Sociocultural Importance of Wetlands in northern Australia

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We want Goose, we want fish.
Otherman want money.
Him can make million dollars,
But only last one year.
Next year him want another million.
Forever and ever him make million dollars…
Him die.

Million no good for us.
We need this earth to live because…
We'll be dead,
We'll become earth.

This ground this earth…
Like mother and brother.

Trees and eagle…
You know eagle?
He can listen.
Eagle our brother,
Like Dingo our brother.

We like this earth to stay,
Because he was staying for ever and ever.
We don't want to loose him.
We say 'sacred leave him'.
Bill Neidjie with S. Davis and A. Fox

ABSTRACT

Although wetlands provide many goods and services to people; ecological, economic and socio-cultural, they are often undervalued. In particular, the sociocultural importance of wetlands is often ignored and difficult to capture with traditional economic valuation methods. There currently exists no framework to assess and value the social and cultural importance of wetlands. Although sacred sites, land rights and native title based on spiritual relationship to land are legally recognized, water however is not.

A typology of sociocultural functions and values has been created in order to assess the sociocultural importance of wetlands in northern Australia. The typology includes tangibles as well as intangibles; human health, cultural heritage, spiritual and existence value, inspiration and expression, knowledge, sense of place, aesthetic quality, tourism and recreation, and peace and reconciliation. Indicators have been selected for these sociocultural values and scores have been attributed to them on the basis of interviews and best professional judgment. Scores have been attributed for different stakeholders such as Aboriginal people, Fishers, Pastoralists and tourists make different uses of water and hold different sociocultural values related to water and land.

Remaining challenges include, the selection of appropriate indicators and valuation processes; the need for the application of appropriate guidelines and methodologies to assess the sociocultural importance of wetlands; setting in place management methods and policy instruments that facilitate integration of sociocultural importance; and facilitating equitable trade-offs and compensation mechanisms between intangible values and development, conservation and poverty alleviation.

INTRODUCTION

This article draws from research experiences gathered from coastal floodplains and wetlands the Mary River catchment,,in the Northern Territory (NT) of Australia; the Daly River catchment; and the wetlands surrounding the Kunbarllanjnja community situated in Western Arnhem Land. The later borders the East Alligator River and neighbours Kakadu National Park, which is listed as an UNESCO World Heritage Site for its cultural and natural values. With the exemption of the Mary River, the wetlands in the region are Australia's largest seasonal wetlands currently unaffected by river regulation or other substantial structural or hydrological modification (Finlayson et al., 1988). The wetlands of the NT and northern Australia at large are essential to the maintenance of viable populations of many aquatic flora and fauna species like lilies, pandanus, birds, fish and reptiles. These play an important role in the nutrition and culture of the Aboriginal peoples and sustain important recreational fisheries and tourism.

As these unique tropical rivers, floodplains, wetlands and estuaries have remained relatively undeveloped compared to those of other regions in Australia, there is now increased interest in finding opportunities to productively develop their land and water resources. Under the increasing development pressure, care needs to be taken to protect downstream users and wetlands of high conservation value (Land & Water Australia, 2004). These wetlands have, in a number of cases, become icons in the 'Northern Territory experience'. Some are registered Ramsar sites whilst others are registered for ther national significance (PWCNT, 2000).

There is a need for effective management initiatives to be employed by decision-makers and land managers alike to protect the values of these rich wetland ecosystems. In the Northern Territory, this means that decision making in relation to development and planning of water resources should be supported by a comprehensive multi-sectoral approach (Land & Water Australia, 2004).

A view over the wetlands and floodplains at Kunbarllanjnja community seen from Injalak Hill. During the wet season the land is covered under an extensive sheet of water cumulating as precipitation reaches totals 3000 mm. to 4000 mm. (from around November till April).

Multi-sectoral and integrated catchment management approaches for the planning of land, water and natural resources have proven effective in other parts of Australia. The Northern Territory however is characterised by a number of unique conditions such as remoteness and low population density. Elsewhere in Australia these and other factors have contributed to a broad array of community-based management structures such as Landcare, Coastcare and Waterwatch, but there are also distinct opportunities for Aboriginal People. The successful and rapidly growing "Caring for Country" movement is effectively revitalising the traditional relationship between the cultural values and land management strategies of Aboriginal People on Aboriginal owned lands. This includes increasing possibilities for participation of Aboriginal People in wetland management (Storrs 2001). However, these developments are not sufficient. It is recognised that in many cases community knowledge remains largely untapped, whilst traditional knowledge held by Indigenous communities is still being lost. Once this knowledge is lost it will be lost forever.

