Sense of ownership: Application of Participatory Action Research to a Cultural Ecosystem Valuation Process

Akram Fatourehchi Shabestari[1], Marjorie Ruth van Roon [2]

[1]*The University of Auckland, afat525@aucklanduni.ac.nz*
[2]*The University of Auckland, m.vanroon@auckland.ac.nz*

Abstract: Despite the importance of cultural ecosystem services in decision-making processes, the application of an appropriate methodology for valuation of cultural ecosystem services among communities with the same and common cultural values has been underestimated. This has become a challenge for urban planners, social and environmental groups and other stakeholders. Urban development projects have a great impact on ecosystem services that are of fundamental importance to communities. As a growing population demands more space for ambitious urban projects, these demands present substantial challenges to urban ecosystems particularly in areas with crucial environmental, and cultural values. The concept of ecosystem services contributes to a better understanding of the values people attach to nature, based on how they can benefit from the ecosystem services. This provides us with an applicable framework for the investigation into the importance of ecosystem services in human life well-being, enhancing dynamic social and cultural relations as a prominent basis for planning and management. Cultural Ecosystem Services (CES) are included in basic categories by presenting some important explanations for the necessity of an ecosystem framework. The values defined as cultural values have been elusive in part due to their complicated characteristics of intangibility and incommensurability in a valuation process. A lack of appropriate methodology and tool for valuation of CES has resulted in underestimating these values in the decision-making procedure. This paper firstly investigates CES and Participatory Action Research (PAR) as a possible valuation tool. Secondly, because of the importance of potential participation within the procedure, it investigates a sense of ownership that might result from PAR. Thus, the process aims to explore why this participatory-based approach can be defined as a reasonable tool for cultural ecosytem valuation by giving local people a greater knowledge of cultural values, and in-depth awareness of the consequences of socio-environmental actions in planning.

Keywords: Cultural Ecosystem Services; Participatory Action Research; Sense of Ownership

Introduction

> *"You tell us to take compensation. What is the state compensating us for? For our land, for our fields. But we don't live only by this. Are you going to compensate us for our forest?*
>
> *What is the price of this? How are you compensating us for fields either–we didn't buy this land; our forefathers cleared it and settled here. What price this land? Our gods, the support of those who are our kin –what price do you have for these? Our adivasi [tribal life] –what price do you put on it?'' (Mahalia, 1994)*

Global biodiversity is increasingly threatened by a range of drivers of change, including population and economic growth, land use change (development projects) and climate change. Therefore,

biodiversity continues to deteriorate at unprecedented rates (MA, 2005; Stern *et al*., 2006; UN, 2009; Butchart *et al*., 2010; TEEB, 2010; LPI, 2018). Among all these uncertainties, the concept of ecosystem services has gained worldwide attention as a worthwhile approach in terms of integration in decision-making related to ecosystem values, which already have been underestimated as peripheral issues (MA, 2005; TEEB, 2010). The ecosystem services (ES) concept has been advanced and widely adopted as a framework for identifying and weighting the social, cultural and ecological value in comprehensive management schemes (Daily, 1997; MA, 2005; Foundations, 2010; Tallis, 2011; TEEB, 2009; Blicharska *et al*., 2017). The fundamental typology for ecosystem services in this research is based on the Millennium Ecosystem Assessment (MA, 2005) which distinguishes four types of services: provisioning, regulating, cultural and supporting services. Despite the integrative role of the ecosystem framework, the ecosystem service approach (TEEB, 2011) cannot take into account all dimensions of value and much value remains segregated in ecosystem research and practice, in fact, the doors have been closed to a lot of social and cultural aspects (Daniel *et al*., 2012). In recent years, there has been a growing interest in the valuation of cultural ecosystem services and recognition of the importance of these values in decision-making procedures apart from monetary and dollar values. Cultural values have been included with ecosystem services in all eminent typologies (Costanza, d'Arge *et al*., 1997; Blicharska *et al*., 2017). Searching for those important cultural and moral values which are not dismissed as elusive externalities provides suitable space in order to facilitate appropriate treatment of different stakeholders and perspectives (Milcu *et al*., 2013; Blicharska *et al*., 2017). As mentioned above, apart from the importance of these cultural values, in a lot of cases cultural ecosystems have generally been valued in totally economic terms (Chiesura and De Groot, 2003) or there has been an unrealistic perception to these values. With the exception of recreation and ecotourism, the vast majority of the CESs have intangible nature and it is precisely the intangibility that is seen as the reason for their poor assessment (Milcu *et al*., 2013; Burkhard *et al*., 2014; Blicharska *et al*., 2017). At present, it is, therefore, fair to argue that CESs are not yet adequately integrated within the ES framework, and, consequently, the development of parallel management strategies and policies is often unsatisfactory (Bieling and Plieninger, 2013; Blicharska *et al*., 2017). The processes and mechanisms necessary for implementing this valuation in action especially at local levels have received relatively little attention. Thus, having an approach that is designed and used to work with local grassroots organizations has been avoidable (Milcu *et al*., 2013; Burkhard *et al*., 2014; Blicharska *et al*., 2017; Hølleland *et al*., 2017). A range of techniques has been used to measure the benefits extracted from biodiversity and associated ecosystem services. In this paper, the main concentration is on non-monetary approaches (TEEB, 2010). Non-monetary valuation (NMV) has a long tradition in some fields of environmental policy-making (e.g. in describing protected areas (Kukkala and Moilanen 2013), and different international initiatives have acknowledged its role in ecosystem services (ES) valuation (e.g., the MA, TEEB, IPBES). These techniques range from structured survey techniques such as questionnaires (Terer *et al*., 2004) and interviews (Kaplowitz, 2001) to more participatory approaches such as participatory rural appraisal (PRA) (King and Faasili 1999) and participatory action research (PAR) (Mendoza and Prabhu, 2005; Tetui *et al*., 2017). While these methods do not provide the monetary valuation of biodiversity, they can provide useful information on the importance of biodiversity to people in ways that monetary methods cannot (Málovics, 2009). But, the challenge in this area is a conventional disconnection between conducting research and putting results into practice through the mechanisms which focus on either research or capacity building but rarely both (Tetui *et al*., 2017; Málovics, 2009). Indeed, the benefits of these valuation researches because of insufficient attention given to bringing together research and practice are always open to scepticism (Tetui *et al*., 2017; Málovics, 2009). Many of participatory methods such as PRA and PAR were developed for use for marginalized groups, indigenous communities. The knowledge and insights derived from this experience may provide

