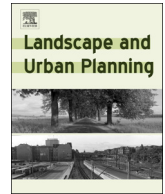




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Research Paper

Nature affinity and willingness to pay for urban green spaces in a developing country

Rahat Sabyrbekov^{a,c,*}, Martin Dallimer^b, Stale Navrud^c^a Economics Program, American University of Central Asia, Kyrgyzstan^b Sustainability Research Institute, School of Earth and Environment, University of Leeds, United Kingdom^c School of Economics and Business, Norwegian University of Life Sciences, Norway

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ABSTRACT

Urban green spaces (UGS) provide multiple ecosystem services to city residents and are often their only places to spend time in a natural environment. Rapid urbanisation poses difficult choices for city planners who frequently decide to prioritise built infrastructure over retaining or enhancing green spaces, not least because the value of green spaces is rarely recognised in policy and planning processes. This is particularly true in developing countries which face rapidly growing populations and trade-offs between the growing demand for built infrastructure and access to nature. We address the value of public UGS using both a monetary approach and a non-monetary approach. A Contingent Valuation (CV) survey was used to elicit householders' willingness-to-pay (WTP) for three different scenarios to enhance public UGS provision in Bishkek, Kyrgyzstan. Scenarios were based on ongoing public debates on how to address the degradation and loss of existing park areas and on current plans to build new parks. The same survey also employed the Nature Relatedness (NR) scale, which measures individual cognitive attachment to nature, as a non-monetary valuation approach. Our findings showed that a high attachment to nature does not necessarily lead to higher WTP for improved provision of public UGS as WTP is constrained by household characteristics such as income, education and household size. We concluded that monetary valuation techniques could potentially underestimate the value attached to UGS by some population groups (e.g. rural migrants and pensioners) that attach great importance to UGS but whose values are not reflected in a high WTP. Thus, we argue that the assessment of the value of UGS would benefit from combining monetary and non-monetary approaches under various institutional contexts; and that this would be particularly important for cities in developing countries.

1. Introduction

Today, over half of the world's population lives in urban areas. This proportion is predicted to increase to around 60% by 2030 (UN, 2016). Urbanisation is set to take place mainly in developing countries (Rafiq, Salim, & Nielsen, 2016); cities also continue to expand in more developed and industrialised societies (Dallimer, 2011). Urbanisation has a number of economic benefits including productivity growth and industrialization (Wu, 2015), innovation (e.g. Bertinelli & Black, 2004), higher income generation (Chauvin, Glaeser, Ma, & Tobio, 2017), improved healthcare and sanitation (Frumkin, 2017), and higher returns on investment from education (Xing, 2016). Despite the many economic and societal benefits from urbanisation, a major challenge in the coming decades will be to ensure that cities remain liveable and sustainable through the prioritisation of the well-being of their residents,

including an emphasis on restoring and preserving the natural environment (Wheeler & Beatley, 2014).

One increasingly recognised way of doing this is through the provision of high quality, accessible urban green spaces (UGS). As living in a city provides less access to natural environments than living in rural areas, for most urban dwellers UGS present the only opportunity to spend time in nature. This is a problem because access to high quality UGS improves both physical and mental public health (Kouao, 2019; van den Berg, 2010). UGS also provide other public goods like clean air, noise reduction, pollution control, aesthetic and cultural amenities, and water management (Bolund & Hunhammar, 1999).

Urbanisation, however, often requires a trade-off or prioritization between the retention of green spaces and alternative land uses (Lauf, Haase, & Kleinschmit, 2014). This is challenging as urban land use planning is influenced by a diversity of actors, all of whom have

* Corresponding author at: American University of Central Asia, 7/6 Aaly Tokombaev Str. Bishkek, 720060, Kyrgyzstan.

E-mail addresses: rahat.sabyrbekov@nmbu.no (R. Sabyrbekov), M.Dallimer@leeds.ac.uk (M. Dallimer), stale.navrud@nmbu.no (S. Navrud).

different preferences with regards to green versus built infrastructure (Aronson, 2017). Accurate assessment and valuation of UGS is therefore helpful in providing evidence to urban planners and decision makers as to the full value of UGS. The results of such assessments, however, are dependent on the disciplinary orientation of how studies are undertaken. Detailed analysis by Ives and Kendal (2014) shows a clear distinction between assigned values i.e. how values are registered (e.g. through money) and underlying values i.e. perceptions and beliefs (e.g. altruistic values). The distinction is important since a survey instrument intended to reveal an assigned value must also be designed to take into account the relevant underlying values of the target population. Further, underlying values are unlikely to be similar between studies, especially if they take place in radically different cultural contexts.

Incorporating valuations of UGS into urban planning processes has proven challenging (Jacobs, 2015), not least because valuation of UGS is complex. Despite a growing number of studies, research has thus far been concentrated in developed countries (Kabisch, Qureshi, & Haase, 2015), and assessments tend to be segregated by academic discipline, utilizing only mono-disciplinary approaches (Luederitz, 2015). For instance, studies have assessed the monetary value of UGS in terms of people's willingness-to-pay (WTP) to improve the quality and/or quantity of UGS or to avoid degradation of UGS (Brander & Koetse, 2011). Such studies therefore focus on attached value, often without sufficient appreciation of underlying values. This potentially renders findings of limited use to planners and decision-makers working outside the particular context in which the study was undertaken. The difficulties of applying the findings of studies across wide cultural and geographical extents is further highlighted by the fact that the literature also indicates that higher WTP for UGS is associated with socio-economic and geographic factors such as income (e.g. Lo & Jim, 2010), short travel distance and accessibility, frequency of use, and education level (Latinopoulos, Mallios, & Latinopoulos, 2016). Other relevant variables include age, population density and gender (del Saz Salazar and García Menéndez, 2007).

