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Review

Land Use and Global Environmental Change: An Analytical Proposal Based on A Systematic Review

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Abstract: Global environmental changes are multifactorial and affected by multiple forms of land use. For this reason, and also in view of the current world climate scenario, they have become highly relevant and are subject to analysis and discussions on the best uses of land. The research presented here offers a systematic analysis on the priorities related to the multiple uses of land and their implications in urban planning. An exploratory and descriptive analysis is used with a qualitative approach based in a systematic literature review. General findings indicate that land uses arise amid the duality between economy and environmental concerns, while increasing frequencies of heat islands, desertification, suppression of green areas in cities, and other phenomena are the backdrop. Urban planning tied to social and environmental dynamics becomes a powerful engine to predict rational uses of the land, enabling and balancing the economic–environmental dynamics without overriding each other. Proper planning of urban land governs both the infrastructure itself and the human influence over space in addition to predicting future uses and disuse as well as actions not consistent with sustainable development.

Keywords: environmental changes; land use; urban planning; sustainable development

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1. Introduction

Land use is closely linked to the global dynamics of the urbanization process, especially in recent decades in which the world has gone through intense migratory processes moving from rural to the urban setting [1]. The dynamics that involve the urbanization process have multiple aspects and presuppose multiple ways of using the land and their linking to the economic aspect.

Briassoulis (2000) presented a classification of the uses of land and the types of covering it possesses, which includes the following: (a) forests: either natural forest for leisure use or managed forest for lumber production and possible mixed use combined with leisure activities; (b) undergrowth or scrub: considering natural areas for leisure or pastures with possible mixed use combined with leisure activities; (c) agricultural areas: farmland producing annual crops, orchards, woods or mixed use; (d) built areas: city, village, archaeological sites, industrial areas, second house developments, tourism development, commercial areas, transport or mixed use [2].

Lambin et al. (2003) claim that land use is defined by the purposes with which humans exploit its covering. There is also considerable variability in time and spatial scales in the biophysical environments, socioeconomic activities, and cultural contexts associated with its change of use [3]. The ideas behind this development process are related to increased production, the expansion of urban spaces and the increase in industries that promote what is considered as socioeconomic development [4,5]. Previously, the disorderly use of land and a changing environment, whether through urbanization or

environmental degradation as well as unprecedented pollution, culminated in the push towards sustainable development [6].

Currently, talking about land development presupposes a direct correlation with sustainability, which, in many respects, is linked directly to the use of land and its resources [7–9]. As a result, it is necessary to emphasize that land use should be thought of in parallel with the effects resulting from its use and mitigation of natural reactions such as microclimate changes, biodiversity degradation and scarcity. Thus, it is imperative that the use of land in its multiple aspects and contexts be reviewed from a singular perspective, i.e., the idea of urban planning being consistent with urban policies. Urban planning as an instrument of urban policies has an indispensable role in promoting a rational use of land in a sustainable and coherent way that follows pre-established parameters. Therefore, planning the use of land is an indispensable task used to offset the disorderly and disconnected implementation of urban policies that offer risks to the health of the land as evidenced by the global environmental changes we see today.

Depending on the needs of planning, a region can also be defined according to its size and may be assigned the label of urban or metropolitan region when the objective is urban or metropolitan planning. Regionalization can be characterized with three interdependent functions: scientific knowledge of the territory; the administration of the same; and the strengthening of the community and interests of the agents who cohabit the same space. The summary of these three interdependent functions, knowledge, administration, and socialization, is understood as planning. Therefore, with the aim of fostering a clear understanding and critical evaluation of current research effort on land use, this study provides a synthesis of global theoretical data on urban policies and urban planning linked to both the economic and environmental forms of land use.

Given the peculiarities within this theme and considering its global characteristics, this systematic analysis considers the multiple uses of land whilst simultaneously verifying the implications of these uses in urban planning. Within the aim of this research, support was sought for the following propositions:

(i) Urban policies and urban planning are powerful engines to promote and monitor the multiple uses of land while striving to affect the sustainable use of land.
(ii) Land use presupposes multiple functionalities, whether economic or environmental, where impacts are effectively deployed and perceived through climate change.

2. Literature Review

2.1. Land: Possibilities and Uses

The use of land presupposes a series of "possibilities and effects" that translate into the "usefulness versus results". Some of the main effects resulting from the use of land are disconnected from effective planning about the natural, social and economic effects and impacts [10,11]. Because of this, spaces for new or functional uses must be considered and configured without causing conflicts between the economic and environmental effects. In this sense, the development of possible uses of rural and urban land must start from a strategically innovative approach [12]. This is because the activities of humans alter the characteristics of watersheds and cause changes in land use, e.g., the use of forest area in agriculture in Thailand caused several problems after a tropical storm in 2019. Falling trees reduced production considerably [13]. Additionally, when focusing on climate effects, the issue of floods goes beyond the economic damage and requires the emergency construction of sub-basins to deal with low water absorption in the soil [13]. Thus, for example, in Austria, issues arise that may compromise agriculture in semi-arid regions where the suggestion to store groundwater for use on the land in periods of drought is considered as a strategy to cope with the problem [14].

In addition to natural factors, there are factors such as social vulnerability, issues resulting from irrational use of land, valorization of areas to the detriment of others and economic priority attributed to a locality [15]. These vulnerabilities motivate the restructuring of land use which can be beneficial or cause an environmental and economic

imbalance. For example, one of the resources that is relevant and inherent to land use is energy generation which is an important component of urbanized spaces. Due to its economic and environmental potential [16], it is essential to indicate the use of solar energy and the multiple possibilities of adapting such international plans to local realities [17].

In related perspectives, several authors convey the idea that between the binomial of "possibilities and challenges", challenges are much more visible because, logically, they are paid more attention in the plans and projects where urban planning is the driver for the rational use of land [7,15,18–20]. These observations add to the suggestion that a set of unique methodologies to analyze and mitigate climate change in urban areas may be developed [21] in addition to the alignment between policies and measures applied to urban planning [22]. Generally, reflections on land use focus on two aspects: environmental protection on the one hand, and its socioeconomic development resulting from an environmental exploitation on the other.

Studies being carried out are positioned in the sense that, at the strategic level and in order to promote an adequate use of land, it is necessary that there be urban policies focused on a particular context. Such policies are responsible for strategically instrumentalizing the use of natural resources inherent to the land and changes in its use [10,18]. All stakeholders should be involved including farmers, community leaders and public managers. It is these stakeholders who should contribute to the proper management of land based on the use of correct information, sense of responsibility and use of quality ecosystem services [23].