Including cultural values of natural resources in planning and management has posed the need for re-tooling and creation of innovative assessment approaches that ultimately support sustainable development through equitable decision making. For example, regarding the planning of proposed water reallocation plans in the NT there does not seem to be an adequate government mechanism or procedure in place to take into account the cultural importance that the Aboriginal People attach to water. This is remarkable reconsidering the fact that 43.9% of NT land is under Aboriginal title. However these cultural values of water are increasingly recognised to play an important role in sustainable planning of water, wetlands and the coastal zone. In southern Australia

integrated river basin management of the Murray-Darling system has led to the development of what is called cultural flow. Cultural flow is not merely the quantification of the amount of water needed to satisfy "cultural" demands it extends to a working relationship between Aboriginal people, communities and the management of the river system.

Various stakeholders in the NT have expressed their desires to see more open and participatory forms of planning and ultimately guidelines for the incorporation of sociocultural values and related environmental functions in these planning processes (like the concept of cultural flow). Overall it has been recognised that this is an important factor to gain cooperation from local and indigenous communities. Moreover, conservation and natural resource management programs are likely to have only limited success without the support of local communities (Land & Water Australia, 2004). Including sociocultural values in the assessment and planning process can help to exclude non-sustainable development decisions. Also obstacles such as vested competing interests can be transcended and ideally inappropriate or incomprehensive management and policy actions can be identified.

THE FULL VALUE OF WETLANDS

Wetland ecosystems provide many diverse resources and services and are of critical ecological and sociocultural importance to human well being. As one of earth's most productive ecosystems, wetlands directly and indirectly support millions of people in providing goods (such as food and raw materials) and services (such as flood control, water filtration, aesthetic beauty and recreational benefits) (Stuip, et al., 2002). The Millennium Ecosystem Assessment (MEA) estimates 7% of the earths surface to be wetlands delivering 45% of the worlds natural productivity and ecosystem services of which the benefits are estimated at 15 trillion US$ a year.

Despite these benefits, the "full value" of ecosystem functions is often ignored in policy-making, environmental management plans and corporate evaluations of development projects. As a result of the failure to fully account for ecosystem values 50% of the earth's wetlands is estimated to already have disappeared. Hence, uninformed decision making often leads to unnecessary ecological damage, social problems and a waste of financial resources, which is now belatedly recognised through analysis of expensive wetland restoration actions. To ensure proper decision-making regarding the conservation and sustainable use of ecosystems, further and improved information is needed on the functions and the full ecological, sociocultural, and economic value of the goods and services ecosystems provide (Costanza et al, 1997, deGroot et al, 2002). Increasingly, scientific studies are showing that multi-functional sustainable use of ecosystems is, in most cases, economically more beneficial than non-sustainable, single purpose use, if all functions are properly accounted for (Balmford et al., 2002, Millennium Ecosystem Assessment 2003).

Wetlands and water play a key role in many ecosystem services that contribute significantly to human well-being. Likewise, people make diverse use of water and hold different social and cultural values related to water and wetlands. In order to assess the sociocultural importance of wetlands these values need to be identified and categorized in a comprehensive manner. One approach for achieving this is by using an analysis of wetland functions goods and services. Following the ecosystem services classification of the recent UN Millennium Ecosystem Assessment, ecosystems provide, supporting, provisioning, regulating and "cultural services" (non-material benefits) obtained from ecosystems. A similar classification is used by the Ramsar convention's Scientific and Technical Review panel (STRP) in refining technical guidance for valuing wetland goods and services (deGroot and Stuip, 2005). Furthermore, the Ramsar

bureau recognizes the importance of cultural aspects of wetlands through resolution VIII.19 (COP8 DOC15) which provides a classification of non-material values that can serve as basis for assessment of cultural values.

