

Values and Human Inter-relationships with Nature

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1. INTRODUCTION

The paper discusses different meanings of value, and how value can be considered from different analytical perspectives. Such different perspectives can be used to produce information about human interactions with nature to help develop integrated approaches to programmes which affect relationships between indigenous peoples and local communities and forest ecosystems.

The term 'value' has a range of different meanings such as:

- value as a synonym for standards or ethics guiding individual behaviour
- value as a tool for cultural expression through defining important and enduring beliefs shared by the members of a culture about what is and isn't good or desirable
- value as a criterion for direct or reciprocal exchange, based on the amounts of goods/ services or money, thought to be a fair and suitable equivalent for something
- value as a means of assessing usefulness (in terms of the importance or significance to the possessors of an asset)
- value as a criterion for monetary worth
- value as a term for inherent non-anthropocentric qualities.

'Value' is used in this paper in the sense of a quality attributed to an entity (however defined) which distinguishes it from other entities which are attributed with more or less of this quality. Thus value is a concept which enables comparisons between entities in terms of specific characteristics such as their financial outlay, 'significance' or some other measure of status.

'Valuing' is the process of attributing value to an entity. Although 'valuing' is commonly interpreted as estimating the value of something in monetary terms (see Appendix 1), any type of value that is attributed to an entity is attributed through a process of valuing. The attribution of cultural value to an entity, for example, also involves a process of valuing. Values can be expressed in quantitative and qualitative terms (e.g. dollars, percentages, levels, degrees etc.), or in the case of intrinsic value(s) (see section 2) in terms of the fact of their existence.

A key factor in discussions about value is the difference between anthropocentric and non-anthropocentric types of value. Many of the meanings given to the term 'value' relate to human use of entities, whether such use involves direct, indirect and 'non-use' of these entities. Such anthropocentric types of values can be contrasted with intrinsic (non-anthropocentric) types of value, which are premised on the idea that entities can have 'value' outside of their human use, i.e. value in their own right. The contribution of forest ecosystems to continued life on Earth (whether including humans or not) could be seen as an intrinsic type of value.

It is also useful to distinguish the different meanings of value from the meanings of 'benefits', as these terms are frequently used interchangeably. For example, Feary notes in the context of aboriginal peoples' interactions with the New South Wales marine environment that:

"The term 'benefits' and its corollary 'value' are vague terms...Most definitions of benefit/ value depend on the context in which they are being assessed e.g. economic theory, social science research, etc. There is no common language or understanding across government departments and many terms are used interchangeably e.g. benefits = values = assets = significance" (Feary, 2015, p79).

'Benefits' are defined in this paper as the advantageous outcomes of the human use of entities already attributed with value. Benefits are obtained from the direct, indirect and 'non-use' of entities (see Appendix 2). As intrinsic types of value are explicitly non-anthropocentric, this definition of 'benefits' does not apply to that type of value. Benefits represent the additional wellbeing obtained from using the entity concerned, compared to not using it.

2. DIFFERENT CATEGORIES OF VALUE

The International Platform on Biodiversity and Ecosystem Services (IPBES) suggests the following non-exclusive and non-hierarchical classification of the values humans attach to nature i.e.:

- non-anthropocentric values ('intrinsic' values of nature)
- anthropocentric ('instrumental') values (Nature's benefits to people)
- anthropocentric ('instrumental and 'relational') values i.e. quality of life (IPBES, 2015).

The IPBES categorisation is shown in Table 1. The values identified in Table 1, i.e. intrinsic, instrumental and relational values, can be defined as follows.

Intrinsic value

Intrinsic value is a concept which has been used in different ways. Some definitions of intrinsic value relate to ethical arguments that all living things have 'the right' to exist independent of the value humans ascribe to them. Their existence has value through its contribution to the continuing functioning of life on Earth.

In contrast, Harmon and Putney, define 'intrinsic' value as follows. Entities exist which have not been ascribed 'value' by humans for various reasons e.g. humans are unaware of what (anthropocentric) values these entities possess, or even unaware of the entity itself. Such entities only possess value once they have been 'valued' by humans. Such entities of course exist, whether we attach values to them or not; these entities have 'intrinsic' value in their own right. In this sense, intrinsic value represents a form of 'latent' value, which exists before instrumental values are ascribed to the entity in question, and before the intrinsic value is transformed into some other form of value (see Figure 1):

"...intrinsic values have the potential to become appreciated by the beholder. The act of appreciation confers *instrumental* value: that which serves a purpose. The more an intrinsically valuable natural object is appreciated by people the more instrumental value it gains..." (Harmon and Putney 2003, p15,)

Whatever definition is applied, definitions of intrinsic value share the idea that entities have value in their own right, independent of their value to humans. This common idea is used in this paper as the basis for the discussion of different perspectives of non-anthropocentric types of values.

Instrumental value

Instrumental value is the value attributed to things that can be used to achieve some purpose. For example, food and medicine have instrumental values as a means of achieving survival and health.

Relational value

Table 1 also refers to 'relational' values. These are a type of value attributed to particular interactions between humans, and between humans and nature, leading to good quality of life or wellbeing, such as the values attached to security and education.

Relational values are anthropocentric, in that they are attributed to entities by humans and used to achieve a particular outcome (benefit) such as improved health or security. Therefore, they can be regarded as instrumental values. However, it is possible to make a distinction between entities with (instrumental) material values and those with (instrumental) non-material, relational values. Such intangible values correspond to the relational values shown in Table 1. (Non-material values relating to human interactions with nature are discussed in section 3.6.) A possible relationship between the above types of value is shown in Figure 1.

