

**RIGA TECHNICAL UNIVERSITY**

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“Architecture”

**OPEN SPACE TRANSFORMATIONS  
IN LARGE-SCALE HOUSING ESTATES  
OF RIGA IN THE POST-SOCIALIST  
PERIOD**

**Summary of the Doctoral Thesis**

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I hereby declare that the Doctoral Thesis submitted for the review to Riga Technical University for the promotion to the scientific degree of Doctor of Science is my own. I confirm that this Doctoral Thesis had not been submitted to any other university for the promotion to a scientific degree.

Alisa Koroļova ..... (signature)

Date: .....

The Doctoral Thesis has been written in English. It consists of Introduction; 3 chapters; Conclusion; 54 figures; 6 tables; 5 appendices; the total number of pages is 124, not including appendices. The Bibliography contains 262 titles.

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# INTRODUCTION

Open space in large-scale housing estates forms an important part of the residential environment quality, by providing both necessary, optional and social services, and playing an important role in recreation and recovery from everyday stress. The green open space is a distinctive feature of most large-scale housing estates, and by many residents is perceived as the most valuable feature [49], [127], [162], [143]. Currently, there are various transformations going on in open space. In Latvia, as a starting point of these transformations are changes in political situation in the 1990s, which have led also to transformations in land ownership, open space maintenance and management models, etc. The land reform and property denationalisation in the 1990s [257] has led to the current difficult situation, where the open space in large-scale housing estate is fragmented, owners are different, often the land being in property of private individuals including foreign citizens (or nationals) who are not interested in developing recreational open spaces. At present transformation processes are also influenced by changing economic, ecological and social factors. State and city level strategies aiming at sustainable compact development, pressure from the private sector, global awareness of ecological issues, growing right to the city movement and bottom-up actions, introduction of new governance and city making collaborative models, and other factors are shaping how the open space in large-scale housing estates is perceived, how it functions and develops.

The crucial aspect is the nature of transformations, as they can have both positive and negative impact on the residential environment quality. In case of the negative impact, open space transformations act as a driving motivation for residents to leave the large-scale housing estate, while in the estate remain only those inhabitant groups who, for different reasons, cannot afford to change their residence (e.g. ageing population, social groups with low income, etc.). On the other hand, positive improvements can contribute to the raised property value, and positive inflow of new residents. Currently, bad maintenance, lack of control, undefined spatial organisation and lack of sense of belonging fosters inhabitants' dissatisfaction. For that reason, regeneration of the

outdoor environment, preservation of positive features, and holistic approach to transformation processes should be among preferences to prevent degradation of estates and attract new inhabitants.

In Riga, about 60 % of residents live in large housing estates, so these areas represent an important part of the housing stock [19]. The growing new housing market creates serious competition for large-scale housing estates, thus, increasing the need for strategies to keep the residents interested in large-scale housing estates. As open space in large-scale housing estates now faces various transformations, it is crucial to follow the tendencies of these changes, as they can directly impact residents' decision to move or stay in the neighbourhood [49]. To prevent decay of these areas, the open space transformations should be guided in order to preserve and improve the residential environment quality.

This research is focused on physical transformations in open space of large-scale housing estates. In addition to classification according to the type of transformation and scale, physical changes can be classified according to driving forces and actors involved. Transformations in open space of large-scale housing estates and the residential environment quality cannot be investigated without defining stakeholders who are directly or indirectly involved in the process of these transformations. There is a distinction between externally-led and self-organised engagement in the process of open space transformation.

## Previous Research

Previous research is further described according to various topics: open space in residential areas; formation and development of large-scale housing estates [19], [20], [42], [49], [58]; large-scale housing estates in Riga [19], [26], [42]; functioning of open space in large-scale housing estates [34], [58], [117], [122]; quality of urban life [36], [49], [67]; role of public participation in planning and citizen activism, and community building [13], [18]. Some authors discuss changes in the open space of large-scale housing estates; however, so far these studies are fragmented.

Comprehensive research on the character, features and evaluation methods of **open space** was done by various researchers.

Character and features of different public open spaces and open spaces in large-scale housing estates in particular were studied by Professor of Urban Design and the Director of Global Urban Research Unit at Newcastle University Ali Madanipour [34]. Issues related to housing reform, privatization and denationalization have been studied by various researchers [42], [171], issues of insecurity in public open space were analysed by Manuel Aalbers [66]. Richard Sendi, Manuel Aalbers and Marcele Trigueiro have investigated quality of life of the residents in large-scale housing estates and in particular quality of public open space, focusing on the issues affecting social interaction and social cohesion [49, 131–157], [66], [67]. Spatial character of open space in large-scale housing estates was analysed in various studies [75], [133], [138], [191], [149]. The importance of green space was discussed by various researchers from different viewpoints. Despite the fact that not all the planned amenities were built due to budget constraints, various research results show that green open areas are considered among the most valuable features in large-scale housing estates [49]. The explanation of originally planned sanitary-and-hygienic and ornamental planning functions of open space in large-scale housing estates were provided by Vladimir Mashinsky and Elena Zalogina [65]. Characteristic features of large-scale housing estates were defined by Rob Rowlands et al. and other researchers [49], [127], [143]. Sociologist William Whyte conducted great amount of research on social use in public spaces [60]. Some researchers have studied spatial configuration and used *Space Syntax* methodology to analyse functionality of open space in large-scale housing estates [190].

The ideas behind **formation of large-scale housing estates**, reasons and local peculiarities were described and analysed by various authors: Marija Dremaite [11].; Jānis Krastiņš, Ivars Strautmanis, Jānis Dripe [26]; Frank Wassenberg [255]; Eva Oresjo et al. [147]; Henk Heeger [249]; research within the framework of RESTATE project [66], [147], [106], [143], [147], including national reports like Large Housing Estates in Budapest and Nyiregyhaza, Hungary. Comprehensive research on typology of housing with some insights in the formation of the spatial organization was done by Philip Meuser and Dimitrij Zadorin [38].

The history of the **development and current changes of large-scale housing estates** has been investigated by various researchers. Recent book *Housing Estates in the Baltic Countries* is focused on the political, economic and cultural aspects which affected modernist housing estates in the Baltic countries [19]. Contributing authors touch upon ideological and socio-demographic issues which have both fostered the popularity of large-scale housing estates at the time of construction and changes which have led to current situation. Similar approach is described in the book *Housing Estates in Europe: Poverty, Ethnic Segregation and Policy Challenges* [20]. The book represents an extensive collection of research by different authors from Athens, Berlin, Birmingham, Brussels, Bucharest, Budapest, Helsinki, Madrid, Milan, Moscow, Paris, Prague, Stockholm, and Tallinn [20]. The authors analyse origins, current situation, and the development trajectories of large housing estates. The collection of studies in *Mass Housing in Europe: Multiple Faces of Development, Change and Response* also focus on residential satisfaction and different aspects of large-scale housing estates through the lens of social sustainability [49]. Ronald van Kempen, Karien Dekker, Stephen Hall and Ivan Tosics have edited the collection of national studies which describe current transformations in large-scale housing estates [58]. Reflections on urban planning in post-socialist countries are edited by Marina Dmitrieva and Alfrun Kliems [25]. Post-war architecture in Sweden is researched by Claes Caldenby [85].

There has been a lot of research representing **critique of large-scale housing estates and critique of open space** in particular. Starting from failed ideas of modernist urban planning, and then focusing on negative features of large-scale housing estates both external spacial organisation and housing itself, social consequences, crime and vandalism were the focus of work by Anne Power [46], critiques by British architects Alison and Peter Smithson. Critique of open space by Jane Jacobs [22], Oscar Newman [41], discussion on negative effects of density on the social fabric of neighbourhood by Ellen Van Beekhoven, Gideon Bolt and Ronald van Kempen, Oscar Newman [41], Louis Wirth [189]. Recent criticism was made by Ali Madanipour [129] and Jan Gehl [14], [15]. Critique of large-scale housing estates in Tallinn by Leo Gens, who pointed out lack

of 'human scale' and thought that areas can become more people-friendly with introduction of small architecture forms, more clever organization of greenery, sculptures, etc. Psychologist Mati Heidmets assumed that the living environment in large-scale housing estates lacks personality, which can be achieved by prioritizing images and introduction of landmarks [40].

As **large-scale housing estates** comprise big part of the residential housing stock **in Riga**, there are studies focusing on the origins and development trajectories of large-scale housing estates: The Doctoral Thesis defended by Sandra Treija [254], *Otrā Rīga* represents the analysis of typology and features of large-scale housing estates in Riga [42]. The book *Latvijas arhitektūra: no senatnes līdz mūsdienām* by Jānis Krastiņš, Ivars Strautmanis, and Jānis Dripe compiles research on urban development in Latvia in the second part of the 20<sup>th</sup> century [26]. Planning and development of cities has been studied by Jānis Brinķis and Oļģerts Buka [5]. Doctoral Thesis by Una Īle [250] is focused on the landscape quality of courtyards of residential areas in the cities of Latvia. archive materials of Latvian museum of Architecture offer various territory plans of large-scale housing estates as well as descriptive materials. Andris Roze has analysed spatial organisation of *microrajoni* and proposed some guidelines for further development [261, 13–14].

**Quality of urban life** is a wide concept and has been investigated by various researchers in different fields. Robert W. Marans and Robert J. Stimson have summarized comprehensive research on the issues of urban quality of life and related notions like neighbourhood satisfaction, residential satisfaction, etc. [36]. Objective and subjective evaluation of the quality of urban life was presented by Roderick Peter McCrea in *Urban Quality of Life: Linking Objective Dimensions and Subjective Evaluations of the Urban Environment* [252]. Robert Marans and Willard L. Rodgers studied issues related to residents' satisfaction and described findings in *Towards an Understanding of Community Satisfaction* [131]. Angus Campbell used variable of inhabitants' characteristics (age, gender, etc.) to describe life satisfaction in *The Quality of American Life: Perceptions, Evaluations and Satisfaction* [6]. Harvey S. Perloff described and analysed urban environment features in *The Quality of the Urban Environment*, 1969 [45]. Charles Montgomery, through case studies

in different countries analysed inhabitants' satisfaction with life in relation to urban design and planning issues [39]. David Seamon and Jacob Sowers analysed people's need for associations with significant places and the concept of placelessness [168].

Following the growing interest in citizen engagement in the process of planning and co-creation, grows also the amount of research in this field. Approaches to **public participation** in planning and design processes have been described and analysed by Nick Gallent and Daniela Ciaffi [13], Patsy Healey [18], Ali Madanipour [34], Joanne Dolley and Caryl Bosman [10].

Despite the fact that variety of research was focused on privatization of open space in large-scale housing estates, on the character of open space in large-scale housing estates, as well as on residential environment quality and quality of urban life, research which would interconnect those issues so far is fragmented.

**The research object** is open space transformations in large-scale housing estates.

**The research aim** is to evaluate the impact of open space transformations in the post-socialist period in large-scale housing estates on the residential environment quality in Riga's large-scale housing estates.

## Research Tasks

1. Based on literature studies summarise the background behind the formation of open space in large-scale housing estates in different cities of Europe, theoretical guidelines, aimed purpose of open space and the correspondence of the realised result, role of open space of large-scale housing estates in the city's green infrastructure and importance of the open space for residents.
2. Based on literature studies identify types of possible transformation processes in the open space of large-scale housing estates in different cities of Europe.
3. Identify opportunities and challenges for public participation in the process of large-scale housing estate open space transformations.

4. Summarise information on residential environment quality evaluation approaches and tools.
5. Develop an evaluation approach to assess the residential environment quality in the context of transformations.
6. Define residential environment quality of large-scale housing estates of Riga in the context of open space transformations by conducting the open space survey and using the adapted evaluation checklist.
7. Develop and conduct a survey in four large-scale housing estates of Riga, to define residents attitude towards transformations which have already happened and possible future transformations of open space in large-scale housing estates.

## Research Methodology

The theoretical basis of research consists of the analysis of literature related to the development of open space of large-scale housing estates and features which influence the character of open space.

Based on the theoretical analysis of books, scientific articles, research reports, archive materials, internet resources and documents, the following methods are used to reach the research aim and objectives.

- Comparative analysis is used to:
  - analyse development of open space in large-scale housing estates and open space spatial configuration principles;
  - analyse scientific articles in *Science Direct* un *Scopus* data bases, using PRISMA methodology;
  - analyse residential environment quality evaluation tools [70], [81], [82], [188].
- Case study analysis – empirical research, that investigates a certain phenomenon in its natural environment, by using various data collection methods and sources [55], [62]. This research focuses on the case of open space in large-scale housing estates in Riga:
  - On-site observations and evaluation of residential environment using open space quality evaluation tool.
  - Inhabitants' surveys [102], [111], [149];

- For case description analysis of archive materials, regulations, scientific literature and internet sources is used.
- An experiment of introducing a community garden in open space of one selected large-scale housing estate. Urban gardening initiative realised in June 2017, with an aim to evaluate the process of getting a permission and the willingness of people to participate and maintain the garden. The method included concept development, preparation of requested documents, engagement of local inhabitants, organisation of the event together with project team and volunteers.
- The collection of quantitative data was insured by inhabitants' survey (240 respondents) with semi-open questions (to provide alternative answer opportunities in case the respondents are not satisfied with the proposed answers).

### **Scientific Novelty of Research**

The Doctoral Thesis contributes to the research on open space transformations in Riga's large-scale housing estates in the post-socialist period, which has almost not been studied from the perspective of the relation between transformations and the quality of residential environment. The research has a methodological significance, as it summarises the data on existing residential environment evaluation tools, proposes classification of open spaces in large-scale housing estates, and introduces an approach for evaluation of impact from present and possible future transformations on the quality of residential environment in large-scale housing estates.

### **Practical Significance of the Work**

This research examines an up-to-date issue of open space significance in large-scale housing estates and emphasizes the need to identify the impact of open space transformations on the residential environment quality. The research reveals the most important features related to transformations in open space.

The research reveals the connection between open space transformations and increase or decrease of the residential environment quality. The developed evaluation approach can be used to identify the impact from transformations which have already happened and the ones which may take place in the future. This allows to evaluate various scenarios and prevent decrease of the residential environment quality. Conclusions which reveal the impact of open space transformations on the residential environment quality in Riga's large-scale housing estates form a background for development of planning guidelines.

