

Charting sustainable urban development through a systematic review of SDG11 research

In the format provided by the authors and unedited

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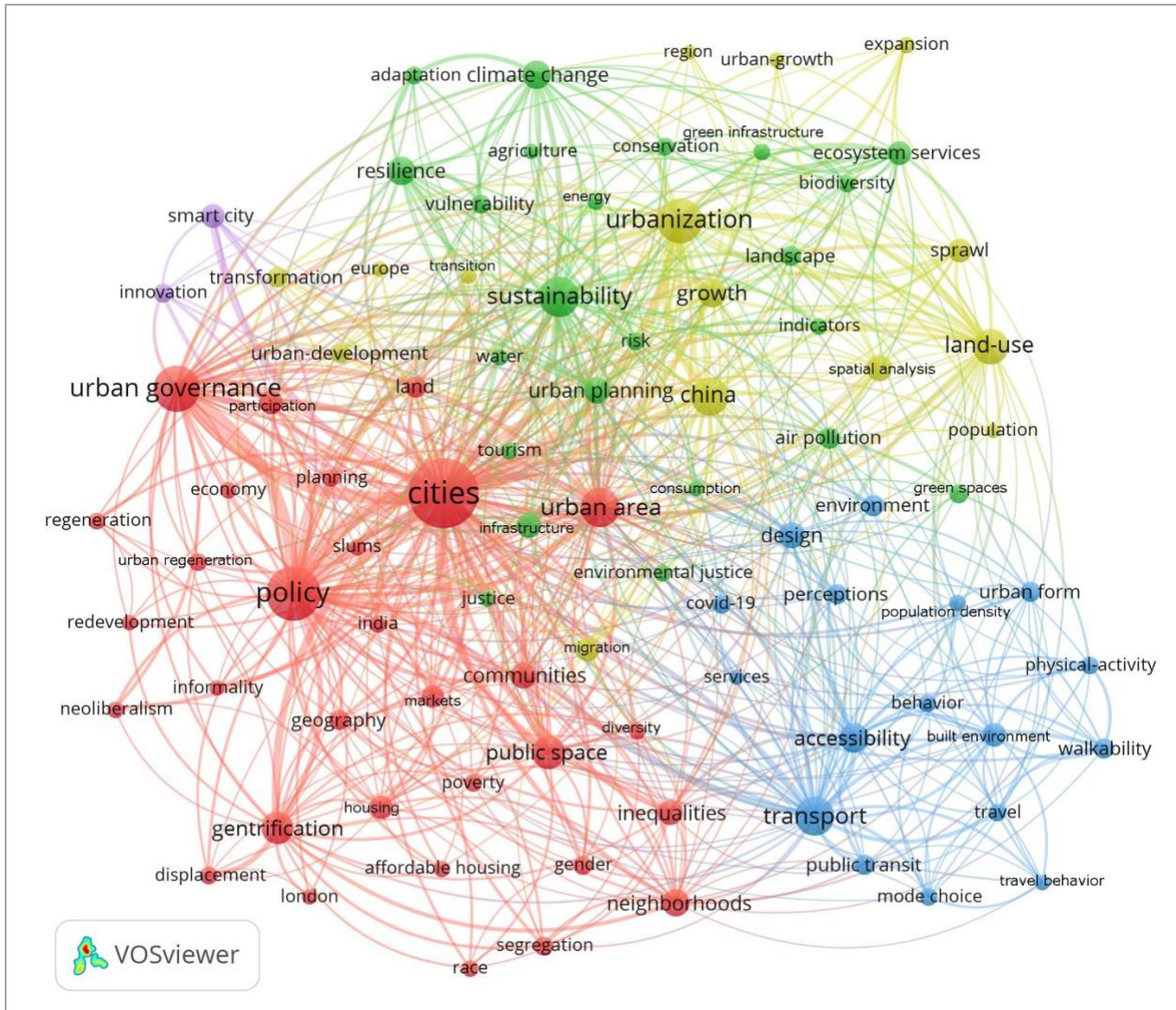
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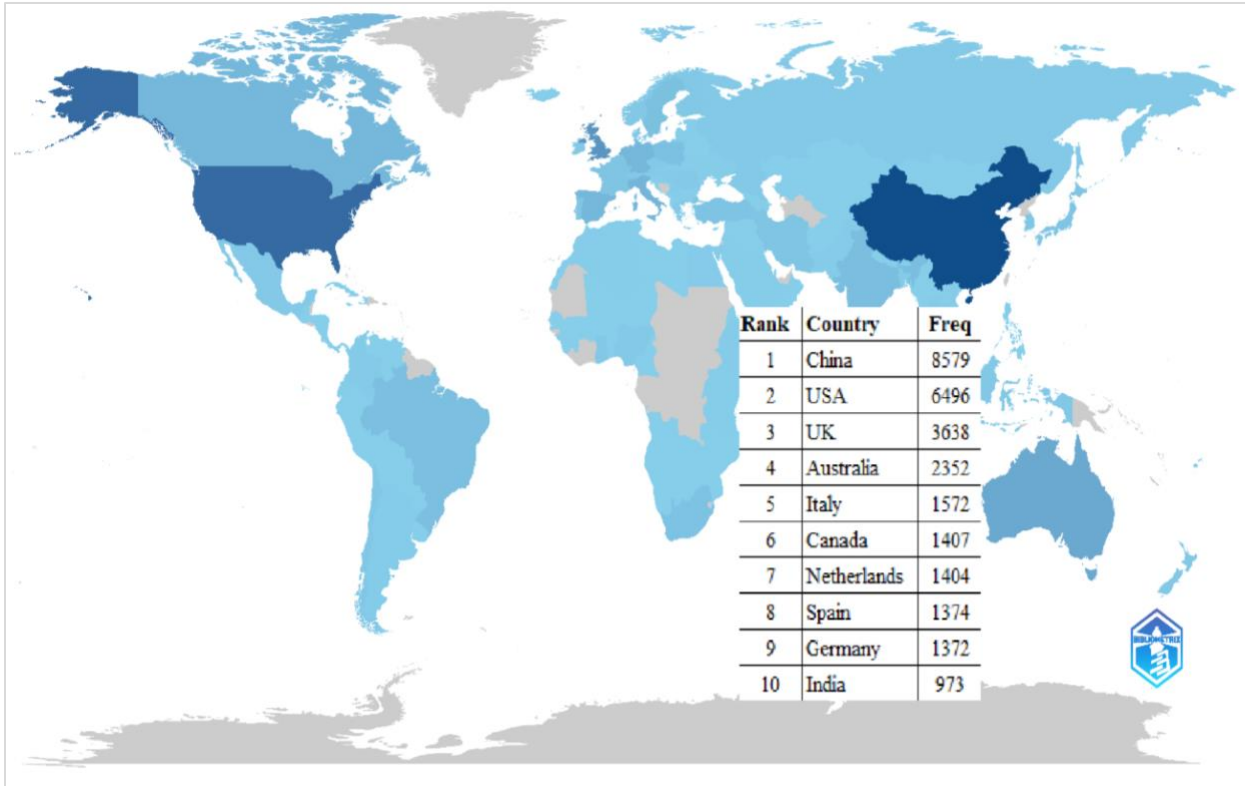
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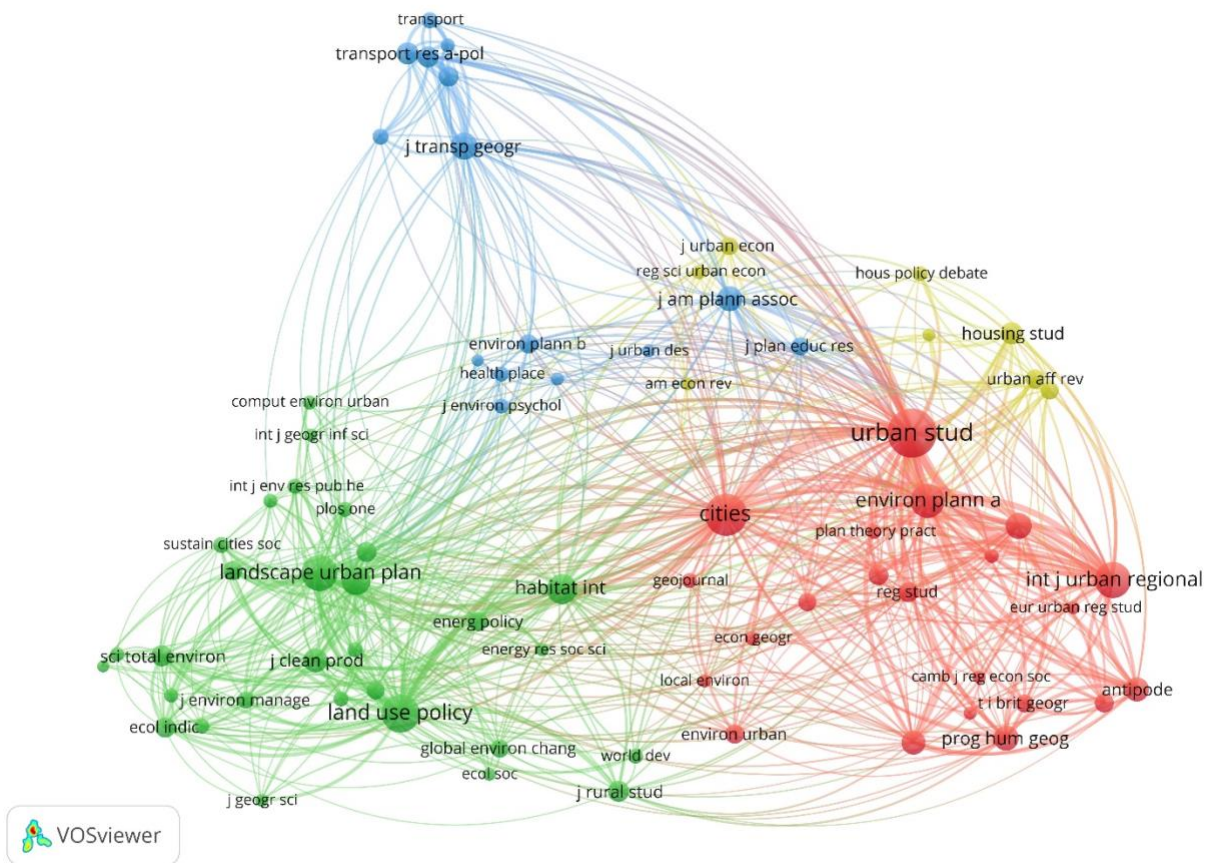
Supplementary Fig. 1. The output of the term co-occurrence analysis between 2016 and 2022. The size of each node is proportional to the keyword co-occurrence frequency, while the thickness of the line represents the strength of the connection between terms. The results of the term co-occurrence analysis reveal an imbalance of attention given to different SDG11 targets over the entire period. The dominant cluster (depicted in red) focuses primarily on SDG11.1 (affordable housing), SDG11.7 (access to public spaces), and SDG11.3 (participatory planning). The green and yellow clusters highlight urbanization, sustainability, resilience, land use changes, and CC adaptation and mitigation in cities. Meanwhile, the blue cluster is characterized by terms related to urban mobility, while the purple cluster focuses on smart cities and innovation.



