



# Similarities and differences in the assessment of land-use associations by local people and experts



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## ABSTRACT

The continuous and unforeseeable mutations in relation to the use of land have led to different types of adjacencies between land uses. These often cause considerable nuisance which influences how people think about their environment. The aim of our study is to explore the similarities and differences in the assessment of land-use associations by local people and experts. We investigated the problems or nuisance (noise, insecurity, odor, waste disposal, unwanted animals, health risk, visual discomfort and unorganized trade) caused by the adjacency of residential to a range of six non-residential land uses (industry, commercial, transport infrastructure, landfill, medical and recreational). Face-to face written surveys were conducted with local people from 33 settlements in Romania (52% urban areas) and an online survey was distributed to experts of different professional activities. A multiple correspondence analysis was carried out to explore similarities and differences in the assessment of land-use associations by the two groups of actors. The results showed (i) differences, where local people positively assessed some land-use associations (industry vs. residential, commercial vs. residential and transport infrastructure vs. residential), while experts assessed them negatively; (ii) similarities, where both local people and experts had similar negative assessments on the same land-use association (landfill-residential), as well as (iii) similarities, where both groups had similar positive assessments on the same land-use associations (medical-residential and recreational-residential). Therefore, understanding the patterns in local people's and experts' assessment towards different adjacent land uses potentially causing nuisance could provide additional support for the complicated planning processes which are often overriding the public participation. This means that motivated and informed citizens along with experts' evaluation should be part of the planning process in order to achieve effective land-use policies.

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## 1. Introduction

The location of non-residential land uses adjacent to residential areas has become problematic in many settlements because of the diversified environmental and social impacts (Hersperger, 2006; Lejano and Smith, 2006). Consequently, the control of the problems triggered by adjacent land uses has become a common planning issue that can be dealt with in the context of experts' technical expertise and public participation. Environmental problems such

as health risks, noise, odor, waste, insecurity as well as ecological and visual impacts have often been correlated with the association between residences and industrial facilities (Liu et al., 2012), commercial facilities (Coleman, 2006), transport facilities (Barros et al., 2013), landfills (Che et al., 2013), medical facilities (He et al., 2010) as well as recreational facilities (Lo and Jim, 2012).

Many regulations are applied to control land-use nuisance by authorizing, prohibiting, allowing, or excluding certain uses in order to decide on "the right location of land activities" (Makhzoumi and Pungetti, 1999). Land use regulations (such as environmental, safety, aesthetic regulations) are designed to minimize the nuisance caused by adjacent land uses (Fischel, 2004) and their effectiveness is widely accepted. The adjacency of several non-residential uses to residences is controlled under the laws of many countries. Here, land-use regulations refer to: (i) prohibiting certain land uses (e.g.,

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any activities which generate problems such as noise, vibrations, air, water and soil pollution, etc., are prohibited in the proximity of residential areas), (ii) enforcing minimum distances (e.g., a specific distance in meters from a hospital); (iii) obtaining a neighbors' agreement (e.g., building adjacent to existing buildings or in their immediate vicinity requires the neighbors' agreement in case of a different use than the neighboring buildings); (iv) managing the limits of certain land uses (e.g., installation of noise absorbing panels along railways in residential areas) as well as (v) strict conditions on land uses that cause problems (e.g., non-residential activities must obey to an operating schedule that does not interfere with the local residents' resting schedule). However, there are many circumstances under which land-use regulations can be inadequate, failing to fulfill their designed purpose and even causing conflicts and environmental problems (Hersperger et al., 2015; Rotich, 2012).

Decisions regarding land-use regulations are based on the expert knowledge, and, occasionally, the involvement of the public. The public does not get involved mostly because opportunities for participation are not available or known (Hanssen and Falleth, 2014), but also due to personal reasons. For example, individuals might fear to become sidelined by the community whether their opinion differs from the collective one (Buchecker et al., 2003), they mistrust their conversational skills or knowledge about the issues under concern, they are not convinced that participation would contribute to important outcomes, or they are not interested in local landscape development (Höppner et al., 2007, 2008).

Public participation has many potential benefits. It could bring better informed and transparent decisions as well as service improvements (Lowndes et al., 2001), increased fairness and justice of the decision making process (Innes and Booher, 2004), and improved planning outcomes (Clifford, 2013). Furthermore, the public has a special knowledge which is practical, collective, derived from everyday life experience and cultural background, and is strongly related to the local landscape.

