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RESEARCH ON URBAN SHRINKAGE IN RESOURCE-DEPENDENT ECONOMIES: A BIBLIOMETRIC REVIEW OF SCOPUS-INDEXED LITERATURE

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Abstract. This study presents a bibliometric systematic review of the urban shrinkage literature, with a specific focus on how the field addresses resource-dependent, peripheral, and post-socialist territories. Following PRISMA 2020 guidelines, a two-block Boolean search of the Scopus database was conducted, combining terms for urban shrinkage with contextual descriptors (resource dependence, peripherality, post-socialist transformation, migration, and investment). The initial search yielded 583 records; after sequential filtering by subject area (Business, Management and Accounting; Economics, Econometrics and Finance), document type (articles and reviews), and language (English), a final dataset of 66 documents (1980–2025) was retained for bibliometric analysis using Bibliometrix for Biblioshiny. The results reveal that Cities (21 articles) and Applied Geography (9) are the dominant publishing venues. Research output has accelerated markedly since 2013, with 47 of 66 articles (71.2%) published between 2020 and 2025. Citation analysis identifies He et al. (2017) on resource-based cities in China (271 citations) and Nelle et al. (2017) on entangled shrinkage conditions in Germany (82 citations) as highly influential contributions. Keyword co-occurrence analysis reveals three thematic clusters: structural causes and the Chinese context; governance, sustainability, and social dimensions; measurement and identification. Critically, only 9 of 66 articles (13.6%) directly address resource-dependent urban contexts, and none examine Central Asian or post-Soviet peripheral territories through a systematic spatial-econometric lens. This geographic and methodological gap is consequential: in Kazakhstan, 195 of 223 districts recorded negative migration balances in 2024 despite substantial investment growth. The review concludes by proposing a targeted research agenda for resource-dependent economies, including composite shrinkage indices adapted to non-Western contexts, spatial econometric modeling of inter-territorial spillovers, and threshold analysis of investment–migration decoupling.

Keywords: *systematic literature review; bibliometric analysis; urban shrinkage; shrinking cities; PRISMA; Biblioshiny; resource-dependent territories; post-Soviet*

ИССЛЕДОВАНИЕ СОКРАЩЕНИЯ ГОРОДСКОГО НАСЕЛЕНИЯ В СТРАНАХ, ЗАВИСЯЩИХ ОТ РЕСУРСОВ: БИБЛИОМЕТРИЧЕСКИЙ ОБЗОР ЛИТЕРАТУРЫ, ИНДЕКСИРОВАННОЙ SCOPUS

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Аннотация. В данном исследовании представлен библиометрический систематический обзор литературы по проблеме сокращения городов, с особым акцентом на то, как эта область рассматривает ресурсозависимые, периферийные и постсоциалистические территории. В соответствии с рекомендациями PRISMA 2020 был проведен двухблочный булевый поиск в базе данных Scopus, сочетающий термины, относящиеся к проблеме сокращения городов, с контекстными дескрипторами (ресурсозависимость, периферийность, постсоциалистическая трансформация, миграция и инвестиции). Первоначальный поиск дал 583 записи; после последовательной фильтрации по предметной области (Бизнес, менеджмент и бухгалтерский учет; Экономика, эконометрика и финансы), типу документа (статьи и обзоры) и языку (английский) для библиометрического анализа был отобран окончательный набор данных из 66 документов (1980–2025 гг.) с использованием Bibliometrix for Biblioshiny. Результаты показывают, что доминирующими издательскими площадками являются журналы Cities (21 статья) и Applied Geography (9). С 2013 года значительно ускорился рост числа научных публикаций: 47 из 66 статей (71,2%) были опубликованы в период с 2020 по 2025 год. Анализ цитирования выявил

работы Хе и др. (2017) о городах, зависящих от ресурсов, в Китае (271 цитирование) и Нелле и др. (2017) о сложных условиях сокращения населения в Германии (82 цитирования) как наиболее влиятельные работы. Анализ совместной встречаемости ключевых слов выявил три тематических кластера: структурные причины и китайский контекст; управление, устойчивое развитие и социальные аспекты; измерение и идентификация. Важно отметить, что только 9 из 66 статей (13,6%) непосредственно рассматривают городские контексты, зависящие от ресурсов, и ни одна из них не исследует территории Центральной Азии или постсоветской периферии с помощью систематического пространственно-эконометрического подхода. Этот географический и методологический разрыв имеет существенные последствия: в Казахстане в 2024 году в 195 из 223 районов был зафиксирован отрицательный миграционный баланс, несмотря на существенный рост инвестиций. В заключение обзора предлагается целенаправленная программа исследований для ресурсозависимых экономик, включающая составные индексы сокращения, адаптированные к незападным условиям, пространственное эконометрическое моделирование межтерриториальных эффектов распространения и пороговый анализ разрыва между инвестициями и миграцией.

Ключевые слова: систематический обзор литературы; библиометрический анализ; сокращение городов; сокращающиеся города; PRISMA; Biblioshiny; ресурсозависимые территории; постсоветские

РЕСУРСТАРҒА ТӘУЕЛДІ ЭКОНОМИКАДАҒЫ ҚАЛАЛАРДЫҢ ҚЫСҚАРУЫН ЗЕРТТЕУ: SCOPUS-та ИНДЕКСТЕЛЕТІН ӘДЕБИЕТТЕРГЕ БИБЛИОМЕТРИЯЛЫҚ ШОЛУ

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Түйіндеме. Бұл зерттеу қалалардың кішіреюі туралы әдебиеттерге библиометриялық жүйелі шолу ұсынады және аталған ғылыми бағыттың ресурстарға тәуелді, шеткері орналасқан және постсоциалистік аумақтарды қалай қарастыратынына ерекше назар аударады. Зерттеу Scopus дерекқорында қалалардың кішіреюіне қатысты терминдерді біріктіретін екі блоктық Boolean іздеу әдісін қолданып, PRISMA 2020 нұсқауларына сәйкес жүргізілді. Бастапқы іздеу нәтижесінде 583 жарияланым анықталып, одан соң пәндік сала (бизнес, басқару және бухгалтерлік есеп; экономика, эконометрика және қаржы) айқындалды, құжат түрі (мақалалар мен шолулар) бойынша және тіл (ағылшын тілі) бойынша кезең кезеңмен сүзгіден өткізгеннен кейін, Biblioshiny/Bibliometrix көмегімен библиометриялық талдау үшін 66 құжаттан тұратын соңғы деректер жиынтығы (1980–2025) қалыптастырылды. Зерттеу нәтижелері басты баспа алаңдары ретінде Cities (21 мақала) және Applied Geography (9) журналдарын көрсетеді. 2013 жылдан бастап ғылыми басылымдардың едәуір өскен: 66 мақаланың 47-і (71,2%) 2020 және 2025 жылдар аралығында жарияланын көруге болады. Дәйексөз талдауы ең ықпалды зерттеу ретінде Хе және әріптестерінің мақалаларын анықтады. (2017) Қытайдағы ресурстарға тәуелді қалалар туралы (271 дәйексөз) және Нелле және әріптестері (2017) Германиядағы халық санының азаюының күрделі жағдайлары туралы зерттеуін (82 дәйексөз) анықтады. Кілт сөздердің бірлесе пайда болуын талдау үш тақырыптық кластерді анықтады: құрылымдық себептер және Қытай контексті; басқару, тұрақтылық және әлеуметтік өлшемдер; өлшеу және анықтау. Шолу нәтижесінде ресурстарға тәуелді экономикалар үшін нысаналы зерттеу күн тәртібі ұсынылады. Атап өтсек, оған батыстық емес контексттерге бейімделген кешенді кішірею индекстерін әзірлеу, аумақаралық кеңістіктік эконометриялық модельдеу және инвестиция-көші қон алшақтығын шекті талдау әдістері кіреді.