All figures, diagrams, and tables, which do not have a source, are made or developed by the author.

## **Approbation of the results**

Results of the research have been presented at various international and local scientific conferences and published in international and local scientific journals.

## **Publications**

1. **Korolova, A., Treija, S.** Spatial Character and Usage of Public Open Space in Large Housing Estates. *Journal of Architecture and Urbanism*, VGTU, Scopus (submitted for publication in 2021).
2. **Shih, Ch.-M., Treija, S., Zaleckis, K., Bratuškins, U., Chen, Ch.-H., Chen, Y.-H., Chiang, Ch.T.W., Jankauskaitė-Jurevičienė, L., Kamičaitytė, J., Koroļova, A., Lee, H.-Ch., Lektauers, A., Mlinkauskienė, A.** Digital Placemaking for Urban Regeneration: Identification of Historic Heritage Values in Taiwan and Baltic. *Urban Planning, Special issue: Towards Digital Urban Regeneration: Embedding Digital Technologies into Urban Renewal Processes and Development*, Vol. 6, Issue 4, 2021 (accepted for publication in 2021).
3. **Pearlmutter, D., Pucher, B., Calheiros, C. S. C., Hoffmann, K. A., Aicher, A., Pedro, P., Stracqualursi, A., Korolova, A., Pobric, A., Taieb, A. H., Galvão, A., Tokuç, A., Bas, B., Theochari, D., Milosevic, D., Giancola, E., Bertino, G., Lazarevic, J., Castellar, J., Flaszynska, J., Onur, M., Mateo, M. C. G., Andreucci, M. B., Milousi, M., Fonseca, M., Di Lonardo, S., Gezik, V., Pitha, U., Nehls, T.** Closing Water Cycles in the Built Environment Through Nature-Based Solutions: The Contribution of Vertical Greening Systems and Green Roofs. *Water*, 2021, 13 (16), 2165. <https://doi.org/10.3390/w13162165>

4. **Bratuškis, U., Zaleckis, K., Treija, S., Koroļova, A., Kamičaityte, J.** Digital Information Tools in Urban Regeneration: Capital's Approach in Theory and Practice. *Sustainability*, Vol. 12, No. 19, 2020, pp. 1–16. ISSN 2071-1050. <https://doi.org/10.3390/SU12198082>
5. **Pearlmutter, D., Theochari, D., Nehls, T., Pinho, P., Piro, P., Korolova, A., Papaefthimiou, S., Mateo, M. C. G., Calheiros, C., Zluwa, I., Pitha, U., Schosseler, P., Florentin, Y., Ouannou, S., Gal, E., Aicher, A., Arnold, K., Igondová, E., Pucher, B.** Enhancing the Circular Economy with Nature-Based Solutions in the Built Urban Environment: Green Building Materials, Systems and Sites. *Blue-Green Systems*, Vol. 2, Issue 1, 2020, pp. 46–72. <https://doi.org/10.2166/bgs.2019.928>
6. **Korolova, A., Treija, S.** Participatory Budgeting in Urban Regeneration: Defining the Gap Between Formal and Informal Citizen Activism. *Architecture and Urban Planning*, Vol. 15, 2019, pp. 131–137. <https://doi.org/10.2478/aup-2019-0018>
7. **Korolova, A., Treija, S.** Urban Gardening as a Multifunctional Tool to Increase Social Sustainability in the City. *Architecture and Urban Planning*, Vol. 14, Issue 1, 2018, pp. 91–95. <https://doi.org/10.2478/aup-2018-0012>
8. **Treija, S., Bratuškis, U., Koroļova, A.** Urban Densification of Large Housing Estates in The Context of Privatisation of Public Open Space: The Case of Imanta, Riga. *Architecture and Urban Planning*, Vol. 14, Issue 1, 2018. pp. 105–110. <https://doi.org/10.2478/aup-2018-0014>
9. **Treija, S., Korolova, A.** Mūsdienu urbānā dārzkopība un tās daudzveidīgās izpausmes. *Latvijas Arhitektūra*, 2018, Maijs–Jūnijs (Iegūvis *Latvijas arhitektūra* žurnāla atzinības rakstu).

*Reports at conferences and full text research articles  
in the conference proceedings*

1. **Treija, S., Bratuškis, U., Koroļova, A.** Up-to-Date Interventions and Changing Identity: Housing Estate Imanta in Riga. *Proceedings of the 15<sup>th</sup> international Docomomo Conference, Metamorphosis The continuity of change*. 28–31 August 2018, Ljubljana, Slovenia. pp. 174–180. [https://issuu.com/docomomo\\_si/docs/1\\_pdfsam\\_docomomo\\_layout\\_ebook](https://issuu.com/docomomo_si/docs/1_pdfsam_docomomo_layout_ebook)
2. **Korolova, A., Treija, S.** The Diverse Nature of Local Activism Trends and its Impact on the Quality of Life in the City. *AESOP Congress: Making space for hope, Conference proceedings*, Sweden, Gothenburg, 10–14 July 2018.

3. **Koroļova, A., Treija, S.** The Impact of Land-Use on The Social and Ecological Systems In Courtyards of Large Scale Housing Estates. *17<sup>th</sup> International Multidisciplinary Scientific GeoConference SGEM 2017*, [www.sgemviennagreen.org](http://www.sgemviennagreen.org), SGEM2017 Vienna GREEN Conference Proceedings, ISBN 978-619-7408-29-4 / ISSN 1314-2704, 27–29 November 2017, Vol. 17, Issue 63, pp. 1039–1046; DOI: 10.5593/SGEM2017H/63/S27.129
4. **Koroļova, A.** Implementation of Temporary Urbanism for Revitalisation of Residential Outdoor Spaces. *CARE Conference for Artistic and Architectural (Doctoral) research, Ljubljana 2017*. pp. 169–177. [http://www.fa.uni-lj.si/filelib/1\\_strani\\_predmetov/tadeja\\_zupancic/projekti/2018-03-15-ca2re-book-pass.pdf](http://www.fa.uni-lj.si/filelib/1_strani_predmetov/tadeja_zupancic/projekti/2018-03-15-ca2re-book-pass.pdf)
5. **Koroļova, A., Treija, S.** Community Gardens as Temporary Uses for Vacant Land Revitalization: the Case of Riga. In: *Spaces of Dialog for Places of Dignity: Fostering the European Dimension of Planning: Lisbon AESOP Annual Congress 2017 : Book of Proceedings*, Portugal, Lisbon, 11–14 July 2017. Lisboa: Universidade de Lisboa, 2017, p. 444–449. e-ISBN 978-989-99801-3-6.
6. **Koroļova, A.** Strategic Goals for Physical Activity Reflected in Urban Planning Documents. *Proceedings of the CARE Conference for Artistic and Architectural (Doctoral) research*, KU Leuven, Faculty of Architecture, Belgium, Ghent, 7–9 April 2017. pp. 241–248. <https://arch.kuleuven.be/english/research1/publications/proceedings-ca2re-2017.pdf>
7. **Treija, S., Koroļova, A., Latkowska, M.** Environmental Design Solutions to Promote Safety in Urban Gardens. *Growing in Cities. Interdisciplinary Perspectives on Urban Gardening: Conference Proceedings*, Switzerland, Basel, 10–11 September 2016. Basel: University of Applied Sciences, 2016, pp. 180–197. ISBN 978-3-033-05757-9.

### *Reports at conferences*

8. **Koroļova, A., Treija, S.** Public Open Space Transformations in Large Housing Estates. *COST Action European Middle Class Mass Housing Conference / WG-Meeting*, 8–9 March 2021, online.
9. **Treija, S., Koroļova, A.** Collaborative Housing: an Innovation for Neighbourhood Development. *LU 79. Starptautiskā zinātniskā conference: Telpiskā plānošana ar skatījumu uz nākotnes dzīves veidu un mājokli / Spatial planning and an outlook on future housing and lifestyle*, 19 March 2021, online.

10. **Treija, S., Bratuškins, U., Koroļova, A., Lektauers, A.** Participatory Budgeting for Urban Regeneration in Riga. *The Second Online Conference Smart City (MUTUAL FUNDS TAIWAN – LATVIA - LITHUANIA COOPERATION PROJECT “Up-to-date Information Systems in Urban Regeneration”)*, 20 November 2020, online.
11. **Treija, S., Bratuškins, U., Koroļova, A., Lektauers, A.** Identifying Digital Tools for Social Sustainability in Urban Regeneration in Riga. *Riga Technical University 61st International Scientific Conference Architecture and Urban Planning / RTU 61. Starptautiskā zinātniskā konference sekcija Arhitektūra and pilsētplānošana*, October 16, 2020, online.
12. **Korolova, A., Treija, S.** Infill Development and Its Impact on The Public Open Space In Large Housing Estates: Case Of Riga. *AESOP Annual Congress 2019: Planning for Transition, Italy, Venice, 9–13 July 2019*.
13. **Korolova, A.** Investigation of Residents’ Satisfaction with the Outdoors of Large Housing Estates. *60<sup>th</sup> Riga Technical University International scientific conference section Architecture and urban planning / RTU 60. Starptautiskā zinātniskā konference sekcija Arhitektūra and pilsētplānošana*, Latvia, Riga, 17 October 2019.
14. **Korolova, A.** Relationships Between Urban Public Space Use and Residential Satisfaction in Large-Scale Housing Estates. *59<sup>th</sup> Riga Technical University International scientific conference section Architecture and urban planning / RTU 59. Starptautiskā zinātniskā konference sekcija Arhitektūra and pilsētplānošana*, Latvia, Riga, 11 October 2018.
15. **Treija, S., Koroļova, A., Āboliņa, K.** Pagalmu dārzkopības attīstības iespējas un izaicinājumi Rīgas lielmēroga dzīvojamo rajonu kontekstā. *LU 76.zinātniskā konference, Zemes un vides zinātņu nozares sekcija, Apakšsekcija „Vietu plānošana un attīstība”*. Latvia, Riga, 1 February 2018.
16. **Treija, S., Koroļova, A., Latkowska, M.** Effectiveness of CPTED principles: The Case of Urban Allotment Gardens. *57<sup>th</sup> Riga Technical University International scientific conference section Architecture and urban planning / RTU 57. Starptautiskā zinātniskā konference sekcija Arhitektūra and pilsētplānošana*, Latvia, Riga, 14 October 2016.
17. **Korolova, A.** The Meaning of Urban Gardening in Relation to Local Peculiarities. *COST Action TU 1201 conference Urban Allotment Gardens in European Cities Future, Challenges and Lessons Learned Thessaloniki Joint MC and WG Meeting*, Greece, Thessaloniki, 16–19 March 2016.

18. **Koroļova, A.** Urbānās dārzkopības nozīme pilsētvides reģenerācijā. *LU 76.zinātniskā conference, Zemes un vides zinātņu nozares sekcija, Apakšsekcija „Vietu plānošana un attīstība”*, Latvia, Riga, February 2016.
19. **Korolova, A.** Temporary urbanism solutions for urban regeneration. PhD Workshop in terms of *Sustainable Built Environment SBE16 Hamburg Conference*, Germany, Hamburg, 11 March 2016. <http://www.zebau.de/projekte/sbe16-hamburg>

# **1. DEVELOPMENT OF OPEN SPACE IN LARGE-SCALE HOUSING ESTATES**

**Chapter 1** discusses the genesis of open space in large-scale housing estates in the regional context of the Baltics and Northern Europe. The idea of high widely spaced apartment blocks raised already in the 1930s [17], [197]. Originally, open space in large-scale housing estate followed the concept of a car-free inner zone and the idea of different functions reachable in the walking distance [38].

Despite local peculiarities across Europe, there have been certain similarities in the formation of open space of large-scale housing estates. Sub-section 1.1 presents an overview on open space spatial configuration principles, and the further sub-sections display variety of inhabitants' needs in relation to the residential open space and the role of green areas in large-scale housing estates. Development was highly influenced by context, construction period and scale, location and connectedness, maintenance, population structure, stigmatisation, local economy, public space, livability.

## **1.1. Genesis and Characteristics of Open Space in Large-Scale Housing Estates**

Spatial organisation and the approach to the open space organisation differed in different parts of Europe. Literature studies have shown the following main types of spatial structures within large-scale housing estates: a surround-type where a square inner-courtyard is formed between apartment buildings, a semi-closed form (often U-shaped courtyards formed by building blocks or u-shaped buildings), a canyon-type formation with grand roads with apartment buildings along both sides or along one side and a parallel blades formation featuring long rows of parallel buildings [75], [133], [194], [253]. The analysed case studies allowed to find examples of these types as well as to define some additional types. Similar open space spatial organisation types across Europe make it possible to search for replicable solutions when considering raising the quality of residential environment.

## **1.2. Open Space in Large-Scale Housing Estates in Relation to Residents' Needs**

Features of open space in large-scale housing estate, like the presence of open green space, children and adult recreation facilities, parking facilities, and their cleanliness and safety are among features which define residential satisfaction with the area [36, 267]. Research on large-scale housing estates from RESTATE project showed that green open space is considered among the most valuable features of the estate [49]. This sub-section describes the features of open space in large-scale housing estates in relation to the necessary, optional, and social activities and the importance of open space for residents' health, well-being, social interaction, and social cohesion.

The social space in large-scale housing estates is also important. Large-scale housing estates comprise diverse inhabitant groups who have different needs in terms of recreation and socialisation. Sometimes these needs appear to be in conflict. For this reason, in order to ensure that different inhabitant groups are satisfied, recreational amenities should be planned based on analysis of the whole large-scale housing estate to ensure fair distribution of different open space uses.

## **1.3. Role of Open Space of Large-Scale Housing Estates in the System of Green Infrastructure**

One of the characteristic features of large-scale housing estates are large open green spaces. This feature was highly appreciated by inhabitants; however undefined use of this space fostered quick decay, and nowadays these green areas are not used effectively. However, if maintained and retrofitted in a right way, they can form a part of the cities' green infrastructure and thus contribute to the quality of urban life of local residents [209], [210], [225], [248]. It is important to have good quality green space near your place of residence. According to Urban Green Nation Report 2010, people visit and use green space more if it is of good quality and do not use less marginalized, decayed green areas [203].



Fig. 1. Elements of urban green infrastructure and their potential to be integrated in open space of large-scale housing estates [adapted by author using [150]].

