PROSTOR

30 [2022] 1 [63]

A SCHOLARLY JOURNAL OF ARCHITECTURE AND URBAN PLANNING
ZNANSTVENI ČASOPIS ZA ARHITEKTURU I URBANIZAM

UNIVERSITY OF ZAGREB, FACULTY OF ARCHITECTURE
SVEUČILIŠTE U ZAGREBU, ARHITEKTONSKI FAKULTET

ISSN 1330-0652
https://doi.org/10.31522/p
CODEN PORREV
UDC 71/72
30 [2022] 1 [63]
1-138
1-6 [2022]

Fig. 1 Distribution of the literature based on authors' affiliation addresses

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Scientific Subject Review
https://doi.org/10.31522/p.30.1(63).10
UDC 72-047.44 BREEAM (048)
Technical Sciences / Architecture and Urban Planning
2.01.03. – Architectural Structures, Building Physics, Materials and Building Technology
Article Received / Accepted: 15. 5. 2022. / 14. 6. 2022.

The Comparative Analysis of the Scoring System Used in BREEAM International New Construction 2016 and the Recent Trends in Housing Sustainability-Related Literature

BREEAM certificate
building benchmarking
sustainability assessment tools
sustainable housing

Paying attention to the sustainability of houses and any effort in this direction can be extremely important in achieving more sustainable societies. In this regard, sustainability assessment tools and more specifically the certificates that are used to evaluate the sustainability of urban houses can play major roles and, therefore, present points that need to be as efficient as possible. The study is an attempt at analyzing the efficiency of BREEAM (The British Building Research Establishment Environmental Assessment Method), as one of the most advanced and highest used certificates (in the world) in the housing sector, based on the results from a systematic literature review. To achieve this goal, the scoring system used in the BREEAM International New Construction 2016 is evaluated in order to see if the credits and weightings that are assigned to the assessment issues are aligned with the trends existing in the recent literature related to urban housing sustainability. The results of a previously published systematic review of 118 recent papers are used to extract the most important factors (and their importance degrees) affecting the sustainability of urban houses on a global scale. The analysis outcome shows significant differences in the prioritization of factors and the importance degree given to each factor between the BREEAM evaluation process and the literature review factors.

INTRODUCTION

Residential construction is an important industry in achieving sustainable development. The initiatives in this sector have been primarily concerned with technical and financial practicality (Tupenaite et al., 2017). Nevertheless, in recent years, since housing has been identified as a critical component in achieving sustainable development, the focus on housing has expanded far beyond financial and technical feasibility. To present some instances of the importance of housing in sustainable development, it can be stated that, from a social perspective, housing not only delivers shelter but also generates a sense of security and supports local communities (Arman et al., 2009). In terms of economics, housing is one of the major investments that individuals can make in their lifetimes (Maliene and Malys, 2009). Furthermore, from an environmental point of view, energy consumption in the usage phase of housing causes the largest environmental impact in Europe (European Environment Agency, 2019). These examples demonstrate how sustainable housing (in all areas of sustainability) may significantly contribute to society's sustainable development.

Developing and applying building sustainability assessment and benchmarking methodologies, according to Mateus and Bragança (2011) and Zhang et al. (2014), is one of the measures that might promote a more sustainable built environment and housing. Presently, several techniques for evaluating the sustainability of buildings are being employed in the housing industry, some of which are being used internationally. The British Building Research Establishment Environmental Assessment Method (BREEAM), which is now one of the most extensively used tools worldwide, and especially throughout Europe, was first developed in the United Kingdom in 1990. The most current international version, BREEAM International for New Construction 2016, has been launched to certify projects across the world (BRE Global, 2016).

Academics disagree on the extent of efficiency of the BREEAM certificate and, in general, the international building sustainability assessment tools. Some authors have criticized the scoring system of sustainability assessment tools through the usage of life-cycle assessment (Humbert et al., 2006; Trigaux et al., 2016). Besides, there are multiple previous studies evaluating the diverse aspects of the BREEAM certificate (different versions). For instance, there are studies criticizing its holistics regarding various sustainability aspects -e.g., (Hassan, Cheen and Rahmawaty, 2011; Sharifi and Murayama, 2013)- its local applicability -e.g., (Ameen and Mourshed, 2019; Awadh, 2017; Sallam and Abdelaal, 2016)- different variables and indicators and weighting measures -e.g., (Sallam and Abdelaal, 2016; Suzer, 2015)- and the extent of alignment between its performance and design procedures/building simulation techniques -e.g., (Schweber and Haroglu, 2014; Schwartz and Raslan, 2013).

Previous evaluations of BREEAM have mostly been done in comparison with other building sustainability assessment tools or the locally-specific priorities and variables. However, there has not been an investigation done to assess the BREEAM's weighting system efficiency according to the sustainability priorities that exist in the recent literature related to urban housing sustainability. Using the data of a systematic review of the recent literature, this paper attempts at filling out this gap by comparing the prioritization of assessment issues used in the scoring system of the BREEAM International New Construction 2016, with the prioritization of housing sustainability factors gathered from the recent related literature.

MATERIALS AND METHODOLOGY

This paper uses the results of a systematic literature review of 118 recent papers (journal articles, conference papers, review papers and book chapters published in the period from 2015 to 2020) by Sanei, Khodadad, and Calonge Reillo (2022). As can be seen in Figure

1, the results of this study are not based on the priorities of a limited region in the world, but are constructed in a universal context.

Figure 2 illustrates the search structure used for the literature review in Scopus. Keywords related to housing sustainability factors are searched within multiple areas of research, including "social sciences", "engineering", "energy", "environmental science", "decision sciences", "economics, econometrics and finance", "business, management and accounting", "arts and humanities", and "multidisciplinary", to ensure the holistics of the results regarding multiple aspects of sustainability.

Literature review provides a comprehensive prioritized list of factors (F; mostly categories of indicators) that affect the sustainability of urban houses. The full list with the references can be found in the Appendix. The prioritization of factors is done by their investigation frequencies (IF; the number of times each factor is found in the total reviewed literature; e.g., if a factor is found in 10 reviewed papers out of the total 118, IF for this factor equals to 10). Scrutinizing the frequency of each factor is chosen as a possible method to show how much a factor is investigated in the selected literature, and therefore, to be a base to calculate the degree of importance that literature has given to each factor. The specific and detailed methodology used for literature review can be found in *Identifying the Most Investigated Factors Affecting Urban Housing Sustainability and Their Scale/Sector of Influence - A Systematic Review of the Recent Literature* (Sanei, Khodadad and Calonge Reillo, 2022). Investigation frequencies of factors (results of the previous study, Table I), as the assigned measures showing their degree of significance, are used in this paper to evaluate the prioritization (overall weightings) of the assessment issues used by BREEAM International New Construction 2016 in its scoring system. This is the most recent version of the BREEAM certificate which can be used in any country around the world, with the exception of territories where locally-adapted versions exist (BRE Group, 2022). Therefore, it can be assumed that the scale of implementation for this certificate matches the universal context of the literature review outcomes. Investigation frequencies of factors (results of the previous study, Table I), as the assigned measures showing their degree of significance, are used in this paper to evaluate the prioritization (overall weightings) of the assessment issues used by BREEAM International New Construction 2016 in its scoring system.

For each BREEAM assessment issue, all the related Fs are found and then the average amounts of their IFs are calculated (Av. IF), as the overall score which is based on the literature review results. These numbers shape the foundation of the comparison with the values gathered from the BREEAM assessment system (maximum weightings). It should be mentioned that in order to find the related Fs, the description related to each assessment issue in the BREEAM International New Construction 2016 official report is read and only the factors directly related to the descriptions that are used by the BREEAM certificate are selected from all the factors extracted from literature. Therefore, there may be some other factors from the list that seem to be related to each credit but as this relationship is not mentioned directly in the description of the credits, these factors are not included in the credits analysis, because they do not have roles in the scoring process of BREEAM.