Figure 1: Relationship between intrinsic and instrumental values of nature

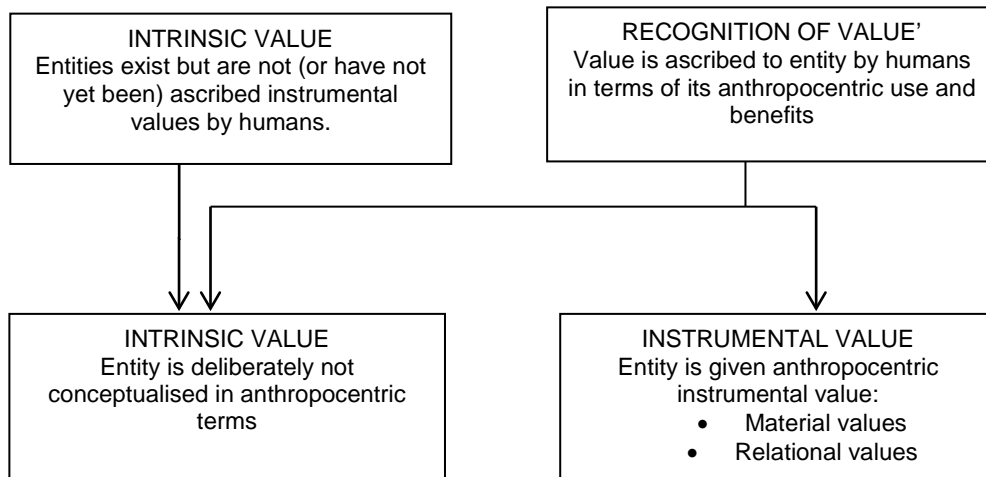


Table 1: A categorisation of values applied to Nature

Focus of values	Types of values		Key targets of valuation	Examples of key 'things' of value
NATURE <i>Intrinsic value</i>	Non-anthropocentric		Individual organisms	Living beings (biocentrism), sentient beings (animal welfare/rights)...
			Biophysical assemblages	Populations, communities, ecosystems, biomes, the biosphere, Gaia, Pachamama, Mother Earth...
			Biophysical processes	Evolution, ecosystem functions and processes, ecological resilience ...
			Biodiversity	Genetic, functional, taxonomic and phylogenetic diversity, uniqueness, vulnerability...
NATURE'S BENEFITS TO PEOPLE	Anthropocentric	<i>Instrumental</i>	Biosphere's ability to enable human endeavour	Energy: Embodied energy, Human Appropriation of Net Primary Production (HANPP)...
				Materials: Total material consumption, life cycles, carbon footprint, water footprint...
				Land: Land cover flows, ecological footprint...
			Nature's ability to supply benefits (basis of benefits)	Habitats for fisheries, contribution of soil biodiversity to sustenance of long-term yields,...
			Nature's gifts, goods and services (actual services enjoyed)	Regulating: Climate regulation, regulation of water flows, pollination, biological control...
				Provisioning: Food, medicine, timber, water, bioenergy...
				Cultural: Ecotourism, education, psychological benefits, bequest value, ...

Contd.

Table 1: A categorisation of values applied to Nature (contd.)

Focus of values	Types of values		Key targets of valuation	Examples of key ‘things’ of value
GOOD QUALITY OF LIFE		Relational	Security and Livelihoods	Physical security, political stability, food and water security, energy security, livelihood security...
			Sustainability and Resilience	Social-ecological resilience, social, economic and ecological sustainability...
			Diversity and Options	Biocultural diversity, diversity of current and future options ...
			Living well in harmony with nature and Mother Earth	Stewardship, relationships and interactions between people and nature inherently entwined as systems of life, as also indicated by time spent for managing ecosystems, conservation activities, contemplation of nature...
			Health and Wellbeing	Physical, mental, holistic health, biophilia...
			Education and Knowledge	Inspiration, education, experience, learning space...
			Identity and Autonomy	Sense of place, sense of community, historical values, agency, self-determination...
			Good social relations	Community cohesion, social resilience, conviviality...
			Art and Cultural heritage	Inspiration, artistic creation...
			Spirituality and Religions	Sacred sites, totemic beings, spiritual well-being...
			Governance and Justice	Environmental justice, intra-generational equity, inter-generational equity...
Note: Any given ‘thing’ of value can contribute (in some way) to multiple types of value, depending on the perspectives of people involved. For example, snow leopards can be valued intrinsically as sentient beings, they can be valued instrumentally for their contribution to ecosystem’s resilience, and appropriate treatment of snow leopards can be judged via relational values.				

Source: IPBES, 2015

3. DIFFERENT PERSPECTIVES OF VALUE ATTRIBUTED TO NATURE

The different meanings given to anthropocentric instrumental and relational value and non-anthropocentric value can be explored through different analytical perspectives, as shown in Figure 2, and discussed in the following section.

Figure 2: Some analytical perspectives for exploring different meanings of value

Meaning	Possible analytical perspective
(i). value as a synonym for standards or ethics guiding individual behaviour	Psychological
(ii). value as a tool for cultural expression and identification through defining important and enduring beliefs shared by the members of a culture about what is and isn't good or desirable	Anthropological
(iii). value as a criterion for direct or reciprocal exchange, based on the amounts of goods/ services, money, status, obligations etc. thought to be a fair and suitable equivalent for something (over the short or long term)	Economic, Anthropological
(iv). value as a means of assessing usefulness (in terms of the material or non-material (relational) importance or significance to the possessors or potential possessors of an entity	Economic
(v). value as a criterion for monetary worth	Financial
(vi). value as a term for inherent non-anthropocentric qualities	Ecological, Anthropological

3.1 A psychological perspective of value as a synonym for standards or ethics

Using Values Theory, Schwartz defines values as “desirable, trans-situational goals, varying in importance that serve as guiding principles in people’s lives, which have the following characteristics:

- “Values are beliefs. But they are beliefs tied inextricably to emotion, not objective, cold ideas.
- Values are a motivational construct. They refer to the desirable goals people strive to attain.
- Values transcend specific actions and situations. They are abstract goals. The abstract nature of values distinguishes them from concepts like norms and attitudes, which usually refer to specific actions, objects, or situations.
- Values guide the selection or evaluation of actions, policies, people, and events. That is, values serve as standards or criteria.
- Values are ordered by importance relative to one another.
- People’s values form an ordered system of value priorities that characterize them as individuals. This hierarchical feature of values also distinguishes them from norms and attitudes” (Schwartz 2005, p0).

Schwartz suggests that universal human requirements (i.e. the needs of individuals as biological organisms, the requisites of coordinated social interaction and the survival and welfare needs of groups) can produce "motivationally distinct, universal, basic human values" irrespective of cultural context. These values comprise:

- Self-direction
- Stimulation
- Hedonism
- Achievement
- Power
- Security
- Conformity
- Tradition
- Benevolence
- Universalism (Schwartz 2005, p1).

These 'Basic Human Values' represent moral and ethical principles and goals which guide human behaviour, including human interactions with nature. These values affect individual and community attitudes and values towards their interrelationship with nature.

3.2 A cultural anthropology perspective of value as a tool for cultural expression

In simplistic terms, a cultural anthropology perspective can be used to explore the values that communities ascribe to nature in their economic, social and ceremonial uses. These values are affected by culturally-determined rules, institutions, taboos etc. which influence the attribution and prioritisation of values relating to human interactions with nature, including material and symbolic values attached to forest places, harvesting sites, and species. In addition, extra- and intra-community factors influence the cultural definition and attribution of values, and changes in values related to nature (e.g. the role of power and gender in determining how values are ascribed), and decisions about the use and non-use of ecosystem services.¹

Different aspects of the relationship between culture and attribution of values to ecosystems have been considered by a wide range of researchers. For example, Fisher et al. noted the interest in research in:

"...the ways differences of gender, caste, class, age, ethnicity and so on shape human's interactions with nature. Diverse groups, even within the same locality have different values and interests, and conflicting values are struggled over and negotiated in resource use conflicts ((Fisher et al, 2005 p.41-42).

