An Analytical Approach to Urban Landscape Planning Studies: Bibliometric Analysis

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ABSTRACT

This study aims to evaluate urban landscape planning resources, to reveal traditional and modern landscape planning approaches in an integrated manner. In addition, it is aimed to determine the place and usage areas of landscape in urban planning in order to increase the impact of urban landscape planning and contribute to its development. In this context, to carry out descriptive network and cluster analyzes and bibliometric analyzes of studies conducted in the field of urban landscape planning in peer-reviewed journals (4250 articles) between 2000 and 2021, using the WOS database and R program, within the framework of various parameters. The study reveals the 21-year development process of urban landscape planning and the interest/study tendency towards the subject. Within the scope of the bibliometric analysis results obtained in the study, which provides an overview of the field of urban landscape planning, the contributions of the studies on the subject to the field are determined and it is aimed to be a reference and guide for similar studies to be done in the future. According to the findings, the subjects of landscape, managemenet, sustainability, land use, ecosystem services, climate change come to the fore in the studies carried out intensively in China, the USA and the United Kingdom. The most influential journals in the field can be listed as Landscape and Urban Planning, Sustainability and Land. Although there are bibliometric studies in the field of Landscape Architecture, this study presents the first bibliometric approach with an overview by considering all the sources in the temporal process and scanned in the articles in the field of urban landscape planning. By identifying key thematic trends, the study will contribute to guiding future research and to the development of sustainable, nature-based urban planning policies.

1.   Introduction

Landscape defined by Alexander Von Humboldt with the sum of the characters of the area (Hepcan, 2008) is defined in the European Landscape Convention as "the area whose character is formed as a result of natural and/or human activities and interaction, as perceived by people" (Déjeant-Pons, 2006; Çetinkaya and Uzun, 2014; Miklós, 2016). Landscapes affected by natural and cultural dynamics are spatially planned and designed in a hierarchical order at lower and upper scales.

Many environmental problems arise in cities, mostly due to unplanned urbanization, increasing structural density and incorrect use of land (Olsson et al., 2019). The increasing pace of change, especially in the developing world, is reshaping urban environments (Abramson, 2016 ; Buxton and Choy, 2007). Increasing pressures on the natural and cultural environment and with the rapid development of social civilization bring urban planning to the fore, and in this context, urban landscape planning is becoming increasingly important (Önder and Polat 2002; Chen and Liang, 2022; Brunckhorst and Trammell, 2023). User and environment relations based on planning allow the conceptualization of the landscape (Selman, 2012; Cottet et al., 2018). Landscape-based planning addresses upper-scale studies on processual changes by considering the environmental relationships of natural and cultural areas. (Buizer et al., 2016; Kusters et al., 2020). The use of landscape in urban planning requires interdisciplinary research in a broad perspective (Tan et al., 2023). Spatial and regional landscape features in urban areas greatly affect planning (Nguyen et al., 2019). The multidimensional evaluation of the landscape is important in terms of landscape planning and management (Aksu and Küçük, 2020). Landscape planning, which is created with sustainable, ecological, cultural and economic foundations in order to protect and develop landscapes, is defined as "forward-looking actions aiming at increasing the value of the landscape, improving it or recreating it" (Council of Europe, 2000; Termorshuizen and Opdam, 2009; Benliay and Yıldırım, 2013).

Nowadays, landscape planning has higher requirements; it requires a new vision for new concepts, harmony between humans and nature, sustainable development, and ecological foundations (Xiao and Chen 2016). Considering the academic studies in the field of landscape planning; process analysis, analysis of the structure and functions of the landscape, and ecological-based planning approaches come to the fore (Uzun et al., 2012; Wolch et al., 2014). It was determined that the first study in the field of Urban Landscape Planning was the publication titled "Climate and Culture, Landscape and Lifestyle in Sun Belt of Southern Arizona" in 1978 (Hecht, 1978). Looking at the academic studies that provide an overview of the field of urban landscape planning, Özkan and Gül's (2019) study included statistical analysis by researching doctoral thesis studies in landscape architecture. Similarly, in the study conducted by Mutlu et al. (2020), it was aimed to determine the orientation in the study subjects of landscape architecture in Turkey and to compare them with each other. For this purpose, first of all, the study subjects of landscape architecture of 253 lecturers in 39 universities providing landscape architecture education in Turkey were grouped under 16 headings. Gobster (2014), on the other hand, included the analysis of the landscape of the 'LAND' journal over a 40-year period in his study and presented the bibliometric analysis of the studies in the context of words, authors and citations in detail. In another study, green infrastructure, which constitutes the sub-terms of urban landscape planning, was examined in a similar way, and sub-terms and analyses were included (Matsler, 2021). Considering the existing studies, it is seen that there is no study in the field of landscape architecture that provides an overview in the field of urban landscape planning by considering all resources in the temporal process. A general

review is needed in order to monitor the scientific development of the landscape planning field and to identify the deficiencies and needs in this field. In this context, bibliometric analysis is used to examine the structural development of scientific knowledge and disciplinary trends (Jiang et al., 2019).

Broadus (1987) defines bibliometrics as the quantitative examination of studies published in any scientific journal. According to OECD (2002), bibliometrics is a term that covers the information obtained about the profiles of scientific publications. Bibliometric analyses mostly provide information about the journal in which an article is published, its author(s), title, subject, keywords and links (Dolati Neghabadi et al., 2019). The number of sources is an element that shows the quality of research in these studies (Tayfun et al., 2016). Bibliometric analysis (Ellegaard and Wallin, 2015), which reveals the scope of research, quantitatively and qualitatively, is used to classify and to expose research according to journals and times (Merigó and Yang, 2017). On the other hand, bibliometrics contributes to the scientific literature (Osareh, 1996). Bibliometric analysis deals with publication performance in various fields, using different methods (Gözde and Yıldırım, 2020).

Bibliometric analysis enables the evaluation of studies in a specific field through statistical techniques. It analyzes data such as author collaborations, subject distribution, keywords, citations, and methodologies (Çavuşgil Köse, 2020). This method allows the tracking of research development based on various parameters. As a tool to measure scientific impact, bibliometric analysis has gained significant popularity in recent years. It is valued for providing external insights into research quality and the evolution of academic fields (Hall, 2011). Studies on the planning process have a very wide scope and are analyzed through various research and applications. Urban landscape planning studies, which include complexity and heterogeneity, are adopted by different disciplines and integrated into many fields (Qviström and Cadieux, 2012; Wandland Magoni, 2017). Despite the developments in the field of urban landscape planning in recent years, one of the deficiencies in the field is that the potential of the subject has not been fully revealed (Turner and Gardner, 2015; De Graaf et al., 2017; Tan et al., 2023). It is important to understand urban landscape planning to comprehensively define landscape planning in the urban environment and analytically present landscape approaches in order to produce optimal solutions within the framework of urban problems. In this context, studies require a theoretical infrastructure with integrated approaches and a conceptual framework to resolve the complexity of urban landscape planning. The aim of this problem-based study is to determine the place and trends of the landscape approach in urban planning. It also aims to create a theoretical framework and introduce new concepts to the field by systematically examining existing research on the development of the subject. In addition, the study aims to evaluate the existing resources on urban landscape planning. It seeks to reveal both traditional and modern landscape planning approaches in an integrated manner. Another objective is to define the role and application areas of landscape within urban planning. Through this, the study intends to enhance the effectiveness of urban landscape planning and contribute to its further development.