To use Av. IFs for analyzing the weightings of BREEAM assessment issues, the range used for these values (see Table II, Av. IF_{min} = 13, Av. IF_{max} = 63.67) is converted to the range of the overall weightings (W) that are given to the issues in the BREEAM scoring system (W_{min} = 0.65, W_{max} = 10.56). This way, the

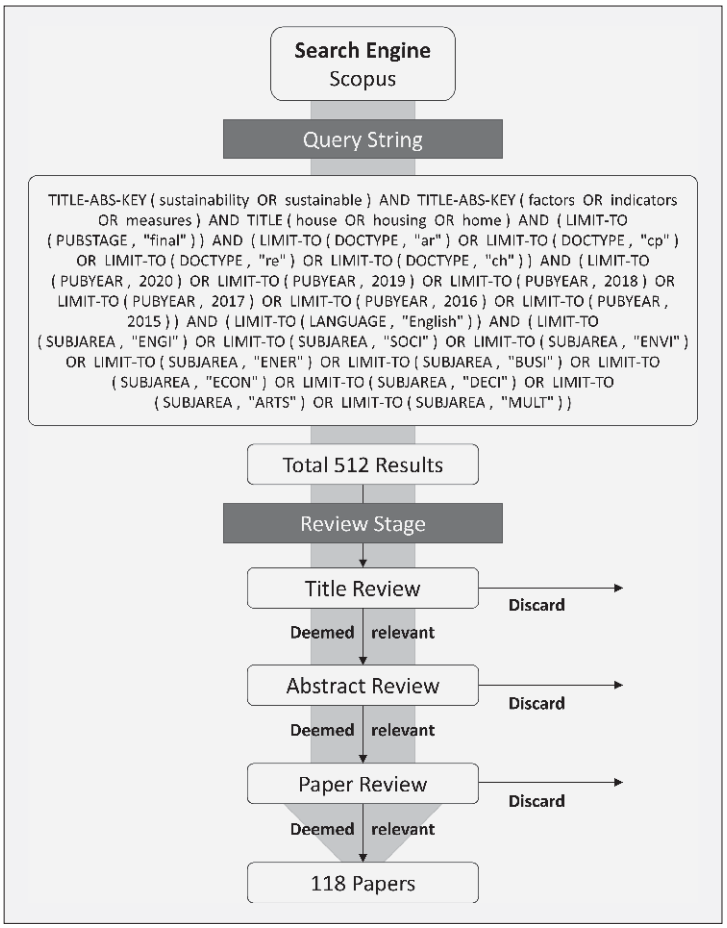


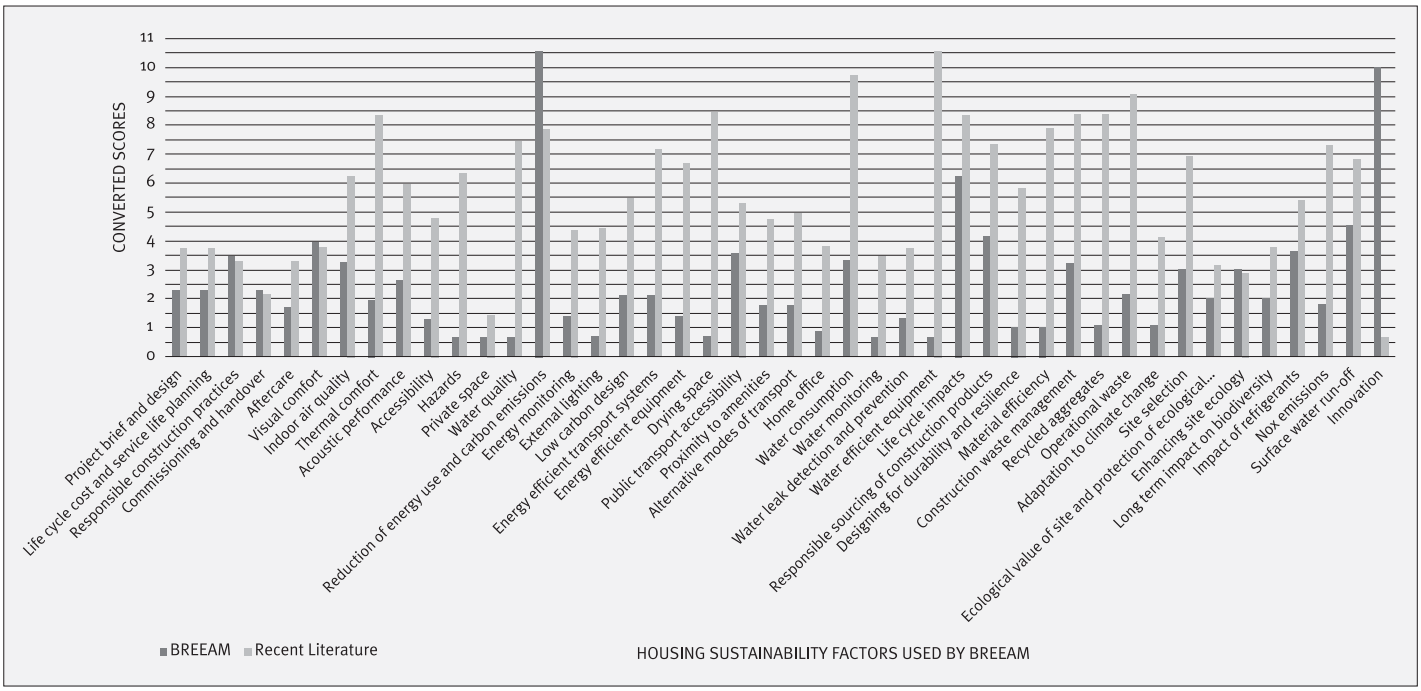
Fig. 2 The search structure used to select the related literature

Table I Factors Affecting Urban Housing Sustainability and their Investigation Frequencies (Source: Sanei, Khodadad and Calonge Reillo, 2022)

No.	Factors Affecting Urban Housing Sustainability	IF
F1	Natural resource or energy consumption/efficiency of the building/equipment (during the construction, operation, etc.)	87
F2	Materials performance (durability, cost, thermal capacity, permeability, ability to re-use, recycled, eco-friendly materials)	78
F3	Access to public services/infrastructure: availability/quality of services and/or distance/time of travel time to the services (public transport, education/health/shopping/leisure facilities, parks, etc.)	72
F4	Building spatial layout (size and dimensions, building form, internal space distribution, etc.)	72
F5	Location – Site – Development land	67
F6	Healthy conditions (hygiene, clean environment, air/water quality, mental health, etc.)	66
F7	Housing affordable purchase/rental/mortgage costs (market value, relation to household income)	66
F8	Waste management/facilities (waste recycle/reduction, appropriate disposal of waste, etc.)	62
F9	Safety and security	59
F10	Building equipment/technologies (heating/cooling systems, ventilation systems, kitchen appliances, furniture, etc.)	56
F11	Rehabilitation/refurbishment of the building/community (repairing the deteriorations, functional improvements, etc.)	53
F12	Building envelope (thermal performance of the building, insulation, air tightness/exchange, etc.)	52
F13	Indoor environment (air quality, humidity, mold, thermal comfort, air circulation, etc.)	49
F14	Carbon footprint – GHG emissions	48
F15	Water management (consumption rate, irrigation systems, recycling, etc.)	48
F16	Use of renewable/clean resources (solar, wind, geothermal, renewable material, etc.)	47
F17	Opportunity for social cohesion/integrity/interaction/connectivity (common use areas, facility sharing, etc.)	46
F18	Re-use/recycle (materials, water, waste, etc.)	43
F19	Housing-related policies/strategies/guidelines/plans/decision-making procedures	41
F20	Building's basic services (safe drinking water availability, access to electricity, sewer, sanitation, etc.)	40
F21	Noise level – Acoustic design – Aural comfort	40
F22	Building codes/energy standards/technical specifications/regulations	40
F23	Investment/finance measures (subsidies, financial risk/support options, investment cost, return of investment, payback period, profitability, cost-benefit data, budget adaptability)	39
F24	Pollution (air, water, land)	37
F25	Climatic/microclimatic conditions (air temperature, humidity, wind speed, solar radiation, heat island effect, etc.)	37
F26	Land use (mixed-use building/community, zoning plans, re-using a developed area instead of new developments, land use change, amount of land supplied, etc.)	36
F27	Natural light – Solar radiation (availability, intensity, etc.)	35
F28	Built-up density	35
F29	Building typology (single-family, attached, apartment, etc.)	35
F30	Flexibility/adaptability (design, construction, function)	35
F31	Neighborhood spatial layout (street layout and network, space between blocks, pedestrian paths, open space layout, human scale features, public furniture, disables accessibility, etc.)	34
F32	Construction method/techniques/technologies (prefabrication, light/heavy structure, energy efficient techniques, traditional method, etc.)	34
F33	Passive/green/low-energy/near-zero-energy/plus energy design/principles	34
F34	Lighting systems (indoor lights, street lights, open space lights, etc.)	33
F35	Housing occupancy rate – Community population	31
F36	Overall/lifecycle costs of the building	31
F37	Operation cost (energy/water/telephone bills, technology investment price, etc.)	31
F38	Aesthetical quality	29
F39	Traffic – Car dependency – Parking area	28
F40	Space functionality	27
F41	Participatory actions (design, management, bottom up governance, educational programs, etc.)	27
F42	Housing/community administration and management (cost/time/risk/maintenance management, etc.), and the types (self-managed, co-managing, etc.)	26
F43	Accessible house (easy physical accessibility for pedestrians/cars/elders/disables/etc.)	26
F44	Structural quality and durability	26
F45	Natural hazards and the related resilience/repair (earthquake, flooding, etc.)	25
F46	Building orientation	25
F47	Natural ventilation	25
F48	Walkability/bikeability (auto-free zones, sidewalks, bike routes, etc.)	24
F49	Access to workplaces (distance/time of travel)	23
F50	Local materials	23
F51	Construction cost (material, transport, labor, equipment and installation, etc.)	22
F52	Household/project team overall satisfaction rate	21
F53	Employment/business activity rate/opportunities in the area	21
F54	Compatibility with household/community cultural values or heritage	20
F55	Shading options – Rain protection	19
F56	Building's/neighborhood's identity/reputation/popularity	19
F57	Private/semi-public outdoor space (courtyard, garden, greenhouse, green roof, etc.)	18
F58	Privacy	16
F59	Presence/preservation of cultural heritage/natural resource (ponds, preserved greenery, topographical contours, etc.)	15
F60	Pleasant view/scenery	15
F61	Maintenance cost	14
F62	Renovation/repair/reconstruction cost (material, transportation, etc.)	14
F63	Greening the building (plants, green wall/roof, garden, etc.) and types of greenery (types of plants, etc.)	14
F64	Light pollution/quality – Visual comfort	13
F65	Innovation (design, management, technologies, etc.)	13
F66	Socio-cultural mixing of the community	13
F67	Fire prevention/emergency measures	13
F68	Building age – Year of construction	12
F69	Cost/value of land – Land use rights	12
F70	Household transport costs	11
F71	Type of tenure (private ownership, shared/private rent, etc.)	11
F72	Property value retention – Balanced housing market – Market trends	11
F73	Life expectancy of housing – Long lasting house	10
F74	Biodiversity/wildlife in the area	9
F75	Cater for senior citizens/disables	9
F76	Ease of movement inside the building (elevators, stairs, furniture and decoration placement, etc.)	9
F77	Construction time/speed	9
F78	Smart home/community (smart technologies/equipment: energy management systems, smart communication, intelligent controlling of home performance, smart toilets, etc.)	8
F79	Sense of belonging	8
F80	Odors – Olfactory comfort	7
F81	Access to the city center/urban space (distance/time of travel)	7
F82	Skilled/local labor and/or manager	7
F83	Security of tenure	7
F84	Standards of living	6
F85	Administration/government/management/design cost	6
F86	Ease of maintenance/cleaning (space, equipment)	6
F87	Level of physical deterioration	5
F88	Green/electric car usage – Carpooling	4
F89	Community acceptance/opposition with the project	4
F90	Economic mixing of the community	4
F91	Demographic/ethnic mixing of the community	4
F92	Diversity of building typology and/or spatial/aesthetic forms in the area	3
F93	Openness/closeness of the community (open/semi-open/gated neighborhoods)	3
F94	Community agriculture/gardening	3
F95	Mixed tenure community	3
F96	Access to internet (speed, capacity)	3
F97	Access to telecommunication service	3
F98	Access to television/cable system	3