Кілт сөздер: жүйелі әдебиеттерге шолу; библиометриялық талдау; қалалық қысқару; қалалардың қысқаруы; PRISMA; Biblioshiny; ресурстарға тәуелді аумақтар; посткеңестік

Introduction

The current understanding of the phenomenon of urban shrinkage has evolved through a succession of research paradigms, each of which illuminated specific aspects of the problem but left gaps in operationalization and interregional comparability. The term "urban shrinkage" first came into use in German academic discourse against the backdrop of the depopulation of East German cities amidst the severe disparity in development between East and West Germany (Haase et al., 2014). Early interpretations described shrinkage as a long-term decline in population and economic activity while maintaining the city's physical structure, accompanied by the concentration of growth in a limited number of large cores and peripheral shrinkage, leading to agglomerative polarization of the stratification system.

However, the analysis was limited to qualitative analysis without quantitative metrics.

Furthermore, research on shrinking cities has grown significantly, expanding the empirical base and identifying more than 370 shrinking cities (Rieniets, 2009; Long & Gao, 2019). However, standardized methods for measuring shrinkage, accounting for spatial interactions (spillover), and comparability of results across territories and periods remain limited. Therefore, it is important to conduct research into a standardized assessment methodology and comparative analysis between regions in the context of spatial polarization. This methodological gap underscores the need for a systematic review of existing approaches to studying urban shrinkage in resource-dependent and peripheral contexts, which is the focus of the present study.

These gaps are consequential. In Kazakhstan, for example, 195 of 223 districts exhibited negative migration balances in 2024 despite investment growth of 231.4% in North Kazakhstan and 221.1% in Turkestan region (BNS ASPIR RK, 2025). This investment–migration paradox, in which rising capital inflows fail to arrest population outflows, cannot be adequately explained by existing Western-centric shrinkage frameworks, yet it poses a critical policy challenge for resource-dependent economies.

The purpose of this study is to conduct a bibliometric systematic review that addresses four specific research questions:

RQ1: What is the temporal, geographic, and thematic structure of the literature on urban shrinkage as captured in the Scopus database when filtered for resource-dependent, peripheral, and post-socialist contexts?

RQ2: To what extent does the existing literature address resource-dependent and peripheral territories, and what geographic blind spots exist?

RQ3: What thematic clusters and methodological approaches characterize literature, and which approaches are absent or underrepresented?

RQ4: What research agenda priorities emerge for studying urban shrinkage in resource-dependent and post-Soviet economies?

Methodology

This review follows PRISMA 2020 guidelines (Page et al., 2021) for systematic reviews. The bibliometric analysis was conducted using the R-based Bibliometrix package and its Biblioshiny web interface (Aria & Cuccurullo, 2017), which provides standardized analytical tools for science mapping including performance analysis, co-occurrence analysis, and network visualization.

Scopus was selected as the data source due to its broad coverage of journals in urban studies, planning, economics, and regional development (Chadegani et al., 2013). The search strategy combined two blocks of Boolean terms. The first block captured the core phenomenon of urban shrinkage using the following terms: “shrinking cit*”, “urban shrinkage”, “city shrinkage”, “shrinking town*”, “urban decline”, and “depopulating cit*”. The second block captured the contextual dimensions relevant to resource-dependent, peripheral, and post-socialist contexts: “resource*”, “mono-industr*”, “monotown*”, “single-industry”, “small town*”, “peripheral”, “post-Soviet”, “post-socialist”, “agglomeration”, “polariz*”, “migration”, “investment”, “Central Asia”, and “Kazakhstan”. The two blocks were combined using the AND operator. The search was conducted in the Title, Abstract, and Keywords fields on March 8, 2026, with no date restriction.

The study selection followed a sequential filtering process illustrated in the PRISMA flow diagram (Figure 1). The initial Scopus search identified 583 records. In the first screening step, records were restricted to two subject areas: “Business, Management and Accounting” and “Economics, Econometrics and Finance.” This reduced the dataset to 100 records, with 483 records excluding for belonging to other subject areas (e.g., Environmental Science, Social Sciences,

Engineering). In the second step, the sample was limited to articles and reviews, excluding 17 conference papers, book chapters, and editorial materials. Third, non-English publications were removed, excluding an additional 17 records. The resulting dataset of 66 documents was then manually verified by examining titles, abstracts, and keywords to confirm thematic relevance to urban shrinkage in resource-dependent, peripheral, or post-socialist contexts. No additional records were excluded at this stage.

