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Abstract

Based on the analysis of 1676 papers published in the 131 SCI/SSCI English journals from 2000 to 2014, and 1689 Chinese papers published in the 14 domestic journals from 1980 to 2014, we have found urban and regional development under globalization, population and economic growth and the function of market and policy, urban and regional sustainable development and planning, are the 3 major topics of the global urbanization research in the new millennium. Some important phenomena with urbanization including global change, land use, energy, ecological landscape and environmental pollution have also attracted many studies in the world. China's urbanization research has risen with the rapid urbanization process since the end of the 1970s. Compared to its international counterparts, China's urbanization research mainly focuses on how to lead and settle population into the cities, pays more attention on the urbanization's process, dynamics, temporal and spatial variation, problems, influence and policy, etc. It has been clearly characterized by the close combination of theoretical research, policy implications and planning practice. Urban land use, ecological landscape and environmental pollution are the recent key topics connecting to urbanization. China needs to strive in the global perspective, theoretical innovation, and integrated study in its future urbanization research.

Keywords

Urbanization • Dynamics • Mechanism • Literature quantitative analysis • China

A total of 1676 SCI/SSCI-indexed articles are analyzed in the research area of the urbanization process and mechanism. Articles were identified from 131 international journals from 2000 to 2014. The number of journals that have published more than 15 of the relevant articles is 26 (Appendix Q). The search query is as follows: "urbanization".

20.1 Overview**20.1.1 Development of Research Questions**

The word urbanization was firstly used by **A. Serda** in 1876 to describe rural-urban transformation. Many disciplines have joined in urbanization research from their own specialties during the past one and half centuries. Demography treats

urbanization as a migration process from the countryside to cities (Hertzler 1963); economics focuses on the economic change from the primary to the secondary and tertiary industries (Hauser and Schnore 1965); sociology pays more attention on the change from rural to urban ways of life (Wirth 1938); geography studies the extension of urban landscapes into rural areas. A more common understanding of urbanization is that it is a multi-dimensional process, involving demographic, social, cultural, spatial, lifestyle, values and landscape issues (for example, Friedmann 1966).

Some scholars think that urbanization began around 5500 years ago (Woolley 1981), while most researchers agree that modern urbanization started with the industrial revolution in the 18th century. The urbanization ratio of the developed countries reached 55 % in 1950, 70 % in 1980, and 78 % by the end of 2014; most developing countries

started their rapid urbanization after the end of the Second World War; the urbanization ratio grew from 17.6 % in 1950 to about 30 % in 1980, and then to 48 % in 2014; with the rapid development of developing countries, the world's urbanization ratio also increased from less than 30 % in 1950 to 54 % in 2014. Every country has shown its own special features of process and mechanism although all countries ostensibly had the similar urbanization growth trends in the past decades.

Urbanization has given rise to more and more research which developed through 3 main phrases: the infancy stage from the mid-18th century to 1900, the rapid development stage from 1901 to 1980, and the diversification stage since the 1980s. In the first stage, scholars from the Western Countries advanced the definition of urbanization, studied urban origins, urbanization characteristics, and the economic driving forces, etc. In the second stage, urbanization dynamics, laws, urban systems, urban structures, and the developing countries' urbanization were studied. Economic locational theories, "push-pull" migration model, "S Curve" and other urbanization process models were established. In the recent third stage, influenced by the development of globalization, economic, social and spatial restructuring, and the theoretical turns in human geography in the Western Countries (Johnston 1979), urbanization research has shown new tendencies, such as being more critical and interdisciplinary, more closely combined with globalization and urban reality, and diversification of theory and methodology. The main research topics include planetary urbanization (Harvey 2012; Brenner 2013), glocalization (Amin and Thrift 2002; Brenner 2004; Robertson 2012), comparative urbanism (Robinson 2002; Nijman 2007), production of space (Soja 1989; Ye 2012), world city/global city (Friedemann 1986; Sassen 1991; Castells 1996; Taylor 1997; Hill and Kim 2000; Taylor 2004; Sassen 2006), metropolitan area, urban renewal and regeneration (DETR 1999; Carmona 2001; DETR 2000), gentrification (Ley 1986; Lees 2000; Smith 2002; Rofo 2004), counter urbanization and post suburbanization (Fishman 1987; Lang 2003), edge city (Garreau 1991), development zone, and creative city (Clarke and Gaile 1998; Hall 1998; Landry 2000; Florida 2005). Topics closely related to urbanization but focusing on feminism (Bush 1992), crime, ethnicity, and ecological cities have also attracted a lot of attention.

Although urbanization research in developing countries began at the turn of the 19th and 20th centuries, it did not enter a rapid development period until the 1950s when Western scholars started research on it. The early research focused upon urban origins, urban growth dynamics, urbanization path, migration, etc. It has turned to problems in the process of urbanization, such as slums (Mangin 1967; Turner 1968; Perlman 1976), housing, social movement, informal sectors, etc., since the 1970s. The concepts and

statements of over-urbanization, urbanization without industrialization, and urban bias were put forward (Lipton 1977). After the 1990s, urbanization research in the developing world diversified as had developed country research. Globalization, post colonialism, post Fordism, and neo-liberalism become the new dominant context; urban social segregation (Crot 2006; Rodgers 2009), policy and space (Schuurman 1989; Server 1996), poverty, crime, aging, illness and health (Gilbert 1994; Harpham et al. 1988; Aguirre 1994; Hardoy et al. 1995; Smith 1998; Pacione 2005; Mughah 2012), became the main topics; new models like *desakota* were proposed (McGee 1991). Among developing countries, Brazil (Hauser 1961; Cornelius and Trueblood 1974; Smith 1974; Perlman 1976; Ward and Sanders 1980; Fernandes and Valenca 2001), Russia (Ofer 1977; Rowland 1992; Becker et al. 2012), India (Wheeler 1966; Bose 1976; Murphey 1977; Alam and Alikhan 1987; Zachariah 1966), China and South Africa (Bloom 1964; Welsh 1971; Davies 1981; Hindson 1987; Lemanski 2004; Oldfield 2004) have contributed to more notable research results.

20.1.2 Contributions by Scholars from Different Countries

Statistical analyses of the 1676 articles mentioned at the beginning of this chapter indicate a doubling in the number of papers every 5 years during the past one and half decades (Table 20.1), which certify that urbanization has become a more and more important worldwide research topic.

The articles come from 67 countries, of which the USA, China, and the UK are the top 3 countries, accounting 25.2, 15.0 and 7.9 % of all the articles since 2010; 63 countries' articles were cited, of which the USA, China, and the UK were the top 3 countries, occupying 30.1, 19.8 and 9.4 % of all the citations since 2010; 103 articles, from 16 countries, were among the highly cited, of which the USA, China, and the UK were again the top 3 countries, occupying 27.7, 27.7 and 10.6 of all the highly cited articles since 2010.

In the top 10 countries of respectively paper publication, citation, and highly cited articles, there are only 2 (China and Brazil), 1 (China) and 3 (China, Malaysia and South Africa) developing countries, reflecting that the developed countries still dominate this research field. Although China ranked the second in terms of the numbers of articles, citations, and highly cited articles, it still has a long way to go to catch with the first, the USA.

20.1.3 Key Research Topics

Based on the graph of keyword clusters (Fig. 20.1), the six most important themes connected with urbanization research

Table 20.1 Top 20 countries (regions) with the number and citations of SCI/SSCI-indexed articles on “The Urbanization Process and Mechanism” during the period 2000–2014

Rank	Number of articles					Cited frequency					Number of highly cited articles							
	Countries (Regions)	2000	2014	2000-2004	2005-2009	2010-2014	Countries (Regions)	2000	2014	2000-2004	2005-2009	2010-2014	Countries (Regions)	2000	2014	2000-2004	2005-2009	2010-2014
	World	44	240	252	477	947	World	1,122	89	6,270	8,743	3,536	World	6	0	26	30	47
1	USA	18	58	101	168	239	USA	423	37	2,720	3,169	1,064	USA	2	0	13	15	13
2	China	3	42	23	38	142	China	32	17	795	886	700	China	0	0	5	2	13
3	UK	5	15	21	51	75	UK	172	4	795	1,402	333	UK	2	0	4	4	5
4	Netherlands	0	10	5	6	37	Netherlands	0	7	69	168	136	Australia	1	0	1	1	3
5	Germany	0	11	3	6	35	Italy	0	0	14	27	125	Netherlands	0	0	0	1	2
6	Australia	3	8	7	8	33	Australia	119	1	190	156	119	Germany	0	0	0	0	2
7	Canada	5	7	18	33	29	Germany	0	4	32	153	118	Italy	0	0	0	0	2
8	Spain	0	12	5	17	29	Japan	0	0	24	477	91	Japan	0	0	0	4	1
9	Italy	0	8	2	2	25	Canada	249	0	565	465	79	Belgium	0	0	1	1	1
10	Brazil	1	3	3	10	19	Sweden	0	3	19	195	78	France	0	0	0	0	1
11	Sweden	0	3	3	8	17	Singapore	22	0	57	40	74	Malaysia	0	0	0	0	1
12	France	0	7	1	6	17	France	0	1	34	98	69	South Africa	0	0	0	0	1
13	Japan	0	1	1	16	15	Belgium	0	1	307	351	57	Greece	0	0	0	0	1
14	Belgium	0	5	2	5	15	Spain	0	2	137	107	44	Singapore	0	0	0	0	1
15	Turkey	0	2	3	6	14	Mexico	3	0	30	123	37	Canada	1	0	2	1	0
16	Mexico	1	0	3	6	14	South Africa	0	2	36	34	29	Sweden	0	0	0	1	0
17	Singapore	1	2	3	5	12	Brazil	17	1	37	73	15	Spain	0	0	0	0	0
18	Argentina	1	2	3	4	11	Israel	0	1	0	72	13	India	0	0	0	0	0
19	Chile	2	1	3	4	10	Estonia	13	0	86	22	12	Brazil	0	0	0	0	0
20	South Africa	0	3	4	2	10	Taiwan, China	0	1	88	59	10	South Korea	0	0	0	0	0

Note Countries (regions) ranked by the number of articles, cited frequency and the number of highly cited articles during the period 2010–2014

from 2000 to 2014 were identified. The first focused on urban and regional development under globalization, including the keywords economic growth, urban form, housing, management, governance, etc. The second focused on urban and regional sustainable development and planning, including the keywords community, land cover, conservation, impact, network, planning, etc. The third focused on population and economic growth and the function of market and policy. China, developing countries and Europe are the most typical countries and regions for this research. These three are the major themes of urbanization research at the world level in the first 15 years of new millennium. The following three themes are the most important phenomena in the course of urbanization. The fourth focused on the ecological landscape system and spatial pattern, including the keywords growth, system, landscape, cover, bird, urban ecology, etc. The fifth focused on land use and urban expansion, including the keywords state, metropolitan area, urban expansion, sprawl, scale, politics, etc. The USA is the most typical country for this research. Remote sensing is the mostly used method. The sixth focused on ecology, environment, migration, poverty and other problems in developing countries, including the keywords economy, sustainability, reform, rural, urban growth, etc. Africa and India are the most typical regions and countries for this

research. In addition to the above mentioned 6 themes, land, habitat, innovation, productivity, development, transformation, agglomeration and model are also important research topics.