Table II BREEAM International New Construction 2016 Assessment Issues and Their Related Factors

Categories and Issues	Credits	Weightings (W) %	Associated factors from literature	Av. IF	CIF
Management	*21*	*12.00*			
Project brief and design	4	2.29	F19, F41, F42, F52	28.75	3.73
Life cycle cost and service life planning	4	2.29	F7, F23, F36, F37, F41, F42, F51, F69, F85	28.89	3.76
Responsible construction practices	6	3.43	F41, F42	26.5	3.29
Commissioning and handover	4	2.29	F41, F42, F77	20.67	2.15
Aftercare	3	1.71	F41, F42	26.5	3.29
Health and wellbeing	*23*	*15.00*			
Visual comfort	6	3.91	F13, F27, F34, F60, F64	29	3.78
Indoor air quality	5	3.26	F6, F10, F13, F24, F25, F47	41.67	6.26
Thermal comfort	3	1.96	F10, F12, F13	52.33	8.34
Acoustic performance	4	2.61	F21	40	5.93
Accessibility	2	1.30	F4, F9, F17, F31, F39, F43, F48, F75, F76	34.11	4.78
Hazards	1	0.65	F9, F45	42	6.32
Private space	1	0.65	F57, F58	17	1.43
Water quality	1	0.65	F6, F15, F20, F24	47.75	7.45
Energy	*27*	*19.00*			
Reduction of energy use and carbon emissions	15	10.56	F1, F10, F14, F22, F32, F33	49.83	7.85
Energy monitoring	2	1.41	F10, F78	32	4.37
External lighting	1	0.70	F10, F34, F78	32.33	4.43
Low carbon design	3	2.11	F14, F16, F32, F33, F47	37.6	5.46
Energy efficient transport systems	3	2.11	F1, F10, F33, F78	46.25	7.15
Energy efficient equipment	2	1.41	F1, F10, F32, F33, F78	43.8	6.67
Drying space	1	0.70	F4, F10, F13, F33, F47	47.2	7.34
Transport	*9*	*8.00*			
Public transport accessibility	4	3.56	F3, F24, F31, F39, F43, F48	36.83	5.31
Proximity to amenities	2	1.78	F3, F31, F49, F81	34	4.76
Alternative modes of transport	2	1.78	F3, F14, F31, F39, F48, F88	35	4.95
Home office	1	0.89	F4, F10, F13, F27, F64, F96, F97, F98	29.25	3.83
Water	*9*	*6.00*			
Water consumption	5	3.33	F1, F15, F18	59.33	9.71
Water monitoring	1	0.67	F15, F42, F78	27.33	3.45
Water leak detection and prevention	2	1.33	F10, F15, F42, F78, F86	28.8	3.74
Water efficient equipment	1	0.67	F1, F10, F15	63.67	10.56
Materials	*12*	*12.50*			
Life cycle impacts	6	6.25	F2, F12, F14, F18, F22	52.2	8.32
Responsible sourcing of construction products	4	4.17	F2, F12, F18, F22, F50	47.2	7.34
Designing for durability and resilience	1	1.04	F2, F11, F32, F44, F86	39.4	5.81
Material efficiency	1	1.04	F2, F8, F32, F44	50	7.89
Waste	7	7.50			
Construction waste management	3	3.21	F8, F18	52.5	8.38
Recycled aggregates	1	1.07	F8, F18	52.5	8.38
Operational waste	2	2.14	F4, F8, F31	56	9.06
Adaptation to climate change	1	1.07	F25, F30, F42, F45	30.75	4.12
Land use and ecology	*10*	*10.00*			
Site selection	3	3.00	F5, F22, F24, F26	45	6.91
Ecological value of site and protection of ecological features	2	2.00	F5, F59, F69, F74	25.75	3.14
Enhancing site ecology	3	3.00	F5, F59, F74, F82	24.5	2.90
Long term impact on biodiversity	2	2.00	F5, F22, F26, F59, F74, F82	29	3.78
Pollution	*11*	*10.00*			
Impact of refrigerants	4	3.64	F10, F14, F24, F78	37.25	5.39
NOx emissions	2	1.82	F10, F14, F24	47	7.30
Surface water run-off	5	4.55	F5, F10, F15, F24, F31, F45	44.5	6.81
Innovation	*10*	*10.00*			
Innovation	10	10.00	F65	13	0.65



GRAPH I THE COMPARISON BETWEEN BREEAM SCORES AND CONVERTED INVESTIGATION FACTORS FOR ISSUES

comparisons between Av. IFs and Ws are done on the basis of a similar range of values (0.65-10.56). For this conversion the following equation (linear conversion) is used for each Av. IF, which concludes in Converted IFs (CIFs, see Table II):

$$CIF = ((\text{BREEAM issue's Av. IF} - \text{Av. IF}_{min}) / / (\text{Av. IF}_{max} - \text{Av. IF}_{min})) \times (W_{max} - W_{min}) + W_{min}$$

As mentioned, the outcomes (CIFs) are the amounts that are compared with the W values (overall weightings) of the BREEAMS's issues. It should be noted that, in this evaluation, the prerequisites of the BREEAM certificate are not included, as although meeting these prerequisites are mandatory for buildings to be involved in the certificate evaluation procedure, there is no score (credit and weighting) assigned to these criteria in the BREEAM assessment. Also, only the issues that influence the "residential dwellings" (based on the categorization used in BREEAM, including single and multiple dwellings) are included in the analysis. Other typographical characteristics of residential dwellings (e.g., high-rise or low-rise) are not specified in the BREEAM report and the certificate can be used for all these classes of houses.

