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Forest stakeholders' value preferences in Mount Kilimanjaro, Tanzania

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ABSTRACT

The study investigates societal states of forests that are perceived to enhance human and environmental well-being in Mount Kilimanjaro, Tanzania. Villagers, foresters, park employees, entrepreneurs and environmentalists were surveyed. The survey applied a multi-group social choice method, following six steps: (i) identification of all relevant social states for sustainable forest management; (ii) elicitation of preferences, for different social states, of forest user groups' members; (iii) determination of attributes of users and social states; (iv) aggregation of individual forest value preferences into social value preferences; (v) inter-group comparison of preferences; and (vi) estimation of predictors of social forest value preferences. A distinction is made between the household-perspective and the citizen-perspective of evaluations. As well, socio-economic and institutional-legal attributes of stakeholders were tested as predictors of stakeholder preferences. The major findings include the following. First, non-consumptive forest uses, including ecosystem services, were given highest priority by all stakeholders. Second, consumptive values were weighted more discriminately, while non-consumptive values were viewed more holistically. Third, forest dependence and environmental-resource-entitlements lead to more household consumption-based valuations; whereas, the appreciation of diverse forest values increases with the education of people. Fourth, the stakeholders exercise higher consensus on the importance of non-consumptive uses when such values are evaluated in the context of societal needs but not as household needs; consumptive uses registered the opposite effect. This finding signifies the separation between individual-conscience and social-conscience corresponding with the evaluation of consumer needs and societal needs, respectively. Thus, societal allocations, such as biodiversity conservation or ecosystem services, must be based on valuations specifically formulated in the context of eliciting collective social judgments.

1. Introduction

There is a well established tradition of forest valuation using cost-benefit analysis and market pricing, applications of which are diverse: e.g. economics of sustainable forest management (James, 1994); carbon sequestration (Bateman and Lovett, 2000); forest preservation (Lockwood et al., 1993); and recreation (Bostedt and Mattsson, 2006). Additionally, contingent valuation is often used to measure environmental attributes – e.g. intrinsic and aesthetic values of nature – which give people utility but do not have market price, by asking people 'how much they would be willing to pay for continued existence of such attributes of nature' (White and Lovett, 1999).

All these approaches and related market-based techniques such as travel cost methods, hedonic pricing, residual value method and choice experiments are extensions of market valuation, which demand assigning a monetary metric to all forest values and to related social welfare measures (Kant and Lee, 2004). However, the "willingness to pay" (WTP) foundation of these market-centered valuations does not provide room for all socially defined forest attributes, or social states, to which individuals as citizens would attach importance, and which are critical for public discussions or decisions about sustainable forest management (Kant and Lee, 2004).

Moreover, the market-centered valuations treat an individual as self-interest-maximizing-operator in a market; the so called "Homo economicus" or the "rational economic man" (Pareto, 1906). Yet, in the context of sustainable forest management this view of the individual does not best capture the problems of forest evaluation in the broader societal context, considering social, cultural, economic and environmental perspectives. In fact, this prototypical "Homo economicus" has been described as a "mindless individual" (Hegel, 1967) and a "social moron" or a "rational fool" (Sen, 1977a). Accordingly, Kant and Berry (2005) argue that "sustainability cannot be achieved through the choices of such rational fools or mindless individuals". Agreeably, there is no objective definition for sustainability that does not depend on individual preferences, albeit through public debate and social norms. Our objection is only when such

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definition is narrowly defined by self-interest maximization motive of individual as prescribed by conventional utilitarian consumer theory.[2]

There is ample evidence that altruistic behaviors are as common as self-interests in management of common property resources (Ostrom et al., 2002). Altruism is usually attributed to individuals' moral obligations and commitments to others who share the "commons". Thus, when forests and other common pool resources are concerned, an alternative view is to see the individual as a citizen: an agent who judges the alternatives from a social perspective which includes her own well-being and many other considerations (Blamey et al., 1995). Environmental stewardship, as well as intra- and inter-generational altruism can be such other considerations. In this context, the social choice approach has been proposed as the alternative evaluation approach (Kant and Lee, 2004), and it is adopted in this study. According to several authors (e.g. Mitchell and Carson, 1989; Kahneman and Knetsch, 1992; Brekke et al., 2003) altruism and other non-personal motives may be part of individual preferences. However, in this study we distinguish individual preferences from societal/citizen preferences. We argue that although individual preferences – which are important for individual/household allocations of resources – may consider some societal needs, they do not guarantee them (see also Sen, 1995); thus for social allocations social-conscience of individuals, must not be assumed; rather, must be explicitly investigated by a survey that addresses societal preferences.

Evaluation methods based on social choice – particularly voting methods – have been commended by Kangas et al. (2006) because they: (1) satisfy many requirements of decision support in sustainable forest management; (2) allow large representations of people; (3) provide structure to the participation process; (4) exhibit high level of transparency; and (5) are quite easy to comprehend. Thus, in this study a Borda count voting type method incorporated into the Multi-Group Social Choice Approach (Kant and Lee, 2004) is used for evaluation of forest stakeholder value preferences.