2.2. Land-Use Planning and Its Implications for Global Environmental Changes

City-based support ecosystem services are concerned with carbon storage, water management, soil nutrient treatment and retention and flood mitigation. They often suffer pressure from the need for short-term development and are unable to support people's well-being. For this reason, ecosystem services are essential to support environmental conservation planning [24]. Indicators of urban sustainability should also be established for the development of policies and practices, e.g., the number of non-governmental organizations, percentage of urban population and open green spaces and air quality, amongst others [25].

Urban expansion is discussed constantly [26] and, in this sense, systems should be developed that address social and ecological aspects with academics, public managers and local actors to debate changes in the use of land, water and emission of pollutants [26], adoption of low power LED lighting on public roads and in homes [27]. The issue of land use is also impacted by municipal policies that often choose to disconnect the historical and ecological aspects of rivers and streams in cities such as Aman which is a major city in Jordan. However, this practice fails to promote business related to the use of these features that, in practice, can impact a city positively through public involvement in the development of policies [28]. Typically, this style of planning has weaknesses such as lack of social equity and social reforms, top-down planning, and top-down targets imposed without the involvement of the population [12].

In this area of planning, low-carbon cities with strategies to deal with the impact of climate change also appear. For example, alternatives for carbon dioxide emissions in cars [19] are considered in cities with a high density of buildings and population [29] and socio-ecological urban zoning policies [30]. The expansion of large urban centers also raises concerns about greenhouse gases with residential buildings being the largest emitters. However, this situation is resolvable with policies aimed at urban areas to protect the proper uses of land, reduction in carbon emitters and use of renewable energies, such as what is seen in the Swedish city of Stockholm [30]. These models can be supported by proper planning systems and involve the participation of all stakeholders in the creation of scenarios based on land use and economics. The scenarios allow the simulation and evaluation of land use [31], urban mobility [32] and the social impacts [26].

Discussion about water resources concerns systems for capturing and storing rainwater. This are developed according to the types of land use and characteristics as well

as their influence on drainage systems. In Thailand, the issue of water is quite fragile due to the existence of built and agricultural areas near the river basins. The country suffers from floods and production losses caused by the inability of watersheds to absorb water culminating in the need to plan and create sub-basins for runoff in times of intense rainfall [13]. Likewise, there is a need to plan groundwater policies in view of the possibility of using these for agricultural irrigation. In Austria, for example, water scarcity reduces productivity and makes life impossible in the semi-arid regions [14].

To enhance land-use systems and reduce impacts suffered by climate change, ecological and economic management models can be used to guide the decision-making process and develop sustainable land use [23]. These systems can also have their planning organized by neighborhoods or sectors, as in the case of Germany where ways of managing water, urban energy use, building construction and maintenance and land use are all considered. These aspects can be part of a plan capable of assisting decision-making and implementing the necessary resources [33]. Green spaces in urban centers can still be planned according to indicators such as connectivity, multifunctionality, applicability, integration, diversity, scalability, governance, and continuity. In the capital city of Portugal, Lisbon, the green infrastructure depends on connectivity, multifunctionality and its applicability. Thus, public managers and professionals working in urbanization showed that it is essential to abandon traditional approaches and develop new strategies for planning [34].

Ecological land use is also able to develop cities through the creation of services capable of exploring the planning practices of neighboring communities and other cities which may lead to the overall reduction in buildings, as is the case in Italy. Thus, urban design could be considered ecological and guide the decision-making process of public managers regarding environmental and human issues inherent in infrastructure, e.g., the integration of urban vegetation, green roofs and urban community gardens [35]. Ecological compensation and preservation have been adopted as ways to deal with environmental impacts. In Beijing, China, public managers noted the change in soil that occurred due to urbanization, deforestation, and environmental degradation. Therefore, measures aimed at ecological management of very populated cities were adopted to preserve ecosystem services [36].

3. Materials and Methods

The research presented in this article emerges from the need to correlate the economic and environmental aspects that permeate and guide urban policies and planning when considered alongside the global characteristics. As a result, to explore this dynamic, a systematic review of the literature was adopted using a bibliometric analysis method, outlined schematically in Figure 1. The answering of the central question of the research is achieved by exploring the relevance of existing works while at the same time seeking support for the two propositions (i, ii) as outlined earlier [37].

Figure 1 presents two elements that drove the systematic approach to the research [38], i.e., research questions and guide propositions. The systematic review as described here is a well-established and reliable method which presents a complete picture of research trends on the subject within the literature. As this is a systematic investigation with bibliometrics, a greater reliability was brought to the work by using multiple databases that ensured a greater number of articles could be identified and analyzed. In this sense, the selection of 5 databases was considered essential for the reliability of this research, since, although Scopus and Science Direct are linked to Elsevier, there are manuscripts that are only indexed in one of the two, whereas the Web Of Science is another international platform for scientific articles. As a complement to the study, Scielo was used, which is a large online bookstore of various journals, and also Google Scholar with its vast repository that even indexes other databases.

