrated analysis of economic, social and environmental and cultural heritage implications of decisions

Our contention is that decision-making processes are unable to adequately take into account or analyse the implications of decisions unless there is a consistent and equitable platform to compare development impacts and policy alternatives. Economic valuation may play a critical role in addressing this.

2.3 The land use planning system

Victoria's land use planning system provides the rulebook for managing land use and development through a hierarchy of planning policy and tools. It explicitly seeks to both understand value and to balance the triple bottom line. Examples include:

- The Victorian Planning Provisions (Department of Planning and Community Development 2010) set the framework for Victoria's land use planning system via the State Planning Policy Framework and for the subsequent development of municipal planning schemes. The introduction to the Provisions states:

  "It is the State Government's expectation that planning and responsible authorities will endeavour to integrate the range of policies relevant to the issues to be determined and balance conflicting objectives in favour of net community benefit and sustainable development."
- The goal of Victoria's State Planning Policy Framework (Department of Planning and Community Development 2010) (SPPF) at Clause 10.2 is:

  "To ensure that the objectives of planning ….. are fostered through appropriate land use and development planning policies and practices which integrate relevant environmental, social and economic factors in the interests of net community benefit and sustainable development."
- Coastal content, previously contained primarily in Clause 15.08, was integrated throughout the SPPF in September 2010, and includes a new 12.02 Coastal Areas clause. The goal is:

  "*To recognise and enhance the value of the coastal areas to the community and ensure the sustainable use of natural coastal resources."*

These examples demonstrate a clear need to balance issues across the three themes and recognise value. While how this is to occur is not specified, the question is not whether it should be done, but how it should be done. If the social, environmental and economic information regarding values is not presented equitably, consistently or with a firm evidence-base, how is the decision making process able to deliver the balanced outcomes sought?

2.4 Natural Resource Management

The need for valuation is also well-supported in Victorian and Australia-wide natural resource management (NRM) policy and practice. The use of natural resources drives much coastal behaviour and influences the viability of investment and development. In turn, natural resources can be impacted upon by inappropriate use and development.

The Victorian Land and Biodiversity White Paper, released in late 2009, established a rationale for broad-based reform to NRM arrangements. The White Paper noted that:
"*Good decision-making about investment in natural resource management projects at all levels can be very challenging. It requires the systematic integration of biological, physical, economic and social information. It may also require difficult trade-offs in the course of striking a balance between potentially competing priorities.*

The Draft Asset Based Approach being developed by Catchment Management Authorities (CMAs) and the Victorian Government also places emphasis on value as a key determinant of the significance of assets and thus the degree to which intervention should occur to retain or enhance those values. It has strong parallels with risk management, which is mentioned in the following sections. The guidance notes being prepared for the application of the asset based approach identify that

> *Environmental (ecological), social/community and economic values should be used to define significance.*

The Wentworth Group have made an important contribution to the valuation debate through the release of their *Accounting Metrics for Building Regionally Based National Environmental Accounts (2008).* These appear to focus on the development of a system and set of metrics aimed at understanding the condition of environmental assets that is not based primarily on economic value, and it is not yet clear how these translate to merits based decision-making and policy evaluation. .

While we recognise there are challenges with the valuation of natural resources, it is clear that an understanding of value is essential if decisions that balance environmental, social and economic issues are to be made.

2.5 Managing People on the Coast

A number of factors at play on the coast provide strong support for valuation, but perhaps none more than the nature of human interaction with the coast. The coast is recognised as a place where competing interests and conflicting demands are routinely addressed through a range of decision-making processes. Integrated coastal zone management (ICZM) by its very nature implies that decisions, and therefore choices, should be made in an integrated way.

Importantly, how we manage the coast is directly related to how people value the different elements of the coast and the opportunities they provide. These are the values which feed our understanding of priorities and have profound impacts on coastal decision-making processes.