The study is shaped around the following research questions: What is the development and change process of urban landscape planning? What issues do urban landscape planning studies include? What are the main themes/concepts and topics that come to the fore in studies on the subject over time? Do the studies carried out in recent years cover issues that will provide solutions to existing environmental problems? What are the prominent authors, journals, studies and keywords within the scope of the subject? In which countries are research on urban landscape planning carried out more intensively? What is the relationship between the prominent issues in the field of urban landscape planning?

Based on the research questions, the following hypotheses are put forward regarding the role, effects and development of urban landscape planning:

• Determining the role of landscape in urban planning allows producing more effective and optimal solutions to urban problems.

• Over time, issues in the field of urban landscape planning have changed in line with environmental problems and user needs.

• Studies in the urban landscape planning literature show that the subject of urban landscape planning is studied in a multidisciplinary field.

The study is important because it presents the first bibliometric approach that provides an overview of the subject by considering all sources in the temporal process in the field of urban landscape planning.

2.Methodology

The main material of the study consists of articles on urban landscape planning in the WOS database. Web of Science (WOS) is one of the most important scientific index databases (Silva et al., 2018; Wang et al., 2016). In the study, which consisted of data collection and analysis processes, bibliometric analysis method was adopted using the R program. R program was preferred in this study due to its high flexibility, open-source structure, and comprehensive package options (e.g., Bibliometrix) that enable advanced bibliometric and network analyses, offering more customizable and reproducible results compared to tools like VOSviewer (Aria & Cuccurullo, 2017). in this context, Web of Science indexes (SSCI, A&HCI, SCI-Expanded, CPCI-S, CPCI-SSH, ESCI) were searched in the WOS database with the urban landscape planning keyword, filtering 4250 articles between January 2000 and August 2021 (8 months data) included in the research. Within the scope of the research, the data belonging to the keyword "urban landscape planning" were retrieved from the WOS database on 18.10.2021.

Various parameters were determined to reveal the bibliometric features of the articles. The articles were evaluated according to the year, subject, number of citations, the subjects on which the studies are concentrated, the status of multiple authors, the annual distribution of the articles, the study subjects and some sub-categories. Also the aging rate of the urban landscape planning subject, the most cited topics, the most influential authors and journals, the relational status of the publications according to country, author, journal and keywords, and method content were also evaluated.

The first stage of the selection process of the raw articles was carried out by determining the keywords of the axis in question and defining the keyword "urban landscape planning". Then, according to the results obtained from the WOS database on urban landscape planning, the data were collected and classified as an open access article. The search terms and strategy within the scope of landscape planning are shown in Table 1.

Table 1 Present Building and Environmental Laws

	Data Collection			Bibliometric Analysis
STAGE 1	Database	:WOS	**STAGE 2**	Data Information and Growth Trend
	Search Mode	:Advanced Search		Author and Sources Analysis
	Search Term	:Urban Landscape Planning		Keyword Analysis and Topic Distribution
	Time Span	:2000-2021		Three Fields Diagrams
	Document Types/Numbers	:Article/4250		Authors and Country Collaboration Analysis

In the study, in order to determine the place of landscape in urban planning, the studies in the Wos database were scanned with the keyword "urban planning" and the 1345 most cited articles were included in the study. The data were evaluated with bibliometric analysis and the prominent words, their relationships with each other, and their frequencies were revealed. The data obtained was compared with the results obtained in the urban landscape planning analysis.

In the research, in which the data obtained were visualized and evaluated with descriptive network and cluster analysis, bibliometric analysis and mapping were used within the scope of urban landscape planning. With this mapping, the scope, growth trends and temporal developments of the studies are revealed (Singh et al., 2020). Other data obtained by bibliometric analysis (author relations, country collaborations, common keyword analysis, etc.) can be listed is obtained by applying data mining techniques (Verma and Gustafsson, 2020).

3.   Results

Findings obtained in the field of urban landscape planning were evaluated under 5 main headings as "Publication status and aging rate/growth trend, author and journal analysis, Keyword Analysis and Topic Distribution, Evaluation of Relational Status of Publications by Authors, Countries, Sources, Keywords (Three Fields Diagram), Landscape issue in urban planning studies".

3.1   Publication Status And Aging Rate/Growth Trend

Within the scope of Urban Landscape Planning, 4250 publications in article format were included in the study between the years 2000 and 2021. Among the publications there were 649 different sources. Full Record and Cited References (authors, institutions, journal, abstract, title, etc.) are included in the data exported from WOS (Table 2). The data obtained in this context were interpreted by visualizing and tabulating through bibliometric analysis.

Table 2 Main Information About Data

Description	Results
Timespan	2000:2021
Sources (Journals, Books, etc)	649
Documents	4250
Average years from publication	3,34
Average citations per documents	15,53
Average citations per year per doc	2,828
References	165145
Document Types	
article	4132
article; book chapter	42
article; data paper	3
article; early access	40
article; proceedings paper	31
article; retracted publication	2

Annual publication number is an important indicator of the development and aging rate of research (Guo et al., 2019). In the publications listed chronologically between the years 2000 and 2021, a significant increase was seen in the field of urban landscape planning until 2020. While there were 3 publications in 2000, this number increased to 772 in 2020, when the most articles were published. In addition, a 13% decrease (645 publications) was observed in the number of scientific studies conducted in 2021 compared to the number of publications in 2020 (Figure 1).
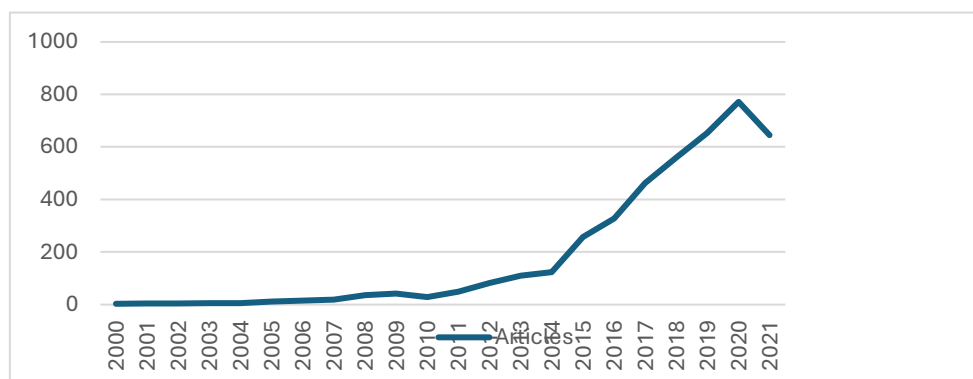

Figure 1 Annual scientific production

3.2   Analysis of Authors and Journals

As a result of the data obtained in WOS, the total number of authors in 4250 articles in the field of urban landscape planning was determined to be 12246. Considering the multi-authorship status, it was seen that 9% of the articles were single-authored (400), and 91% (11846) were written by multiple authors (Table 3).

