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Flexible land-use and undefined governance: From threats to potentials in peri-urban landscape planning

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ABSTRACT

Densification of cities is presently one of the dominating strategies for urbanization globally. However, how densification of cities is linked to processes in the peri-urban landscapes is rather unknown. The aim of this paper is to highlight the potentials in of peri-urban landscapes to be recognized as complementary providers of urban ecosystem services when green areas in cities are reduced by densification. We suggest that the way forward is to change the perceptions of peri-urban areas from being defined as located between cities and rural areas with a specific population density or a geographical distance, to become recognized as a landscape defined by its functionality. By identifying and describing the functionality in peri-urban landscapes the existing governance gaps can be recognized and thus dealt with through adaptation of existing planning tools. Although not yet articulated, peri-urban areas should be used to facilitate integration of top down and bottom up approaches and thereby closing the governance gaps. We illustrate this reasoning by two examples; one of the establishment of green wedges in Stockholm, Sweden, and the other with the establishments of international Model forests. We conclude that further densification of cities will create a lack of ecosystem services in cities by putting an even higher pressure on the peri-urban landscape and not as suggested today that densification lower pressure on peri-urban landscapes. Rethinking and reframing the peri-urban areas by adapting existing platforms will potentially contribute to a more nuanced discussion on strategies for urban development generally.

1. Introduction

Urbanization is increasingly affecting land-use globally and one of the major challenges planners are facing is how to make cities more sustainable. A dominating trend in the efforts towards sustainable urban development is to increase their efficiency by densifying the already built up areas which mean reduction of urban green space for the need of housing and service infrastructures (Wolsink, 2016). Although the consequences of this strategy have not been fully evaluated, it is already implemented in a large scale. Densification of cities directly affects people's quality of life by reducing the availability of green space, and may trap citizens in dense urban districts with insufficient room to meet their recreational requirements and needs of other ecosystem services (Westerink and Aalbers, 2013; Westerink et al., 2013). Shortage of space within cities will force people to seek publicly available ecosystem services (like recreation or food production) elsewhere, making cities increasingly reliant on their hinterlands. Thus, these hinterlands needs to be planned since the urban periphery is already under strong pressure from urban growth, regardless of whether growth happens through densification, i.e. increasing populations within existing borders, or through sprawl, extensive outwards expansion. Compact cities need regional support systems, which mean that peri-urban lands will become gradually more important. Recent research only emphasize the importance to investigate effects of local densification for the city as a whole (Lin and Fuller, 2013; Wolsink, 2016) and thus not how local urban densification effects the city *and* the peri-urban areas. This raises two critical issues that need more attention if we are to successfully navigate urban densification and avoid some of the more irreversible landscape scale problems it causes.

The first is to further investigate the hypothesis that densification will push many functions existing solely in urban areas out

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into the peri-urban periphery, forcing it to become even more multifunctional than it is today. This leads to the second issue, the need to deal with the current lack of clear governance structures and processes for the peri-urban landscape which seems to be a global pattern. In the peri-urban areas the urban planning fails to handle the sectoral traditions within agriculture and forestry, with gaps and overlaps as a result, whilst the rural governance structures commonly are incapable of handle urban issues. However, we argue that less established structures are not only a problem, it also means that there is space to form something new. Recent research stresses the need for a new perception of the periphery and the connections between peri-urban character and densifying cities (Nilsson et al., 2013). Not least, the value of peri-urban landscapes as ecosystem service providers is becoming increasingly recognized (e.g. Merson et al., 2010). But how do we make peri-urban areas a more integrated part of metropolitan regions? And how do we make sure that the potential of the peri-urban landscape can be tapped without compromising the fundamental reasons for building compact cities, i.e. reduced needs for transportation and easy access to services?

This viewpoint paper outline the peri-urban landscape as an urban form-dependent functional space, not just the spatial periphery or space open to any type development. We will discuss the flexibility and current lack of a unified governance approach as strength to build on and not a problem that needs to be solved. We use present literature and case studies from Northern Europe to illustrate our thoughts for future planning and research. Although the perspective draws primarily on the North European experience the discussion has global relevance, although the specific details – which functions, what governance solutions – will differ.