Formal religion and informal faith-based principles can also play a fundamental role in influencing values attached to human relationships to nature. Schwarte, for example, discusses elements of environmental ethics and protection in Islam, i.e:

"Humans are only part of the divinely created scheme of the perfect equilibrium of things and the universe...They are required to conserve the environment as a manifestation of the divine presence and live peacefully on Earth in harmony with the cosmos and the environment (Schwarte, 2003, p568-9).

Verschuuren et al. (2010) provide a comprehensive overview of the connections between culture and nature through the protection of sacred natural sites.

3.3 An economic anthropology perspective of value as a criterion for direct or reciprocal exchange

Direct and reciprocal exchange relating to human uses of the natural environment can be considered from an economic anthropology perspective.

According to O'Neill (2013), monetary and non-monetary trades of goods and services involve pure economic gain and social gain. Both of these motives usually occur simultaneously in non-market economies. However, in market economies, the social component is often missing, except when the exchange is between relatives or friends. Exchange items in non-market economies include more things than food and manufactured objects, such as courtesies, entertainment (e.g. dances and speeches), practical assistance and political alliances.

¹ This discussion itself reflects a particular world view about the inter-relationship between individuals, communities and the natural environment.

Gift exchanges are usually reciprocal i.e. the recipient of the gift is obliged to repay it with another gift. Reciprocity typically results in a continuing sequence of giving, receiving, and repaying gifts. Breaking this obligation to continue the reciprocity is commonly seen as an insult to the other person involved in the exchange. Reciprocal exchanges generally involve a circulation of goods and services, with no net economic loss for individuals because they ultimately receive gifts in return. O'Neill refers to work by Sahlins, who observed three distinct types of reciprocity:

- *Generalized reciprocity*: where gifts are given without the expectation of an immediate return, involving a continuing reciprocal exchange between the partners over time.
- *Balanced reciprocity*: where there is an explicit expectation of immediate return (e.g. simple barter transactions)
- *Negative reciprocity*: where there is an attempt by one party to exchange something they may not want to give up, or when there is an attempt to get a more valued thing than that given in return through trickery, coercion, or hard bargaining. In some cases, negative reciprocity may involve one party willingly giving to give up more than they expect in the short term in order to obtain longer-term gains in status.

Considering indigenous peoples' and local communities' interactions with nature in terms of the above types of reciprocity can provide valuable insights into the different types of anthropocentric values they may ascribe to the use of ecosystem assets for wellbeing.

3.4 Economic perspectives of value as a criterion for direct or reciprocal exchange

Instrumental (anthropocentric) values can be defined in a number of different ways through microeconomic and macroeconomic concepts. These approaches have traditionally focussed on material values, but economists are increasingly exploring approaches to estimating non-material values.

3.4.1. Microeconomic perspectives of value

Microeconomics focuses on the determination of prices, outputs, and income distribution in markets through supply and demand. It is assumed that these arrangements take place in a context where individuals and businesses seek to allocate (invest) their scarce resources of land, labour, capital, and other assets in ways that will maximize their individual return on their investment to maximize their 'utility' or 'welfare'.

It is important to note that the market price consumers pay for a good is not necessarily its economic value, as goods and services not provided in competitive markets may be implicitly assumed to have zero value, and people may be willing to pay more than the market price for a good. Economic value is properly defined as the combination of 'consumer surplus' (the amount people are willing to pay above what they actually pay) and 'producer surplus' (the benefit producers obtain if they receive a higher price than the minimum price they would sell their output for). Some microeconomic techniques used in estimating economic aspects of exchange are summarised below.

- *Efficiency*: Economists are interested in the interaction of supply and demand in markets. Under an efficient allocation of resources no-one can be made better off without someone being made worse off.
- *Scarce resources*: A key principle in economics is that individuals and nations have limited stocks of resources at their disposal, such as time, money, land, and information, and seek to allocate these scarce resources in ways that maximise their wellbeing. Resources can be combined in different proportions to produce goods and services, and substituted for each other to a point.

- *Opportunity costs:* Whenever a resource is used for one purpose, the user forgoes the value they would get from using it for something else (i.e. its opportunity cost). In terms of economic efficiency, users would want to ensure they were using their resources for activities providing the highest return.
- *Welfare, Utility and Wellbeing:* Welfare economics uses the concept of 'utility' as a theoretical indicator of the wellbeing an individual obtains from consumption of a good or service (which they would have had to expend scarce resources to obtain). Economists are concerned with analysing alternative ways in which scarce private and public resources can be allocated to obtain greater individual and community wellbeing outcomes

Total Economic Value

A common framework for showing the different economic values of natural environments, which is underpinned by microeconomics concepts, is the Total Economic Value framework shown in Figure 3. This framework categorises values into direct use, indirect and non-use values, as discussed below.

Direct use values

According to the classification in Figure 3, goods and services used directly for consumption (as opposed to being inputs into production processes where they are transformed into other products), are regarded as having direct use values. Examples of goods and services with direct (extractive) use values include forest products, fisheries, crops and livestock, bushmeat, and medical plants. Examples of non-extractive direct use values include nature-based recreational experiences, research, and education (see Figure 3 below).

Indirect use values

This category of values concerns functions and services used indirectly, with these goods and services generally providing an input into another activity which has economic value. Examples of indirect use values include crop pollination, flood mitigation, mangrove habitats acting as nurseries for commercially valuable fish species, forest carbon sequestration, and sediment and nutrient capture. These types of value are commonly referred to as ecosystem services. It is important to recognise that this classification is anthropocentric. Ecosystem services (which include physical goods as well as 'non-physical' services) are defined in terms of their input into human production and consumption activities (even though some services such as the regulating services of microclimates may not directly provide inputs into production and consumption activities).

Non-use values

Non-use values are rather harder to define, and even to distinguish as different values. Types of non-use values may include:

- *Option value:* the benefit placed on the potential future ability to use a resource, even though it is not currently used and the likelihood of future use may be very low. Future use may include use by existing individuals or future generations. One example of an option value is the value to coastal communities in parts of the Pacific from creation of *tabu* areas (temporary no-take coastal zones to allow fish stocks to recover from overfishing).
- *Bequest value:* the value attributed to maintaining something for the benefit of future generations, for example the value to indigenous Australian communities of knowing a particular cultural landscape is protected so that future generations can maintain cultural traditions associated with the land. N.B. some researchers suggest that option value and bequest value are not non-use values, but deferred use values (hence the dotted line between 'use value' and 'option value' and 'bequest value' in Figure 3).