The monetary valuation approach has been criticized for not accounting for the multifaceted concept of value (Spangenberg & Settele, 2016). New integrated valuation schools have emerged that look to include multiple values and worldviews (Jacobs, 2016). According to this integrated value approach, any assessment must be multi-disciplinary in nature (Ranger, 2016). This is particularly needed in a developing country context where a purely monetary valuation might have more limited validity due to methodological and epistemological challenges (Kenter, 2011), and the differing underlying values that are likely to be present. In developing countries, people are more directly dependent on ecosystem services, all of which do not have market prices, and this makes monetary valuation challenging (de Groot, 2012). In Central Asia, for example, pastoralists rely heavily on livestock grazing on natural pastures. Livestock, and livestock products, can be valued directly through market prices. However, pastoralists also have a deep underlying cultural value associated with their way of life and the landscapes in which they live. Generating appropriate values for such cultural identity is particularly challenging, not least because this type of intangible good is difficult to monetise (van Leeuwen, Emeljanenko, and Popova, 1994). Moreover, monetary valuation reflects the norms of capitalist history, with valuation attached to long-standing societal standards and the beliefs of developed countries (Everard, Reed, & Kenter, 2016). The use of monetary valuation methods in developing countries should, therefore, be accompanied by non-monetary approaches (Raymond & Kenter, 2016). However, the choice as to which approach to use can be equally difficult, and there are currently few studies examining how monetary and non-monetary valuation of UGS might complement or contradict one another. Rather, the current literature highlights the complex relationships between the two. In some cases, metrics of self-reported psychological well-being and WTP for more biodiverse urban parks are broadly aligned (Dallimer, 2014). Other studies have analysed the relationship between

WTP for UGS and environmental attitudes through the New Ecological Paradigm (NEP) scale; built on the original approach of Dunlap and Van Liere (1978). The NEP has become the dominant measurement tool for evaluating environmental beliefs and has been widely used in different countries. However, findings on the validity of NEP used in such contexts have been mixed, with the literature divided between scholars who have found that a relationship exists between NEP and WTP (e.g. Kotchen & Reiling, 2000), and those who found no such relationship (e.g. Wilhelm-rechmann, Cowling, & Difford, 2014). Moreover, the majority of such studies were conducted in developed countries, with very few from developing countries (Choi & Fielding, 2013). Empirical tests of other existing methods for measuring individual cognitive attachment to nature have revealed that, while the methodologies have many commonalities, the nature relatedness (NR) scale (Nisbet, Zelenski, Murphy, & a. , 2008) was among the strongest in predicting ecological behaviour (Tam, 2013), and therefore may provide a useful addition to UGS valuation studies. Thus far, however, there remains a gap in the literature on the use of methodologies, such as NR, in combination with monetary valuation, particularly in the developing world.

This paper contributes to the literature by beginning to fill this knowledge gap. To do so, we use two different approaches; one drawn from environmental economics to assess WTP for the creation or retention of UGS, and one from environmental psychology to assess individual cognitive attachment to nature in the form of nature relatedness (NR). We examine the extent to which these two metrics vary, both among individuals and spatially within the city of Bishkek, Kyrgyzstan, in order to answer the following research questions: (1) How do WTP and NR vary, both among individuals and spatially, (2) to what extent do WTP and NR co-vary, and (3) to what extent does including both metrics in a valuation exercise enhance our understanding of the value of UGS?

2. Methodology

2.1. The study area

Bishkek, the capital of Kyrgyzstan, is located in Central Asia (Fig. 1). Bishkek currently has a population of around 1 million, but this is predicted to increase to 3 million by 2050 (NISS, 2017). The country's residents often call their capital city 'the greenest city in Central Asia' (Penn, 2010) due to the high number of green spaces. Typically, parks were established during the Soviet times (1924–1991) and were intended to provide places for leisure. They are characterised by high tree density, managed lawns and flower beds, as well as benches, entertainment facilities and locations for small vendors selling food and drinks. Other green spaces established in Soviet times included 'green strips' which are found along roads. At present, urban parks are popular places of leisure among Bishkek citizens of all ages and other socio-economic characteristics (limon.kg, 2014). The city is also in close proximity to the Ala Too mountains to the south and city dwellers are increasingly visiting these mountains for leisure activities.

As with many cities in the developing world, Bishkek city planners are faced with a trade-off between preserving UGS and investing in new infrastructure such as roads and buildings (Arku, Yeboah, & Nyantakyi-Frimpong, 2016). They also face increased population pressure in the form of high migration from rural areas. While migrants tend to live in Bishkek's outskirts, where public infrastructure is poor, the growing population has also increased development in the city centre. This has altered the typical Soviet urban plan within the city. Previously, Bishkek was characterised by clear distinctions between industrial and residential zones. Residential zones typically consisted of multi-storey tower blocks, often with associated publicly accessible open and green areas for the use of the residents and local communities (UNESCAP, 2013). However, urban sprawl on the city outskirts and booming construction in the more central areas has led to a substantially altered city.

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