Perhaps the most obvious and topical decision-making process that influences our interaction with the coast is risk management, brought to the fore by climate change and the nexus of predicted impacts and liability. The choices made through risk management frameworks have serious consequences at all ends of the management cycle and have the potential to affect both public and private entities and the individuals that work within them.

Risk is often assessed through an analysis of likelihood and consequence, and the concept of consequence is centred firmly on an understanding of value. Our poor understanding of the values present on the coast suggests that we also have a poor understanding of consequence. Given that we also have a general inability to equitably compare value and therefore consequence across social, environmental and economic impacts, it would appear extremely difficult to make robust and defensible risk management decisions in the current context. We believe this presents a key risk to all parties involved in coastal planning and management.

In addition, the *Managing Coastal Hazards and the Coastal Impacts of Climate Change – General Practice Note* - issued by the Victorian Minister for Planning in 2008, requires the assessment of the future impacts of coastal hazard risk exposure on the economic, environmental and social wellbeing of people and communities in coastal areas. How will

these assessments be compared and decisions made without a better understanding of the economic value of the coast?

2.6 The importance of valuation

We argue that a better understanding of coastal values is important for effective and transparent coastal management practice. In order to make a compelling and comprehensive case for the sustainable use and development of the coast it is imperative that coastal values across the economic, social and environmental themes are understood, quantified and able to be compared. In order to minimise the politicisation of decisions, it is important to develop an evidence base of information to input into decision-making processes.

There are a number of key areas where valuation is required for the coast, such as:

- Project appraisal, assessment and approval
- Risk management and understanding the concept of consequence
- Understanding damages, the liability that may be apportioned as a result of different activities and potential compensation claims
- The full range of investment decisions
- Underpinning a business case to greatly increase public sector investment in coastal planning and management

In essence, it is clear that the decision-making systems that govern coastal planning and management all require the integration, balancing and comparison of social, environmental and economic issues. This is reinforced through the need to understand consequence in risk management, and a clear need to have parity between the inputs to decision-making systems. Given that it is people who will make the choices within these systems, we believe that economic valuation can play a significant role in enhancing our knowledge base and provide much greater parity of the inputs required for coastal decision-making.

3. Exploring Economic Value on Victoria's west coast

This section explores the concept of economic value in a coastal context, and briefly outlines some of the valuation techniques and the advances which have been made in applying these techniques to the challenge of estimating values associated with the coast.

3.1 What is meant by value?

In developing a discussion on the economic, environmental, social and cultural values of the coast it is necessary to begin by establishing how value is determined from an economic perspective and the role of valuation in environmental policy decision-making. A controversial foundation of the economic approach to estimating value is that economic values are anthropocentric. This is a recognised limitation and it is acknowledged that all kinds of value may ultimately contribute to decisions regarding coastal use, preservation or restoration (National Research Council 2005).

Despite this limitation economic values are not as narrow as often assumed. Economic value does not refer to an assessment of only the commercial value but also includes many components that have no commercial or market basis. Figure 1 provides an outline of the types of values included in the economists' definition of total economic value (TEV). These include both use and non-use values.

