Urban Forestry & Urban Greening 16 (2016) 150–159

Contents lists available at ScienceDirect

Urban Forestry & Urban Greening

journal homepage: www.elsevier.com/locate/ufug

What determines the use of urban green spaces in highly urbanized areas? – Examples from two fast growing Asian cities

Sophie Schetke[a,*], Salman Qureshi[b,c,d], Sven Lautenbach[a], Nadja Kabisch[c,e,f]

[a] Institute for Geodesy and Geoinformation, University of Bonn, Nussallee 1, 53115 Bonn, Germany
[b] University of Bayreuth, Institute of Sport Science (Sports Ecology), Universitaetsstrasse 30, Bayreuth 95440, Germany
[c] Department of Geography (Landscape Ecology), Humboldt University of Berlin, Unter den Linden 6, 10099 Berlin, Germany
[d] School of Architecture, Birmingham City University, 5 Cardigan Street, Birmingham B4 7BD, UK
[e] Department Ecosystem Services, Helmholtz-Centre for Environmental Research – UFZ Leipzig, Germany
[f] Research Group Ecosystem Services, German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig, Germany

ARTICLE INFO

Article history:
Received 22 September 2015
Received in revised form 16 February 2016
Accepted 19 February 2016
Available online 22 February 2016

Keywords:
Green perception
HCMC
Karachi
Urban expansion

ABSTRACT

The use of urban nature and its correlation with socio-economic and cultural conditions of urban dwellers were subject to a multitude of scientific studies in the last years. Nature and green spaces were found important for relaxing, mental restoration, playing sports and physical activities or simply for being outside together with people. Until now, less is known about spatial settings as determinants for green space use in fast growing major agglomerations in the developing world. Comparative case studies from developing countries could help consolidate a general hypothesis that people living in the same spatial setting (e.g. a highly urbanized city) use urban green spaces and prioritize specific green space facilities in a similar way regardless of developed or developing country. This study addresses this hypothesis by using a questionnaire survey for understanding peoples' use of urban green spaces in Karachi, Pakistan and Ho-Chi-Minh City in Vietnam.

Questionnaire surveys identified perception of and activities in urban green spaces in both cities. In Ho-Chi-Minh City 118 questionnaires were valid for analysis. In Karachi 315 questionnaires were analyzed. Our study shows that the main reason for visiting green spaces is walking and spending time with friends and family. This is mostly done in larger groups for picnics. We also show that accessibility of green spaces is a clear driver of their use by residents. Additionally, residents highlighted the need for urban green spaces but criticized their design and that green spaces lack of basic facilities such as benches or toilets in both cities. Results, thus, partly verify the initial hypothesis, because some green space activities and expected facilities are similar and some are different in developed compared to developing countries. The differences may result from cultural or religious influences and help to broaden the knowledge base on the use of urban green spaces in fast growing Asian cities.

1. Introduction

A large number of studies have related the use and perception of urban green space to the socio-economic conditions of residential populations, in both developing and developed countries (Bonauioto et al., 1999; Carp and Carp, 1982; Crow et al., 2006; Tyrväinen et al., 2003) – however see Qureshi et al. (2013) for contradicting results from Karachi, Pakistan. Similarly, while it has been reported that man-made natural environments are much more appreciated in cities (Breuste, 2004), a few case studies have shown that people prefer a natural environment in its original form (e.g. mother nature/untouched/wild, Hartig, 1993; Smardon, 1988). Taken together this implies a strong demand for urban green spaces across the globe (Tajima, 2003) asserting a sense of place among people regardless of cultural or spatial backgrounds (Born et al., 2001; Wilson, 1997). This inspired us to the general hypothesis that urban green spaces are similarly used and perceived in the developed and developing world.

1.1. Use of green space in developed and developing countries

It has been shown that urban green spaces provide a range of benefits to city residents (Haase et al., 2014; Kabisch et al., 2015; Milcu et al., 2013). In developed countries the use of urban green

* Corresponding author.
E-mail address: schetke@uni-bonn.de (S. Schetke).

http://dx.doi.org/10.1016/j.ufug.2016.02.009
1618-8667/

Table 1
Population development for Karachi and HCMC.

Year	Population Karachi		HCMC	
	Total number	Growth rate (%)	Total number	Growth rate (%)
1979	5,437,984		3,293,146	
1989			3,924,435	19.17
1999	9,856,318	81.25	5,037,151	28.35
2009	18,529,000	87.99	7,123,340	41.42
2015	22,594,000	21.94	8,043,000	12.91
2020	27,550,000	21.94	8,713,000	8.33

Source Karachi: Handbook of population census, GOP (1985), for 2015 and 2020 projected population by CDGK-MPGO (2007); Note that several sources claimed that Karachi has surpassed these estimated figures already.
Source HCMC: Ministry of Planning and Investment: General Statistics Office (2011a: 66, 2011b: 286). Expanded by own growth rate calculations. Note that the two last time steps for HCMC refer to the years 2014 and 2019.