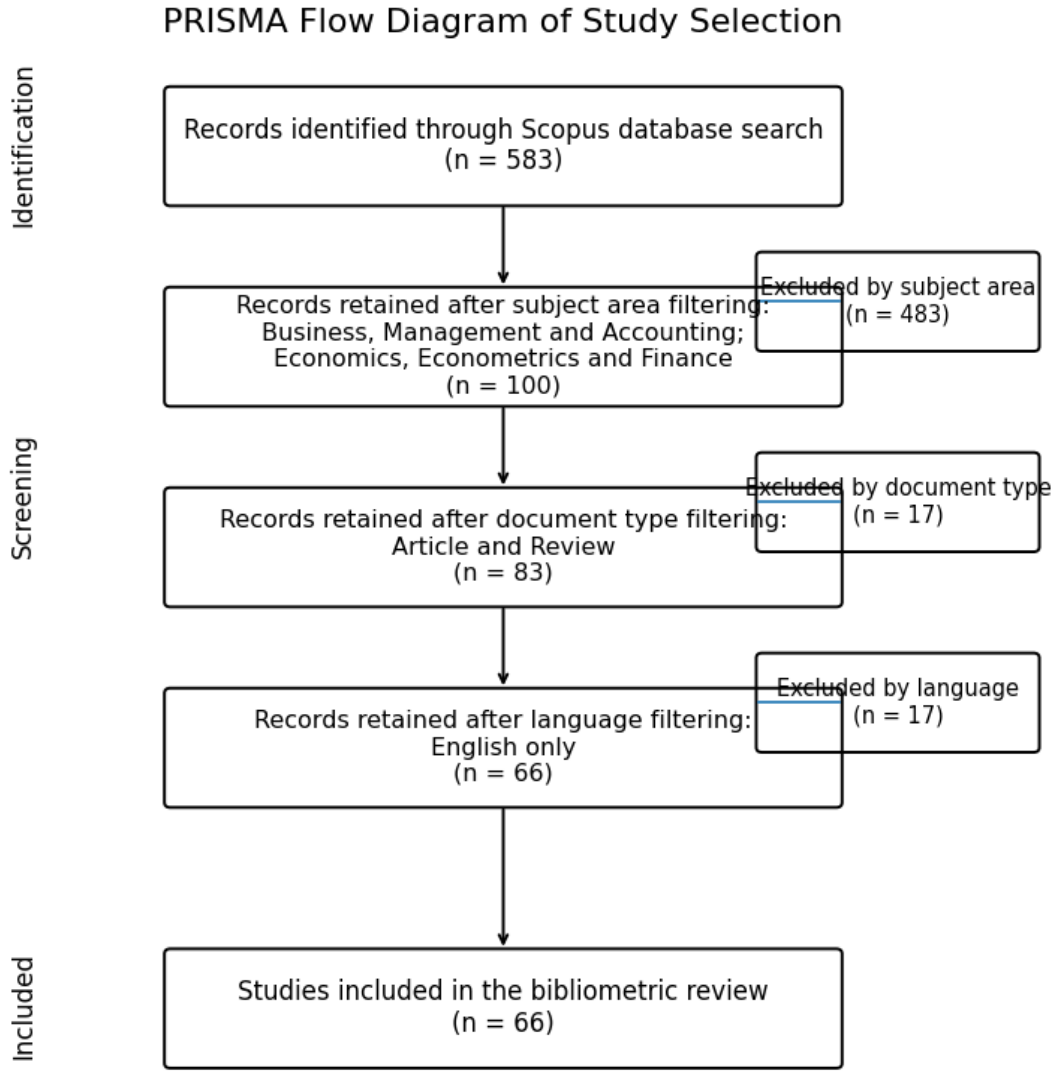

Figure 1. PRISMA flow diagram of study selection.

The bibliometric analysis was structured in four stages. First, performance analysis examined annual scientific production, source productivity (Bradford's Law), and country-level contributions. Second, citation analysis identified the most-cited documents globally and the average annual citation impact. Third, keyword co-occurrence analysis (using both Keywords Plus and Author Keywords) was conducted to identify thematic clusters and map the intellectual structure of the field. Fourth, source impact analysis examined the local H-index of publishing venues within the dataset. Visualizations were generated using Biblioshiny's built-in tools. Throughout the analysis, we paid particular attention to the representation of resource-dependent and peripheral contexts within each analytical dimension, which distinguishes this review

from previous general bibliometric surveys of the shrinking cities literature.

Several methodological limitations should be acknowledged. The search was limited to Scopus, which may exclude relevant publications indexed only in Web of Science, Google Scholar, or regional databases (e.g., eLibrary.ru for Russian-language scholarship). The two-block Boolean search design intentionally prioritizes contextual relevance over comprehensiveness: the 66 retained articles represent the intersection of urban shrinkage with resource-dependent, peripheral, and transformational dimensions, not the full corpus of shrinking cities research (which exceeds 3,000 publications in Scopus). This design is appropriate for the research questions posed, but means that the descriptive statistics (e.g., annual production trends, journal rankings) apply to the filtered subset rather than to the field. Finally, restricting the analysis to English-language publications may underrepresent research from China, Russia, and other non-Anglophone countries where significant urban shrinkage research is published in national languages.

Results

The final dataset comprises 66 documents published between 1980 and 2025 in 28 distinct sources, authored by 170 researchers. The average number of co-authors per document is 2.85, and the international co-authorship rate is 15%. Table 1 presents the main descriptive statistics of the dataset.

Table 1. Main information about the dataset

Indicator	Value
Timespan	1980–2025
Documents	66
Sources (journals)	28
Average citations per doc	25.76
Authors	170
Average co-authors per document	2.85
International co-authorship	15%
Average citations per document	22.73
Annual growth rate	4.73%

Figure 2 shows the temporal distribution of publications. The dataset reveals three distinct phases. The pioneering phase (1980–2012) contains only 3 publications, representing isolated studies on urban decline in Western countries. An inflexion point occurred around 2013, coinciding with the publication of several influential conceptual and comparative works on shrinking cities (Martinez-Fernandez et al., 2012; Frazier & Bagchi-Sen, 2013). The growth phase (2013–2019) produced 16 articles as the research topic gained systematic attention, particularly from Chinese scholars studying resource-exhausted cities. The acceleration phase (2020–2025) accounts for 47 articles (71.2% of the dataset), confirming that research at the intersection of urban shrinkage and resource-dependent/peripheral contexts has entered a period of rapid development.

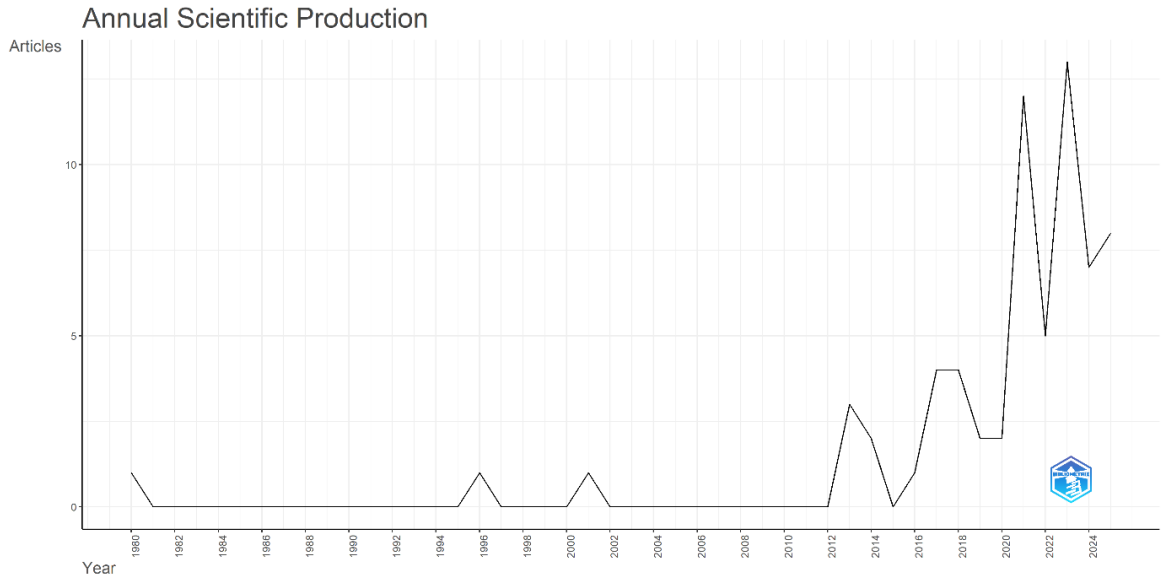

Figure 2. Annual Scientific Production

The average citation impact varies substantially across publication cohorts (Figure 3). Articles from 2017–2018 achieve the highest average citations (approximately 17.5 per article per year), reflecting the seminal status of works by He et al. (2017) and Wolff (2018). More recent publications (2023–2025) show lower absolute citation counts but higher annual citation accumulation rates, suggesting growing scholarly engagement with the topic.