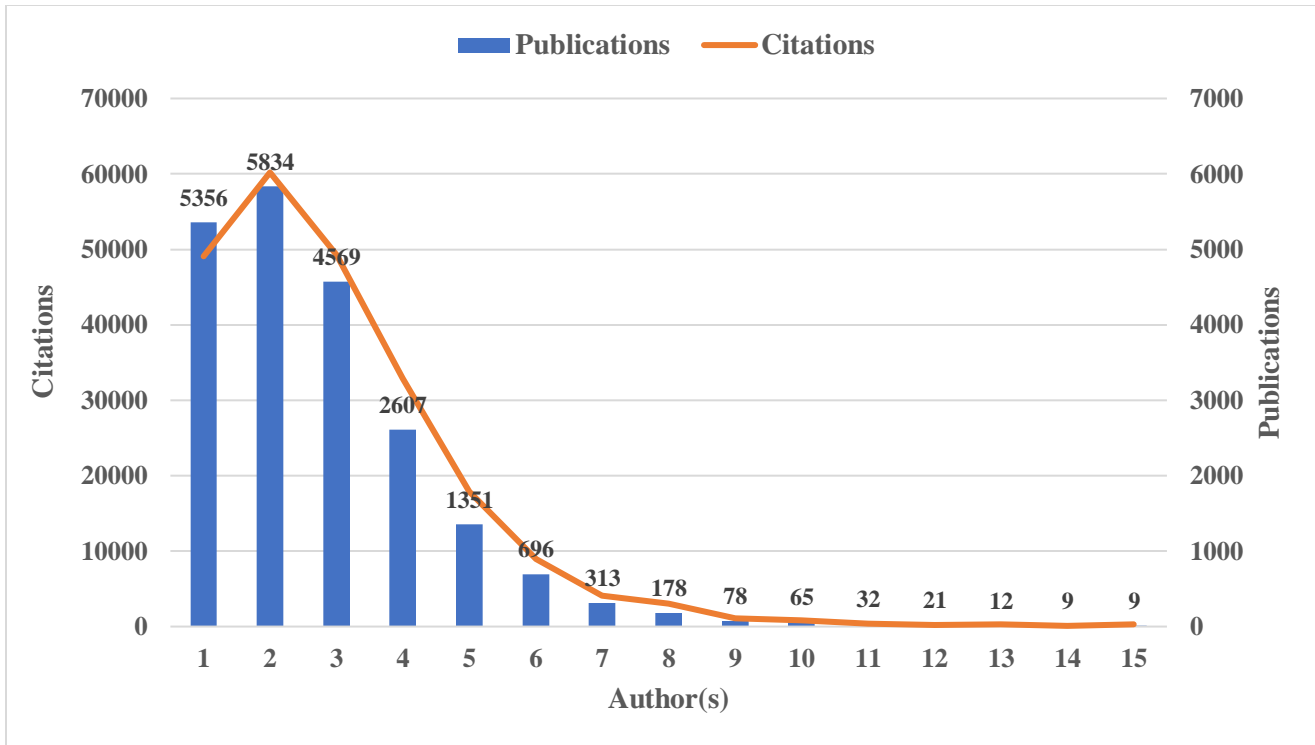
Supplementary Fig. 2. The map showcases the top 10 countries that have made significant contributions to SDG11 research from 2016 to 2022. The color intensity on the map corresponds to the level of productivity, where darker shades indicate higher levels of contribution. China and India represent Asia in the top 10, but there is no representation from Africa, Latin America, and the Caribbean among the leading contributing countries.