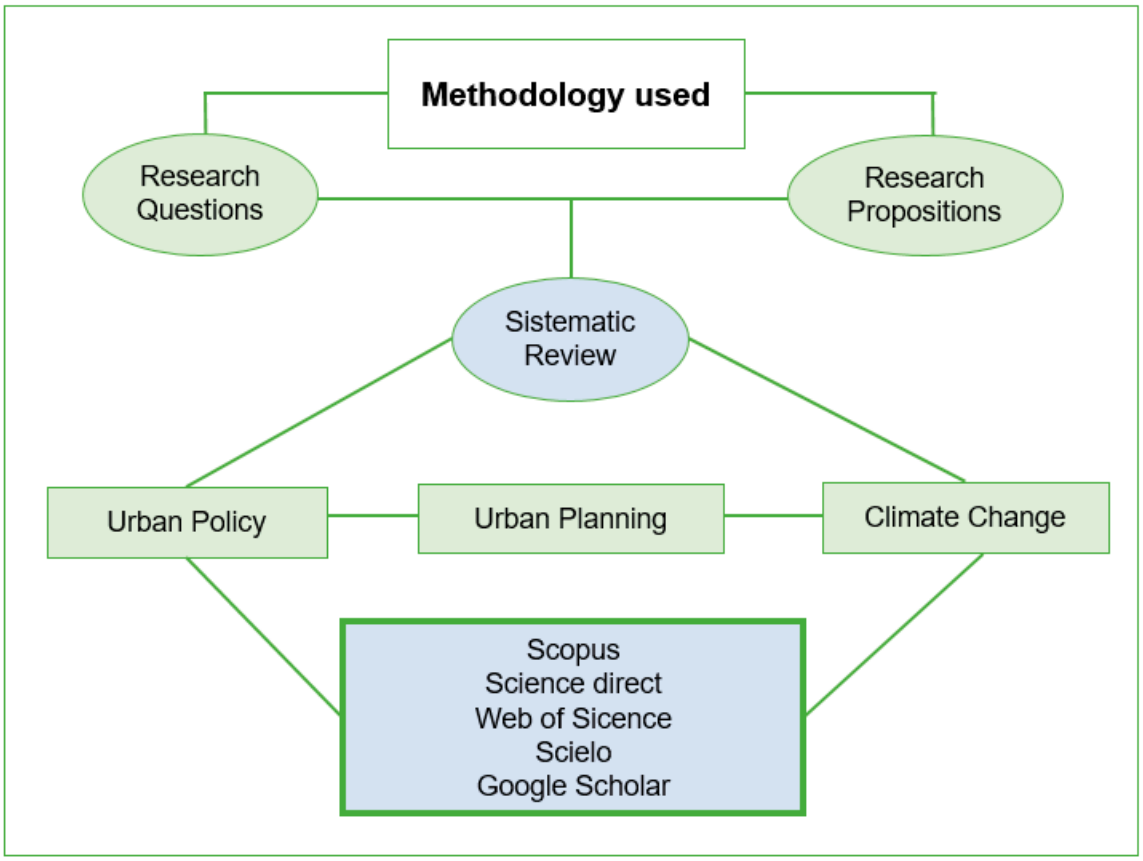

Figure 1. Methodological structure. (Source: The authors, 2022).

Regarding the research questions (Qs) and propositions, they were structured as follows:

1: (i) Urban policies and urban planning are powerful engines to promote and monitor the multiple uses of land; they also strive to affect the sustainable use of land. In this context, global environmental changes, especially climate changes, result from human impacts on the natural environment [6]. Because of this, when thinking holistically about land use, the inquiry into the "correct or rational use" is suggested, articulating three elements: urban policy, urban planning and climate change. This proposition translates into the following question: (Q1) how do these elements manifest to the detriment of the economic versus environmental use of the land?

2: (ii) Land use presupposes multiple functionalities, whether economic or environmental, where impacts are effectively deployed and perceived through climate change. With the perspective that land use presupposes multiple functionalities, the following question is presented: (Q2) which of them should prevail over the other; are these impacts effectively unfolded and perceived through climate change?

After structuring the research questions and propositions, a procedure for the systematic review of the literature was sought. Research procedures essential to support the reliability and technical robustness within the searches were used as illustrated in Figure 2 which shows the methodological path adopted by this research according to the steps and processes described.

The search process used the Scopus, Science Direct, Web of Science (WoS) Core Collection, Scielo, and Google Scholar databases as these are understood to be databases for classifying academic research. Together, these databases contain more than 40,000 peer-reviewed, high-quality academic journals published worldwide in more than 250 distinct areas of the world. For this research, the literature search was limited to peer reviewed articles using the search keywords: "Environmental land use" AND "Urban Policy" AND "Climate Change"; "Environmental land use" AND "Urban Planning" AND "Climate Change";

"Economic land use" AND "Urban Policy" AND "Climate Change"; and "Economic land use" AND "Urban Planning" AND "Climate Change". The use of different typologies captured all possible variations of these in the titles, abstracts, and keywords (topic option) of the selected articles and limited to open access documents.

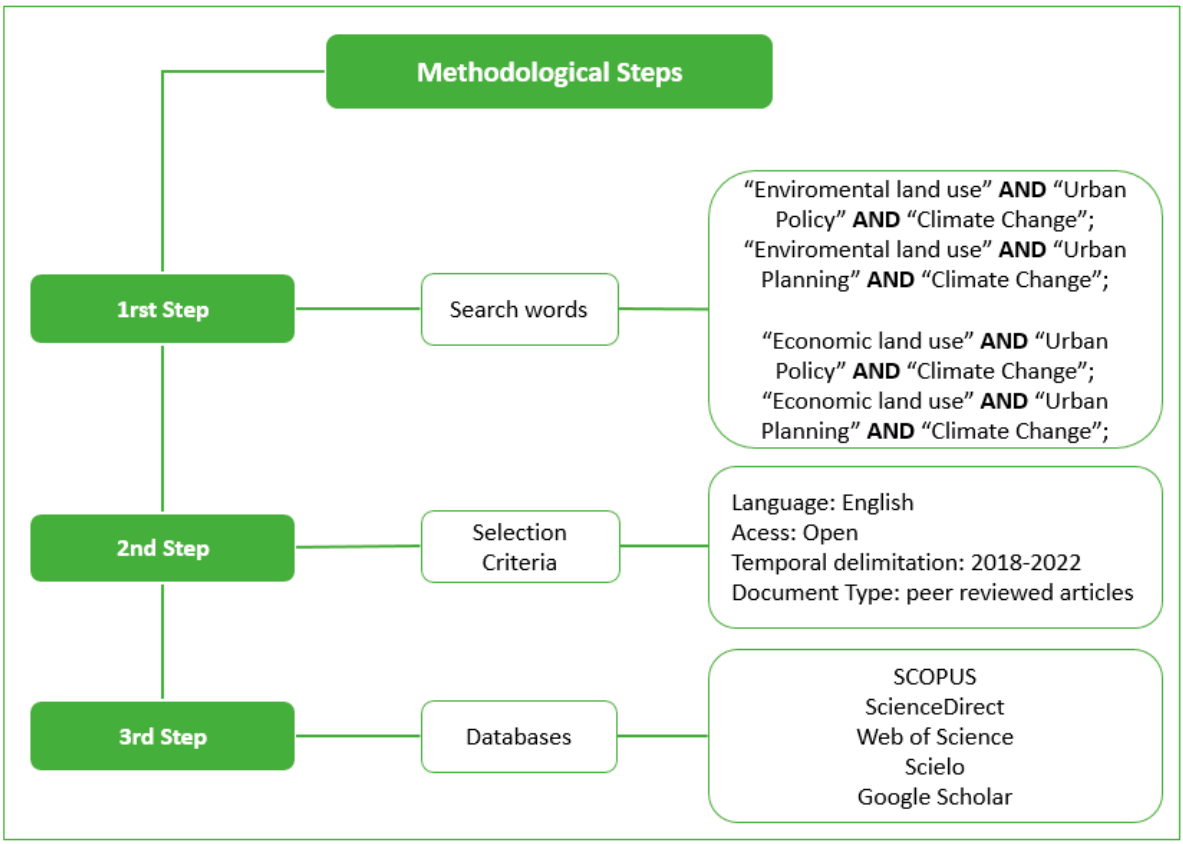

Figure 2. Systematic search strategy.

It should be noted that 4 selection criteria were used (as seen in Figure 2) to first filter the articles published in the English language (scientific standard, offering the largest collection of articles worldwide). Second, only open access articles were considered, as well as acquisition of chapters or articles to complement the study and whose research was not in receipt of exclusive sponsorship was performed. Third, in order to understand the most recent scenario of the theme, the time span from the previous 5 years, 2018 to 2022 (22 August) was considered. Fourth, to ensure robustness in the research, the type of documents was limited to peer-reviewed articles.