The sociocultural importance attached to wetlands is strongly related to a cluster of intangible values. In most classifications of ecosystem functions goods and services this cluster of intangible values is covered by the terms cultural and amenity, sociocultural or information functions (MEA, 2005, deGroot 2002, Folke and Moberg 2003). Most classifications encompass the following more or less similar or overlapping intangible human ecosystem relations; human health; cultural heritage; spirituality; aesthetics; existence; recreation and tourism; inspiration and expression; knowledge; sense of place; peace and reconciliation. For an explanation of these categories see the typology of sociocultural functions and values in table 1. Being largely within the domain of the IUCN-WCPA Task Force on Cultural and Spiritual Values of Protected Areas (CSVPA) the work accomplished by the taskforce has been very helpful acting as guidance for compiling a typology of sociocultural or intangible values and assessing the sociocultural importance of wetlands in the NT. However, when creating such a typology one has to accept that definitions of classification categories overlap. According to Harmon (2003) there is no particular reason to artificially attempt to eliminate this overlap since because the definitions are all used at one time by different technical or academic disciplines. Hence, overlap needs to be dealt with according to the purpose of the assessment and most appropriate valuation methods.

Table 1: Typology of sociocultural values,

Sociocultural functions and values	Short description	Indicators - measurement units
Importance to human health	Therapeutic effects of nature on human psyche and physical health effects on or relationship between people and natural environments that creates the potential for healing and enhancing physical and psychological wellbeing.	▪ Suitability and capacity of the natural system to provide health services ▪ Restorative and regenerative effects on people such as decreased levels of stress and mental fatigue (restorative effects) ▪ Decreased need for health care services and medication ▪ Socio economic benefits from reduced health costs
Cultural Heritage	All the qualities, traditions or features of life that have been continued over many years and passed on from one generation to another, especially ones that are of historical importance or that have had a strong influence on society.	▪ Historic sites and features ▪ Role in cultural landscapes ▪ Cultural traditions ▪ Culturally significant species ▪ UNESCO world heritage, Man and Biosphere reserves, Belvedere listings, NHT listing, etc.
Spiritual	Sacred, religious or other forms of spiritual inspiration derived from ecosystems. Importance of nature in symbols and elements with sacred and religious significance. Qualities of nature that inspire humans to relate with reverence to the sacredness of	▪ Presence of sacred sites or features / SNS ▪ Role of nature in religious ceremonies and sacred texts ▪ Oral tradition, song, chant & stories. ▪ Totemic species, customary use of flora and fauna ▪ Traditional healing systems
Existence	Importance people attach to nature for ethical reasons (intrinsic value) and intergenerational equity (bequest value). The satisfaction, symbolic importance, derived from knowing that outstanding natural and cultural landscapes have been protected and exi	▪ Expressed preference for nature protection and conservation (e.g. through donations, voluntary work CVM). ▪ Willingness to pay ▪ Donations and contributions to nature conservation organistaions
Recreation & tourism	Variety in landscapes with (potential) recreational uses including natural and cultural heritage. Increased health and well being due to the restorative effects of experiences with nature and vegetation.	▪ Capacity to provide for; eco-tourism; (recreational) nature study; cultural tourism; resource based tourism (fishing, hunting) ▪ Presence of; scenic routes: recreational facilities, tour operators, guides, etc.
Inspiration & expression	Ecosystems provide a rich source of inspiration for art, national symbols, architecture and advertising	▪ Use of nature as motive in books, film, painting, music; ▪ Folklore, national symbols, flagship species; ▪ Architecture, advertising, etc
Knowledge	All forms of knowledge and information dereived from or based on ecosystems through science or traditional means.	▪ Traditional Knowledge systems (TEK, traditional Law, traditional healing systems etc.) ▪ School excursions ▪ Scientific research ▪ Eco tourism / Nature education ▪ Bench marking (for flood control or vulnerability to climate change, food security etc.) ▪ Monitoring (related to water watch, land-care, coast care, bush care etc.)
Sense of place	People value the sense of place that is associated with recognised features of their environment, including aspects of the ecosystem	▪ Historical Heritage NHT listed Story lines and sacred sites ▪ Sense of place studies ▪ Cohesion of; family; social or cultural groups, (skin-names) ▪ Language an linguistic diversity ▪ Caring for country
Aesthetic	Preference for nature and natural elements related to the beauty of nature.	▪ Preference for wilderness over cultivated landscapes ▪ Presence for scenic drives and routes ▪ Increased value of property in natural settings
Peace & reconciliation	Fostering regional peace and stability through cooperative management across (international) land or sea boundaries or as cultural spaces for the development of understanding between traditional and modern societies or distinct cultures.	▪ Border crossing resource sharing ▪ Reconciliation between cultures ▪ Increased social integration ▪ Joint or co-management ▪ Leases of land and minerals ▪ Equitable IP sharing ▪

Source: Adapted from English and Lee (2003), deGroot R.S., et al. (2002), Harmon, D., Putney, A. D., (2003), MEA (2003), Shultis (2003).