useful awareness to provide opportunities for embedding valuation into local decision-making (Fazey *et al*., 2011). Participatory Action Research (PAR) includes working collaboratively with the organization and training its members to conduct research with communities using participatory and deliberative methods (Christie, 2012). By using this approach, the aim is promoting inclusivity and participation in decision-making and building the capacity of the organization to include communities in the centre of social, cultural, and environmental uncertainties (Wakeford *et al*., 2018). It aims to contribute to working with local communities to investigate whether cultural and environmental well-being and awareness grow through the successful establishment and management of cultural values in ecosystem framework and policy-making process. The objective of this paper is to justify the PAR as a possible mechanism for the valuation of the cultural ecosyatem services, where it gives local people a greater sense of owner ship, a more sophisticated view of ecological-cultural linkage, a greater definition of cultural values, and more awareness of the socio-ecological effects on environment.

Current popular terminology for ecosystem services framework

The ecosystem services approach is currently still evolving as a research field with a strong influence on international policy (Hølleland, 2017). The concept of ES was first coined in the early 1980s by Ehrlich and colleagues (Ehrlich and Ehrlich 1981; Ehrlich and Mooney 1983). By drawing attention to the many services ecosystems provide for human beings, their aim was to raise public interest and concern for ecosystem protection (Setten *et al*., 2012). Following the United Nations' initiation of the Millennium Ecosystem Assessment (MA) in 2001, the concept of ES has gained new relevance and impact as a political and practical tool because the aim of the ES framework is ultimately to enable decision-makers to make appropriate management decisions (MA, 2005). The ES concept puts human needs and preferences in the centre of the ecological universe and measures the health of ecosystems based on their ability to provide humans with benefits – referred to as 'services' (Katz-Gerro and Orenstein, 2015). Following this purpose, the MA established a framework for identification, quantification, and valuation of the ecosystems' services. As illustrated in Table 1, the MA categorizes ES into four main classifications with a number of subcategories: supporting, provisioning, regulating and cultural services. As such, ES range from the provision of food, clean water and regulating services such as flood and disease control, to a variety of mainly intangible assets in the category of cultural services.

Ecosystem services	
Supporting services	Nutrient cycling; Soil formation; Primary production
Provisioning services	Food; Fresh water; Wood and fiber; Fuel
Regulating services	Climate regulation; Food regulation; Disease regulation; Water purification
Cultural services	Aesthetic; Spiritual; Educational; Recreational

Table 1. Ecosystem services. Adopted from MA(2005)

Cultural Ecosystem Services(CES)

Despite the great amount of research on the ecosystem services concept and approach in the past decades, the scientific literature clearly shows a lack of knowledge about the CES dimensions and lack of agreement about their role in the ecosystem approach (Schaich *et al*., 2010; Setten *et al*., 2012; Tengberg *et al*., 2012; Blicharska *et al*., 2017; Hølleland *et al*., 2017; Díaz *et al*., 2018). Consequently, there is a lack of integration of CES aspects into the ecosystem services approach, which can be explained by their intangible nature, evaluation difficulties, and methodological and conceptual issues (Milcu *et al*., 2013; Burkhard *et a*l., 2014; Blicharska *et al*. 2017; Hølleland *et al*., 2017; Díaz *et al*., 2018). One problem for including cultural ecosystem services in environmental decision-making processes is not having an agreed-upon definition for cultural ecosystem services. Cultural ecosystem services were defined firstly as the non-material value benefits associated with ecosystem services. Costanza (Costanza *et al*., 1997) defined cultural ecosystem services as the "aesthetic, artistic, educational, spiritual, and or scientific values of ecosystems". As seen in Figure 1, the Millennium Ecosystem (MA, 2005) expanded this definition to include the "the non-material benefits people obtain from ecosystem through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences," including cultural diversity, spiritual and religious values, knowledge systems, educational values, inspiration, aesthetic values, social relations, sense of place, cultural heritage values, and recreation and ecotourism. As illustrated in Table 2, similar definitions are found in succeeding ecosystem frameworks such as The Economics of Ecosystems and Biodiversity study developed by the G8 and hosted by the United Nations Environment Programme (TEEB, 2010) and the Common International Classification of Ecosystem Services (CICES) developed by the European Environment Agency (CICES, 2017). Such definitions seek to present the ways that ecosystems generate knowledge and support experiences (recreational, aesthetic, social, and spiritual), but they have tended to combine services/benefits and values (MA, 2005). A clearer characterization of services and values can be realized if cultural services are seen as producing a large number of intangible and non-market benefits (e.g., social cohesion) including different kinds of value (e.g., moral, religious, aesthetic)(Bieling, and Plieninger, 2010; Setten *et al*., 2012; Tengberg *et al*., 2012; Blicharska *et al*., 2017; Hølleland *et al*., 2017; Díaz *et al*., 2018)

Figure 1. Subcategories of cultural services. Adopted from MA (2005).

