

# Frontier Revitalisation of Industrial Heritage with Urban–Rural Fringe in China

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**Abstract:** The urban–rural fringe is at the forefront of the confrontation between the agricultural and industrial civilisations. How to handle the relationship between the two civilisations in this region and ensure its sustainable development is an eternal topic in the science of the human-living environment. Thanks to the special historical background of the Third Line construction, China's industrial heritage connects with the urban–rural fringe that surpasses other countries. For the first time, this study connects China's Third Line construction, industrial heritage, and urban–rural integration within the same context, combining big data bibliometric methods to obtain the development characteristics and context of China's industrial heritage research starting from 2004. It has strong policy characteristics, is influenced by administrative orders, and is aligned with urbanisation efforts. Theoretical exploration is the first step in research, followed by value connotations and cultural qualities. It addresses various topics, including industrial heritage conservation, regeneration approaches, and cultural heritage tourism. The research focuses primarily on the value appraisal of industrial heritage, exploring revitalisation tactics and routes, as well as regional development models in urban–rural periphery areas. This study also examines how scholars generally consider the impact of industrial heritage on the economic, social, and cultural development of urban–rural fringe areas in order to integrate and propose various protection and utilisation strategies, such as industrial heritage preservation, cultural and creative industry development, and tourism resource development.

**Keywords:** industrial heritage; urban–rural fringe; revitalisation; cultural heritage; bibliometric analysis; Third Line construction; urbanisation



**Citation:** Gan, T.; Chen, J.; Yao, M.; Cenci, J.; Zhang, J.; He, Y. Frontier Revitalisation of Industrial Heritage with Urban–Rural Fringe in China. *Buildings* **2024**, *14*, 1256. <https://doi.org/10.3390/buildings14051256>

Academic Editor: Haifeng Liao

Received: 21 March 2024

Revised: 18 April 2024

Accepted: 24 April 2024

Published: 29 April 2024



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## 1. Introduction

China's large-scale industrialisation has been carried out for decades, improving the urbanisation and manufacturing capacity of the country. It has also produced rich industrial heritage resources [1–3]. These heritages are witnesses to history and important commemorations of China's industrialisation process [4]; however, with the acceleration of urbanisation and the rapid advancement of economic development, many industrial heritage sites face serious damage and even loss, especially in the urban–rural fringe [5,6]. The balance between the protection of industrial heritage and urban–rural development, as well as mutual assistance for sustainable development, has created urgent urban, ecological, and cultural problems to be solve.

The Third Line constructions in the 1960s and 1980s involved a series of industrial construction measures the Chinese government took in the context of national security strategy and economic development needs [7]. The strategic layout of this national construction aimed to achieve independence in the national economy in addition to the dispersion of the military industry while promoting the economic development and urbanisation of inland areas [8]. The urban–rural fringe is where cities and rural areas penetrate and

depend on each other, acting as the intersection of urbanisation and rural development [9]. China's industrial heritage differs from the international experience due to the special historical background of constructing the Third Line [10]. Because of this background, the development of China's urban–rural fringe is closely related to the protection of industrial heritage. The urban–rural fringe area has become important for economic development and population migration due to its geographical location and resource advantages [11]. However, the development of urban–rural fringe areas often accompanies urbanisation and industrialisation issues in industrialisation [12]. The protection and utilisation of industrial heritage have become one of the major challenges in the development of urban–rural fringe areas [13].

On one hand, protecting industrial heritage helps to maintain historical memory and cultural heritage, promoting the development of cultural industries; on the other hand, the rational utilisation of industrial heritage resources can also provide new impetuses for the economic transformation and social development of urban–rural fringe areas [14,15]. According to the conference charter of the 19th National Conference on the Protection and Utilisation of Industrial Heritage, industrial heritage protection and utilisation have been listed as one of the key tasks of current cultural heritage work [16].

The urban–rural fringe areas in China have become important regions for economic development and population migration due to their geographical location and resource advantages [17]. However, the development of urban–rural fringe areas often accompanies urbanisation and industrialisation issues in industrialisation [18]. The protection and utilisation of industrial heritage have become a major challenge in the development process of urban–rural fringe areas [19]. On one hand, protecting industrial heritage helps to maintain historical memory and cultural heritage, promoting the development of cultural industries; on the other hand, the rational utilisation of industrial heritage resources can also provide new impetuses for the economic transformation and social development of urban–rural fringe areas [20,21]. Therefore, studying how to balance the protection of industrial heritage with the development of urban–rural fringe areas has important theoretical and practical significance.

The protection of China's industrial heritage started relatively late, and it was not until the Wuxi Conference in 2004 that it began to attract widespread attention and substantive action. Compared to traditional industrial countries, China's industrial heritage protection is still in the initial and exploratory stage. From the academic research perspective, this study explores China's industrial heritage's formation, evolution, and value by integrating knowledge from multiple disciplines, such as its unique history, geography, economy, society, and culture [22]. At the same time, combined with the development of urban–rural fringe areas, this study explores the impact and role of industrial heritage on the development of urban–rural fringe areas. This kind of research not only helps to deeply understand the connotations and characteristics of China's industrial heritage but also provides theoretical guidance and practical support for protecting industrial heritage, promoting both the development of urban–rural integration and sustainable development.

In recent years, research on protecting industrial heritage and developing urban–rural fringe areas has gradually increased [23–26]. However, existing research is often limited to a specific region or type of industrial heritage, lacking a comprehensive understanding of the overall situation [27–29]. At the same time, existing research often stays at the theoretical level, lacking in-depth exploration of practical issues, rarely studying industrial heritage in the context of human settlements. Therefore, it is necessary to conduct comprehensive research on this to understand better the relationship between industrial heritage protection and the development of urban–rural fringe areas while providing a scientific basis for formulating and implementing relevant policies, particularly in China, a place with the most rapidly rising industrial heritage and one of the most dense populations in regard to people living in urban–rural fringe areas [30].

The motivation of this study is to fill this gap from an academic research perspective, exploring the related issues of industrial heritage protection and the development of

urban–rural fringe areas, while combining the research direction and hot topics of industrial heritage with the development of urban–rural fringe areas and providing comprehensive development suggestions. This study will be based on existing research findings and expand the scope of the research in a targeted manner to better address the current challenges. We will draw on research achievements in relevant fields and conduct in-depth analyses based on the actual situation in China. Through the application of bibliometrics and knowledge graphs, as well as comparisons and induction, we will extract industrial heritage protection and development models suitable for the urban–rural fringe of China, providing a reference for research and practice in related fields.

## 2. Literature and Terminology

### 2.1. Third Line Construction

The term “Third Line”, also called “Third Front”, refers to the categorisation of coastal and border areas into third lines: the First Line includes coastal and border regions, the Third Line encompasses inland areas such as Sichuan, Guizhou, and Shaanxi, and the Second Line lies in the central region between the First and Third Lines [31]. The Third Line construction, a proprietary concept, involved extensive development of national defence, science, technology, industry, and transportation infrastructure across 13 provinces and regions in Central and Western China from 1964 to 1980 [32]. The imperative of war readiness guided this initiative.

The Third Line construction marked a significant chapter in China’s economic history, constituting a large-scale industrial migration process against the backdrop of the Sino–Soviet conflict and the US offensive along the southeastern coast [33]. Its implementation significantly bolstered China’s national defence capabilities, optimised the productivity layout, and propelled industrialisation and urbanisation in the Central and Western regions [34,35].

However, challenges of urbanisation persisted due to the social and economic underdevelopment of the Third Line regions, compounded by historical and industrial constraints [36]. Enterprises and units established during this period faced prolonged difficulties in operation and development [37]. As times changed, circumstances evolved, and industries underwent upgrades while substantial industrial heritage and regional development issues accumulated over time [38].

### 2.2. Industrial Heritage of Third Line Construction

According to the National Industrial Heritage List released by the Ministry of Industry and Information Technology of China, since 2017, over 80% of the projects on the list have originated from Third Line construction [39]. In addition, the list clearly states the scope of application for recognising China’s national industrial heritage, *mainly including production and storage facilities such as factories, workshops, and mining areas built before 1980, as well as other industry-related social activity venues* [40]. The year 1980 here is based on the end time of the Third Line construction as the standard [41]. Objectively speaking, the Third Line construction has promoted the establishment of modern industry in China [42]; therefore, when discussing the protection of industrial heritage from the perspective of human settlement environment development, the industrial heritage left behind by the Third Line construction can represent China’s industrial heritage. When discussing protecting China’s industrial heritage, constructing the Third Line is also an indispensable core term.

### 2.3. Location Distribution of Industrial Heritage

The theory of industrial geographical location explains the reasons for the distribution of industrial geography and the optimal location selection [43]. In response to the special situation in China, this study proposes several types of relationships between industrial heritage and cities based on the theory of industrial geographical location: the independent suburban system, the urban fringe system, the urban centre system, and the industrial historical urban system.

### 2.3.1. Independent Suburban System

The independent suburban system is located in suburban and wilderness areas far from the city. Due to being far from the city and having scattered construction elements, it has formed independent industrial-production and living areas, mostly involving old industrial areas left over from the Third Line construction period or industrial wasteland limited by natural resources [44,45]. The construction of the Third Line has improved transportation in the western region and strengthened China's defence industry system. Many key enterprises and bases in the mechanical, energy, and raw material industries have been built in the western region, greatly improving China's industrial layout. Several important railway and highway trunk and branch lines have been constructed successively, improving the transportation conditions in the western region, promoting local economic development and social progress while laying a certain foundation for solving the development gap between the east and west and carrying out the western development [46–48].