In order to find the commonality and difference between urbanization research in China and the rest of the world, the above mentioned 1676 English articles were divided into two groups: the first group includes 1473 articles written by authors from countries and regions other than China; the second includes the other 203 articles by authors from China.

There were 727 keywords in the first group besides urbanization itself, of which 88 appeared no less than 100 times. We classified the top 60 keywords (used more than 155 times) into 19 groups based on their similarity (Fig. 20.2), to reveal the following characteristics of urbanization research outside of China. **First**, the USA and China are the mostly studied two countries, suggesting that China's urbanization has been a subject of interest for scholars all over the world along with USA. **Second**, “city” is the main studied spatial unit, some spatial terms such as “region”, “area” and “urban community” are also important studied units. Basin and rural area are the other two major spatial types. **Third**, there are 4 main research themes: (1) dynamics, model and impact of urbanization; (2) the

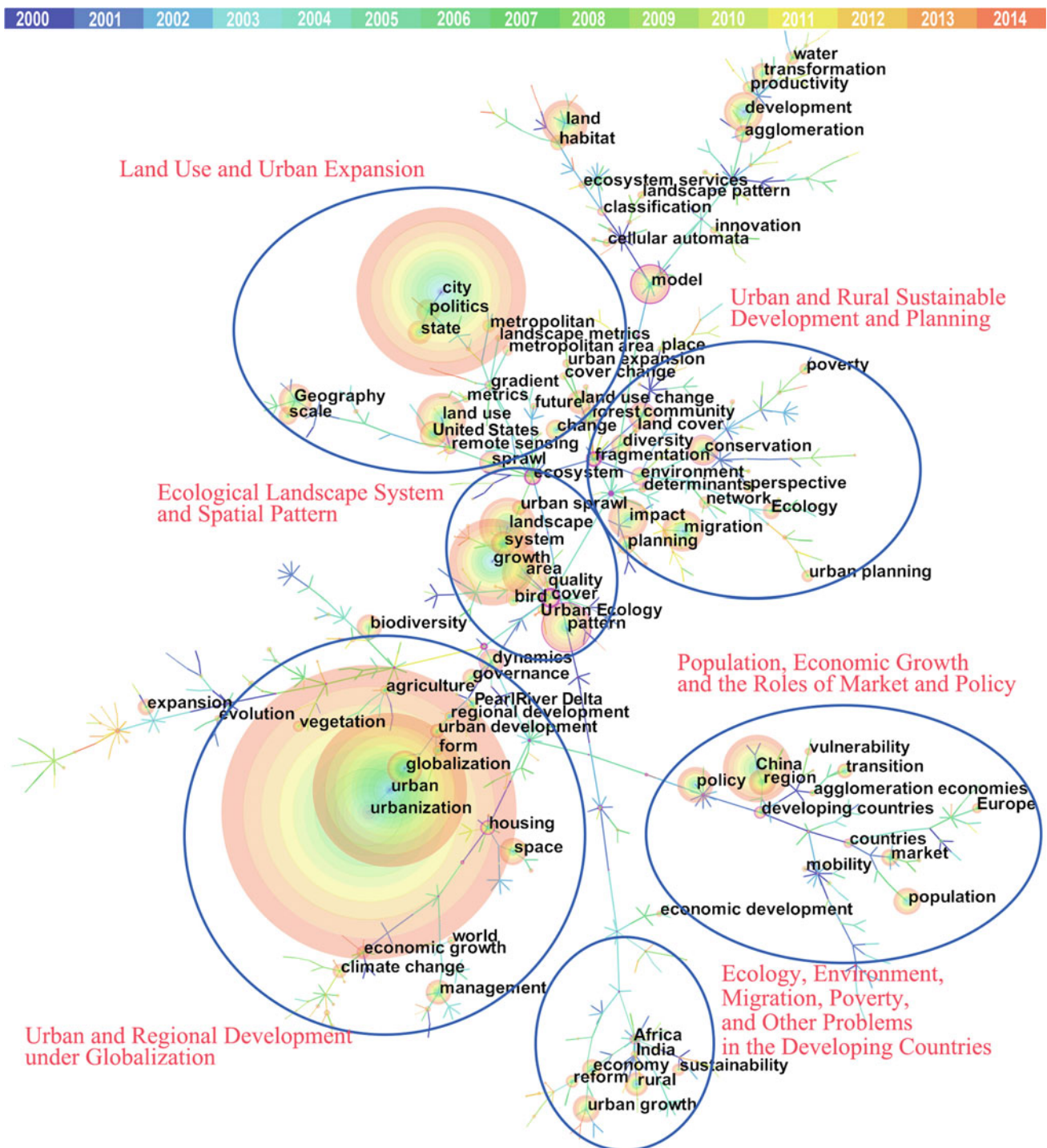


Fig. 20.1 Co-occurrence network of SCI/SSCI-indexed article keywords on “The Urbanization Process and Mechanism” during the period 2000–2014

main changes with urbanization including the keywords growth, trends, change and development; (3) the most important aspects for human being in the course of urbanization including the keywords population, habitat, health and migration; (4) urbanization and management including

the keywords management, conservation and policy. **Fourth**, environment and land use are the mostly studied themes connected with the background of urbanization. The environment here includes the keywords climate change, ecosystem, environmental pollution, water, vegetation, soil

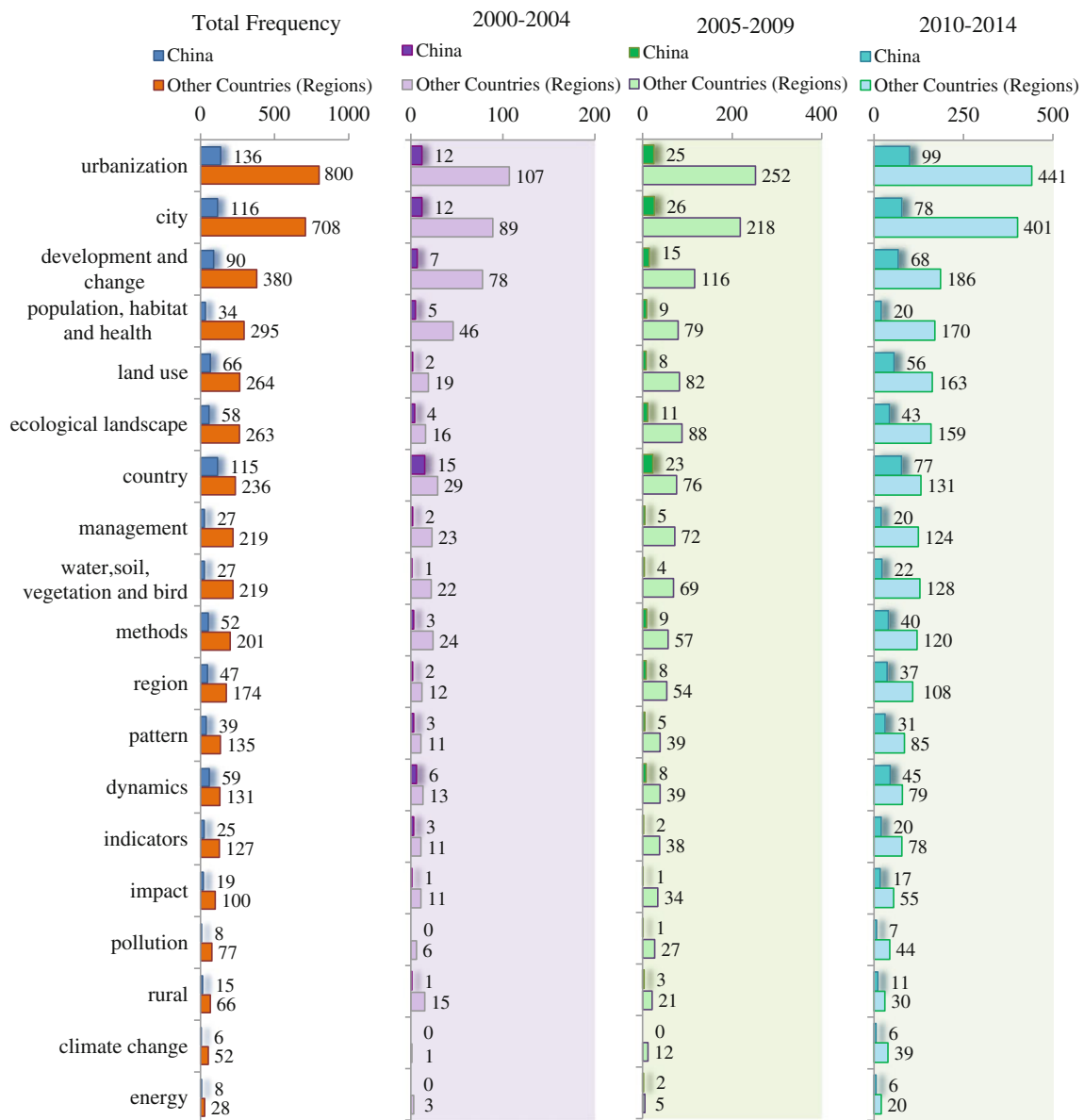


Fig. 20.2 Keyword temporal trajectory graph for SCI/SSCI-indexed articles on “The Urbanization Process and Mechanism” during the period 2000–2014

and bird, etc. **Fifth**, remote sensing, model, system and scale are the major methods used in urbanization research.