Table 3 Author and Collaboration Data

AUTHORS	
Authors	12246
Author Appearances	17860
Authors of single-authored documents	400
Authors of multi-authored documents	11846
AUTHORS COLLABORATION	
Single-authored documents	439
Documents per Author	0,347
Authors per Document	2,88
Co-Authors per Documents	4,2
Collaboration Index	3,11

When the most prolific authors contributing to the field of urban landscape planning are analyzed, Liu Y(48 (citation count)), Zhang Y (43), Gret-Regamey A (39), Li X (36) and Li Y (30) are at the forefront (Figure 2). When the current publications of the authors are examined, it is seen that they concentrate on climate change, artificial neural networks, ecosystem services, land uses, green infrastructure, urban green planning, carbon, accessibility, and noise.
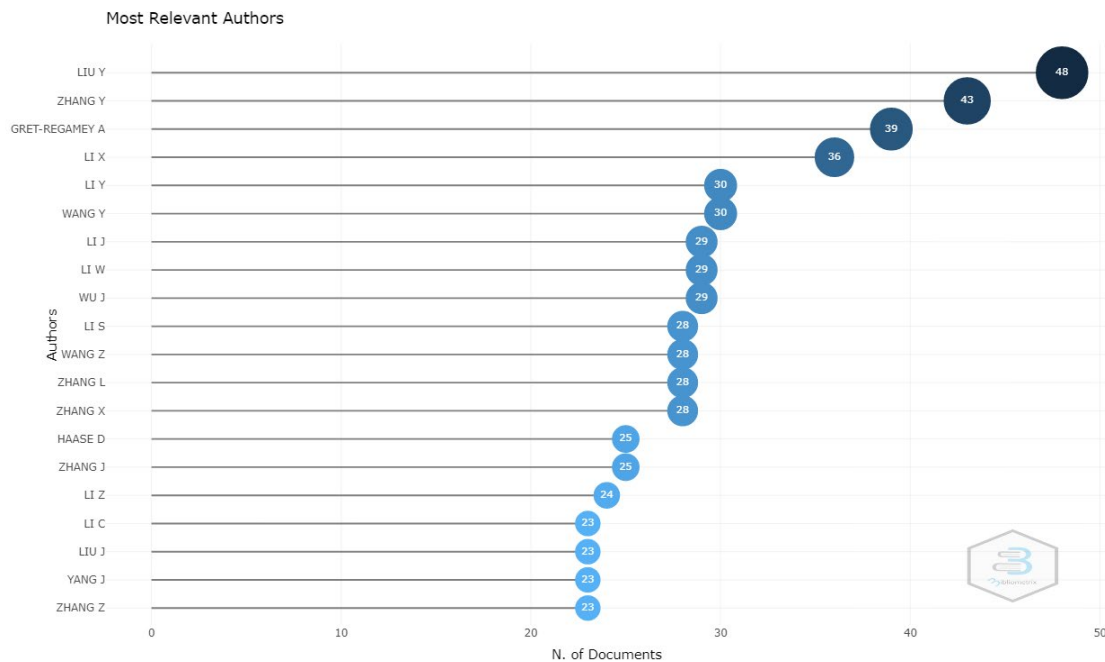

Figure 2 Most-published researchers in the field of urban landscape planning

Collaboration network between authors according to bibliographic data is shown in Figure 3. The document threshold is listed as 40, and in this context, the interaction of 40 influential authors is included. In the current network visualization map, the circle sizes represent the number of publications by the authors on the subject. The colors and linear distances in the network, in which 6 different colors are used, show the cooperation relationship of the authors. The shorter the lines represent, the closer the academic relationship is. In the first group in orange, which shows the relationship between the most influential authors in this field, it is concluded that the authors of Liu Y, Zhang Y, Zhang X maintain a close academic cooperation. In the second group, which is expressed in green, it is seen that there is a strong bond between Li X, Li Y, Li S, Chen Y. In other groups, multiple author relationships were shown in red, purple, brown, and blue.
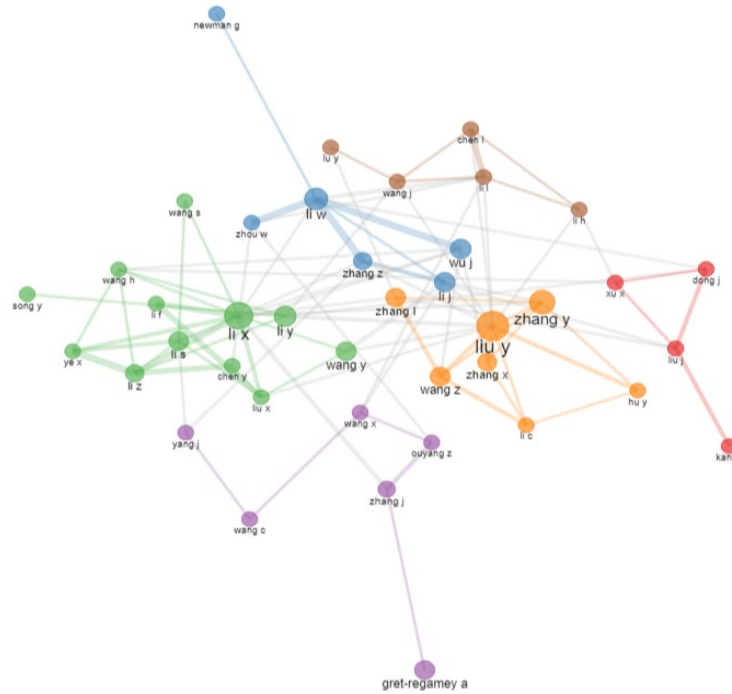

Figure 3 Social structure collabotation network authors

3.2.1   Journals That Publish the Most Articles on Urban Landscape Planning

The 20 most influential journals on urban landscape planning according to the volume of published articles are listed in Table 4. In this context, **"Landscape and Urban Planning"** journal ranks first with 548 publications on the relevant subject in a 21-year period. **"Sustainability"** journal is in the second place, and "Land" journal is in the third place. Other influential journals in which the number of publications varies according to the study subject can be listed as **"International Journal of Environmental Research and Public Health, Remote Sensing, Landscape Architecture Frontiers"** etc. (Table 4).

Table 4 Most Relevant Journals According to Bradford's Law

Rank	Journal	Freq	Zone		Sources	Freq	Zone
1.	Landscape and Urban Planning	548	1	11.	Isprs International Journal Of Geo-Information	49	2
2.	Sustainability	547	1	12.	Water	47	2
3.	Land	141	1	13.	Land Use Policy	43	2
4.	International Journal of Environmental Research and Public Health	128	1	14.	Landscape Ecology	38	2
5.	Remote Sensing	117	1	15.	Urban Planning	38	2
6.	Plos One	87	2	16.	Applied Ecology and Environmental Research	35	2
7.	Landscape Architecture Frontiers	84	2	17.	Cities	34	2
8.	Urban Forestry \& Urban Greening	78	2	18.	Urban Ecosystems	31	2
9.	Forests	58	2	19.	Ecology and Society	30	2
10.	Ecologıcal Indicators	50	2	20.	Environmental Research Letters	30	2

3.3   *Keyword Analysis and Topic Distribution*

Keywords are names that reflect the basic content of scientific studies (Xiang et al., 2017). The data obtained show that there are 11,745 keywords included in this research (Table 5).