| Rank | Country | Citations | Publications | AAC | Urban Population | AUPPC |
|------|---------------------|-----------|--------------|-------|------------------|-----------|
| 1 | China | 48505 | 3300 | 14.70 | 842,933,962 | 17378.29 |
| 2 | United States | 34117 | 3074 | 11.10 | 270,663,028 | 7933.38 |
| 3 | United Kingdom | 28568 | 1879 | 15.20 | 55,908,316 | 1957.03 |
| 4 | Australia | 14367 | 1168 | 12.30 | 21,844,756 | 1520.48 |
| 5 | Netherlands | 9519 | 670 | 14.20 | 15,924,729 | 1672.94 |
| 6 | Canada | 9277 | 742 | 12.50 | 30,628,482 | 3301.55 |
| 7 | Italy | 8729 | 864 | 10.10 | 42,651,966 | 4886.24 |
| 8 | Spain | 7709 | 607 | 12.70 | 37,927,409 | 4919.89 |
| 9 | Germany | 6571 | 664 | 9.90 | 64,324,835 | 9789.20 |
| 10 | Sweden | 3965 | 389 | 10.20 | 9,021,165 | 2275.20 |
| 11 | India | 3696 | 521 | 7.10 | 471,031,528 | 127443.60 |
| 12 | Poland | 2849 | 509 | 5.60 | 22,796,574 | 8001.61 |
| 13 | South Africa | 2637 | 338 | 7.80 | 39,149,717 | 14846.31 |
| 14 | Belgium | 2631 | 251 | 10.50 | 11,259,082 | 4279.39 |
| 15 | Finland | 2512 | 177 | 14.20 | 4,716,888 | 1877.74 |
| 16 | Portugal | 2476 | 213 | 11.60 | 6,753,579 | 2727.62 |
| 17 | Brazil | 2205 | 374 | 5.90 | 183,241,641 | 83102.79 |
| 18 | Republic of Ireland | 2124 | 136 | 15.60 | 3,133,123 | 1475.10 |
| 19 | France | 2042 | 243 | 8.40 | 54,123,364 | 26505.08 |
| 20 | Norway | 1976 | 165 | 12.00 | 4,418,218 | 2235.94 |

Supplementary Fig. 3. The top 20 countries with the highest number of publications and citations in SDG11 research from 2016 to 2022. The ranking of the top five countries decreases with decreasing urban population. South Africa is the sole representative of Africa in the ranking, while the representation of Latin America and the Caribbean is solely through Brazil. Note: AAC = Average Article Citation, AUPPC = Average Urban Population Per Citation.



Supplementary Fig. 4. Co-citation analysis showing journals with the highest number of publications related to SDG11 between 2016 and 2022. The results of this analysis are represented in four distinct clusters. The largest cluster (red) consists of journals that primarily focus on urban planning and development, with a specific emphasis on themes such as “urban studies” and “environmental planning.” The blue cluster aligns with the transportation cluster, highlighting journals that center around topics like “transport” and “transport geography.” The green cluster encompasses journals that concentrate on land use policy, landscaping, and urban planning. Lastly, the yellow cluster corresponds to journals predominantly focusing on urban solutions.



Supplementary Fig. 5. Total publications and citations of the top 15 authors in SDG11 research from 2016 to 2022. The co-citation analysis reveals the most influential authors who have made significant contributions to SDG11 research, showcasing their publication and citation counts. These authors primarily focused on thematic issues related to urban experience, planning, and urbanization.