.

MA, 2005	TEEB, 2010	CICES V 4.3, 2017
Cultural diversity	Aesthetic information	Physical experiential interaction
Spiritual and religious values	Opportunities for recreation and tourism	Intellectual and representative interactions
Knowledge systems	Inspiration for culture, art, and design	Spiritual and/or emblematic (interactions)
Educational values	Spiritual experience	Other cultural outputs
Inspiration	Information for cognitive development	
Aesthetic values		
Social relations		
Sense of place		
Cultural heritage		
Recreation and ecotourism		

Table 2. Overview of the different subcategories of cultural services used in the different ecosystem frameworks (MA 2005, Kumar, 2011, CICES 2017)

Incorporation of cultural ecosystem services in urban planning

Incorporating cultural ecosystem values into urban planning and policy-making could help to increase awareness of nature as a critical component of human health and well-being (Gomez *et al*., 2008). In order to acknowledge the importance of cultural ecosystem services for urban citizens, policy-makers and planners must be aware of the link between biodiversity, ecosystem functions and people's experiences of nature. Urban planning and management must take into account how biodiversity loss not only has a negative impact on the provision of food and water and the regulation of climate, but also on citizens'

mental and physical health and well-being (Gomez *et al*., 2008). Incorporating the diverse cultural values of ES within urban planning and policy will help to ensure that citizens' needs and concerns are included and more comprehensively addressed within planning processes, and that the basic principles of environmental justice have been strengthened. Cultural ecosystem services are an important element of the transition to more inclusive, just, environmentally aware and sustainable urban environments (Chan *et al*., 2012). Existing knowledge and the practice of incorporating values of the ecosystem services in the planning process provides a potential opportunity for implementation of cultural ecosystem service dimensions and the ecosystem services approach at the local and regional planning levels. Tradition, shortage of resources (money and time), and a lack of methods for valuation of intangible aspects are some reasons for the discrepancies between theory and practice (Eliasson *et al*., 2015). Accordingly, there is a great need to increase the availability of resources and improve the methods for evaluating intangible values in order to enhance the inclusion of intangible aspects in practice (Boswell, 2011). This also encompasses a shift in the direction of urban development planning in general, including a move away from strict protective measures and the utilization of CES for urban regeneration toward more creative, participatory interventions of using the past, particularly intangible CES, for the benefit of present needs (Eliasson *et al*., 2019).Working with cultural values requires attention to how, when, and where values are articulated, as well as to what this articulation responds to. Consideration of both specific and broad processes can help environmental managers and policy-makers engage with seemingly intangible and contradictory social dimensions.

The valuation process for ecosystem services

The valuation of ecosystem services has a crucial role in supporting decision-making processes that directly or indirectly affect the natural environment. However, today's most popular monetary valuation methods based on the paradigm of neoclassical welfare economics face extensive criticism from various disciplines (Getzner, Spash *et al*., 2004; Spash, 2006; Kumar and Kumar, 2008; Vatn, 2009; Greenhalgh *et al*., 2017; Langmeyer *et al*., 2016; Kenter *et al*., 2016). Valuing an ecosystem service is thus equivalent with giving values to its different components where valuing the components is an important task even at the individual level. Moreover, measures and weights may vary from one beneficiary to another. This means that values given to different components of ecosystem services are incommensurable and cannot be easily aggregated (Martinez-Alier, 2014). Kumar and Kumar (2008) ask for more comprehensive ways of valuation because "when we focus on cultural, memory and linguistic variables we are valuing not only the intrinsic value of ecosystem services, but also their effects on human health or social structures, their aesthetic contributions, and their significance for future generations." For the scope of this paper, incorporating qualitative, participatory and deliberative methods into the cultural ecosystem valuation contributes to having a broad perspective regarding these incommensurable values (Martín-López *et al*., 2012(.

Cultural Ecosystem Valuation(CEV); Incorporating qualitative, participatory, and deliberative methods into the cultural ecosystem valuation

The term (non-monetary) cultural valuation emerged and has proliferated in a time when the ecosystem valuation literature has been dominated by monetary valuation and raised controversies around commodification (Martín-López *et al*., 2012(. Non-monetary methods include quantitative and qualitative research techniques (i.e. surveys, interviews), participatory and deliberative tools (focus groups, citizens juries, participatory or rapid rural appraisal (PRA/RRA) and Delphi panels), as well as methods expressing preferences in non-monetary but quantifiable terms (i.e. preference assessment,