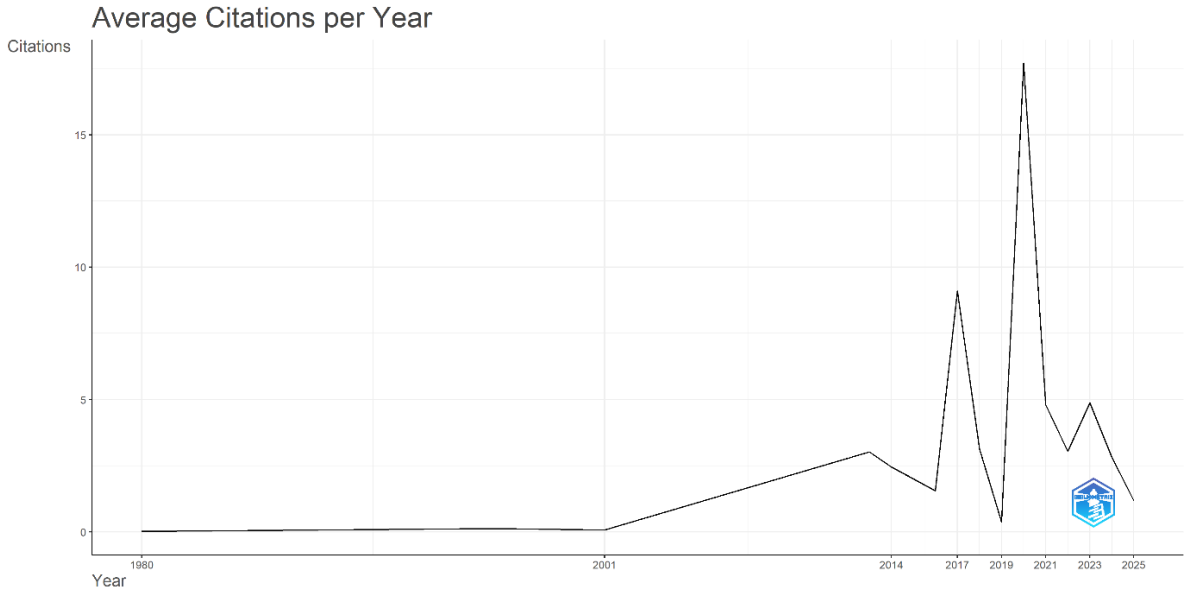

Figure 3. Average Article Citations per Year

Analysis of publishing venues reveals a highly concentrated distribution consistent with Bradford's Law of Scattering (Figure 4). Cities is the dominant outlet with 21 articles (31.8% of the dataset), followed by Applied Geography with 9 articles (13.6%) and Regional Research of Russia with 3 articles (4.5%). Together, these three journals account for exactly half of all publications. The remaining 33 articles are distributed across 31 journals, each contributing one or two articles. This concentration pattern indicates that research on urban shrinkage in resource-dependent and peripheral contexts is published predominantly in established urban studies and geography journals, while specialized outlets for regional economics or spatial econometrics (e.g., Journal of Regional Science, Papers in Regional Science, Spatial Economic Analysis) are absent from the dataset.

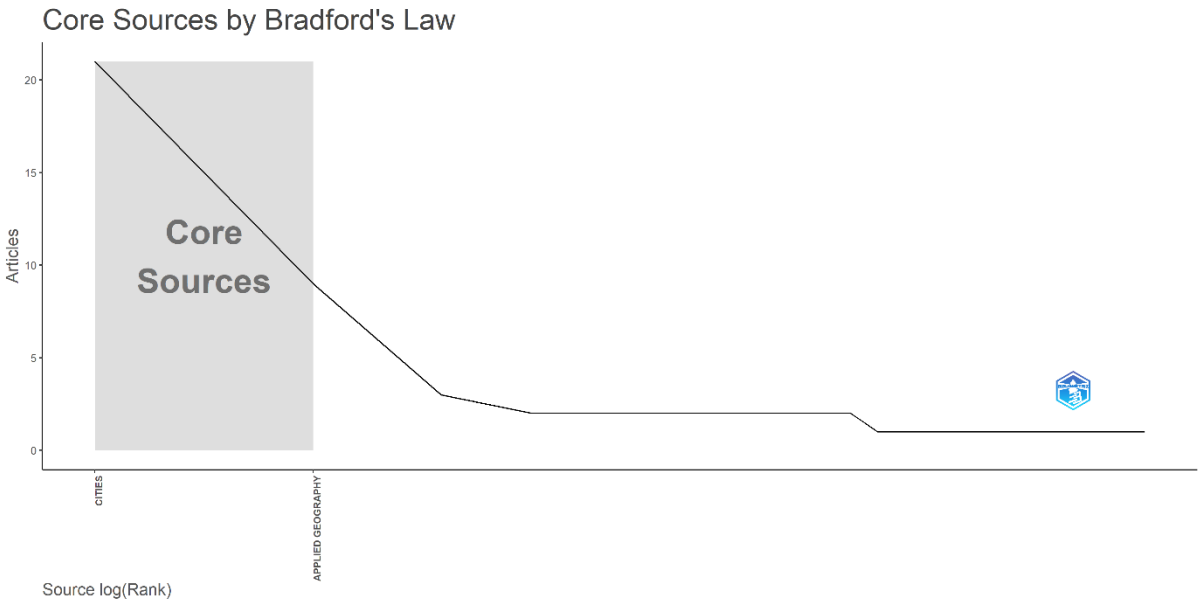

Figure 4. Most Relevant Sources and Bradford's Law distribution

Source impact analysis using the local H-index confirms the dominance of *Cities* (H-index = 13), followed by *Applied Geography* (H = 8). All other sources have H-index values of 2 or below (Figure 5), indicating that while many journals publish occasional articles on this topic, sustained engagement is concentrated in a very small number of outlets. The Sources' Production over Time analysis (Figure 6) further shows that *Cities* have contributed consistently since the mid-1990s, while most other sources entered the field only after 2020.