The question of the role of large-scale housing estate open spaces within GI is strongly connected to its ability to be a part of interconnected network. Elements of urban green infrastructure and their potential to be integrated in the open space of large-scale housing estates are shown in Fig 1.

Many of these types of urban green spaces, for example community gardens, neighbourhood green space, green roofs, and even blue spaces can be found in open spaces of large-scale housing estates, which shows that these areas might represent different types of UGI elements. In the last decade, growing importance are gaining circular approach to architecture and urban planning and a complex integration of nature-based solutions using the circularity principles. Integration of nature-based solutions allows support of various ecosystem services within the open space of large-scale housing estates.

## **2. INTERRELATION BETWEEN OPEN SPACE TRANSFORMATIONS AND THE RESIDENTIAL ENVIRONMENT QUALITY IN LARGE-SCALE HOUSING ESTATES**

As a starting point of transformations in the open space of large-scale housing estates were changes in the result of changing political situation – regaining of the independence in Latvia [257]. This has led also to transformations in ownership, maintenance, management models, etc. **Chapter 2** presents the summary and analysis of transformation types in the regional context, summary of residential environment quality notions and quality assessment approaches, and the interrelation of these two aspects – assessment of transformations’ impact on the residential environment quality.

### **2.1. Open Space Transformations Within Large-Scale Housing Estates of Europe**

The land reform and property denationalisation in the 1990s [257] has led to the current difficult situation, where the open space in large-scale housing estate is fragmented, owners are different, often the land being in property of private and even foreign people who are not interested in development of recreational open spaces. Later, more and more transformation drivers appeared. In general, currently the transformations are influenced by economic factors (related to strategies – e.g. compact development; actors – developers, land owners, who see good infrastructure of large-scale housing estates as an opportunity for new investments, profit); by ecological and social factors (changes in habits, care about ecology, nature-friendly lifestyles, etc., strategies, legislation – green development, circular city); changes in residents’ needs, demographic changes, new partnerships (public-private, public-people-private) [218], [224], [226]; natural changes in the public open space influenced by natural time related changes (like overgrown trees, ageing recreational and functional amenities, etc.).

These transformations are affected and affecting the three dimensions defined in the introduction: context I – physical environment of the public open space in large-scale housing estates; context II – legal issues (regulations, ownership, management structure, etc.), city development strategies, etc.; actors – involved in transformation processes and management of public open space of large-scale housing estates (their roles and collaboration patterns).

Citizens can play a crucial role in identifying or actively intervening in urban challenges, often providing new perspectives and solutions [13], [18], [34]. To test opportunities and barriers for citizen-led bottom-up transformation in Riga, in terms of this research the experiment was conducted. The main aim was to promote more active use of open space and to show local inhabitants the concept of community garden by providing a real example. The guerrilla action proved the hypothesis of community garden being a good tool for social cohesion. However, it has been found that the approval process needs to be made easier and clearer.

The role of partnership and citizen empowerment in urban politics has increased in the course of the last decades [72]. Also, in Riga several participatory budgeting programs are realised (Fig. 2).

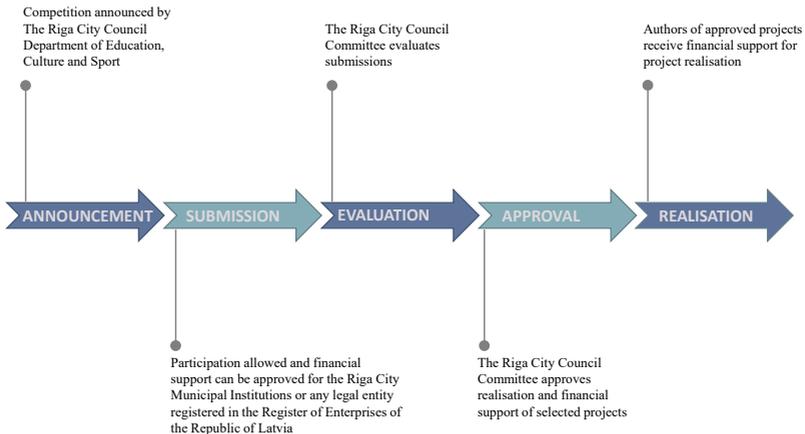


Fig. 2. The process of community project budgeting in “Neighbourhood’s initiative to promote public participation and strengthen the sense of community”.

Analysis of geographical distribution of formal participatory budgeting activities showed certain injustice. It is clear that some neighbourhood associations, like those in *Čiekurkalns*, *Sarkandaugava* or *Maskavas forštate* are more active and successful, therefore the strengthening of community and identity as well as urban regeneration activities happen more often and processes are faster and with wider public participation. Whereas other neighbourhoods have only one or no projects realised in the course of four years (2016–2019).

## **2.2. The Concept of Residential Environment Quality and Its Evaluation Methods**

When considering the quality of open space in large-scale housing estates, it is important to understand the variety of concepts. The review of various concepts aims to identify the most suitable notion in terms of this study [66], [67], [68], [74], [80], [82], [252]. Identification of the most suitable concept allows to collect, analyse, and compare currently available evaluation tools. Evaluation of transformations in public open space must include on-site observations, as it helps to overcome certain shortcomings presented by administrative data: bottom-up activities, level of maintenance, presence of disorder. Combination and comparison of objective (e.g. on-site observation) and subjective (survey) evaluation tools is desirable, as these approaches complement each other. Finally, the concept of proximity needs to be included, as each public open space in the large-scale housing estate can't answer all the diversity of needs of different inhabitant groups. Thus, those transformations which already happened or are planned to improve the residential environment quality need to be evaluated using proximity to home approach.

## **2.3. Evaluation of Impact of Open Space Transformations on Residential Environment Quality**

A systematic review of the review and research articles in Science Direct and Scopus databases was undertaken using the PRISMA methodology. After systematic review of 1183 articles, 22 built environment assessment tools were identified for further deeper analysis.

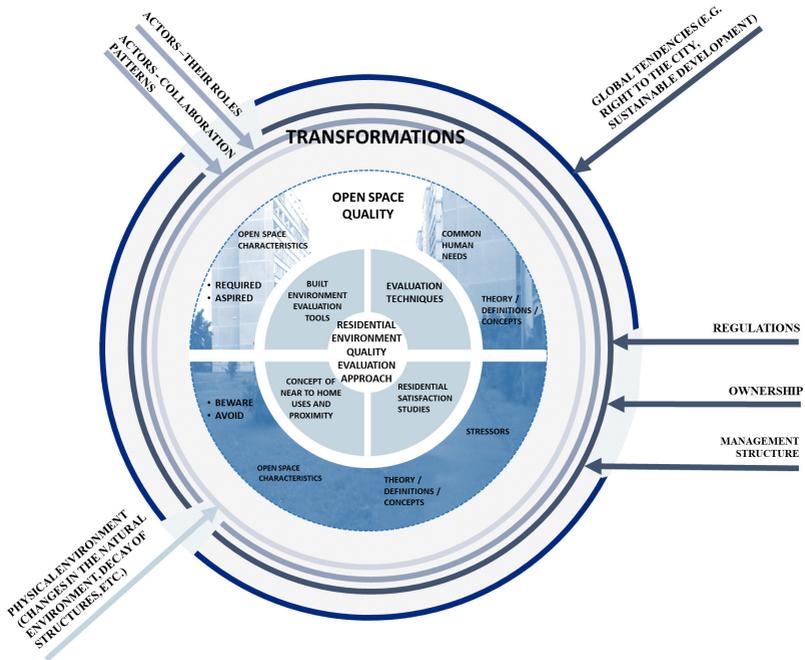


Fig. 3. Development of the residential environment quality evaluation approach – a conceptual model.

To justify positive and negative factors, while analysing interrelation between the selected indicators from Built environment assessment tools and the features identified by Matthew Carmona [195], additional theoretical background was incorporated. The common human needs, as defined by John Zeisel, and the stressors, as illustrated by Michael Pacione [43], were included into the final model.

The adapted checklist is a part of the residential environment quality evaluation approach. Evaluation techniques include on-site observations, analysis of digitally available data, mapping and analysis with incorporation of GIS, residential satisfaction studies using surveys, questionnaires and interviews. Finally, the concept of near home functions and functions reachable in ten-minute walking

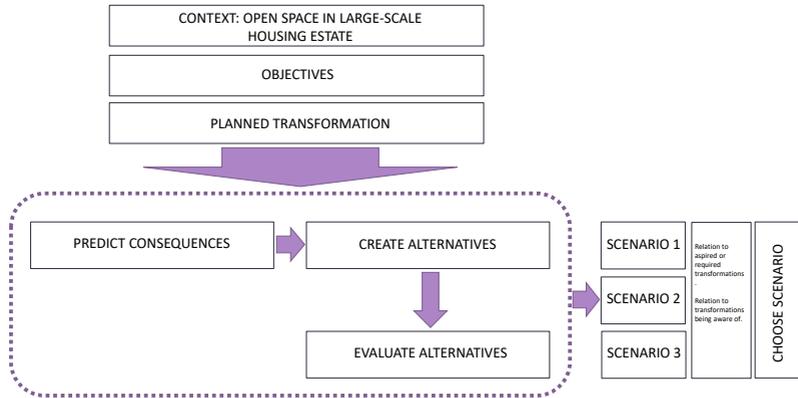


Fig. 4. The model of using the evaluation tool for assessment of future transformations and their impact on the residential environment quality.

distance from the basis for the proximity and accessibility analysis. The conceptual model of the impact of open space transformations on residential environment quality is presented in Fig. 3.

The evaluation approach can be used not only for the evaluation of present state, but also for evaluation of future transformations and alternative scenarios (Fig. 4). When there is an objective for specific transformation, its consequences can be analysed using the approach. The same approach can be used when considering alternative scenarios and the consequences of those alternatives.

For example, the infill development can have both positive or negative impact on the residential environment quality. If correlated with stressors defined by M. Pacione [43], gated communities create barriers, which work as stressors. It is also of importance what kind of open public space is created after the open space is reshaped by introduction of a new development. Also, the contrast between building qualities appeared in the built environment assessment tools as a negative feature. On the other hand, infill development which offers opportunities for more and diverse recreational, social space for both residents within and outside the new project, increase the quality.

### **3. RESIDENTIAL ENVIRONMENT QUALITY IN LARGE-SCALE HOUSING ESTATES OF RIGA IN THE CONTEXT OF OPEN SPACE TRANSFORMATIONS**

Variety of transformations which take place in the open space of large-scale housing estates have different impact on residential environment quality. The impact can be evaluated according to human needs in open space, still certain modifications may have different influence when present in different circumstances. **Chapter 3** presents the situation in Riga: open space character, transformations and their impact on the residential environment quality as well as residents' attitude towards possible future transformations and those which have already happened.

#### **3.1. Characteristics of Open Space in Large-Scale Housing Estates**

Following the analysis of various spatial configurations of open space in large-scale housing estates, detailed plans of large-scale housing estates in Riga were investigated. Following this, the approach to classify open space is chosen according to its physical structure or the pattern. Here the idea of positive and negative spaces proposed by Christopher Alexander was chosen [1]. Additionally, theoretical background of research includes studies conducted by Camillo Sitte, findings available from Jan Gehl's research, and the key principles of public open space design defined by Nikos Salingaros and Pietro Pagliardini [1], [14], [15], [52], [162]. Large-scale housing estates in Riga represent various types of spatial configuration.

#### **3.2. Open Space Quality Transformations in Large-Scale Housing Estates**

The developed residential environment evaluation approach to measure existing situation and the impact of transformations on the quality of the open space has been tested in large-scale housing

estates in Riga. Assessment was conducted in the following large-scale housing estates: *Āgenskalna priedes, Sarkandaugava, Jugla, Ķengarags, Imanta, Purvciems, Bolderāja, Iļģuciems, Vecmīlgrāvis, Mežciems, Pļavnieki, Zolitūde, and Ziepniekkalns* [42]. Although Riga's large-scale housing estates show variety of problems, like unsatisfactory level of environmental accessibility, lack of and monotonous recreation opportunities, lack of privacy, current transformations solve only part of these problems. Thus, an analysis of current situation and inhabitants' needs is crucial before introducing transformations.

### **3.3. Correlation Between Residential Opinion and Open Space Transformations**

Residential satisfaction surveys allow to complete objective evaluation data with subjective residents' assessment. There are two main approaches in the satisfaction studies: general satisfaction and assessment of satisfaction with various aspects of the residential environment [92], [128]. Based on the literature review about large-scale housing estate residential satisfaction studies and survey methods, online residents' survey has been carried out. The target respondents were residents of large-scale housing estates in Riga (from *Jugla, Imanta, Purvciems, Ziepniekkalns*). These neighbourhoods were selected as the ones representing different construction periods and different scales.

Questionnaires were developed in two languages: Latvian and Russian, to ensure respondents chose the most convenient way and understand all the questions. The Likert-type scale was used to measure respondents' satisfaction with various components of the open space and to rate the attitude towards present and possible transformations. The sample size was calculated taking the confidence level set up to 85 % and the margin error to 10 %.

The Questionnaire was completed by 240 respondents. Majority of respondents live in large-scale housing estate more than 5 years, with about 70 % living in estate more than 10 years. Majority of respondents are owners of the flat where they live. More than 60 % of respondents of all estates where the survey was conducted have higher education.

**The results** are divided into three main sections: current state and use of open space in large-scale housing estates; attitude towards transformations which have already happened; attitude towards possible transformations, wishes and needs.

Among the main reasons for not using the open space in large-scale housing estate people mention being unsatisfied with spatial organisation, the amount and variety of recreational choices, maintenance, as well as the reason that they “are spending free time in other nature territories (parks, forests, lake side, etc.)”. The most desired additional features related to recreational amenities, like benches and playgrounds that already exist, would be flower beds, meadow flowers, grill place, sheltered space as protection from environmental conditions, pergolas with growing plants, and also landscaping.

The data in general survey supports the previously gained data about the importance of greenery in large-scale housing estates. Regeneration visions which aim at inclusion of large-scale housing estates in the green infrastructure by creating diverse interconnected nature-based solutions is the way how future of estates could meet social and ecological needs. Positive influence of greenery was proved with variety of answers pointing out the wish for new greenery, garden beds, meadow flowers, etc. Also, in the case of infill residential environment, presence of new greenery was pointed out as a feature which would compensate the negative effect from open space area decrease.