4. Results

Table 1 shows a total of 459 articles obtained: 16 documents belonging to searches in the SCOPUS database, 18 documents from Science Direct, 425 documents from Google Scholar, and no results from the Web of Science and Scielo—Scientific Electronic Library Online platforms. From the results presented by Science Direct, it is verified that only the quantities in parentheses have the criterion of "open access", and these are the documents that make up the general portfolio of this research. From another perspective, with Google Scholar, due to the volume of results in the search (blogs, websites, and books, among others), only the 10 most relevant articles were selected. This included the metrics of Google Scholar for each of the search keywords, and therefore the selection resulted in the number that counts among relatives in the Google Scholar results column (see Table 1).

Table 1. Description of results by database/indexers.

Palavras-Chave (+ AND)	SCOPUS	Web of Science	Science Direct	Google Scholar *	Scielo	Total
"Environmental land use" AND "Urban Policy" AND "Climate Change"	13	0	11 (1) **	39 (8) **	0	63 (22) **
"Environmental land use" AND "Urban Planning" AND "Climate Change"	0	0	0	225 (10) **	0	225 (10)**
"Economic land use" AND "Urban Policy" AND "Climate Change"	3	0	7 (1) **	30 (3) **	0	40 (4) **
"Economic land use" AND "Urban Planning" AND "Climate Change"	0	0	0	131 (10) **	0	131 (10) **
TOTAL	16	0	18 (2) **	425 (31) **	0	459 (46) **

* The selection treatment in Google Scholar was differentiated, considering the macro repository that indexes other databases and journals; ** Numbers written in parentheses are files with open access, of the total obtained.

After delimiting the search words as well as the strategy of criteria and databases, the composition of the research portfolio was performed, which totaled 46 documents with open access that were then stored in a Mendeley Software® environment, allowing the optimization of the researchers' teamwork as well as structuring of an RIS file to be inserted into VOSviwer Software® [1] for analysis of co-occurrence of the main terms located in the interface data (abstracts/titles and keywords) of the articles as shown in Figure 3.

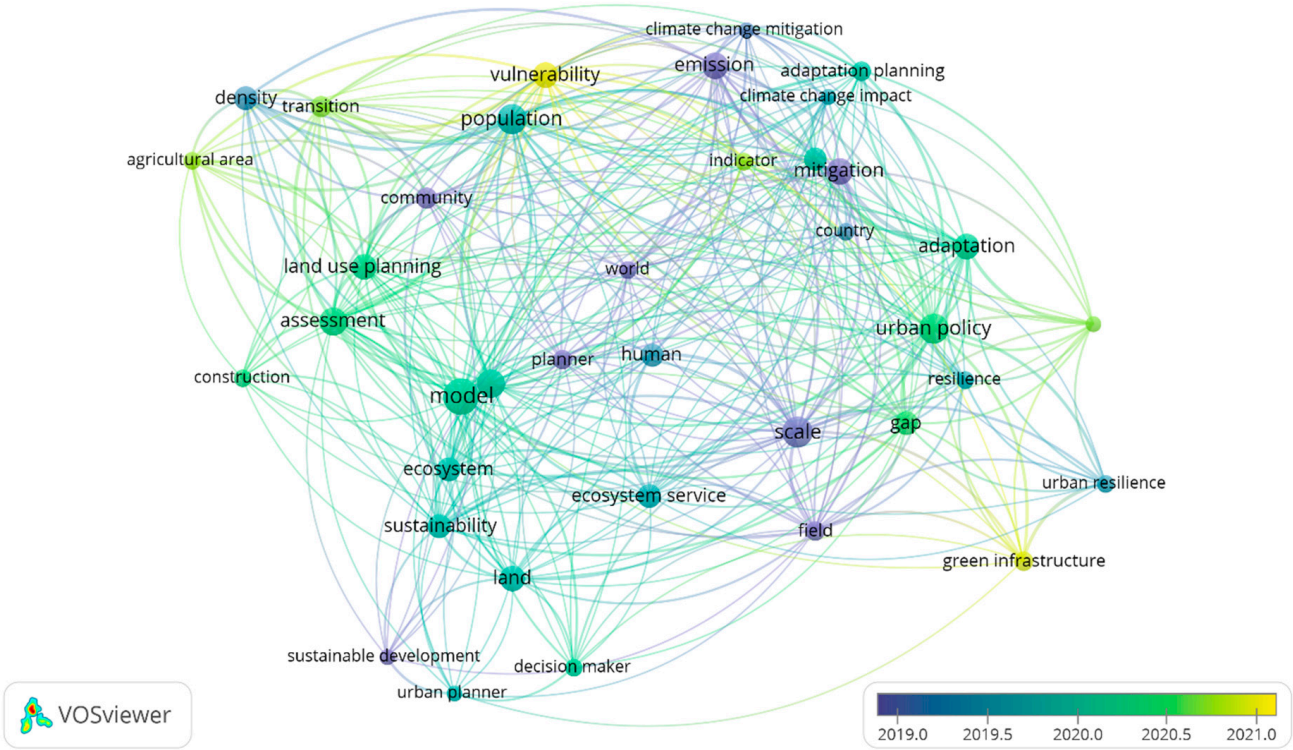

Figure 3. Co-occurrence clusters and their main terms in connection.

The result of inserting the RIS file into VOSviwer can be seen in Figure 3. It is necessary to emphasize that Vosviewer provides three types of maps: (i) visualization or network

map (indicating the occurrences of the keyword); (ii) overlay visualization map (indicating the average citations corresponding to each keyword or item); and (iii) density map. In this way, confidence in the result is built by choosing the existing co-occurrence in the titles and abstracts to verify the main terms that coincide in the map. Consequently, Figure 3 presents the co-occurrences of the terms on a time scale, showing trends and thematic incidences between the years 2019 and 2021 by keywords. This procedure was carried out to optimize the connections between the main terms as well as to promote support for structuring discussions. Subsequently, the content was written in stages and structured in order to (1) present the previous bibliographic theoretical content under the literature review bias, (2) present the methods used in the research to enable the systematics employed in this research as well as enable replication by other researchers, and (3) structure the results of this bibliometric together with a concomitant analysis. Three main types of analyses were performed: citations, co-citations and the analysis of the most frequently researched themes. Citation analysis is used in the scientific literature to recognize the influence, value, and usefulness of a work. The co-citation analysis was based on examining the frequency of citation of a certain pair of works by other works seeking to show their interrelationships from the citation data.