### 2.3.2. Urban Fringe System

There is no unified theory or model for dividing urban fringe areas (also known as urban–rural fringe areas, urban expansion areas, and urban–rural border areas) and urban shadow areas [49]; however, there are mainly three representative models:

- The suburban model refers to the pastoral and scenic areas within the jurisdiction of a city, surrounding the urban land and serving the agricultural and sideline economic areas of the city.
- Urban edge is an important component of the urban regional structure, generally referring to the area connected between urban built-up areas and vast rural areas. It is a transitional area from the urban environmental space to the rural environmental space.
- Urban–rural fringe mainly refers to the boundary area between cities and suburbs. The surrounding areas are mostly suburban and external transportation hubs. The industrial heritage left by the construction of the Third Line belongs more to this category [11,50,51].

### 2.3.3. Urban Centre System

The urban centre is where urban residents engage in public activities, and it can be a square, street, or area; it is also known as an urban public centre [52]. The city centre often reflects the characteristics and style of the city [53]. The industrial heritage in the central urban area is mostly the product of early industrialisation in the city, located in docks and storage areas with convenient transportation; in other words, it is due to the early industrial production in the city's suburbs [54]. However, with the development and expansion of cities, these industrial areas are gradually surrounded by cities and incorporated into the city centre.

### 2.3.4. Industrial Historical Urban System

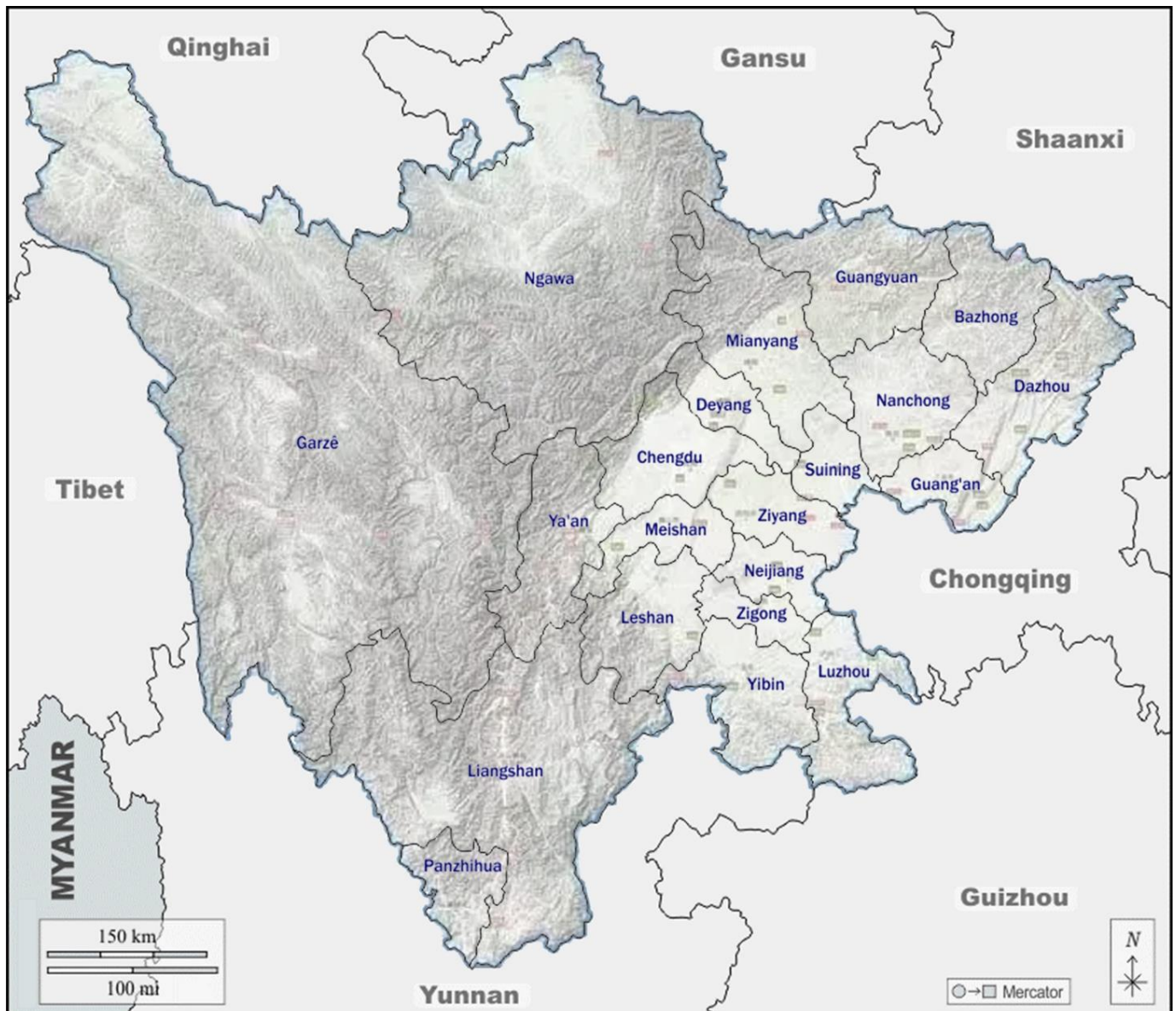
Urban areas are industrial-production and worker-residential areas, and industrial activities are inseparable from urban areas [55]. Meanwhile, these industrial towns are also resource-based towns that emerged locally due to the exploitation of natural resources [56]. The charm of historical towns cannot be separated from the support of important historical buildings, and industrial cities cannot be separated from the support of unique industrial buildings and their landscapes. However, they need to be combined with the characteristics of the times to maintain prosperity.

## 2.4. Industrial Heritage in Urban–Rural Fringe in China

The underlying logic of the Third Line construction is establishing industrial facilities far away from densely populated areas such as the Sichuan Province, an extremely important strategic rear, southwestern region, and geopolitical hinterland in China (Figure 1). At the same time, the natural barrier in Sichuan, with high mountains and deep valleys,



fully conforms to the Third Line construction policy of *relying on mountains, concealment, and dispersion* [57].



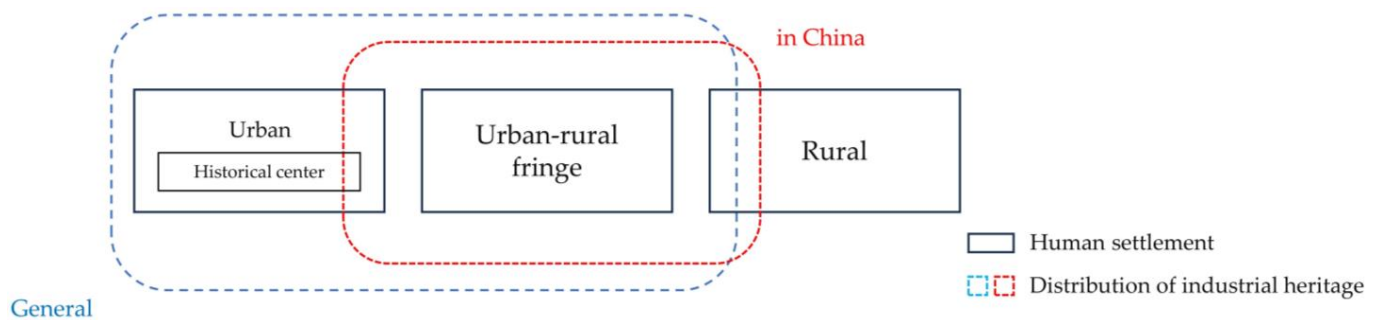
**Figure 1.** The topography and landforms of Sichuan Province.

However, at the micro level, due to the demand for industrial-production, apart from military construction with confidentiality requirements in deep mountains and forests, more industrial facilities are set up in the urban–rural fringe [58]. The main reasons for doing so are focused on the following aspects:

- Resource advantage: Urban–rural fringes usually have abundant natural resources, such as hydraulics and minerals. Choosing urban–rural fringes for production can better utilise local resources [59].
- Reducing costs: Building industrial bases in urban centres often results in land scarcity and high labour costs. However, urban–rural fringes have relatively spacious land and lower labour costs, which helps to reduce construction and production costs [60].
- Security factors: Concerns about possible external military threats were a consideration factor. Urban–rural fringes are relatively remote, and it is easier to carry out military protection, improving the country’s security [61].

- Reducing environmental impact: Heavy industries significantly impact the environment on average. Building in urban–rural fringes can reduce environmental pollution and disturbances to urban residents [62].

Several years after the construction of the Third Line, some of the places where these industrial facilities were originally built have developed into urban areas (Figure 2). In contrast, others have returned to being rural areas due to the end of production activities, although more still belong to the urban–rural fringe. The development of the urban–rural fringe promotes rural modernisation, improves ecological civilisation, realises complementary resources between urban and rural areas, constructs a balanced regional economic pattern, promotes common prosperity between urban and rural areas, and helps China comprehensively build a socialist modernised country.