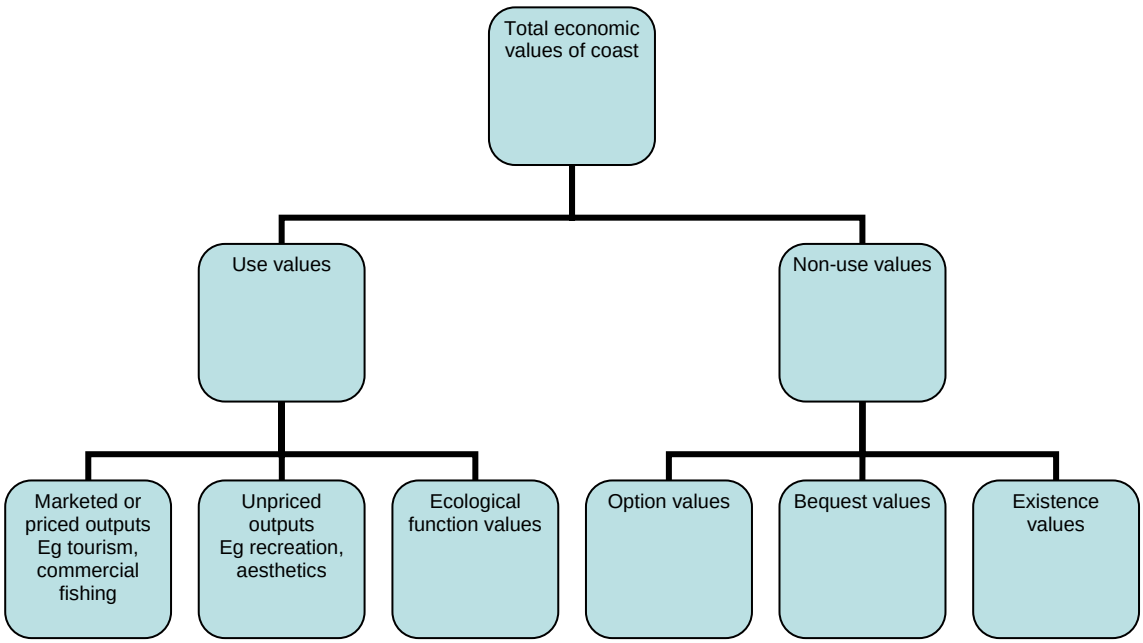

Figure 1: The economic value of the coast (Adapted from Campbell and Brown (2003))

It should be noted that "total" in "total economic value" is summed across the categories of values (ie use and non-use values) measured under *marginal changes* in the socio-ecological system and not over ecosystem or resource units in a constant state (TEEB 2010).

Applying this concept of total economic value to the coast, the use values may include market-based uses such as fisheries and tourism. As environmental management is often about market failure, market prices may not necessarily be an accurate value of a natural resource. Nevertheless they provide an indication of willingness to pay and value and a starting point for assessment of value for goods and services traded in markets. The unpriced outputs such as recreation introduce the difficulty of quantifying values for non-market goods and services. However, as will be further discussed, there has been significant development in the methods of estimating non-market values.

The area where it will become apparent in this paper that there is a paucity of knowledge and research is the ecosystem function values and non-use values of coastal environments. These include option values which are the values we attach to keeping alive the possibility of one day being able to benefit from a resource. Closely related to option values are the important concepts of uncertainty and irreversibility (Campbell and Brown 2002). The other non-use values which are identified in Figure 1 are bequest and existence values. These values recognise that individuals may derive value from something even though it is accepted that they may never use or consume it. For example, people are prepared to donate to the protection of whales, in support of their belief that they ought to remain in existence.

There are five aspects of estimating the economic value of the coast that should be highlighted. Firstly, from an economic perspective, people provide an indication of the value they place on a good or service by their willingness to make trade-offs. For example, if estimating the value of an environmental change, it is willingness to pay (WTP) for the change or willingness to accept compensation (WTAC) that indicates the value to an individual. Research has shown that there will generally be a variance in these two measures (Hanneman 1991, Diamond 1996). This distinction is particularly important in a coastal

context, where the impacts of climate change and coastal inundation may result in WTAC estimates being the more appropriate valuation measure.

Secondly, it is worth emphasising that economic values are dependent on estimating the value of change, as it is marginal units that are central to economic analysis. Hence, estimates of the economic value of the coast should be focussed on valuing potential changes rather than estimating a total figure indicating a capital stock value. While studies such as Martínez *et al*. (2007) which focus on estimating the total value for the ecosystem service product provided by the coastal ecosystems of the world are interesting, this analysis does not provide the analysis of marginal change which is critical for policy analysis. The emphasis on the valuation of change is more important for policy-makers and the dynamic environment in which decision-making takes place.

