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## Article

# Editorial: Land use competition in societal transformation

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# Land use competition in societal transformation

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## 1 Introduction

Societal transformation towards sustainability (Hölscher/Wittmayer/Loorbach 2018) goes hand in hand with a fundamental shift in how land is utilised. New competing demands on land challenge policies and practices in spatial planning and development. Currently, the paradigm for sustainable land use argues for the need to substantially reduce land take, moving towards a circular land use economy. National and international studies show that although momentum is tending to slow down in some countries, land take in general remains high and is leading to urban sprawl (Oueslati/Alvanides/Garrod 2015; Meinel/Henger/Krüger et al. 2020; Behnisch/Krüger/Jaeger 2022). In reaction to this, policies and goals towards no-net land take policies have been introduced on European level and also in many member states and countries worldwide. The target is to ensure that human activities are land take neutral and to protect soil, both in terms of its quality and in terms of the quantitative amount of land in agricultural use or under natural conditions (Lacoere/Decoville/Delattre et al. 2025). In particular across Europe, there is an ongoing process of inte-

grating the instruments used to implement such aims within spatial planning (Idt/Le Bivic/Melot 2025). On a national or international scale, managing growth has become a key topic for research and practice in spatial planning (Siedentop/Schmidt/Dunlop 2022). However, while reduced land take rates could be seen as an initial success, current societal developments highlight the narrow focus of no-net land take policies. In the wider sense of sustainability, the way in which we use land should allow us to live within ecological boundaries while ensuring planetary justice. However, the ecological aim of preserving open land competes strongly with demands arising from a transformation of society and the economy. Hence, further competing land uses challenge the focus on land take and go well beyond debates on urban sprawl and settlement area.

In these times of societal transformation, the types of competition for land are manifold, ranging from housing to renewable energy production. Affordable and accessible housing is becoming an increasingly urgent societal problem in many agglomerations. While infill potentials seem ever scarcer, arguments for expansion on greenfield sites are becoming more prominent (Ehrhardt/Eichhorn/Behnisch et al. 2022). When it comes to urban transformation, the issue of housing provision also raises the question of the interplay between private property rights and public land policies (Hartmann/Hengstermann/Jehling et al. 2025). In addition, the locational requirements of industrial activities and commerce reveal the dilemma between preserving land at such locations or supplying the land required for the current needs of economic development (Jehling/Krehl/Krüger 2021). Furthermore, transformation to low carbon energy systems also involves a conflict of goals with ecology. The extensive construction of renewable energy plants, such as ground-mounted photovoltaic systems and wind farms, demands large amounts of land (Masurowski/Drechsler/Frank 2016; Bennat/Broekel/Sternberg 2019). Agricultural productivity and nature conservation are further competing

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interests that require people to take sides within ecological boundaries and demands for planetary justice.

On the one hand, there are evolving new demands on land that challenge recent achievements in reducing land take. On the other hand, these demands compete with each other for land as a resource needed to make societies more sustainable. Land policies and spatial planning in particular have the means to find solutions that balance competing interests. Against the backdrop of land use competition in societal transformation, there is a need for research that identifies new concepts and viable solutions for land policies and spatial planning, including approaches for involving public and private actors. More knowledge is needed on instruments and processes that support the efficient utilisation of land, which remains a scarce resource.

This special issue aims to connect current research on these necessary conceptual perspectives with empirical knowledge. The contributions highlight methodologies, processes and drivers, which constitute the foundation for viable pathways towards sustainable land use. The special issue addresses relevant approaches to land policies and spatial planning that seek to mitigate competing interests but also identify conflicting goals inherent in sustainability transformation.

## 2 New perspectives on land use competition

In his commentary, Binder (2025) addresses the ongoing debate on no-net land take in Germany and proposes a new conceptual approach to what land take means. He points out that the sole focus of current policies on land as either urban or non-urban inhibits the implementation of regulation. He proposes a model that uses compensation as a starting point and includes the ecological value and multi-functionality of land taken for urbanisation, but also of land given back to urbanisation. Such a model would not be based on the need to provide compensation for square meters of new urban land but rather considers the functionality of such land in qualitative terms.