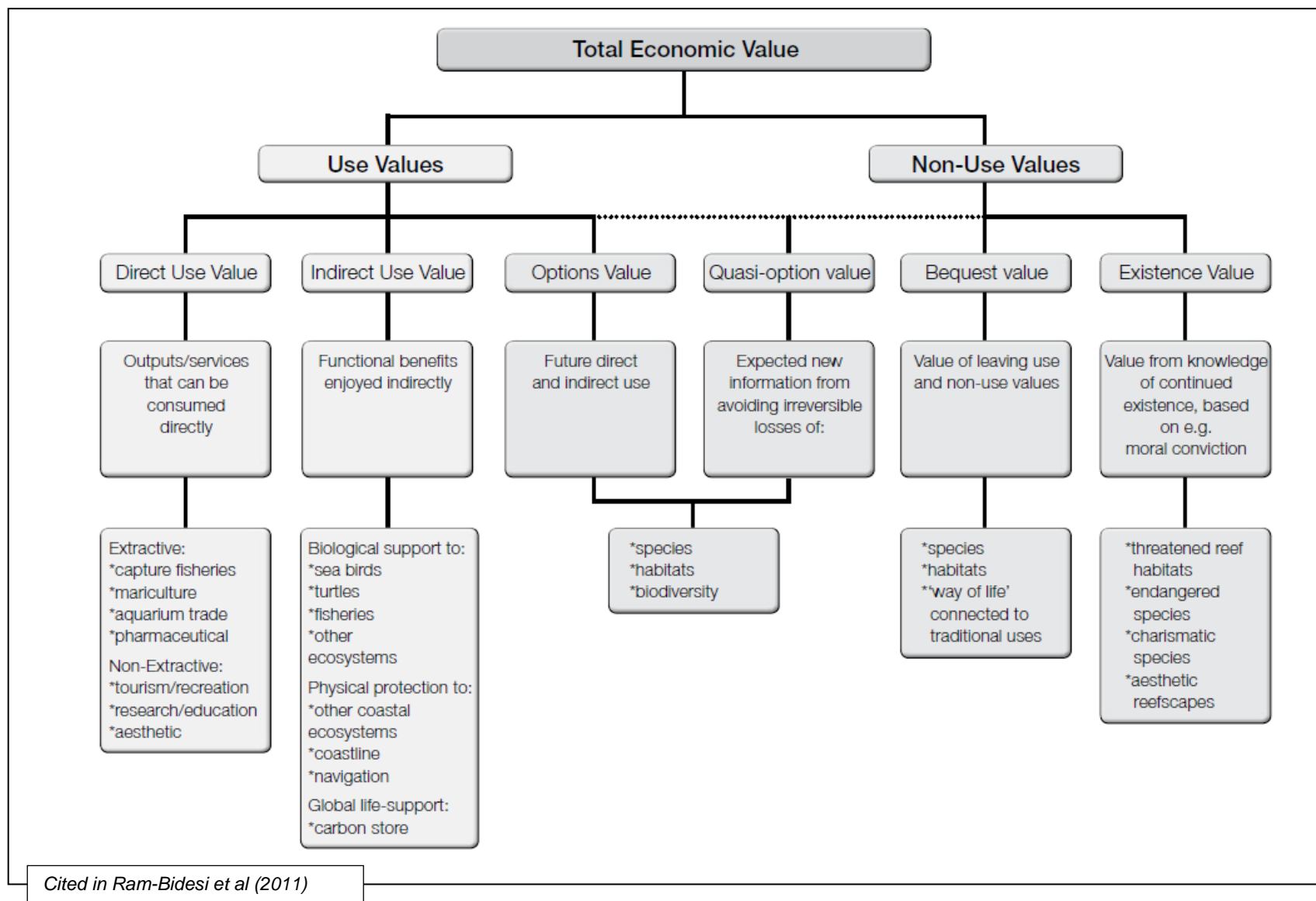
- *Existence value*: the value attributed to the satisfaction the community gets from knowing certain things exist for economic, moral, ethical or other reasons, for example, the value obtained from knowing that a rare species or ecosystems is being protected in its own right (such as the protection of whales in international whale sanctuaries).

It is most important to note that the Total Economic Value (TEV) framework is a concept, not a model or a valuation template. It has become a popular but erroneous approach among some researchers to use this type of framework as a method of estimating the 'total' economic value of an ecosystem or particular environment, by summing the estimates of the different values obtained through the different valuation methods used (see Appendix 1). Value estimates should not be summed to produce a total value for several reasons, including the following.

- 'Total' economic value is not comprehensive, as it does not address biophysical functions and goods and services obtained from the environment that have not yet been identified by individuals, communities etc. as having value (i.e. which have intrinsic value, see section 2).
- There is considerable potential for double counting between use, indirect use and non-use values.
- The framework mixes stock values & flow values (i.e. 'capital' and 'income')
- Values are estimated as static values; changes in value over time, or due to consumption of other resources, are not considered in the framework.
- Conceptually different valuation methods are used in estimating use and non-use values.

Economists are less interested in the total value of an entity than in 'marginal' (i.e. incremental) changes in these values as a consequence of some policy, or management action, i.e. the impact of a new policy or action compared to the absence of that policy etc. To do this, it is necessary to understand how the situation without the proposed policy, activity etc. would evolve over time. Thus it is fundamental to incorporate temporal considerations in estimating how the value of the entity in question would change over time with and without the proposed policy or action.

