Appendix 1. Comparison of landscape metrics among the simulation scenarios for the Guangzhou metropolitan region

Metrics	Description	Formula	Baseline scenario	Rapid development scenario	Green land protection scenario
PD	PD equals the number of patches of the corresponding patch class divided by total landscape area (m^2), multiplied by 10,000 and 100 (to convert to $1km^2$). It expresses the number of patches on a per unit area basis that facilitates comparisons among landscapes of varying size. According to the meaning, the maximum density of patches of a single class is attained when every other cell is of that focal class.	$PD = \frac{N}{A}(10000)(100)$	5.52	4.49	6.63
LSI	LSI is landscape shape index, *E* is total length of perimeter of urban land, *A* is the area of study area. *LSI* = 1, when the landscape consists of a single square or maximally compact (i.e., almost square) patch of the corresponding type. *LSI* increases without limit as the patch type becomes more disaggregated.	$LSI = \frac{0.25E}{\sqrt{A}}$	24.1968	23.3146	25.7066
AI	Aggregation index is calculated from an adjacency matrix, which shows the frequency with which different pairs of patch types (including like adjacencies between the same patch type) appear side-by-side on the map.	$\mathrm{AI} = [\sum_{i=1}^{m}(\frac{g_{ii}}{\max \rightarrow g_{ii}})P_i](100)$	93.15%	93.53%	92.58%
PAFRAC	Perimeter-area fractal dimension indicates the relationship between the area and perimeter of the urban patch. A fractal dimension greater than 1 for a 2-dimensional landscape mosaic indicates a departure from a Euclidean geometry. *PAFRAC* approaches 1 for shapes with very simple perimeters such as squares, and approaches 2 for shapes with highly convoluted, plane-filling perimeters.	$PAFRAC = \frac{2\left[n_i \sum_{j=1}^{n}(\ln p_{ij} \cdot \ln a_{ij})\right] - \left[\left(\sum_{j=1}^{n}\ln p_{ij}\right)\left(\sum_{j=1}^{n}\ln a_{ij}\right)\right]}{\left(n_i \sum_{j=1}^{n}\ln p_{ij}^2\right) - \left(\sum_{j=1}^{n}\ln p_{ij}\right)^2}$	1.3855	1.3832	1.3926