RESULTS AND DISCUSSION

Table I shows the factors that are gathered from the literature review conducted by Sanei, Khodadad and Calonge Reillo (2021). As can be seen, a total of 98 factors are prioritized based on their IFs (the total number of each factor's repetition in the studied literature). The factors with IFs less than 3 are not listed. These factors are used to analyze the BREEAM assessment issues and CIFs are utilized to be compared with the Ws that are assigned to each issue.

To have a clear view of the BREEAM scoring process, it should be noticed that each assessment issue (in multiple general categories of issues) has an assigned credit. The percentage of credits achieved in each category is calculated by adding the quantities. The calculated percentage of credits achieved in each section is then multiplied by the corresponding section weighting. This gives the overall section score. The section scores are then added together to give the overall BREEAM score. The overall score is then compared to the BREEAM rating benchmark levels and, provided all minimum standards have been met, the relevant BREEAM rating is achieved (BRE Global, 2016).

Table II shows The BREEAM categories and assessment issues, together with the maximum credits assigned to them for the residential classification of buildings and their weightings. The factors that are related to each issue and the average IF and CIF (converted IF) for them are also included in this table. The organization of issues is based on their appearance in the BREEAM official report.

As seen in Table II, the top three issues with the highest W scores (according to the BREEAM scoring system) are 'reduction of energy use and carbon emissions', 'innovation',

and 'life cycle impacts' with W scores of 10.56, 10, and 6.25, relatively. While, based on CIFs, the top three issues are 'water efficient equipment', 'water consumption', and 'operational waste' with CIF values of 10.56, 9.71, and 9.06, respectively. Also, the issues with the least Ws are 'private space', 'hazards', and 'water quality', all of which have a W value of 0.65. However, the least values for CIFs are related to 'innovation', 'private space', and 'commissioning and handover' issues with CIFs equal to 0.65, 1.43, and 2.15, respectively.

Graph I shows the comparison of BREEAM issues' scores and CIFs related to each of them. Although there are some similarities between the assigned scores for some issues (for example, 'private space', 'commissioning and handover', 'visual comfort' and 'enhancing site ecology'), there are 23 out of the total 44 issues with differences greater than 3 units in their scores. This demonstrates that there is a huge variance between BREEAM scores and CIFs, and accordingly the prioritization of issues in the BREEAM assessment system and the recent literature related to urban housing sustainability. 'Water efficient equipment' and 'innovation' are the issues that are prioritized quite inversely according to each source of prioritization. While 'water efficient equipment' is significantly important according to the literature (CIF=10.56), it is one of the least considered issues in BREEAM assessment (W=0.67). The situation is quite the opposite for the 'innovation' issue. It has the second-highest degree of importance, of all the issues, by the BREEAM weighting system (W=10), whereas it is not explicitly mentioned many times as a significant factor in the sustainability of urban houses in the related recent literature, so it is not given high priority (CIF=0.65).

The lack of alignment between BREEAM and recent literature priorities can highlight the need to revise the BREEAM's assessment system. This is in line with the results of the previous studies, where the focus was on different aspects of sustainability assessment tools, such as local adaptation and the holistics of sustainability aspects. The necessary revision according to our analysis is to make the prioritization of factors in BREEAM more aligned with the priorities mentioned in recent literature. Also, it is understood from the literature review that multiple factors are considered important from the scholars' perspective but are absent in the BREEAM evaluation procedures (e.g., 'building typology (single-family, attached, apartment, etc.)' and 'built-up density'). It is, therefore, of high importance to implement similar methods to include the recent trends of academic research into the housing sustainability evaluation procedures and tools. Nevertheless, it should be noticed that to achieve optimal results regarding the priorities of sustainability assessment tools, including BREEAM, it is better to combine the proposed approach of this research with other sustainability assessment techniques of buildings, such as the life-cycle assessment. The efficiency of BREEAM and other sustainability assessment tools used in the housing sector is crucial not only because these tools are used to evaluate the sustainability of houses but also because they are used worldwide, as very important references, to guide architects, engineers and decision-makers working on housing sustainability. These certificates might be used to guide and establish environmental strategies over the life cycle of a building (Ali and Al Nsairat, 2009).

Conclusion

The housing sector contributes significantly to sustainability development procedures in our societies. This is due to the important impacts that houses have on all aspects of people's lives and their surrounding environment. Therefore, the sustainability assessment of the housing sector can be crucial for overall sustainability of communities. That is why the tools used for this assessment should be highly efficient, which is why their continuous evaluation and upgrade is required.

The paper evaluates the scoring system used in the BREEAM International New Construction 2016 certificate to see if the prioritization and scoring of the assessment issues are aligned with the trend in the recent housing sustainability-related literature. For this reason, the data from a previous study done by Sanei, Khodadad and Calonge Reillo (2022) is used. The results show huge gaps between the ranking and the scores of the assessment based on these two evaluation sources (BREEAM weighting system and the recent literature). Although for some credits values are closer to each other, the general trend shows significant differences in the way these methods prioritize and give importance to the studied credits. This calls for a possible shift and revision in the way that BREEAM scores the credits. As a limitation of the proposed methodology, the restraint of the available writing space in the studied articles should be taken into consideration, as it can affect the number of factors that authors have included in their manuscripts. Also, some topics can often be discussed in literature while their relevance in terms of impact reduction might be relatively limited. Therefore, it is better to use the proposed approach in combination with other quantitative assessments (e.g., life-cycle assessment) to evaluate the priorities used in sustainability assessment tools.

Appendix

Housing sustainability factors gathered from the literature review and the references (Source: Sanei, Khodadad and Calonge Reillo, 2022).