**Figure 2.** Unique China's industrial heritage distribution in the system of human settlement.

### 3. Method and Data

#### 3.1. Methodology

CiteSpace is a software developed based on Java that abstracts and visualises unquantifiable scientific literature knowledge through data analysis [63]. Its reliability has been widely recognised in academia, and it is a popular software for knowledge-graph research [64]. This article uses the software CiteSpace V.6.2.R2 Advanced. It mainly selects algorithms, such as Keyword, Category, and Reference, to conduct multivariate clustering analysis on the research regarding Chinese industrial heritage using pathfinding and network slicing. After performing visualisation operations, it adjusts and optimises the form of graph analysis; combines with Microsoft Excel to analyse the number of publications, discipline situations, countries and keywords; and conducts research for sorting and citation surge analysis. Finally, through knowledge graphs, visual analysis, statistical tables, etc., combined with analysis software and the RAW Graphs 2.0 mapping platform, the research status, hotspots, frontiers, and development trends of literature in industrial heritage protection in China are presented and described.

The text repeatedly uses the highlighting function to find turning points in a certain field. Afterwards, based on the results of the quantitative analysis, and combined with the special situation of China's industrial heritage, a qualitative analysis will be conducted on the sustainable development of the urban–rural fringe.

#### 3.2. Data Source

##### 3.2.1. Database

Web of Science is an academic literature retrieval tool provided by Clarivate Analytics [65,66]. This platform contains high-quality, authorised academic journals, conference papers, and other academic literature resources from multiple disciplinary fields [67]. Core Collection is the core part of the Web of Science, covering literature information since the establishment of the Science Citation Index [68]. It is one of the most important academic databases, being widely used by researchers, scholars, and research institutions worldwide [69,70], in addition to being one of the most popular and authoritative databases for bibliometric research.

### 3.2.2. Data Acquisition

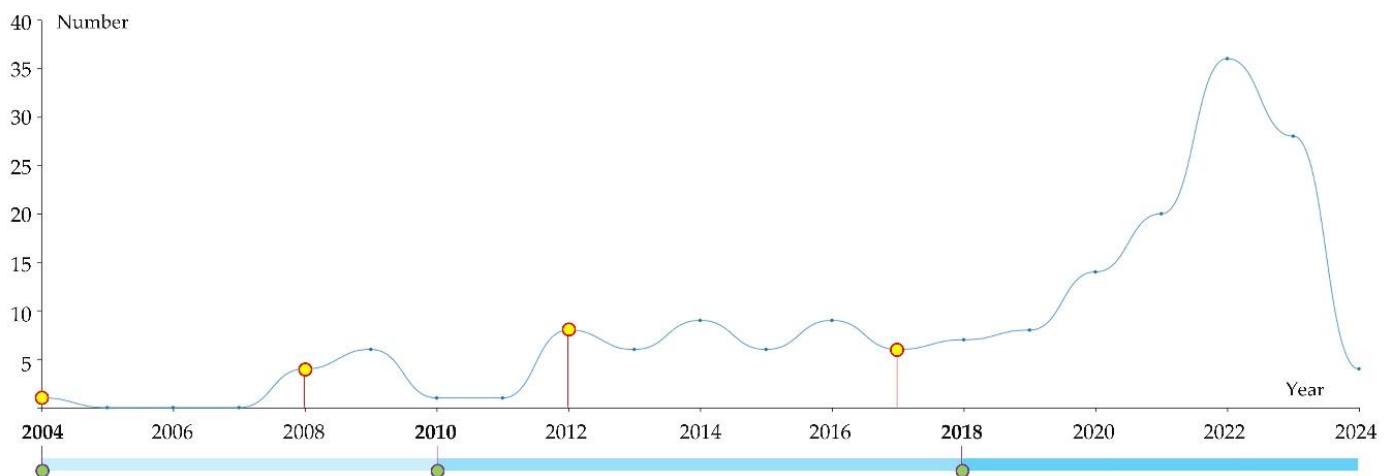
The research data in this article comes from the WoS core collection, which mainly conducts advanced searches based on “research papers”. Combining the type of literature and the actual quality of the literature, all published from 2004 to 2024, and using the search keywords *industrial heritage* and *China*, we begin at 2004 in examining industrial heritage protection in China. The initial search obtained 210 results, and 173 useful data were finally obtained after deduplication and data cleaning. We exported and saved the literature according to the format required for software analysis as a sample database for the research and analysis in this article. The data was obtained on 1 February 2024. Subsequently, manual data cleaning was carried out, mainly to eliminate duplicate and low-relevance articles. After careful sorting and investigation, meaningless projects were eliminated, and the software analysis was imported on 1 March 2024.

## 4. Results

### 4.1. Research and Development Path

#### 4.1.1. Path of Industrial Heritage Revitalisation in China

The temporal variation in research publication can reflect the research situation during a certain period in the research field, acting as an important indicator of the development of the research field [71,72]. This study summarises the publication dates and quantities of 173 articles studying China’s industrial heritage. There are several important time nodes. Considering the historical background of these nodes, this study found that the promotion of China’s industrial heritage protection has very clear policy relevance and is closely related to the dominant direction of government work (Figure 3).



**Figure 3.** Development path of China’s industrial heritage protection with significant nodes.

- In 2004, the Wuxi Proposal issue was the official starting node for protecting China’s industrial heritage [73].
- In 2008, Beijing successfully reported the Summer Olympics. To ensure the smooth hosting of the Olympics, Beijing carried out large-scale urban renewal work, upgrading and transforming many industrial heritage sites [74]. The concept of industrial heritage gradually entered the public eye.
- In 2012, the CCP Government included industrial heritage in the preliminary list of China’s world cultural heritage for the first time [75].
- In 2017, the National Industrial Heritage List was released [76]. As a result, the protection of industrial heritage entered a period of rapid development.

Due to China’s special national conditions, land is under public ownership, and the CCP government controls the promotion of urban construction; therefore, the centralised system leads to the relationship between the government and urban and rural develop-

ment [77]. The government is the leading force, and its functions grasp the direction of urbanisation and rural revitalisation, playing a guiding and management role [78]. This inevitably includes the development of the urban–rural fringe.

#### 4.1.2. Path of the Correlation between Industrial Heritage and Urban–Rural Fringe in China

Both the development of China’s industrial heritage protection and the development of urban–rural fringe areas have shown a mutually reinforcing relationship at a time node at the beginning of the 21st century [79]. With the promotion of urban–rural integration, people’s attention to the protection of industrial heritage has increased, and relevant policies and practices have also been further improved and promoted [80].

- 2000 to 2010

Development stage of urban–rural fringe: During this period, the Chinese government focused on promoting integrated urban–rural development and proposed relevant policies and plans [81]. Urban–rural integration became an important component of the national development strategy, and various regions began to implement policy measures for urban–rural integration [82].

The preliminary stage of industrial heritage protection: During this period, industrial heritage protection had not yet become a mainstream focus. However, some cities began to realise industrial heritage’s historical and cultural value and started to carry out protection work, e.g., some old industrial bases began to explore the practice of protecting and reusing industrial heritage [83,84].

- 2010 to 2018

The policy of urban–rural integration development gradually improved: During this period, the Chinese government increased its policy support for urban–rural integration development and proposed a series of new policies and plans [85]. The development achievements of the urban–rural fringe gradually emerged, and the living standards of urban and rural residents were improved, to a certain extent [86].

The protection of industrial heritage gradually received attention: With the advancement of the development of urban–rural fringe areas, people’s attention to urban industrial history increased, with the protection of industrial heritage gradually receiving more attention [87]. The government and social organisations began investing more resources and energy to protect industrial heritage, formulating relevant policies and plans [88].

- Since 2018

New progress has been made in developing urban–rural integration: The Chinese government has further increased its support for urban–rural integration and proposed a series of new reform policies and measures [82]. The development process of the urban–rural fringe is further accelerating, and the living standards of urban and rural residents continue to improve [89].

Industrial heritage protection has become an important issue: Industrial heritage protection has gradually become an important component of cultural heritage protection, and the country has successively introduced a series of relevant policies and regulations. Various regions have begun to carry out industrial heritage protection work actively, and several successful cases of protection and utilisation have emerged [90]. At the same time, the reuse of urban industrial heritage has become one of the most important means of urban renewal and economic development [91].