## CONCLUSIONS

1. **Spatial organisation** of open space in large-scale housing estates **is similar** in the Baltics and Northern Europe. Therefore, replicable solutions can be adapted for raising the quality of residential environment. In addition to similarities in spatial allocation of buildings and open space scale, successful adaptation of solutions requires similarities in building scale, quantity and quality of greenery, soil characteristics and other factors.
2. Residents of large-scale housing estates represent **diverse groups with diverse needs** and wishes in terms of recreation and socialisation. Sometimes these needs appear to be in conflict. Planning of recreational amenities on the large-scale housing estate level guarantees interconnection and accessibility of services. This ensures that different inhabitant groups are satisfied with the residential environment quality.
3. **Vast green spaces** appear a distinctive feature of large-scale housing estates, thus, also in the third decade of the 21<sup>st</sup> century, estates have potential to form a part of city's **green infrastructure**. Examples of other European cities show the ability to develop rich multifunctional green environment which provides a variety of ecosystem services. Some solutions, like introduction of sustainable urban drainage system, are realised with big investments in perspective of five years or even longer time. Still, others, like community gardening initiatives, appear as fast and / or temporary solutions, where the time of approval varies depending on various factors, such as land ownership, complexity of design, and support of the local community.
4. Transformations which take place in open space of large-scale housing estates **vary in type, scale and are generated by variety of driving forces**. While these driving forces have different objectives, their collaboration results can lead to high-quality transformations, which answer the needs of all involved actors.

5. Guidelines and the **good practice guidebooks** are used in many cities across Europe to support both experts and other involved actors in their decision-making and to avoid common problems. Guidebooks address a wide variety of issues, like recommendations on technical solutions or approaches and steps of public involvement in co-design and co-creation processes. Sharing knowledge is crucial when ensuring the same mistakes are not made.
6. Various residential environment quality evaluation tools exist, and such tools **comprise diverse criteria** for quality evaluation. However, these tools do not address the impact of transformations on the residential environment quality in open space of large-scale housing estates. Inclusion of on-site observations and more specific criteria is among crucial aspects in the evaluation of the impact from transformations.
7. Residential environment quality evaluation approach, which has been developed within the framework of this research, comprises an adapted open space quality evaluation checklist, recommendations on proximity of different functions to home, summary of evaluation techniques and residential satisfaction studies related to open space quality and transformations. Residential environment quality evaluation approach can be used for both evaluation of **the impact from transformations**, which have already happened, and analysis of **possible consequences of future transformations** and search for alternative scenarios. Categories which describe different human needs and stressors are linked to the aspired results and results to be aware of. Improvements in the open space of large-scale housing estates need to be planned as a complex process, analysing the estate situation as a whole.
8. Spatial configuration and building height have certain impact on open space use. 'Undefined space' formed by nine-storey or higher tower blocks, appeared among the most unsuccessful solutions. In their turn, the analysed 'positive space' and 'undefined space' formed by structure combinations of five-storey building blocks, appeared to support social activities. Thus, **pattern analysis is essential**

- before new transformation is introduced**, so that even if the open space gets smaller, the quality increases.
9. Development and improvement of the territory adjusted to the house and being in collective ownership of residents is largely dependent on the **wishes and active engagement of those residents**. Currently visible results of this collective decision-making in relation to open space transformations are seen in relation to car parking. Any other initiatives such as recreational amenities and new natural elements appear mainly as bottom-up guerrilla initiatives, thus the quality and safety cannot be regulated.
  10. Although Riga's large-scale housing estates feature a variety of problems, such as unsatisfactory level of environmental accessibility, lack of and monotonous recreation opportunities, lack of privacy, the current transformations can solve only part of the identified problems. Thus, an analysis of current situation and inhabitants' needs is crucial before introducing any transformations.
  11. New **residential infill development having more than five-stor**eys has a negative impact on the quality of open space in large-scale housing estates by destroying the human scale. Thus, restrictions on the building height are crucial also in cases where existing buildings are more than five storeys tall and new construction is allowed to be higher.
  12. **Land ownership often becomes a barrier for more balanced transformations** – in case of improvements in the open space of large-scale housing estates. New public-private partnership models are a precondition of successful involvement of all parties and a guarantee of their motivation.

# BIBLIOGRAPHY

## *Books*

1. **Alexander, Ch., Ishikawa, S., Silverstein, M., Jacobson, M., Fiksdahl-King, I., Angel, S.** *A pattern language: Towns, Buildings, Construction*. Oxford: Oxford University Press, 1977. 1171 p. ISBN 978-0195019193.
2. **Barker, R. G.** *Ecological Psychology: Concepts and Methods for Studying the Environment of Human Behavior*. Stanford: Stanford University Press, 1968. 252 p. ISBN 978-0804706582.
3. **Beer, A., Higgins, C.** *Environmental planning for site development: A manual for sustainable local planning and design*, 2<sup>nd</sup> edition. London: Routledge, 2000. 368 p. eBook ISBN 9780203639108, <https://doi.org/10.4324/9780203639108>.
4. **Bishop, K., Corkery, L.** (eds.). *Designing cities with children and young people*. London: Routledge, 2017. 278 p. ISBN 9781138890824.
5. **Brinķis, J., Buka, O.** *Apbūves kompleksa pilsētplānošanas aspekti : Metodiskie norādījumi arhitektūras bakalaura un profesionālās studiju programmas ietvaros*. Rīga: RTU izdevniecība, 2009. 95 lpp.
6. **Campbell, A., Converse, P. E., Rodgers, W. L.** *The quality of American life: perceptions, evaluations and satisfactions*. New York: Russell Sage Foundation, 1976. 597 p. ISBN 9781610441032.
7. **Carr, S., Francis, M., Rivlin, L. G., Stone, A. M.** *Public space*. Cambridge: Cambridge University Press, 1993. 420 p. ISBN 978-0521359603.
8. **Coleman, A. M.** *Utopia on a trial : Vision and Reality in Planned Housing*, 2<sup>nd</sup> edition, London: Hilary Shipman, 1990. 232 p. ISBN 978-0948096013.
9. **Creswell, J. W.** *Research design: Qualitative, quantitative and mixed methods approaches*, 4th edition. London: SAGE Publications, 2014. 342 p. ISBN 978-1-4522-2610-1.
10. **Dolley, J., Bosman, C.** (eds.). *Rethinking Third places: Informal Public Spaces and Community Building*. Cheltenham: Edward Elgar Publishing, 2019. 240 p. ISBN 978-1786433909.
11. **Dremaite, M.** *Baltic Modernism: Architecture and Housing in Soviet Lithuania*. Berlin: DOM Publishers, 2017. 250 p. ISBN 978-3869224701.
12. **Fischer, C.S., Merton, R.K.** *The Urban Experience*. New York: Houghton Mifflin Harcourt, 1984. 371 p. ISBN 978-01155934986.

13. **Gallent, N., Ciaffi, D.** *Community action and planning: Contexts, Drivers and Outcomes*. Bristol: Lavenham press, 2016. 341 p. ISBN|978-1447315162.
14. **Gehl, J.** *Cities for people*. Washington, D.C.: Island press, 2010. 288 p. ISBN|978-1597265737
15. **Gehl, J.** *Life between buildings: Using public space*. Washington, D.C.: Island Press, Sixth edition, 2011. 216 p. ISBN 978-1597268271.
16. **Gehl, J., Svarre, B.** *How to study public life*. Berlin: Springer, 2013. 200 p. ISBN|978-1610914239.
17. **Harbusch, G., Perez, M., Somer, K., Weiß, D., Van Es, E.** *Atlas of the Functional City: CIAM 4 and Comparative Urban Analysis*. Zurich: GTA Verlag, 2014. 470 p. ISBN 978-3-85676-338-1.
18. **Healey, P.** *Collaborative planning: Shaping Places in Fragmented Societies*. Vancouver: UBC Press, 1997. 446 p. ISBN|978-0774805988.
19. **Hess, D., Tammaru, T.** (eds.). *Housing estates in Baltic countries: The Legacy of Central Planning in Estonia, Latvia and Lithuania*. Switzerland: Springer, 2019. 383 p. ISBN 978-3-030-23394-5.
20. **Hess, D., Tammaru, T., Van Ham, M.** (eds.). *Housing Estates in Europe : Poverty, Ethnic segregation and policy challenges*. Switzerland: Springer Open, 2018. 429 p. ISBN 978-3-030-06522-5.
21. **Heidensohn, F.** *Crime and Society (Sociology of a Changing world)*. London: Palgrave, 1989. 228 p. ISBN 9780333435281.
22. **Jacobs, J.** *The death and life of great American cities*. UK: Vintage, Reissue edition, 1961. New edition 1992. 458 p. ISBN|978-0679741954.
23. **Kaiser, E. J., Godschalk, D. R., Chapin, Jr. F. S.** *Urban Land Use Planning*, 4<sup>th</sup> edition, Urbana, IL: University of Illinois Press, 1995. 504 p. ISBN 0252021010.
24. **Kaplan, R., Kaplan, S.** *The experience of nature: A psychological perspective*, 1<sup>st</sup> edition. Cambridge: Cambridge University Press, 1989. 352 p. ISBN|978-0521349390.
25. **Kliems, A., Dmitrieva, M.** (eds.) *The Post-socialist city. Continuity and change in urban space and imagery*. Berlin: Jovis, 2010. 208 p. ISBN |978-3868590180.
26. **Krastiņš, J., Strautmanis, I., Dripe, J.** *Latvijas arhitektūra no senātnes līdz mūsdienām*. Rīga: Baltika, 1998. 312 lpp. ISBN 9789984917832.
27. **Krier, R.** *Urban Space*. New York, NY: Rizzoli, 1979. 174 p. ISBN|978-0847802333.
28. **Lang, J., Marschall, N.** *Urban squares as places, links and displays: Successes and failures*, 1<sup>st</sup> edition. London: Routledge, 2016. 310 p. ISBN 9781138959293.

29. **Lefcourt, H.** (ed). *Locus of Control: Current Trends in Theory & Research*. New York: Halsted Press, 1976. 268 p. ISBN 9780898592221.
30. **Light, A., Smith, J.** *Philosophy and Geography II: The Production of Public Space*. Lanham: Rowman and Littlefield, 1998. 268 p. ISBN 978-0847688104.
31. **Little, C.E.** *Greenways for America (Creating the North American Landscape)*. Baltimore, MD, USA: JHU Press, 1995. 288 p. ISBN 978-0801851407.
32. **Lynch, K.** *Good city form*. Cambridge: The MIT Press, 1984. 514 p. ISBN 978-0262620468.
33. **Lynch, K., Hack, G.** *Site Planning*, 3<sup>rd</sup> Edition. Cambridge: MIT Press, 1984. 450 p. ISBN 978-0262121064.
34. **Madanipour, A.** *Cities in Time, Temporary urbanism and the future of the city*. London: Bloomsbury publishing, 2017. 198 p. ISBN 978-1474220712.
35. **Madden, K., Schwartz, A.** Project for Public Spaces. *How to Turn a Place Around: A Handbook of Creating Successful Public Spaces*. New York: Project for Public Spaces, 2000. 121 p. ISBN 9780970632401.
36. **Marans, R., Stimson, R.** (eds.). *Investigating Quality of Urban Life: Theory, Methods, and empirical research*. New York: Springer, 2011. 453 p. ISBN 978-94-007-1742-8.
37. **Matthews, M.H.** *Making sense of place: children's understanding of large-scale environments*. Birmingham: Harvester Wheatsheaf, 1992. 271 p. ISBN 978-0745009315.
38. **Meuser, P., Zadorin, D.** *Towards a Typology of Soviet Mass Housing: The set: Prefabrication in the USSR 1955–1991*. Berlin: DOM Publishers, 2016. 455 p. ISBN 978-3869224466.
39. **Montgomery, Ch.** *Happy Cities: Transforming our lives through urban design*. New York: Farrar, Straus and Giroux, 2013. 369 p. ISBN 978-0374534882.
40. **Moravanszky, A., Kegler, K. R.** (eds.) *Re-scaling the environment: new landscapes of design, 1960–1980 (East West Central: Re-building Europe, 1950–1990)*. Basel: Birkhauser Architecture, 2016. 320 p. ISBN 978-3035610161.
41. **Newman, O.** *Defensible space: Crime prevention through urban design*. New York: Macmillan Publishing, 1973. 264 p. ISBN 978-0020007500.
42. **Otrā Rīga : Dzīvojamo mikrajonu attīstības perspektīvas** [Red.: I. Pedece, B. Gēbele, P. Strancis, G. Princis, G. Asaris, S. Treija, M. Liepa]. Rīga, Latvija, 2004. 96 lpp.
43. **Pacione, M.** *Urban Geography: A global perspective*. Second edition. New York: Routledge, 2005. 957 p. ISBN 9780415462020.