SOCIOCULTURAL VALUATION

What can be valued and how can this value be expressed and communicated? Table one shows a non exhaustive overview of indicators and measurement units related to sociocultural functions and values. The value of sociocultural functions, especially the intangible are generally hard to communicate to decision makers. These values are poorly covered by economic or conventional valuation tools partly because they lack clearly or objectively quantifiable indicators. There are several reasons which explain why this is so. First, valuing intangibles is based on an intercultural process which evolves between different knowledge and belief systems. Secondly, there is no comprehensive framework or valuation methodology for decision makers dealing with intangible values.

However, it is clear that some of these human ecosystem relations like tourism or aesthetics can be addressed by economic valuation tools (e.g. using respectively indicators such as existence value and the increased value of property in a natural setting). Translated into dollar value this is a poor reflection, an approximation (but nonetheless useful in some cases) that does not represent adequately the "full value" of the human ecosystem relation. More clearly, sociocultural functions and values have been found to relate to use as well as non-use values of wetland's goods and services. Where use values are concerned monetary value of goods and services in terms of market price might resemble or contest the value of the sociocultural service. For example, the value of Paperbark trees (*Melaleuca quinquenervia)* might be estimated indirectly through the market price of Aboriginal people's artwork for which their bark is used as a natural canvas. However, the spiritual and inspirational value of the artist put into the painting has different dimensions often relating to aesthetic value and sense of place. Sense of place and the interaction with the trees are also conserved in language. In Wagiman language which is one of the ten languages in the Daly River catchment still spoken fluently by approximately ten people, a place with a lot of paperbark is named specifically "wunybuwunybu" signifying the importance of the wetland related paperbark to Aboriginal people.

Returning to the applicability of economic valuation which is often proposed as a primary valuation tool we must make some considerations prior to the valuation. As is often the case when using economic valuation tools in larger assessments their uncertainties accumulate into the Total Value. This creates uncertainties regarding their accuracy which may cause people to condemn the assessment as a whole. Moreover economic valuation as such does not consider how people or individuals respond to resource allocations and does not regard the longer term allocation of resources. Methods of economic valuation are static and ignore all non-linear interactions and complexities such as ecological thresholds, socio-dynamics and irreversibility. It is therefore important to understand the limitations, caveats and pitfalls of economic valuation, because when methods are inappropriate or flawed they are worse than useless; they perpetuate misunderstanding of the concept of value (Pagiola, et al., 2004). Klaus Töpfer expressed it as follows: "The value of ecosystems, landscapes, animals and plants cannot adequately be measured statistically or in merely financial terms as the values of biological, cultural and linguistic diversity are intimate to life in its entirety". A solution can be to broaden valuation techniques to include sociocultural and ecological aspects and balance them equally with economical aspects. When formalised, this method could become something like a decision support system. However it is clear that numerous obstacles regarding indicators, scale and the nature of value have to be overcome before any reliable system can be developed.

Nonetheless, an attempt has been made by the author to put a numerical value on the indicators provided in table 1. For each indicator four values were

attributed corresponding with the main stakeholders utilising the wetlands namely; fishers, tourists, landowners (mainly pastoralists and agriculturalists) and Aboriginal people. The numerical value was based on best professional judgement derived from circa 60 interviews with local people, tourists, fishers, Aboriginal People, government officials, park staff and representatives of relevant institutions. The approach in itself is interesting; it becomes possible to graphically display for example the importance these stakeholders attribute to traditional or local knowledge in one of the three wetlands. However as the analysis took place it was realized that much more in depth and lengthier research would be needed to determine more specific indicators and to come to a display of information useful for equitable decision making. Nonetheless, general conclusions and lessons learned from this valuation are particularly useful to illustrate this article. In addition to the applied methodology alternative methods can be recommended such as Multi Criteria Analysis, Judgment (personal and group), Expert opinion (jurors, referees), Participatory Rural Appraisal etc.