	Factors	References
F1	Natural resource or energy consumption/ efficiency of the building/equipment (during the construction, operation, etc.)	(Henderson, Ganah, and John, 2016) (Mulliner and Maliene, 2015) (Rid, Lammers, and Zimmermann, 2017) (Alrashed and Asif, 2015) (Rehkopf, Rowlands, and Tobert, 2016) (Woo, Kim, and Lee, 2018) (Sanhueza-Durán et al., 2019) (Nuuter, Lill, and Tupenaite, 2015) (Popova, Glebova, and Karakozova, 2018) (Ganiyu, Fapohunda, and Haldenwang, 2016) (Adabre et al., 2020) (J. Yang and Yang, 2015) (Oyebanji, Liyanage, and Akintoye, 2017) (Adabre and Chan, 2019a) (Peruzzini et al., 2016) (Zhang, Chen, and Jin, 2015) (Tomšić and Šijanec Zavrl, 2018) (Boeckermann, Kaczynski, and King, 2019) (Zare Mohazabieh, Ghajarkhosravi, and Fung, 2015) (Chohan, Irfan, and Awad, 2015) (Akinyede, Fapohunda, and Haldwang, 2017) (Sang and Yao, 2019) (Ezennia and Hoskara, 2019) (A. L. Olanrewaju et al., 2017) (Aldossary, Rezgui, and Kwan, 2015) (Willems, 2015) (Al-Jebouri et al., 2017) (Schneider-Skalska, 2019) (Ruiz-Pérez et al., 2019) (Prochorskaite et al., 2016) (Gan et al., 2017) (Shama and Motlak, 2019) (Seo and Kwon, 2017) (Colistra, 2019) (Wu et al., 2017) (Castellano, Ribera, and Ciurana, 2016) (Roshanfekr, Tawil, and Goh, 2016) (Kovacic, Reisinger, and Honic, 2018) (Marín et al., 2015) (Wahi et al., 2018) (Asad Poor, Thorpe, and Goh, 2018) (Djebbar, Salem, and Mokhtari, 2018) (Matthews, Friedland, and Orooji, 2016) (Karatas and El-Rayes, 2015) (Daly, 2017) (Tupenaite et al., 2017) (A. Olanrewaju, Yeow, and Lim, 2016) (Manoochehri, 2015) (Mohtat and Zargar, 2018) (Hagbert and Femenías, 2016) (Said et al., 2016) (Saldaña-Márquez et al., 2018) (Perrucci, Vazquez, and Aktas, 2016) (Bazan-Krzywoszańska et al., 2017) (Maciejko and Wojtyszyn, 2020) (Dokic, Gligorijevic, and Damjanovic, 2015) (K. Yang and Cho, 2016) (Tomovska and Radivojevic, 2017) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (R. Y. M. Li, Cheung, and Shoaib, 2018) (Verovsek and Juvancic, 2018) (Han and Yang, 2018) (Feng et al., 2018) (Kapedani, Herssens, and Verbeeck, 2019) (Vega-Azamar et al., 2017) (Lorek and Spangenberg, 2019) (Ali and Alzu'bi, 2017) (Ellsworth-Krebs, Reid, and Hunter, 2015) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Kaoula and Bouchair, 2020) (Nguyen, Bokel, and Dobbelsteen, 2019) (Pérez-Fargallo et al., 2018) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019) (Cheng, Bae, and Horton, 2019) (Verovsek, Juvancic, and Zupancic, 2015) (Päätalo, 2016) (Sánchez-Garrido and Yepes, 2020) (Croitoru et al., 2016) (Sharafeddin, Arocho, and Anderson, 2019) (Ignjatovic, Ignjatovic, and Sudimac, 2018) (Rodrigues Moreno, de Morais, and de Souza, 2017) (Ahmed and Alipour, 2019) (Rydborg, Lauring, and Brunsgaard, 2019) (Chan and Adabre, 2019) (Saldaña-Márquez et al., 2019) (Dong et al., 2018) (Wittmann, Kopacik, and Leitmannova, 2019)
F2	Materials performance (durability, cost, thermal capacity, permeability, ability to re-use, recycled, eco-friendly materials)	(Henderson, Ganah, and John, 2016) (Rid, Lammers, and Zimmermann, 2017) (Alrashed and Asif, 2015) (Nasrabadi and Hataminejad, 2019) (Rehkopf, Rowlands, and Tobert, 2016) (Woo, Kim, and Lee, 2018) (Sanhueza-Durán et al., 2019) (Popova, Glebova, and Karakozova, 2018) (Ganiyu, Fapohunda, and Haldenwang, 2016) (Roosli et al., 2015) (Bintoro et al., 2019) (Adabre et al., 2020) (J. Yang and Yang, 2015) (Oyebanji, Liyanage, and Akintoye, 2017) (Zhang, Chen, and Jin, 2015) (McHunu and Nkambule, 2019) (Tomšić and Šijanec Zavrl, 2018) (Boeckermann, Kaczynski, and King, 2019) (Chohan, Irfan, and Awad, 2015) (Akinyede, Fapohunda, and Haldwang, 2017) (Sang and Yao, 2019) (Tanganco, Alberto, and Gotangco, 2019) (Ezennia and Hoskara, 2019) (A. L. Olanrewaju et al., 2017) (Aldossary, Rezgui, and Kwan, 2015) (Willems, 2015) (Al-Jebouri et al., 2017) (Schneider-Skalska, 2019) (Ruiz-Pérez et al., 2019) (Saldaña-Márquez et al., 2019) (Shama and Motlak, 2019) (Seo and Kwon, 2017) (Wu et al., 2017) (Castellano, Ribera, and Ciurana, 2016) (Kovacic, Reisinger, and Honic, 2018) (Marín et al., 2015) (Wahi et al., 2018) (Asad Poor, Thorpe, and Goh, 2018) (Djebbar, Salem, and Mokhtari, 2018) (Mihnovits and Nisos, 2016) (Matthews, Friedland, and Orooji, 2016) (Daly, 2017) (Tupenaite et al., 2017) (Manoochehri, 2015) (Mohtat and Zargar, 2018) (Hagbert and Femenías, 2016) (Saldaña-Márquez et al., 2018) (Perrucci, Vazquez, and Aktas, 2016) (Bazan-Krzywoszańska et al., 2017) (Maciejko and Wojtyszyn, 2020) (Dokic, Gligorijevic, and Damjanovic, 2015) (Tomovska and Radivojevic, 2017) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (Soyinka and Siu, 2018) (Han and Yang, 2018) (Feng et al., 2018) (Dong et al., 2018) (Arkhangelskaya and Arkhangelskaya, 2020) (Vega-Azamar et al., 2017) (Lorek and Spangenberg, 2019) (Ali and Alzu'bi, 2017) (Ellsworth-Krebs, Reid, and Hunter, 2015) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Kaoula and Bouchair, 2020) (Nguyen, Bokel, and Dobbelsteen, 2019) (Pérez-Fargallo et al., 2018) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019) (Cheng, Bae, and Horton, 2019) (Verovsek, Juvancic, and Zupancic, 2015) (Päätalo, 2016) (Sánchez-Garrido and Yepes, 2020) (Croitoru et al., 2016) (Sharafeddin, Arocho, and Anderson, 2019) (Ignjatovic, Ignjatovic, and Sudimac, 2018) (Rodrigues Moreno, de Morais, and de Souza, 2017) (Ahmed and Alipour, 2019) (Rydborg, Lauring, and Brunsgaard, 2019) (Karji et al., 2019)