44. **Paddison, R., Miles, S.** *Culture-led urban regeneration*. New York: Routledge, 2009. 186 p. ISBN 9780415568524.
45. **Perloff, H. S.** *The Quality of the urban environment: Essays on new resources in an urban age*. New York: RFF Press, 1969. 352 p. ISBN 9781138930438.
46. **Power, A.** *Estates on the Edge: the social consequences of mass housing in Northern Europe*. London: Palgrave Macmillan, 1997. 456 p. ISBN 9780333746035.
47. **Prak, N., Priemus, H.** *Post-war public housing in trouble: Papers presented at the congress "Post-war public housing in trouble," Delft, the Netherlands, October 4-5, 1984*. Delft: Delft university press, 1986. 200 p. ISBN 978-9062751679.
48. **Rosenberg, M. J., Hovland, C. I.** Cognitive, affective and behavioural components of attitudes [In: C. I. Hovland & M. J. Rosenberg (eds.)], *Attitude, organization and change*. New Haven, CT: Yale University Press, 1960. pp. 1-14. ISBN 9780300008647.
49. **Rowlands, R., Musterd, S., Van Kempen, R.** (eds.). *Mass Housing in Europe: multiple faces of development, change and response*. London: Palgrave Macmillan, 2009. 285 p. ISBN 9780230007307.
50. **Schaffer, D., Vollmer, D.** *Pathways to urban sustainability: research and development on urban systems*. Washington D.C.: National academy press, 2010. 124 p. ISBN 978-0-309-15895-4, 978-0-309-16151-0, <https://doi.org/10.17226/12969>
51. **Sennett, R.** *The conscience of the Eye, the design and social life of cities*. New York: Alfred Knopf, 1990. 284 p. ISBN 978-0393308785.
52. **Shirvani, H.** *The urban design process*. New York: Van Nostrand Reinhold Company, 1985, 192 p. ISBN 978-0442280642.
53. **Sitte, C.** *City Planning According to Artistic Principles* [translated by G. R. Collins and C. C. Collins]. London: Phaidon, 1889 [1965].
54. **Smithson, P.** Planning today. In: *Architectural design*, 1957. p. 185-190.
55. **Stake, R. E.** *The art of case study research*. Thousand Oaks, CA: Sage, 1995. 192 p. ISBN 978-0803957671.
56. **Tsenkova, S., Lowe, S.** *Housing Change in East and Central Europe: Integration or Fragmentation?* London: Routledge, 2003. 244 p. ISBN 978-0754618140.
57. **Tiesdel, S., Carmona, M.** *Urban design reader*. London: Routledge, 2006. 384 p. ISBN 978-0750665315, <https://doi.org/10.4324/9780080468129>
58. **Van Kempen, R., Dekker, K., Hall, S., Tosics, I.** *Restructuring large housing estates in Europe: Restructuring and resistance inside the welfare industry*. Bristol: Policy Press, 2005. 400 p. ISBN 978-1861347756.

59. **Wang, X., vom Hofe, R.** *Research Methods in Urban and Regional Planning*. Berlin: Springer, 2007. 430 p. ISBN 978-3-540-49658-8, <https://doi.org/10.1007/978-3-540-49658-8>
60. **Whyte, W.** *The social life of small urban spaces*. New York: Project for public spaces, 2001. 125 p. ISBN 978-0970632418.
61. **Wise, N., Clark, J.** (ed.) *Urban Transformations: Geographies of Renewal and Creative Change*. London: Routledge, 2019. 238 p. ISBN 9780367877927.
62. **Yin, R. K.** *Case study research: Design and methods*. 3<sup>rd</sup> edition. Thousand Oaks, CA: Sage, 2002. 200 p. ISBN 978-1-4129-6099-1.
63. **Zuker, P.** *Town and Square: From the Agora to the Village Green*. New York: Columbia university press, 1959. 287 p. ISBN 978-0262740050.
64. **Адамчевска-Вейхерт, Х.** *Формирование жилых комплексов*. Москва: Стройиздат, 1988. 304 стр.
65. **Машинский, В. Л.; Залогина, Е. Г.** *Проектирование озеленения жилых районов*. Москва: Стройиздат, 1978. 112 стр.

*Scientific articles in journals, conference proceedings, collections of articles, research reports*

66. **Aalbers, M., van Beckhoven, E., van Kempen, R., Musterd, S., Ostendorf, W. J. M.** Large housing estates in Netherlands. Overview of developments and problems in Amsterdam and Utrecht. *RESTATE Report 2e. RESTATE Reports*, 2003. 154 p.
67. **Aalbers, M., Rancati, S.** Feeling insecure in large housing estates: Tackling “Unsicherheit” in the Risk Society. *Urban studies*, Vol. 45, No. 13, 2008, pp. 2735–2757.
68. **Adriaanse, C. C. M.** Measuring residential satisfaction: A residential environmental satisfaction scale (RESS). *Journal of Housing and the Built Environment*, 22 (3), 2007, pp. 287–304. <https://doi.org/10.1007/s10901-007-9082-9>.
69. **Alterman, R.** The challenge of farmland preservation: Lessons from a six-nation comparison. *Journal of the American Planning Association*, 63 (2), 1997, pp. 220–243.
70. **Araya, R., Montgomery, A., Rojas, G., Fritsch, R., Solis, J., Signorelli, A., Lewis, G.** Common mental disorders and the built environment in Santiago Chile Br. *J. Psychiatry.*, 190 (2007), pp. 394–401.
71. **Artmann, M., Kohler, M., Meinel, G., Gan, J., Ioja, I.-C.** How smart growth and green infrastructure can mutually support each other — A conceptual framework for compact and green cities. *Ecol. Indicators*, 96 (2), 2019, pp. 10–22. <https://doi.org/10.1016/j.ecolind.2017.07.001>.

72. **Atkinson, R.** Discourses of partnership and empowerment in contemporary British urban regeneration. *Urban Studies*, Vol. 36, Issue 1, 1999, pp. 59–72. <https://doi.org/10.1080/0042098993736>.
73. **Aziz, N. F., Said, I.** The trends and influential factors of children's use of outdoor environments: A review. *Procedia - Social and Behavioral Sciences*, 38, 2012, pp. 204–212. <https://doi.org/10.1016/j.sbspro.2012.03.341>.
74. **Beckhoven, E., Bolt, G., van Kempen, R.** Theories of neighbourhood change and decline: their significance for post-WWII large housing estates. *Conference proceedings "Housing in Europe: New Challenges and Innovations in Tomorrow's Cities"*, Reykjavik, 29 June – 2 July, 2005, pp. 1–25.
75. **Bendjedidi, S., Bada, Y., Meziani, R.** Open spaces: spatial configuration, visibility analysis and use: case study of mass housing in Biskra, Algeria. *International review for spatial planning and sustainable development*, 6/4, 2018, pp. 93–109. [https://doi.org/10.14246/irpsd.6.4\\_93](https://doi.org/10.14246/irpsd.6.4_93).
76. **Benedict, M. A., McMahan, E. T.** Green infrastructure: Smart conservation for the 21<sup>st</sup> century. *Renew. Resour. J.*, 20, 2002, pp. 12–17.
77. **Bengston, D. N., Fletcher, J. O., Nelson, K. C.** Public policies for managing urban growth and protecting open space: Policy instruments and lessons learned in the United States. *Landscape and Urban Planning*, 69 (2), 2004, pp. 271–286.
78. **Bodnar, J., Molnar, V.** Reconfiguring private and public state, capital and new housing development in Berlin and Budapest. *Urban Studies*, Volume: 47, issue: 4, 2010, pp. 789–812.
79. **Bonaaiuto, M., Fornara, F., Bonnes, M.** Indexes of perceived residential environment quality and neighbourhood attachment in urban environments: a confirmation study on the city of Rome. *Landscape and urban planning*, 65, 2003, pp. 41–52. [https://doi.org/10.1016/S0169-2046\(02\)00236-0](https://doi.org/10.1016/S0169-2046(02)00236-0).
80. **Bonaiuto, M., Fornara, F., Ariccio, S., Cancellieri, U. G., Rahimi, L.** Perceived Residential Environment Quality Indicators (PREQIs) relevance for UN-HABITAT City Prosperity. *Habitat International*, Vol. 45, Part 1, 2015, pp. 53–63. <https://doi.org/10.1016/j.habitatint.2014.06.015>.
81. **Bonaaiuto, M., Fornara, F., Bonnes, M.** Perceived residential environment quality in middle- and low-extension Italian cities = Perception de la qualité résidentielle dans les villes italiennes de moyenne et petite étendues. *European review of applied psychology*, Vol. 56, Issue 1, 2006, pp. 23–34. <https://doi.org/10.1016/j.erap.2005.02.011>.

82. **Bonnes, M., Bonaiuto, M., Aiello, A., Perugini, M., Ercolani, A.P.** A transactional perspective on residential satisfaction. *Housing Surveys. Advances in Theory and Methods* [In: Despres, C., Piché, D. (eds.)], Québec: Centre de recherche en aménagement et développement: Université de Laval, 1997, pp. 99–13.
83. **Brueckner, J. K.** Urban sprawl: Diagnosis and remedies. *International Regional Science Review*, 23, 2000, pp. 160–171.
84. **Burton, E. J., Weich, S., Bianchard, M., Prince, M.** Measuring Physical Characteristics of housing: The built environment site survey checklist (BESSC). *Environmental and planning B: Planning and Design*, Vol. 32, Issue 2, 2005, pp. 265–280. <https://doi.org/10.1068/b3038>.
85. **Caldenby, C.** Architecture and society. White architects and Swedish post-war architecture. Proceedings of the 15<sup>th</sup> International Docomomo Conference - Metamorphosis: The Continuity of Change, 15IDC, Ljubljana, Slovenia, 28–31 August 2018, pp. 76–84.
86. **Carmona, M.** Principles for public space design, planning to do better. *Urban design International*, 24, 2019, pp. 47–59. <https://doi.org/10.1057/s41289-018-0070-3>.
87. **Carmona, M.** Contemporary public space, Part two: classification. *Journal of urban design*, 15:2, 2010, pp. 157–173. <http://dx.doi.org/10.1080/13574801003638111>.
88. **Carmona, M.** Contemporary public space: Critique and classification, Part one: critique. *Journal of Urban Design*, 15:1, 2010, pp. 123–148. <https://doi.org/10.1080/13574800903435651>.
89. **Cao, J. X., Wang, D.** Environmental correlates of residential satisfaction: An exploration of mismatched neighborhood characteristics in the Twin Cities. *Landscape and Urban Planning*, Vol. 150, 2016, pp. 26–35. <https://doi.org/10.1016/j.landurbplan.2016.02.007>.
90. **Cavanagh, W.** Empty space? Courts and squares in Mycenaean towns. *Urbanism in the Aegean Bronze Age; Sheffield Studies in Aegean Archaeology*, Vol. 4., [In: K. Branigan ed.], Sheffield, UK: Sheffield Academic Press, 2001, pp. 119–134.
91. **Debek, M., Janda-Debek, B.** Perceived Residential Environment Quality and Neighborhood Attachment (PREQ & NA) Indicators by Marino Bonaiuto, Ferdinando Fornara, and Mirilia Bonnes – Polish adaptation. *Polish Journal of Applied Psychology*, Vol. 13, Issue 2, 2015, pp. 1–52. <https://doi.org/10.1515/pjap-2015-0032>.
92. **Dekker, K., de Vos, S., Musterd, S., van Kempen, R.** Residential satisfaction in housing estates in European cities: A multi-level research approach. *Housing Studies*, 26(4), 2011, pp. 479–499. <https://doi.org/10.1080/02673037.2011.559751>.

93. **Dunstan, F., Weaver, N., Araya, R., Bell, T., Lannon, S., Lewis, G., Patterson, J., Thomas, P., Jones, P., Palmer, S.** An observation tool to assist with the assessment of urban residential environments. *Journal of Environmental Psychology*, Vol. 25, Issue 3, 2005, pp. 293–305. <https://doi.org/10.1016/j.jenvp.2005.07.004>.
94. **Dzhambov, A.M., Hartig, T., Tilov, B., Atanasova, V., Makakova, D.R., Dimitrova, D.D.** Residential greenspace is associated with mental health via intertwined capacity-building and capacity-restoring pathways. *Environmental research*, Vol. 178, 2019, p. 108708. <https://doi.org/10.1016/j.envres.2019.108708>.
95. **Edwards, N., Hooper, P., Trapp, G.A., Bull, F., Boruff, B., Giles-Corti, B.** Development of a public open space desktop auditing tool (POSDAT): a remote sensing approach. *Applied geography*, Vol. 38, 2013, pp. 22–30. <https://doi.org/10.1016/j.apgeog.2012.11.010>.
96. **El Din, H. S., Shalaby, A., Farouh, H. E., Elariane, S. A.** Principles of urban quality of life for a neighbourhood. *HBRC Journal*, Vol. 9, Issue 1, 2013, pp. 86–92. <https://doi.org/10.1016/j.hbrj.2013.02.007>.
97. **Ferreira, I. A., Johansson, M., Sternudd, C., Fornara, F.** Transport walking in urban neighbourhoods—Impact of perceived neighbourhood qualities and emotional relationship. *Landscape and urban planning*, Vol. 150, 2016, pp. 60–69. <https://doi.org/10.1016/j.landurbplan.2016.02.009>.
98. **Finlay, J., Esposito, M., Li, M., Colabianchi, N., Zhou, H., Judd, S., Clarke, P.** Neighbourhood active aging infrastructure and cognitive function: a mixed-methods study of older Americans. *Preventive medicine*, Vol. 150, 2021, 106669. <https://doi.org/10.1016/j.ypmed.2021.106669>.
99. **Florida, R., Mellander, C., Stolarick, K.** Beautiful Places: The Role of Perceived Aesthetic Beauty in Community Satisfaction. *Regional Studies*, 45, (1), 2011, pp. 33–48. <https://doi.org/10.1080/00343404.2010.486784>.
100. **Fornara, F., Bonaaiuto, M., Bonnes, M.** Cross-Validation of Abbreviated Perceived Residential Environment Quality (PREQ) and Neighborhood Attachment (NA) Indicators. *Environment and Behavior*, 42, (2), 2010, pp.171–196. <https://doi.org/10.1177/0013916508330998>.
101. **Foster, S., Giles-Corti, B., Knuiman, M.** Neighbourhood design and fear of crime: A social-ecological examination of the correlates of residents' fear in new suburban housing developments. *Health and Place*, Vol. 16, Issue 6, 2010, pp. 1156–1165. <https://doi.org/10.1016/j.healthplace.2010.07.007>.