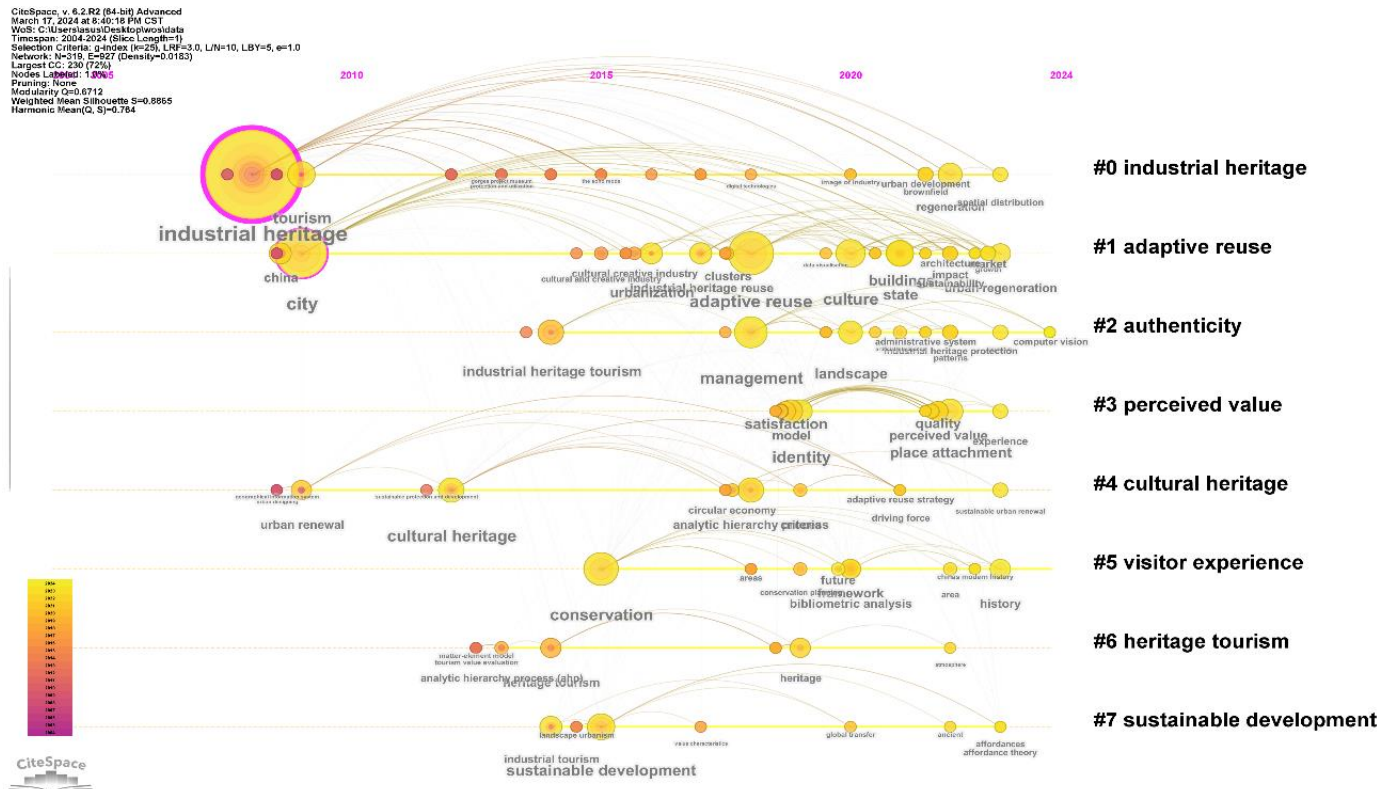
#### 4.2. Research Subject

##### 4.2.1. Research Frontier Trends

The forefront of research is based on a knowledge foundation composed of co-cited literature networks, and, through the analysis of the CiteSpace clustering algorithm, emerging theoretical trends and new topics are identified [92]. As shown in the timeline of



China's industrial heritage research, the cited literature with the highest citation frequency in the top 50 of each time slice was extracted (Figure 4). The LLR algorithm was used for clustering analysis, resulting in seven clustering sets.



**Figure 4.** Timeline of research on Chinese industrial heritage.

The timeline chart outlines the relationships between clusters and the historical span of literature in a certain cluster, which can be used to display the forefront development of research regarding Chinese industrial heritage.

Before 2008, the research literature mainly focused on linear models and did not establish significant research hotspots.

Since 2009, the research content has continuously expanded, encompassing multiple aspects. Early research primarily concentrated on defining the concept of industrial heritage, as well as its protection and restoration, delving into theoretical aspects such as historical and cultural values. Emphasis was placed on protecting industrial heritage buildings, restoration technology, and material research, along with exploring the impact of industrial heritage on social development and cultural inheritance, highlighting its historical significance and cultural connotations.

Between 2015 and 2018, substantial progress was achieved in industrial tourism, value determination, and cultural heritage, among other areas. Exploration commenced in regard to industrial heritage and urban renewal, the application of digital technology towards its protection, as well as the connection to industrial heritage tourism and cultural creative industries. During this period, research predominantly centred on the role and value of industrial heritage in urban renewal, investigating its relationship with sustainable urban development. New technologies, such as laser scanning, 3D modelling, and virtual reality, were also explored to protect, display, and disseminate industrial heritage. Efforts were made to examine industrial heritage's potential and development trajectory in tourism and the cultural creative industries.

Starting in 2018, with the advancement of urbanisation, China's industrial heritage expanded beyond heritage protection to encompass systemic issues in the entire urban

living environment system. There was an exploration of how industrial heritage and social memory could serve as a carrier of social memory, promoting social identity and historical and cultural inheritance. Studies focused on industrial heritage's social impact and transformation, analysing its effects on the local economy, social structure, and environment while investigating the relationship between its transformation and sustainable development.

#### 4.2.2. Research Focus

The keywords/categories highly summarise the main content, academic ideas, research objectives, methods of the paper, and the core ideas [93]. Analysing keywords can provide a preliminary understanding of the topic of the paper. At the same time, several keywords usually appear in a paper, regardless of whether they come from the same field. These keywords in the same article indicate the connection [94].

High-frequency keywords/categories can reflect hot research areas [95]. The co-occurrence map of keywords/categories generated by CiteSpace reveals that the most frequently occurring keywords/categories in China's industrial heritage research include sustainable development, urban renewal and tourism, social impact and transformation, etc., all of which have high centrality and can, to some extent, reflect the hot research areas. Cluster analysis of keywords reveals that the main evaluation directions are concentrated in three hot areas: "Sustainable development", "Urban renewal and tourism", and "Social impact and transformation".

- Sustainable development

This hot topic is committed to promoting sustainable economic and social development while protecting industrial heritage [96]. This study covers multiple aspects, including protection technologies and methods, policy and legal frameworks, social participation and public awareness, economic values and sustainable development, and international exchange and cooperation. Researchers explore how to effectively protect the buildings, facilities, and cultural heritages of industrial heritage while formulating relevant policies and regulations, incorporating them into urban planning and development strategies. In addition, this study promotes the participation and recognition of all sectors of society, as well as the realisation of economic value and sustainable utilisation of industrial heritage (Table 1).

**Table 1.** High-frequency categories/keywords clustering of sustainable development.

No.	Category	Centrality	Year
1	Environmental studies	0.025	35
2	Construction and building technology	0.02	24
3	Engineering, civil	0.11	23
4	Green and sustainable science and technology	0	18
5	Materials science, multidisciplinary	0.65	15
No.	Keyword	Centrality	Year
1	Adaptive reuse	0.08	2018
2	Sustainable development	0.06	2015
3	Regeneration	0	2020
4	Urbanisation	0.01	2016
5	Framework	0.02	2020

- Urban renewal and tourism

This hot topic explores the potential and role of industrial heritage in urban renewal and tourism development. This study involves multiple aspects, including the importance of industrial heritage in urban renewal, its value as cultural heritage, and how to integrate it into urban planning and construction. At the same time, researchers focus on the attractiveness and economic benefits of industrial heritage in cultural tourism, exploring how to attract tourists, promote economic development, and achieve a win-win situation

between industrial heritage protection and urban renewal by exploring the historical and cultural connotations of industrial heritage. This research field also involves public participation, policy support, and experience exchange and cooperation with other cities internationally, jointly promoting the protection of industrial heritage, urban renewal, and sustainable development of the tourism industry (Table 2).

**Table 2.** High-frequency categories/keywords clustering of urban renewal and tourism.

No.	Category	Centrality	Year
1	Hospitality, leisure, sport, and tourism	0.06	12
2	Urban studies	0	9
3	Architecture	0.01	9
4	Management	0.2	6
5	Geoscience, multidisciplinary	0.06	4
No.	Keyword	Centrality	Year
1	Management	0.09	2018
2	City	0.11	2009
3	Tourism	0.03	2009
4	Industrial heritage tourism	0.03	2014
5	Heritage tourism	0.07	2014

- Social impact and transformation

This hot research explores the impact of industrial heritage on social structure, economic development, and cultural heritage, as well as how to promote its transformation and sustainable development. This study covers multiple aspects, including industrial heritage as a carrier of social memory, its impact on urban renewal and economic development, and its position in cultural inheritance and social identity. At the same time, researchers are paying attention to the role of industrial heritage in urban transformation, exploring how to use industrial heritage resources to promote regional economic transformation in addition to upgrading and sustaining social development. In addition, the study also involves the protection and utilisation models of industrial heritage, social participation, and the enhancement of public awareness, jointly promoting the coordinated development of industrial heritage protection and social transformation (Table 3).

**Table 3.** High-frequency categories/keywords clustering of social impact and transformation.

No.	Category	Centrality	Year
1	Social, sciences, interdisciplinary	0.26	11
2	Humanities, multidisciplinary	0.26	10
3	Education and educational research	0	4
4	Transportation science and technology	0	3
5	Art	0.07	3
No.	Keyword	Centrality	Year
1	Conservation	0.09	2015
2	Culture	0.05	2020
3	Place attachment	0.04	2022
4	Analytic hierarchy process	0.01	2018
5	Protection principle	0	2014

The revitalisation of China's industrial heritage is closely related to urban renewal and tourism, sustainable development, and social impact and transformation, all being closely related to revitalising the urban–rural fringe. Industrial heritage has rich historical and cultural connotations and important economic, social, and cultural values in the urban–rural fringe. Firstly, industrial heritage, as one of the important resources in the urban–rural fringe, plays an important role in urban renewal. By protecting and utilising industrial

heritage, new development spaces and innovative driving forces can be provided for urban renewal, promoting the urbanisation process of urban–rural fringe areas. At the same time, industrial heritage also provides important support for the development of tourism in the urban–rural fringe. By exploring the historical and cultural connotations of industrial heritage, we can attract more tourists, promote the prosperous development of the tourism industry, and promote the transformation and upgrading of the economy in the urban–rural fringe. In addition, the protection and sustainable development of industrial heritage are closely related to the development of urban–rural fringe areas. In the urban–rural fringe, the protection and sustainable utilisation of industrial heritage can promote local economic development, improve residents' quality of life, and promote urban–rural integration and development. Therefore, comprehensive consideration of industrial heritage and urban renewal, tourism development, and social impact and transformation will help promote the sustainable development of the urban–rural fringe and achieve comprehensive economic and social improvements.