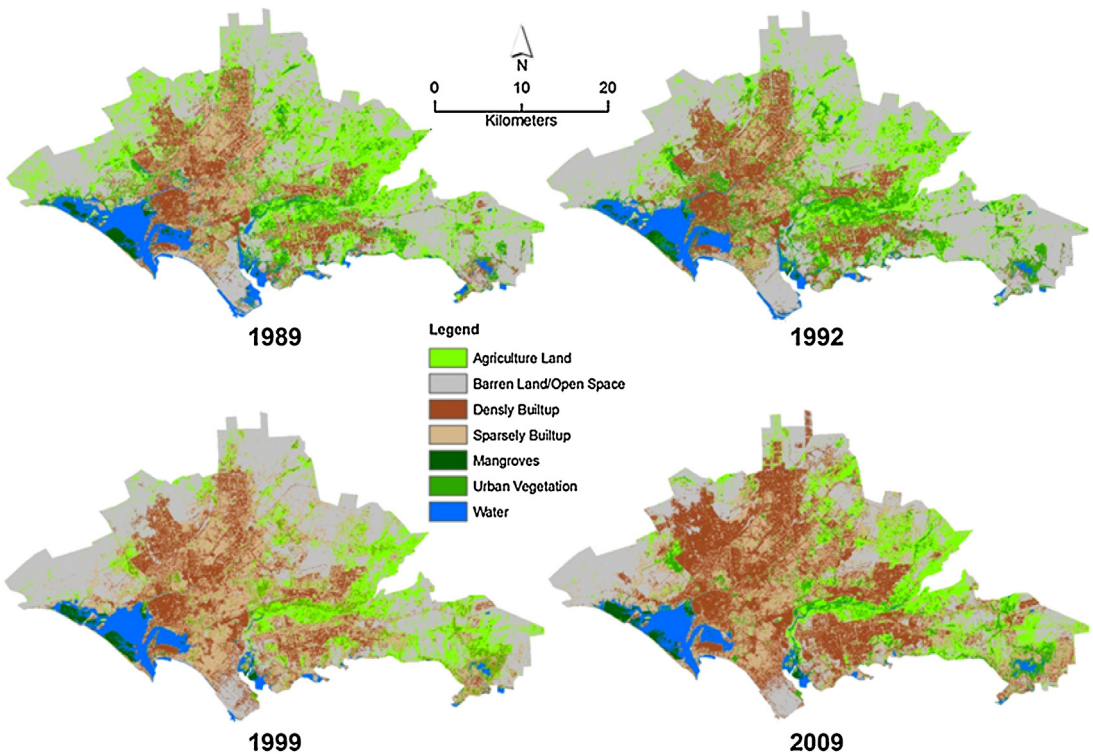

Fig. 1. Land use and land cover change in Karachi. *Note:* Land use change detection in Karachi was performed based on geometrically and atmospherically corrected Landsat TM images for 1989, 1992, 1999 and 2009. Images were acquired based on the availability of cloud-free images for comparable seasons. Land use for the individual years was classified by a maximum likelihood classifier. The overall accuracy of the classification was 84%. Land use change was quantified based on a post-classification change detection.

space has been characterized by a strong social component such as by practicing sports, playing with children or meeting other people (Chiesura, 2004). The type of use has been attributed to social properties of the users such as using playgrounds with children or walking a dog as well as to properties of the green spaces such as size and to the configuration of green spaces in the cities (Schipperijn et al., 2010). Physical activities have been found to be related to properties of the green spaces such as trees, water, and lights (Schipperijn et al., 2013), while the effect of accessibility of green spaces had mixed effects (Hillsdon et al., 2006; Kaczynski et al., 2009). Use of urban green spaces also differs across developed countries: in northern Europe, green areas are appreciated as spaces of physical activity being located within a walkable distance (Nielsen et al., 2012; Toftager et al., 2011) while a comparative study in Europe (Priego et al., 2008) showed that respondents in Chile and Germany preferred public parks or gardens, whereas respondents in Spain preferred taking walks along tree-lined streets.

Similar to studies in developed countries, a study in Malaysia – classified as a developing country – identified that the use of urban green space is primarily determined by engaging in physical activities such as jogging or walking but also in relaxation (Maruthaveeran, 2010). Suitable pathways, playgrounds and pleasant green areas but also security installations and improved lightings were named as most important green space features to visitors. The importance of safety in urban green spaces in different parts of the world has been stressed further in a systematic review by Maruthaveeran and Konijnendijk van den Bosch (2014). In addition, accessibility of green spaces in fast growing cities of developing countries is often limited (Dony et al., 2015; Lee and Hong, 2013). It is determined by public transport development or depends upon the family's access to private transport. In some cities such as in Karachi, higher quality green and recreational spaces are dispersed across and beyond the city with poor connections to public transport. Qureshi et al. (2010b, 194 with reference to Matsuoka and Kaplan, 2008) critically discussed the connection