102. **Gifford, R.** Residential environmental psychology. In: Gifford, R. (ed.) *Environmental psychology: Principles and practice*, 5th ed., Colville (Washington): Optimal Books, 2014. pp. 212–239.
103. **Godhwani, S., Jivraj, S., Marshall, A., Becares, L.** Comparing subjective and objective neighbourhood deprivation and their association with health over time among older adults in England. *Health and Place*, 2019, Vol. 55, pp. 51–58. <https://doi.org/10.1016/j.healthplace.2018.10.006>.
104. **Gong, Y., Palmer, S., Gallacherc, J., Marsdena, T., Foneb, D.** A systematic review of the relationship between objective measurements of the urban environment and psychological distress. *Environment international*, Vol. 96, 2016, pp. 48–57. <https://doi.org/10.1016/j.envint.2016.08.019>.
105. **Gorczyca, K.** The Social Transformation of Large Housing Estates in Poland at the Turn of the 21<sup>st</sup> Century. *Czech sociological review*, 52, (6), 2016, pp. 861–892. <https://doi.org/10.13060/00380288.2016.52.6.289>.
106. **Hall, S., Murie, A., Rowlands, R., Sankey, S.** *Large housing estates in London and Birmingham, UK, Opinions of residents on recent developments. Restate report 4j*. Utrecht: University Utrecht, Faculty of Geosciences, 2005. 118 p. [cited 10.02.2019]. <http://restate.geo.uu.nl/results/Report4/4kec.pdf>.
107. **He, L. Paez, A., Liu, D.** Built environment and violent crime: An environmental audit approach using Google Street. *Computers, Environment and Urban systems*, 66, 2017, pp. 83–95. <https://doi.org/10.1016/j.compenurbsys.2017.08.001>.
108. **Hedayati, M., Abdullah, M. A., Ignatius, J., Tilaki, M. J. M.** Examining the effects of crime prevention through environmental design (CPTED) on Residential Burglary. *Int. journal of law, crime and justice*, Vol. 46, 2016, pp. 86–102. <https://doi.org/10.1016/j.ijlcrj.2016.04.001>.
109. **Huang, S. C. L.** A study of outdoor interactional spaces in high-rise housing. *Landscape and Urban Planning*, 78, 2006, pp. 193–204. <https://doi.org/10.1016/j.landurbplan.2005.07.008>.
110. **Irwin, E. G., Bockstael, N. E.** Land use externalities, open space preservation, and urban sprawl. *Regional Science and Urban Economics*, 34 (6), 2004, pp. 705–725.
111. **Jansen, S. J. T.** Why is housing always satisfactory? A study into the impact of cognitive restructuring and future perspectives on housing appreciation. *Social Indicators Research*, 116, 2014, pp. 353–371. <https://doi.org/10.1007/s11205-013-0303-1>.

112. **Jaskiewicz, M., Wiwatowska, E.** Perceived neighbourhood disorder and quality of life: the role of the human-place bond, social interactions, and out-group blaming, *Journal of environmental psychology*, Vol. 58, 2018, pp. 31–41. <https://doi.org/10.1016/j.jenvp.2018.07.008>.
113. **Kabisch, S., Grossmann, K.** Challenges for large housing estates in light of population decline and ageing: Results of a long-term survey in East Germany. *Habitat International*, Vol. 39, 2013, pp. 232–239. <https://doi.org/10.1016/j.habitatint.2012.12.003>.
114. **Kajumulo Tibaijuka, A.** Interactive Discussion with Heads of UN Programmes and Agencies: Responding to the Challenges. *12<sup>th</sup> Session of the Commission on Sustainable Development*, New York, USA, 29 April 2004, 5 p. [online, cited 10.11.2019]. [https://sustainabledevelopment.un.org/content/documents/habitat\\_2904.pdf](https://sustainabledevelopment.un.org/content/documents/habitat_2904.pdf)
115. **Kaplan, S.** The restorative benefits of nature: Toward an integrative framework, *Journal of Environmental Psychology*, 15 (3), 1995, pp. 169–182, ISSN 0272-4944, [https://doi.org/10.1016/0272-4944\(95\)90001-2](https://doi.org/10.1016/0272-4944(95)90001-2).
116. **Kienast, F., Degenhardt, B., Weilenmann, B., Wäger, Y., Buchecker, M.** GIS-assisted mapping of landscape suitability for nearby recreation. *Landscape and urban planning*, Vol. 105, Issue 4, 2012, pp. 385–399. <https://doi.org/10.1016/j.landurbplan.2012.01.015>.
117. **Kilnarova, P., Wittmann, M.** Open Space between Residential Buildings as a Factor of Sustainable Development – Case Studies in Brno (Czech Republic) and Vienna (Austria). *IOP Conference Series: Earth and Environmental Science*, Vol. 95, Issue 5, 2017, pp. 2–12. doi :10.1088/1755-1315/95/5/052008.
118. **Knack, R. E.** Hanging out: teens search for the perfect public space. *Planning*, 66 (8), 2000, pp. 4–9.
119. **Korpela, K., Borodulin, K., Neuvonen, M., Paronen, O., Tyrväinen, L.** Analyzing the mediators between nature-based outdoor recreation and emotional well-being. *Journal of environmental psychology*, Vol. 37, 2014, pp. 1–7. <https://doi.org/10.1016/j.jenvp.2013.11.003>.
120. **Kosunen, H., Hirvonen-Kantola, S., Hentilä, H-L.** Approaches to planning urban infill on Finnish large housing estates. *The Finnish society of urban planning* [online, cited 10.05.2020]. <https://www.yss.fi/journal/approaches-to-planning-urban-infill-on-finnish-large-housing-estates/>
121. **Koomen, E., Dekkers, J., van Dijck, T.** Open-space preservation in the Netherlands: Planning, practice and prospects. *Land Use Policy*, 25 (3), 2008, pp. 361–377.

122. **Kristiánová, K.** Post-Socialist Transformations of Green Open Spaces in Large Scale Socialist Housing Estates in Slovakia. *Procedia engineering*, Vol. 161, 2016, pp. 1863–1867. <https://doi.org/10.1016/j.proeng.2016.08.715>.
123. **Laws, D., Scholz, R. W., Shiroyama, H., Susskind, L., Suzuki, T., Weber, O.** Expert views on sustainability and technology implementation. *The International Journal of Sustainable Development & World Ecology*, 2004, Vol. 11, Issue 3, pp. 247–261. <https://doi.org/10.1080/13504500409469829>.
124. **Lennard, S. H. C. Lennard, H. L.** *Livable Cities: People and Places: Social and Design Principles for the Future of the City*. Center for Urban Well-Being. Venice: Gondolier Press, 1987. 166 p.
125. **Lipnik Vehovar, K.** Modern neighbourhoods in Ljubljana – The splendour and misery of their existence and development. *Proceedings of the 15<sup>th</sup> International Docomomo Conference - Metamorphosis: The Continuity of Change*, 15IDC, 2018, pp. 156–163.
126. **Llinares, C., Page, A., Llinares, J.** An approach to defining strategies for improving city perception. Case study of Valencia, Spain. *Cities*, Vol. 35, 2013, pp. 78–88. <https://doi.org/10.1016/j.cities.2013.06.009>.
127. **Lūse, M.** Latvijas pilsētu dzīvojamo kvartālu apstādījumu izmantošana. Arhitektūra un pilsēt būvniecība Latvijas PSR. Rīga: Zinātne, 1971, 159. –174.lpp.
128. **Lu, M.** Determinants of Residential Satisfaction: Ordered Logit vs. Regression Models. *Growth and Change*, 30, 1999, pp. 264–287.
129. **Madanipour, A.** Marginal public spaces in European cities. *Journal of Urban Design*, Vol. 9. No. 3, 2004, pp. 267–286.
130. **Malone, K.** “Street Life: Youth” Culture and Competing Uses of Public Space. *Environment and Urbanization*, 14 (2), 2002, pp. 157–168.
131. **Marans, R., Rodgers, W.** Towards an understanding of community satisfaction. In: *Metropolitan America in contemporary perspective* (Eds.: A.H. Hawley, V.P. Roch), New York: Halstead Press, 1975. pp. 89–101.
132. **Markevych, I., Schoierer, J., Hartig, T., Chudnovsky, A., Hystad, P., Dzhambov, A.M., de Vires, S., Triguero-Mas, M., Brauer, M., et al.** Exploring pathways linking greenspace to health: Theoretical and methodological guidance. *Environmental research*, 2017, 158, pp. 301–317. <https://doi.org/10.1016/j.envres.2017.06.028>.
133. **Marin, V., Chelcea, L.** The Many (Still) Functioning Housing estates in Bucharest, Romania: a viable housing provider in Europe’s densest capital city. *Housing Estates in Europe: poverty, segregation, and policy challenges* [In: Hess DB, Tammaru T, van Ham M (eds.)]. Springer, Dordrecht, Netherlands, 2018, pp. 167–190.

134. **Marshall, K. A., Gonzalez-Meler, M. A.** Can ecosystem services be part of the solution to environmental justice? *Ecosystem services*, Vol. 22, Part A, 2016, pp. 202–203. <https://doi.org/10.1016/j.ecoser.2016.10.008>.
135. **Maruani, T., Amit-Cohen, I.** Open space planning models: A review of approaches and methods. *Landscape and Urban Planning*, 81, 2007, pp. 1–13.
136. **Mccrea, R., Stimson, R., Western, J.** “Testing a Moderated Model of Satisfaction with Urban Living using Data for Brisbane-South East Queensland, Australia”. *Social Indicators Research: An International and Interdisciplinary Journal for Quality-of-Life Measurement*, Springer, Vol. 72 (2), 2005, pp. 121–152. <https://doi.org/10.1007/s11205-004-2211-x>.
137. **McLintock, M.** Maximising the benefits of green infrastructure in social housing. *Scottish Natural Heritage Research Report No. 1046*. 2018. 98 p.
138. **Metspalu, P., Hess, D. B.** Revisiting the role of architects in planning large-scale housing in the USSR: the birth of socialist residential districts in Tallinn, Estonia, 1957-1979. *Planning perspectives*, 33 (3), 2017, pp. 335–361. <https://doi.org/10.1080/02665433.2017.1348974>.
139. **Milgram, S.** The experience of living in cities. *Science*, 167, 1970, pp. 1461–1468.
140. **M. Dębek, B. Janda-Dębek,** Perceived Residential Environment Quality and Neighborhood Attachment (PREQ & NA) Indicators by Marino Bonaiuto, Ferdinando Fornara, and Mirilia Bonnes – Polish adaptation. *Polish Journal of Applied Psychology* 2015, vol. 13 (2). pp. 1–52. <https://doi.org/10.1515/pjap-2015-0032>.
141. **Moore, T. H. M., Kesten, J. M., Lopez-Lopez, J. A., Ijaz, S., McAleenan, A., Richards, A., Gray, S., Savovis, J., Audrey, S.** The effects of changes to the built environment on the mental health and well-being of adults: Systematic review. *Health and Place*, Vol. 53, 2018, pp. 237–257. <https://doi.org/10.1016/j.healthplace.2018.07.012>.
142. **Moser, G.** Quality of life and sustainability: Toward person–environment congruity. *Journal of Environmental Psychology*, Vol. 29, Issue 3, 2009, pp. 351–357. <https://doi.org/10.1016/j.jenvp.2009.02.002>.
143. **Musterd, S., van Kempen, R.** Large housing estates in European cities. Opinions of residents on recent developments. Restate report 4k. *RESTATE reports*. Netherlands: Urban and regional research center, 2005. 118 p. [cited 10.02.2019]. <http://restate.geo.uu.nl/results/Report4/4kec.pdf>.

144. **Nazir, N. N. M., Othman, N., Nawawi, A.H.** Green Infrastructure and its Roles in Enhancing Quality of Life. *Procedia - Social and Behavioral Sciences*, Vol. 153, 16 October 2014, pp. 384–394. <https://doi.org/10.1016/j.sbspro.2014.10.071>.
145. **Nechyba, T. J. Walsh, R. P.** Urban sprawl. *Journal of Economic Perspectives*, Vol. 18, No. 4, 2004, pp. 177–200.
146. **Nickelson, J., Wang, A. R., Mitchell, Q. P., Hendricks, K., Paschal, A.** Inventory of the physical environment domains and subdomains measured by neighborhood audit tools: A systematic literature review. *Journal of Environmental Psychology*, Vol. 36, December 2013, pp. 179–189. <https://doi.org/10.1016/j.jenvp.2013.07.009>.
147. **Öresjö, E., Andersson, R., Holmqvist, E., Pettersson, L., Siwertsson, Ch.** Large Housing Estates in the Sweden: Policies and Practices. *RESTATE report 3* (D5/6). Utrecht: Faculty of Geosciences, Utrecht University, 8 January 2004, 2004. 84 p. [cited 10.02.2019]. <https://doi.org/10.13140/RG.2.1.4550.0562>.
148. **Pacione, M.** Urban environmental quality and human wellbeing—a social geographical perspective. *Landscape and urban planning*, 65, 2003, pp. 19–30.
149. **Parkes, A., Kearns, A., Atkinson, R.** What makes people dissatisfied with their neighbourhoods? *Urban Studies*, 39 (13), 2002, pp. 2413–2438. <https://doi.org/10.1080/004209802200002703>.
150. **Pauleit, S., Ambrose-Oji, B., Andersson, E., Anton, B., Buijs, A., Haase, D., Elands, B., Hansen, R., Kowarik, I., Kronenberg, J., Mattijssen, T., Olafsson, A. S., Rall, E., van der Jagt, A. P. N., van der Bosch, C. K.** Advancing urban green infrastructure in Europe: Outcomes and reflections from the GREEN SURGE project. *Urban forestry and greening*, Vol. 40, 2019. pp. 4–16. <https://doi.org/10.1016/j.ufug.2018.10.006>.
151. **Perkins, D. D.** The physical environment of street blocks and resident perceptions of crime and disorder: Implications for theory and measurement. *Journal of Environmental Psychology*, 1992. pp. 21–34.
152. **Perkins, D. D., Taylor, R. B.** Revised Block Environmental Inventory (RBEI) [online, cited 10.01.2019]. <https://cdn.vanderbilt.edu/vu-my/wp-content/uploads/sites/249/2011/09/14093050/BEI.2.doc>.
153. **Perkins, D. D., Larsen, C., Brown, B.** Mapping Urban Revitalization: Using GIS Spatial Analysis to Evaluate a New Housing Policy. *Journal of Prevention & Intervention Community*, 37 (1), 2009, pp. 48–65. <https://doi.org/10.1080/10852350802498698>.