SUPPLEMENTARY TABLES

Supplementary Table 1. The top 10 countries with the highest number of publications related to SDG11 between 2016 and 2022. The United States of America (USA), China, the United Kingdom (UK), and Australia have consistently been the leading nations in SDG11 publications since 2016. In Period-1, the USA held the first position, accounting for 20.41% of total publications. However, in Period-2, it dropped to the second position with 17.09% of publications. Conversely, China ranked second in Period-1 with 12.02% of publications but claimed the top spot in Period-2 with 20.84% of publications. The top 10 countries collectively contributed 78.3% of the total publications in Period-1, a percentage that increased slightly to 79.0% in Period-2.

| Period-1: 2016-2019 (N =9,240) | | | | Period-2: 2020-2022 (N= 11,928) | | |
|--------------------------------|-------------|---------|---------|---------------------------------|---------|---------|
| Rank | Country | Article | Percent | Country | Article | Percent |
| 1 | USA | 1,886 | 20.41% | China | 2,486 | 20.84% |
| 2 | China | 1,111 | 12.02% | USA | 2,038 | 17.09% |
| 3 | UK | 1,075 | 11.63% | UK | 1,167 | 9.78% |
| 4 | Australia | 740 | 8.01% | Australia | 768 | 6.44% |
| 5 | Italy | 494 | 5.35% | Germany | 549 | 4.60% |
| 6 | Canada | 471 | 5.10% | Netherlands | 549 | 4.60% |
| 7 | Netherlands | 462 | 5.00% | Italy | 538 | 4.51% |
| 8 | Germany | 385 | 4.17% | Canada | 501 | 4.20% |
| 9 | Spain | 353 | 3.82% | Spain | 441 | 3.70% |
| 10 | Sweden | 259 | 2.80% | India | 387 | 3.24% |

Supplementary Table 2. The top 20 countries with the highest number of research collaborations related to SDG11 between 2016 and 2022. The list is predominantly comprised of countries from the Global North. Europe is represented by nine countries, while Asia is represented by six. Two countries from North America, and one each from Africa, Oceania, and Latin America and the Caribbean also feature on the list.

| Rank | Country | Articles | Citations | SCP | MCP | ACPP | 2023 SDGs Rank |
|------|--------------|----------|-----------|------|-----|-------|----------------|
| 1 | China | 3297 | 48505 | 2467 | 830 | 14.71 | 63 |
| 2 | USA | 3076 | 34128 | 2588 | 488 | 11.09 | 39 |
| 3 | UK | 1883 | 28569 | 1348 | 535 | 15.17 | 11 |
| 4 | Australia | 1169 | 14368 | 892 | 277 | 12.29 | 40 |
| 5 | Italy | 864 | 8729 | 694 | 170 | 10.10 | 24 |
| 6 | Canada | 744 | 9282 | 595 | 149 | 12.48 | 26 |
| 7 | Netherlands | 669 | 9519 | 426 | 243 | 14.23 | 20 |
| 8 | Germany | 665 | 6578 | 445 | 220 | 9.89 | 4 |
| 9 | Spain | 609 | 7709 | 463 | 146 | 12.66 | 16 |
| 10 | India | 519 | 3696 | 467 | 52 | 7.12 | 112 |
| 11 | Poland | 509 | 2849 | 461 | 48 | 5.60 | 9 |
| 12 | Sweden | 389 | 3965 | 302 | 87 | 10.19 | 2 |
| 13 | Turkey | 375 | 1309 | 346 | 29 | 3.49 | 72 |
| 14 | Brazil | 371 | 2205 | 287 | 84 | 5.94 | 50 |
| 15 | South Africa | 338 | 2637 | 275 | 63 | 7.80 | 110 |
| 16 | Iran | 269 | 1650 | 200 | 69 | 6.13 | 86 |
| 17 | Belgium | 253 | 2631 | 176 | 77 | 10.40 | 19 |
| 18 | Japan | 249 | 1685 | 185 | 64 | 6.77 | 21 |
| 19 | Korea | 246 | 1967 | 188 | 58 | 8.00 | 31 |
| 20 | France | 244 | 2042 | 175 | 69 | 8.37 | 6 |

Note: SCP = Single Country Publications, MCP = Multi Country Publications, ACPP = Average Citation Per Paper, TLS = Total Link Strength.

Supplementary Table 3. The top 20 institutions that have made significant contributions to SDG11 research between 2016 and 2022. Out of these institutions, eight are from China, followed by four from the UK, three from both the Netherlands and Australia, and one each from Canada and Hong Kong.

| Rank | Name | Country | Articles | Citations | ACPP | TLS |
|------|---|-----------------|----------|-----------|-------|------|
| 1 | Chinese Academy of Sciences | China | 485 | 12338 | 25.44 | 1571 |
| 2 | University College London | UK | 336 | 6204 | 18.46 | 922 |
| 3 | University of Melbourne | Australia | 283 | 3111 | 10.99 | 367 |
| 4 | University of Hong Kong | Hong Kong | 248 | 3906 | 15.75 | 794 |
| 5 | Delft University of Technology | The Netherlands | 230 | 2876 | 12.50 | 309 |
| 6 | University of Chinese Academy of Sciences | China | 227 | 5606 | 24.70 | 1007 |
| 7 | University of Sheffield | UK | 211 | 3498 | 16.58 | 481 |
| 8 | Peking University | China | 187 | 3165 | 16.93 | 582 |
| 9 | University of Manchester | UK | 185 | 3530 | 19.08 | 410 |
| 10 | Utrecht University | The Netherlands | 185 | 3504 | 18.94 | 344 |
| 11 | Wuhan University | China | 165 | 3705 | 22.45 | 680 |
| 12 | Tongji University | China | 156 | 1940 | 12.44 | 432 |
| 13 | University of Amsterdam | The Netherlands | 149 | 3487 | 23.40 | 232 |
| 14 | RMIT University | Australia | 145 | 1918 | 13.23 | 254 |
| 15 | Sun Yat-sen University | China | 143 | 2459 | 17.20 | 558 |
| 16 | University of Cambridge | UK | 143 | 2028 | 14.18 | 240 |
| 17 | University of Sydney | Australia | 139 | 1833 | 13.19 | 249 |
| 18 | Zhejiang University | China | 133 | 2412 | 18.14 | 475 |
| 19 | Nanjing University | China | 131 | 2399 | 18.31 | 504 |
| 20 | University of Toronto | Canada | 129 | 1728 | 13.40 | 143 |