Figure 3: Total Economic Value Framework

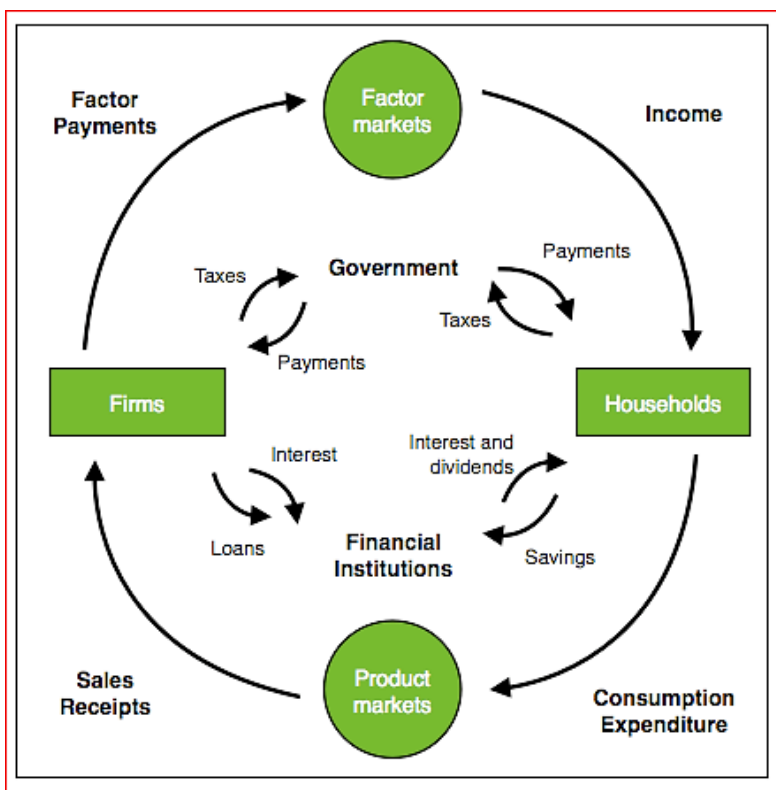


3.4.2. Macroeconomic perspectives of exchange value

Macroeconomics is concerned with the behaviour, functioning and internal interactions of economies as a whole, and uses models that explain the relationship between factors such as national income, output, consumption, unemployment, inflation, savings, investment, international trade and international finance. For the purposes of macroeconomics, an economy may be at the local, regional, national, or international scale.

Macroeconomic can be used, for example, to estimate the economic 'value' of protected area management expenditure and tourist expenditure for different sectors of an economy, whether it be a local, State or national economy. Economies are composed of varying degrees of industrial, household, government and financial institution sectors which interact through a system of inter-sectoral transactions in the form of flows of wages and subsidies, taxes, loans, purchases, and imports and exports. Figure 4 illustrates these flows in terms of a circular flow of monetary transactions between industry (firms), government, and households².

Figure 4: Basic model of an economy



Source: <http://hanseconomics.com/wp-content/uploads/2012/01/circular-flow1.png>

Macroeconomics uses aggregated indicators such as Gross Domestic Output and Product, unemployment rates, national income and price indices to measure and explain the functioning and performance of economies. These indicators are used to record the performance of national and state economies through the System of National Accounts (SNA).

² This figure does not show imports and exports

Value in National and State economies

The SNA records economic activity over a specified period in terms of changes in the dollar value of financial, physical and human resource stocks (capital) which occur when these stocks are used to produce goods and services, and as reinvestment occurs to rebuild stocks for later consumption. The SNA does not individually distinguish the dollar value of other assets that contribute to the economic and social welfare of an economy, such as stocks of non-market assets like ecosystem assets. Thus, the outputs of the SNA may not give an accurately disaggregated picture of the (monetary) value of a nation's or State's total stocks.

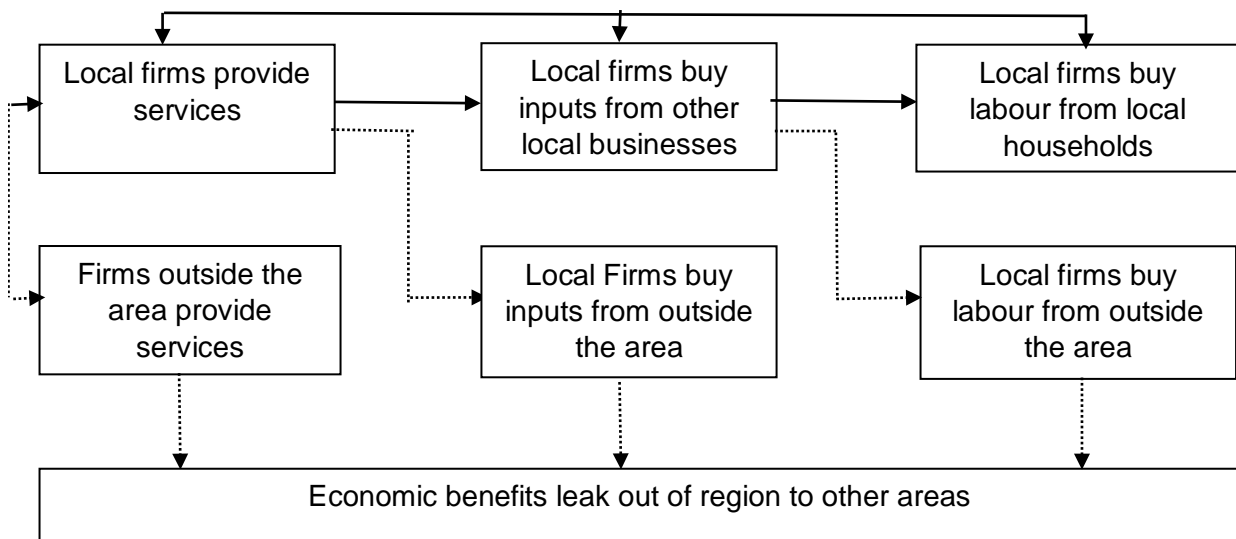
Value in local and regional economies

Macroeconomic concepts can be applied at the local economy scale to track flows between different sectors of the economy in question. Local economies typically have limited economic diversity, and are dominated by a small number of economic sectors such as agriculture, mining, or fishing, and associated support services. Such economies are unlikely to provide all the goods and services required for economic activity within their own economy, and will need to import much of the required goods and services from other regions. Thus the economic benefits to local businesses and households from the supply and use of such goods and services will be lost to the local economy via 'leakages' (see Figure 5).

Figure 5 shows inter-economy flows relating to provision of goods and services required by agencies for managing natural world heritage sites, and by tourists visiting these sites.

Economic 'value' at the local economy scale can be defined as the monetary value of business activity that occurs in an economy from the direct and flow-on effects of expenditure on particular goods and services e.g. expenditure made by managers of world heritage sites and their visitors. Thus 'value' can be equated with the monetary value of business activity estimated through macroeconomic indicators of business turnover ('gross output'), value-added ('gross product') and household income.

Figure 5: Natural World Heritage Sites and Local Services



Key: Leakages from the regional economy→

3.5 A financial perspective of value as monetary worth

The primary concern of financial analysis is to understand the quantitative relationship between direct expenditure and gross and net income related to investment of financial, physical and human assets (capital).

A financial approach to estimating the values of e.g. world heritage sites would concern the financial outlays and revenue associated with meeting statutory commitments. Costs would include planning and operational expenditure on labour, materials etc. Revenue would include budgetary allocations, grants and payments from other agencies, rents, and park entry fees. Analysts would examine whether the range of benefits that the site provided to the community could be achieved in ways that led to lower net financial costs.