Also critical to a discussion of the economic value of coastal environments is the treatment of uncertainty. If probability distributions can be estimated, it is possible to use *expected values* for those variables whose outcome cannot be known. In this way each uncertainty is dealt with by weighting each potential outcome by the probability of its occurrence. One approach is based on the expected damage function (EDF) and based on methods used in risk analysis. Barbier (2007) applies this approach to value the storm protection service provided by coastal wetlands. The underlying assumption is that changes in wetland are affected by the probability and severity of economically damaging storm events in coastal area. In this coastal wetland example a key piece of information which is critical to estimating the value of wetlands in the face of economically damaging natural disasters is the influence on wetland area of the expected incidence of storm events.

Also critical for estimating the economic value of the coast is the question of the distributional and social justice preferences of the community. In particular, climate change is likely to lead to debate regarding the sharing of the burden of the costs of mitigation and adaptation, particularly between the private and public sectors. Previous research by Scarborough and Bennett (2008) has illustrated the potential for non-market methods of valuation to be used to elicit the distributional preferences of the community. Knowledge of distributional preferences can assist in the incorporation of distributional weights in cost benefit analysis thereby incorporating both efficiency and equity considerations in policy decision-making.

The final key issue which requires further consideration in the estimation of economic values associated with the coast is the relationship between environmental accounting and economic value. The Wentworth group (2008) has urged the development of environmental accounts in Australia. Further research is required to explore the synergies and inter-relationship between the required accounting values for this process and the concept of total economic value.

3.2 How can we estimate economic value and what do we know about coastal values?

Methods of estimating non-market economic values are generally divided into two categories; stated preference models and revealed preference models. Revealed preference approaches make use of individuals' behaviour in actual or simulated markets to infer the value of an environmental good or service. Examples include the travel cost and hedonic pricing methods. Stated preference methods attempt to elicit environmental values directly from respondents using survey techniques. These methods can be further classified into three types; contingent valuation, conjoint analysis and choice modelling.

The appropriate method of estimating the economic value of the coast is dependent on the type of value being estimated. Hedonic analysis has been used to estimate values to coastal property owners of both recreational and amenity values. This revealed preference method is dependent upon market prices for property being available. Bell and Leeeworthy (1990) and Bin *et al.* (2005) used revealed preference studies to estimate recreational demand for beach visits. Bin *et al.* (2005) estimated the net benefits of a day at the beach at seven ocean beaches in North Carolina to range between $US11 and $US80 for those users making day trips and between $US11 and $US41 for those users that stay onsite overnight. Similarly, Marzetti and Bradolini (2009) estimated the recreational use value of a coastal tourist resort in Italy. Studies on the economic value of beaches have focussed on estimating the value of changes in beach quality, such as beach width or water quality, and access to beaches (Bin et al 2005).

Non-market valuation techniques can also provide valuable analysis of management alternatives. For example, Landry *et al.* (2003) incorporated hedonic analysis in their economic evaluation of beach erosion management alternatives. They found that the average marginal WTP associated with the recreational benefits of beaches was sensitive to the method of managing coastal erosion. For example, daily mean marginal WTP for beach recreational value varied from $US6.75 per household to $US9.08 per household in 1996 dollars. Interestingly, a fundamental result of their analysis is that the estimated recreational benefits from wider beaches with no visible seawall, groins and rip-rap are very large in comparison to any of the estimated costs imposed by strategies that achieve these high quality beaches.[1] It is likely that this empirical support that beach width has a positive hedonic price reflects a combination of amenity and storm protection values (Landry *et al.* 2003, Milton *et al*. 1984, Pompe *et al*. 1995.)