time use studies, Q-methodology)(Christie and Fazey *et al*., 2012). Those non-monetary techniques with focusing on the human expressions of preferences adjust to a more homogeneous subgroup within non-monetary valuation. Terms such as 'qualitative' or 'subjective' valuation (Aretano *et al*., 2013) suggest that results reflect the subjective perceptions of stakeholders. Discourse centred (Wilson and Howarth, 2002) and 'psycho-cultural valuation'(Kumar and Kumar, 2008) reflects broad umbrella concepts that consider preference formation as part of the valuation process and emphasise that personal and group values are important to understand. Sociocultural valuation has been applied as an umbrella term of non-economic methods analysing social preferences towards ecosystems (Martínez *et al*., 2013). Due to the large heterogeneity of preference-based non-monetary valuation techniques, it is difficult to arrive at the same level of methodological consistency as seen in monetary valuation. Qualitative approaches (such as in-depth interviews and focus groups) provide opportunities for the researcher to probe more deeply into people's preferences than could be achieved using either quantitative or economic techniques (Baird and Flaherty, 2005). Such detailed insights may be extremely useful for uncovering local cultural and spiritual values that might not be directly transparent to external researchers. Participatory and deliberative approaches offer an alternative approach to the design and administration of valuation studies. Given that participatory approaches such as PRA and PAR were developed to meet the needs of social science research among margiilized groups, and indigenous people (Chambers, 1992), such approaches can help to ensure that valuation is applied through traditional, cultural or thinking practices, which will help to avoid the problem of imposing a western way of conceptualising environmental goods and services (Asia Forest Network, 2002; Jackson and Ingles, 1998). Participatory and deliberative approaches also provide respondents with 'time to think' about and reflect on their preferences, which has been demonstrated to improve the accuracy of valuation surveys (Whittington *et al*, 1992; Kenter *et al*., 2011). Such approaches may also help to: promote dialogue and deliberation with local people and decision-makers thus fostering ownership and responsibility of problems; promote learning and awareness; and build local capacity to analyse problems and make more effective collective decisions (Chambers and Cleaver, 1997; Reed, 2008; Wadsworth, 1993; Hughes and Seymour-Rolls, 2000).

Participatory Action Research (PAR)

Participatory Action Research (PAR) is a study design that treats the target communities as a part of knowledge generator and it is an approach from social science research as a shift away from the conventional approach. PAR works through diagnosis and addressing complicated human, environmental and social science issues. The specific characteristic of PAR is starting from social and educational research and expanding to research principles of participation and reflection, empowerment and enfranchisement of the group with social targets (Hughes and Seymour-Rolls, 2000). The PAR name reflects its three principles of participation, action, and development of knowledge with the potential to figure out wider issues of social justice, community inclusion and empowerment of marginalized groups (Wallerstein and Duran, 2010). It aims for a process to identify, prioritize and address social and environmental concerns and bridge the gap between communities and academics (Wallerstein and Duran, 2010). Community-based PAR has been defined by the National Institute of Environmental Health Science (NIEHS, 2001), and includes six principles:

1) Defining community as a unit of identity

2) Ensuring projects are community-driven

3) Promoting active collaboration and participation at every stage of research

4) Fostering co-learning

5) Disseminating results in useful terms

6) Ensuring research and intervention strategies are culturally appropriate. (O'Fallon and Dearry, 2002)

Groups that utilize PAR, attempt to redistribute power relations by working as a team to decide what is reached, how it is researched and its benefits across all stakeholders involved. In such collaborations, communities play a central role in decision-making, participants seek to collaboratively identify social-environmental problems, adapt potential solutions, and devise strategies to overcome challenges within highly respectful and analytical deliberations and discussions in order to collectively generate the final solution for problems (Susman, 1983; Baum *et al*., 2006).

The different frameworks agree on PAR being an iterative process based on principles that promote local capacity building toward a collective social change (Susman, 1983; Stuttaford *et al*., 2012; Loewenson *et al*., 2014).

According to Susman, the PAR cycle has five phases: problem diagnosis; action planning; taking action; evaluation; and specifying learning achieved. The cycle repeats with a refinement of the problem or a new one (Oscós-Sánchez *et al*., 2008). At the centre of the PAR cycle the main principles are building and empowering communities and a system by which the important and inclusive characteristic of dialogues and actions can be made at different levels. Reflexive critique is about providing the opportunity for stakeholders to diagnose the problems and their perceptions about problems. This procedure happens in a very respectful and critical atmosphere. Collaborative resources are divergent participants, each with a valuable contribution to the process of research. On the other hand, the risk is about conflict created through the procedure of seeking challenge or change.

The plural structure principle demonstrates that there are several views and options in dealing with social problems (Tripathy *et al*., 2010). Finally theory, practice, and transformation indicate the fact that peoples' actions are based on tactically-held assumptions that inform their actions based on built or enhanced theoretical outputs (Susman, 1983).

A sense of ownership: Demonstrating the potential for participation in local planning

The term ownership has been specifically used in community development contexts (Simpson *et al*., 2003; Bessant, 2005; Bowen, 2005; Zimmerman & Meyer, 2005). The term is popular in environmental policy literature and in scholarship associated with sociology, education and curriculum development, and organizational behavior (Schneider, 1985; Barufaldi, 1987; Gusfield, 1989; Himmelman, 1996; Kearney and Kaplan, 1997; Wondelleck and Yaffee, 2000). The body of literature is loosely predicated on the assumption that if individuals are intimately and authentically engaged, dedication to the process and outcome will be created, leading to greater chances of political support and implementation (Lachapelle, 2008). Gaining a better understanding of the many characteristics of ownership in a planning process is critical toward furthering the study and application of community development since it can lead to better analysis of complex interactions, a greater chance of public involvement, and increased support toward the realization of community development goals (Lachapelle, 2008). Lachapelle (2008) demonstrates that a sense of ownership is proposed and applied to community development research and practice based on three essential characteristics and related questions:

1. A sense of ownership in process (who has a voice and whose voice is heard?);

2. A sense of ownership in outcome (who has influence over decisions and what results from the effort?);

3. A sense of ownership distribution (who is affected by the process and outcome?.

This first characteristic involves the processes by which voices are heard and considered legitimate or valid. Through a focus on ownership in the process, community development research and practice can construct methods that explicitly examine who has a voice in a development process and, more importantly, whose voice is heard (Bardwell, 1991; Gray, 2003; Fischer, 2000; Watts, 2000; Ferguson and Derman, 2005).

