



Resident's preferences for urban brownfield revitalization: Insights from two Czech cities

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ABSTRACT

Residents' preferences are one of the factors in deciding how brownfields should be revitalized. We compare the views of residents in a city with many brownfields (Karviná) with those in a city with only few brownfields (České Budějovice). We assessed the preferences of residents for four global regeneration alternatives (refurbishment, demolition, open space, (re)development) in three different areas of a city (city centre, inner city, city outskirts). A one percent population sample of two post-socialistic cities in the Czech Republic, was used for the comparison. Positive preferences towards brownfield regeneration were confirmed. We found spatial differences in preferences between refurbishment and demolition of brownfields in each city area: demolition was preferred for inner city brownfields whereas refurbishment was preferred in the city centre and outskirts. Differences were also identified between the two cities: residents of the brownfield rich city preferred demolition, whereas residents of the city with few brownfields preferred refurbishment. Creating new public open space, for residents' recreation, was given a lower importance within the city centre and a higher significance in outskirts. With the support of a combined ANOVA model, significant differences in residents' preferences were found for distinct types of regeneration with regards to the cities' character, the location of brownfields within the city and residents' proximity.

1. Introduction

A brownfield is a site that has been affected by the former uses of the site or surrounding land, is derelict or underused, mainly in fully or partly developed urban areas, requires intervention to bring it back to beneficial use, and may have real or perceived contamination problems (CEN, 2014). In our study, we focus on abandoned and underused, but not necessarily post-industrial or even contaminated, locations or buildings that are awaiting a new use.

Brownfields present significant social as well as environmental problems worldwide (Thornton et al., 2007), recognized by the international community (UN, 2015) and the European Union (EC, 2012). Brownfields have diverse origins, are spread throughout the land, but are particularly important topic in densely urbanized areas, especially

in cities (Burinskiene et al., 2017). The level of brownfield regeneration reflects the cultural and economic maturity of a country, region, town or village as it reflects the sustainable development strategies of places (Wedding & Crawford-Brown, 2007). However, there are often conflicts of interest (Alexandrescu et al., 2017; Dair & Williams, 2006; Rizzo et al., 2015). Tools to resolve conflicts between stakeholder interests and sustainable development goals are rare (Bartke et al., 2016).

Previous studies have shown that the location of inner-city brownfields influences the type of regeneration (Bjelland, 2004; Temelova, 2007). The regeneration type may, or may not, accord with the opinions of local residents (De Sousa, 2006) and sustainability (Bleicher & Gross, 2010). However the opinions of local residents should be taken into account in planning of brownfield regeneration (Meyer & Lyons, 2000), especially where regeneration is co-funded from public funds

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(Rizzo et al., 2015).

This paper assesses the influence of three spatial factors (location of brownfields within a city; location of inhabitants within a city; cities with different amounts of brownfields) on the preferences of city dwellers for alternative types of brownfield regeneration.

2. Background and hypotheses

We will present main concepts of the issue we are dealing with and state our hypotheses in the following subsections.

2.1. Reuse of brownfields

Brownfields are often seen as barriers in the contemporary city's structure limiting an area's development (Raco & Henderson, 2006). Alternatively they could be viewed as potential sites for demolition through to retaining their current, albeit temporary, form and many options in between (Johnson et al., 2009). The most socially convenient option seems to be keeping historically valued brownfields as part of the heritage of a bygone industrial era (Berg & Stenbro, 2015). Other options are demolition and landscaping to create green spaces (De Sousa, 2003) or demolition followed by new development, a common and economically driven option (Kunc et al., 2012). However brownfields in the form of abandoned areas have a cooling effect on the micro climate of a city and their redevelopment can lead to urban densification and a loss of cooling effects (Koch et al., 2018).

Therefore, **our first hypothesis (H1) is:** resident preferences for the four basic types of regeneration (refurbishment, demolition for development, demolition for creating green spaces, keeping the current state) are influenced by different factors.

2.2. Brownfield location within city

The variability in the level of brownfield regeneration is viewed differently in various parts of city.

The central parts of a city are often the most attractive and hence the areas where regeneration will most likely involve redeveloping brownfields for housing (Haggett, 2001). This corresponds with re-urbanisation trends in Central and Eastern Europe (CEE) countries (Buzar et al., 2007). After suburbanization (as mentioned above), the gentrification processes occurred in CEE cities (Kovacs et al., 2013; Marcinczak et al., 2013). During the late 19th and early 20th centuries industrial sites were established surrounding the city-centre. However the dynamic growth of cities during the 20th century saw them become integrated into the densely urbanised inner city (Frantal et al., 2015). Outside the inner-city (Krzysztofik et al., 2012) brownfields covering extensive areas emerged from various former uses, including: brick pits, quarries, transit depots, waste/sludge fields or agriculture.

