

Possible Negative Legal Impacts on Cadastral Work Due to Lack of Perception on Spatial Uncertainty

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SUMMARY

The primary unit of any cadastral system is a land parcel, which is generally perceived as a single piece of land defined geographically by its boundaries and held under relatively homogeneous property rights (Williamson, 2010). Thus, property rights are also referenced to cadastral parcels, which are defined by a number of geometric attributes, such as corners (points), edges, and the auxiliary information derived from them such as polygons including their geometric area.

The area information is one of the most frequently used attributes of a parcel in different domains, such as real estate finance, spatial planning, land development, land readjustment, expropriation, taxation, agricultural subsidies, land regulations, and land valuation, etc. Even in ancient times, the area information was roughly predicted by the landowners, farmers, and other stakeholders by various methods. The cadastral surveying activities and as a result the land registries with area information have enabled a more precise estimation and practical use of this data. In other words, various public and private parties have started to use the area information registered into the land registers for different purposes. However, considering its undoubted importance, deviations in area calculations, even when it remains within the measurement tolerance, have become difficult to comprehend and even unacceptable by many.

Every measurement and estimation process involves various levels of uncertainty, and several studies emphasized that the uncertainty concept and the distributions may not be understood by policymakers and the public (e.g., Patt and Desai, 2005; Pappenberger and Beven, 2006). The lack of uncertainty perception for cadastral activities and the resulting registries in the society, particularly the legal experts and policymakers, has numerous consequences. Although the reality must come before the registers, legal entities consider the registers as facts. Recently, an unexpected development has occurred in Europe with adverse effects on the geospatial professionals with a

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potential of producing unprecedented costs for the states.

In this paper, we will discuss the shortcomings of insufficient spatial uncertainty perception by property right holders and legal experts via a specific court case, a decision given by the European Court of Human Rights in 2015. Cases from different countries, e.g. Germany, Switzerland, Turkey, etc., will be addressed accordingly. The potential implications of the legal cases on geospatial professionals and real estate finance sectors will be discussed. We also consider that timely discussions and outreach activities on this subject are essential in the light of new land administration trends, such as 3D city models with various levels of details, urban digital twins, etc.

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