In a similar study of management alternatives using a choice modelling study of stormwater remediation options in marine coastal ecosystems in Auckland, Batstone *et al*. (2010) found:

"…estimate of WTP associated with outer medium ecological health is $NZ135.64. This represents the monetised annual benefit to an Auckland household for a change in the level of ecosystem health, from low to medium levels understood in terms of species diversity at outer coastal zones (beaches). Using a discount rate of 8%, this represents a lump sum of $NZ1695.50 lost per household if ecosystem quality declines at those sites from a medium to a low level at beach locations (annual value divided by the discount rate). Assuming a population of 1.5 million people with 2.2 people per household, the money value of the loss to the Auckland region is $NZ1.15 billion. This amount is the monetised value of the outcomes of remediation works and policy that would have the effect of moving the assessment of outer ecological health from low to high."

There have been few studies which have estimated the ecosystem service values of the coast. One example is a study by Kosenius (2010). This study of water quality, including the presence of seaweed found that the Finnish population has "a great willingness to contribute to "doing something" to improve the water quality of the Gulf of Finland." As part of a comprehensive coastal assessment, economic values were estimated for the natural resources of the coastal zone of NSW in 2006. This project which estimated an annual use value of $850m is likely to have underestimated coastal and estuarine recreation. Beaches were among

[1] This analysis by Landy *et al.* (2003) also found that the increase in recreational benefits arising from a retreat approach to coastal management (which resulted in wider beaches than alternate coastal management approaches such as seawalls) more than offset the value of potential property losses assumed to result from a retreat approach.

the most highly valued natural resource at all levels. (NSW Government Department of Planning 2006; Anning *et al*. (2009)).

This brief review of the literature of coastal valuation suggests that despite an increase in the number of studies estimating coastal values in recent years, there remains a paucity of research of particularly the non-recreational values of the coast.

The discussion of economic valuation of the coast would be incomplete without briefly discussing benefits transfer. A benefit transfer is the process of taking an existing value estimate and transferring it to a new application that is different from the original one (Tietenberg and Lewis 2009). There are two types of benefit transfers; value transfers and function transfers. A value transfer takes a single point estimate or an average of point estimates from multiple studies, to transfer to a new policy application. A function transfer uses an estimated equation to predict a customised value for a new policy application (National Research Council 2005).

An example of the application of coastal benefits transfer is the economic valuation of the NSW Great Lakes (Great Lakes Council (2009b). Values estimated by Windle and Rolfe (2004) of community WTP for increases in the percentage of Fitzroy river estuary (Qld) were applied. Windle and Rolfe (2004) found a WTP of $3.23 to $3.89 per household per annum for 20 years for each 1% (4.3km2) increase in the area of an estuary in good health.

The potential of benefits transfer in estimating the economic value of coastal environments is dependent on a comprehensive data base of coastal economic values which is not yet available, particularly in an Australian context.

3.3 Why is economic valuation of the coast important?

Economic valuation of coastal ecosystems is important for a number of reasons. Foremost is the need for value estimates to inform cost benefit assessment and policy and project appraisal. In many instances the economic cost of remediation and preservation work is well-known. In determining the benefits to be derived from expenditure and the net benefit to society of projects it is imperative to be able to estimate the environmental benefits to justify the expenditure. This information is likely to strengthen the environmental arguments for resources to be devoted to coastal environments and to improve the leveraging of funds for coastal preservation and management.

The Exxon Valdez case where the state of California sued for damages to the Californian coast as a result of the oil spill highlighted the need for economic valuations in environmental damage claims. [It was this case which brought the stated preference method of contingent valuation to the fore of research in economic valuation of the environment.] Damage assessment needs to be beyond the assessment of property damage to include the loss of other values included in total economic value. For example, beach day values are also important in natural resource damage assessment cases where environmental accidents temporarily restrict recreation opportunities along the coast, since lost or impaired opportunities are an important component of the overall economic damages (Lew and Larson, 2008).