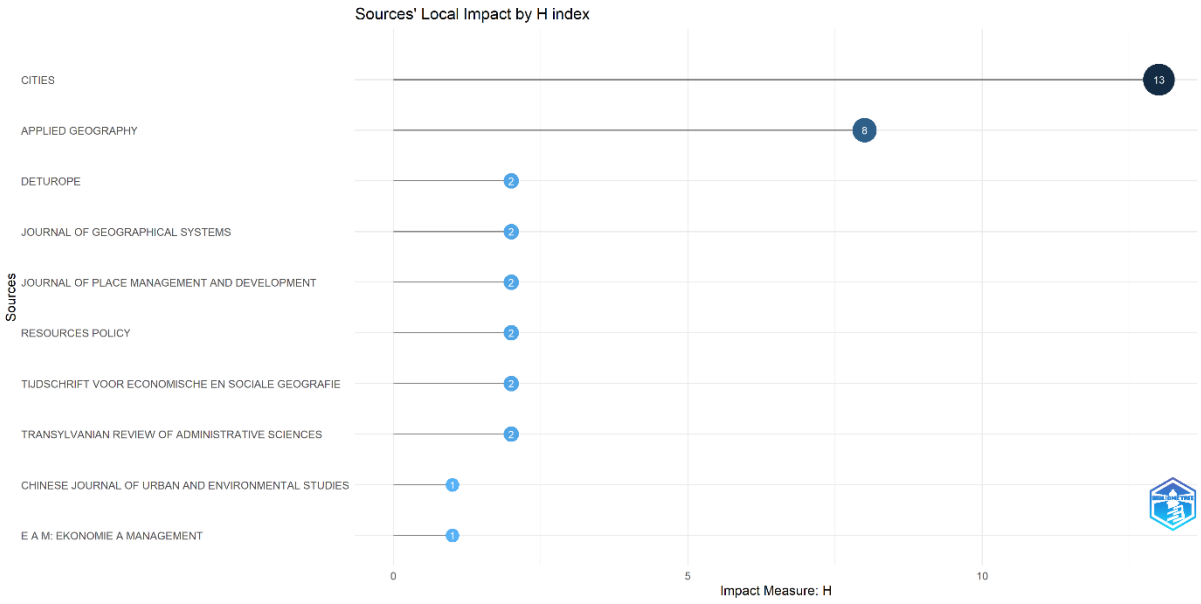

Figure 5. Sources' Local Impact by H-index

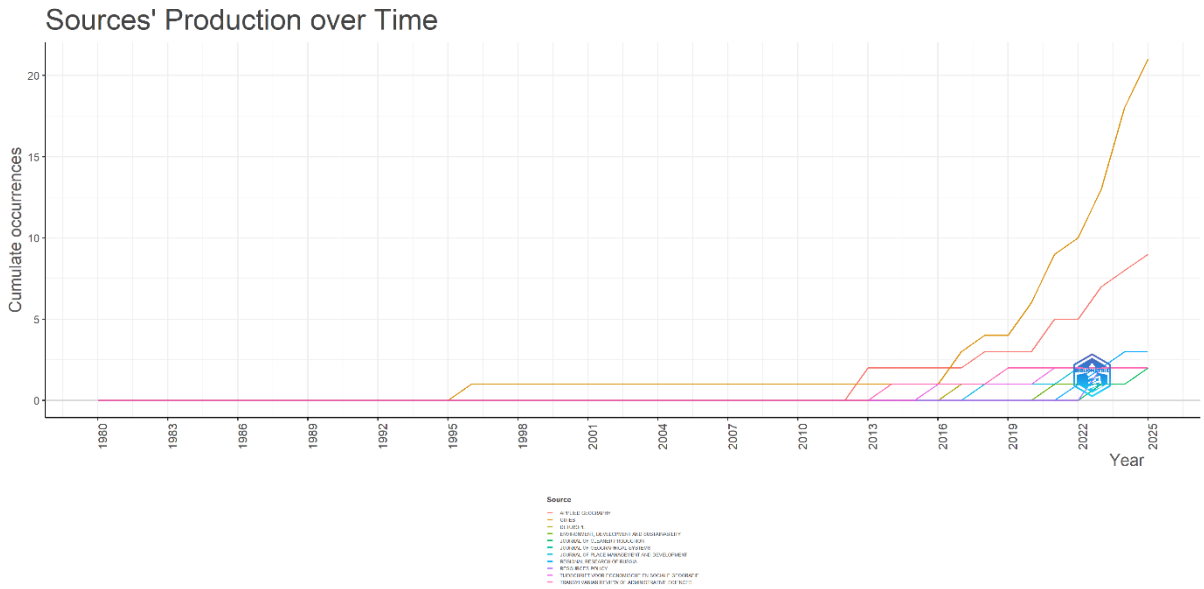

Figure 6. Sources' Production over Time

The geographic distribution of research reveals significant concentration. China-affiliated authors dominate the dataset, reflecting both the empirical prevalence of shrinkage in Northeast China's resource-exhausted cities (He et al., 2017; Guo et al., 2021; Wu & Yao, 2021) and the country's expansion of research capacity in urban studies. Germany and the United States form a secondary research core, grounded respectively in the East German and Rust Belt shrinkage experiences. European contributions also come from the Netherlands, Hungary, and Poland, often through comparative studies.

Critically, Central Asian countries are virtually absent from the dataset. Kazakhstan, despite exhibiting widespread indicators of urban shrinkage in resource-dependent regions, does not appear as a country of affiliation for the author. Russia contributes only through the Regional Research of Russia (3 articles), despite widespread shrinkage in Siberian and Ural industrial cities. Sub-Saharan Africa and Latin America are also severely underrepresented. This geographic concentration means that the theoretical frameworks, measurement approaches, and policy recommendations generated by the literature are calibrated primarily to Chinese, Western European, and North American contexts, limiting their transferability to post-Soviet and other developing-economy settings.

The most productive authors in the dataset are Wolff, M. (3 articles) and Zhang, X. (3 articles), followed by a group of eight authors with 2 articles each, including Aoki, T., Bagchi-Sen, S., Deng, T., Großmann, K., He, S.Y., Hu, Y., Knight, J., and Li, L. (Figure 7). The author distribution reflects the dominance of Chinese research observed in the geographic analysis. Notably, the prominent European scholars in the broader shrinking cities literature (e.g., Annegret Haase, Dieter Rink) appear with limited contributions in this filtered dataset, suggesting that the resource-dependent and peripheral dimensions of shrinkage represent a distinct sub-community within the larger field.