There were 566 keywords in the second group besides urbanization itself, of which 12 appeared no less than 100 times. We classified the top 60 keywords (occurring more than 35 times) into 19 groups based on their similarity (Fig. 20.2), which reveal the following characteristics of urban research within China. **First**, China and the USA are the mostly studied 2 countries, suggesting that the USA was the main comparative country in China’s urbanization research. The Pearl River Delta, Hong Kong, Shanghai, and South China are the most important regions and cities within China. **Second**, “city” is the main studied spatial unit, but

the spatial units “region” and “area” are also important studied spaces, rural area is the other major spatial type. **Third**, rapid urbanization is one of the most remarkable characteristics of China’s urbanization. **Fourth**, there are 3 main research themes in China’s urbanization: (1) impact, model, pattern and dynamics of urbanization; (2) the main changes caused by urbanization including the keywords of growth, trends, change, development and expansion; (3) urbanization and management including the two keywords of management and policy. **Fifth**, environment and land use are the mostly studied themes connecting with the context of urbanization. The environment includes the keywords climate change, ecosystem, environmental pollution, urban

heat island, water, vegetation, soil, metal, energy and carbon, etc. **Sixth**, remote sensing, model, system and scale are the major methods used in urbanization research.

Based on the above information, there are 5 main common aspects of urbanization research outside of and within China. **First**, the USA and China are the mostly studied two countries. **Second**, “city” is the main studied spatial unit. **Third**, impact, dynamics, pattern and trends are the most important themes of urbanization research. **Fourth**, environment and land use are the mostly studied themes connecting with the background of urbanization. **Fifth**, remote sensing, model, system and scale are the major methods used in urbanization research.

There are also 4 main differences between the research outside of and within China. **First**, rapid urbanization is the most remarkable characteristics of China’s urbanization compared with other countries. **Second**, China’s urbanization research focuses on how to lead and settle more population in cities, while the Western Countries pay more attention to human being’s habitat, health and migration. **Third**, the research surrounding “environment” in China is more connected to environmental pollution, while the Western Countries pay more attention to a variety of environmental changes. **Fourth**, China’s research concentrates more on the country level, while research outside of China concentrates more on the macro global and micro urban community levels. These differences reflect China’s development stage and special national realities.

Further analysis of the temporal changes of the 19 keyword groups in 5-year intervals helps to yield more findings (Fig. 20.2). **First**, climate change, ecological landscape, region, land use, pattern and pollution are the 6 most rapidly growing topics outside of China, while pollution, climate change, energy, land use, region and impact are the most rapidly growing within China. **Second**, ecological landscape and spatial pattern have attracted more and more research interest outside of China, while energy and impact are the most rapidly growing topics within China. **Third**, all the other 5 most rapidly growing topics except ecological

landscape are not the most important topics (the most frequently used keywords), suggesting that they will emerge as new hot topics in urbanization research.

20.1.4 The Role of NSFC in Supporting the Research on the Urbanization Process and Mechanism

Urbanization has been an important research field funded by NSFC since the 1990s. NSFC financially supported 167 urbanization research topics from 2000 to 2014, with a total funding of more than 73 million yuan (Table 20.2). The number of projects increased from 22 in 2000–2004 to 105 in 2010–2014, and the funding increased from 7200 thousand yuan to about 49,925 thousand yuan at the same time. The numbers of projects and the amount of funding have almost doubled every five years.

NSFC supported 151 project managers in 82 research institutions from 2000 to 2014 (Table 20.2). The average project number for each principal investigator decreased from 1.1 in 2000–2004 to 1 in 2010–2014. The average number of principal investigators in each institution decreased from 1.8 to 1.5 at the same time period. The numbers of principal investigators and research institutions have also doubled every five years, while the degree of concentration of projects by managers and institutions have decreased. This demonstrates that NSFC has successfully attracted more scholars and institutions in the field of urbanization research in China during the past one and half decades.

Further statistics has shown that 32.0 % of SCI/SSCI-indexed articles published by Chinese scholars during 2000–2014 were funded by NSFC (Table 20.2), with the percentage increasing from 13.0 % in 2000–2004 to 37.3 % in 2010–2014. The main reason for the low percentage of NSFC supported articles is that the articles published by scholars from Hong Kong accounted for more than one-half of all Chinese articles, while Hong Kong scholars secured comparatively fewer projects from NSFC than their Mainland colleagues.

Table 20.2 NSFC-funded projects and SCI/SSCI-indexed articles on “The Urbanization Process and Mechanism” during the period 2000–2014

SCI/SSCI-indexed articles					NSFC-funded projects			
Periods	Number of articles	% of articles by Chinese authors	% of articles with NSFC funding by Chinese authors	% of articles funded by MOST among those with NSFC funding	Number of projects	Funding (10,000 yuan)	Number of PIs	Number of institutions
2000-2004	252	9.1	13.0	0.0	22	720.0	20	11
2005-2009	477	8.0	23.7	11.1	40	1,675.0	39	25
2010-2014	947	15.0	37.3	22.6	105	4,992.5	102	67
2000-2014	1,676	12.1	32.0	20.0	167	7,387.5	151	82

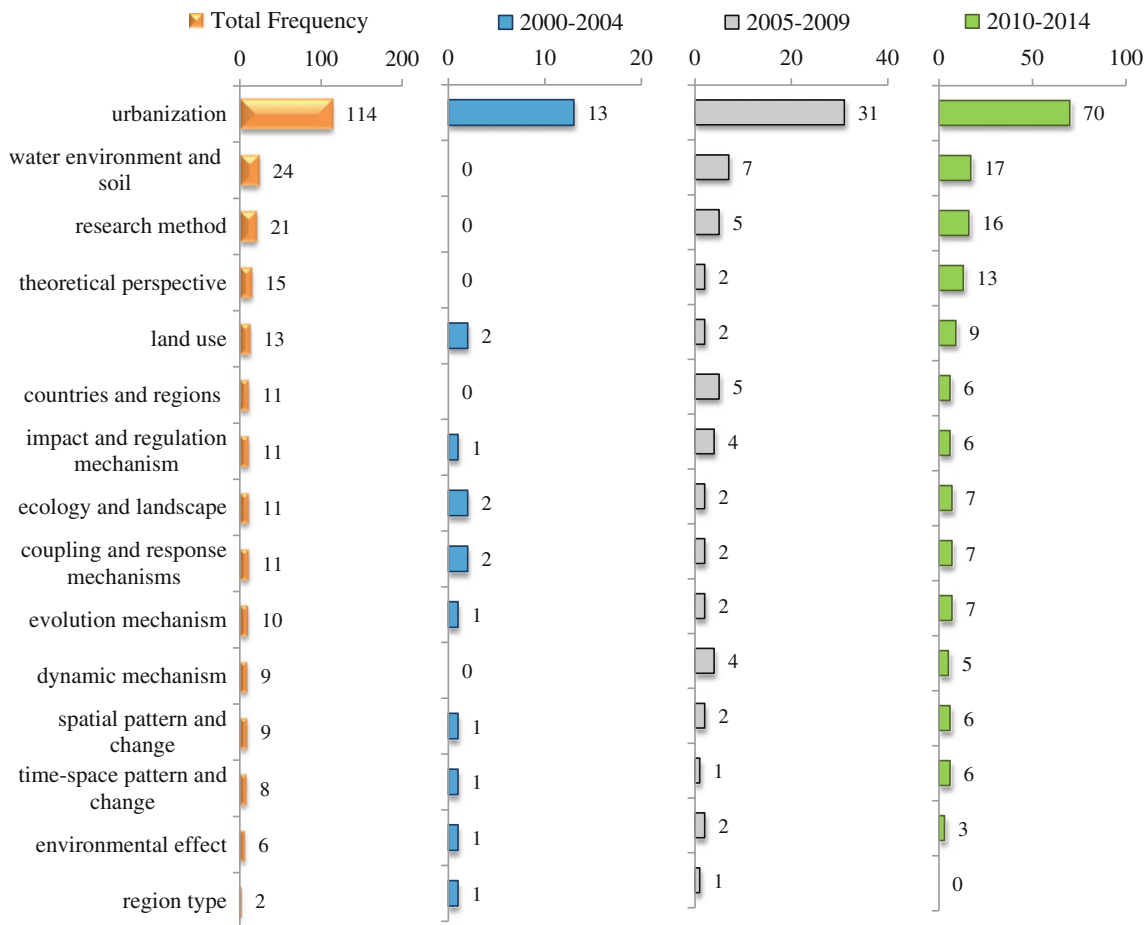


Fig. 20.3 Keyword temporal trajectory graph for NSFC-funded projects on “The Urbanization Process and Mechanism” during the period 2000–2014

There were 494 keywords in the 167 NSFC-funded projects from 2000 to 2014, of which 44 appeared more than 3 times (including 3). These 44 keywords were classified into 15 groups based on their similarity (Fig. 20.3), revealing the following characteristics of urbanization research funded by NSFC. **First**, types of urbanization connecting with the recent state policy constitute one of the keywords together with urbanization, China’s urbanization and regional urbanization since 2010. **Second**, China, Beijing and the Pearl River Delta are the main study areas. **Third**, human-land relationships, sustainable development and urban-rural relationships are the main theoretical perspectives and basis of urbanization research. **Fourth**, model simulation, remote sensing, evaluation, and process observation are the main research methods. **Fifth**, dynamics, mechanism, and temporal and spatial patterns are the major research themes of urbanization itself. **Sixth**, water environment, soil, ecology, landscape, land use and environmental effects are the main research themes closely connecting to the background of urbanization.

These projects have demonstrated similar research trends with the formerly mentioned English articles. NSFC has strongly supported China’s urbanization research during the last 2 decades, and needs to lead the research about health, energy and management, and particularly encourage research at the micro scale within cities.