5. Discussion

Although operationally it appears to be a broad approach, it is verified that by restricting the perspective according to the search words demonstrated in Table 1, the number of open access studies that discuss the topic within the time frame from 2018 to 2022 remains small. In view of this scope, it should be observed that this time frame is permeated by the COVID-19 pandemic which may have decreased or increased research in this area, but cannot be confirmed either way by the work presented here. However, this work aimed to correlate the multiple strands of land use through the "environmental and economic" binomial instrument of urban planning. On global environmental changes, it should be emphasized that this presupposes much more than climate change is linked closely to changes in the terrestrial, natural and climatic states. They are the product of human actions in the use of land and the environment [39].

From clusters of co-occurrence and main terms of the cluster presented in Figure 3 built during the methodological construction of the map, it was possible to identify a new cluster. The main indicators (clusters) are shown in Figure 4 and illustrate the main connections with the term "indicators". To understand the proposed indicators that come out of the literature search, it is verified that on a temporal scale between the years 2019 and 2021, attraction between different indicators was gaining new perspectives. As can be seen from Figure 4, some themes are placed as indicators inherent to land use, among them highlighting the social vulnerability that presented more latently from the year 2021. Another indicator that gained new perspectives was urban policy that is seen as a crucial element coming out of this research. Added to these indicators are the issues of climate impacts, rational use of land for agriculture, global adaptations, adaptation plans, population as a key element, mitigations, and sustainability.

From the central cluster of Figure 4, a timeline was elaborated (see Figure 5) with the main terms and indicators from the literature, thus evidencing the strength that some themes have gained in recent years. Figure 5 infers that multiple indicators show the relevance that policies have in favor of land use. It is in this context that the time scale presented in this figure points out the indicators that have been increased in studies in recent years. As a result, it is important to highlight that, although land use is linked to the previously mentioned dynamics, i.e., environmental protection versus economic exploitation, additional factors cannot be neglected. In this perspective, the issue of vulnerability arises and is evidenced as a side effect of land use that is only driven by the pressure of economics [15]. This and other phenomena are the responsibility of urban policies, built with the participation of all stakeholders and enhancing the form and strands that will be provided to land use [40,41]. In this sense, some suggestions are constructed as parameters

to consider the ways in which to build urban policies such as land-use taxes to mitigate CO_2 emissions [19]. In addition, another powerful tool is the introduction of environmental elements and natural dynamics in the construction of urban policies [41]. This type of tool is also necessary to predict urban vulnerabilities in the face of environmental and climate changes [42].

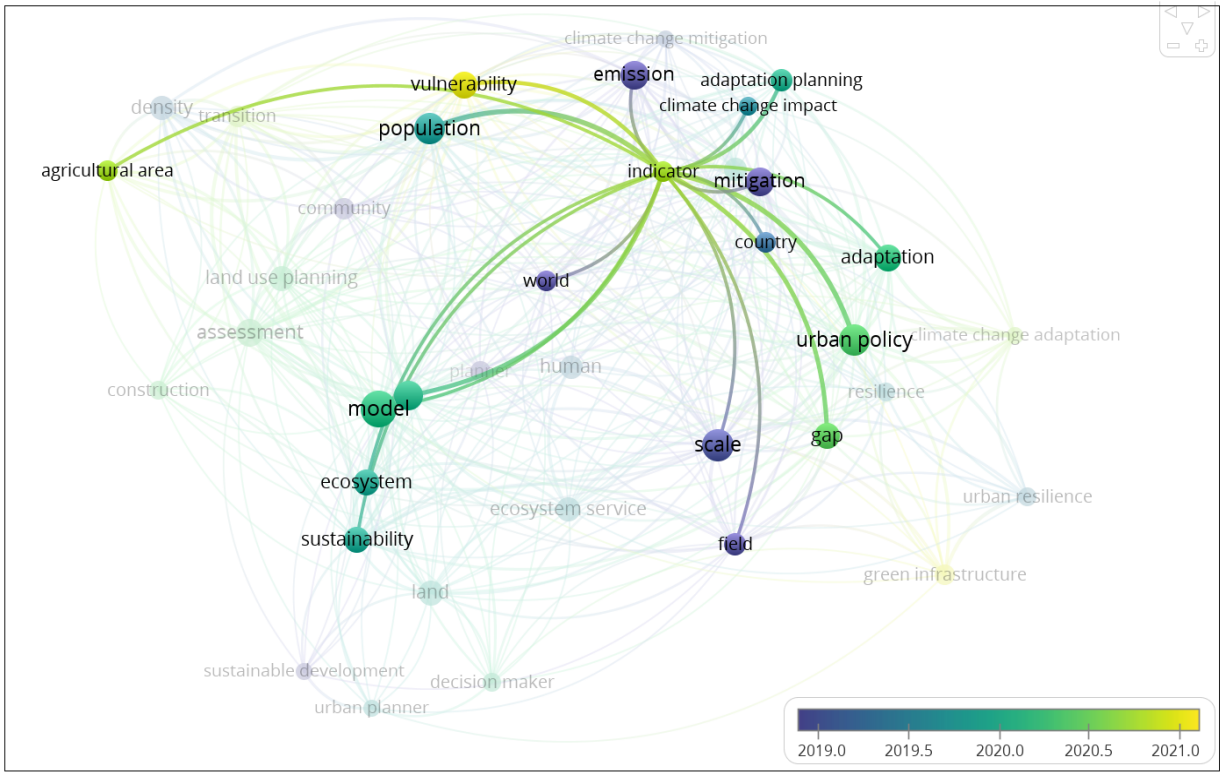

Figure 4. Main Indicators (Clusters). Notes: Elaborated by the authors based on the literature on VOSviewer Software (2022).

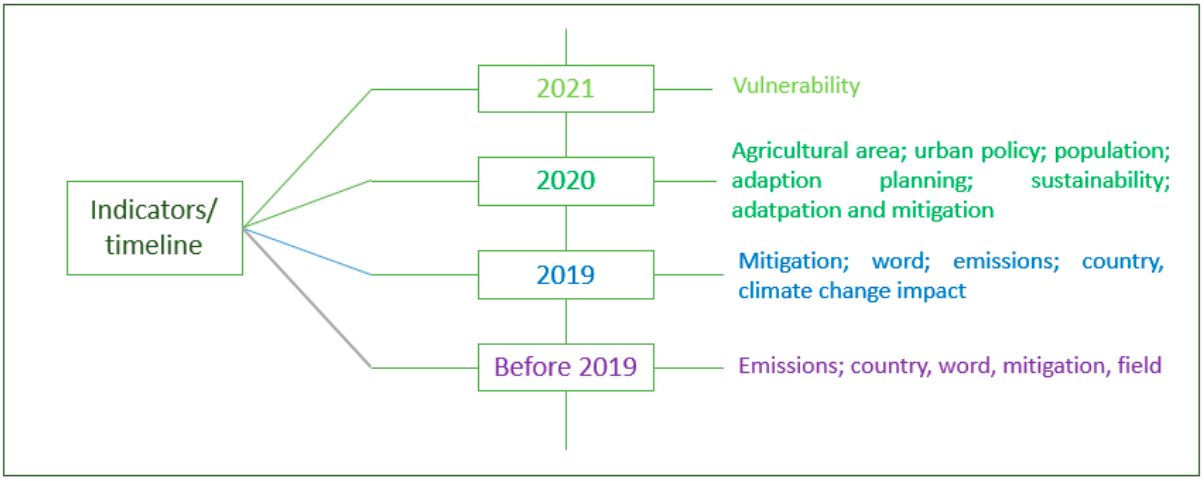

Figure 5. Online indicators between 2019 and 2021. Notes: Elaborated by the authors based on the literature via VOSviewer Software (2022).