F3	Access to public services/infrastructure: availability/quality of services and/or distance/time of travel time to the services (public transport, education/health/ shopping/leisure facilities, parks, etc.)	(Mulliner and Maliene, 2015) (Rid, Lammers, and Zimmermann, 2017) (Karji et al., 2019) (Le, Ta, and Dang, 2016) (Woo, Kim, and Lee, 2018) (Roosli et al., 2015) (Adabre et al., 2020) (Oyebanji, Liyanage, and Akintoye, 2017) (Adabre and Chan, 2019a) (Zhang, Chen, and Jin, 2015) (McHunu and Nkambule, 2019) (Tomšić and Šijanec Zavrl, 2018) (Haarhoff, Beattie, and Dupuis, 2016) (Gilderbloom, Riggs, and Meares, 2015) (Boeckermann, Kaczynski, and King, 2019) (Yildiz, 2015) (Chohan, Irfan, and Awad, 2015) (Yu et al., 2017) (D. Li et al., 2016) (Akinyede, Fapohunda, and Haldwang, 2017) (Tanganco, Alberto, and Gotangco, 2019) (Ezennia and Hoskara, 2019) (A. L. Olanrewaju et al., 2017) (Aldossary, Rezgui, and Kwan, 2015) (Al-Jebouri et al., 2017) (Schneider-Skalska, 2019) (Saldaña-Márquez et al., 2019) (Prochorskaite et al., 2016) (Gan et al., 2017) (Shama and Motlak, 2019) (Colistra, 2019) (Wu et al., 2017) (Castellano, Ribera, and Ciurana, 2016) (Roshanfekr, Tawil, and Goh, 2016) (Wahi et al., 2018) (Tsuang and Peng, 2018) (Mihnovits and Nisos, 2016) (Karatas and El-Rayes, 2015) (Daly, 2017) (Osman et al., 2016) (Tupenaite et al., 2017) (A. Olanrewaju, Yeow, and Lim, 2016) (Manoochehri, 2015) (Mohtat and Zargar, 2018) (Hagbert and Femenías, 2016) (Said et al., 2016) (Saldaña-Márquez et al., 2018) (Maciejko and Wojtyszyn, 2020) (Dokic, Gligorijevic, and Damjanovic, 2015) (Tomovska and Radivojevic, 2017) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (Soyinka and Siu, 2018) (Verovsek and Juvancic, 2018) (Kobylarczyk, 2018) (Huang, Mori, and Nomura, 2018) (Kapedani, Herssens, and Verbeeck, 2019) (Mou, He, and Zhou, 2017) (Vega-Azamar et al., 2017) (Lorek and Spangenberg, 2019) (Wittmann, Kopacik, and Leitmannova, 2019) (Ali and Alzu'bi, 2017) (Yuliastuti, Haryanto, and Haryanti, 2020) (Ellsworth-Krebs, Reid, and Hunter, 2015) (Kaoula and Bouchair, 2020) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019) (Cui et al., 2018) (Verovsek, Juvancic, and Zupancic, 2015) (Abass and Tucker, 2020) (Sharafeddin, Arocho, and Anderson, 2019) (Ignjatovic, Ignjatovic, and Sudimac, 2018) (Seo, Chung, and Kwon, 2018) (Ahmed and Alipour, 2019)
F4	Building spatial layout (size and dimensions, building form, internal space distribution, etc.)	(Rid, Lammers, and Zimmermann, 2017) (Alrashed and Asif, 2015) (Nasrabadi and Hataminejad, 2019) (Le, Ta, and Dang, 2016) (Sanhueza-Durán et al., 2019) (Nuuter, Lill, and Tupenaite, 2015) (Popova, Glebova, and Karakozova, 2018) (Roosli et al., 2015) (Bintoro et al., 2019) (Adabre and Chan, 2019a) (Tomšić and Šijanec Zavrl, 2018) (Haarhoff, Beattie, and Dupuis, 2016) (Boeckermann, Kaczynski, and King, 2019) (Yildiz, 2015) (Chohan, Irfan, and Awad, 2015) (Sang and Yao, 2019) (Tanganco, Alberto, and Gotangco, 2019) (Ezennia and Hoskara, 2019) (A. L. Olanrewaju et al., 2017) (Aldossary, Rezgui, and Kwan, 2015) (Al-Jebouri et al., 2017) (Schneider-Skalska, 2019) (Saldaña-Márquez et al., 2019) (Prochorskaite et al., 2016) (Gan et al., 2017) (Shama and Motlak, 2019) (Seo and Kwon, 2017) (Castellano, Ribera, and Ciurana, 2016) (Roshanfekr, Tawil, and Goh, 2016) (Kovacic, Reisinger, and Honic, 2018) (Asad Poor, Thorpe, and Goh, 2018) (Djebbar, Salem, and Mokhtari, 2018) (Matthews, Friedland, and Orooji, 2016) (Karatas and El-Rayes, 2015) (Daly, 2017) (A. Olanrewaju, Yeow, and Lim, 2016) (Manoochehri, 2015) (Mohtat and Zargar, 2018) (Hagbert and Femenías, 2016) (Said et al., 2016) (Perrucci, Vazquez, and Aktas, 2016) (Bazan-Krzywoszańska et al., 2017) (Sari, Nuryanti, and Ikaputra, 2019) (Maciejko and Wojtyszyn, 2020) (Dokic, Gligorijevic, and Damjanovic, 2015) (Tomovska and Radivojevic, 2017) (Soyinka and Siu, 2018) (R. Y. M. Li, Cheung, and Shoaib, 2018) (Han and Yang, 2018) (Feng et al., 2018) (Kobylarczyk, 2018) (Kapedani, Herssens, and Verbeeck, 2019) (Mou, He, and Zhou, 2017) (Vega-Azamar et al., 2017) (Lorek and Spangenberg, 2019) (Wittmann, Kopacik, and Leitmannova, 2019) (Ali and Alzu'bi, 2017) (Zasada et al., 2020) (Kaoula and Bouchair, 2020) (Nguyen, Bokel, and Dobbelsteen, 2019) (Cui et al., 2018) (Cheng, Bae, and Horton, 2019) (Päätalo, 2016) (Abass and Tucker, 2020) (Sánchez-Garrido and Yepes, 2020) (Croitoru et al., 2016) (Sharafeddin, Arocho, and Anderson, 2019) (Ignjatovic, Ignjatovic, and Sudimac, 2018) (Seo, Chung, and Kwon, 2018) (Rodrigues Moreno, de Morais, and de Souza, 2017) (Ahmed and Alipour, 2019) (Rydborg, Lauring, and Brunsgaard, 2019)
F5	Location – Site – Development land	(Mulliner and Maliene, 2015) (Alrashed and Asif, 2015) (Nasrabadi and Hataminejad, 2019) (Le, Ta, and Dang, 2016) (Woo, Kim, and Lee, 2018) (Aghimien, Aigbavboa, and Ngwari, 2018) (Sanhueza-Durán et al., 2019) (Nuuter, Lill, and Tupenaite, 2015) (Adabre and Chan, 2019a) (McHunu and Nkambule, 2019) (Tomšić and Šijanec Zavrl, 2018) (Haarhoff, Beattie, and Dupuis, 2016) (Chohan, Irfan, and Awad, 2015) (Tanganco, Alberto, and Gotangco, 2019) (Ezennia and Hoskara, 2019) (A. L. Olanrewaju et al., 2017) (Aldossary, Rezgui, and Kwan, 2015) (Al-Jebouri et al., 2017) (Saldaña-Márquez et al., 2019) (Gan et al., 2017) (Seo and Kwon, 2017) (Castellano, Ribera, and Ciurana, 2016) (Roshanfekr, Tawil, and Goh, 2016) (Tsuang and Peng, 2018) (Djebbar, Salem, and Mokhtari, 2018) (Mihnovits and Nisos, 2016) (Matthews, Friedland, and Orooji, 2016) (Karatas and El-Rayes, 2015) (Daly, 2017) (Tupenaite et al., 2017) (A. Olanrewaju, Yeow, and Lim, 2016) (Manoochehri, 2015) (Mohtat and Zargar, 2018) (Said et al., 2016) (Saldaña-Márquez et al., 2018) (Bazan-Krzywoszańska et al., 2017) (Sari, Nuryanti, and Ikaputra, 2019) (Maciejko and Wojtyszyn, 2020) (Dokic, Gligorijevic, and Damjanovic, 2015) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (Soyinka and Siu, 2018) (R. Y. M. Li, Cheung, and Shoaib, 2018) (Han and Yang, 2018) (Kobylarczyk, 2018) (Dong et al., 2018) (Huang, Mori, and Nomura, 2018) (Mou, He, and Zhou, 2017) (Vega-Azamar et al., 2017) (Lorek and Spangenberg, 2019) (Wittmann, Kopacik, and Leitmannova, 2019) (Ali and Alzu'bi, 2017) (Yuliastuti, Haryanto, and Haryanti, 2020) (Ellsworth-Krebs, Reid, and Hunter, 2015) (Kaoula and Bouchair, 2020) (Nguyen, Bokel, and Dobbelsteen, 2019) (Pérez-Fargallo et al., 2018) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019) (Cui et al., 2018) (Cheng, Bae, and Horton, 2019) (Abass and Tucker, 2020) (Sánchez-Garrido and Yepes, 2020) (Sharafeddin, Arocho, and Anderson, 2019) (Ignjatovic, Ignjatovic, and Sudimac, 2018) (Seo, Chung, and Kwon, 2018) (Rodrigues Moreno, de Morais, and de Souza, 2017) (Ahmed and Alipour, 2019) (Karji et al., 2019)