The second characteristic of a sense of ownership involves who has influence over the outcome through decision- making (Lachapelle, 2009). The sense of ownership provides a clear focus on the influence or direct authority over decision-making and the execution of actions. Consequently, a sense of ownership is predicated on power and empowerment, two terms that have received adequate discussion in theoretical and applied community development scholarship (Harley *et al*., 2000; Pigg, 2002). The third characteristic of a sense of ownership demonstrates its distribution across various social, political and ecological scales. This last characteristic involves analysis of those who are affected by a decision as well as how the effects of a decision are distributed, accepted, both spatially and temporally (Pigg, 2002). Thus, a sense of ownership makes explicit connections and interactions, both spatial and temporal in community development research and practice (Harley, 2000).

Application of Participatory Action Research to Cultural Ecosystem Valuation, Why PAR?

PAR has been used to bring about social change in many different settings, particularly in the fields of community development, education, environment, and within organisations (Selener, 1997). One of the main features of PAR is the bringing together of theoretical and analytical processes for understanding a development problem, combined with action for social change (Kemmis, 2001). Because PAR researchers work closely with their study communities, an inter-subjectivity attitude between researcher and informed participants takes place (Reason and Bradbury, 2008). Stinger (1980) refers to a similar approach that he refers to as community-based action research and emphasises the social and cultural values that support it to make the research process democratic for all participants. PAR is used to facilitate a process that empowers a sense of ownership. This process is adapted to building common knowledge and innovative solutions for the benefits of local people. The approach is used to animate local stakeholders to create change in a manner that was previously not experienced with other non-participatory approaches. In terms of sequence, stakeholder involvement is experienced as being invigorated (Tetui *et al*., 2017). It has to be pointed out that, a problem with many communities based on assessment is the reliability of these communities on traditional conventional mechanisms of data collection, report writing, distribution of results to the public with an overemphasis on external experts (Reed, 2008).

Indeed, they can include in-community methods by extracting data from local people but they cannot achieve methods with and by the community, therefore, empowering local people to make decisions and implementation of the outcome are superficial (Campbell and Vainio-Mattila, 2003). Such community research projects cause stakeholders to be in powerless positions (Fabricius *et al*., 2007) by increasing dependency on external factors thus future efforts for empowering community becomes more difficult day by day (Cook and Kothari, 2001). Furthermore, they inhibit the progress of future

human adaptive abilities and configuration. Importantly in these kinds of community methods, local beneficiaries are separated from the critical stages of reflection, analysis, and interpretation because most of the learning takes place in distant research institutes which result in elimination of learning potential in the procedure of facilitating conceptual and behavioural changes (Blackstock, 2007). Achieving a pragmatic approach to cultural valuation of ecosystem services with in-depth learning for individuals from different contexts provides opportunities to enhance local adaptive capacity and learning.

Conclusion

A Participatory Action Research is a reimagined path to cultural ecosystem valuation and managing social-ecological systems that benefit people and support ecosystem integrity. For the scope of this paper, due to an urgent need to encourage learning and empowerment of local people in the valuation process, an ongoing emphasis on co-production and co-synthesis of knowledge between disciplines and stakeholders needs to be paid more attention. Assessments must take into account social-environmental heterogeneity and not ignore the places where people live, as that may be the exact location where they perceive and receive the most benefits. Documentation of the PAR approach mainly occurs to address social problems such as mental health, educational justice and community development. Similar documentation in cultural ecosystem services valuation is much less common, especially among marginalized groups and indigenous communities. This paper outlines one path of operationalizing this process by redefining the PAR as a possible mechanism, but do not deny there are many other ways to work toward valuation of cultural ecosystem services. Implementing the PAR, where the effects of decision-making on people and environment continue to be evaluated and revised over time, will ensure the community-based process for assessment of the cultural ecosystem services. However, understanding the potential for implementation of PAR for cultural ecosystem valuation in various contexts and at different scales needs further discussion and study of the PAR approach in a more pragmatic way.

References

Abson, D.J. and Termansen, M., 2011. Valuing ecosystem services in terms of ecological risks and returns. *Conservation Biology*, *25*(2), pp.250-258.

Aretano, R., Petrosillo, I., Zaccarelli, N., Semeraro, T. and Zurlini, G., 2013. People perception of landscape change effects on ecosystem services in small Mediterranean islands: A combination of subjective and objective assessments. *Landscape and Urban Planning*, *112*, pp.63-73.

Assessment, M.E., 2005. *Ecosystems and human well-being*(Vol. 5). Washington, DC:: Island press.

Baum, F., MacDougall, C. and Smith, D., 2006. Participatory action research. *Journal of Epidemiology & Community Health*, *60*(10), pp.854-857.

Beichler, S.A., Bastian, O., Haase, D., Heiland, S., Kabisch, N. and Müller, F., 2017. Does the ecosystem service concept reach its limits in urban environments?. *Landscape Online*, *51*.