20.2 Research Advances and Problems

20.2.1 Chinese Publications on Urbanization Research

Urbanization research in Mainland China started around the end of the 1970s (Wu 1979). China witnessed its rapid urbanization process and parallel growth in research since then. There are more Chinese articles published than English SCI/SSCI-indexed articles on China’s urbanization research. These publications in Chinese are more closely connected with China’s urbanization reality. Focusing on the research

Table 20.3 Articles on “The Urbanization Process and Mechanism” published in selected Chinese journals in 1980–2014

Periods	1980-1984	1985-1989	1990-1994	1995-1999	2000-2004	2005-2009	2010-2014	Sum
Sum	17	39	70	141	319	426	677	1,689
Annual average	3.4	9.8	14	28.2	63.8	85.2	135.4	67.6

themes of urbanization, while excluding the themes connecting to the background of urbanization, we try to sketch and summarize the progress of urbanization research during the past three and half decades based on selected Chinese articles and books published during this time.

Most Chinese articles on urbanization are published in the journals of geography, urban planning and urban studies. We chose 9 geography journals including *Acta Geographica Sinica*, *Scientia Geographica Sinica*, *Geographical Research*, *Progress in Geography*, *Economic Geography*, *Human Geography*, *World Regional Studies*, *Journal of Geographical Sciences(English)*, *Chinese Geographic Science(English)*; three urban planning journals including *City Planning Review*, *Urban Planning Review*, *Urban Planning International*, and 2 urban studies journals including *Urban Problems*, *Modern Urban Research*. There were 1689 articles published in these 14 journals from 1980 to 2014 identified by using “urbanization” as the keyword.

20.2.2 Stages of China’s Urbanization Research

Through the statistics of published articles, we divided the 35 years since 1980 into three periods. The 1980s was the starting stage of China’s urbanization research, with on average less than 10 articles published per year (Table 20.3). The 1990s, especially the first 5 years, was the rapid development stage, with the number of publications doubling every 5 years. The 10 years since 2005 were both a rapidly growing and an improving stage, with a significant progress in both the quantity and quality of publications.

20.2.3 Main Progress of China’s Urbanization Research

An analysis of these articles and some books suggests that most progress was made in the following research themes.

Dynamics of Urbanization

Only several urbanization driving forces were paid close attention to in the first stage. They mainly concentrated on industrial, agricultural and economic development, which revealed the roles of industrial restructuring in rural area

(Zeng and Yu 1989) foreign investment (Xue and Yang 1995), export-oriented economy (Zheng and Wang 1985), infrastructure and public facilities development (Shi 1991), on urbanization in some regions. The ideas of urbanization from below and top-down urbanization were advanced (Lin 1984; Zheng and Wang 1985).

Research on urbanization dynamics was tremendously extended and deepened in the second stage. **First**, more urbanization driving forces were revealed such as regional institutional environment (Zhang 1998), management system (Wang 2002; Zhang et al. 2002), ecological and environmental resource (Li et al. 2005), tourist industry (Meng et al. 2002), etc. **Second**, a systematic analysis of the various aspects of urban dynamics started. System Models were advanced, such as “Endogenous-Exogenous dynamics system” (Ning 2000), “Basic-Special dynamics system” (Cai 1997), “Government-Enterprise-Individual multi dynamics system” (Ning 1998), “History-Resource-Industry-Project-Institution integrated system” (Liu et al. 2002). **Third**, the model of “Urbanization from below” (Cui and Ma 1999), the interaction of industrial restructuring and urbanization (Li et al. 2004b), the role of the New International Division of Labor under globalization in shaping China’s urbanization (Wu and Gu 2005) were more deeply studied.

Research on urbanization dynamics was further developed during the third stage. **First**, it turned from the universal dynamic mechanism to the specific dynamics in the given regions. Different models for special regions were advanced, such as the dynamic models of China’s Eastern, Middle and Western areas (Zhao and Ning 2009), the dynamic mechanism of semi-urbanization (Zhang et al. 2008), the dynamics of Rural in Situ Urbanization (Weng and Yan 2011), etc. **Second**, the restriction of urbanization mainly from the perspectives of resource consumption and environmental pollution started to be examined (Wu et al. 2011; Zhang et al. 2012b). **Third**, the informal dynamics of urbanization was studied including informal employment, informal sectors and informal housing (Yin et al. 2009; Liu et al. 2010).

Problems and Impact of Urbanization

Two main types of problems were studied including the problems restricting urbanization development and the problems caused by urbanization.

Research on the first type of problems started in the early 1980s, when a lack of economic capacity was the main concern (Luo 1981). Restrictions on urbanization associated with the household registration (Hukou) system and administrative system were explored since the 1990s (Tao 1996; Zhang and Chen 2003; Wei et al. 2009; Liu 2010).

Research on the second type of problems started in the mid-1990s. The main problems included the low quality and low efficiency of land use and development caused by rural urbanization (Sun and Lin 2000; An et al. 2002); environmental problems of acid rain, water pollution, damage of regional river systems caused by rapid urbanization (Liu 1998; Gao et al. 2003; Yang et al. 2004; Fang 2008; Yao et al. 2010); social problems of social norms, labor force market (Zhang and Yao 1997), urban village renewal (Yan et al. 2004), conflicts in the course of rural land requisition (Shi 2002), land ownership transfer (Liu 2010), semi-urbanization and hollowed-out villages (Liu et al. 2013; Lv et al. 2013), and the forced urbanization of some peasants (Zhang and Gu 2006). Problems in some specific areas of Middle and Western China and the old manufacturing area of North Eastern China were also examined during the last two decades (Guan and Yao 2002).

Models of Urbanization

China witnessed the development of small towns, and advanced the model of rural urbanization before the mid-1990s. The related rural population transformation and migration models based on different regions were put forward, such as “Both Workers and Peasants” (Yao and Wu 1982), and top-down urbanization in the Southern Jiangsu Province, Bottom-up urbanization in Wenzhou, Zhejiang Province, rural urbanization driven by comprehensive forces in the Northern Jiangsu Province and Beijing suburban areas (Sun and Lin 1988), double track urbanization influenced by the registration system (Meng 1992), etc. Special urbanization models of Southern Jiangsu Province, and Zhejiang Village in Beijing were studied in the 1990s (Zhang 1996; Hu 1997). A quasi-urbanization model was explored and systematically studied based on research in some coastal developed areas in the new millennium (Zheng et al. 2003; Liu et al. 2004, 2005; He and Huang 2012). Some other models were also suggested, including urbanization driven by the tourist industry (Zhu and Jia 2006; Ge et al. 2009), and urbanization on the spot in some developed rural areas (Zhu 2006), based on empirical research.

Urbanization Policy and Strategy

The research on urbanization policies in China has been changing with the major problems in the course of

urbanization, and has also notably influenced the policies in different periods.

This research mainly focused on the discussion of City Size in the 1980s. The core question was which size(s) of city China should develop in its urbanization, and different opinions advocate respectively small town, mid-size city, large city, or multi-level city development (Li 1983). Most human geographers supported developing large cities or multi-level cities. The former thought that large cities could take the advantage of scale economies (Hu 1984), while the latter argued there was not a best city size choice, therefore, China should pay attention to developing the regional urban system with multi-level cities (Zhou and Yu 1988).

There were two foci of urbanization policy research in the second stage. The first was the sustainable urbanization strategy against the backgrounds of resource consumption and environmental pollution at the state level (Meng and An 1996). A similar strategy was integrating industrial restructuring, informational development and environmental regulation (Zhang 2004). The second was the diverse policies more closely connected to the special characteristics of different regions (Ning 1997; Zhang et al. 2004).

Extended research followed the second stage since the mid-2000s. More comprehensive, healthy and high quality urbanization integrating “population-resource-environment-society” was put forward (Lv and Chen 2006; Sun et al. 2012), in which human oriented ideas were highly valued (Chen and Ye 2011).

Measurement and Evaluation of Urbanization

Scientific measurement and evaluation of urbanization are the basis for formulating planning rationales and policy. Single indicator and multi indicators evaluations of urbanization have been conducted in China since the 1980s. The urbanization ratio (the proportion of urban population in the total population) was the only indicator used to measure the urbanization levels of the whole country and a given region from early 1980s to mid-1990s. A lot of research focused upon how to calculate precisely the national and regional urbanization rate through establishing and applying statistical models in the last two decades of the 20th century (Li 1986; Cai 1992). Later some scholars tried to revise the census data and statistical models in order to get a more accurate estimate of the urbanization degree (Shen 2005; Zhao et al. 2005). Since the late 1990s, some research attempted to measure the urbanization level of a given region with multiple population-economic-social-environmental indicators (Chen et al. 1999; Ge et al. 2003; Han and Liu 2009; Fang and Wang 2011; Zhang et al. 2012a). Some scholars started comparative research on the urbanization development trajectories of China and the Western Countries

in the last 10 years (Chen and Luo 2006; Chen et al. 2011; Chen 2012b).

Process and Spatial Pattern of Urbanization

Research on urbanization processes has been done at both national and regional levels (Dai and Liu 1998; Tang and Yao 1999; Li et al. 2004a; Yeh et al. 2006). Suburbanization and de-urbanization have also been studied (Wang and Li 1995; Feng et al. 2004). Research on the spatial pattern of urbanization mainly focused on national and regional city systems (Xu 1986), development of urban-rural integrated areas (Wei 1997; Chen and Li 2004), metropolitan areas (Hou 1999), megalopolis, urban clusters, the inner city spatial structure, and land use pattern (Wang and Zhao 2004; Zhang and Zhang 2004; He et al. 2005; Huang and Zhu 2005; Shen 2006; Lu 2007; Liu et al. 2008a, b).