3.6 Social perspectives of value as a means of assessing usefulness or significance

A number of authors identify a separate category of values from the instrumental material values discussed above. This category includes social values which relate to the presence of a particular ecosystem or environment. (These values are categorised in IPBES as relational values) (see Table 1). Harmon and Putney (2003) refer to these values as 'intangible' values, which include personal values (which provide psychological or therapeutic benefits from using the entity in question), cultural and spiritual values (which link people together), and societal values which bring cultures together (e.g. national parks under joint management agreements between indigenous communities and government conservation agencies).

A number of studies have attempted to quantify and monetise these relational values, particularly relating to the avoided costs of treating mental and physical illnesses through increased passive and active recreation (see Menzies Centre for Health Policy, 2008). However, qualitative approaches have more commonly been used by researchers to investigate these types of values and associated benefits (see Maler et al., 2008).

Harmon and Putney identify the following relational types of value:

- Recreational values
- Spiritual values
- Cultural values
- Identity values
- Existence value
- Artistic values
- Aesthetic values
- Educational values
- Research and monitoring values
- Peace values
- Therapeutic values (Harmon and Putney 2003 p8)

3.6.1 Cultural values

Harmon and Putney (2003) define cultural values (noted above) as:

"...the qualities, both positive and negative, ascribed to natural, cultural, and mixed sites by different social groups, traditions, beliefs, value systems, that fulfil mankind's need to understand, and connect in meaningful ways, to the environment of its origin and the rest of nature" Harmon and Putney 2003, p8).

Apart from this definition of cultural values in terms of traditions, beliefs and value systems, cultural values can also be considered in relation to the activities of public institutions and other bodies which conserve cultural 'heritage' (whether indigenous or non-indigenous). For example, the Australia ICOMOS Charter for the Conservation of Places of Cultural Significance defines 'cultural heritage value' as synonymous with 'cultural significance'. (Environment South Australia, 2015). Cultural significance is defined in the charter as aesthetic, historic, scientific, social or spiritual value for past, present or future generations. The charter identifies four categories of value, i.e. social or cultural, historical, scientific, and aesthetic values (ICOMOS, 2015). The potential cultural values of a site, object, location or other entity are estimated by an assessment of their level of significance (i.e. high, moderate or low significance). Qualitative assessments of significance are used to estimate the cultural value of particular sites, objects or other entities.

3.7 Ecological perspectives of value as a term for inherent non-anthropocentric qualities

In contrast to the above perspectives of value which considered anthropocentric types of value, ecological perspectives appear to be concerned with non-anthropocentric, intrinsic values, in that their value is defined in terms that do not consider human interests.

The Aquatic Ecosystems Task Group (2012) suggests that, at least in the context of aquatic ecosystems:

"Ecological value is the perceived importance of an ecosystem, which is underpinned by the biotic and/ or abiotic components and processes that characterise that ecosystem. Application of specific criteria and identification of critical components and processes or comparable approaches are used to assess ecological value" (Aquatic Ecosystems Task Group, 2012, p2.).

Some relevant criteria are: diversity, distinctiveness, vital habitat, naturalness, and representativeness. Based on this, ecological values can be seen to concern the extent to which the ecosystem, habitat etc. in question meets certain criteria which reflect pre-established ecological concepts. The extent that such ecosystems meet these criteria is generally measured in quantitative terms. Such metrics do not relate to anthropocentric values considered above.

Walker refers to a related definition of 'high conservation value', which was used in negotiations over the logging or conservation of Tasmanian native forests. Interestingly, this definition includes criteria relating to human economic, social, cultural and spiritual needs. High conservation value is defined as:

- "forest areas containing globally, regionally or nationally significant: concentrations of biodiversity values (e.g. endemism, endangered species, refugia); and/ or large landscape-level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance;
- forest areas that are in, or contain rare, threatened or endangered ecosystems;
- forest areas that provide basic services of nature in critical situations (e.g. watershed protection, erosion control);
- forest areas fundamental to meeting basic needs of local communities (e.g. subsistence, health) and/ or critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities) (Walker, 2011).

Objective measures of the extent to which certain ecosystems, habitats, species etc. meet the relevant criteria can show their value as subjects worthy of conservation action. Where there is a need to prioritise locations and species already assessed as meeting the criteria for high conservation value, conservation agencies may need to use non-ecological considerations, such as management costs, level of local community support, or cultural significance to help inform decision making.

4. USING DIFFERENT PERSPECTIVES TO PROVIDE INFORMATION ON HUMAN- INTERACTIONS WITH NATURE

This part of the report considers how the different analytical perspectives of value described in Section 3 can be used to provide information and insights into the values communities attach to their interactions with the natural world. Figure 6 suggests the type of information that can be obtained from different analytical perspectives.

Figure 6: Some types of information on human interrelationships with nature that can be obtained from different analytical perspectives of value

Perspective	Information relating to human-nature interactions
Psychological perspective: - Personal values	Provides information on underlying/ high-level attitudes influencing personal behaviours.
Cultural anthropological perspective: - Anthropocentric instrumental and relational values - Non-anthropocentric intrinsic values	Information on cultural dimensions of use: e.g. rules, rituals, customs relating to harvesting and use of ecosystem services. Information on beliefs and attitudes to human relationship with nature
Economic anthropological perspective: - Exchange values - Reciprocal values	Information on economic and social dimensions of exchanges/ trades of ecosystem goods and services, and socio-economic relationships between different parties engaged in exchanges/ trade
Economic perspective: - Exchange values	Quantitative and qualitative data on direct and indirect allocation of resources to obtain ecosystem goods and services, including opportunity costs and other costs and benefits associated with transactions
Financial perspective: - Monetary values	Quantitative data on financial outlays to obtain ecosystem goods and services
Ecological perspective: - Non-anthropocentric intrinsic values	Quantitative and qualitative data on those species, ecosystems etc. in a particular location which are regarded by community as outside the sphere of the community's instrumental use.

5. IMPLICATIONS OF VALUES AND VALUING

Section 3 has discussed some analytical perspectives that can be used to explore different meanings of value. However, researchers using these analytical perspectives may see little in common between their approach to exploring meanings of value and those used by researchers from other disciplines. As noted in Camfield et al.:

“Quantitative researchers may see qualitative researchers as too context specific, their samples as unrepresentative and their claims about their work as unwarranted; that is judged from the vantage point of statistical generalisation. Qualitative researchers may see quantitative research as overly simplistic, decontextualized, reductionist in terms of its generalisations, and failing to capture the meanings that actors attach to their lives and circumstances”.(quoted in Camfield et al., 2009).