## 5. Discussion

### 5.1. *Revitalisation of Industrial Heritage in Urban–Rural Fringe*

#### 5.1.1. The Status of Industrial Heritage in the Urban–Rural Fringe

Industrial heritage is a historical heritage of China's urban–rural fringe and an important pillar of its development. With the advancement of industrialisation, many traditional industrial areas have gradually been marginalised or abandoned, leaving behind a large amount of industrial heritage. These heritages reflect the historical footsteps of China's industrialisation and carry the historical and cultural memory of the urban–rural fringe. In urbanisation and rural modernisation, industrial heritage has become a link, connecting cities and rural areas while inheriting urban–rural culture. They are both witnesses of urban development and important resources for rural revitalisation. In the process of urbanisation, industrial heritage is often forgotten or marginalised. However, urbanisation and rural modernisation still exist in a unique form in the landscape of the urban–rural fringe, becoming witnesses to history and witnessing the development and changes in the urban–rural fringe.

#### 5.1.2. The Significance and Value of the Revitalisation

The revitalisation of industrial heritage not only involves protecting historical heritages but also stimulating new vitality in the urban–rural fringe. Firstly, the revitalisation of industrial heritage can drive the development of the local economy. Through cultural and creative industries, tourism, and other means, industrial heritage has become an economic growth point in the urban–rural fringe, creating rich employment opportunities for the local area. Secondly, the revitalisation of industrial heritage has also promoted the industrial upgrading and transformation of the urban–rural fringe, taking industrial heritage as the core and promoting the development of related industries while injecting new impetuses into the integrated development of urban and rural economies. In addition, the revitalisation of industrial heritage also has important cultural and social significance, not only helping to inherit and promote industrial culture but also providing residents with a sense of belonging and pride, promoting social harmony and stability. At the same time, the revitalisation of industrial heritage can also promote communication and interaction between urban and rural areas, strengthening urban–rural integration development and building a harmonious society.

#### 5.1.3. Challenges and Countermeasures

Although industrial heritage revitalisation has significant significance and value, it also faces many challenges. Firstly, industrial heritage protection and utilisation face technological and financial challenges. Many industrial heritage buildings are severely ageing and require repair and protection, which requires substantial funding and professional technical support. Secondly, revitalising industrial heritage requires coordinating multiple interests

and achieving cooperation and win–win outcomes among governments, enterprises, social organisations, and other parties. In addition, industrial heritage revitalisation also needs to focus on sustainable development, avoiding issues such as excessive commercialisation and cultural devaluation. To address these challenges, we can start from the following aspects: increasing government investment in the protection of industrial heritage, encouraging social capital to participate in industrial heritage revitalisation projects, strengthening industrial heritage protection and utilisation planning, promoting innovative development of related industries, and guiding the public to participate in industrial heritage protection and utilisation, jointly promoting the revitalisation and development of industrial heritage.

5.2. Path and Prospects for the Revitalisation of Industrial Heritage in the Urban–Rural Fringe

5.2.1. Keywords Development Path of China’s Industrial Heritage

The development of research hotspots can be reflected through the emergence function of CiteSpace, combined with keyword emergence situations (Table 4).

Table 4. Keyword emergence of China’s industrial heritage.

No.	Category	Year	Strength	Begin	End	2004–2024
1	Implementation strategies	2014	1.72	2014	2016	□□□□□□□□□□■□□□□□□□
2	Automobile industrial heritage	2014	1.72	2014	2016	□□□□□□□□□□■□□□□□□□
3	Protection principle	2014	1.72	2014	2016	□□□□□□□□□□■□□□□□□□
4	Industrial heritage tourism	2014	2.1	2019	2020	□□□□□□□□□□□□□■□□□□
5	City	2009	2.85	2021	2022	□□□□□□□□□□□□□□□■□□
6	Adaptive reuse	2018	2.68	2021	2024	□□□□□□□□□□□□□□□■□□□
7	Place attachment	2022	1.6	2022	2024	□□□□□□□□□□□□□□□■□□■

Firstly, the keyword “City” in 2009 reflects the acceleration of China’s urbanisation process, which has brought about many urban renewal and construction projects, including the transformation and reuse of industrial heritage. During this period, the development of cities required the preservation of historical memories and the updating and optimisation of urban spaces. Due to its unique historical value and spatial attributes, industrial heritage has become an important resource for urban renewal.

With the advancement of urbanisation, three keywords emerged in 2014: “Automobile industrial heritage”, “Protection principle”, and “Industrial heritage tourism”. The automotive industry is an important component of China’s industrial development, and its related industrial heritage has received much attention. The proposal of protection principles reflects the urgent need for industrial heritage protection in the context of urban renewal and economic development. At the same time, the rise of industrial heritage tourism is a response to the diversified utilisation of industrial heritage. It can not only protect industrial heritage but also promote the development of local economies and cultures.

The 2018 Adaptive Reuse emphasised the importance of adaptive reuse in industrial heritage conservation. With the continuous advancement of urban renewal, traditional protection methods can no longer meet the needs of urban development, and adaptive reuse has become a more flexible and effective method of protection.

Finally, the 2022 “Place attachment” reflects people’s emotional attachment to the place. As a local historical symbol and cultural heritage, industrial heritage protection and reuse are cultural conservation behaviours and important means of strengthening community cohesion and identity recognition.

In summary, the emergence of these seven co-occurrence keywords reflects the development trajectory of China’s industrial heritage research over the past two decades, acting as a response to China’s industrialisation and urbanisation process. In addition, it also acts a summary and exploration of the practice of industrial heritage protection and utilisation.



### 5.2.2. Prospects for the Revitalisation of Industrial Heritage in the Urban–Rural Fringe

Industrial heritage plays an important role in developing urban–rural fringe areas, and its protection and reuse strategies are crucial for promoting sustainable economic, cultural, and social development in the region. In China, industrial heritage and other relics with unique historical value left over from the construction of the Third Line are regarded as valuable assets of the urban–rural fringe. Therefore, it is particularly urgent to take effective measures to protect them. However, protecting industrial heritage is not just about historical preservation but also an important means of connecting the past with the future.

Firstly, the protection of industrial heritage needs to follow flexible principles and strategies to meet the diverse development needs of urban–rural fringe areas. This includes adopting comprehensive protection measures to preserve its historical appearance while combining modern technology and designs for reuse to achieve its sustained economic, social, and cultural functions. At the same time, attention should be paid to the original characteristics of industrial heritage and its environmental characteristics, as it should be revitalised in the modern urban–rural fringe through moderate restoration and protection.

Secondly, developing and utilising industrial heritage tourism will become an important engine for promoting economic growth and cultural inheritance in the urban–rural fringe. By carrying out industrial heritage tourism, people can better understand the rich historical and cultural heritage of the urban–rural fringe and enhance their emotional identification and sense of belonging to the local area. This not only attracts more tourists to visit but also creates employment opportunities, promoting income growth for residents and ultimately achieving diversified economic development in the region.

Furthermore, the adaptive reuse of industrial heritage in the urban–rural fringe is an important component of urban renewal. By transforming industrial heritage into new functions, such as creative industry parks, cultural centres, or art galleries, its historical value can be preserved and innovation and entrepreneurship activities can also be stimulated, promoting industrial upgrading and transformation development in the urban–rural fringe.

Overall, integrating industrial heritage protection and developing urban–rural fringe areas is one of the key factors in achieving sustainable development. By adopting comprehensive protection and utilisation strategies, effective protection and inheritance of historical heritage can be achieved while promoting regional economic prosperity and social and cultural prosperity, thereby promoting the development of the urban–rural fringe towards a more liveable, business-friendly, and tourism-friendly direction.

The relationship between industrial heritage and urban–rural fringe is a complex and profound topic involving multiple aspects, such as economy, society, culture, etc. By delving into the relationship between industrial heritage and urban–rural integration, we can better grasp the context of urban–rural development and provide new ideas and methods for achieving urban–rural integration. The revitalisation of industrial heritage is an important means of support for the development of urban–rural fringe areas, but it is also one of the most important methods for achieving the great rejuvenation of the Chinese nation and the Chinese Dream. Only by continuously promoting the industrial spirit and inheriting industrial culture can we promote positive interactions between industrial heritage and urban–rural integration while promoting the prosperity and progress of China's urban–rural integration development.

We have innovatively overlapped conventional bibliometric research, a literature review, as well as theoretical and applied research in this research. For conventional bibliometric research, we selectively selected sections suitable for this study for analysis and elaboration rather than putting all the analysis into the main text, excluding the analysis of certain researchers and research institutions, consequently making the language of the article more concise, the research more meticulous, and the logic more rigorous.