Bieling, C. and Plieninger, T., 2013. Recording manifestations of cultural ecosystem services in the landscape. *Landscape Research*, *38*(5), pp.649-667.

Blackstock, K.L., Kelly, G.J. and Horsey, B.L., 2007. Developing and applying a framework to evaluate participatory research for sustainability. *Ecological economics*, *60*(4), pp.726-742.

Blicharska, M. and Mikusiński, G., 2014. Incorporating social and cultural significance of large old trees in conservation policy. *Conservation Biology*, *28*(6), pp.1558-1567.

Blignaut, J., Aronson, J., Mander, M. and Marais, C., 2008. Investing in natural capital and economic development: South Africa's Drakensberg Mountains. *Ecological Restoration*, *26*(2), pp.143-150.

Boyd, J. and Banzhaf, S., 2007. What are ecosystem services? The need for standardized environmental accounting units. *Ecological economics*, *63*(2-3), pp.616-626.

Braun, V. and Clarke, V., 2006. Using thematic analysis in psychology. *Qualitative research in psychology*, *3*(2), pp.77-101.

Bryan, T.A., 2004. Tragedy averted: The promise of collaboration. *Society & Natural Resources*, *17*(10), pp.881-896..

Boyd, J. and Banzhaf, S., 2007. What are ecosystem services? The need for standardized environmental accounting units. *Ecological economics*, *63*(2-3), pp.616-626.

Bowen, G. A., 2005. Local-level stakeholder collaboration: A substantive theory of community-driven development. *Journal of the Community Development Society, 36(2)*, pp.73-88.

Burkhard, B., Kandziora, M., Hou, Y. and Müller, F., 2014. Ecosystem Service Potentials, Flows and Demands-Concepts for Spatial Localisation, Indication and Quantification. *Landscape online*, *34*.

Burkhard, B., Kroll, F., Müller, F. and Windhorst, W., 2009. Landscapes' capacities to provide ecosystem services–a concept for land-cover based assessments. *Landscape online*, *15*(1), pp.1-22.

Büyükdamgacı, G., 2003. Process of organizational problem definition: how to evaluate and how to improve. *Omega*, *31*(4), pp.327-338.

Butchart, S.H., Walpole, M., Collen, B., Van Strien, A., Scharlemann, J.P., Almond, R.E., Baillie, J.E., Bomhard, B., Brown, C., Bruno, J. and Carpenter, K.E., 2010. Global biodiversity: indicators of recent declines. *Science*, *328*(5982), pp.1164-1168.

Campbell, L.M. and Vainio-Mattila, A., 2003. Participatory development and community-based conservation: Opportunities missed for lessons learned?. *Human ecology*, *31*(3), pp.417-437.

Chambers, R., 1994. The origins and practice of participatory rural appraisal. *World development*, *22*(7), pp.953-969.

Chan, K.M., Satterfield, T. and Goldstein, J., 2012. Rethinking ecosystem services to better address and navigate cultural values. *Ecological economics*, *74*, pp.8-18.

Carr, A., 2008. Cultural landscape values as a heritage tourism resource. *Cultural and heritage tourism in Asia and the pacific*, pp.35-48. https://researchonline.jcu.edu.au/27789/4/27789_Prideaux_etal_2008.pdf

Christens, B. and Perkins, D.D., 2008. Transdisciplinary, multilevel action research to enhance ecological and psychopolitical validity. *Journal of Community Psychology*, *36*(2), pp.214-231.

Christie, M., Fazey, I., Cooper, R., Hyde, T. and Kenter, J.O., 2012. An evaluation of monetary and non-monetary techniques for assessing the importance of biodiversity and ecosystem services to people in countries with developing economies. *Ecological economics*, *83*, pp.67-78.

Church, A., Fish, R., Haines-Young, R., Mourato, S., Tratalos, J., Stapleton, L. and Willis, C., 2014. UK national ecosystem assessment follow-on: cultural ecosystem services and indicators. http://sro.sussex.ac.uk/id/eprint/49305/1/Church_et_al_(2014).pdf

CICES. (2017). Structures of CICES. Accessed February 22, 2018. http://cices.eu/cices-structure/

Costanza, R., de Groot, R., Braat, L., Kubiszewski, I., Fioramonti, L., Sutton, P., Farber, S. and Grasso, M., 2017. Twenty years of ecosystem services: how far have we come and how far do we still need to go?. *Ecosystem Services*, *28*, pp.1-16.

Costanza, R., d'Arge, R., De Groot, R., Farber, S., Grasso, M., Hannon, B., Limburg, K., Naeem, S., O'neill, R.V., Paruelo, J. and Raskin, R.G., 1997. The value of the world's ecosystem services and natural capital. *Nature*, *387*(6630), p.253.

Daily, G.C., 1997. *Nature's services* (Vol. 19971). Island Press, Washington, DC.

Daniel, T.C., Muhar, A., Arnberger, A., Aznar, O., Boyd, J.W., Chan, K.M., Costanza, R., Elmqvist, T., Flint, C.G., Gobster, P.H. and Grêt-Regamey, A., 2012. Contributions of cultural services to the ecosystem services agenda. *Proceedings of the National Academy of Sciences*, *109*(23), pp.8812-8819.

De Groot, R.S., Alkemade, R., Braat, L., Hein, L. and Willemen, L., 2010. Challenges in integrating the concept of ecosystem services and values in landscape planning, management and decision making. *Ecological complexity*, *7*(3), pp.260-272.