Note: ACPP = Average Citation Per Paper, TLS = Total Link Strength

Supplementary Table 4. The top 10 affiliations of publications related to SDG11 between 2016 and 2022. In both periods, the N8 Research Partnership, the University of London, and the Chinese Academy of Sciences emerge as the top three research institutions. During Period-2, the University of Chinese Academy of Sciences and the University of Hong Kong replaced Delft University of Technology and RLUK Research Libraries, which were the bottom two universities in Period-1. Notably, institutions from Africa and the Latin America and the Caribbean regions are not represented among the top leading institutions in SDG11 research during the study period. In Period-1, the top ten leading affiliations accounted for 20.63% of the total publications, which slightly decreased to 18.97% in Period-2.

| Period-1: 2016-2019 | | | | Period-2: 2020-2022 | | |
|---------------------|---|---------|---------|---|---------|---------|
| Rank | Affiliation (country) | Article | Percent | Affiliation (country) | Article | Percent |
| 1 | N8 Research Partnership (UK) | 348 | 3.77% | N8 Research Partnership (UK) | 381 | 3.19% |
| 2 | University of London (UK) | 281 | 3.04% | Chinese Academy of Sciences (China) | 323 | 2.71% |
| 3 | Chinese Academy of Sciences (China) | 180 | 1.95% | University of London (UK) | 301 | 2.52% |
| 4 | University College London (UK) | 173 | 1.87% | Institute of Geographic Sciences Natural Resources Research (China) | 235 | 1.97% |
| 5 | The University of California System (USA) | 169 | 1.83% | White Rose University Consortium (UK) | 189 | 1.59% |
| 6 | White Rose University Consortium (UK) | 150 | 1.62% | University College London (UK) | 188 | 1.58% |
| 7 | Institute of Geographic Sciences Natural Resources Research (China) | 128 | 1.39% | The University of California System (USA) | 186 | 1.56% |

| | | | | | | |
|----|--|-----|-------|---|-----|-------|
| 8 | University of Melbourne (Australia) | 128 | 1.39% | University of Chinese Academy of Sciences (China) | 157 | 1.32% |
| 9 | Delft University of Technology (the Netherlands) | 115 | 1.25% | University of Melbourne (Australia) | 157 | 1.32% |
| 10 | RLUK Research Libraries (UK) | 104 | 1.13% | University of Hong Kong (Hong Kong) | 144 | 1.21% |

Supplementary Table 5: The top 20 most influential journals in terms of publishing SDG11 research between 2016 and 2022. The top journals for publishing SDG11 research in descending order include Land (16.5%), Cities (16.0%), Land Use Policy (13.4%), Urban Studies (9.2%), and Urban Geography (4.2), among others. Except for the Land journal, the total journal citations are directly proportional to the number of published papers. There is a moderate positive relationship between publications and citations, as indicated by a correlation coefficient of 0.682.

| Rank | Source | Publications | Citations | ACPP | TLS |
|------|---|---------------|----------------|-------|------|
| 1 | Land | 1546 (16.47%) | 8749 (7.82%) | 5.66 | 3281 |
| 2 | Cities | 1502 (16.0%) | 29449 (26.32%) | 19.61 | 3735 |
| 3 | Land Use Policy | 1255 (13.4%) | 28402 (25.41%) | 22.63 | 3746 |
| 4 | Urban Studies | 862 (9.2%) | 15575 (13.94%) | 18.07 | 2877 |
| 5 | Urban Geography | 390 (4.2%) | 6163 (5.51%) | 15.80 | 1607 |
| 6 | Case Studies on Transport Policy | 387 (4.1%) | 2728 (2.44%) | 7.05 | 118 |
| 7 | Geoforum | 356 (3.8%) | 4592 (4.11%) | 12.90 | 925 |
| 8 | Environment and Planning B-Urban Analytics and City Science | 335 (3.6%) | 3108 (2.78%) | 9.28 | 455 |
| 9 | Urban Planning | 329 (3.5%) | 1878 (1.68%) | 5.71 | 438 |
| 10 | International Journal of Urban and Regional Research | 312 (3.3%) | 5376 (4.81%) | 17.23 | 1343 |
| 11 | Applied Geography | 307 (3.3%) | 6632 (5.93%) | 21.60 | 676 |
| 12 | Journal of Urban Affairs | 304 (3.2%) | 2534 (2.26%) | 8.34 | 658 |
| 13 | European Planning Studies | 290 (3.1%) | 3503 (3.13%) | 12.08 | 554 |
| 14 | Geojournal | 275 (2.9%) | 2269 (2.03%) | 8.25 | 327 |
| 15 | Journal of Rural Studies | 265 (2.8%) | 5086 (4.55%) | 19.19 | 726 |
| 16 | Environment and Planning A-Economy and Space | 231 (2.5%) | 3998 (3.58%) | 17.31 | 1017 |
| 17 | Housing Studies | 229 (2.4%) | 2029 (1.82%) | 8.86 | 623 |
| 18 | Journal of Housing and the Built Environment | 219 (2.3%) | 1634 (1.46%) | 7.46 | 394 |
| 19 | Annals of the American Association of Geographers | 202 (2.2%) | 3740 (3.34%) | 18.51 | 515 |
| 20 | Journal of Geographical Sciences | 198 (2.1%) | 3946 (3.53%) | 19.93 | 479 |

Note: ACPP = Average Citation Per Paper, TLS = Total Link Strength

Supplementary Table 6: Top 10 journals with the highest number of publications related to SDG11 between 2016 and 2022. In Period-1, the journals with the most publications in SDG11 research were Cities (N=589), Land Use Policy (N=559), Urban Studies (N=454), Geoforum (N=196), and Applied Geography (N=176), among others. These journals primarily focused on urbanization, spatial, and land use challenges. In Period-2, the leading journals were Land (N=1456), Cities (N=913), Land Use Policy (N=696), Urban Studies (N=408), and Case Studies on Transport Policy (N=272).