## 6. Conclusions

In modern human history, industry creates cities, and cities carry industry. Chinese industrial heritage has unique characteristics, especially those generated during the Third Line construction period. During this period, the construction of many important industrial facilities, such as military factories, space bases, and nuclear facilities, played a crucial role in the country's national defence and technological development. At the same time, it has promoted the rapid development of many previously underdeveloped areas, forming a series of important industrial towns and infrastructures. These heritages carry the memories and emotions of a generation and have important historical and cultural value. Therefore, protecting and utilising this industrial heritage helps maintain historical and cultural heritage and promotes sustainable economic and social development.

The industrial heritage left over from the Third Line construction is closely related to the urban–rural fringe and is crucial for sustainable development. These industrial heritages have become important pillars of the economy in the urban–rural fringe, promoting the development of local industries and economic growth. At the same time, protecting and utilising these heritage resources has also become a key factor in developing urban–rural fringe areas, promoting the rise of tourism and cultural industries, and enhancing the region's visibility and attractiveness. However, the protection of industrial heritage is closely related to protecting the ecological environment in the urban–rural fringe. It is necessary to pay attention to protecting the ecological environment while protecting and utilising industrial heritage to achieve coordinated development between economic development and the ecological environment. Therefore, strengthening the protection and utilisation of industrial heritage can help promote the sustainable development of urban–rural fringe areas.

Since 2004, research on industrial heritage in China has undergone continuous development and exploration. During this period, with the continuous enhancement of national awareness of cultural heritage protection and sustainable development, industrial heritage research has gradually become one of the focuses of academic and social attention. Researchers have conducted in-depth discussions on the historical evolution, cultural value, protection, and utilisation of industrial heritage, actively exploring the role and significance of industrial heritage in urban renewal, cultural tourism, and industrial transformation. At the same time, introducing and implementing a series of policies and regulations, such as revising the Cultural Relics Protection Law and formulating industrial heritage protection plans, provide legal and policy guarantees for the protection and utilisation of industrial heritage. However, problems include a single research perspective, imbalanced protection and utilisation, and insufficient interdisciplinary research. It is necessary to strengthen academic exchanges and cooperation further while deepening research content and methods to promote better protection and sustainable development of China's industrial heritage. This includes, but is not limited to, academic research directions such as industrial heritage value assessment in urban–rural fringe areas, protection and reuse of industrial heritage in urban–rural fringe areas, community participation and governance mechanisms, integration of cultural heritage and sustainable development, application of interdisciplinary research methods, technological innovation and digital preservation, as well as international experience and comparative research. By conducting in-depth research on these directions, we can better understand the challenges and opportunities of industrial heritage protection in the urban–rural fringe and provide theoretical guidance and policy recommendations for future practices.

Mainly from the keywords co-occurrence analysis by CiteSpace software. Integrating theoretical research with practical applications. To promote the comprehensive development of the urban–rural fringe and effectively protect industrial heritage, the following suggestions are proposed: Firstly, a comprehensive plan should be formulated to incorporate industrial heritage into the urban–rural planning system, clarifying its protection status and importance while integrating it into various aspects of urban–rural development. Secondly, a sound protection mechanism should be established to strengthen the

formulation and implementation of laws and regulations, clarifying the responsibilities of relevant departments and ensuring the effective protection of industrial heritage. Furthermore, we will delve deeper into industrial heritage's cultural connotations and utilisation value, promoting its diversified utilisation (such as cultural tourism and creative industries) and increasing its economic and social benefits. Meanwhile, industrial heritage protection should be combined to promote industrial transformation, and industrial heritage resources should be utilised to promote the upgrading of traditional industries. Additionally, emerging industries should be cultivated, and integrated development of urban and rural economies should be promoted. At the same time, we will strengthen the combination of technological innovation and industrial heritage protection, utilise advanced technology to carry out protection and restoration work, and improve the level of protection. Finally, all sectors of society should be encouraged to actively participate in the protection and utilisation of industrial heritage, and a diversified protection model should be formed that is led by the government, operated by the market, and participated in by society to jointly promote the protection of industrial heritage and the development of urban–rural fringe areas.

**Author Contributions:** Methodology, J.C. (Jeremy Cenci); Software, M.Y.; Investigation, J.C. (Juan Chen); Resources, J.C. (Juan Chen); Writing—original draft, T.G.; Writing—review and editing, J.C. (Jeremy Cenci) and J.Z.; Visualisation, M.Y.; Supervision, Y.H.; Project administration, J.Z. and Y.H. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research was funded by the Sichuan Provincial Science and Technology Department Project (2023NSFSC0360). Le Fonds de la Recherche Scientifique—FNRS (Fund for Scientific Research) and Wallonie-Bruxelles International (WBI), grant number SUB/2020/482272.

**Data Availability Statement:** Not applicable.

**Conflicts of Interest:** The authors declare no conflicts of interest.

## References

- Chen, J.; Judd, B. Relationality and territoriality: Rethinking policy circulation of industrial heritage reuse in Chongqing, China. *Int. J. Herit. Stud.* **2021**, *27*, 16–38. [\[CrossRef\]](#)
- Hepburn, C.; Qi, Y.; Stern, N.; Ward, B.; Xie, C.; Zenghelis, D. Towards carbon neutrality and China's 14th Five-Year Plan: Clean energy transition, sustainable urban development, and investment priorities. *Environ. Sci. Ecotechnol.* **2021**, *8*, 100130. [\[CrossRef\]](#) [\[PubMed\]](#)
- Zhang, J.; Cenci, J.; Becue, V. A Preliminary Study on Industrial Landscape Planning and Spatial Layout in Belgium. *Heritage* **2021**, *4*, 1375–1387. [\[CrossRef\]](#)
- Zarrow, P. Notes on heritage and history in modern China. *Monum. Serica* **2020**, *68*, 439–472. [\[CrossRef\]](#)
- Grigorescu, I.; Dumitrică, C.; Dumitraşcu, M.; Mitrică, B.; Dumitraşcu, C. Urban Development and the (Re) use of the Communist-Built Industrial and Agricultural Sites after 1990. The Showcase of Bucharest–Ilfov Development Region. *Land* **2021**, *10*, 1044. [\[CrossRef\]](#)
- Buchori, I.; Rahmayana, L.; Pangi, P.; Pramitasari, A.; Sejati, A.W.; Basuki, Y.; Bramiana, C.N. In situ urbanization-driven industrial activities: The Pringapus enclave on the rural-urban fringe of Semarang Metropolitan Region, Indonesia. *Int. J. Urban Sci.* **2022**, *26*, 244–267. [\[CrossRef\]](#)
- Tan, G.; Gao, Y.; Xue, C.Q.; Xu, L. 'Third Front' construction in China: Planning the industrial towns during the Cold War (1964–1980). *Plan. Perspect.* **2021**, *36*, 1149–1171. [\[CrossRef\]](#)
- Chen, Y.; Xiang, M. Research Hotspots and Prospects of Third-Tier Construction Industrial Heritage. *World J. Eng. Technol.* **2022**, *10*, 473–486. [\[CrossRef\]](#)
- Zhao, P.; Wan, J. Land use and travel burden of residents in urban fringe and rural areas: An evaluation of urban-rural integration initiatives in Beijing. *Land Use Policy* **2021**, *103*, 105309. [\[CrossRef\]](#)
- Liu, Y.; Zhou, Y. Territory spatial planning and national governance system in China. *Land Use Policy* **2021**, *102*, 105288. [\[CrossRef\]](#)
- Li, G.; Cao, Y.; He, Z.; He, J.; Cao, Y.; Wang, J.; Fang, X. Understanding the diversity of urban–rural fringe development in a fast urbanizing region of China. *Remote Sens.* **2021**, *13*, 2373. [\[CrossRef\]](#)
- Ma, W.; Jiang, G.; Li, W.; Zhou, T. How do population decline, urban sprawl and industrial transformation impact land use change in rural residential areas? A comparative regional analysis at the peri-urban interface. *J. Clean. Prod.* **2018**, *205*, 76–85. [\[CrossRef\]](#)
- Verdini, G.; Wang, Y.; Zhang, X. *Urban China's Rural Fringe: Actors, Dimensions and Management Challenges*; Routledge: London, UK, 2016.