Theories of Urbanization

Chinese researchers started to introduce urbanization theory from Western Countries since the early 1980s; they were at the same time also gradually committed to construct China's own urbanization theory based on empirical research in China. The main theoretical work includes setting up the standard and definition of China's cities and urban population (Zhou 1984; Ma 1992), establishing the special urbanization models of rural urbanization, urban-rural integration, urbanization from below, semi-urbanization (Xue et al. 1998; Xue and Zheng 2001; Liu et al. 2004; Chen 2012a), and the special migration models of "Both Workers and Peasants", "Leaving the land but not the countryside", "farmer-peasant worker-urban inhabitant" in the course of China's urbanization (Yao and Wu 1982; Shen 1999; Li et al. 2011), which differ from the experience of Western Countries. A systematic research framework for the study of urbanization from a geographical perspective has been advanced recently (Lu 2013).

20.2.4 International Comparisons and the Main Problems in China's Research

China has achieved great progress in its urbanization research in the past three and half decades, although this research started much later than in developed countries. The major differences between Chinese and Western Countries' research are as follows:

Different Urbanization Development Stages

China's urbanization ratio is about 50–55 %, so China is still in a phase of rapid urbanization, while the urbanization ratio of most Western Countries has reached more than 75 %, and they are at a highly developed stage in which in the eyes of some scholars urbanization has largely been completed (Andersen et al. 2011).

Different Research Foci

Chinese articles published since the 1980s indicate that urbanization research in China is mainly focused on the process, dynamics, mechanisms, spatial patterns, models, policy, etc. The final aim is to promote urbanization, and is greatly influenced by China's urbanization stage and reality. The projects funded by NSFC and SCI/SSCI-indexed articles written by Chinese authors since the 2000s also show that land use and environmental pollution have become the two main research themes closely connecting to the context of urbanization; research on ecological landscapes, water, soil and vegetation have been growing rapidly. In the Western Countries, the quality of urban life, health, newly emerging socio-economic development, and spatial change have attracted more research interest. Changes accompanying rapid urbanization, including land use, environment, landscape, ecosystem and energy, have become important topics with even more publications than urbanization itself.

Different Research Perspectives

Researchers in Mainland China have mostly chosen urbanization in China as their research topic, but seldom discussed China's urbanization from a global perspective. Most overseas Chinese scholars have studied China's urbanization in the light of Western theories, but still lack global perspectives. Conversely many Western scholars have got used to studying urbanization at the global level.

Different Research Scales

Most research on China's urbanization was at the more macro scales of state, trans-province, province and municipality, and coincide with administrative levels. Choosing these scales helps provide policy suggestions for governments at different levels. Research in Western Countries tends to choose the two extremes of the global scale and the micro community scale within a city. Some western scholars

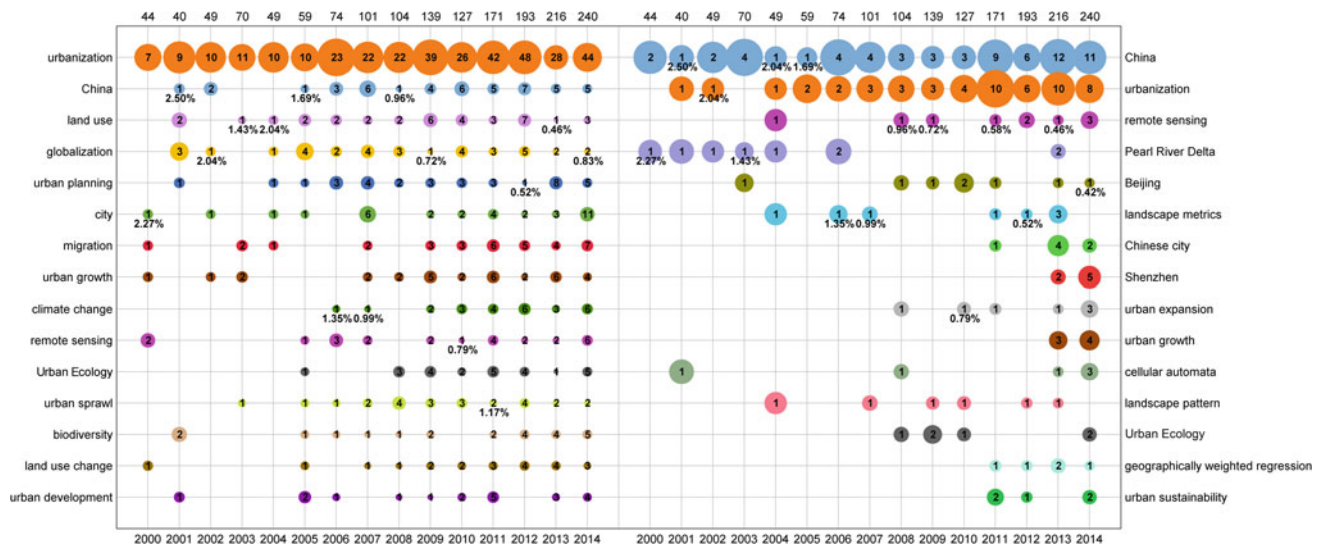


Fig. 20.4 Comparative diagram of prominent keywords on “The Urbanization Process and Mechanism” by Chinese authors and others in SCI/SSCI-indexed articles during the period 2000–2014. *Note* Right panel shows keywords used by Chinese authors and left panel shows those used by the authors from other countries (regions). Size of circles

denotes the ratio of a certain keyword frequency to the total article number in a specific year. The annual total number of articles is shown at the top of the diagram. The frequency of the keyword is shown inside the circle. The size of circles in the diagram for Chinese authors are magnified for clear display

think that today’s urban study has transcended the traditional paradigm of urbanization. It is dominated by urban community research (Harvey 1997), and pays more attention to the problems in people’s everyday lives.

Different Roles of Governments

Because of the special political and institutional system in China, the central government plays an essential role in decision making relating to state investment, which due to its scale greatly influences urbanization. Local governments also play important roles in urban planning and construction. Urban development policy, urbanization strategy, urban and regional planning are all among the important topics of urbanization research in China. Compared to China, there is much less research on governmental functions in the urbanization research of Western Countries.

Different Orientations of Theoretical Innovation and Practical Application

Influenced by the idea that knowledge must serve society and the state, the emphases of urbanization research in China are on the solution of practical problems, and serving national needs. Although problem orientation is also emphasized in Western Countries, academic research pays more attention to find the scientific patterns and establishing theories.

Because of different development stages and backgrounds, urbanization research at home and abroad has shown some commonalities and differences. Based on the most frequently used keywords (Fig. 20.4), we find that urbanization research outside of China not only focuses on urbanization itself which mainly covers city, urban planning, urban growth, urban sprawl, urban development, and migration, but also incorporates much wider fields such as land use, climate change, urban ecology, and biodiversity set against the background of globalization. Research on China’s urbanization mainly focuses on issues directly related to urbanization and includes urban expansion, urban growth, and urban sustainability in those most developed cities and regions including Beijing, Shenzhen and the Pearl River Delta. Urban ecology and landscape patterns closely connected to urbanization are also studied. In addition to remote sensing, more specific methods have been used in China’s research, including cellular automata, geographically weighted regression, landscape metrics, etc.

A comparison of Chinese and Western urbanization research points to the following problems:

Lack of a Global Vision

China’s urbanization has not been studied at the global level. Chinese geographers have seldom studied urbanization outside of China, hindering a more comprehensive understanding of China’s urbanization.

Lack of Theoretical Innovation

Theoretical innovation is one of the weak points in China's urbanization research. Compared to Western Countries, China has a very different history of urban development, standards of urban area and population, national political and institutional systems, and cultural background. China's urbanization is not a replica of Western urbanization. Establishing China's own urbanization theory based on solid empirical studies will be helpful for understanding and guiding China's urbanization. The world will also benefit from China's urbanization experience and theory in the future.

Lack of Comprehensively Integrated Research

Urbanization is a comprehensive process affected by many natural and human factors. It also involves processes taking place at different scales, from the global to the local. Up until now a number of different disciplines have individually examined urbanization issues (crossover study). In order to better understand urbanization in all its complexity, integrated multi-disciplinary research is needed in the future, bringing together geography, ecology, biology, environmental science, economy, sociology, anthropology, planning, architecture, engineering, psychology, culture, etc.

Lack of Nuanced Research at the Micro Level

Nuanced studies are necessary for revealing the deep reasons and mechanisms causing urbanization phenomena, and yet empirical research at the micro level within cities is still not often found in China. It should be strengthened in the future in order to improve theoretical innovation and solve practical problems.

20.3 Roadmap for Further Research

China's urbanization is characterized by its high speed, large population size, powerful government, diversified social and cultural backgrounds, and complicated environmental problems. To adapt to these features and problems and learn from international experiences, Chinese urbanization research should in future pay more attention to the following points:

(1) Adjust Research Directions and Contents, and Serve New National Needs

China has entered the "New Normal" stage with lower economic growth and less resource consumption. Urbanization

will correspondingly change from the former mode of only emphasizing fast growth to stressing higher quality. In the face to the new situation and the New National Urbanization strategy, the following issues should receive more attention in future research: **First**, research should change from "how to attract and settle more population in the city" to "how to improve the quality of China's urbanization"; **second**, research should change from providing conditions for urban growth to better urban life and health; **third**, research on resource and environmental limitations, energy and ecological security, should be increased; **fourth**, research at the scale of the urban community and neighborhood should be strengthened, in order to provide scientific support for more careful and efficient urban management.

(2) Expand Global Vision, Strengthen Theoretical Innovation, and Contribute Global Urbanization Research and Practice

Some Western scholars have realized the limitations of urban theories derived solely in the light of the reality of Western cities, so they recently initiated wider and deeper research into cities in the Global South, in order to achieve new theoretical innovation (Ong and Roy 2011; Sheppard et al. 2013; Scott and Storper 2015). We should study China's urbanization with a global vision, to explore new theories based on existing mainstream theories. At the same time, Chinese geographers should more widely participate in urbanization research outside of China by engaging in international cooperation and comparative study, in order to better understanding the urbanization in China and the whole world, and make a greater contribution to global (particularly to other developing countries') urbanization research and practice.