When the most frequently repeated keywords are examined, it is seen that the words landscape (439), management (352), biodiversity (323), ecosystem services (307), urbanization (289) come to the fore (Table 6). In addition, land-use patterns and climate change etc. in the field of urban landscape planning words are also used frequently.

Table 5 Keyword Document Content

Document Contents	
Keywords Plus (ID)	5774
Author's Keywords (DE)	11745

Table 6 Most Used Words in Urban Landscape Architecture

Words	Occurrences	Words	Occurrences
Landscape	439	Land-Use	236
Management	352	Health	220
Biodiversity	323	Patterns	200
Ecosystem Services	307	Impacts	197
City	299	Model	176
Urbanization	289	Climate-Change	166
Urban	279	Vegetation	163
Conservation	267	Dynamics	162
Cities	262	Growth	160
Impact	258	Areas	157

The word cloud created according to the frequency of the keywords in the articles is given in Figure 4. In this word cloud, which includes the main study subjects of urban landscape planning, the frequency of the words is related to the word sizes and has emerged as a product of the temporal change in the field of urban landscape planning.

Figure 4 Urban Landscape keywords

When the changes in the temporal process of these concepts, which constitute the basic building blocks of the urban landscape planning area, are examined, it is seen that studies on the concepts of expansion, green infrastructure, walking, land surface temperature have increased in the last 3 years. It is determined that the concepts of management, biodiversity, urbanization and conservation have been focused on after 2017. Trend topic words with a frequency of 30 are given in Figure 5.
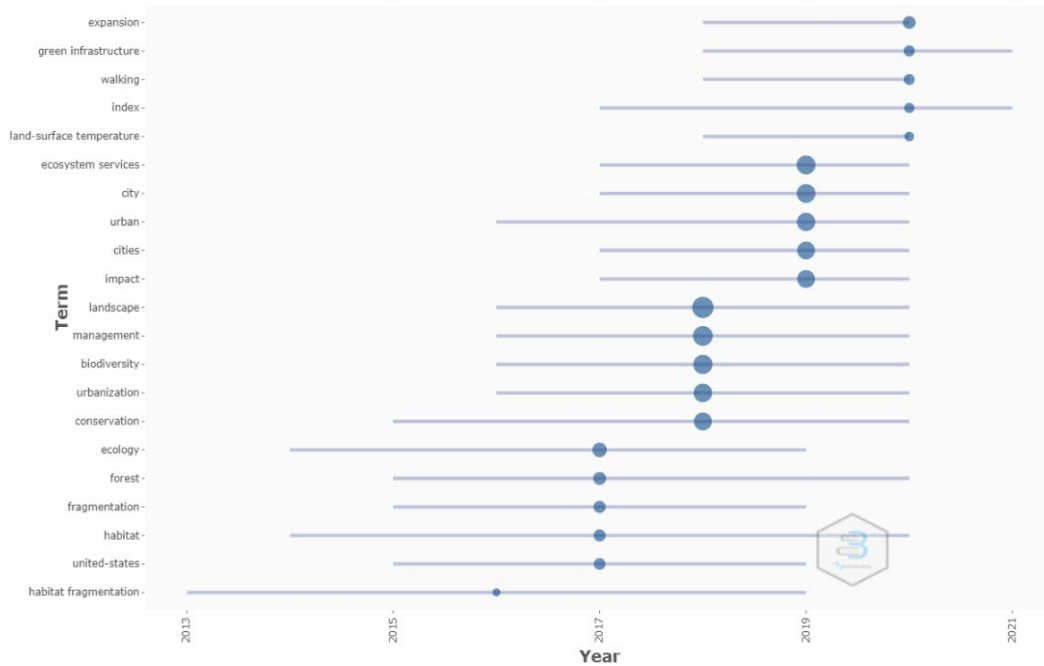

Figure 5 Temporal trend topics of urban landscape planning

Figure 6 shows the development process of keywords used temporally. In recent years, increasing global environmental problems and the importance given to ecological balance have caused a number of key concepts to come to the fore. Among these concepts, biodiversity and climate change are emphasized as a critical factor in environmental sustainability. It is clearly seen that words based on environmental and ecological foundations have come to the fore in urban landscape planning, especially after 2010.
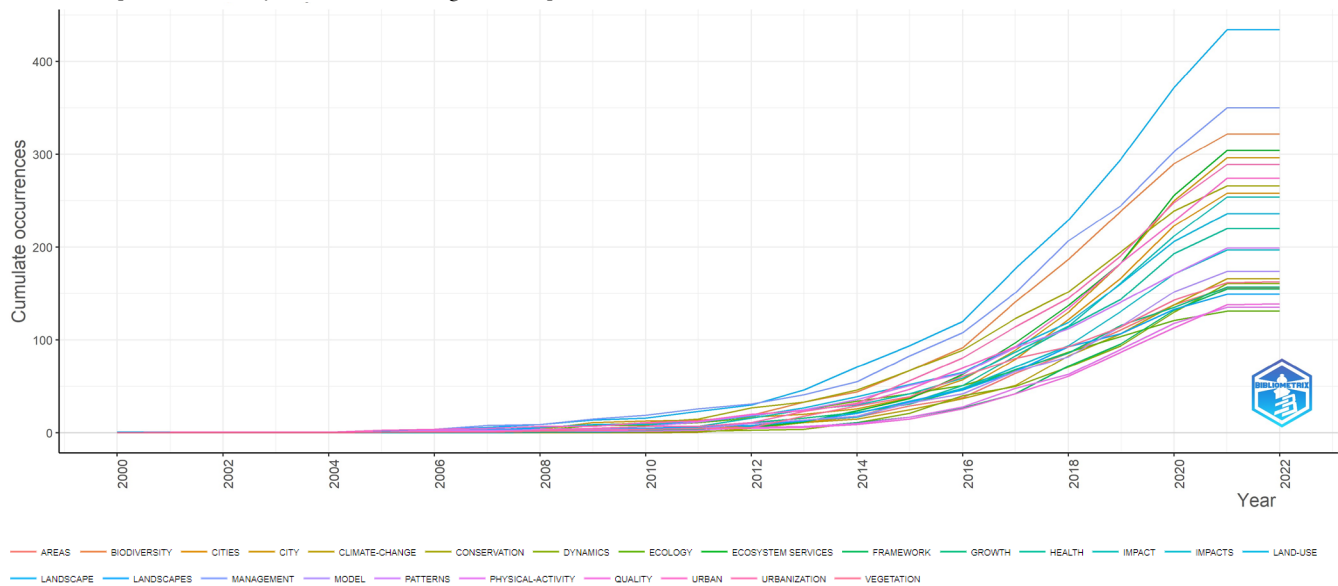