14. Nilson, T.; Thorell, K. Cultural Heritage Preservation: The Past, the Present and the Future. 2018. Available online: <http://www.diva-portal.org/smash/get/diva2:1224014/FULLTEXT01.pdf> (accessed on 20 January 2024).
15. Liu, S.; Guan, Y.; Chen, W.; Peng, Z. The Transformation of Rural Areas Located in China's Agricultural Heritage Systems under the Evolution of Urban–Rural Relationships. *Sustainability* **2023**, *15*, 16408. [\[CrossRef\]](#)
16. Feng, R.; Ma, T. Research on the Protection of Modern and Contemporary Urban Industrial Architecture Heritage in Shanxi. In Proceedings of the 3rd International Conference on Architecture: Heritage, Traditions and Innovations (AHTI 2021), Moscow, Russia, 9–10 March 2021; pp. 214–223.
17. Feng, C.; Zhang, H.; Xiao, L.; Guo, Y. Land use change and its driving factors in the rural–urban fringe of Beijing: A Production–Living–Ecological perspective. *Land* **2022**, *11*, 314. [\[CrossRef\]](#)
18. Ding, W.; Chen, H. Urban-rural fringe identification and spatial form transformation during rapid urbanization: A case study in Wuhan, China. *Build. Environ.* **2022**, *226*, 109697. [\[CrossRef\]](#)
19. Wang, Y. Rural regeneration in the Yangtze River Delta: The challenge and potential for rural heritage tourism development. In *Urban China's Rural Fringe*; Routledge: London, UK, 2016; pp. 81–108.
20. Xie, P.F. *Industrial Heritage Tourism*; Channel View Publications: Bristol, UK, 2015; Volume 43.
21. Wu, Y.; Pottgiesser, U.; Quist, W.; Zhou, Q. The guidance and control of urban planning for reuse of industrial heritage: A study of Nanjing. *Land* **2022**, *11*, 852. [\[CrossRef\]](#)
22. Zhu, Y.; Koutra, S.; Zhang, J. Zero-Carbon Communities: Research Hotspots, Evolution, and Prospects. *Buildings* **2022**, *12*, 674. [\[CrossRef\]](#)
23. Zou, H.; Liu, Y.; Li, B.; Luo, W. Sustainable development efficiency of cultural landscape heritage in urban fringe based on GIS-DEA-MI, a case study of wuhan, China. *Int. J. Environ. Res. Public Health* **2022**, *19*, 13061. [\[CrossRef\]](#) [\[PubMed\]](#)
24. Cao, W.; Zhou, S.; Zhou, M. Operational pattern of urban-rural integration regulated by land use in metropolitan fringe of China. *Land* **2021**, *10*, 515. [\[CrossRef\]](#)
25. Sylla, M.; Solecka, I. Highly valued agricultural landscapes and their ecosystem services in the urban-rural fringe—an integrated approach. *J. Environ. Plan. Manag.* **2020**, *63*, 883–911. [\[CrossRef\]](#)
26. Ianoș, I.; Jones, R. Local aspects of change in the rural-urban fringe of a metropolitan area: A study of Bucharest, Romania. *Habitat Int.* **2019**, *91*, 102026. [\[CrossRef\]](#)
27. Lu, N.; Liu, M.; Wang, R. Reproducing the discourse on industrial heritage in China: Reflections on the evolution of values, policies and practices. *Int. J. Herit. Stud.* **2020**, *26*, 498–518. [\[CrossRef\]](#)
28. Yanbin, Y. Towards the Methodology for the Reuse of Industrial Heritage in China. Ph.D. Thesis, Politecnico di Torino, Turin, Italy, 2014.
29. Berta, M.; Bottero, M.; Ferretti, V. A mixed methods approach for the integration of urban design and economic evaluation: Industrial heritage and urban regeneration in China. *Environ. Plan. B Urban Anal. City Sci.* **2018**, *45*, 208–232. [\[CrossRef\]](#)
30. Zhang, J.; Cenci, J.; Becue, V.; Koutra, S. Analysis of spatial structure and influencing factors of the distribution of national industrial heritage sites in China based on mathematical calculations. *Environ. Sci. Pollut. Res.* **2022**, *29*, 27124–27139. [\[CrossRef\]](#) [\[PubMed\]](#)
31. Fan, J.; Zou, B. Industrialization from scratch: The “Construction of Third Front” and local economic development in China's hinterland. *J. Dev. Econ.* **2021**, *152*, 102698. [\[CrossRef\]](#)
32. Naughton, B. The Third Front: Defence industrialization in the Chinese interior. *China Q.* **1988**, *115*, 351–386. [\[CrossRef\]](#)
33. Li, J. How it was/is told, recorded and remembered: The discontinued history of the Third front construction. *J. Hist. Sociol.* **2015**, *28*, 314–341. [\[CrossRef\]](#)
34. Youwei, X. Exploring new frontiers in contemporary Chinese history studies: A case study of third front construction. *Soc. Sci. China* **2020**, *41*, 164–182. [\[CrossRef\]](#)
35. Zhang, J.; Cenci, J.; Becue, V.; Koutra, S. Research of the industrial heritage category and spatial density distribution in the Walloon region, Belgium, and Northeast China. In *Structural Studies, Repairs and Maintenance of Heritage Architecture XVII & Earthquake Resistant Engineering Structures XIII*; Wit Press: Billerica, MA, USA, 2021; p. 285.
36. Meyskens, C. Third front railroads and industrial modernity in late Maoist China. *Twent.-Century China* **2015**, *40*, 238–260. [\[CrossRef\]](#)
37. Liu, G.; Li, Z.; Han, Q.; Zhang, H. The redevelopment mode selection framework for Third Front Brownfields in China. *Environ. Sci. Pollut. Res.* **2023**, *30*, 33061–33074. [\[CrossRef\]](#)
38. Wei, Y.D.; Li, W.; Wang, C. Restructuring industrial districts, scaling up regional development: A study of the Wenzhou model, China. *Econ. Geogr.* **2007**, *83*, 421–444. [\[CrossRef\]](#)
39. Zhang, Y.; Yang, M.; Li, Z.; Li, W.; Lu, C.; Li, Z.; Li, H.; Zhai, F. Study on the Spatial Distribution Characteristics and Influencing Factors in the Reuse of National Industrial Heritage Sites in China. *Sustainability* **2023**, *15*, 16685. [\[CrossRef\]](#)
40. Sun, Z. Analysis of the systematic conservation of China's petroleum industrial heritage: A case study and analysis of the petroleum industrial heritage in Daqing. *Built Herit.* **2023**, *7*, 10. [\[CrossRef\]](#)
41. Shi, X. State-led industrialization projects and firm dynamics: The case of Third-Front construction in China. *SSRN Electron. J.* **2022**, 4249518. [\[CrossRef\]](#)
42. Cheung, T.M. *Fortifying China: The Struggle to Build a Modern Defense Economy*; Cornell University Press: Ithaca, NY, USA, 2013.