The objective of this study is to investigate societal states of forests that are perceived to enhance human and environmental well-being in Mount Kilimanjaro, Tanzania, with the goal of promoting sustainable forest management. To this end, the social choice approach is applied in a broader context of ecosystem justice, considering societal choices geared towards both human and environmental well-being. Villagers, foresters, park employees, entrepreneurs and environmentalists with high stake on Mount Kilimanjaro forests were surveyed. The use of social choice to elicit forest stakeholders' value preferences in North-Western Ontario by Kant and Lee (2004) presumes endogenously shared-values and social-conscience within stakeholder groups. But Gibson and Koontz (1998) empirically observed that institutions are critical in exogenously modulating stakeholder values. In this study, therefore, institutions, including education, economic entitlements and environmental entitlements, were tested as predictors of stakeholder value preferences. The "entitlement approach" concentrates on relating a person's or a household's actual command over goods and services to the rules of entitlement in that system and the person's or household's actual position in the system (e.g. initial ownership or endowment) (Sen, 1977b). The approach has been used widely to understand causation of famine and other problems of relative resource depravation (Sen 1977b, 1997) and human development analysis in general (Cordoba, 2006); but its role in affecting social choices of forest amenities has not been investigated. Thus, the significance of entitlements in regulating forest use and non-use values is examined.

Different versions of the contingent valuation question have been used by Ovaskainen and Kniivilä (2005) to encourage the respondents to take the consumer or the citizen role. According to their results, the citizen version resulted in substantially fewer zero-WTP responses and protests and higher mean and median WTP, suggesting that the framing information has a major effect on the preferences expressed. Thus, in this study to test for social-conscience in these two (consumer and citizen) contexts, the evaluation framework was set into two contexts: (a) the individualistic context, which required the respondents to indicate their forest value preferences based on their individual and household needs only; and (b) the citizen context, which required the respondents to indicate forest value preferences based on broader societal needs (i.e. social, cultural, economic and environmental needs). These additional inclusions to the original social choice approach to sustainable forest management (Kant and Lee, op cit.) are critical in policy making: the predictor variables allow decision makers to target specific socio-economic and institutional variables that happen to be critical in influencing stakeholder values and well-being; whereas the individual vs. citizen contexts serve to provide a framework for reconciling individual/household priorities vs. societal priorities.

The rest of the paper is organized as follows. In Section 2 a review of social choice approach as applicable to this study is provided. In Section 3 we describe the methods used in the empirical case study of stakeholder forest value preferences in Mount Kilimanjaro. Results of the empirical investigation are presented in Section 4 followed by discussion and conclusions in Section 5.

1.1. The social choice approach and sustainable forest management evaluation

The basic objective of social choice is to combine individual preferences into a collective choice (Kangas et al., 2006). Because, "socially, sustainable forest management can be viewed as maximizing the social welfare obtainable from forests", the social choice approach can be used to aggregate forest stakeholders' value preferences with the goal of maximizing societal well-being (Kant and Lee, 2004).The social choice approach, *per se*, is based on the theory initiated by Arrow (1951) and expanded by Suzumura (1983) and Sen (1999) among others. The theory has the following distinct components: (1) space of states — the subject of valuation is taken to be social states x, belonging to any opportunity set S of options, reflecting the alternative possibilities that an individual k compares; (2) valuation of states — individual valuations of states x are defined over all such opportunity sets S; (3) rules and principles — collective choice rules relate social choices to n-tuples of individual valuations or choices. The rules reflect the principles to be used in aggregating individual valuations to determine social choice. In the first study of modern social choice (Arrow, 1951) the principles imposed on collective choice rules include: the Pareto principle, independence of irrelevant alternatives, non-dictatorship and unrestricted domain.[3] The famous Arrow's "impossibility theorem" (Arrow, 1951), showed that it is, in general, not possible to satisfy simultaneously a set of the above conditions of fairness imposed on collective choice rules, leading to pessimism about social choice theory (Arrow, 1951). However, there has also emerged an 'optimistic social choice school', which has showed that the impasse in making social evaluations or choices can be avoided with more informational inputs, particularly by supplementing the expression of individual valuations with inter-personal comparisons (Sen, 1999). In this study, therefore, inter-personal comparisons of well-being or, more specifically, peoples' satisfactions are made when evaluating stakeholder forest value preferences.

Quite often outcomes of conventional economic valuations are rendered ineffective in addressing socio-political decisions, involving

[2] See Sen (1995) for an elaborate discussion on this issue.

[3] "Unrestricted domain" demands that the domain of the social choice function must include all possible individual preference profiles (i.e. no matter what preferences the members of the society hold, the social welfare function can successfully aggregate them into a social preference ordering). The "Pareto principle" demands that if everyone prefers any x to any y, then x is socially preferred to y. "Independence of irrelevant alternatives" requires that the social ranking of any two states x and y depends only on the individual rankings of these two states. "Non-dictatorship" prohibits the presence of a dictator (i.e. a person such that whenever he prefers any x to y, the result is that x is socially preferred to y).