Figure 6 Words frequency over time

On the other hand, 4 different clusters emerge in the network of which the keywords form the conceptual structure (Figure 7). In this context, although the circle sizes represent the frequency of repetition of keywords, it is seen that the main cluster tags are urban, biodiversity, ecosystem services, urbanization. Clusters with the same color express the similarity of the subject and are used together, and urban, impact, environment, health, perception form a meaningful cluster in itself. Similarly, a relationship has been determined between ecosystem services, managements, cities, framework, climate-change, sustainability. In the conceptual structure expressed in blue and red, it is seen that there is a grouping between city, urbanization, patterns, impacts, growth, dynamics, and a different grouping between biodiversity landscape, conservation, land use, areas, vegetation ecology. In the subgroups of the clusters, there are other words related to urban landscape planning.
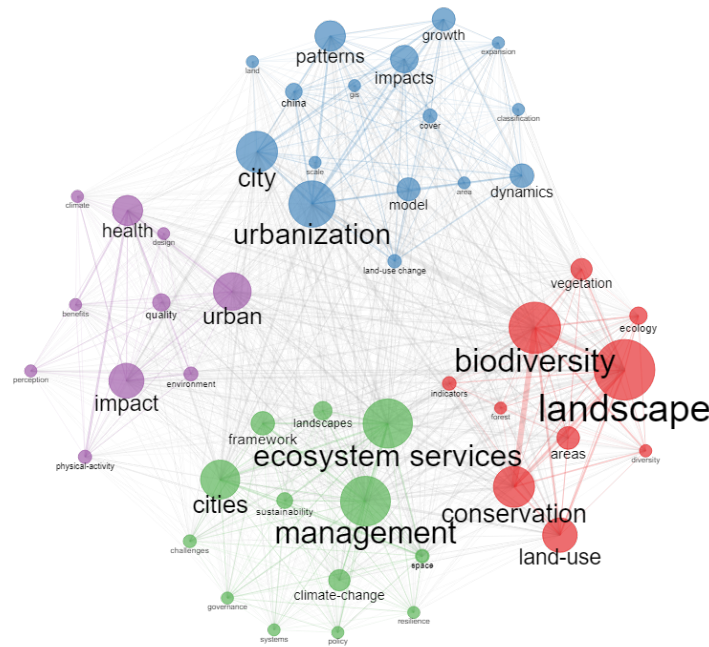

Figure 7 Conceptual structure co-occurence network map by keywords (Co-occurrence status and relational network of keywords that stand out in the studies.)

A topic dendrogram was obtained within the scope of clustering analysis, which is formed by statistical processing of the network structure created by considering the frequency of use of word patterns together (Cobo et al., 2011; Ding, 2011; Seyhan et al., 2021). Among the concepts (key words) categorized in 2 main groups in the field of urban landscape planning, the words classification-area, impacts-urbanization-patterns, growth-gis, dynamic-cover, china, land use change, expansion are frequently used together. In the other category, it is seen that word groups such as diversity-ecology-biodiversity-conservation, management-ecosystem services-framework-sustainability, urban- lendscapes-climate change, land use-model are formed (Figure 8).
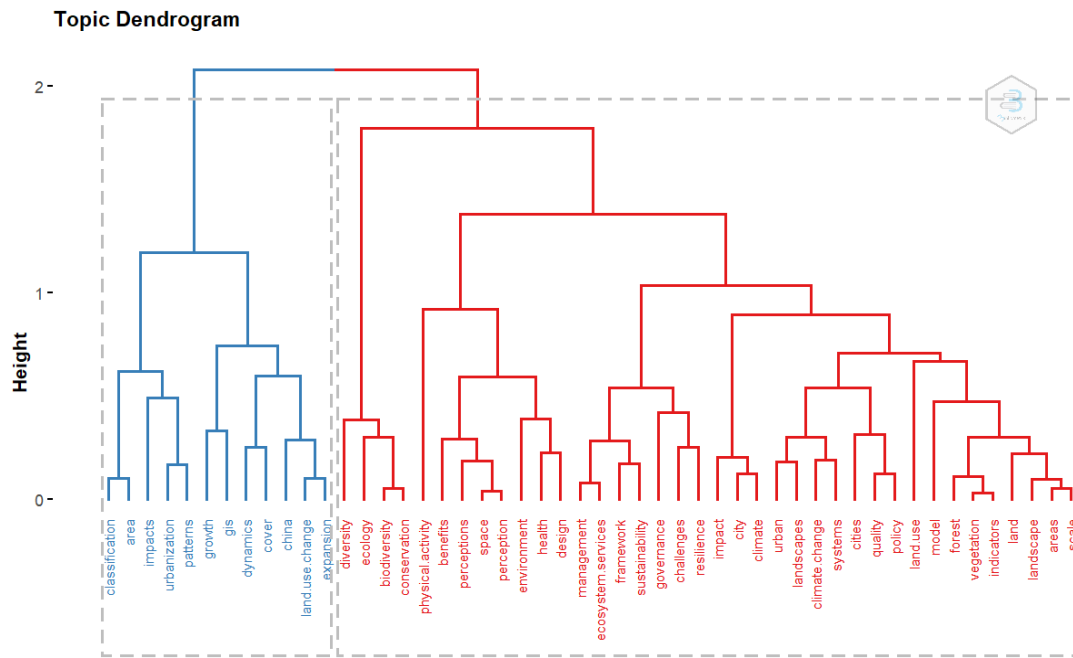
Topic Dendrogram

Figure 8 Topic dendrogram for keywords

In Table 7, 20 most cited publications in the field of urban landscape planning are listed with author keyword title and citation rate information (Table 7). This data aims to understand which publications attract the most attention in the literature. In this context, it has been seen that the most cited studies include urban green spaces, health, urban landscapes, sustainability ecosystem services, climate change, urban air quality, urban heat island, green infrastructure, biodiversity, social safety, accessibility.

Table 7 Most Used words in Urban Landscape Architecture (T: Topic, J: Journal, TC: Total Citations)

Paper	Key words		Topic (T)/Journal (J)	TC
Brenner, N., & Theodore, N. (2002).	"urban spaces, neoliberalism, cities"	T	"Cities and the Geographies of "Actually Existing Neoliberalism"	
		J	"ANTIPODE"	1458
Wolch, J. R. et al., (2014).	"urban green spaces, ecosystem services, human health, environmental justice, planning strategies, gentrification"	T	"Urban green space, public health, and environmental justice: The challenge of making cities 'just green enough"	
		J	"Landscape and urban planning"	1307
Lee, A. C., & Maheswaran, R., (2011).	"environment, geography, public health"	T	"The health benefits of urban green spaces: a review of the evidence"	
		J	"Journal of Public Health"	683
De Vries, S. et al., (2003).	"greenspace, health, natural environments"	T	"Natural environments healthy environments? An exploratory analysis of the relationship between greenspace and health"	
		J	"Environment and planning"	650
Thompson, C. W. et al., (2012).	"green space, stress, salivary cortisol, residential environment, deprivation"	T	"More green space is linked to less stress in deprived communities: Evidence from salivary cortisol patterns"	
		J	"Landscape and Urban Planning"	506
Cervero, R., & Duncan, M. (2003).	"walking, bicycling urban landscapes"	T	"Walking, Bicycling, and Urban Landscapes: Evidence From the San Francisco Bay Area"	
		J	"American Journal of Public Health"	487
Ahern, J. (2011).	"non-equilibrium, sustainability" resilience, adaptive planning and design	T	"From fail-safe to safe-to-fail: Sustainability and resilience in the new urban world"	
		J	"Landscape and Urban Planning"	428
Haase, D. et al., (2014).	"ecosystem services, urban landscapes, landscape planning"	T	"Ecosystem Services in Urban Landscapes: Practical Applications and Governance Implications"	
		J	"AMBIO"	407