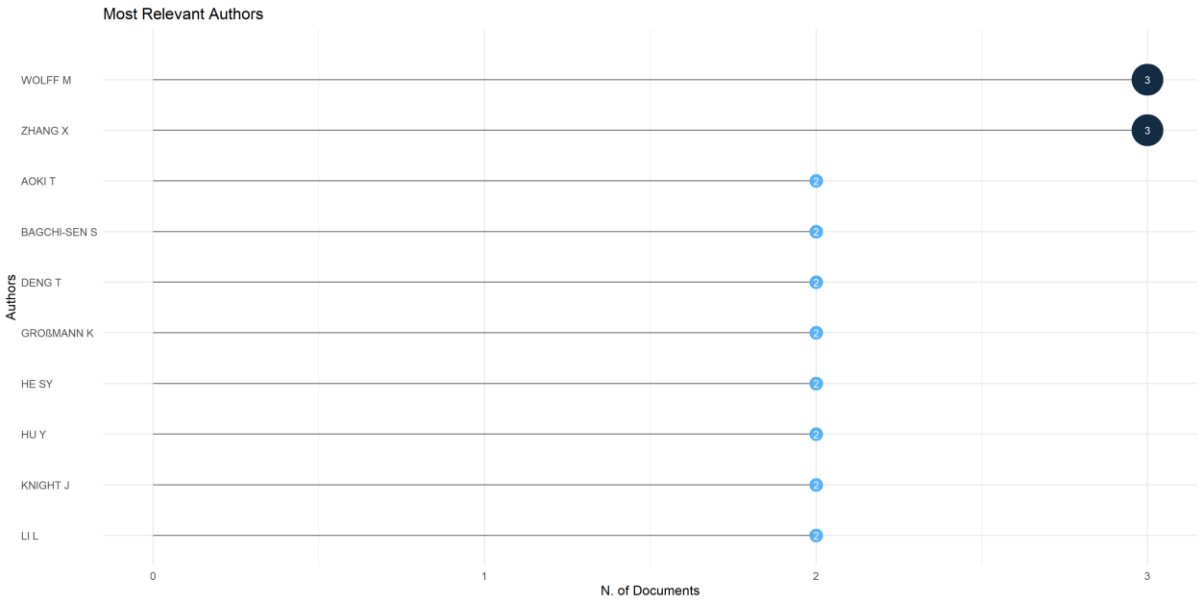

Figure 7. Most Relevant Authors

Table 2 presents the ten most cited documents in the dataset. He et al. (2017), which examines the economic restructuring of China's mining cities, leads with 271 total citations and represents the most direct engagement with resource-dependent shrinkage. Kim and Newman (2020) and Wang et al. (2020) address urban regeneration and local industrial structure, respectively, while Nelle et al. (2017) provide a comprehensive German analysis of entangled shrinkage conditions. The presence of He et al. (2017) and Hu et al. (2021) in the top-cited list indicates that resource-dependent urban shrinkage generates significant scholarly interest when studied, despite being underrepresented in overall publication volume.

Table 2. Top 10 most globally cited documents

Paper		DOI		Total Citations	TC per Year	Normalized TC
Sylvia Y. He, Jeongwoo Lee, Tao Zhou, Dan Wu	2017	Shrinking cities and resource-based economy: The economic restructuring in China's mining cities	CITIES	271	27,10	2,98
Gunwoo Kim, Galen Newman, Bin Jiang	2020	Urban regeneration: Community engagement process for vacant land in declining cities	CITIES	156	22,29	1,26
Jian Wang, Zhuqing Yang, Xuepeng Qian	2020	Driving factors of urban shrinkage: Examining the role of local industrial diversity	CITIES	92	13,14	0,74
Anja Nelle, Katrin Großmann, Dagmar Haase, Sigrun Kabisch, Dieter Rink, Manuel Wolff	2017	Urban shrinkage in Germany: An entangled web of conditions, debates and policies	CITIES	82	8,20	0,90
Amy E. Frazier, Sharmistha Bagchi-Sen, Jason Knight	2013	The spatio-temporal impacts of demolition land use policy and	APPL GEOGR	81	5,79	1,91

		crime in a shrinking city				
Yukun Hu, Zhiyu Wang, Taotao Deng	2021	Expansion in the shrinking cities: Does place-based policy help to curb urban shrinkage in China?	CITIES	69	11,50	2,39
Fuyou Guo, Xiaoqian Qu, Yuanyuan M, Lianjun Tong	2021	Spatiotemporal pattern evolution and influencing factors of shrinking cities: Evidence from China	CITIES	64	10,67	2,22
Manuel Wolff	2018	Understanding the role of centralization processes for cities – Evidence from a spatial perspective of urban Europe 1990–2010	CITIES	59	6,56	2,09
Jason Knight, Russell Weaver, Paula Jones	2018	Walkable and resurgent for whom? The uneven geographies of walkability in Buffalo, NY	APPL GEOGR	48	5,33	1,70
Danning Zhang, Yang Chen	2021	Evaluation on urban environmental sustainability and coupling coordination among its dimensions: A case study of Shandong Province, China	CITIES	48	8,00	1,66

Keyword co-occurrence analysis using Author Keywords was performed in Biblioshiny with the Walktrap clustering algorithm. The analysis reveals three thematic clusters that structure the intellectual landscape of the literature (Figure 8):

1. **Cluster 1 (red): Structural causes and the Chinese context.** This cluster is anchored by "urban shrinkage" and "China," with "population decline" as a prominent associated keyword. It reflects the dominance of Chinese empirical studies examining the structural drivers of urban contraction, including resource exhaustion, economic restructuring, and outmigration from industrial cities in Northeast China (He et al., 2017; Shao et al., 2023). The keyword "resource-based cities" also appears in this cluster, confirming that resource-dependent shrinkage is examined primarily within the Chinese research tradition.
2. **Cluster 2 (blue): Governance, sustainability, and social dimensions.** Centered on the high-frequency keyword "shrinking cities," this cluster includes "urban sustainability," "demolition," "influencing factors," "aging," and "depopulation." It integrates three interrelated research threads: institutional responses to shrinkage (demolition programs, infrastructure rightsizing), environmental and sustainability consequences of urban decline, and social impacts, including demographic aging. The co-occurrence of "urban sustainability" with governance-related keywords indicates growing integration of the shrinkage discourse with the broader sustainable development agenda.

3. **Cluster 3 (green): Measurement and identification.** This small but distinct cluster contains "shrinking city" and "population loss," reflecting methodological work focused on defining and quantifying urban shrinkage. The separation of this cluster from the larger thematic groupings suggests that measurement-oriented research — including the development of composite indices and remote sensing approaches — constitutes a recognizable yet still underdeveloped strand of literature.

Figure 8. Author Keywords co-occurrence network

Notably absent from all three clusters are keywords related to spatial econometric methods (e.g., spatial autocorrelation, spillover effects, spatial weight matrices) or to the investment–migration paradox observed in peripheral resource-dependent economies. This absence confirms that the spatial dynamics of shrinkage and the decoupling of investment from demographic stabilization remain underexplored methodologically.

The thematic map (Figure 9) provides a strategic overview of the field by positioning keyword clusters along two dimensions: centrality (relevance to the broader field) and density (internal coherence of the theme). The upper-right quadrant (motor themes) contains the dominant research clusters — "shrinking cities / China / population decline" and "United States / aging population / depopulation / Japan" — which drive the field and are internally well-developed. The upper-left quadrant (niche themes) includes "Russian Federation / mining industry / resilience" and "comparative study / Europe / population growth," indicating specialized but peripherally connected research strands. Notably, the Russian mining-industry cluster occupies the niche quadrant, confirming that resource-dependent shrinkage in post-Soviet contexts remains isolated from mainstream discourse.