Eliasson, I., Knez, I. and Fredholm, S., 2019. Heritage Planning in Practice and the Role of Cultural Ecosystem Services. *Heritage & Society*, pp.1-26.

Ehrlich, P.R. and Mooney, H.A., 1983. Extinction, substitution, and ecosystem services. *BioScience*, *33*(4), pp.248-254.

Fabricius, C., Folke, C., Cundill, G. and Schultz, L., 2007. Powerless spectators, coping actors, and adaptive co-managers: a synthesis of the role of communities in ecosystem management. *Ecology and Society*, *12*(1).

Foundations, T., 2010. *The economics of ecosystems and biodiversity: ecological and economic foundations. Earthscan, London and Washington*.

Gómez-Baggethun, E. and Barton, D.N., 2013. Classifying and valuing ecosystem services for urban planning. *Ecological Economics*, *86*, pp.235-245.

Gray, B, Lewicki, R., and Elliott, M. eds., 2003. *Making sense of intractable environmental conflicts: Concepts and cases*. Island press.

Harley, D.A., Stebnicki, M. and Rollins, C.W., 2000. Applying empowerment evaluation as a tool for self-improvement and community development with culturally diverse populations. *Community Development*, *31*(2), pp.348-364.

Harvey, P.A. and Reed, R.A., 2006. Community-managed water supplies in Africa: sustainable or dispensable?. *Community Development Journal*, *42*(3), pp.365-378.

Hølleland, H., Skrede, J. and Holmgaard, S.B., 2017. Cultural heritage and ecosystem services: A literature review. *Conservation and ManageMent of arChaeologiCal sites*, *19*(3), pp.210-237.

Information, U. N. D. o. P., 2009. *Millennium Development Goals Report 2009 Includes the 2009 Progress Chart, United Nations Publications*.

Ivanitz, M., 1999. Culture, ethics and participatory methodology in cross-cultural research. *Australian Aboriginal Studies*, (2), p.46.

Jackson, W. and A. W. Ingles., 1998. *Participatory techniques for community forestry: A field manual, IUCN*.

Kaplowitz, M.D. and Hoehn, J.P., 2001. Do focus groups and individual interviews reveal the same information for natural resource valuation?. *Ecological Economics*, *36*(2), pp.237-247.

Katz-Gerro, T. and Orenstein, D., 2015. Environmental tastes, opinions and behaviors: social sciences in the service of cultural ecosystem service assessment. *Ecology and Society*, *20*(3).Retrieved from http://www.jstor.org/stable/26270242

Kemmis, S., McTaggart, R. 2005. *Participatory action research. Communicative action and the public sphere. In Norman K. Denzin & Yvonna S. Lincoln (Eds.), Handbook of qualitative research (pp.559-603). Thousand Oaks, CA: Sage*

Kenter, J.O., Hyde, T., Christie, M. and Fazey, I., 2011. The importance of deliberation in valuing ecosystem services in developing countries—evidence from the Solomon Islands. *Global Environmental Change*, *21*(2), pp.505-521.

Kindon, S., Pain, R., & Kesby, M. (Eds.)., 2007. *Participatory action research approaches and methods: Connecting people, participation and place. Routledge.*

King, M. and U. Faasili (1999). *Community-based management of subsistence fisheries in Samoa. Fisheries Management and Ecology 6(2),* pp 133-144.

Kumar, M. and P. Kumar (2008). *Valuation of the ecosystem services: a psycho-cultural perspective. Ecological Economics 64(4),* pp 808-819.

Lachapelle, P., 2008. A sense of ownership in community development: Understanding the potential for participation in community planning efforts. *Community development*, *39*(2), pp.52-59.

Mahalia, B. (1994). *Letter from a tribal village. Lokoyan Bulletin 11*

Málovics, G. and Kelemen, E., 2009, June. Non-monetary valuation of ecosystem services: a tool for decision making and conflict management. In *8th international conference of the European society for ecological economics—transformation, innovation and adaptation for sustainability, Ljubjana, Slovenia* (Vol. 29).

Martín-López, B., Iniesta-Arandia, I., García-Llorente, M., Palomo, I., Casado-Arzuaga, I., Del Amo, D.G., Gómez-Baggethun, E., Oteros-Rozas, E., Palacios-Agundez, I., Willaarts, B. and González, J.A., 2012. Uncovering ecosystem service bundles through social preferences. *PLoS one*, *7*(6), p.e38970.

Martín-López, B., Montes, C. and Benayas, J., 2007. The non-economic motives behind the willingness to pay for biodiversity conservation. *Biological conservation*, *139*(1-2), pp.67-82.

Martinez-Alier, J. (2014). *The environmentalism of the poor. Geoforum 54,* pp 239-241.

Martínez, A.C., García-Llorente, M., Martín-López, B., Palomo, I. and Iniesta-Arandia, I., 2013. Multidimensional approaches in ecosystem services assessment. *Earth Observ. Ecosyst. Serv*, *441*.

Milcu, A., Hanspach, J., Abson, D. and Fischer, J., 2013. Cultural ecosystem services: a literature review and prospects for future research. *Ecology and Society*, *18*(3).