The task of bringing together both local and expert knowledge represents a significant challenge because sometimes local knowledge is marginalized as being too subjective or based on speculative information, whereas experts knowledge as being overconfident or ignorant to local issues (Failing et al., 2007; NRC, 1996).

Differences in local and expert knowledge may lead to contradictory assessments. These differences are often driven by distinct values, attitudes, as well as different cultural and social backgrounds of local people and experts, including gender, age and level of education (Renn, 2008; Renn and Rohrmann, 2000). A plethora of case studies revealed situations when local people have more negative perception than experts, for example on the importance of urban derelict land (Hofmann et al., 2012), or on hazardous facilities (Sjöberg, 1999) as well as cases when local people are more positive in perception than experts, for example on electric technologies (Slovic, 1987). The conditions in which we would expect agreement refer to the public get aware of the technical knowledge in order to understand the real issues. Local people and experts can also agree on a negative or a positive assessment. Literature has shown cases of both locals and experts negative assessments toward past landscape changes (Ruskule et al., 2013) and cases where both groups share similar assessments toward the impacts of oil and gas production industry (Wright et al., 2000). The conditions in which we would expect agreement refer to a consensus among experts and public regarding the assessment of the problems caused by adjacent land uses.

Several European policies encourage public involvement in decision making along with experts' assessments (e.g., Public Participation Directive (2003/35/EC), Environmental Assessment Directives: Environmental Impact Assessment—EIA (2011/92/EU) and Strategic Environmental Assessment—SEA (2001/42/EC),

Water Framework Directive (2000/60/EC)). These aim to integrate expert evaluation and public consultation to increase awareness towards the real problems and commonly accepted decisions.

Public participation of local inhabitants in planning processes is still underdeveloped in Eastern European Countries, and specifically in Romania. Here, usually local people do not participate in the preparation or approval of land-use plans. Instead, plans are prepared by experts usually from a remote workplace. These experts develop the plans based on their attitudes regarding problematic and un-problematic land-use associations, e.g., the adjacency of non-residential uses to residences. The attitudes of the local people about these issues are largely unknown and neither enter the planning process directly nor indirectly (Tudor et al., 2014). Although there are sufficient requirements for public participation procedure, local people's passivity and apathy about local issues still favor top-down decisions.

Romania has many land-use regulations (Table 1). In recent years, the implementation of such regulations has been neglected and resulted in a significant increase in problematic land-use associations. Thus, the number of disputes, even among land uses with a low potential for conflict (e.g., cemeteries, gas stations, recreational areas) has increased (Iloja et al., 2014; Tudor et al., 2013). As Romania further integrates into the EU the public's values are expected to become more important and determinant for land use plans. In order to better anticipate potential future changes in this regard we are interested in the current assessment of local people and experts. Thus, the aim of this study is to explore similarities and differences between local people's and experts' assessments of close proximities of non-residential and residential land uses for an Eastern European country with a communist past and strong preference for economic development. A multiple correspondence analysis was carried out to identify such similarities and differences. We hypothesize that currently in the study area local people tend to assess land-use associations less problematic than experts.

## 2. Method

### 2.1. Data collection

The data on the assessment of problems induced by the close proximity of different land uses by local people and experts was collected through two different types of surveys. To explore assessments with regards to adjacent non-residential and residential uses, we administrated face-to-face surveys on paper in December 2011 and June 2012 with local people, while for experts, we distributed an online survey during February 2012 and May 2014.

We chose face-to-face surveys on paper to evaluate people's assessment because many respondents were from rural areas and there local people have more willingness to cooperate in face-to-face surveys. Although web-based surveys have lower response rates (Brown and Kyttä, 2014; Shih and Fan, 2008), we chose this approach to explore expert assessment because it is more flexible regarding their work schedules, and makes it possible to return to specific questions at any time. Information gathered from these two types of surveys can be combined since its reliability is considered to be almost the same (Revilla and Saris, 2013).

The analysis focuses on the problems of six non-residential land uses (industrial, commercial, transport infrastructure, landfill, medical and recreational) located in the neighborhood of residences. We analyzed these land-use associations as they were frequently reported as problematic for Romania (e.g., Niculita et al. (2011), Onose et al. (2011)) and worldwide (e.g., Saint et al., 2009; Lecourt and Faburel, 2008). We excluded from statistical analyses the association between residences and places of worship and the association between residences and abandoned land because of incomplete and inexistent responses from

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