Each discipline may provide valuable and legitimate insights into particular issues. However when analysts working in the area of environmental management focus on one perspective to the exclusion of others, valuable insights may be lost. For example, there is concern among some ecologists and social scientists that the approaches described in the Millennium Ecosystem Assessment and TEEB frameworks have overly focused on economic perspectives of consumption and management of nature products

('ecosystem 'services'), a perspective which tends to marginalize more qualitative approaches. Burlando for example, notes:

"While economic valuation is a first step towards increasing awareness of 'nature's value', ... it may hide, or be incommensurable with, social, cultural and ethical values at the heart of local approaches to biodiversity conservation...the shift in discourse from "biodiversity" to "ecosystem services" and "natural capital" has important implications. As we shift our discourses towards a more fragmented worldview (ecosystem services versus biodiversity), which rewards economic valuation, we risk losing sight not only of the social, cultural and ethical values associated with our bio-cultural diversity, but also of the social and economic drivers which enable the maintenance of these same values (Burlando, 2015).³

Greater use of the perspectives described above may provide insights into some of the material and symbolic values attached to places, sites, and harvested species, in relation to issues of provisioning and cultural ecosystem services. This information can help improve understanding of the way communities attribute value to their relationships with nature, and thus contribute to more informed policy and programme decision making and implementation.

6. CONCLUSIONS

This paper has considered the ways that different concepts of value have been applied to human interactions with the natural world.

Section 2 of this paper discussed anthropocentric (instrumental material and relational) values and non-anthropocentric (intrinsic) values and factors. Section 3 then considered how value can be identified and assessed from different analytical perspectives, such as psychological, anthropological, economic, financial, social and ecological perspectives.

Section 4 considers how a different range of analytical perspectives of value can be used to provide information and insights about the human interactions with nature which can be used to contribute to development of policy and programme initiatives, including those relating to forest ecosystems. Section 5 of the paper concludes that no single analytical perspective can adequately address the different meanings of value described in this paper; and an approach giving equal weight to different perspectives is necessary to avoid the loss of valuable insights into the economic, social, cultural and ecological dimensions of human interactions with nature.

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³ Arguably, these concerns may apply to the way economic concepts have been misunderstood, communicated and misapplied by practitioners, rather than to fundamental shortcomings in the conceptual foundations of economics. Comprehensive economic analyses should include economic efficiency considerations, and examine whether society as a whole experiences significant net socio-economic costs or benefits from the activities under consideration.

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APPENDIX 1: QUANTITATIVE AND QUALITATIVE APPROACHES THAT CAN BE USED TO ESTIMATE VALUES ASSOCIATED WITH NATURE

As noted earlier in the paper, values can be categorised as anthropocentric and non-anthropocentric, and can be considered from different analytical perspectives. This appendix provides an example of quantitative and qualitative approaches that have been used in some analytical perspectives to estimate anthropocentric values attributed to nature.

A1.1 A quantitative approach

A microeconomic valuation approach

Several different valuation approaches are used in microeconomics to estimate values associated with nature (in monetary terms). 'Market price', 'revealed preference' and 'stated preference' approaches are summarised in Figure A1.1. These approaches are concerned with the decisions individuals, businesses and governments make to maximise personal, business or community welfare in a world of scarce resources, and whether particular resource allocation decisions may provide greater economic benefits than others.

Figure A1.1: Summary of microeconomic valuation techniques

MARKET PRICE	
Estimation of market price	Identify actual value of environmental goods/ services and estimate private costs/benefits
Estimation of contribution to production	Identify actual value of environmental goods/ services as inputs and estimates value of private costs/benefits
Estimation of avoided costs of replacement/ damage avoidance	Estimate costs of alternative sources of services normally provide by natural environments or costs /benefits of protecting environmental goods/ services
REVEALED PREFERENCE	
Hedonic pricing	Reveal preferences of individuals for particular environmental attributes based on their behaviour
Trave cost method	Estimate value of benefits resulting from recreational experiences in natural environments especially PAs
STATED PREFERENCE	
Contingent valuation	Determine individuals' hypothetical valuation of environmental goods/ services
Choice modelling	Determine individual's hypothetical valuation of specific environmental attributes

A1.2 A qualitative approach

Narrative inquiry

Narrative inquiry is a research approach which uses material collected in the field from interviews and discussions etc. with subject groups in the form of stories, autobiography, letters, photographs and other artefacts. This material provides the basis for subsequent analysis of how the subject group or individuals in question perceive and experience events, relationships, and other phenomena the researcher is investigating. This approach has been used to explore values attached to national parks by local communities.

For example, Thomas (2001) used a narrative approach to interview Macedonian community activities in a national park in the south of Sydney. This study examined the cultural meaning of national parks and the natural environment generally in Macedonia, and looked at the differences encountered by Macedonian

migrants in the natural environment of NSW. Thomas examines how understandings of protected areas are shaped by ethnicity.

Thomas (2002) also uses a narrative approach in a study of the range of Vietnamese understandings of the natural and cultural environment, both in Australia and in Vietnam. Thomas documented the differing experiences of Vietnamese Australians concerning national parks, focusing on the factors influencing the involvement of Vietnamese people in parks and reserves. These included social, age, economic, gender and cultural determinants.

Under this approach, the values and associated benefits different groups and communities attached to their experience of national parks were expressed in terms of their subjective importance to the community being investigated. This approach did not explicitly attempt to compare and rank the relative value of different experiences. Information obtained from narrative inquiry can help park managers to tailor park management approaches to meet the interests of specific communities, but has only limited value in helping managers make trade-offs between the different values held by different groups.

APPENDIX 3: DIFFERENT TYPES OF BENEFITS

Individuals and communities obtain a wide range of goods and services from ecosystems and species which are attributed with anthropocentric instrumental values, and derive various types of benefits from the use of these entities. Benefits are obtained from the direct, indirect and 'non-use' of the entities in question. For example, business operators obtain financial benefits from goods and services sold to national park visitors, individuals obtain health benefits from their recreational experiences in natural environments and communities obtain social benefits from cultural connections with lands under World Heritage protection.