154. **Poortinga, W.** et al. Neighborhood Quality and Attachment: Validation of the Revised Residential Environment Assessment Tool. *Environment and behaviour*, Vol. 49, Issue 3, 2016. pp. 1–28. <https://doi.org/10.1177/0013916516634403>.
155. **Püffel, C., Haase, D., Priess, J.** Mapping Ecosystem Services on Brownfields in Leipzig, Germany. *Ecosyst. Serv.*, 30, 2018, pp. 73–85. <https://doi.org/10.1016/j.ecoser.2018.01.011>.
156. **Qingfen, W.** Outdoor Activity Space Design for the Elderly in Residential Areas. *2019 International Conference on Intelligent Transportation, Big Data & Smart City (ICITBS)*, 2019, pp. 278–280. <https://doi.org/10.1109/ICITBS.2019.00073>. <https://ieeexplore.ieee.org/document/8669627>.
157. **Quintas, R., Koutsogeorgou, E., Raggi, A., Bucciarelli, P., Cerniauskaite, M., Leonardi, M.** The selection of items for the preliminary version of the COURAGE in Europe built environment instrument. *Maturitas: An International journal of midlife health and beyond*, Vol. 71, Issue 2, 2012, pp. 147–153. [https://www.maturitas.org/article/S0378-5122\(11\)00399-9/fulltext](https://www.maturitas.org/article/S0378-5122(11)00399-9/fulltext).
158. **Rehdanz, K., Maddison, D. J.** Local Environmental Quality and Life-Satisfaction in Germany. *Ecological Economics*, 64 (4), 2008, pp. 787–797. <https://doi.org/10.1016/j.ecolecon.2007.04.016>.
159. **Repetti, A., Desthieux, G.** A Relational Indicator set Model for urban land-use planning and management: Methodological approach and application in two case studies. *Landscape and Urban Planning*, Vol. 77, Issue 1–2, 2006, pp. 196–215. <https://doi.org/10.1016/j.landurbplan.2005.02.006>.
160. **Rivlin, L. G.** Public spaces and public life in urban areas. *The urban experience: a people-environment perspective* [In; S.J. Neary, M.S. Symes and F.E. Brown eds.], Taylor & Francis group, 1994, pp. 289–296.
161. **Rodiek, S.** SOS Senior’s outdoor survey. Texas, TX: Center for health systems and design, 2014 [online, cited 10.01.2019]. <https://www.accesstonature.org/SOS-ENGLISH.pdf>.
162. **Rowland, R., Murie, A.** Whose Regeneration? The Spectre of Revanchist Regeneration. *Mass Housing in Europe* [In: Rowlands R., Musterd S., van Kempen R. (eds)]. London: Palgrave Macmillan, 2009. pp. 235–264.
163. **Salingaros, N., Pagliardini, P.** Geometry and life of urban space. *Proceedings of the 11th International Congress on the Virtual City and Territory, “Back to the Sense of the City”*, Krakow, Poland, 6–8 July 2016. pp. 1–20.

164. **Salama, A., Azzali, S.** Examining attributes of urban open spaces in Doha. *Proc. ICE-Urban Design and Planning*, 168 (2), 2015, pp. 75–87.
165. **Sampson, R. J., Raudenbush, S. W.** Systematic social observation of public spaces: A new look at disorder in urban neighborhoods. *American Journal of Sociology*, 105, no. 3, 1999, pp. 603–651.
166. **Schaefer-McDaniel, N., Caughy, M. O., O'Campo, P., Gearey, W.** Examining methodological details of neighbourhood observations and the relationship to health: a literature review. *Soc Sci Med*, 70, 2010, pp. 277–292.
167. **Schaefer-McDaniel, N., Dunn, J.R., Minian, N., Katz, D.** Rethinking measurement of neighborhood in the context of health research. *Soc Sci Med*, 71, 2010, pp. 651–656.
168. **Seamon, D., Sowers, J.** Place and Placelessness, *Key Texts in Human Geography*, [In P. Hubbard, R. Kitchen, & G. Vallentine, eds.], London: Sage, 2008, pp. 43–51.
169. **Sendi, R., Goličnik Marušić, B.** Neighbourhood design. *International Encyclopedia of Housing and Home*, Elsevier Science, 2012. 3862 p.
170. **Sendi, R., Marušić, B.** Neighbourhood Design. Public Spaces. *International encyclopedia of housing and home*, 2012, pp. 21–28. <https://doi.org/10.1016/B978-0-08-047163-1.00541-5>.
171. **Sendi, R.** Housing Reform and Housing conflict: the privatization and denationalization of public housing in the republic of Slovenia in practice. *Intern. Journal of urban and regional research*, Vol. 19, No. 3, 1995, pp. 435–446.
172. **Shu-Chun, L. H.** A study of outdoor international spaces in high-rise housing. *Landscape and Urban Planning*, Vol. 78 (3), 2006, pp. 193–204. <https://doi.org/10.1016/j.landurbplan.2005.07.008>.
173. **Shabak, M., Norouzi, N., Abdullah, A. M., Khan, T. H.** Children's sense of attachment to the residential common open space. *Procedia Social and Behavioral Sciences*, 201:39–48, 2015. <https://doi.org/10.1016/j.sbspro.2015.08.117>
174. **Silva, C., Viegas, I., Panagopoulos, T., Bell, S.** Environmental Justice in Accessibility to Green Infrastructure in Two European Cities. *Land*, Vol. 7, 134, 2018, pp. 1–23. <https://doi.org/10.3390/land7040134>.
175. **Skalicky, V., Čerpes, I.** Comprehensive assessment methodology for liveable residential environment. *Cities*, Vol. 94, 2019, pp. 44–54. <https://doi.org/10.1016/j.cities.2019.05.020>.
176. **Skjaeveland, O., Garling, T.** Effects of interactional space on neighbouring. *Journal of environmental psychology*, 17 (3), 1997, p. 181–198. <https://doi.org/10.1006/jevps.1997.0054>.

177. **Sola, A. G., Vilhelmson, B.** Negotiating Proximity in Sustainable Urban Planning: A Swedish Case. *Sustainability*, Vol. 11 (1), 2019. p. 31. <https://doi.org/10.3390/su11010031>.
178. **Spokane, A. R., Lombard, J. L., Martinez, F., et al.** Identifying streetscape features significant to well-being. *Architectural science review*, 50 (3), 2007, pp. 234–245. <https://doi.org/10.3763/asre.2007.5029>.
179. **Stanley, B. W., Stark, B. L., Johnston, K. L., Smith, M. E.** Urban Open Spaces in Historical Perspective: A Transdisciplinary Typology and Analysis. *Urban Geography*, 33 (8), 2012, pp. 1089–1117. <https://doi.org/10.2747/0272-3638.33.8.1089>.
180. **Sterling, E. J., Betley, E., Sigouin, A., Gomez, A., Toomey, A., Cullman, G., Malone, C., Pekor, A., Arengo, F., Blair, M., Filardi, C., Landrigan, K., Luz Porzecanski, A.** Assessing the evidence for stakeholder engagement in biodiversity conservation. *Biological Conservation*, Vol. 209, 2017, pp. 159–171. <https://doi.org/10.1016/j.biocon.2017.02.008>.
181. **Suarez, M., Barton, D.N., Cinburova, Z., et al.** Environmental justice and outdoor recreation opportunities: a spatially explicit assessment in Oslo metropolitan area, Norway. *Env. Science and policy*, Vol. 108, 2020, pp. 133–143. <https://doi.org/10.1016/j.envsci.2020.03.014>.
182. **Temelova, J., Slezakova, A.** The changing environment and neighbourhood satisfaction in socialist high-rise panel housing estates: The time-comparative perceptions of elderly residents in Prague. *Cities*, Vol. 37, 2014, pp. 82–91. <https://doi.org/10.1016/j.cities.2013.12.002>.
183. **Tiitu, M., Viinikka, A., Kopperoinen, L., Geneletu, D.** Balancing urban green space and residential infill development: a spatial multi-criteria approach based on practitioner engagement. *Journal of Env.Ass. Policy and Management*, Vol. 20, 03, 2018, p. 1840004. <https://doi.org/10.1142/S1464333218400045>.
184. **Trojanek, R., Gluszak, M., Tanas, J.** The effect of urban green spaces on house prices in Warsaw. *International Journal of Strategic Property Management*, 22 (5), 2018, pp. 358–371. <https://doi.org/10.3846/ijspm.2018.5220>.
185. **Turan, S. Ö., Pulatkan, M., Beyazlı, D., Özen, B.S.** User evaluation of the urban park design implementation with participatory approach process. *Procedia-Soc. Behav. Sci.*, 216 (2016), pp. 306–315.
186. **Ulmer, J. M., Wolf, K. L., Backman, D. R., Tretheway, R. L., Blain, C. J. A., O'Neil-Dunne, J. P. M., Frank, L. D.** Multiple health benefits of urban tree canopy: The mounting evidence for a green prescription. *Health and place*, Vol. 42, 2016, pp. 54–62. <https://doi.org/10.1016/j.healthplace.2016.08.011>.

187. **Wagtendonk, A. J., Koomen, E.** An indicator set for capturing long-term open space fragmentation and urban development dynamics. *Computers, Environment and Urban Systems*, Vol. 76, July 2019, pp. 178–193.
188. **Weich, S., Burton, E., Blanchard, M., Prince, M., Sproston, K., Erens, B.** Measuring the built environment: Validity of a site survey instrument for use in urban settings. *Health & Place*, Vol. 7, 2001, pp. 283–292.
189. **Wirth, L.** Urbanism as a way of life. *Am. J. Sociol.*, Vol. 44, 1938, pp. 1–24.
190. **Zaleckis, K., Vitkuvienė, J., Grazulevičiūtė-Vileniskė, I., Tranavičiūtė, B., Dogan, H. A., Sinkienė, J., Grunskis, T.** Public Spaces of Kaunas from the Inter-War Period to Contemporary: Content Analysis. *Architecture and Urban Planning*, Vol. 14, 2018, pp. 35–45. <https://doi.org/10.2478/aup-2018-0005>.
191. **Zerouati, W. Bellal, T.** Evaluating the impact of mass housings' in-between spaces' spatial configuration on users' social interaction. *Frontiers of Architectural Research*, Vol. 9, Issue 1, March 2020, pp. 34–53. <https://doi.org/10.1016/j.foar.2019.05.005>.
192. **Zhang, Zh., Meerow, S., Newell, J. P., Lindquist, M.** Enhancing landscape connectivity through multifunctional green infrastructure corridor modeling and design. *Urban forestry and urban greening*, Vol. 38, 2019, pp. 305–317. <https://doi.org/10.1016/j.ufug.2018.10.014>.

### *Online sources*

193. **Brownson, R. C., Brennan Ramirez, L. K., et al.** Analytic Audit Tool and Checklist audit tool [online]. *Active living research* [cited 10.01.2019]. <https://activelivingresearch.org/analytic-audit-tool-and-checklist-audit-tool>.
194. **CABE.** The value of public space: How high-quality parks and public spaces create economic, social and environmental value [online, cited 10.08.2019]. <https://www.designcouncil.org.uk/sites/default/files/asset/document/the-value-of-public-space1.pdf>.
195. **Carmona, M.** Place value and the ladder of place quality. A place alliance report. 2019. 18 p. [online]. *Place alliance* [cited 10.10.2019]. <http://placealliance.org.uk/wp-content/uploads/2019/03/Place-Value-and-the-Ladder-of-Place-Quality-Place-Alliance.pdf>.
196. **Centrālā statistikas pārvalde.** Iedzīvotāju skaits un galvenie demogrāfiskie rādītāji [tiešsaistē 01.09.2019]. <https://www.csb.gov.lv/lv/statistika/statistikas-temas/iedzivotaji/iedzivotaju-skaits/tabulas/metadati-iedzivotaju-skaits-un-galvenie>.

197. CIAM (Congres Internationaux d'Architecture Moderne) [online]. *Open learn* [cited 10.11.2019]. <https://www.open.edu/openlearn/history-the-arts/history/heritage/ciam-congres-internationaux-darchitecture-moderne>.
198. City typology [online]. *European environment agency* [cited 10.11.2019]. <https://www.eea.europa.eu/themes/sustainability-transitions/urban-environment/sub-sections/urban-green-infrastructure/typology-for-urban-green-infrastructure>.
199. **Cohut, M.** Simply seeing green spaces may help reduce cravings, 2019 [online]. *Medical news today* [cited 01.09.2019]. <https://www.medicalnewstoday.com/articles/325765>.
200. Common International Classification of Ecosystem Services (CICES) [online]. *Biodiversity information system for Europe* [cited 10.11.2019]. <https://biodiversity.europa.eu/maes/common-international-classification-of-ecosystem-services-cices-classification-version-4.3>.
201. Courtyard [online]. *Oxford Learner's Dictionaries* [cited 11.10.2019]. <https://www.oxfordlearnersdictionaries.com/definition/english/courtyard>.
202. **Day, K.** The Irvine-Minnesota Inventory (IMI) [online, cited 20.01.2019]. <https://www.midss.org/content/irvine-minnesota-inventory>.
203. **Duxbury, G.** People don't just need social housing, they need green spaces close by [online]. *The guardian* [cited 10.11.2019]. <https://www.theguardian.com/society/2015/jun/23/social-housing-green-spaces-health-benefits>.
204. Ecosystem services categories [online]. *Biodiversity information system for Europe* [cited 10.11.2019]. <https://biodiversity.europa.eu/maes/ecosystem-services-categories-in-millennium-ecosystem-assessment-ma-the-economics-of-ecosystem-and-biodiversity-teeb-and-common-international-classification-of-ecosystem-services-cices>.
205. **Elledge, J.** British governments used to cough up for social housing. Not this one, 2018 [online]. *The guardian* [cited 10.11.2019]. <https://www.theguardian.com/commentisfree/2018/mar/02/british-governments-social-housing-councils-residents>.
206. Environmental protection agency. Environmental quality Index [online, cited 10.11.2019]. <https://www.epa.gov/healthresearch/environmental-quality-index-eqi>.
207. European commission. A walk to the park: Assessing access to green areas in Europe's cities, 2018 [online, cited 10.11.2019]. [https://ec.europa.eu/regional\\_policy/sources/docgener/work/2018\\_01\\_green\\_urban\\_area.pdf](https://ec.europa.eu/regional_policy/sources/docgener/work/2018_01_green_urban_area.pdf).