THE PERCEPTION OF VALUE

To be able to account for the sociocultural importance of wetlands we need to understand its desirability and usefulness in relation to human well being. Recognising that different types of spiritual, intellectual, and physical links between human cultures and ecosystems are inseparable, the different dimensions of the human-ecosystem relationship become apparent (MEA, 2003). Moreover, cultural dimensions are often diverse; for indigenous and traditional peoples, community, culture, spirituality, nature and territory are an indivisible whole (Posey, 1999). This illustrates one of the challenges when assessing the sociocultural importance of wetlands using an ecosystem function approach. Sociocultural values can be assigned to almost every single function the ecosystem performs because human well-being is not only inextricably linked to goods and services provided by ecosystems but more so by the functioning of the ecosystem as an indivisible whole.

Clearly, one wetland can be of significance to various groups of people and hence support a myriad of distinct and possibly even conflicting sociocultural values. However, an analysis of wetland functions, goods and services is particularly useful to show that sociocultural importance does not relate trough a one-to-one relationship with cultural services, but also may be attributed for example to production- or regulation functions. This can be explained by the fact that many wetland goods and services are known to be of economic value as well as being of significant sociocultural importance. For example, fish in wetlands can provide a basis for substantial indigenous, commercial and recreational fishing potential, but the same fish can also be important as a sacred, totemic or iconic species. This is illustrated by a comment of an Aboriginal woman about recreational fishers anchoring at sacred sites in the Daly River:

> *"We are talking about water, but these people are sitting on my ancestors under the river, that river is really alive".*

Furthermore the fish can be of considerable importance to science for monitoring and benchmarking of water quality. From this we can conclude that fish support tangible (production) functions, such as food provision, and intangible functions, such as knowledge generation and spiritual well-being. Moreover these differential values have at times steered the debate on resource rights and access to the resource inviting the NT government to use fishing as a political leverage (Palmer 2004).

Barramundi (Lates calcarifer) rock painting at Injalak Hill Kunbarllanjnja communities' primary Art site. The style of painting where the inside of the animal is visible is called "X-ray". It is part of the world's oldest continuous painting tradition which confirms the living spiritual relationship of Aboriginal people and the wetlands that form their environment. Photo by Bas Verschuuren 2004.

As is often said; "The way we categorise things limits the way we perceive things". This is well illustrated using a fisheries related example derived from NT coastal wetlands. In many coastal communities all around the world cultural traditions have developed in synergy with the coastal zone as a form of co-evolution and are therefore important regarding stabilising social and institutional structures that underlie cooperative fishing activities (Pomeroy, R. and Berkes, F., 1997). In the NT these social and institutional structures are poorly developed between stakeholders, who are ignorant of each other, as a result of underlaying contested cultural and social values.

In this case, cultural values encapsulated in dreamtime stories have been passed on over generations through, dance, song, art and ceremony. These dreaming tracks link social groups and geographical areas (Jackson 2004). Memmot (2004). Recorded examples of dreaming tracks in coastal areas, such as in the Gulf of Carpentaria, even include case where ancestral beings, such as the dingo, rainbow serpent and Dugong, are passing through areas that are now sea. Similar developments have been described along the floodplains in the Alligator rivers region in the vicinity of Kunbarllanjnja. In this case story lines describing the dreaming tracks of the ancestral beings have been preserved at least since the physical creation of wetlands inundated the land (Chaloupka 1993).

Because Aboriginal people do not distinguish between land and water they see any claim on the sea within their traditional responsibilities as justifiable disregarding the fact that Aboriginal freehold title by law includes land and does not extend to water or the sea or the fish in it. As a result of disputes over

ownership of the coastal zone and the sea, coastal policy has not yet effectively developed. Despite the fact that Aboriginal people are legally excluded from commercial fisheries other than for self-subsistence fisheries, Aboriginal claims of the sea are poorly understood by professional and recreational fishers. Alternatively, to protect sacred dreaming sites Aboriginal people call upon the Sacred Sites Act. after which (in most cases) these areas become off limits for non-Aboriginal people, including commercial and recreational fishers, who feel excluded from what they regard to be a common resource.

Both, the contested claims on ownership and the protection of sacred sites have resulted in court cases giving little space to reconciliation among the parties involved. It also shows cultural values need to be supported by a rights based approach because they are very likely to be outweighed by the economical value of production functions. Functional legal arrangements have lead to co-management agreements and the granting of customary or user rights. Specifically in cases where land claims were considered to result in lengthy and expensive court cases, this has often been used as a means to reach an effective compromise. Co-management arrangements are in this respect a good example of empowering local people through conserving cultural diversity that in its turn naturally contributes to the maintenance of biodiversity.