| Period-1: 2016-2019 | | | | Period-2: 2020-2022 | | |
|---------------------|-----------------|---------|---------|---------------------|---------|---------|
| Rank | Journal | Article | Percent | Journal | Article | Percent |
| 1 | Cities | 589 | 6.37% | Land | 1,456 | 12.21% |
| 2 | Land Use Policy | 559 | 6.05% | Cities | 913 | 7.65% |

| | | | | | | |
|----|--|-----|-------|--|-----|-------|
| 3 | Urban Studies | 454 | 4.91% | Land Use Policy | 696 | 5.84% |
| 4 | Geoforum | 196 | 2.12% | Urban Studies | 408 | 3.42% |
| 5 | Applied Geography | 176 | 1.91% | Case Studies on Transport Policy | 272 | 2.28% |
| 6 | Urban Geography | 175 | 1.89% | Environment and Planning B: Urban Analytics and City Science | 247 | 2.07% |
| 7 | International Journal of Urban and Regional Research | 173 | 1.87% | Urban Planning | 216 | 1.81% |
| 8 | European Planning Studies | 144 | 1.56% | Urban Geography | 215 | 1.80% |
| 9 | Open House International | 122 | 1.32% | Geojournal | 195 | 1.64% |
| 10 | Environment and Urbanization | 121 | 1.31% | Journal of Urban Affairs | 186 | 1.56% |

Supplementary Table 7. Top 10 authors with the highest number of publications related to SDG11 between 2016 and 2022. Chinese authors dominated the SDG11 publications throughout the study period. In Period-1, half of the authors were replaced by new entrants in Period-2. During Period-2, a new wave of authors emerged, including some who were also present in the previous period. These authors collectively accounted for 2.68% of all publications. Notably, the contributions of these authors increased by more than 1.6-fold, rising from 206 articles in Period-1 to 343 articles in Period-2.

| Period-1: 2016-2019 | | | | Period-2: 2020-2022 | | |
|---------------------|-------------|---------|---------|---------------------|---------|---------|
| Rank | Author | Article | Percent | Author | Article | Percent |
| 1 | Liu Y | 35 | 0.38% | Liu Y | 44 | 0.37% |
| 2 | Salvati L | 33 | 0.36% | Zhang Y | 43 | 0.36% |
| 3 | Cobbinah PB | 19 | 0.21% | Li X | 38 | 0.32% |
| 4 | Li X | 18 | 0.20% | Wang Y | 33 | 0.28% |
| 5 | Liu YS | 18 | 0.20% | Wang L | 30 | 0.25% |
| 6 | Zhang XL | 18 | 0.20% | Li H | 29 | 0.24% |
| 7 | Chen Y | 17 | 0.18% | Zhang XL | 27 | 0.23% |
| 8 | Wang J | 16 | 0.17% | Wang J | 26 | 0.22% |
| 9 | Zhang L | 16 | 0.17% | Wang H | 25 | 0.21% |
| 10 | Zhang Y | 16 | 0.17% | Chen J | 24 | 0.20% |

Supplementary Table 8. The top 10 cited SDG11 publications between 2016 and 2022. these highly cited publications have evolved to become increasingly multidisciplinary since 2016, with a growing emphasis on sustainability, smart cities, and the urban environment.

| Period-1: 2016-2019 | | | Period-2: 2020-2022 | | |
|--|---------|-----|---|---------|-----|
| Title (year) | H-Index | N | Title (year) | H-Index | N |
| What are the differences between sustainable and smart cities? (2017) ¹ | 78.71 | 551 | Assessing the Environmental Sustainability Corridor: Linking Natural Resources, Renewable Energy, Human Capital, and Ecological Footprint in BRICS (2021) ¹¹ | 55.33 | 166 |
| Bikeshare: A Review of Recent Literature (2018) ² | 64.5 | 516 | The Relevance of Sustainable Soil Management Within the European Green Deal (2021) ¹² | 51.33 | 154 |
| Introduction to land use and rural sustainability in China (2018) ³ | 72.83 | 437 | Extended Urbanization and the Spatialities of Infectious Disease: Demographic Change, Infrastructure, and Governance (2021) ¹³ | 50.67 | 152 |

| | | | | | |
|---|-------|-----|--|-------|-----|
| Airbnb and the rent gap: Gentrification through the sharing economy (2018) ⁴ | 60.33 | 362 | Analysis of the Electricity Demand Trends Amidst the Covid-19 Coronavirus Pandemic (2020) ¹⁴ | 35.50 | 142 |
| Urban resilience for whom, what, when, where, and why? (2021) ⁵ | 64.2 | 321 | Monitoring Land Use and Land Cover Changes in the Mountainous Cities of Oman Using GIS and Ca-Markov Modelling Techniques (2020) ¹⁵ | 33.75 | 135 |
| Strategic adjustment of land use policy under the economic transformation (2018) ⁶ | 52.17 | 313 | Moving Beyond Marcuse: Gentrification, Displacement, and the Violence of Un-Homing (2020) ¹⁶ | 33.25 | 133 |
| Challenges and the way forward in China's new-type urbanization (2016) ⁷ | 38.88 | 311 | Urban Water Resource Management for Sustainable Environment Planning Using Artificial Intelligence Techniques (2021) ¹⁷ | 44.00 | 132 |
| On big data, artificial intelligence, and smart cities (2019) ⁸ | 59.6 | 298 | Local Response in Health Emergencies: Key Considerations for Addressing the Covid-19 Pandemic in Informal Urban Settlements (2020) ¹⁸ | 28.50 | 114 |
| Thinking cities through elsewhere: Comparative tactics for a more global urban study (2016) ⁹ | 36.88 | 295 | Deciphering the Spatial Structure of China's Megacity Region: A New Bay Area-the Guangdong-Hong Kong-Macao Greater Bay Area in the Making (2020) ¹⁹ | 28.25 | 113 |
| Peripheral urbanization: Auto Construction, transversal logics, and Politics in Cities of the global south (2017) ¹⁰ | 38.86 | 272 | Ecological Footprint, Energy Use, Trade, and Urbanization Linkage in Indonesia (2020) ²⁰ | 37.00 | 111 |