(3) Attract More Disciplines to Join Integrated Research

Many disciplines have so far studied urbanization from their own perspectives. More and more scientists have realized the necessity of multi-disciplinary research for a full understanding of urbanization. Geographers have recently started to cooperate with economists in research on the economic dynamics of urbanization, with sociologists in research on social problems, with planners in research on urban planning and management, with ecologists and environmental scientists in research on ecological and environmental problems. But existing inter-disciplinary studies limited to several disciplines will not fulfill the requirements of a future demands of complicated research. We should take advantage of geography's synthetic ability, and promote multi-disciplinary, multi-factor, and multi-scale integrated

research, so as to explore new theories, methods and models in future urbanization research.

20.4 Summary

Urbanization is one of the most notable economic, social and spatial processes in human history. Many disciplines have studied urbanization from their own perspectives, of which geography mainly deals with its spatial characteristics and processes.

Western Countries started their modern urbanization at the time of the industrial revolution. People movement from the countryside to the city was largely completed (but at different times in different countries) by the end of the post-war 'golden age' of full employment and relatively fast growth. Instead of continuing to increase rapidly in size of urbanization, urban restructuring and improvements in the quality of urban life assumed more importance as many social, economic and political problems emerged in western cities after the mid-1970s economic crisis. Urbanization research of Western Countries started earlier in the late 18th century. Based on their urbanization and urban experiences, a series of definitions, theories and models of urbanization, migration, urban development and urban spatial structure, were established. These Western theories have dominated mainstream urbanization research all over the world in the past century. In the new millennium three major themes emerged in global urbanization research including urban and regional development under globalization, population & economic growth and the function of markets and policy, and urban and regional sustainable development and planning. Some important phenomena closely connected with urbanization, such as global change, land use, energy, ecological landscape and environmental pollution, have also become intensively studied topics in the world as a whole.

The rapid urbanization in China started in the late 1970s. In 2012 after 3 decades more than one-half of the Chinese population lived in urban areas. So China's urbanization has entered a stage of pursuing both rapid speed and high quality. Compared to Western Countries, urbanization research in China started later at the end of the 1970s. So far Chinese scholars have made great progress in the introduction of Western urbanization theories, and also produced many empirical studies dealing with the measurement and evaluation of urbanization, dynamics and models, problems and impact, policy and strategy, process and patterns, etc. Based on China's special urbanization reality, Chinese scholars have advanced some special urbanization models such as rural urbanization, urban-rural integration,

urbanization from below, semi-urbanization, and migration models such as "Both Workers and Peasants", "Leaving the land but not countryside", "farmer-peasant worker-urban inhabitant", etc. China's urbanization research is clearly characterized by the close combination of basic research, policy implications and planning practice.

Urbanization has become a hot topic of global research in the new millennium. China has reached the second place in the number of papers publication and citations in the field of urbanization research during the past five years. China's urbanization has focused on how to lead more population into cities, and taken the whole nation and large regions as the main spatial scale. Phenomena closely connected with urbanization including land use, ecological landscape and environmental pollution, have also been studied recently. Considering the new national needs and international academic progress, Chinese scholars should in the future adjust the research directions, contents and scales, expand their global vision, strengthen theoretical innovation and promote integrated studies.

References

- Aguirre P (1994) How the very poor survive—the impact of hyper-inflationary crisis on low-income urban households in Buenos Aires/Argentina. *GeoJournal* 34(3):295–304
- Alam SM, Alikhan F (1987) Perspectives on urbanization and migration: India and USSR. Allied Publishers, Ahmedabad
- Amin A, Thrift N (2002) Cities: reimagining the urban. Polity Press, Cambridge
- An XD, Gao ZG, Peng BZ (2002) Sustainable land use under rural urbanization: a case study of Yangtze Delta area. *Hum Geogr* 17(1):60–64 (in Chinese)
- Andersen HT, Møller-Jensen L, Engelstoft S (2011) The end of urbanization? Towards a new urban concept or rethinking urbanization. *Eur Plan Stud* 19(4):595–611
- Becker C, Mendelsohn J, Benderskaya K (2012) Russian urbanization in the Soviet and post-Soviet eras. Human Settlements Group, IIED. Population and Development Branch, UNFPA
- Bloom L (1964) Some problems of urbanization in South Africa. *Phylon* (1960-), 25(4):347–361
- Bose A (1976) Bibliography on urbanization in India, 1947–76. Tata McGraw Hill, New Delhi
- Brenner N (2004) Urban governance and the production of new state spaces in Western Europe, 1960–2000. *Rev Int Polit Econ* 11(3):447–488
- Brenner N (2013) Theses on urbanization. *Publ Cult* 25(1):85–114
- Bush DM (1992) Women's movements and state policy reform aimed at domestic violence against women: a comparison of the consequences of movement mobilization in the US and India. *Gend Soc* 6(4):587–608
- Cai JM (1992) Forecast and expectation on population urbanization in China. *Urban Prob* 5:19–23 (in Chinese)
- Cai JM (1997) Dynamics of Chinese urbanization process and its future developmental strategies. *Prog Geogr* 16(2):9–14 (in Chinese)

- Carmona M (2001) Implementing urban renaissance-problems, possibilities and plans in south east England. *Prog Plann* 56(4):169–250
- Castells M (1996) The rise of the network society. In: *The information age: economy, society and culture*, vol 1. Malden and Oxford, Blackwell
- Chen BB (2012a) Review on identification method and driving mechanism of peri-urban area. *Progr Geogr* 31(2):210–220 (in Chinese)
- Chen YG (2012b) On the urbanization curves: types, stages and research methods. *Sci Geogr Sin* 32(1):12–17 (in Chinese)
- Chen XH, Li CG (2004) Study on urbanization and urban-rural integration in China. *Urban Dev Stud* 11(2):41–44 (in Chinese)
- Chen YG, Luo J (2006) Derivation of relations between urbanization level and velocity from logistic growth model. *Geogr Res* 25(6):1063–1072 (in Chinese)
- Chen MX, Ye C (2011) Healthy urbanization: a new conception and policy explanation. *Hum Geogr* 26(2):56–61 (in Chinese)
- Chen S, Yao SM, Zhang YB (1999) Comprehensive thought on the appropriate ratio of urbanized people in China. *Econ Geogr* 19(4):111–116 (in Chinese)
- Chen MX, Ye C, Zhou Y (2011) Urbanization rate and its policy implications: discussion and development of Northam's curve. *Geogr Res* 30(8):1499–1507 (in Chinese)
- Clarke S, Gaile G (1998) *The work of cities*. University of Minnesota Press, Minneapolis
- Cornelius WA, Trueblood FM (1974) *Anthropological perspectives on Latin American urbanization*. Sage Publications, London
- Crot L (2006) "Scenographic" and "cosmetic" planning: globalization and territorial restructuring in Buenos Aires. *J Urban Aff* 28(3):227–251
- Cui GH, Ma RC (1999) Urbanization from below in China: its development and mechanism. *Acta Geogr Sin* 54(2):106–115 (in Chinese)
- Dai HZ, Liu ZD (1998) Complex indicator method and its application to measuring provincial urbanization level of China. *Urban Prob* 4:21–24 (in Chinese)
- Davies RJ (1981) The spatial formation of the South African city. *GeoJournal* 2(2):59–72
- DETR (1999) Towards an urban renaissance. Final report of the urban task force, chaired by lord rogers of riverside. The Stationery Office
- DETR (2000) *Our town and cities: the future delivering an urban renaissance*. The Stationery Office
- Fang CL (2008) *Urbanization process and its ecological and environmental effects*. Science Press, Beijing (in Chinese)
- Fang CL, Wang DL (2011) Comprehensive measures and improvement of Chinese urbanization development quality. *Geogr Res* 30(11):1931–1946 (in Chinese)
- Feng J, Zhou YX, Wang XG, Chen Y (2004) The development of suburbanization of Beijing and its countermeasures in the 1990s. *City Plann Rev* 28(3):13–29 (in Chinese)
- Fernandes E, Valenca MM (2001) Urban Brazil: past and future. *Geoforum* 32(4):v–viii
- Fishman R (1987) *Bourgeois utopias: the rise and fall of Suburbia*. Basic Books Inc, New York
- Florida R (2005) *Cities and the creative class*. Routledge, New York
- Fridemann J (1986) The world city hypothesis. *Dev Change* 17(1):69–83
- Friedmann J (1966) *Regional development policy: a case study of Venezuela*. MIT Press, Massachusetts
- Gao C, Zhu JY, Dai KW, Gao S, Dou YJ (2003) Impact of rapid urbanization on water quality and related mitigation options in Taihu Lake area. *Sci Geogr Sin* 23(6):746–750 (in Chinese)
- Garreau J (1991) *Edge city: life on the new frontier*. Doubleday, New York
- Ge YJ, Xu XQ, Yan XP (2003) A comprehensive appraisal of the level of urbanization in China. *Hum Geogr* 18(1):49–52 (in Chinese)
- Ge JB, Lu L, Ling SJ (2009) Characteristics and mechanism of tourism urbanization of Lijiang city. *Sci Geogr Sin* 29(1):134–140 (in Chinese)
- Gilbert A (1994) Third world cities: poverty, employment, gender roles and the environment during a time of restructuring. *Urban Stud* 31(4–5):605–633
- Guan WH, Yao SM (2002) Some pivotal problems about the urbanization in the process of western development. *Econ Geogr* 22(5):579–584 (in Chinese)
- Hall P (1998) *Cities in civilization: culture, innovation and urban order*. Phoenix Giant, London
- Han ZL, Liu TB (2009) Analysis of the characteristics and spatial differences of urbanization quality of cities at prefecture level and above in China. *Geogr Res* 28(6):1508–1515 (in Chinese)
- Hardoy JE, Mitlin D, Satterthwaite D (1995) *Environmental problems in third world cities*. Earthscan, London
- Harpham T, Lusty T, Vaughan P (1988) *In the shadow of the city: community health and the urban poor*. Oxford University Press, Oxford
- Harvey D (1997) *Contested cities: social process and spatial form*. In: Jewson N, MacGregor S (eds) *Transforming cities: contested governance and new spatial divisions*. Routledge, London
- Harvey D (2012) *Rebel cities: from the right to the city to the urban revolution*. Verso, London
- Hauser PM (1961) *Urbanization in Latin America: proceedings*. Columbia University Press, New York
- Hauser PM, Schnore LF (1965) *The study of urbanization*. Wiley, New York
- He W, Huang XJ (2012) Incomplete urbanization: a research on China's urbanization. *Urban Plann Forum* 2:24–32 (in Chinese)
- He CY, Li JG, Chen J (2005) The urbanization model and process in Bohai sea surrounding area in 1990s by using DMSP/OLS data. *Acta Geogr Sin* 60(3):409–417 (in Chinese)
- Hertzler JO (1963) *The Crisis in world population: a sociological examination, with special reference to the underdeveloped areas* (trans: He X). The Commercial Press, Beijing (original work published 1956)
- Hill RC, Kim JW (2000) *Global cities and developmental states: New York, Tokyo and Seoul*. *Urban Stud* 37(12):2167–2195
- Hindson D (1987) *Pass controls and the urban African proletariat in South Africa*. Ravan Press of South Africa, Johannesburg
- Hou XG (1999) The motive mechanism and follow-up control of urbanization in Shanghai suburb. *Urban Plann Forum* 6:66–69 (in Chinese)
- Hu ZL (1984) A probe into the developmental law of large scale cities. *Urban Prob* 3:18–22 (in Chinese)
- Hu ZL (1997) "Zhejiang village" in Beijing: a special urbanization form of Wenzhou style. *Urban Plann Forum* 3:28–30 (in Chinese)
- Huang Y, Zhu L (2005) Metropolitan area: the necessary option of urbanization in Yangtze River Delta. *Econ Geogr* 25(1):71–74 (in Chinese)
- Johnston RJ (1979) *Geography and geographers: Anglo-American human geography since 1945*. Arnold, London
- Landry C (2000) *The creative city: a toolkit for urban innovators*. Earthscan, London
- Lang RE (2003) *Edgeless cities: exploring the elusive metropolis*. Brookings Institution Press, Washington DC
- Lees L (2000) A reappraisal of gentrification towards a 'geography of gentrification'. *Prog Hum Geogr* 24(3):389–408
- Lemanski C (2004) A new apartheid? the spatial implications of fear of crime in Cape Town, South Africa. *Environ Urbanization* 16(2):101–112

