Indicator Factsheet: Land use configuration

Indicator: Land use configuration	
Description	Land use configuration can be described by the size and shape of the land use units or by the indices of connectivity or fragmentation derived from these for a reference area. The effective mesh size (m_{eff}) serves here as a measure of landscape fragmentation. It indicates the probability that two randomly selected points in a region lie within a single area, or how heterogeneous the region under investigation is.
Data basis	**Remote sensing:** Mapping (nationwide) of open land use (Blickensdörfer et al. 2022), field boundaries derived from image segmentation (Tetteh et al., 2021). See Appendix II for the class catalogue. **Agricultural data**: Crop type and other land use, including geometries (field blocks or parcels), from IACS (nationwide).
Calculation	(1)effektive mesh size: $m_{eff} = \frac{1}{A_{TAL(UAA;OL)}} \sum_{i=1}^{n} a_i^2$ [a_i = size of field *i*; *n*: number of fields per reference area; A_{TAL} = area of total agricultural land; A_{UAA} = utilised agricultural area; A_{OL} = area of open landscape
Spatial reporting level	**Coverage**: National; **Resolution**: Hexagons (100 ha, proportion of open land > 25%); **Reference area**: Respective land category (TAL, UAA, OL)
Reporting period/ interval	from 2010 (IACS) or 2017 (remote sensing), respectively / annually
Interpretation	The effective mesh size (m_{eff}) serves as a measure for assessing land use heterogeneity based on the size distribution of land use patches. When reference units are standardised, values from different regions can be compared directly with one another. Low m_{eff} values indicate a smaller average field size and thus greater heterogeneity of land use. The maximum m_{eff} value corresponds to the size of the reference area. High values are an indication of very homogeneous land use.
Limitations	The calculation is performed for all areas within an object at the respective reporting level (e.g., for the individual hexagon). Areas extending beyond the object's boundaries are truncated, thereby generating pseudo-areas that may influence the indicator value to a greater or lesser extent. The indicator is only displayed for reference units where the proportion of open land is at least 25%.
Latest Update	2025