Indicators and Evidence in the Context of Land Use

The main indicators presented in Figure 5 are positioned between four time frames and, from this, the frequency with which these indicators began to be mentioned in the

literature was verified. The first group of indicators begins even before the year 2019, represented by the words "emissions, cities, world and mitigation, and fields".

It is inferred from these terms that the concern behind land use until then was built on considering these perspectives, that is, softening or mitigating the emission of gases [19], for example, or considering more global cities with more sustainable fields [32,43]. Therefore, these indicators demonstrate that this dynamic is not recent, but is necessary in the adaptation of models for the multiple uses of land as shown from the indicators when contemplating socio-environmental requirements. The second group of indicators that permeates the literature from the year 2019 that repeats the group of terms mentioned previously is again "emissions, cities, world and mitigation, and fields"; however, a new term that sees increased use in the literature is the "impacts of climate change". Regarding this, the literature review presents several aspects that should be analyzed, such as the risks to urban growth for the future [44], urban growth and ecosystem services [45], impacts from urban planning [10] and carbon stock [12], among others. Added to these aspects is rationality in the use of water [28] which should be in agreement with the sustainable way of using the earth when considering global perspectives and climate impacts. In addition, it emphasizes the need to provide solutions for land use based on nature and with correlation to urban policy [41].

Figure 5 further infers that the main group of terms found from the year 2020 focuses on issues of agriculture, urban policy, adaptations, populations, sustainability, and planning. For these indicators, it is evident that land use is based on the dynamics of Urban Policies, delimiting the resources and the ways in which to use them, e.g., river basin management [13] and food security in green cities [46]. In this sense, the areas that guide land use will always be led by urban policies and urban planning, which are supervised by legislation capable of ensuring its robustness [7]. So far, the mechanisms presented in the form of indicators show a macro aspect which is an issue of vulnerability. From the studies addressed, vulnerability coexists in several contexts, be it social [15] or environmental [11,13]. Therefore, it is verified that from the year 2021, the dynamics which are part of the context of vulnerability in multiple aspects began to guide studies and policies aimed at land use.

From the evidence presented here, it can be seen that the problem should be treated with great rigor and caution. Thus, with the aim of instigating and enabling an understanding of the research propositions whose dynamics are part of two aspects, environmental and economic, Table 2 presents some of the services and aspects linked to each of these dynamics that permeate urban policies and urban planning.

Table 2. Research propositions and environmental and economic aspects.

(i) Urban Policies and Urban Planning Are Powerful Engines to Promote and Monitor the Multiple Uses of Land, Strife for the Effective Sustainable Use of Land		
(ii) Land Use Presupposes Multiple Functionalities, Whether Economic or Environmental, Where Impacts Are Effectively Deployed and Perceived through Climate Change		
Features	**Description**	**Authors**
1: Environmental	Promotion of green cities, preservation of parks and green areas; improving environmental aspects and balances; introduction of adaptive climate change policies; containment of rainwater; ecosystem services.	[47]; [48]; [36]; [35]; [34]; [5];
2: Economic	Aiming at territorial development; implementation of decision-making based on bio-economic precepts; ecological urbanization; urban sustainability; transport systems.	[4,23]; [49]; [25]; [50];

Prepared by the authors based on the literature.

Table 2 presents a synthesis of the main services and descriptions related to land use and its functionalities based on specific studies of the cited authors. The relationship between the services/functionalities listed in the environmental column refer to the main components and interests of urban policies that enable environmental preservation. On the other hand, the services and aspects mentioned in the second column refer to urban equipment and services which essentially depend on a spatial restructuring based mainly on an economic development to the detriment of the environmental state. In this sense, although Table 2 summarizes several of the aspects addressed in this study, it does not suppress the discussions and does not claim to summarize the entire discussion presented from the results. However, it was intended that Table 2 present some of the studies that emphasize the themes and perspectives related to the environmental and economic aspects of study in the context of land-use policies and planning.

Thus, to understand the existing dynamics in the multiple uses of land, it is necessary that the agents who consider and produce urban and rural spaces articulate policies and projects aimed at sustainability in the rational use of land and provide balanced environments that are consistent with global requirements [12,25,51]. In view of this, it is evident that so far, land use has been permeated by outdated dynamics consistent with disorderly use favoring economic development rather than ecological environmental development.

6. Conclusions

The disoriented use of the land promotes and encourages an economic and functionalist culture of the land, providing various phenomena such as social segregation and social and urban vulnerability in addition to promoting changes in the microclimate, landscape and other natural elements. Considering and articulating programs and policies inherent and related to the correct use of land are evidenced as powerful engines for the transformation of this reality. Promoting an adequate and orderly use of land is consistent with a strategic and adequate planning. Therefore, urban policies and planning become indispensable elements for the realization or achievement of sustainability.

The global scenario, transformed and reformed daily, has and will continue to permeate challenges that precede the use of land and represent challenges that are the result of human actions according to their constant need. It is, however, from these precedents that programming can and should be articulated in the form of planning that is consistent with these needs and scarcity of natural resources. Based on the systematic review presented here, this study identified the multiple uses of land in addition to the priority they are assigned whilst verifying simultaneously the implications of these uses in urban planning. In this sense, it is concluded that land use is particularly related to the socioeconomic dimension, evidencing that the socio-environmental perspective is not always the main element to be visualized and brought into discussions related to land-use planning in a more efficient and sustainable way. In addition, the propositions (i) and (ii) outlined in this study were met, as it is evident through this research that disordered uses of land promote environmental degradation and a disconnect between sustainable and socioeconomic planning.

Overall, it is concluded that the themes of this study are highly relevant to the current global scenario of environmental changes and that there is a dearth of research in these areas. It is also noteworthy that the quantitative number of studies on this theme evidences a gap and a deficit that still exists in discussions related to urban planning for sustainable and rational use of land today.

In addition, the studies that are compiled in the research portfolio of this study are still incipient in the present response to the theme, thus indicating various gaps that exist within it. As evidenced from the results and discussions presented here, this study embodies the various theoretical elements and case studies examined here into a dimension of multiple strands. It is also important to highlight that the methods used were essential in ratifying the robustness of the methodology and in providing it a greater scientific confidence.