- Ley D (1986) Alternative explanations for inner-city gentrification: a Canadian assessment. *Ann Assoc Am Geogr* 76(4):521–535
- Li BR (1983) Discussions on the way of China's urbanization. *City Plann Rev* 7(2):27–28 (in Chinese)
- Li L (1986) Discussion of the problem about the urbanization level comparison of all the countries in the world. *Geogr Res* 5(2):37–46 (in Chinese)
- Li AJ, Tan ZH, Lu CF, Zhang YF (2004a) Discussion of the method for urbanization level measure with synthetic index: taking Wuxi city and Taizhou city in Jiangsu province as two cases. *Econ Geogr* 24(1):43–47 (in Chinese)
- Li CG, Han SQ, Zheng WS (2004b) A study on the urbanization response to the upgrade of industry structure. *City Plann Rev* 28(4):31–36 (in Chinese)
- Li YF, Zhu XD, Zou XQ (2005) Urban ecological governance: policy response to the pressure of urbanization. *Hum Geogr* 20(6):88–91 (in Chinese)
- Li KY, Li JQ, Wang K (2011) A study on the urbanization of migrant workers based on urban social geography. *Hum Geogr* 26(5):39–42 (in Chinese)
- Lin ZQ (1984) Cognitions on historical process of urbanization. *City Plann Rev* 8(5):29–37 (in Chinese)
- Lipton SG (1977) Evidence of central city revival. *J Am Plann Assoc* 43(2):136–147
- Liu J (1998) Acid rain problem and its countermeasures in urbanization process of Jiangsu province. *Urban Prob* 2:25–27 (in Chinese)
- Liu X (2010) On the hampers of redevelopment of 'transitional community' under the high-speed urbanization in China: cases in Guangzhou and Shenzhen. *Geogr Res* 29(4):693–702 (in Chinese)
- Liu XF, Li CG, Tan XL (2002) Analysis of the characteristics and mechanism of urbanization in northeast China. *Urban Prob* 5:17–20 (in Chinese)
- Liu SH, Chen T, Cai JM (2004) Peri-urbanization in China and its major research issues. *Acta Geogr Sin* 59(S1):101–108 (in Chinese)
- Liu SH, Ye SZ, Du HL, Lu XX (2005) A probe into the impetus and mechanisms for the formation of quasi-urbanization area and its development prospect: a sample study on Shaoxing county, Zhejiang province. *Geogr Res* 24(4):601–610 (in Chinese)
- Liu JB, Yang QS, Zhang CL (2008a) Urbanization process and spatial organization of central Jilin urban agglomeration. *Econ Geogr* 28(2):228–231 (in Chinese)
- Liu XY, Yang QS, Zhang P (2008b) Research on Harbin metropolis circle's development of urbanization and spatial organization. *Econ Geogr* 28(1):96–99 (in Chinese)
- Liu R, Huang DZ, Liu SH (2010) The informal housing market in Beijing's rural areas: its formation and operating mechanism amidst the process of urbanization. *Geogr Res* 28(3):391–397 (in Chinese)
- Liu YS, Yang R, Li Y (2013) Potential of land consolidation of hollowed villages under different urbanization scenarios in China. *J Geogr Sci* 23(3):503–512
- Lu DD (2007) Urbanization process and urban sprawl in China. *Urban Plann Forum* 10:14–17 (in Chinese)
- Lu DD (2013) Framework of urbanization studies from a geographical perspective. *Sci Geogr Sin* 33(8):897–901 (in Chinese)
- Luo QC (1981) A probe into the characteristics and problems of urbanization in Anhui province. *City Plann Rev* 5(3):34–38 (in Chinese)
- Lv B, Chen R (2006) An approach to spatial planning for healthy urbanization. *City Plann Rev* 30(S1):65–68 (in Chinese)
- Lv Y, Liu KW, Niu JQ, Liu L, Zhao D (2013) Problems and strategies of urbanization from the perspective of city-dominated society: a case study of Shanxi province. *Econ Geogr* 33(7):59–66 (in Chinese)
- Ma QY (1992) Discussions on the essential issues on China's urbanization. *Urban Prob* 1:16–19 (in Chinese)
- Mangin W (1967) Latin American squatter settlements: a problem and a solution. *Latin Am Res Rev* 2(3):65–98
- McGee TG (1991) The emergence of desakota regions in Asia: expanding a hypothesis. In: Ginsburg N, Koppel B, McGee TG (eds) *The extended metropolis: settlement transition in Asia*. University of Hawaii Press, Honolulu
- Meng XC (1992) Urbanization and the approach to urbanization. *City Plann Rev* 16(3):9–13 (in Chinese)
- Meng QM, An CM (1996) New reflections on Chinese urbanization. *Hum Geogr* 11(4):72–75 (in Chinese)
- Meng R, Liu JW, Yang CY (2002) A primitive study on the mutual relationship between agri-tourism and the western urbanization. *Hum Geogr* 17(2):47–50 (in Chinese)
- Muggah R (2012) *Researching the Urban dilemma: urbanization, poverty and violence*. International Development Research Centre, Ottawa
- Murphey R (1977) *The outsiders: the western experience in India and China*. University of Michigan Press, Michigan
- Nijman J (2007) Place-particularity and "deep analogies": a comparative essay on Miami's rise as a world city. *Urban Geogr* 28(1):92–107
- Ning D (1997) Issues on the way of urbanization in China: implementation of dual urbanization strategy. *Urban Plann Forum* 1:24–26 (in Chinese)
- Ning YM (1998) New process of urbanization: dynamics and features of urbanization in China since 1990. *Acta Geogr Sin* 65(5):470–477 (in Chinese)
- Ning D (2000) Study on China's urbanization mechanism in the 21st century. *Urban Plann Forum* 3:41–46 (in Chinese)
- Ofer G (1977) Economizing on urbanization in socialist countries: historical necessity or socialist strategy. In: Brown A, Neuberger E (eds) *Internal migration: a comparative perspective*. Academic Press, New York
- Oldfield S (2004) Urban networks, community organising and race: an analysis of racial integration in a desegregated South African neighbourhood. *Geoforum* 35(2):189–201
- Ong A, Roy A (2011) *Worlding cities: Asian experiments and the art of being global*. Wiley-Blackwell, Chichester
- Pacione M (2005) *Urban geography: a global perspective*. Psychology Press, London
- Perlman JE (1976) *The myth of marginality: urban poverty and politics in Rio de Janeiro*. University of California Press, Oakland
- Robertson R (2012) Globalisation or glocalisation? *J Int Commun* 18(2):191–208
- Robinson J (2002) Global and world cities: a view from off the map. *Int J Urban Reg Res* 26(3):531–554
- Rodgers D (2009) Slum wars of the 21st century: gangs, manodura and the new urban geography of conflict in Central America. *Dev Change* 40(5):949–976
- Rofe MW (2004) From 'problem city' to 'promise city': Gentrification and the revitalization of Newcastle. *Aust Geogr Stud* 42(2):193–206
- Rowland R (1992) Demographic trends in Soviet Central Asia and Southern Kazakhstan. In: Lewis R (ed) *Geographic perspectives on Soviet Central Asia*. Routledge, London
- Sassen S (1991) *The global city: New York, London, Tokyo*. Princeton University Press, Princeton
- Sassen S (2006) *Territory, Authority, rights: from medieval to global assemblages*. Princeton University Press, Princeton
- Schuurman FJ (1989) Urban social movements: between regressive utopia and socialist panacea. In: Schuurman F, Naerissen TV (eds) *Urban social movements in the third world*. Routledge, London
- Scott AJ, Storper M (2015) The nature of cities: the scope and limits of urban theory. *Int J Urban Reg Res* 39(1):1–15
- Server OB (1996) Corruption: a major problem for urban management: some evidence from Indonesia. *Habitat Int* 20(1):23–41