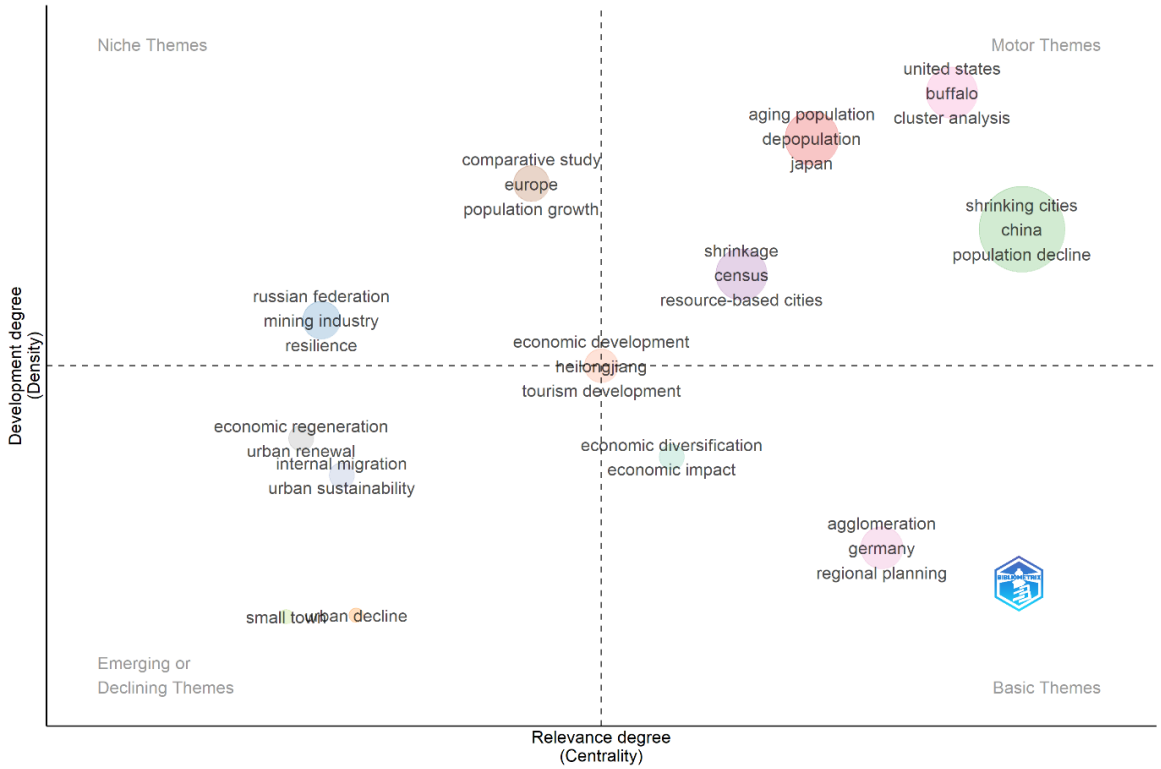

Figure 9. Thematic map of Author Keywords

The lower-right quadrant (basic themes) contains foundational topics such as "agglomeration / Germany / regional planning" and "economic diversification / economic impact," which are central to the field but lack internal development — suggesting these represent widely referenced but undertheorized concepts. The lower-left quadrant (emerging or declining themes) includes "economic regeneration / urban renewal / urban sustainability" and "small town / urban decline," indicating either nascent research fronts or fading topics. The positioning of "urban sustainability" in this quadrant is significant for this review: it suggests that the integration of urban shrinkage research with the sustainability agenda, while growing, has not yet achieved either centrality or internal coherence within the resource-dependent literature.

To directly address the study's focus on resource-dependent territories, a targeted sub-analysis of the 66-article dataset was conducted. Manual screening identified 9 articles (13.6%) that explicitly address resource-dependent urban contexts. Of these, 5 focus on Chinese resource-based cities (He et al., 2017; He & Chen, 2022; Shao et al., 2023; He et al., 2023; Yu et al., 2025), 1 examines a Hungarian peripheral town with resource characteristics (Kovács, 2017), 1 covers Russian resource-dependent cities in the Urals (Averkieva & Denisov, 2022), and 2 address resource-related themes without using the resource-dependency framework explicitly.

This sub-analysis reveals three key patterns. First, research on resource-dependent shrinkage is almost exclusively focused on China, with only isolated contributions from Russia and Hungary. Second, the dominant analytical approach is descriptive-comparative rather than econometric: none of the 9 articles employ spatial econometric methods (Spatial Durbin Models, spatial lag/error models, or spatial weight matrices) to analyze inter-territorial spillovers. Third, the investment–migration paradox — a phenomenon where rising capital investment in resource-dependent territories fails to arrest population outflow — is not systematically examined in any article, despite its policy relevance for countries like Kazakhstan, where this pattern is empirically documented.

4. Discussion

Regarding RQ1, the bibliometric analysis reveals a field that has experienced rapid growth since 2013, with 71.2% of the filtered

dataset published between 2020 and 2025. The literature is concentrated in a small number of high-impact journals (Cities, Applied Geography) and is dominated by research communities from China, Germany, and the United States. The international co-authorship rate of 15% is notably lower than the social science average of approximately 25%, suggesting limited cross-national knowledge transfer.

Regarding RQ2, the geographic analysis reveals significant blind spots. Only 9 of 66 articles (13.6%) directly address resource-dependent territories, and these are overwhelmingly focused on China. Central Asian countries, including Kazakhstan, are absent from empirical research despite exhibiting widespread indicators of urban shrinkage. Russia contributes only marginally through 3 articles in the Regional Research of Russia. This geographic concentration means that the conceptual models, measurement tools, and policy recommendations in the literature are calibrated to Chinese, Western European, and North American contexts, limiting their applicability to post-Soviet resource-dependent economies.

Regarding RQ3, keyword co-occurrence analysis identifies three thematic clusters. Measurement approaches increasingly employ remote sensing data alongside traditional census methods, but composite indices remain underdeveloped. Structural drivers are well documented in Chinese and European contexts but lack spatial econometric modelling. Environmental and governance dimensions are growing but weakly connected to resource dependence. Critically, the investment–migration paradox, which is a key feature of resource-dependent peripheral economies, does not appear as a recognized research theme.

Regarding RQ4, the identified gaps suggest four priority directions for future research, discussed in the following section.

First, there is a need for composite shrinkage indices adapted to non-Western resource-dependent contexts. Existing measurement tools privilege population change as the primary indicator of shrinkage, but in mono-industrial and resource-dependent settings, economic diversification indices, institutional capacity measures, and infrastructure utilization rates may be equally or more relevant. A multi-dimensional index incorporating demographic, economic, institutional, and spatial components would enable more nuanced classification of shrinkage trajectories.