Finally, it is suggested that future research work in the area should consider widening the scope to examine the more innovative dynamics of the theme.

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Note

[1] VOSViewer. VOSviewer. Available online: https://app.vosviewer.com/ (accessed on 19 November 2022).

References

1. Dias, F.T.; Pereira, D.M.; Clemente, C.M.S. The Urbanization Process and Space Producing Agents. *Acad. Lett.* **2021**, *7*, 1288–1293. [CrossRef]
2. Briassoulis, H. Analysis of land use change: Theoretical and modeling approaches. In *The Web Book of Regional Science*; Loveridge, S., Ed.; Regional Research Institute, West Virginia University: Morgantown, WV, USA, 2000; Available online: www.rri.wvu.edu/regscweb.htm (accessed on 19 November 2022).
3. Lambin, E.F.; Geist, H.J.; Lepers, E. Land-Use and Land-Cover Change in Tropical Regions. *Annu. Rev. Environ. Resour.* **2003**, *28*, 205–241. [CrossRef]
4. Galeano-Barrera, C.J.; Ospina, M.E.A.; García, E.M.M.; Rico-Bautista, D.; Romero-Riaño, E. Exploring the Evolution of the Topics and Research Fields of Territorial Development from a Comprehensive Bibliometric Analysis. *Sustainability* **2022**, *14*, 6515. [CrossRef]
5. Panagopoulos, T.; Cilliers, S.; Choi, J.; Kim, G. History of Seoul's Parks and Green Space Policies: Focusing on Policy Changes in Urban Development. *Land* **2022**, *11*, 474. [CrossRef]
6. Pierri, N. The historical and theoretical process that leads to the proposal of sustainable development. In *Sustentabilidad? Desacuerdos Sobre el Desarrollo Sustantable*, 1st ed.; Chang, M.Y., Ed.; Trabajo y Capital: Montevideo, Uruguay, 2001.
7. Alves, P.B.R.; Rufino, I.A.A.; Feitosa, P.H.C.; Djordjević, S.; Javadi, A. Land-Use and Legislation-Based Methodology for the Implementation of Sustainable Drainage Systems in the Semi-Arid Region of Brazil. *Sustainability* **2020**, *12*, 661. [CrossRef]
8. Escudero Gómez, L.A. Land at the Service of the Regional Growth Coalition: Projects of Special Interest in the Region of Castilla–La Mancha (Spain). *Land* **2021**, *10*, 875. [CrossRef]
9. Ford, A.; Barr, S.; Dawson, R.; Virgo, J.; Batty, M.; Hall, J. A multi-scale urban integrated assessment framework for climate change studies: A flooding application. *Comput. Environ. Urban Syst.* **2019**, *75*, 229–243. [CrossRef]
10. Cobbinah, P.B.; Asibey, M.O.; Opoku-Gyamfi, M.; Peprah, C. Urban planning and climate change in Ghana. *J. Urban Manag.* **2019**, *8*, 261–271. [CrossRef]
11. Cai, Z.; Page, J.; Cvetkovic, V. Urban ecosystem vulnerability assessment of support climate-resilient city development. *Urban Plan.* **2021**, *6*, 227–239. [CrossRef]

12. Hunter, G.W.; Sagoe, G.; Vettorato, D.; Jiayu, D. Sustainability of Low Carbon City Initiatives in China: A Comprehensive Literature Review. *Sustainability* **2019**, *11*, 4342. [CrossRef]
13. Waiyasusri, K.; Chotpantarat, S. Watershed Prioritization of Kaeng Lawa Sub-Watershed, Khon Kaen Province Using the Morphometric and Land-Use Analysis: A Case Study of Heavy Flooding Caused by Tropical Storm Podul. *Water* **2020**, *12*, 1570. [CrossRef]
14. Mitter, H.; Schmid, E. Informing groundwater policies in semi-arid agricultural production regions under stochastic climate scenario impacts. *Ecol. Econ.* **2020**, *180*, 106908. [CrossRef]
15. Botezan, C.S.; Radovici, A.; Ajtai, I. The Challenge of Social Vulnerability Assessment in the Context of Land Use Changes for Sustainable Urban Planning—Case Studies: Developing Cities in Romania. *Land* **2021**, *11*, 17. [CrossRef]
16. Uebelhor, E.; Hintz, O.; Mills, S.B.; Randall, A. Utility-Scale Solar in the Great Lakes: Analyzing Community Reactions to Solar Developments. *Sustainability* **2021**, *13*, 1677. [CrossRef]
17. Beckwith, L. Cambodia's resilience agenda: Understanding how local institutions and actors accept, contest and accommodate an externally driven approach. *Geoforum* **2022**, *128*, 125–134. [CrossRef]
18. Hurlimann, A.; Moosavi, S.; Browne, G.R. Urban planning policy must do more to integrate climate change adaptation and mitigation actions. *Land Use Policy* **2021**, *101*, 105188. [CrossRef]
19. Iwata, K.; Managi, S. Can land use regulations and taxes help mitigate vehicular CO 2 emissions? An empirical study of Japanese cities. *Urban Policy Res.* **2016**, *34*, 356–372. [CrossRef]
20. Nasrollahzadeh, S.; Koramaz, T.K. Large-scale projects and land value changes in peripheral residential development in Istanbul. *J. Hous. Built Environ.* **2021**, *37*, 1221–1253. [CrossRef]
21. Buzási, A.; Pálvölgyi, T.; Csete, M.S. Assessment of climate change performance of urban development projects—Case of Budapest, Hungary. *Cities* **2021**, *114*, 103215. [CrossRef]
22. Ahmed, A.; Akanbang, B.A.A.; Poku-Boansi, M.; Derbile, E.K. Policy coherence between climate change adaptation and urban policies in Ghana: Implications for adaptation planning in African cities. *Int. J. Urban Sustain. Dev.* **2022**, *14*, 77–90. [CrossRef]
23. Castro, L.M.; Lechthaler, F. The contribution of bio-economic assessments to better informed land-use decision making: An overview. *Ecol. Eng.* **2022**, *174*, 106449. [CrossRef]
24. Davids, R.; Rouget, M.; Boon, R.; Roberts, D. Spatial analyses of threats to ecosystem service hotspots in Greater Durban, South Africa. *PeerJ* **2018**, *6*, e5723. [CrossRef] [PubMed]
25. Hassan, A.; Kotval-K, Z. A Framework for Measuring Urban Sustainability in an Emerging Region: The City of Duhok as a Case Study. *Sustainability* **2019**, *11*, 5402. [CrossRef]
26. Kalantari, Z.; Ferreira, C.S.S.; Page, J.; Goldenberg, R.; Olsson, J.; Destouni, G. Meeting sustainable development challenges in growing cities: Coupled social-ecological systems modeling of land use and water changes. *J. Environ. Manag.* **2019**, *245*, 471–480. [CrossRef]
27. Zielinska-Dabkowska, K.M.; Xavia, K. Global Approaches to Reduce Light Pollution from Media Architecture and Non-Static, Self-Luminous LED Displays for Mixed-Use Urban Developments. *Sustainability* **2019**, *11*, 3446. [CrossRef]
28. Gharaibeh, A.A.; AlZu'bi, E.M.; Abuhasson, L.B. Amman (City of Waters); Policy, Land Use, and Character Changes. *Land* **2019**, *8*, 195. [CrossRef]
29. Gim, T.-H.T. Analyzing the city-level effects of land use on travel time and CO2 emissions: A global mediation study of travel time. *Int. J. Sustain. Transp.* **2022**, *16*, 496–513. [CrossRef]
30. Pan, H.; Page, J.; Zhang, L.; Cong, C.; Ferreira, C.; Jonsson, E.; Näsström, H.; Destouni, G.; Deal, B.; Kalantari, Z. Understanding interactions between urban development policies and GHG emissions: A case study in Stockholm Region. *Ambio* **2020**, *49*, 1313–1327. [CrossRef]
31. Chen, S.; Kwak, Y.; Zhang, L.; Mosey, G.; Deal, B. Tightly Coupling Input Output Economics with Spatio-Temporal Land Use in a Dynamic Planning Support System Framework. *Land* **2021**, *10*, 78. [CrossRef]
32. Ford, A.; Dawson, R.; Blythe, P.; Barr, S. Land-use transport models for climate change mitigation and adaptation planning. *J. Transp. Land Use* **2018**, *11*, 83–101. [CrossRef]
33. Hörnschemeyer, B.; Söfker-Rieniets, A.; Niesten, J.; Arendt, R.; Kleckers, J.; Klemm, C.; Stretz, C.J.; Reicher, C.; Grimsehl-Schmitz, W.; Wirbals, D.; et al. The ResourcePlan—An Instrument for Resource-Efficient Development of Urban Neighborhoods. *Sustainability* **2022**, *14*, 1522. [CrossRef]
34. Monteiro, R.; Ferreira, J.C.; Antunes, P. Green Infrastructure Planning Principles: Identification of Priorities Using Analytic Hierarchy Process. *Sustainability* **2022**, *14*, 5170. [CrossRef]
35. Semeraro, T.; Scarano, A.; Pandey, R. Ecosystem Services Analysis and Design through Nature-Based Solutions in Urban Planning at a Neighbourhood Scale. *Urban Sci.* **2022**, *6*, 23. [CrossRef]
36. Liu, H.; Xiao, W.; Li, Q.; Tian, Y.; Zhu, J. Spatio-Temporal Change of Multiple Ecosystem Services and Their Driving Factors: A Case Study in Beijing, China. *Forests* **2022**, *13*, 260. [CrossRef]
37. Martins, G.D.A.; Theóphilo, C.R. *Scientific Research Methodology for Applied Social Sciences*, 3rd ed.; Atlas: São Paulo, Brazil, 2018.
38. Mengist, W.; Soromessa, T.; Legese, G. Method for conducting systematic literature review and meta-analysis for environmental science research. *Methodsx* **2020**, *7*, 100777. [CrossRef]