2. Urban densification and its effects on peri-urban landscapes

There is a need to recognize people's needs for accessible public spaces when cities expand and later densify and the resilience that ecosystem services from these areas can provide for local residents and for the city as a whole. Large, open green spaces have long been recognized as an instrument to balance increasingly compact cities (Lin and Fuller, 2013). These areas which by their size allow a flexibility in land-use and provides improved conditions for public health, well-being, provisioning services, resilience (see e.g. Lee et al., 2015; Stott et al., 2015). Further, these areas also have the potential to adapt to future changes of new needs which already build areas do not. We see peri-urban areas as unrecognized contributors to this urban need of public green spaces and eco-system service providers. These areas will over time become embedded in cities. Acknowledging a-priori that peri-urban land can increase future quality of life in cities should encourage engagement in the planning of these areas.

At present, when cities are densified and the demand for peri-urban functions and services increase we expect the peri-urban zone to (1) grow outwards into the rural hinterlands, and (2) become increasingly multifunctional, or at least being looked to as a potential source for an increasing number of functions. This may not 'consume' land the way sprawl does (i.e. it convert land covers) but instead changes the way the land is used. Heavier use of a landscape independently where it is located will also challenge the maintenance of the very landscapes that support multifunctional use (Cincotta et al., 2000; Lin and Fuller, 2013). To tackle this issue we argue that the peri-urban landscape should be seen as a functional extension of its city rather than spatially determined fringe land (e.g. a specific distance from rather inadequately described urban borders or density of people which often is the case today). One of the implications this would bring is that urban planning may need to be rethought to include the peri-urban areas and how it could contribute to the well-being of city dwellers. This means for example that instead of present common practice to solemnly focus on existing urban green spaces and their qualities for recreation for urban citizens also actively plan and provide public transport to set aside peri-urban areas. At present, in a number of metropolitan cities such as Beijing people in the centre do not participate in outdoor recreation due to shortage of time and inconvenient transportation (queues with cars) which cause empty country parks and city parks that are overcrowded (Zhang and Jun, 2014).

Defining peri-urban areas according to their functions would support a broader discussion about transition zones and service repositories, including smaller "islands" of flexible land use embedded in urban fabric. Examples of such islands include regional green structures, such as the "fingers" in Copenhagen, Denmark (Caspersen and Olafsson, 2010) and "green wedges" in Stockholm, Sweden, as further described below. In recognizing and articulating this variation a functional understanding of the peri-urban landscape can facilitate cross-case exchange of experiences and lessons.

The peri-urbanization process is described as a diversification of land use (Winarso et al., 2015). Diversification together with extension and densifying transportation infrastructure leads to fragmentation of peri-urban areas, especially in previously fairly connected agricultural or forest landscapes. This fragmentation can lead to a situation where ecological integrity and ecosystem services are being reduced. On the other hand, some ecosystem services might become more accessible to a larger segment of the population through, for instance, reductions in the average distance to the nearest road and/or more transportation options increasing recreation possibilities (Mitchell et al., 2015). However, these linkages are rather unstudied and future research should try to reveal if dense urban cities have larger extensions of multifunctional peri-urban landscapes than similar populated cities with lower urban density. This multifunctionality could be estimated by a combination of land cover (e.g. size and heterogeneity) and actual land use (e.g. diversity of private companies, forest for recreation, forest for production etc.).

3. Flexible land-use as an opportunity for peri-urban governance?

Peri-urban landscapes are often owned by a mixture of private owners, companies and in some countries by the state. Most private companies often have little interest in communicating with other actors; their interest is in their business (Lidestav et al., 2015). Even when land ownership is not private, for example in the state-owned Polish peri-urban forests, sectoral thinking dominates with little or no dialogue between sectors (Lidestav et al., 2015). Authorities responsible for sectors such as forestry, agriculture or nature conservation prioritize sectoral interests (and are generally obliged to do so), often from a rural perspective. This is problematic, because of the limited capacity it renders for managing the emerging (and potential) *multifunctional land uses* of peri-urban landscapes. The high diversity of users with different rights to land and use (relative to rural areas) also increases risks of conflicts between interests.

In contrast to the concrete and long lasting surfaces in urban areas, and the long continuity of production in traditional rural landscapes, the functionality of land use in the peri-urban landscape is not constant. This *flexibility* of peri-urban landscapes distinguishes them from both the much more defined and fixed urban landscapes. In urban landscapes is the development rarely reversed, and in rural areas where, for example, production forests seldom change from private to public ownership and land uses tend to be constant over generations. The peri-urban areas' flexibility may also contribute to a high adaptive capacity, potentially allowing provision of diverse land-uses, and ecosystem services, to shift