A further perspective on competing interests for land is provided by Oelke (2025). In his contribution, he discusses the ecological dynamics of human-wolf competition (or co-operation) in the Eastern German region of Lusatia. This opens the spatial planning debate to the question of the co-habitation of humans and animals. He introduces the concept of 'ecological labour' to emphasise the role of land use as a resource for reproduction, to which both human and animals contribute. In terms of a sustainability transformation, this develops the idea of understanding land use

competition in a way that respects the contributions of both human and non-human actors.

Buika and Schiller (2025) draw on a case of infrastructure conflict to set up a complementary perspective on acceptance in planning. They look at the LNG terminal on the German Baltic Island of Rügen, where they identify an acceptance crisis concerning accelerated planning with limited participation and recourse to 'a rational legitimisation approach'. They counter this by proposing complementary approaches to legitimisation. In terms of societal transformation, their plea for 'shared legitimisation arenas' could provide a viable pathway to address competition for future land use.

## 3 Gaining knowledge on actors and spatial dynamics

Ehrhardt, Sommer, Ndim et al. (2025) look at the dynamics of inner urban land use and focus on the pivotal role of landowners in urban densification. They contribute an empirical approach that makes use of spatial data on landownership and its change for the city of Dortmund, Germany. They show that distinct groups of landowners were involved in different forms of densification and demonstrate changes in landownership over time. The gained knowledge on actor groups sustains the argument that future endeavours in spatial planning and land policy need to be more specific about which landowner groups they address to mitigate competition for urban space for housing or climate adaptation. This approach helps enable adaptive urban systems capable of mitigating housing pressures and limiting land take.

Tietz and Bockelmann (2025) examine the role of agricultural landownership across a nationwide sample in Germany and reveal highly diverse ownership structures in agricultural land. They consider the ownership of non-urban land with its important role for societal transformation and point out that such ownership is generally widely dispersed but simultaneously highly unequal. These imbalances have repercussions for the benefits and burdens of future land use in societal transition, which relies greatly on private landowners as key actors. They point out that this may create pathways of inequality in energy transition, as land used for solar farms and wind turbines is typically owned by long-established landowning families.

Siedentop and Schartmann (2025) address competition for urban land and point to the debate about whether the scarcity of developable land is due to regulatory restrictions or the financialisation of housing markets. They investigate the spatial patterns of land price dynamics in the German federal state of North Rhine-Westphalia, which is undergoing strong demographic and economic reurbanisation. They

see spatial planning as incapable of responding to a surge in demand by increasing land supply, and observe spatial polarisation between dynamic urban areas and left-behind rural areas. This highlights the varied conditions shaping future sustainable land use adaptation. Above all, the results raise questions about the capacity of land policies to restrain rising land prices.

## 4 Conclusion and prospects

The focus on land use competition in societal transformation highlights how important it is to identify new conceptual approaches to open up future development pathways in urban to rural contexts. How we conceive land take, think about interaction as competition or co-operation, and seek legitimacy for changes in land use can enable these pathways. The studies on landownership also show who is in control of the land available for sustainable futures. Hence, solutions need to embrace these actors in terms of co-operation but also regulation. The study on land markets further highlights the importance of complementing a planning-oriented view with consideration of demand and supply in land markets to better position policies that enable societal transformation. The research on structures of landownership in urban dynamics and agriculture reveal the enormous value of data availability for evidence-based decision making. Due to the increase and specificity of data collections, as well as improved possibilities for temporal cross-sectional and longitudinal analyses, there is enormous potential for developing innovative approaches to spatial modelling and assessment – particularly for the simulation and differentiation of future scenarios.

Against this backdrop, current activities need to enhance the measuring and monitoring of spatial processes of land use in both urban and rural environments to support future research. The more we know about past and current drivers for land use competition, the more we can develop and evaluate scenarios of desired and undesired spatial futures. For this, multidimensional perspectives that make the interactions between biophysical, social, economic, legal and ethical dimensions explicit are becoming key. Such interdependencies must be reflected in future modelling and scenario-building efforts to ensure that proposed land use strategies respond to the complexity of real-world dynamics and contribute to more sustainable outcomes of spatial planning.

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