- Shen JF (1999) Urbanization and population management. Science Press, Beijing (in Chinese)
- Shen JF (2005) Analysis of the trends of urbanization levels in Chinese provinces since 1982. *Acta Geogr Sin* 60(4):607–614 (in Chinese)
- Shen JF (2006) Urbanization and urban space reorganization in China. *City Plann Rev* 30(S1):36–40 (in Chinese)
- Sheppard E, Leitner H, Maringanti A (2013) Provincializing global urbanism: a manifesto. *Urban Geogr* 34(7):893–900
- Shi YS (1991) Analysis on the relationship between urbanization and development level of urban infrastructures in Shandong province. *City Plann Rev* 15(5):28–31 (in Chinese)
- Shi YS (2002) On the land economy issues in the urbanizing China. *Urban Plann Forum* 3:41–43 (in Chinese)
- Smith TL (1974) Brazilian society. University of New Mexico Press, Albuquerque
- Smith DW (1998) Urban food systems and the poor in developing countries. *Trans Inst Br Geogr* 23(2):207–219
- Smith N (2002) New globalism, new urbanism: gentrification as global urban strategy. *Antipode* 34(3):427–450
- Soja EW (1989) Postmodern geographies: the reassertion of space in critical social theory. Verso, London
- Sun YS, Lin YZ (1988) Process and types of rural urbanization. *Econ Geogr* 8(1):31–35 (in Chinese)
- Sun MJ, Lin BY (2000) The problems and countermeasures in urbanization process of rural district in the Pearl River Delta: a case of Pinghu town in Shenzhen. *Econ Geogr* 20(4):46–49 (in Chinese)
- Sun PJ, Ding SB, Xiu CL, Wei Z (2012) Population-economy-space urbanization of northeast China. *Sci Geogr Sin* 32(4):450–457 (in Chinese)
- Tang ML, Yao SM (1999) On the development of urbanization in Jiangsu province: process and characteristics. *Econ Geogr* 19(4):117–122 (in Chinese)
- Tao R (1996) Institutional innovation and urbanization: discussion on the construction of urban infrastructures and public facilities in China. *Urban Prob* 4:15–19 (in Chinese)
- Taylor PJ (1997) Hierarchical tendencies amongst world cities: a global research proposal. *Cities* 14(6):323–332
- Taylor PJ (2004) World city network: a global urban analysis. Routledge, London
- Turner J (1968) The squatter settlement: an architecture that works. *Archit Des* 38(4):357–360
- Wang YM (2002) The Chinese urbanization and institutional innovation for the administrative divisions in urban areas. *City Plann Rev* 26(6):22–25 (in Chinese)
- Wang SJ, Li XM (1995) An analysis of the trend of suburb-urbanization of inland central cities in China's eastern part: with Changchun city as an example. *Hum Geogr* 10(2):43–47 (in Chinese)
- Wang RC, Zhao L (2004) Study on urbanization responds of harbin-dalian traffic economic belt in northeast China. *Sci Geogr Sin* 24(5):535–541 (in Chinese)
- Ward JO, Sanders JH (1980) Nutritional determinants and migration in the Brazilian: a case study of rural and urban areas. *Monograph* 29(1):141–163
- Wei QQ (1997) Urban-rural integration: a unique urbanization model. *Urban Dev Stud* 1(4):27–29 (in Chinese)
- Wei H, Wei QQ, Cao TY, Zhao J (2009) Types, problems and changes for readjustment of administrative divisions in the process of urbanization. *Hum Geogr* 24(6):55–58 (in Chinese)
- Welsh DJ (1971) The roots of segregation: native policy in colonial Natal, 1845–1910. Oxford University Press, Oxford
- Weng JC, Yan XP (2011) Typical characteristics and power mechanism of rural in situ urbanization in Zhongshan city. *World Reg Stud* 20(2):76–83 (in Chinese)
- Wheeler SREM (1966) Civilization of the Indus Valley and beyond. Thames and Hudson, London
- Wirth L (1938) Urbanism as a way of life. *Am J Sociol* 44(1):1–24
- Woolley L (1981) The beginnings of civilisation: the urbanisation of society in history of mankind. UNESCO, Paris
- Wu YR (1979) Problems of China's socialist urbanization. *City Plann Rev* 3(5):13–25 (in Chinese)
- Wu LY, Gu CL (2005) Globalization, foreign investment and urbanization in developing countries: a case study of Jiangsu. *City Plann Rev* 29(7):28–33 (in Chinese)
- Wu WJ, Shi PJ, Hu W (2011) Research on the coordination between urbanization and cultivated land change in an Oasis city of Ganzhou district. *Progr Geogr* 30(5):621–626 (in Chinese)
- Xu XQ (1986) Spatial process and organization of urbanization. *Urban Prob* 3:4–8 (in Chinese)
- Xue DS, Chen WJ, Hou QZ (1998) The analysis of the concepts on rural urbanization and urban-rural integration. *Urban Prob* 1:14–16 (in Chinese)
- Xue FX, Yang C (1995) Urbanization influenced by foreign investment: a case study of the Pearl River Delta. *City Plann Rev* 19(6):21–27 (in Chinese)
- Xue DS, Zheng X (2001) Research on rural urbanization in China: origin, definition, progress and prospect. *Hum Geogr* 16(5):24–28 (in Chinese)
- Yan XP, Wei LH, Zhou RB (2004) Research on the coordination between urban and rural area in the rapid urbanization with the redevelopment of Guangzhou village-amid-the-city as a case. *City Plann Rev* 28(3):30–38 (in Chinese)
- Yang K, Yuan W, Zhao J, Xu SY (2004) Stream structure characteristics and its urbanization responses to tidal river system. *Acta Geogr Sin* 59(4):557–564 (in Chinese)
- Yao SM, Wu CC (1982) A special form of urbanization of rural population in China: a comment on the population of both workers and peasants. *Acta Geogr Sin* 37(2):155–163 (in Chinese)
- Yao SM, Feng CC, Wang CX, Nian FH, Guan CM, Chen C (2010) China's urbanization and its resource and environmental basis. Science Press, Beijing (in Chinese)
- Ye C (2012) The significant turns of thoughts on space in human geography. *Hum Geogr* 27(5):1–5 (in Chinese)
- Yeh A, Xu J, Yi H (2006) The fourth wave of urbanization in China. *City Plann Rev* 30(S1):13–18 (in Chinese)
- Yin XY, Yan XP, Xue DS (2009) The informal sector in "urban village" and "urban village" transformation in rapid urbanization region: case of Caiwuwei and Yumincun, Shenzhen. *Mod Urban Res* 24(3):44–53 (in Chinese)
- Zachariah KC (1966) Bombay migration study: a pilot analysis of migration to an Asian metropolis. *Demography* 3(2):378–392
- Zeng ZG, Yu CP (1989) Change of rural economic structure, transformation of surplus rural labor forces and urbanization in Nantong county, Jiangsu province. *Acta Geogr Sin* 56(1):68–76 (in Chinese)
- Zhang XL (1996) Study on development of rural urbanization in southern Jiangsu province. *Econ Geogr* 16(3):21–26 (in Chinese)
- Zhang J (1998) On the regional institution environment with its transition and urbanization. *Hum Geogr* 13(3):39–44 (in Chinese)
- Zhang PY (2004) Urban regeneration: China urbanization trends in 21st century. *Prog Geogr* 23(4):72–79 (in Chinese)
- Zhang LJ, Chen ZN (2003) New discussions on the essential reasons for the backwardness of China's urbanization. *Urban Prob* 5:2–5 (in Chinese)
- Zhang GR, Gu CL (2006) Passive urbanization in rapid urbanization. *City Plann Rev* 30(5):48–54 (in Chinese)
- Zhang SL, Yao SM (1997) The riptide of China's urbanization: the redundant rural laborers. *Urban Prob* 2:40–43 (in Chinese)

- Zhang LP, Zhang RB (2004) Research on the land use components developing change in the urbanization processes of Hangzhou. *Econ Geogr* 24(6):793–796 (in Chinese)
- Zhang JX, Fan CL, Shen JF (2002) On administrative division adjustment and urbanization promotion. *Urban Plann Forum* 5:25–28 (in Chinese)
- Zhang PY, Ma YJ, Liu WX, Chen QY (2004) New urbanization strategy for revitalizing the traditional industrial base of Northeast China. *Acta Geogr Sin* 59(S1):109–115 (in Chinese)
- Zhang M, Zhen F, Zhang XM (2008) Characteristics and mechanisms of the peri-urbanization in China's less developed coastal areas: a case study of Putian, Fujian Province. *Geogr Res* 27(4):927–937 (in Chinese)
- Zhang CM, Zhang XL, Wu QY, Li HB (2012a) Measures and improvement of urbanization development quality in the developed area: a case study of Jiangsu. *Econ Geogr* 32(7):50–55 (in Chinese)
- Zhang SW, Shi PJ, Wang ZJ (2012b) Analysis of coupling between urbanization and water resource and environment of Inland River Basin in arid region: a case study of Shiyang River Basin. *Econ Geogr* 32(8):142–148 (in Chinese)
- Zhao XZ, Ning YM (2009) Researches on the different dynamics of regional urbanization in China with grey relevancy method. *Urban Prob* 12:13–18 (in Chinese)
- Zhao QY, Zhou YX, Wang MJ (2005) The comparative analysis of urbanization speed among Chinese provinces in recent 20 years: reconstruction based on the fifth population census. *Econ Geogr* 25(5):632–637 (in Chinese)
- Zheng TX, Wang XS (1985) Economic development and urbanization of Bao'an county, Guangdong province. *Econ Geogr* 5(4):295–299 (in Chinese)
- Zheng YT, Liu SH, Chen T (2003) The characteristics of peri-urbanization region: a case study of Dongguan municipality in Guangdong province. *Geogr Res* 22(6):760–768 (in Chinese)
- Zhou YX (1984) Several problems of China's urbanization. *Econ Geogr* 4(2):116–123 (in Chinese)
- Zhou YX, Yu T (1988) Discussions on China's city development policies. *City Plann Rev* 12(3):33–36 (in Chinese)
- Zhu Y (2006) New forms of urbanization and China's urbanization policies. *Hum Geogr* 21(2):115–118 (in Chinese)
- Zhu H, Jia LL (2006) The form of urban tourism based on the tourism urbanization. *Econ Geogr* 26(1):151–155 (in Chinese)