Kabisch, N. et al., (2016).	*"climate change; cobenefits; governance; nature-based solutions; urban areas"*	T	*"Nature-based solutions to climate change mitigation and adaptation in urban areas: perspectives on indicators, knowledge gaps, barriers, and opportunities for action"*	
		J	*"Ecology and Society"*	*298*
Han, L. et al., (2014).	*"urbanization, air pollution, fine particulate matter (pm2.5), chinese prefectures"*	T	*"Impact of urbanization level on urban air quality: A case of fine particles (PM2.5) in Chinese cities"*	
		J	*"Environmental Pollution"*	*294*
Schoennagel, T. et al., (2017).	*"wildfire, resilience, forests, wildland-urban interface, policy"*	T	*"Adapt to more wildfire in western North American forests as climate changes"*	
		J	*"Proceedings of the National Academy of Sciences (PNAS)"*	*288*
Connors, J. P. et al., (2013).	*"aster quickbird remote sensing, cap-lter, urban temperature"*	T	*"Landscape configuration and urban heat island effects: assessing the relationship between landscape characteristics and land surface temperature in Phoenix, Arizona"*	
		J	*"Landscape Ecology"*	*276*
Middel, A. et al., (2014).	*"microclimate, urban form, urban design, envı-met modeling, local climate zones"*	T	*"Impact of urban form and design on mid-afternoon microclimate in Phoenix Local Climate Zones"*	
		J	*"Landscape and Urban Planning"*	*275*
Hansen, R., & Pauleit, S. (2014).	*"social–ecological systems ecosystem services green ınfrastructure urban planning environmental planning"*	T	*"From Multifunctionality to Multiple Ecosystem Services? A Conceptual Framework for Multifunctionality in Green Infrastructure Planning for Urban Areas"*	
		J	*"AMBIO"*	*269*
Andersson, E. et al., (2014).	*"biodiversity ecosystem services property rights stewardship urban ecology urban social–ecological systems"*	T	*"Reconnecting Cities to the Biosphere: Stewardship of Green Infrastructure and Urban Ecosystem Services"*	
		J	*"AMBIO"*	*267*
Maes, J. et al., (2016).	*"eu biodiversity strategy, cıces, ındicators, maes, natural capital"*	T	*"An indicator framework for assessing ecosystem services in support of the EU Biodiversity Strategy to 2020"*	
		J	*"Ecosystem Services"*	*262*
Comber, A. et al., (2008).	*"greenspace, gıs, network analysis, ethnicity, religion, urban planning"*	T	*"Using a GIS-based network analysis to determine urban greenspace accessibility for different ethnic and religious groups"*	
		J	*"Landscape and Urban Planning"*	*261*
Kattge, J. et al., (2020).	*"data coverage, data integration, data representativeness, functional diversity, plant traits, try plant trait database"*	T	*"TRY plant trait database–enhanced coverage and open access"*	
		J	*"Global change biology"*	*242*
Bechtel, B. et al., (2015).	*"land cover; supervised classification; pixel-based, classification; multi-temporal remote sensing; urban climate science; local climate zones; wudapt"*	T	*"Mapping Local Climate Zones for a Worldwide Database of the Form and Function of Cities"*	
		J	*"ISPRS International Journal of Geo-Information"*	*239*
Groenewegen, P. P. et al., (2006).	*"green space, health, social safety"*	T	*"Vitamin G: effects of green space on health, well-being, and social safety"*	
				235

3.4 Evaluation of Relational Status Of Publications By Authors, Countries, Sources, Keywords (Three Fields Diagram)

Three field plots provide a general perspective on this subject by revealing the temporal relationships of the studies according to certain criteria (Atabay and Güzeller 2021). Relational evaluation of urban landscape planning area was made according to authors, countries, keywords in 21 years; the most effective top 20 data were taken as a basis, and countries were on the left, authors were in the middle, and keywords were on the right (Figure 9). When the data are examined, it is seen that the studies in the relevant field are mostly in China, the USA, and the United Kingdom. In these countries, the most influential writers are Li Y, Li X, Liu Y, Zhang Y. In the keyword analysis of the most influential authors, it is seen that the words China, urbanization, ecosystem services, urban, landscape metrics, urban planning, remote sensing, land use, sustainability, gis, climate change come to the fore.
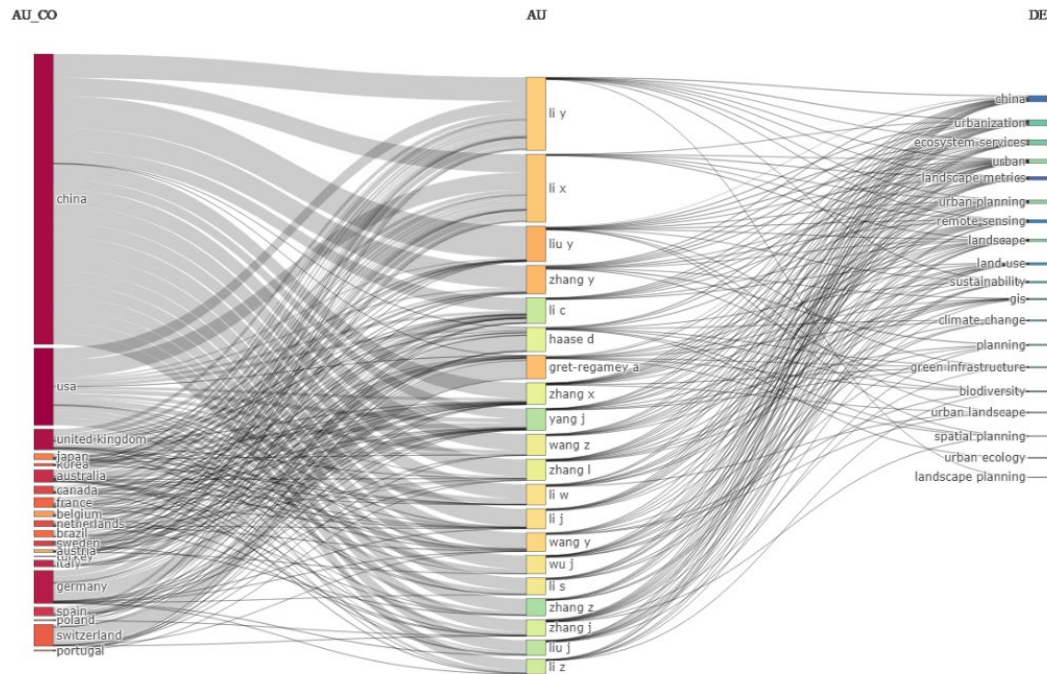
Figure 9 Three Fields Plot (relationship analysis between authors, countries, keywords)