NEED FOR RECONCILING PLANNING PROCESSES

According to the deGroot and Ramakrishnan (2005) cultural services are tightly bound to human values and behaviour, as well as to human institutions and patterns of social, economic, and political organisation. Often tradeoffs have to be made when material capital is accumulated at the expense of environmental security or sociocultural values (as illustrated by the poem in the beginning of this article). Because of their important role, cultural services are in need of conservation and in most cases protection; once gone they cannot be replaced. In the light of these conservation requirements it may be expected from development projects that they incorporate best practice and management styles. It may be argued that governments should stimulate the development of such measures including the implementation of guidelines such as the CBD's Akwé Kon[1] which propose a stepwise approach towards adaptation of the relevant processes within the government and private sectors.

In the face of regional development, assessment methodologies need to upscale from a local to a regional level, which has posed the need for re-tooling and innovative approaches. This is especially true when taking into account that conventional top down chains of management and policy need to become able to be influenced by outcomes of participatory processes and transparent working methods. Obstacles such as vested competing interests, conflicts and inappropriate or incompatible management and policy need to be put on the table and re-examined in order to incorporate a participatory stakeholder based approach.

Perceptions of cultural services are more likely to differ among individuals and communities than, say, perceptions of the importance of food production. Moreover, assessment and valuation of sociocultural services should result in clarifying tradeoffs based on competing interests in the light of human well-being. Equitable decision making itself is a social choice, but can only be reached when all stakeholders have been involved in the assessment process. This includes empowering people and communities to participate adequately in the relevant

[1] Voluntary guidelines for the conduct of cultural, environmental and social impact assessments regarding developments proposed to take place on, or which are likely to impact on, sacred sites and on lands and waters traditionally occupied or used by indigenous and local communities

development processes. Often the contrary is true, as is expressed in a social study undertaken in the Alligator River region:

> *"social problems are seen as a manifestation of a lack of real control and the absence of any sense of real control among local people. The smothering of Aboriginal values and priorities by overlying non-Aboriginal structures generates a sense of inadequacy and powerlessness".*

Learning from such experiences it is of the utmost importance to communicate with the people appointed by the community. Doing so often requires preparations in terms of giving public notice, gaining access to land and in terms of getting people organised. Because this can be a lengthy process, the Aboriginal People of the Daily River saw themselves confronted with an impossible time schedule prepared by the Community Reference Group established on the behalf of a water re-allocation project. The schedule did not permit them to adequately relay the community's views and concerns regarding water, which caused the Aboriginal people to withdraw from the planning process. However, there is potential for an increasing role for cultural values in wetland management. But first there needs to be agreement on which values are important and how these values will be assessed and communicated

Corroboree – Ceremonial link of spiritual and communal life with landscape and nature through dance and song.

In reality, sociocultural values are too often used as a vehicle for strengthening decision making rather than being the decisive (objective) source

that is often based on more easily assessable market based arguments. Due to the differences in the numeric nature of expressing market based values and sociocultural values, sociocultural values can be a merit or a burden depending on how respective actors in a debate wish to support their case. Coming to terms with valuation methods, for "making the priceless count", is probably the most challenging aspect of valuation. Developing a value assessment framework that works as a sort of "easy packaging" with ready made questions tasks and boxes to tick off might be a tool that would meet the demands of managers and policy makers, but surely would not do justice to the actors in question and the discipline of social sciences as such. However care needs to be taken regarding the approach of assessment according to a NT government official;

> "*One culture is dominating the other and telling others what is or isn't important: I certainly don't see us being in a box or framework and Aboriginal people coming up to us and saying 'Well this is the most important set of values and you fit here within that framework…No one conceives of that at all"*

Despites difficulties, the need exists with the NT government to make explicit the linkages that people have with country and natural resources to further enhance planning. Social relations and structures are now receiving increased attention in bringing about catchment wide change in land use policy and practice (Jackson 2004). Most of the problems are perceived when people's values are being inadequately interpreted or defined. According to English (2000), the fact of defining intangible values is not itself culturally neutral, it comes from the western scientific tradition.; but if we don't define intangible in some way it will be virtually impossible for them to influence management. Moreover, it has become very clear, according to Max Finlayson, that with a changing attitude towards the growing importance of the role of cultural values in the decision-making process, there is a need to move from traditional biophysical sciences towards social sciences and integration of the two.

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