Our second hypothesis (H2) is: brownfield location within a city affects residents' preferences for alternative types of regeneration.

2.3. Spatial factors influencing attitudes of residents towards brownfields regeneration

Scholars emphasize public participation in urban planning process for redevelopment of brownfields (Bartke & Schwarze, 2015; Loures et al., 2016). Particularly for the reason, that the local residents, who are the foundation of urban democracy, are affected by the redevelopment the most – especially economically (van Duijn et al., 2016), socially (Simis et al., 2016) or environmentally (Doick et al., 2009). Determining residents' preferences for regeneration alternatives is of great importance for this process (Glumac et al., 2015; Haase et al., 2018). Opinions of residents or visitors, with the exception of brownfield development into recreational grounds (Zhang & Klenosky, 2016), is mentioned rather sparsely in brownfield redevelopment literature.

In one of the research project, Loures concluded that community

attitudes to brownfield regeneration projects are positive and creating multifunctional areas is the most preferred (Loures et al., 2016). While 'hard' redevelopment (i.e. some form of building or infrastructure) is preferred by the investors, 'soft' re-uses of brownfields (i.e. forms of use that do not involve substantial construction) are also sought after and are of wider environmental, social or economic value (Bardos et al., 2016). Nevertheless, any alternative of revitalisation is positively appraised by the respondents (Maliene et al., 2012), even though long-term residents can view any 'change' as a potential threat to the existing social relations (Raco et al., 2008).

According to residents, general attributes of regeneration project should be: mobility and accessibility, use of renewable energies, environmental education, economic redevelopment, and safety/security (Loures et al., 2016). The differences in the perception of particular projects were studied on four types of dissimilar megaprojects among groups of residents coming from economically different backgrounds (rich and poor) and also from different geographical (close and far) areas in Rotterdam (Doucet et al., 2011a). Spatial proximity was found to be the key factor affecting the perception of particular revitalisation project, similarly to local context (Doucet et al., 2011b).

Similarly in the example of 'industrial forests' (which means abandoned areas of larger industrial or mining brownfields left free to secondary succession going towards reforestation of this area without removing of facilities) in Germany, Franz and colleagues points out the differences in preferences of 'identical' revitalisations in a single area (Franz et al., 2008). In summary, previous studies draw attention to the location impacts as well as the proximity of residents to the revitalised brownfield and also the influence on the specific location within the city (Rink & Arndt, 2016).

Based on these findings we formulated a **third hypothesis (H3):** place of residence affects the preferences of revitalisation alternatives in different parts of city.

2.4. Brownfields in post-socialistic cities

Brownfields are not a new phenomenon within the cityscape. It is natural that some abandoned sites and buildings appear during an economic cycle, their use no longer corresponds to the needs of the present time and place and uses are continuously replaced by more useful activities (Moss, 2003). This dynamic space utility is apparent in the history of spatial development of towns and cities (Swyngedouw et al., 2002). Specific circumstance sets in, when there is a great increase in abandoned sites in a relatively short time and small space (Ling et al., 2007). This situation arose in CEE countries in the 1990s (Alexandrescu et al., 2014; Frantal et al., 2015; Janeckova Molnarova et al., 2017; Kabai, 2017; Krzysztofik et al., 2016; Reisinger et al., 2017; Van der Horst et al., 2018) as a result in transition from a centrally planned economy into free market economy, which was followed by the collapse of number of ineffective businesses (Frantal et al., 2013). The trend was strengthened by de-industrialisation trends across the globe as various industrial activities gradually relocated to countries with lower labour costs. Also, since the 1990s, there has been apparent strong tendencies of city residents particularly in large cities to move to the suburbs (Berkes, 2016; Maly & Mulicek, 2016). The result of these trends is, for example in the Czech Republic, the existence of more than 10 thousand unused sites that take up more than 30 thousand hectares of land (Kunc et al., 2014).

The distribution of these sites across the country and within individual cities is highly uneven (Frantal et al., 2013). Particular city was found to be important factor regarding perception of brownfield regeneration – the results of a comparative study between same types of brownfields in the UK and Germany (Maliene et al., 2012) showed the same direction of preferences but different levels of 'satisfaction' between cultural environments of UK and Germany. As the number and extent of brownfields varies among cities, the perception of its regeneration varies, too (Kunc et al., 2014). However, testing this

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