

## Advances and trends in research on urban ecosystem sustainability and smartness: a bibliometric analysis and network visualization

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This research focuses on urban ecosystem sustainability and smartness. As urbanization continues to rise, sustainable urban development has become a key focus, addressing challenges like pollution, climate change, and social inequality.

The present study uses bibliometric analysis to assess the current trends and hotspots in urban ecosystem sustainability and smartness research. A total of 1,359 articles published between 1991 and 2025 were analyzed to understand the development of the field.

The methodology involved collecting data from databases like WOS and Scopus, and applying bibliometric analysis by R bibliometrix, Vosviewer, Citespace. This revealed trends in publication growth, research power, and keyword evolution.

The results show a significant increase in publications, especially in recent years, with China leading in the number of papers. Core journals like Sustainability play a central role in this research. Key research areas include urban ecosystem services, climate adaptation, and smart cities.

This study highlights the growing interdisciplinary nature of the field and the need for further exploration into the integration of emerging technologies in urban sustainability. And holds significant importance for the sustainable and smart development of urban ecosystems.

### Источники и литература

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- 2) HassanWDuarteAE. Bibliometric analysis: a few suggestions. Curr Probl Cardiol. (2024) 49:102640. doi: 10.1016/j.cpcardiol.2024.102640
- 3) van EckNJWaltmanL. Software survey: VOSviewer, a computer program for bibliometric mapping. Scientometrics. (2010) 84:523–38. doi: 10.1007/s11192-009-0146-3

### Иллюстрации

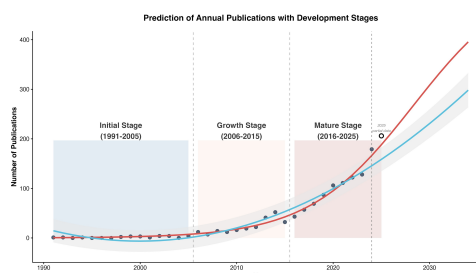


Рис. : Three-Stage Growth Trend and Forecast of Research Output

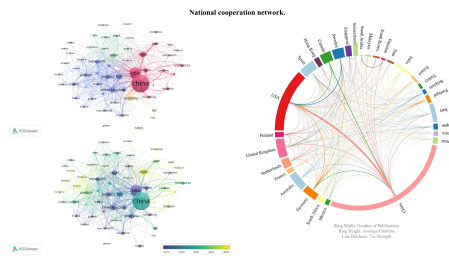


Рис. : National cooperation network

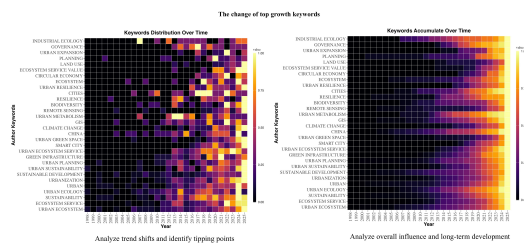


Рис. : The change of top growth keywords

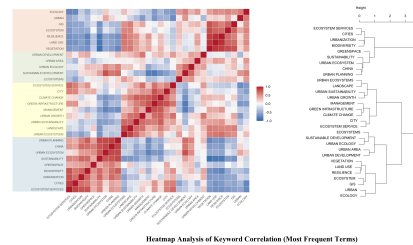


Рис. : Heatmap Analysis of Keyword Correlation

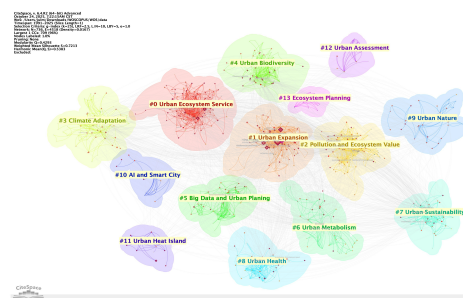


Рис. : Cluster Analysis of Keywords