	Factors	References
F6	Healthy conditions (hygiene, clean environment, air/water quality, mental health, etc.)	(Henderson, Ganah, and John, 2016) (Nasrabadi and Hataminejad, 2019) (Karji et al., 2019) (Aghimien, Aigbavboa, and Ngwari, 2018) (Sanhueza-Durán et al., 2019) (Nuuter, Lill, and Tupenaite, 2015) (Ganiyu, Fapohunda, and Haldenwang, 2016) (Adabre et al., 2020) (Oyebanji, Liyanage, and Akintoye, 2017) (Peruzzini et al., 2016) (McHunu and Nkambule, 2019) (Haarhoff, Beattie, and Dupuis, 2016) (Zare Mohazabieh, Ghajarkhosravi, and Fung, 2015) (Chohan, Irfan, and Awad, 2015) (Yu et al., 2017) (Akinyede, Fapohunda, and Haldwang, 2017) (Sang and Yao, 2019) (Tanganco, Alberto, and Gotangco, 2019) (Ezennia and Hoskara, 2019) (Al-Jebouri et al., 2017) (Hostland et al., 2015) (Schneider-Skalska, 2019) (Saldaña-Márquez et al., 2019) (Prochorskaite et al., 2016) (Gan et al., 2017) (Shama and Motlak, 2019) (Bintoro et al., 2019) (Seo and Kwon, 2017) (Colistra, 2019) (Wu et al., 2017) (Castellano, Ribera, and Ciurana, 2016) (Roshanfekr, Tawil, and Goh, 2016) (Marín et al., 2015) (Wahi et al., 2018) (Tsuang and Peng, 2018) (Djebbar, Salem, and Mokhtari, 2018) (Mihnovits and Nisos, 2016) (Karatas and El-Rayes, 2015) (Osman et al., 2016) (Tupenaite et al., 2017) (Manoochehri, 2015) (Mohtat and Zargar, 2018) (Saldaña-Márquez et al., 2018) (Tomšić and Šijanec Zavrl, 2018) (Perrucci, Vazquez, and Aktas, 2016) (Dokic, Gligorijevic, and Damjanovic, 2015) (Tomovska and Radivojevic, 2017) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (Soyinka and Siu, 2018) (R. Y. M. Li, Cheung, and Shoaib, 2018) (Feng et al., 2018) (Kobylarczyk, 2018) (Dong et al., 2018) (Lorek and Spangenberg, 2019) (Wittmann, Kopacik, and Leitmannova, 2019) (Wittmann, Kopacik, and Leitmannova, 2019) (Ali and Alzu'bi, 2017) (Zasada et al., 2020) (Ellsworth-Krebs, Reid, and Hunter, 2015) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Abass and Tucker, 2020) (Sánchez-Garrido and Yepes, 2020) (Sharafeddin, Arocho, and Anderson, 2019) (Seo, Chung, and Kwon, 2018) (Ahmed and Alipour, 2019) (Rydborg, Lauring, and Brunsgaard, 2019)
F7	Housing affordable purchase/rental/ mortgage costs (market value, relation to household income)	(Mulliner and Maliene, 2015) (Chan and Adabre, 2019) (Woo, Kim, and Lee, 2018) (Aghimien, Aigbavboa, and Ngwari, 2018) (Nuuter, Lill, and Tupenaite, 2015) (Ganiyu, Fapohunda, and Haldenwang, 2016) (Adabre et al., 2020) (Oyebanji, Liyanage, and Akintoye, 2017) (Adabre and Chan, 2019a) (Zhang, Chen, and Jin, 2015) (McHunu and Nkambule, 2019) (A. Olanrewaju and Tan, 2018) (Haarhoff, Beattie, and Dupuis, 2016) (Gilderbloom, Riggs, and Meares, 2015) (Boeckermann, Kaczynski, and King, 2019) (Zare Mohazabieh, Ghajarkhosravi, and Fung, 2015) (Yildiz, 2015) (Yu et al., 2017) (D. Li et al., 2016) (Akinyede, Fapohunda, and Haldwang, 2017) (Tanganco, Alberto, and Gotangco, 2019) (Ezennia and Hoskara, 2019) (Chan and Adabre, 2019) (A. L. Olanrewaju et al., 2017) (Ruiz-Pérez et al., 2019) (Gan et al., 2017) (Shama and Motlak, 2019) (Seo and Kwon, 2017) (Colistra, 2019) (Wu et al., 2017) (Marín et al., 2015) (Wahi et al., 2018) (Mihnovits and Nisos, 2016) (Karatas and El-Rayes, 2015) (Tupenaite et al., 2017) (A. Olanrewaju, Yeow, and Lim, 2016) (Manoochehri, 2015) (Hagbert and Femenías, 2016) (Said et al., 2016) (Perrucci, Vazquez, and Aktas, 2016) (Maciejko and Wojtyszyn, 2020) (Dokic, Gligorijevic, and Damjanovic, 2015) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (Soyinka and Siu, 2018) (R. Y. M. Li, Cheung, and Shoaib, 2018) (Huang, Mori, and Nomura, 2018) (Kapedani, Herssens, and Verbeeck, 2019) (Mou, He, and Zhou, 2017) (Lorek and Spangenberg, 2019) (Wittmann, Kopacik, and Leitmannova, 2019) (Ali and Alzu'bi, 2017) (Ellsworth-Krebs, Reid, and Hunter, 2015) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019) (Cui et al., 2018) (Cheng, Bae, and Horton, 2019) (Sharafeddin, Arocho, and Anderson, 2019) (Ignjatovic, Ignjatovic, and Sudimac, 2018) (Seo, Chung, and Kwon, 2018) (Rydborg, Lauring, and Brunsgaard, 2019) (Karji et al., 2019) (J. Yang and Yang, 2015) (Djebbar, Salem, and Mokhtari, 2018) (Kaoula and Bouchair, 2020) (Henderson, Ganah, and John, 2016) (Rehkopf, Rowlands, and Tobert, 2016)
F8	Waste management/ facilities (waste recycle/ reduction, appropriate disposal of waste, etc.)	(Henderson, Ganah, and John, 2016) (Mulliner and Maliene, 2015) (Nasrabadi and Hataminejad, 2019) (Le, Ta, and Dang, 2016) (Sanhueza-Durán et al., 2019) (Nuuter, Lill, and Tupenaite, 2015) (Ganiyu, Fapohunda, and Haldenwang, 2016) (Bintoro et al., 2019) (Oyebanji, Liyanage, and Akintoye, 2017) (Peruzzini et al., 2016) (Zhang, Chen, and Jin, 2015) (McHunu and Nkambule, 2019) (A. Olanrewaju and Tan, 2018) (Tomšić and Šijanec Zavrl, 2018) (Zare Mohazabieh, Ghajarkhosravi, and Fung, 2015) (Chohan, Irfan, and Awad, 2015) (Sang and Yao, 2019) (Tanganco, Alberto, and Gotangco, 2019) (Ezennia and Hoskara, 2019) (A. L. Olanrewaju et al., 2017) (Willems, 2015) (Willems, 2015) (Al-Jebouri et al., 2017) (Schneider-Skalska, 2019) (Ruiz-Pérez et al., 2019) (Saldaña-Márquez et al., 2019) (Gan et al., 2017) (Wu et al., 2017) (Castellano, Ribera, and Ciurana, 2016) (Roshanfekr, Tawil, and Goh, 2016) (Kovacic, Reisinger, and Honic, 2018) (Asad Poor, Thorpe, and Goh, 2018) (Tsuang and Peng, 2018) (Djebbar, Salem, and Mokhtari, 2018) (Mihnovits and Nisos, 2016) (Matthews, Friedland, and Orooji, 2016) (Daly, 2017) (Osman et al., 2016) (Tupenaite et al., 2017) (A. Olanrewaju, Yeow, and Lim, 2016) (Mohtat and Zargar, 2018) (Hagbert and Femenías, 2016) (Said et al., 2016) (Saldaña-Márquez et al., 2018) (Perrucci, Vazquez, and Aktas, 2016) (Bazan-Krzywoszańska et al., 2017) (Dokic, Gligorijevic, and Damjanovic, 2015) (Tomovska and Radivojevic, 2017) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (Feng et al., 2018) (Dong et al., 2018) (Kapedani, Herssens, and Verbeeck, 2019) (Vega-Azamar et al., 2017) (Lorek and Spangenberg, 2019) (Ali and Alzu'bi, 2017) (Zasada et al., 2020) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Kaoula and Bouchair, 2020) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019) (Verovsek, Juvancic, and Zupancic, 2015) (Sánchez-Garrido and Yepes, 2020) (Adabre and Chan, 2019a)
F9	Safety and security	(Mulliner and Maliene, 2015) (Karji et al., 2019) (Chan and Adabre, 2019) (Le, Ta, and Dang, 2016) (Woo, Kim, and Lee, 2018) (Nuuter, Lill, and Tupenaite, 2015) (Bintoro et al., 2019) (Adabre et al., 2020) (Oyebanji, Liyanage, and Akintoye, 2017) (Peruzzini et al., 2016) (McHunu and Nkambule, 2019) (A. Olanrewaju and Tan, 2018) (Haarhoff, Beattie, and Dupuis, 2016) (Gilderbloom, Riggs, and Meares, 2015) (Yildiz, 2015) (Yu et al., 2017) (Akinyede, Fapohunda, and Haldwang, 2017) (Tanganco, Alberto, and Gotangco, 2019) (Ezennia and Hoskara, 2019) (Chan and Adabre, 2019) (A. L. Olanrewaju et al., 2017) (Al-Jebouri et al., 2017) (Schneider-Skalska, 2019) (Saldaña-Márquez et al., 2019) (Prochorskaite et al., 2016) (Shama and Motlak, 2019) (Seo and Kwon, 2017) (Wu et al., 2017) (Roshanfekr, Tawil, and Goh, 2016) (Wahi et al., 2018) (Tsuang and Peng, 2018) (Djebbar, Salem, and Mokhtari, 2018) (Mihnovits and Nisos, 2016) (Karatas and El-Rayes, 2015) (Osman et al., 2016) (Tupenaite et al., 2017) (Manoochehri, 2015) (Mohtat and Zargar, 2018) (Hagbert and Femenías, 2016) (Said et al., 2016) (Saldaña-Márquez et al., 2018) (Sari, Nuryanti, and Ikaputra, 2019) (Dokic, Gligorijevic, and Damjanovic, 2015) (K. Yang and Cho, 2016) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (Arifin, Rasyid, and Osman, 2020) (Han and Yang, 2018) (Feng et al., 2018) (Kobylarczyk, 2018) (Dong et al., 2018) (Huang, Mori, and Nomura, 2018) (Wittmann, Kopacik, and Leitmannova, 2019) (Yuliastuti, Haryanto, and Haryanti, 2020) (Ellsworth-Krebs, Reid, and Hunter, 2015) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Abass and Tucker, 2020) (Sharafeddin, Arocho, and Anderson, 2019) (Seo, Chung, and Kwon, 2018) (Ahmed and Alipour, 2019)
F10	Building equipment/ technologies (heating/ cooling systems, ventilation systems, kitchen appliances, furniture, etc.)	(Rid, Lammers, and Zimmermann, 2017) (Alrashed and Asif, 2015) (Rehkopf, Rowlands, and Tobert, 2016) (Karji et al., 2019) (Le, Ta, and Dang, 2016) (Sanhueza-Durán et al., 2019) (Roosli et al., 2015) (Bintoro et al., 2019) (Zare Mohazabieh, Ghajarkhosravi, and Fung, 2015) (Chohan, Irfan, and Awad, 2015) (Sang and Yao, 2019) (Tanganco, Alberto, and Gotangco, 2019) (Ezennia and Hoskara, 2019) (Aldossary, Rezgui, and Kwan, 2015) (Willems, 2015) (Hostland et al., 2015) (Ruiz-Pérez et al., 2019) (Saldaña-Márquez et al., 2019) (Shama and Motlak, 2019) (Seo and Kwon, 2017) (Castellano, Ribera, and Ciurana, 2016) (Kovacic, Reisinger, and Honic, 2018) (Djebbar, Salem, and Mokhtari, 2018) (Karatas and El-Rayes, 2015) (Daly, 2017) (Manoochehri, 2015) (Mohtat and Zargar, 2018) (Hagbert and Femenías, 2016) (Saldaña-Márquez et al., 2018) (Bazan-Krzywoszańska et al., 2017) (Sari, Nuryanti, and Ikaputra, 2019) (K. Yang and Cho, 2016) (Tomovska and Radivojevic, 2017) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (Han and Yang, 2018) (Feng et al., 2018) (Kobylarczyk, 2018) (Dong et al., 2018) (Kapedani, Herssens, and Verbeeck, 2019) (Lorek and Spangenberg, 2019) (Wittmann, Kopacik, and Leitmannova, 2019) (Ali and Alzu'bi, 2017) (Yuliastuti, Haryanto, and Haryanti, 2020) (Ellsworth-Krebs, Reid, and Hunter, 2015) (Kaoula and Bouchair, 2020) (Nguyen, Bokel, and Dobbelsteen, 2019) (Pérez-Fargallo et al., 2018) (Cui et al., 2018) (Cheng, Bae, and Horton, 2019) (Verovsek, Juvancic, and Zupancic, 2015) (Sánchez-Garrido and Yepes, 2020) (Croitoru et al., 2016) (Seo, Chung, and Kwon, 2018) (Rodrigues Moreno, de Morais, and de Souza, 2017) (Rydborg, Lauring, and Brunsgaard, 2019) (Adabre and Chan, 2019a)
F11	Rehabilitation/ refurbishment of the building/community (repairing the deteriorations, functional improvements, etc.)	(Tomovska and Radivojevic, 2017) (Nasrabadi and Hataminejad, 2019) (Rehkopf, Rowlands, and Tobert, 2016) (Karji et al., 2019) (Woo, Kim, and Lee, 2018) (Sanhueza-Durán et al., 2019) (Popova, Glebova, and Karakozova, 2018) (Adabre et al., 2020) (Oyebanji, Liyanage, and Akintoye, 2017) (Adabre and Chan, 2019a) (Adabre et al., 2020) (A. Olanrewaju and Tan, 2018) (Chohan, Irfan, and Awad, 2015) (Tanganco, Alberto, and Gotangco, 2019) (A. L. Olanrewaju et al., 2017) (Aldossary, Rezgui, and Kwan, 2015) (Hostland et al., 2015) (Ruiz-Pérez et al., 2019) (Gan et al., 2017) (Shama and Motlak, 2019) (Colistra, 2019) (Castellano, Ribera, and Ciurana, 2016) (Roshanfekr, Tawil, and Goh, 2016) (Kovacic, Reisinger, and Honic, 2018) (Marín et al., 2015) (Tsuang and Peng, 2018) (Djebbar, Salem, and Mokhtari, 2018) (Matthews, Friedland, and Orooji, 2016) (Tupenaite et al., 2017) (A. Olanrewaju, Yeow, and Lim, 2016) (Manoochehri, 2015) (Mohtat and Zargar, 2018) (Hagbert and Femenías, 2016) (Bazan-Krzywoszańska et al., 2017) (Dokic, Gligorijevic, and Damjanovic, 2015) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (Soyinka and Siu, 2018) (Verovsek and Juvancic, 2018) (Han and Yang, 2018) (Feng et al., 2018) (Dong et al., 2018) (Arkhangelskaya and Arkhangelskaya, 2020) (Kapedani, Herssens, and Verbeeck, 2019) (Lorek and Spangenberg, 2019) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Kaoula and Bouchair, 2020) (Nguyen, Bokel, and Dobbelsteen, 2019) (Cheng, Bae, and Horton, 2019) (Sánchez-Garrido and Yepes, 2020) (Sharafeddin, Arocho, and Anderson, 2019) (Ignjatovic, Ignjatovic, and Sudimac, 2018) (Rydborg, Lauring, and Brunsgaard, 2019) (Wittmann, Kopacik, and Leitmannova, 2019)