Similarly, journals such as "Sustainability, Remote Sensing, International Journal of Environmental Research and Public Health, Land, Landscape and Urban Planning" are among the journals published in the field of urban landscape in the three-field plot diagram that creates the analysis of the journal, author and keywords. It is seen that Liu Y, Li X, Zhang Y, Wang Y are influential authors in the mentioned influential journals. Again, in the keyword analysis of these authors, the words such as China, urbanization, ecosystem come to the fore (Figure 10).
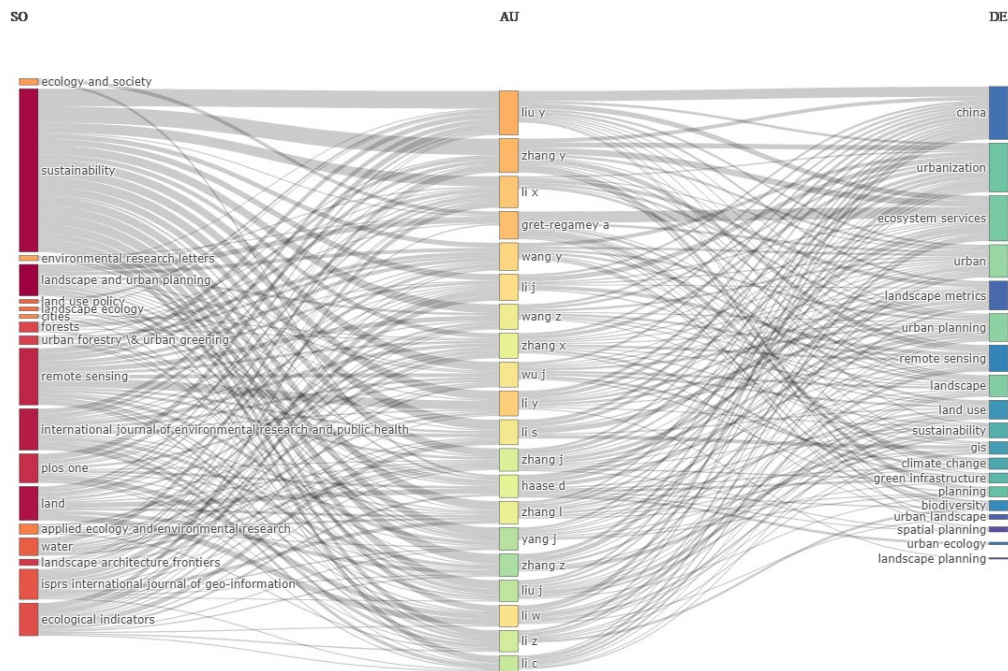

Figure 10 Three fields plot (relationship analysis between authors, sources, keywords)

It has been observed that many countries cooperate in the field of urban landscape planning. The size of each dot shown in Figure 11 indicates the frequency of broadcasting in that country. Linear distances represent the state of cooperation between countries. In this context, there are 4 different groupings, and it is seen that there is a close cooperation between China, the USA, the United Kingdom, Japan,

Australia, Iran, Canada and Egpyt, which contribute the most in the red group. While Brazil, Chile, Mexico and Colombia are in the second group, which is seen as blue, there are many countries such as Norway, Greece, Austria, Turkey, and Germany that make almost equal contributions in the green group.
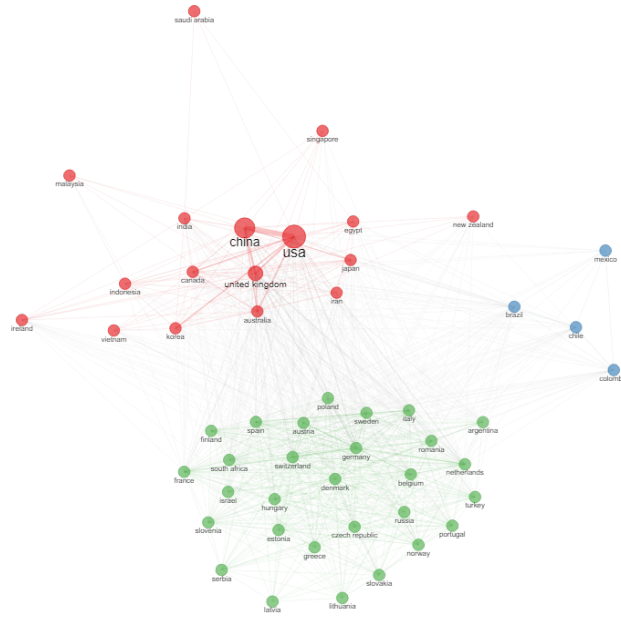

Figure 11 Social structure collaboration network (Inter-country cooperation analysis)

3.5   *Landscape Issue in Urban Planning Studies*

In order to reveal the relationship between the studies on urban planning and landscape, a bibliometric analysis was carried out by searching for the keyword urban planning. The 1346 most cited publications in the studies searched only with the keyword urban planning in the wos database were examined. In this context, the words that came to the fore in these studies were compared with the words that came to the fore as a result of the bibliometric analysis conducted within the scope of urban landscape planning (Table 6, Table 8).

Table 8 Most Global (top) 30 Cited Documents

	Terms	Frequens		Terms	Frequens
1	Impact	124	16	Dynamics	50
2	Cities	115	17	Built environment	46
3	City	114	18	Framework	46
4	Model	92	19	Biodiversity	45
5	Urbanization	91	20	policy	45
6	China	86	21	CO2 emissions	44
7	Ecosystem services	84	22	Expansion	43
8	Health	77	23	Economic growth	42
9	Land use	68	24	Classification	38
10	Physical activity	67	25	System	38
11	Climate change	64	26	Areas	37
12	Management	62	27	Climate	37
13	Urban	62	28	Landscape	37
14	Growth	59	29	Challenges	36
15	Patterns	52	30	Design	36

The Most Commonly Used Words In Urban Planning According To Frequency Are Impact, Cities, City, Model, Urbanization, Ecosystem Services. In Addition, Other Words Frequently Mentioned In The Studies Are Land Use, Climate Change Management Urban Patterns Dynamics-Built Environment, Framework Biodiversity (Figure 12).

Figure 12 World cloud for urban planning studies

The usage situations of words used in urban planning studies are given in Figure 12. In this context, it appears that there is a strong relationship between health, physical activity and the built environment. Similarly, while Ecosystem services and city constitute a subgroup, words such as biodiversity, climate change, policy and management are included in the other subgroup. Land use, urbanization and growth are among the main groups (Figure 13).

Figure 13 Topic dendrogram for studies in the field of urban planning

As a result of the data obtained, it is evident that there are similarities and differences between urban planning and planning that includes landscape. Although the subjects of urban landscape planning and urban planning, especially urbanization, ecosystem services, land use, climate change and management, are similar, their frequency of use in studies varies. In the study subjects that distinguish urban planning studies from urban landscape planning studies, subjects in different areas of expertise such as built environment, co2 emissions, economic growth stand out.