Naredo, J. M., 2001. *Quantifying natural capital: beyond monetary value. The sustainability of long term growth: socioeconomic and ecological perspectives.*

NHMRC., 2002. Draft Values and Ethics in Aboriginal and Torres Strait Islander Health Research, Consultation Paper for revision of the National Health and Medical Research Council's Guidelines on Ethical Matters in Aboriginal and Torres Strait Islander Health Research 1991. Canberra.

O'Fallon, L.R. and Dearry, A., 2002. Community-based participatory research as a tool to advance environmental health sciences. *Environmental health perspectives*, *110*(suppl 2), pp.155-159.

O'Neill, J., 2001. Representing people, representing nature, representing the world. *Environment and Planning C: Government and Policy*, *19*(4), pp.483-500.

Opdam, P., Coninx, I., Dewulf, A., Steingröver, E., Vos, C. and van der Wal, M., 2016. Does information on landscape benefits influence collective action in landscape governance?. *Current Opinion in Environmental Sustainability*, *18*, pp.107-114.

Oscós-Sánchez, M.A., Lesser, J. and Kelly, P., 2008. Cultural competence: a critical facilitator of success in community-based participatory action research. *Issues in mental health nursing*, *29*(2), pp.197-200.

Pigg, K.E., 2002. Three faces of empowerment: Expanding the theory of empowerment in community development. *Community Development*, *33*(1), pp.107-123.

Pascual, U., Balvanera, P., Díaz, S., Pataki, G., Roth, E., Stenseke, M., Watson, R.T., Dessane, E.B., Islar, M., Kelemen, E. and Maris, V., 2017. Valuing nature's contributions to people: the IPBES approach. *Current Opinion in Environmental Sustainability*, *26*, pp.7-16.

Plieninger, T., Bieling, C., Fagerholm, N., Byg, A., Hartel, T., Hurley, P., López-Santiago, C.A., Nagabhatla, N., Oteros-Rozas, E., Raymond, C.M. and Van Der Horst, D., 2015. The role of cultural ecosystem services in landscape management and planning. *Current Opinion in Environmental Sustainability*, *14*, pp.28-33.

Reason, P. & Bradbury, H., 2008. *The Sage handbook of action research. Participative Inquiry and Practice. London, United Kingdom*.

Reed, M.S., 2008. Stakeholder participation for environmental management: a literature review. *Biological conservation*, *141*(10), pp.2417-2431.

Rincón-Ruiz, A., Arias-Arévalo, P., Hernández, J.M.N., Cotler, H., Caso, M.A., Meli, P., Tauro, A., Akerberg, V.D.Á., Avila-Foucat, V.S., Cardenas, J.P. and Hernández, L.A.C., 2019. Applying integrated valuation of ecosystem services in Latin America: Insights from 21 case studies. *Ecosystem Services*, *36*, p.100901.

Selener, D., 1997. *Participatory action research and social change* (No. Ed. 2). The Cornell Participatory Action Research Network, Cornell University.

Setten, G., Stenseke, M. and Moen, J., 2012. Ecosystem services and landscape management: three challenges and one plea. *International Journal of Biodiversity Science, Ecosystem Services & Management*, *8*(4), pp.305-312.

Stern, N. and Stern, N.H., 2007. The economics of climate change: the Stern review. cambridge University press.

Stringer, E. T., 1999. *Action Research (2nd ed.). Thousand Oaks, CA: Sage publications.*

Susman, G. I., 1983. *Action research: a sociotechnical systems perspective. Beyond method: Strategies for social research*.

Tallis, H., 2011. *Natural capital: theory and practice of mapping ecosystem services, Oxford University Press.*

TEEB., 2010. *The Economics of Ecosystems & Biodiversity Mainstreaming the Economics of Nature a Synthesis of the Approach, Conclusions and Recommendations of TEEB. Accessed February 22, 2017*.

Terer, T., Ndiritu, G.G. and Gichuki, N.N., 2004. Socio-economic values and traditional strategies of managing wetland resources in Lower Tana River, Kenya. *Hydrobiologia*, *527*(1), pp.3-15.

Tetui, M., Coe, A.B., Hurtig, A.K., Bennett, S., Kiwanuka, S.N., George, A. and Kiracho, E.E., 2017. A participatory action research approach to strengthening health managers' capacity at district level in Eastern Uganda. *Health research policy and systems*, *15*(2), p.110.

Unies, N. and K.-m. Ban., 2007. *The Millennium Development Goals: Report 2007, UN.*

Vatn, A., 2009. An institutional analysis of methods for environmental appraisal. *Ecological Economics*, *68*(8-9), pp.2207-2215.

Wadsworth, Y., 1998.*What is participatory action research?, Action Research Issues Association.1998,Article 2*

Watts, M., 2000. Political ecology. *A companion to economic geography*, *257*, p.274.

Whittington, D., Smith, V.K., Okorafor, A., Okore, A., Liu, J.L. and McPhail, A., 1992. Giving respondents time to think in contingent valuation studies: a developing country application. *Journal of Environmental Economics and Management*, *22*(3), pp.205-225.

Williams, B. A., Matheny, A. R., 1995. Democracy, dialogue, and environmental disputes: The contested languages of social regulation. *New Haven, CT: Yale University Press*

Wilson, M.A. and Howarth, R.B., 2002. Discourse-based valuation of ecosystem services: establishing fair outcomes through group deliberation. *Ecological economics*, *41*(3), pp.431-443.

Zimmerman, J.N. and Meyer, A., 2005. Building knowledge, building community: Integrating internet access to secondary data as part of the community development process. *Community Development*, *36*(1), pp.93-102.