Second, spatial econometric methods should be applied to model interterritorial dynamics. The absence of spatial autocorrelation analysis, Spatial Durbin Models, and spatial weight matrices in the resource-dependent shrinkage literature represents a critical methodological gap. In countries like Kazakhstan, where urban systems are characterized by vast distances, low population density, and strong agglomeration-driven polarization, understanding spatial spillover effects between growing cores and declining peripheries is essential for effective regional policy.

Third, the investment–migration paradox requires dedicated empirical investigation. The coexistence of rising investment and persistent population outflow in peripheral resource-dependent regions challenges fundamental assumptions about the relationship between economic development and demographic stability. Threshold analysis — identifying critical inflexion points at which investment begins to retain population — would provide actionable insights for policymakers.

Fourth, expanded international collaboration is needed to bridge the geographic divide in research coverage. A partnership among Central Asian, Russian, and established European/Chinese research groups would facilitate the adaptation of existing conceptual frameworks and measurement tools to post-Soviet institutional contexts.

This review has several limitations that should inform the interpretation of the findings. The Scopus-only search design may miss relevant publications in Web of Science, Google Scholar, or regional databases. The two-block Boolean search strategy filters the urban shrinkage literature for contextual relevance, producing a focused but non-representative

subset of 66 articles from a field of over 3,000 publications. The English-language restriction underrepresents Chinese-language and Russian-language scholarship. Finally, bibliometric methods capture publication patterns and citation structures but do not assess the substantive quality or validity of individual studies' findings.

5. Conclusion

This bibliometric systematic review of 66 Scopus-indexed articles (1980–2025), filtered for resource-dependent, peripheral, and post-socialist dimensions of urban shrinkage, reveals a rapidly growing but geographically concentrated and methodologically uneven field. Cities and Applied Geography serve as the primary publication outlets. Research is dominated by Chinese, American, and German institutions, while Central Asian and other post-Soviet economies are virtually absent despite experiencing significant urban shrinkage. Only 13.6% of the analyzed articles directly address resource-dependent territories, and none employ spatial econometric methods to model inter-territorial spillover dynamics.

The review identifies four priority areas for future research: the development of composite shrinkage indices for non-Western contexts, the application of spatial econometric models to resource-dependent urban systems, the empirical investigation of the investment–migration paradox in peripheral economies, and the expansion of international research collaboration to fill geographic blind spots. These advances are essential for developing evidence-based regional policies in economies facing the dual challenges of resource dependence and agglomeration-driven territorial polarization.

References

Aria, M., & Cuccurullo, C. (2017). bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of informetrics*, *11*(4), 959-975.

Averkieva, K. V., & Denisov, E. A. (2022). The North of Sverdlovsk Oblast: A system of cities on the edge of the old-developed Urals. Regional Research of Russia, 12(Suppl 1), S176-S185.

BNS ASPIR RK. (2025). Demographic statistics: Dynamic series. Bureau of National Statistics of the Republic of Kazakhstan. https://stat.gov.kz/

Chadegani, A. A., Salehi, H., Yunus, M. M., Farhadi, H., Fooladi, M., Farhadi, M., & Ebrahim, N. A. (2013). A comparison between two main academic literature collections: Web of Science and Scopus databases. arXiv preprint arXiv:1305.0377.

Frazier, A. E., Bagchi-Sen, S., & Knight, J. (2013). The spatio-temporal impacts of demolition land use policy and crime in a shrinking city. Applied Geography, 41, 55-64.

Guo, F., Qu, X., Ma, Y., & Tong, L. (2021). Spatiotemporal pattern evolution and influencing factors of shrinking cities: Evidence from China. Cities, 119, 103391.

Haase, A., Rink, D., Grossmann, K., Bernt, M., & Mykhnenko, V. (2014). Conceptualizing urban shrinkage. Environment and Planning a, 46(7), 1519-1534.

He, S. Y., Lee, J., Zhou, T., & Wu, D. (2017). Shrinking cities and resource-based economy: The economic restructuring in China's mining cities. *Cities*, *60*, 75-83.

He, S. Y., Chen, X., Es, M., Guo, Y., Sun, K. K., & Lin, Z. (2022). Liveability and migration intention in Chinese resource-based economies: Findings from seven cities with potential for population shrinkage. *Cities*, *131*, 103961.

He, T., Song, H., & Chen, W. (2023). Recognizing the transformation characteristics of resource-based cities using night-time light remote sensing data: Evidence from 126 cities in China. *Resources Policy*, *85*, 104013.

Hu, Y., Wang, Z., & Deng, T. (2021). Expansion in the shrinking cities: Does place-based policy help to curb urban shrinkage in China?. *Cities*, *113*, 103188.

Kim, G., Newman, G., & Jiang, B. (2020). Urban regeneration: Community engagement process for vacant land in declining cities. *Cities*, *102*, 102730.

Knight, J., Weaver, R., & Jones, P. (2018). Walkable and resurgent for whom? The uneven geographies of walkability in Buffalo, NY. *Applied geography*, *92*, 1-11.

Kovács, T. (2017). Kisújszállás,'the Cultural Capital of Great Cumania'–Shrinkage, Resilience and Culture-Based Urban Development in East Hungary. *Deturope*, *9*(3), 122-140.

Long, Y., & Gao, S. (2019). Shrinking cities in China: The overall profile and paradox in planning. In *Shrinking cities in China: The other facet of urbanization* (pp. 3-21). Singapore: Springer Singapore.

Martinez-Fernandez, C., Audirac, I., Fol, S., & Cunningham-Sabot, E. (2012). Shrinking cities: Urban challenges of globalization. *International journal of urban and regional research*, *36*(2), 213-225.

Nelle, A., Großmann, K., Haase, D., Kabisch, S., Rink, D., & Wolff, M. (2017). Urban shrinkage in Germany: An entangled web of conditions, debates and policies. *Cities*, *69*, 116-123.
Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., ... & Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *bmj*, *372*.
Rieniets, T. (2009). Shrinking cities: Causes and effects of urban population losses in the twentieth century. *Nature and Culture*, *4*(3), 231-254.
Shao, S., Zhang, X., & Yang, L. (2023). Natural resource dependence and urban shrinkage: The role of human capital accumulation. *Resources Policy*, *81*, 103325.
Wang, J., Yang, Z., & Qian, X. (2020). Driving factors of urban shrinkage: Examining the role of local industrial diversity. *Cities*, *99*, 102646.
Wolff, M. (2018). Understanding the role of centralization processes for cities–Evidence from a spatial perspective of urban Europe 1990–2010. *Cities*, *75*, 20-29.
Wu, K., & Yao, C. (2021). Exploring the association between shrinking cities and the loss of external investment: An intercity network analysis. *Cities*, *119*, 103351.
Yu, W., Zhang, S., Zhong, Y., Wang, H., Yang, Y., Pang, E., ... & Zhou, H. (2025). How can resource-based cities respond to urban shrinkage within a resilience framework. *Journal of Cleaner Production*, *530*, 146886.

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