39. Blanco, H.; Alberti, M.; Olshansky, R.; Chang, S.; Wheeler, S.M.; Randolph, J.; London, J.B.; Hollander, J.B.; Pallagst, K.M.; Schwarz, T.; et al. Shaken, shrinking, hot, impoverished and informal: Emerging research agendas in planning. *Prog. Plan.* **2009**, *72*, 195–250. [CrossRef]
40. Robin, E.; Acuto, M. Global urban policy and the geopolitics of urban data. *Politi. Geogr.* **2018**, *66*, 76–87. [CrossRef]
41. Zwierzchowska, I.; Fagiewicz, K.; Poniży, L.; Lupa, P.; Mizgajski, A. Introducing nature-based solutions into urban policy—Facts and gaps. Case study of Poznań. *Land Use Policy* **2019**, *85*, 161–175. [CrossRef]
42. Jurgilevich, A.; Räsänen, A.; Juhola, S. Assessing the dynamics of urban vulnerability to climate change: Case of Helsinki, Finland. *Environ. Sci. Policy* **2021**, *125*, 32–43. [CrossRef]
43. Xu, L.; Gao, J.; Lin, W.; Zhou, W. Differences in the ecological impact of climate change and urbanization. *Urban Clim.* **2021**, *38*, 100891. [CrossRef]
44. Kim, Y.; Newman, G. Climate change preparedness: Comparing future urban growth and flood risk in Amsterdam and Houston. *Sustainability* **2019**, *11*, 1048. [CrossRef] [PubMed]
45. Lyu, R.; Clarke, K.C.; Zhang, J.; Jia, X.; Feng, J.; Li, J. The impact of urbanization and climate change on ecosystem services: A case study of the city belt along the Yellow River in Ningxia, China. *Comput. Environ. Urban Syst.* **2019**, *77*, 101351. [CrossRef]
46. Ochoa, C.Y.; Jiménez, D.F.; Olmo, R.M. Green Infrastructure Planning in Metropolitan Regions to Improve the Connectivity of Agricultural Landscapes and Food Security. *Land* **2020**, *9*, 414. [CrossRef]
47. Boyd, D.; Pathak, M.; van Diemen, R.; Skea, J. Mitigation co-benefits of climate change adaptation: A case-study analysis of eight cities. *Sustain. Cities Soc.* **2022**, *77*, 103563. [CrossRef]
48. Song, K.; Kim, M.; Kang, H.-M.; Ham, E.-K.; Noh, J.; Khim, J.S.; Chon, J. Stormwater runoff reduction simulation model for urban flood restoration in coastal area. *Nat. Hazards* **2022**, *114*, 2509–2526. [CrossRef]
49. Wang, Z.; Deng, X.; Wong, C. Integrated Land Governance for Eco-Urbanization. *Sustainability* **2016**, *8*, 903. [CrossRef]
50. Fontoura, W.B.; Ribeiro, G.M. System Dynamics for Sustainable Transportation Policies: A Systematic Literature Review. *Urbe Rev. Bras. Gestão Urbana* **2021**, *13*, e20200259. [CrossRef]
51. Lin, S.H.; Huang, X.; Fu, G.; Chen, J.T.; Zhao, X.; Li, J.H.; Tzeng, G.H. Evaluating the sustainability of urban renewal projects based on a model of hybrid multiple-attribute decision-making. *Land Use Policy* **2021**, *108*, 105570. [CrossRef]