Finally, as discussed, in Victoria the adoption by government of an asset-based approach for the planning and prioritisation of natural resource management in the Land and Biodiversity white paper; *Securing Our Natural Future* (Department of Environment and Sustainability 2009) means that the identification and valuation of coastal assets and the ecosystem services

provided by coastal assets is a critical aspect of incorporating the coast in integrated coastal zone management

4. What are the main gaps and what do we need?

The question of the economic value of the western Victorian coast is conceptually and logistically too complex to tackle in one project. Hence it is suggested that it be broken into a series of manageable projects that build both the understanding of the need for valuation, and the requirements of the relevant decision-making systems.

To date, the emphasis has been on "traditional" market values such as property, tourism and primary productivity values. However, in order to achieve balanced decision-making as required through legislation, the emphasis needs to move towards developing a more holistic understanding of the true value of these traditional activities and generating investment in understanding social, environmental and non-market coastal values.

The first step in such an approach could be undertaking an investigation of the range of coastal decision-making, investment and strategic planning systems that require valuations and/or consideration of triple bottom line issues to improve understanding of the evidence needs of these systems. This would act as a guide to the specific valuation projects that should be undertaken as a priority to improve our understanding of the need for valuation and the requirements of the decision-makers.

A second step could be to establish a program of valuation that is able to be shared and contributed to by all coastal stakeholders. Such a program could ensure coordination of economic valuation information and ensure consistency of studies and outputs to build a regional understanding of coastal economic value. This could also include discrete investigations of different aspects of the coast, including:

- Undertaking the work recommended by URS in 2007, possibly at State level, as outlined in their conclusion:

  There are especially three services that are assessed as contributing largely to the value of the coast but remain largely unknown: amenities connected to residential areas, storm protection and shoreline stabilisation.
- A suite of regional projects.

Given the paucity of information available, there is a wide range of potential issues that require an investigation of their economic value. In our opinion, valuation of the following are likely to be high on the list of priority needs and could form a starting point for investigation on the western Victorian coast:

1. Community willingness to share the burden of costs associated with adaptation to climate change. As indicated earlier, the distributional questions associated with climate change and coastal communities are significant. What do the community consider is fair regarding the sharing of the burden of the costs associated with climate change? These social justice questions (which we consider are economic questions) are likely to become increasingly important in planning and decision making.
2. The recreational and existence value of iconic environmental features such as The Twelve Apostles. The main values to be estimated include the market-based tourism values and the existence and recreational non-market values. The market-based values can be estimated with prices, the non-market values estimated with methods such as

travel cost and contingent or choice modelling. (This project is probably methodologically the easiest of those listed below).

3. The existence, option and bequest values associated with rugged, undeveloped coast which is not used for specific recreational uses. This could be estimated with contingent valuation or choice modelling and seems not to have been investigated.
4. The ecosystem service values of coastal and marine environments. More research is needed where economists and ecologists work together to develop estimates of the value of the services of coastal and marine environments that are important in policy-making. This would not be easy as the conceptual challenges of valuing ecosystem services involve the explicit description and adequate assessment of the link between the structure and function of natural systems and the goods or services derived by humanity. For example, what are the carbon sequestration benefits of seaweed? If they were to be quantified, a value as a carbon sink may be able to be applied.

This is not an exhaustive list but aims to provide examples of the types of projects that are required to progress our understanding of coastal economic values. This information and knowledge is essential if coastal economic values are to be incorporated in decision making and effective integrated coastal zone management.

5. Conclusions

In our view, there is a clear need for robust information on social, environmental and economic values to be available for coastal decision making. We believe that economic valuation may be able to provide an important degree of parity between these inputs so that truly balanced decisions are able to be made.

Economic value is often far broader and, consequently, significantly greater than most practitioners and community members realise. Techniques to understand valuation have improved markedly in recent years, and are able to provide the necessary robustness that decision making requires. The implications of not understanding value, particularly in the context of risk assessment and liability, are very significant and therefore we view valuation as a very high priority.

However, little work has been undertaken on economic value of the coast. We recommend this gap be addressed urgently and have highlighted several opportunities to improve our understanding of economic value and therefore our ability to deliver integrated coastal zone management.

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