208. European environment agency. Annex 3: European common indicators: Towards a local sustainability profile [online, cited 10.11.2019]. [https://www.eea.europa.eu/publications/environmental\\_issue\\_report\\_2002\\_30/chap10-annex3.pdf/view](https://www.eea.europa.eu/publications/environmental_issue_report_2002_30/chap10-annex3.pdf/view).
209. **Gedge, D.** Green infrastructure and housing estates [online]. *Green infrastructure* [cited 10.11.2019]. <https://greeninfrastructureconsultancy.com/green-infrastructure-social-housing/>.
210. **Gedge, D.** Retrofitting green infrastructure around housing estate [online]. *Green infrastructure* [cited 10.11.2019]. <https://greeninfrastructureconsultancy.com/retrofitting-green-infrastructure/>.
211. **Gooden, B.** A green view: how seeing trees from your window improves wellbeing. City Green Urban Landscape solutions, 2019 [online]. *City Green* [cited 10.02.2019]. <https://citygreen.com/blog/a-green-view-how-seeing-trees-from-your-window-improves-wellbeing/>.
212. Housing in Köln Ostheim: Urbane Gestalt [online]. *Landezine* [cited 10.11.2019]. <http://landezine.com/index.php/2015/02/housing-in-koln-ostheim-complete-renewal-of-a-1950s-housing-complex/>.
213. Iedzīvotāju aptauja par dzīvi apkaimē 4. Ziepniekkalns [tiešsaiste]. *Rīgas domes pilsētas attīstības departaments* [skatīts 10.09.2018]. [https://www.rdpad.lv/wp-content/uploads/2014/12/4\\_apkaime\\_Ziepniekkalns\\_atksaite.pdf](https://www.rdpad.lv/wp-content/uploads/2014/12/4_apkaime_Ziepniekkalns_atksaite.pdf).
214. Iedzīvotāju aptauja par dzīvi apkaimē 9. Jugla [tiešsaiste]. *Rīgas domes pilsētas attīstības departaments* [skatīts 10.09.2018]. [https://www.rdpad.lv/wp-content/uploads/2014/12/9\\_apkaime\\_Jugla\\_atksaite.pdf](https://www.rdpad.lv/wp-content/uploads/2014/12/9_apkaime_Jugla_atksaite.pdf).
215. IEREK International experts for Research enrichment and knowledge exchange (2016). The compact city a sustainable urban form [online]. *IEREK* [cited 10.11.2019]. <https://www.ierek.com/news/index.php/2016/08/03/compact-city-sustainable-urban-form/>.
216. Imantas iedzīvotāju vērtējums dzīvei apkaimē. Imantas iedzīvotāju aptauja. 2012. gada decembris – 2013. gada janvāris. Tirgus un sabiedriskās domas pētījumu centrs, 26 lpp. [tiešsaistē 10.09.2018]. [https://sus.lv/sites/default/files/media/faili/atksaite\\_imanta\\_12\\_2012.pdf](https://sus.lv/sites/default/files/media/faili/atksaite_imanta_12_2012.pdf).
217. Importance of Leisure & Recreation for Health [online]. *Entertainment Broadcast* [cited 10.11.2019]. <http://broadcastforfriends.com/importance-leisure-recreation-health/>.

218. Izsludināts Rīgas pilsētas apkaimju attīstības projektu īstenošanas konkurss [tiešsaistē]. *Rīga.lv* [citēts 20.04.2019]. <https://www.riga.lv/lv/news/izsludinats-rigas-pilsetas-apkaimju-attistibas-projektu-istenosanas-konkurss?16775>.
219. Knowledge [online]. *Biodiversity information system for Europe* [cited 10.11.2019]. <https://biodiversity.europa.eu/research>.
220. Leipzig Charter on Sustainable European Cities, 2 May 2007, 7 p. [online, cited 10.11.2019]. [https://ec.europa.eu/regional\\_policy/archive/themes/urban/leipzig\\_charter.pdf](https://ec.europa.eu/regional_policy/archive/themes/urban/leipzig_charter.pdf).
221. **Listova, E.** Sovetskaya imperiya. Khrushhevki. TV Channel "History" = Советская империя. Хрущевки | Телеканал «История» [онлайн, просмотрено 10.04.2020]. <https://www.youtube.com/watch?v=LyideCu4LFk>.
222. London infrastructure plan 2050 [online]. *London.gov.uk* [cited 10.11.2019]. <https://www.london.gov.uk/what-we-do/better-infrastructure/infrastructure-policies/london-infrastructure-plan-2050>.
223. **Muhs, A.** [online, cited 10.11.2019]. [http://www.muhs.de/galerie/details.php?image\\_id=47206&sessionid=20b2a7333ae2c-c106e5455203453aac3](http://www.muhs.de/galerie/details.php?image_id=47206&sessionid=20b2a7333ae2c-c106e5455203453aac3).
224. Nāc un piedalies pagalma labiekārtošanā Zolitūdē, Sarkandaugavā un Maskavas priekšpilsētā [tiešsaistē]. *Rīgas domes pilsētas attīstības departaments* [citēts 10.04.2020]. <https://www.rdpad.lv/nac-un-piedalies-pagalma-labiekartosana-zolitude-sarkandaugava-un-maskavas-priekspilseta/>.
225. "Neues bauen" ("Modern Architecture") and Greening (-1920 - today) [online]. *Fassaden Gruen* [cited 15.11.2019]. <https://www.fassadengruen.de/en/bauhaus-modern-building.html>.
226. Par iniciatīvu: konkursa rezultāti [online]. *BalsoRīga.lv* [cited 5.11.2019]. <https://balso.riga.lv/par-iniciativu>.
227. **Pikora, T.** Systematic Pedestrian and Cycling Environmental Scan (SPACES) [online, cited 10.11.2019]. <https://activelivingresearch.org/systematic-pedestrian-and-cycling-environmental-scan-spaces-instrument>.
228. Projektu konkursa „Apkaimju iniciatīvas līdzdalības un piederības veicināšanai, 3. uzsaukums, 2018. gada 17. septembrī [tiešsaistē]. *Rīga City Council Department of Education, Culture and Sport* [skatīts 10.01.2019]. [https://integracija.riga.lv/lv/integracija?target=news\\_item&news\\_item=projektu-konkursta-apkaimju-iniciativas-lidzdalibas-un-piederibas-veicinasanai-3-uzsaukums-1059](https://integracija.riga.lv/lv/integracija?target=news_item&news_item=projektu-konkursta-apkaimju-iniciativas-lidzdalibas-un-piederibas-veicinasanai-3-uzsaukums-1059).

229. Quality of life [online]. *European commission* [cited 10.11.2019]. [https://ec.europa.eu/eurostat/cache/infographs/qol/index\\_en.html](https://ec.europa.eu/eurostat/cache/infographs/qol/index_en.html).
230. Reestructuració del conjunt de Hellersdorf Berlin (Germany) Integral urban regeneration of a housing development in the northeast periphery of Berlin [online]. *Public Space* [cited 10.11.2019]. <https://www.publicspace.org/works/-/project/w001-reestructuracio-del-conjunt-de-hellersdorf>.
231. Restructuring large-scale housing estates in European cities: good practices and new visions for sustainable neighbourhoods and cities [online]. *European commission* [cited 01.10.2018]. <https://cordis.europa.eu/project/id/EVK4-CT-2002-00085>.
232. Rīgas attīstības stratēģija līdz 2030. gadam [skatīts 10.01.2019]. [https://www.rdpad.lv/wp-content/uploads/2014/11/STRATEGIJA\\_WEB.pdf](https://www.rdpad.lv/wp-content/uploads/2014/11/STRATEGIJA_WEB.pdf).
233. Rīgas domes izglītības, kultūras un sporta departaments. Imantas un Mežciema apkaimēs jauni sporta un aktīvās atpūtas laukumi [skatīts 10.01.2020]. [https://sports.riga.lv/lv/sports?news\\_item=imantas-un-mezciema-apkaimes-jauni-sporta-un-aktivas-atputas-laukumi-999&target=news\\_item](https://sports.riga.lv/lv/sports?news_item=imantas-un-mezciema-apkaimes-jauni-sporta-un-aktivas-atputas-laukumi-999&target=news_item).
234. Rīgas domes pilsētas attīstības departaments. Pārskata "2017. Gada pārskats par Rīgas ilgtspējīgas attīstības stratēģijas līdz 2030. gadam un Rīgas attīstības programmas 2014.–2020.gadam ieviešanu" gala atskaite [skatīts 10.01.2019]. [https://sus.lv/sites/default/files/media/faili/parskats2017\\_nr1771.pdf](https://sus.lv/sites/default/files/media/faili/parskats2017_nr1771.pdf).
235. **Salastie, R.** Pihlajamäki Residential Area Several architects [online]. *Docomomo Finland* [cited 10.10.2019]. <https://en.docomomo.fi/projects/pihlajamaki-residential-area/>.
236. Share of green urban areas [online]. *ArcGIS* [cited 10.11.2019]. <https://eea.maps.arcgis.com/apps/MapSeries/index.html?appid=42bf8cc04ebd49908534efde04c4eec8%20&embed=true>.
237. STSM Reports. COST Action TU 1201 Urban Allotment Gardens in European Ciθ es Future, Challenges and Lessons Learned [online]. *Urban Allotments* [cited 1.03.2021]. <https://www.urbanallotments.eu/stsm/reports-2015.html>.
238. Sustainability [online]. *Sweden.se* [cited 12.05.2019]. <https://sweden.se/climate/sustainability>.
239. Thamesmead [online]. *BBC Home* [cited 10.11.2019]. [http://www.bbc.co.uk/insideout/content/articles/2008/10/08/london\\_thamesmead\\_s14\\_w4\\_feature.shtml](http://www.bbc.co.uk/insideout/content/articles/2008/10/08/london_thamesmead_s14_w4_feature.shtml).

240. The future of cities: Opportunities, Challenges and the Way Forward. 2019. 168 p. [online]. *European commission* [cited 10.11.2019]. [https://ec.europa.eu/futurium/en/system/files/ged/the-future-of-cities\\_online.pdf](https://ec.europa.eu/futurium/en/system/files/ged/the-future-of-cities_online.pdf).
241. The international CPTED Association [cited 10.11.2019]. <https://www.cpted.net/>.
242. The Revised Residential Environment Assessment Tool (REAT 2.0) [online]. *Residential Environment Assessment Tool data site* [cited 10.11.2019]. <http://reat.cardiff.ac.uk/>.
243. The RESidential Environments (RESIDE) [online]. *The university of Western Australia* [cited 10.11.2019]. <https://www.science.uwa.edu.au/centres/cbeh/projects/reside>.
244. The University of Maryland Urban Design Tool [online]. *School of architecture, planning and preservation* [cited 10.11.2019]. <https://arch.umd.edu/programs/urban-studies-and-planning>.
245. Vectorstock [cited 10.11.2020]. <https://www.vectorstock.com/royalty-free-vector/europe-gray-map-vector-25870102>.
246. Walking strategy for Winchester. Promoting walking as a prime mode of transport [online, cited 10.11.2019]. <https://www.winchester.gov.uk/assets/attach/1261/Walking-Strategy-for-Winchester-2-.pdf>.
247. What is green infrastructure? [online]. *European environmental agency* [cited 10.11.2019]. <https://www.eea.europa.eu/themes/sustainability-transitions/urban-environment/urban-green-infrastructure/what-is-green-infrastructure>.
248. World Health organization. Global recommendations on physical activity for health, 2010. 58 p. [online]. *World Health organization* [cited 10.11.2019]. <https://www.who.int/dietphysicalactivity/publications/9789241599979/en/>.

### *Doctoral Thesis*

249. **Heeger, H.** *Aanpak Van Naoorlogse Probleemcomplexen* (Dealing with post-war housing estates). Delft: Delftse Universitaire Pers, 1993. 417 p.
250. **Īle, U.** Dzīvojamo rajonu iekškvartālu ainaviskā kvalitāte Latvijas pilsētās. Jelgava: Latvijas Lauksaimniecības universitāte, 2011.
251. **Legeby, A.** Patterns of co-presence: Spatial configuration and social segregation. Stockholm: Royal institute of technology, 2013.
252. **McCrea, R.** *Urban Quality of Life: Linking Objective Dimensions and Subjective Evaluations of the Urban Environment*. School of geography, planning and architecture, University of Queensland, Australia, PhD Thesis, 2007.

253. **Stjernberg, M.** *Concrete Suburbia: Suburban housing estates and socio-spatial differentiation in Finland. Project: Small and medium-sized cities in the Nordic and Arctic regions.* University of Helsinki: Department of Geosciences and Geography, 2019. <https://doi.org/10.13140/RG.2.2.21767.14242>.
254. **Treija, S.** *Dzīvojamās vides attīstība Rīgā.* Rīga: Rīgas Tehniskā universitāte, 2006.
255. **Wassenberg, F. A. G.** *Large Housing Estates: Ideas, Rise, Fall and Recovery: The Bijlmermeer and Beyond.* Contributor: H. Priemus. TU Delft, OTB Research institute for the built environment. 2013. <https://doi.org/10.4233/uuid:667bb070-f469-442b-8d72-54c61f61d884>.

### *Regulations and other documents*

256. Ministru kabineta noteikumi Nr. 340. Noteikumi par Latvijas būvnormatīvu LBN 211-15 "Dzīvojamās ēkas" [skatīts 14.02.2020]. <https://likumi.lv/ta/id/275016-noteikumi-par-latvijas-buvnormativu-lbn-211-15-dzivojamas-ekas->
257. Par zemes reformu Latvijas Republikas pilsētās. Latvijas Republikas likums [tiešsaiste, skatīts 10.10.2018]. <https://likumi.lv/doc.php?id=70467>.
258. Tematiskie plānojumi. Jaunā Rīgas teritorijas plānojuma līdz 2030. gadam izstrādes ietvaros [tiešsaiste]. *Rīgas domes Pilsētas attīstības departaments* [skatīts 10.10.2020]. <https://www.rdpad.lv/rtp/tematiskie-planojumi/>.
259. Rīgas ilgtspējīgas attīstības stratēģija līdz 2030. gadam [tiešsaiste]. *Rīgas domes Pilsētas attīstības departaments* [skatīts 10.10.2020]. <https://www.rdpad.lv/strategija/>.
260. Rīgas teritorijas plānojums 2006.-2018. gadam gadam [tiešsaiste]. *Rīgas domes Pilsētas attīstības departaments* [skatīts 10.10.2020]. <https://www.rdpad.lv/rtp/speka-esosais/>.
261. **Roze, A.** *Rīgas telpiskās kompozīcija attīstība.* Pētniecības darbs izstrādāts saskaņā ar 2004. gada 14. jūnija līgumu Da-04-181-li. 58 lpp.

### *Unpublished materials*

262. Latvijas arhitektūras muzeja arhīva materiāli.