43. Arauzo-Carod, J.M.; Liviano-Solis, D.; Manjón-Antolín, M. Empirical studies in industrial location: An assessment of their methods and results. *J. Reg. Sci.* **2010**, *50*, 685–711. [\[CrossRef\]](#)
44. Gillham, O. *The Limitless City: A Primer on the Urban Sprawl Debate*; Island Press: Washington, DC, USA, 2002.
45. Dickinson, R.E. *City, Region and Regionalism: A Geographical Contribution to Human Ecology*; Routledge: London, UK, 2013.
46. Shambaugh, D. Growing strong: China's challenge to Asian security. *Survival* **1994**, *36*, 43–59. [\[CrossRef\]](#)
47. Yeh, E.T.; Lewis, J.I. State power and the logic of reform in China's electricity sector. *Pac. Aff.* **2004**, *77*, 437–465.
48. Li, Y.; Wu, F. The transformation of regional governance in China: The rescaling of statehood. *Prog. Plan.* **2012**, *78*, 55–99. [\[CrossRef\]](#)
49. Peng, J.; Liu, Y.; Ma, J.; Zhao, S. A new approach for urban-rural fringe identification: Integrating impervious surface area and spatial continuous wavelet transform. *Landsc. Urban Plan.* **2018**, *175*, 72–79. [\[CrossRef\]](#)
50. Chai, Y.; Qiao, W.; Hu, Y.; He, T.; Jia, K.; Feng, T.; Wang, Y. Land-use transition of tourist villages in the metropolitan suburbs and its driving forces: A case study of she village in nanjing city, China. *Land* **2021**, *10*, 168. [\[CrossRef\]](#)
51. Liang, C.; Zeng, J.; Zhang, R.-C.; Wang, Q.-W. Connecting urban area with rural hinterland: A stepwise ecological security network construction approach in the urban-rural fringe. *Ecol. Indic.* **2022**, *138*, 108794. [\[CrossRef\]](#)
52. Adebara, T.M.; Adebara, O.B.; Taiwo, A.O. The use or misuse of urban streets? Exploration of everyday urbanism in traditional city centres. *Int. J. Real Estate Stud.* **2023**, *17*, 13–23. [\[CrossRef\]](#)
53. Biddulph, M. Urban design, regeneration and the entrepreneurial city. *Prog. Plan.* **2011**, *76*, 63–103. [\[CrossRef\]](#)
54. Morris, A.E.J. *History of Urban form before the Industrial Revolution*; Routledge: London, UK, 2013.
55. Simon, D. Urban environments: Issues on the peri-urban fringe. *Annu. Rev. Environ. Resour.* **2008**, *33*, 167–185. [\[CrossRef\]](#)
56. DU, Y. Transformation and revival: Research on urban development strategic planning for HanDan under the dual dilemma of resourcebased industry transition and regional spatial marginalization. Master's Thesis, Delft University of Technology (TU Delft), Delft, The Netherlands, 2021.
57. Meyskens, C.F. *Mao's Third Front: The Militarization of Cold War China*; Cambridge University Press: Cambridge, UK, 2020.
58. Hambarde, A.; Shinde, K. Tourism Urbanisation in Metropolitan Fringe: Insights from the Tourist City of Lavasa in Pune, India. *Sustainability* **2024**, *16*, 616. [\[CrossRef\]](#)
59. Cui, L.; Wang, J.; Sun, L.; Lv, C. Construction and optimization of green space ecological networks in urban fringe areas: A case study with the urban fringe area of Tongzhou district in Beijing. *J. Clean. Prod.* **2020**, *276*, 124266. [\[CrossRef\]](#)
60. Webster, D.; Cai, J.; Muller, L. The new face of peri-urbanization in East Asia: Modern production zones, middle-class lifestyles, and rising expectations. *J. Urban Aff.* **2014**, *36*, 315–333. [\[CrossRef\]](#)
61. Farahani, F.; Rajabi, A.; Eghbali, N. Planning Rural Regeneration of Suburban Area Emphasizing Passive Defense Approach (Case Study: Fardis Village, Qarchak city, Southeast of Tehran). *Sustain. Rural Dev.* **2021**, *5*, 285–302.
62. Li, W.; Wang, D.; Wang, Q.; Liu, S.; Zhu, Y.; Wu, W. Impacts from land use pattern on spatial distribution of cultivated soil heavy metal pollution in typical rural-urban fringe of northeast China. *Int. J. Environ. Res. Public Health* **2017**, *14*, 336. [\[CrossRef\]](#)
63. Li, F.; Zhang, H.; Wei, X. Visualization analysis of research hotspots and frontiers on factors influencing urban green innovation—Based on CiteSpace knowledge map. *J. Infrastruct. Policy Dev.* **2023**, *7*, 2067. [\[CrossRef\]](#)
64. Lin, Q.; Zhu, Y.; Lu, H.; Shi, K.; Niu, Z. Improving university faculty evaluations via multi-view knowledge graph. *Future Gener. Comput. Syst.* **2021**, *117*, 181–192. [\[CrossRef\]](#)
65. Li, K.; Rollins, J.; Yan, E. Web of Science use in published research and review papers 1997–2017: A selective, dynamic, cross-domain, content-based analysis. *Scientometrics* **2018**, *115*, 1–20. [\[CrossRef\]](#) [\[PubMed\]](#)
66. Ren, K.; Sun, X.; Cenci, J.; Zhang, J. Assessment of Public Open Space Research Hotspots, Vitalities, and Outlook using Citespace. *J. Asian Archit. Build. Eng.* **2023**, *22*, 3799–3817. [\[CrossRef\]](#)
67. Baas, J.; Schotten, M.; Plume, A.; Côté, G.; Karimi, R. Scopus as a curated, high-quality bibliometric data source for academic research in quantitative science studies. *Quant. Sci. Stud.* **2020**, *1*, 377–386. [\[CrossRef\]](#)
68. Martín-Martín, A.; Orduna-Malea, E.; Thelwall, M.; López-Cózar, E.D. Google Scholar, Web of Science, and Scopus: A systematic comparison of citations in 252 subject categories. *J. Informetr.* **2018**, *12*, 1160–1177. [\[CrossRef\]](#)
69. Chadegani, A.A.; Salehi, H.; Yunus, M.M.; Farhadi, H.; Fooladi, M.; Farhadi, M.; Ebrahim, N.A. A comparison between two main academic literature collections: Web of Science and Scopus databases. *arXiv* **2013**, arXiv:1305.0377. [\[CrossRef\]](#)
70. Yao, M.; Yao, B.; Cenci, J.; Liao, C.; Zhang, J. Visualisation of High-Density City Research Evolution, Trends, and Outlook in the 21st Century. *Land* **2023**, *12*, 485. [\[CrossRef\]](#)
71. Zhang, Y.; Wang, J.; Kan, C. Temporal variation in activity-space-based segregation: A case study of Beijing using location-based service data. *J. Transp. Geogr.* **2022**, *98*, 103239. [\[CrossRef\]](#)
72. Zhou, W.; Cenci, J.; Zhang, J. Systematic Bibliometric analysis of the cultural landscape. *J. Asian Archit. Build. Eng.* **2023**, *23*, 1142–1164. [\[CrossRef\]](#)
73. Han, R.; Yang, S. A study on industrial heritage renewal strategy based on hybrid Bayesian network. *Sustainability* **2023**, *15*, 10707. [\[CrossRef\]](#)
74. Singh, N.; Zhou, H. Transformation of tourism in Beijing after the 2008 Summer Olympics: An analysis of the impacts in 2014. *Int. J. Tour. Res.* **2016**, *18*, 277–285. [\[CrossRef\]](#)
75. Yang, X.S.; Xu, H.; Wall, G. Creative destruction: The commodification of industrial heritage in Nanfeng Kiln District, China. In *Tourism Places in Asia*; Routledge: London, UK, 2021; pp. 54–77.



76. Tang, F.; Wang, L.; Guo, Y.; Fu, M.; Huang, N.; Duan, W.; Luo, M.; Zhang, J.; Li, W.; Song, W. Spatio-temporal variation and coupling coordination relationship between urbanisation and habitat quality in the Grand Canal, China. *Land Use Policy* **2022**, *117*, 106119. [\[CrossRef\]](#)
77. Wu, H.; Li, Y.; Hao, Y.; Ren, S.; Zhang, P. Environmental decentralization, local government competition, and regional green development: Evidence from China. *Sci. Total Environ.* **2020**, *708*, 135085. [\[CrossRef\]](#)
78. Lang, W.; Chen, T.; Li, X. A new style of urbanization in China: Transformation of urban rural communities. *Habitat Int.* **2016**, *55*, 1–9. [\[CrossRef\]](#)
79. Yang, Y.; Bao, W.; Wang, Y.; Liu, Y. Measurement of urban-rural integration level and its spatial differentiation in China in the new century. *Habitat Int.* **2021**, *117*, 102420. [\[CrossRef\]](#)
80. Zhang, Y.; Li, X.; Min, Q. How to balance the relationship between conservation of Important Agricultural Heritage Systems (IAHS) and socio-economic development? A theoretical framework of sustainable industrial integration development. *J. Clean. Prod.* **2018**, *204*, 553–563. [\[CrossRef\]](#)
81. Liu, Y.; Long, H.; Chen, Y.; Wang, J.; Li, Y.; Li, Y.; Yang, Y.; Zhou, Y. Progress of research on urban-rural transformation and rural development in China in the past decade and future prospects. *J. Geogr. Sci.* **2016**, *26*, 1117–1132. [\[CrossRef\]](#)
82. Li, Y. Urban-rural interaction patterns and dynamic land use: Implications for urban-rural integration in China. *Reg. Environ. Chang.* **2012**, *12*, 803–812. [\[CrossRef\]](#)
83. Li, X. Brownfields in China: How Cities Recycle Industrial Land. Doctoral Dissertation, Massachusetts Institute of Technology, Cambridge, MA, USA, 2011.
84. Geng, Y.; Hengxin, Z. Industrial park management in the Chinese environment. *J. Clean. Prod.* **2009**, *17*, 1289–1294. [\[CrossRef\]](#)
85. Ye, X.; Christiansen, F. China's urban-rural integration policies. *J. Curr. Chin. Aff.* **2009**, *38*, 117–143. [\[CrossRef\]](#)
86. Yan, J.; Chen, H.; Xia, F. Toward improved land elements for urban-rural integration: A cell concept of an urban-rural mixed community. *Habitat Int.* **2018**, *77*, 110–120. [\[CrossRef\]](#)
87. Yao, Y.; Xiang, M. The Preservation, Renewal and Cultural Remolding of Industrial Heritage under the Background of Urban Double Construction: A Case Study of Jinling Shipyard in Nanjing. *Open J. Soc. Sci.* **2021**, *9*, 243–253. [\[CrossRef\]](#)
88. Lin, J.Y. New structural economics: A framework for rethinking development. *World Bank Res. Obs.* **2011**, *26*, 193–221. [\[CrossRef\]](#)
89. Wang, K.; Gao, X.; Chen, T. Influencing factors for formation of urban and rural spatial structure in metropolis fringe area—Taking Shuangliu County of Chengdu in China as a case. *Chin. Geogr. Sci.* **2008**, *18*, 224–234. [\[CrossRef\]](#)
90. Han, S.H.; Li, A.Z. Cultural innovation. In *A Hundred Stories: Industrial Heritage Changes China*; Springer: Berlin/Heidelberg, Germany, 2023; pp. 257–369.
91. Guo, P.; Li, Q.; Guo, H.; Li, H. Quantifying the core driving force for the sustainable redevelopment of industrial heritage: Implications for urban renewal. *Environ. Sci. Pollut. Res.* **2021**, *28*, 48097–48111. [\[CrossRef\]](#) [\[PubMed\]](#)
92. Hou, J.; Yang, X.; Chen, C. Emerging trends and new developments in information science: A document co-citation analysis (2009–2016). *Scientometrics* **2018**, *115*, 869–892. [\[CrossRef\]](#)
93. Chen, H.; Jin, Q.; Wang, X.; Xiong, F. Profiling academic-industrial collaborations in bibliometric-enhanced topic networks: A case study on digitalization research. *Technol. Forecast. Soc. Chang.* **2022**, *175*, 121402. [\[CrossRef\]](#)
94. Kleminski, R.; Kazienko, P.; Kajdanowicz, T. Analysis of direct citation, co-citation and bibliographic coupling in scientific topic identification. *J. Inf. Sci.* **2022**, *48*, 349–373. [\[CrossRef\]](#)
95. Zhuang, Q.; Hussein, M.; Ariffin, N.; Yunus, M. Landscape character: A knowledge mapping analysis using CiteSpace. *Int. J. Environ. Sci. Technol.* **2022**, *19*, 10477–10492. [\[CrossRef\]](#)
96. Mensah, J. Sustainable development: Meaning, history, principles, pillars, and implications for human action: Literature review. *Cogent Soc. Sci.* **2019**, *5*, 1653531. [\[CrossRef\]](#)

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