4.   Discussion

In the study, which aims to determine the place and trends of the landscape approach in urban planning and to create a theoretical framework by systematically examining the existing research on the development of the subject, parameters such as prominent concepts, authors, journals and the development process of the subject are revealed. Urban landscape planning, whose scientific quality has increased in recent years, has changed over time and has become an area that offers ecological, social and cultural sustainable solutions. When the results obtained were compared with the results of similar publications in the literature, it was seen that the subjects and concepts that were similar in time in certain periods emerged. The R program was used in the study, and it was determined that bibliometric analyses were made using different tools and methods. Although there are such studies in the literature, Bahers (2022) presented a multi-dimensional analysis of the concept of urban metabolism, and bibliometric analysis was done through VOSviewer (Bahers et al., 2022). The importance of these bibliometric studies, as they provide valuable information about the structure, characteristics and development of a field, was determined in this study and emphasized in the study conducted by Ellegaard and Wallin (2015).

China, the USA, and the UK show dominance in urban landscape planning research, which may be attributed to their strong academic infrastructure, funding opportunities, and growing urban challenges. Socio-political priorities such as climate action, public health, and sustainable development also drive research in these countries. Further comparative studies could uncover how governance models and policy frameworks shape research output in the field.

The issue of urban landscape planning, which has had a significant increase in publication volume in the last 10 years (2001-2021), has been analyzed by many authors (12,246) and divided into many subcategories. These diversified sub-categories also include solution-oriented topics for current environmental problems, and it is seen that conceptual analyses focus on landscape, management, biodiversity, ecosystem services, urbanization, land use patterns, climate change research topics in the field of urban landscape planning and are frequently used in studies. In a similar study conducted in 2014, the dominant clusters of 'landscape planning and analysis, 'urban ecology' came to the fore within the scope of landscape analysis, and the frequent repetition of the concepts of sustainability, green space, and land use change in these clusters showed similarities with the results of the study (Gobster, 2014). When the most cited works that form the focus of urban landscape planning are evaluated, it is seen that the concepts of urban green spaces, health, sustainability, urban air quality, green infrastructure, social safety, accessibility are also studied. In the bibliometric study conducted in the field of landscape in the literature, it was seen that a number of terms related to physical activity and human health were added between 2006 and 2014. In addition, climate change and urban heat island issues started to develop in this period by associating them with other concepts (Gobster, 2014). In the study of Matsler (2021), in which the green infrastructure, which is the sub-term of landscape planning and one of the most cited topics in the

analysis, is examined, the concepts of green space planning, ecosystem services, urban ecology and water management are highlighted. Water management has rarely been used in studies in the field of urban landscape planning, and it reveals the literature gap on water method in urban areas.

As a result, it is possible to categorize the studies carried out in the field of urban landscape planning in three main groups (exploration period, development period and active period). The first of these groups covers the years 2000-2009, which is a period of exploration that includes management, landscape, urban, city, conservation and land use. The second is the Development Period, which covers management, conservation, land use and patterns studies between 2010 and 2014. Finally, the Active Period, which includes urbanization, ecosystem services, climate change, ecology, in addition to the development period between 2015 and 2021, when the number of studies increased the most. Management conservation and land use issues, which were studied jointly in all three periods, were among the subjects that increased the most in the active period compared to the exploration period.

Growth-gis land use-model concepts, which have gained popularity recently and come to the fore with use as a result of the study, emerge as the most frequently used methods in doctoral theses (GIS, remote sensing) in the field of landscape architecture (Özkan and Gül, 2019). In their current studies, active authors (Liu Y, Li X, Li Y, Zhang Y, Gret-Regamey A, Wang Y, Wang Z, Kang J etc.) focus on artificial neural networks, carbon and noise in addition to the above. In the findings obtained in the research, which concepts tend to be used together are expressed with conceptual network maps. This diversity in the field makes the subject dynamic and open to development.

Among the countries analyzed in the cooperation between countries, China, the USA, the United Kingdom are among the countries that contribute the most to the field and lead with their strong connections. It seems that developed countries are more effective in terms of research power. In addition, the study reveales that countries with geographical proximity tend to cooperate. It is also concluded that there is a strong collaboration between the most influential and productive authors, and that the most cited authors are often the same pioneers in the field. The most influential journals in the field of urban landscape planning are listed as "Landscape and Urban Planning, Sustainability, Land", and these journals support various research topics in a multidisciplinary field.

In the study that tries to reveal the place of landscape in urban planning, it is seen that although the subject of urban planning is highly similar to the study subjects in the field of urban landscape planning, it is differentiated by issues such as built environment, CO2 emissions, and economic growth. This also shows that the subject of urban planning can be related to a wide range of areas of expertise.

5.   Conclusion

As a result of the data obtained by bibliometric approaches and methods, the research makes it possible to analyze the evolution and structure of the urban landscape planning area, which has a wide scope. From 2000 to 2021, 4250 publications in the field of urban landscape planning were evaluated by visualizing global research trends through bibliometric analysis using the R program. Developments in the related field, growth trends, active journals, authors, countries and collaborations, keyword analysis results are presented. In addition, this study constitutes the first bibliometric approach that provides an overview of the urban landscape planning area by considering all sources in the temporal process.

Urban landscape planning studies, which are carried out on a high scale by prioritizing user needs and environmental problems in the urban area, have revealed certain concepts on a global scale. Main research topics such as green infrastructure, climate change, ecosystem services, land use changes, sustainability, accessibility and management have formed the focal points in this field. In light of the identified trends, future research should prioritize the integration of green infrastructure with climate resilience strategies within urban planning frameworks. Additionally, further studies are needed to investigate the socio-cultural dimensions of urban landscape planning across varying geographical and contextual settings. To support these developments, it is essential that policymakers promote interdisciplinary and collaborative planning approaches aimed at achieving sustainable land use and equitable access to urban green spaces.

Changing issues in the field of urban landscape planning over time reflect a sensitive evolution towards environmental problems and user needs. This evolution has occurred in parallel with the development of research and practice, along with the increase in publications related to urban landscape planning. These developments in the literature emphasize the increasing role of new and innovative planning methods emerging in urban landscape planning processes in urban planning, thus optimizing factors such as sustainability and ecology in urban areas. Integrating traditional and modern landscape planning approaches makes significant contributions to urban development by providing more effective solutions to various needs in urban areas. Determining the role of landscape in urban planning enables the production of more effective and optimal solutions to urban problems and points to an increase in the number of studies on urban landscape planning in developed countries. The increase in international cooperation over time reveals that studies in the urban landscape planning literature show that urban landscape planning is handled in a multidisciplinary field.

Situations such as environmental elements and technology that change and transform in the temporal process have caused a change in academic studies. The temporal examination and analysis of this change will form a basis for new studies to be done. In addition, bibliometric analysis in the field of urban landscape planning can be an important resource in determining the topics on which future research will focus, evaluating cooperation opportunities and developing strategies for the sector. By assessing developments and trends in the field to inform practical applications in urban landscape planning, analysis can guide practitioners in developing more effective,

sustainable and socially acceptable strategies. In the light of these data, urban planning studies should be considered as a whole and evaluated in terms of ecological, economic, sociological, aesthetic and political aspects since they cover multidisciplinary areas. Effective strategies should be developed to ensure that urban areas are sustainable, inclusive and livable by developing an integrated model with stakeholder participation in planning.

The limitation of the research is that the studies in the related field were taken from the WOS database. Only texts in article format were included in the WOS database. Different findings and results would be revealed in studies to be conducted by including other databases and scanning all data types.

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Conflicts of Interest

The author(s) declare(s) that there is no conflict of interest regarding the publication of this paper

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