Note: N= number of citations

Supplementary Table 9. Authors with the highest citations by SDG11 research based on co-citation analysis between 2016 and 2022. Foundational works from earlier periods tend to have more citations and co-citations compared to recent ones. This is attributed to the additional time these works have had to accumulate citations.

| Rank | Author | Co- citations count | Major thematic cluster | TLS | Most cited work |
|------|---------------|---------------------|------------------------|------|----------------------|
| 1 | Harvey, D | 2155 | Red | 6739 | Harvey, D (1989) |
| 2 | Peck, J | 1593 | Red | 6487 | Peck, J (2002) |
| 3 | Brenner, N | 1568 | Red | 6837 | Brenner, N (2002) |
| 4 | Roy, A | 1418 | Green | 5140 | Roy, A (2009) |
| 5 | Swyngedouw, E | 1347 | Red | 4018 | Swyngedouw, E (2002) |
| 6 | Cervero, R | 1336 | Blue | 1864 | Cervero, R (1997) |
| 7 | Liu, YS | 1127 | Yellow | 2348 | Liu, YS (2014) |
| 8 | Ewing, R | 1097 | Blue | 1640 | Ewing, R (2010) |
| 9 | Healey, P | 1080 | Red | 1845 | Healey, P (1997) |
| 10 | Wu, Fl | 1067 | Red | 3119 | Wu, Fl (2013) |
| 11 | Batty, M | 971 | Green | 967 | Batty, M (2012) |
| 12 | Long, HI | 937 | Blue | 2231 | Long, HI (2012) |
| 13 | Robinson, J | 927 | Red | 4823 | Robinson, J (2006) |
| 14 | Smith, N | 920 | Yellow | 3281 | Smith, N (1979) |
| 15 | Mcfarlane, C | 907 | Red | 3559 | Mcfarlane, C (2012) |

Note: TLS = Total Link Strength

Supplementary Table 10. The top 20 cited publications in SDG11 research between 2016 and 2022. These works cover a wide range of related topics. One notable example is David Harvey's "From Managerialism to Entrepreneurialism: The Transformation in Urban Governance in Late Capitalism," which serves as a crucial reference for SDG11, focusing on urban governance and employment³⁹. This work critically examines SD practices

during the 1980s to 1990s in the USA and explores the relationship between urban change and economic development during a period of instability. Jane Jacob's "The Uses of Sidewalks: Safety" from 1961 holds the second position. This work delves into cities and urban planning, providing an important foundation for SDG11 research⁴⁴. Neil Smith's work also holds great significance, particularly his article "The New Urban Frontier: Gentrification and the Revanchist City." This publication challenges conventional understandings of gentrification and examines its interrelation with urban policy, shedding light on a crucial aspect of SDG research⁴⁵.

| Rank | Title | Cluster | References | Citations | TLS |
|------|---|---------|---------------------------|-----------|-----|
| 1 | From managerialism to entrepreneurialism: the transformation in urban governance in late capitalism ²¹ | Green | Harvey (1989) | 473 | 473 |
| 2 | The uses of sidewalks: safety ²² | Blue | Jacobs (1961) | 414 | 120 |
| 3 | The new urban frontier: Gentrification and the revanchist city ²³ | Yellow | Smith (1996) | 295 | 283 |
| 4 | 10W IP65 Dimmable Recessed Press Steel Fire Rated LED COB Downlight Bezel Interchangeable Fire Rated Down Light ²⁴ | Blue | Wolch (2014) | 278 | 50 |
| 5 | Travel and the Built Environment: A meta-analysis ²⁵ | Blue | Ewing & Cervero (2010) | 274 | 26 |
| 6 | For space ²⁶ | Red | Massey (2005) | 269 | 138 |
| 7 | Splintering urbanism: Networked infrastructures, technological mobilities and the urban condition ²⁷ | Red | Graham & Marvin (2001) | 256 | 178 |
| 8 | Urban Informality: Toward an Epistemology of Planning ²⁸ | Red | Roy (2005) | 247 | 132 |
| 9 | Cities and the Geographies of "Actually Existing Neoliberalism" ²⁹ | Red | Brenner & Theodore (2002) | 224 | 280 |
| 10 | The real-time city? Big data and smart urbanism ³⁰ | Red | Kitchin (2014) | 204 | 78 |
| 11 | New Globalism, New Urbanism: Gentrification as Global Urban Strategy ³¹ | Yellow | Smith (2002) | 204 | 261 |
| 12 | Neoliberalizing Space ³² | Green | Peck & Tickell (2017) | 199 | 284 |
| 13 | Key Issues of land use in China and implications for policy making ³³ | Blue | Liu et al. (2014) | 197 | 13 |
| 14 | Neoliberalism ³⁴ | Green | Harvey (2005) | 190 | 203 |
| 15 | Urban fortunes: The political economy of place, with a new preface ³⁵ | Green | Logan & Molotch (2007) | 184 | 182 |
| 16 | Toward a Theory of Gentrification, A Back to the City Movement by Capital, not People ³⁶ | Yellow | Smith (1979) | 181 | 146 |
| 17 | The 21st-Century Metropolis: New Geographies of Theory ³⁷ | Red | Roy (2009) | 169 | 216 |
| 18 | Towards a new epistemology of the urban? ³⁸ | Red | Brenner & Schmid (2015) | 168 | 178 |
| 19 | Ordinary cities: between modernity and development ³⁹ | Red | Robinson (2013) | 165 | 198 |
| 20 | The Great urban transformation: Politics of land and property in China ⁴⁰ | Blue | Wu (2012) | 134 | 135 |

Note: TLS = Total Link Strength.