A2.1 Private and public benefits

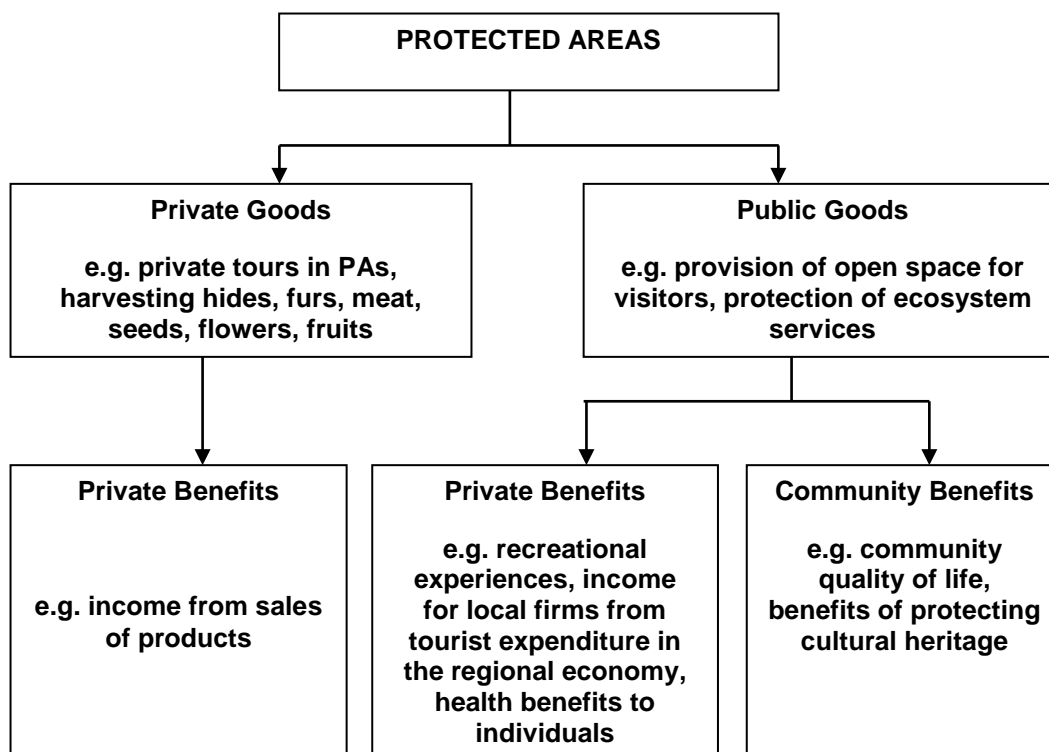
Governments have traditionally provided financial support for conservation activities because they are public goods. Public goods can be defined as entities that they are non-rival (i.e. can be used by many consumers simultaneously) and provide non-excludable benefits (there are no price mechanisms to easily restrict the supply of benefits to particular parties). The economic benefits that flow from this public provision can be 'private benefits' and 'public benefits'. This situation is shown in Figure A2.1. These private and public benefits can be 'direct' and 'consequential'.

A2.2 Direct and consequential private benefits

Direct benefits can be defined as the range of private benefits individuals and businesses can obtain from directly using the products or attributes of ecosystems and species. Direct use of these products or attributes can be translated into income-generating activity e.g. the income hunters receive from selling wild species, or the income received by private owners of wildlife reserves from entry fees.

In addition to these direct income benefits, individuals and businesses can also obtain consequential benefits from the presence of natural environments. Examples of such 'consequential' private benefits include increased visitor expenditure in local towns as a result of visitors being attracted to nearby protected areas.

Figure A2.1: Provision of Private and Public Benefits by Protected Areas



A2.3 Direct and consequential public (non-market) benefits

Ecosystems and species provide other types of benefits which directly and consequentially accrue to individuals, but unlike private benefits, these benefits have no immediate market price and cannot readily be transformed into tradeable commodities or services. These benefits cannot easily be appropriated by individuals or made into private assets and withheld from others, and their use by one group does not necessarily reduce the benefits that can be obtained by other groups. These benefits have the characteristics of public goods as shown in Figure A2.1 above.

For example, protected areas which safeguard the hydrological functions of wetlands provide benefits to downstream communities through moderating extremes of seasonal flooding, and regulating surface runoff. Although individual members of these communities may benefit from this protection, the provision of these benefits is not restricted to specific individuals and deliberately withheld from others, and their consumption by one individual does not necessarily preclude their value to another.

Examples of direct and consequential benefits are shown in Table A2.1 below.

Table A2.1: Some Social and -Economic Benefits of Ecosystems, Species and Protected Areas

Type of Benefit		Example
1. <i>Direct Private Benefits</i>	Source of income for private park owners	Entry fees obtained by private park owners
	Income from harvesting / culling wildlife	Beekeeping in PAs, traditional grazing rights
	Ecotourism industry operating in PAs	Tour companies operating in national parks
2. <i>Consequential Private Benefits</i>	Sale of goods & services provided by local firms to park agencies for park management, and to the public	Fencing, pest control, park infrastructure purchased from local businesses, visitor centres in PAs
	Private business opportunities in parks	Private firms operating cafes, lodges, etc. in PAs
	Local business opportunities from selling goods and services to visitors attracted to the area by the PA	Visitor expenditure on food, accommodation, other entertainment etc., supplied by local businesses
	Local economic activity (incl. jobs) from flow-on effects of park management & visitor expenditure	Additional jobs created in local economy from flow-on effects of park management and visitor expenditure
	Opportunities for recreational activity	Benefits of recreational experience for individuals (associated with psychological, physical, spiritual values)
	Use of ecosystem services for producing commercial goods & services.	E.g., crop pollination, control of agricultural pests, maintenance of supply of water for irrigation

Table contd.

Contd.

3. <i>Direct Public (Non-Market) Benefits</i>	Protection of biophysical functions of ecosystem services	Reduction of floods & droughts, protection of hydrological functions e.g. for municipal water supplies
	Protection of values of biodiversity for future generations to enjoy	Benefit from knowing biodiversity & culture is protected for posterity
	Reassurance that material and non-material values of environment are being protected	Benefit to individuals and communities from knowing that natural and cultural heritage is safeguarded
	Opportunities for deferring decisions on use when impacts are uncertain	Benefit obtained from deferring the use of an environmental resource until the full implications of its use can be assessed
4. <i>Consequential Public (Community) Benefits</i>	Opportunities for maintaining and improving community health & wellbeing	Better physical & mental health in community leading to reduced need for community services. Possible reduction in marginalisation of indigenous peoples and local communities through better cultural connection
	Provision of venues, material and information for education & awareness	Encouragement of environmental ethic, use as free outdoor laboratory for education and training e.g. Field study centres
	Provision of subjects/ themes for local community pride social engagement	Focal point, for community identification (for example with World Heritage areas), leading to more positive community attitudes to conservation
	Provision of venues for delivery of government community services	Avoided costs of more expensive venues for delivering government services which use PAs e.g. field studies, search & rescue training, , rehabilitation of juvenile offenders etc.