Supplementary Table 11. The top 10 highly cited papers by SDG11 research between 2016 and 2022. Notably, the 1989 article by Harvey²¹ maintains its position as the most influential paper in SDG11 research for both Period-1 and Period-2.

| | Rank | Title | Cluster | References | Citations | TLS |
|--------------|------|---|---------|---------------|-----------|-----|
| -1 Period | 1 | From managerialism to entrepreneurialism: the transformation in urban governance in late capitalism ²¹ | Green | Harvey (1989) | 236 | 162 |
| | 2 | The death and life of great American cities ⁴¹ | Blue | Jacobs (1961) | 198 | 37 |

| | | | | | | |
|-----------------|----|---|-------|-----------------|-----|-----|
| | 3 | The new urban frontier: Gentrification and the revanchist city ²³ | Blue | Smith (1996) | 155 | 104 |
| | 4 | Splintering urbanism: Networked infrastructures, technological mobilities, and the urban condition ²⁷ | Red | Graham (2001) | 151 | 68 |
| | 5 | Urban Informality: Toward an Epistemology of Planning ²⁸ | Red | Roy (2005) | 121 | 47 |
| | 6 | The Urbanization of Neoliberalism: Theoretical Debates, Cities and the Geographies of 'Actually Existing Neoliberalism' ²⁹ | Green | Brenner (2002) | 118 | 103 |
| | 7 | New Globalism, New Urbanism: Gentrification as Global Urban Strategy ³¹ | Blue | Smith (2002) | 113 | 104 |
| | 8 | Neoliberalizing Space ³² | Green | Peck (2002) | 108 | 119 |
| | 9 | The 21st-Century Metropolis: New Geographies of Theory ³⁷ | Red | Roy (2009) | 87 | 68 |
| | 10 | Ordinary cities: between modernity and development ³⁹ | Red | Robinson (2011) | 72 | 66 |
| Period-2 | 1 | From managerialism to entrepreneurialism: the transformation in urban governance in late capitalism ²¹ | Red | Harvey (1989) | 237 | 73 |
| | 2 | 10W IP65 Dimmable Recessed Press Steel Fire Rated LED COB Downlight Bezel Interchangeable Fire Rated Down Light ²⁴ | Red | Wolch (2014) | 181 | 14 |
| | 3 | Key Issues of land use in China and implications for policy making ³³ | Green | Liu (2014) | 146 | 122 |
| | 4 | The new urban frontier: Gentrification and the revanchist city ²³ | Red | Smith (1996) | 140 | 53 |
| | 5 | Revitalize the world's countryside ⁴² | Green | Liu & Li (2017) | 137 | 107 |
| | 6 | Splintering urbanism: Networked infrastructures, technological mobilities and the urban condition ²⁷ | Red | Graham. (2001) | 133 | 36 |
| | 7 | Introduction to land use and rural sustainability in China ³ | Green | Liu (2018) | 122 | 123 |
| | 8 | The real-time city? Big data and smart urbanism ³⁰ | Red | Kitchin (2014) | 121 | 27 |
| | 9 | Towards a new epistemology of the urban? ³⁸ | Red | Brenner (2015) | 108 | 29 |
| | 10 | New globalism, new urbanism: Gentrification as a global urban strategy ³¹ | Red | Smith (2002) | 91 | 54 |

Note: TLS = Total Link Strength

Supplementary Table 12. The top research areas related to SDG11 publications between 2016 and 2022.

There are similarities between both periods, as urban studies, environmental sciences, geography, public administration, architecture, transportation, and physical geography emerge as the leading areas of focus.

| Period-1: 2016-2019 | | | Period-2: 2020-2022 | | |
|----------------------------------|---------|---------|---------------------------------|---------|---------|
| Research area | Article | Percent | Research area | Article | Percent |
| Urban studies | 3,624 | 39.22% | Environmental sciences/ ecology | 4,862 | 40.76% |
| Environmental sciences / ecology | 3,116 | 33.72% | Urban studies | 4,332 | 36.32% |
| Geography | 3,031 | 32.80% | Geography | 3,405 | 28.55% |
| Public administration | 1,574 | 17.04% | Public administration | 1,849 | 15.50% |
| Architecture | 1,050 | 11.36% | Architecture | 892 | 7.48% |
| Transportation | 516 | 5.58% | Transportation | 759 | 6.36% |
| Physical geography | 226 | 2.45% | Physical geography | 193 | 1.62% |

Supplementary Table 13. The top cited topics (meso and micro) related to SDG11 research between 2016 and 2022. These topics are often associated with urban studies and SDGs. The citation analysis reveals that the most cited topics remain largely similar across periods, with a slight shift in emphasis on specific topics and their rankings.

| | Period-1: 2016-2019 | | | Period-2: 2020-2022 | | |
|------------------------|--|----------|---------|--|----------|---------|
| | Topic | Citation | Percent | Topic | Citation | Percent |
| Citation topic (meso) | Human geography | 3,111 | 33.67% | Human geography | 3,301 | 27.67% |
| | Transportation | 956 | 10.35% | Forestry | 1,287 | 10.79% |
| | Forestry | 784 | 8.49% | Transportation | 1,249 | 10.47% |
| | Climate change | 609 | 6.59% | Climate change | 762 | 6.39% |
| | Hospitality, leisure, sport & tourism | 457 | 4.95% | Hospitality, leisure, sport & tourism | 697 | 5.84% |
| | Sustainability science | 444 | 4.81% | Sustainability science | 611 | 5.12% |
| | Asian studies | 299 | 3.24% | Asian studies | 356 | 2.99% |
| | Agricultural policy | 232 | 2.51% | Agricultural policy | 285 | 2.39% |
| | Political science | 152 | 1.65% | Oceanography, meteorology & atmospheric sciences | 207 | 1.74% |
| | Knowledge engineering & representation | 130 | 1.41% | Political science | 196 | 1.64% |
| Citation topic (Micro) | Gentrification | 1,971 | 21.33% | Gentrification | 2,049 | 17.18% |
| | Travel behavior | 833 | 9.02% | Ecosystem services | 1,107 | 9.28% |
| | Ecosystem services | 639 | 6.92% | Travel behavior | 1,072 | 8.99% |
| | House prices | 588 | 6.36% | House prices | 670 | 5.62% |
| | Agglomeration economies | 433 | 4.69% | Place attachment | 515 | 4.32% |
| | Climate change adaptation | 419 | 4.54% | Climate change adaptation | 472 | 3.96% |
| | Place attachment | 311 | 3.37% | Agglomeration economies | 424 | 3.56% |
| | China | 289 | 3.13% | China | 346 | 2.90% |
| | Renewable energy | 146 | 1.58% | Renewable energy | 204 | 1.71% |
| | Urban agriculture | 134 | 1.45% | Urban heat island | 185 | 1.55% |

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