	Factors	References
F12	Building envelope (thermal performance of the building, insulation, air tightness/exchange, etc.)	(Alrashed and Asif, 2015) (Nasrabadi and Hataminejad, 2019) (Rehkopf, Rowlands, and Tobert, 2016) (Sanhueza-Durán et al., 2019) (Popova, Glebova, and Karakozova, 2018) (J. Yang and Yang, 2015) (Zhang, Chen, and Jin, 2015) (Zare Mohazabieh, Ghajarkhosravi, and Fung, 2015) (Chohan, Irfan, and Awad, 2015) (Aldossary, Rezgui, and Kwan, 2015) (Al-Jebouri et al., 2017) (Hostland et al., 2015) (Schneider-Skalska, 2019) (Ruiz-Pérez et al., 2019) (Saldaña-Márquez et al., 2019) (Castellano, Ribera, and Ciurana, 2016) (Roshanfekr, Tawil, and Goh, 2016) (Kovacic, Reisinger, and Honic, 2018) (Marín et al., 2015) (Asad Poor, Thorpe, and Goh, 2018) (Djebbar, Salem, and Mokhtari, 2018) (Karatas and El-Rayes, 2015) (Daly, 2017) (Manoochehri, 2015) (Mohtat and Zargar, 2018) (Perrucci, Vazquez, and Aktas, 2016) (Bazan-Krzywoszańska et al., 2017) (Dokic, Gligorijevic, and Damjanovic, 2015) (Tomovska and Radivojevic, 2017) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (Han and Yang, 2018) (Kobylarczyk, 2018) (Dong et al., 2018) (Arkhangelskaya and Arkhangelskaya, 2020) (Kapedani, Herssens, and Verbeeck, 2019) (Lorek and Spangenberg, 2019) (Ali and Alzu'bi, 2017) (Ellsworth-Krebs, Reid, and Hunter, 2015) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Kaoula and Bouchair, 2020) (Nguyen, Bokel, and Dobbelsteen, 2019) (Pérez-Fargallo et al., 2018) (Cheng, Bae, and Horton, 2019) (Verovsek, Juvancic, and Zupancic, 2015) (Päätalo, 2016) (Sánchez-Garrido and Yepes, 2020) (Croitoru et al., 2016) (Ignjatovic, Ignjatovic, and Sudimac, 2018) (Rodrigues Moreno, de Morais, and de Souza, 2017) (Ahmed and Alipour, 2019) (Rydborg, Lauring, and Brunsgaard, 2019) (Adabre and Chan, 2019a)
F13	Indoor environment (air quality, humidity, mold, thermal comfort, air circulation, etc.)	(Karji et al., 2019) (Woo, Kim, and Lee, 2018) (Roosli et al., 2015) (Bintoro et al., 2019) (Peruzzini et al., 2016) (McHunu and Nkambule, 2019) (Yildiz, 2015) (Chohan, Irfan, and Awad, 2015) (Tanganco, Alberto, and Gotangco, 2019) (Ezennia and Hoskara, 2019) (Al-Jebouri et al., 2017) (Hostland et al., 2015) (Ruiz-Pérez et al., 2019) (Prochorskaite et al., 2016) (Gan et al., 2017) (Shama and Motlak, 2019) (Wu et al., 2017) (Roshanfekr, Tawil, and Goh, 2016) (Marín et al., 2015) (Wahi et al., 2018) (Djebbar, Salem, and Mokhtari, 2018) (Mihnovits and Nisos, 2016) (Karatas and El-Rayes, 2015) (Tupenaite et al., 2017) (A. Olanrewaju, Yeow, and Lim, 2016) (Hagbert and Femenías, 2016) (Saldaña-Márquez et al., 2018) (K. Yang and Cho, 2016) (Tomovska and Radivojevic, 2017) (Han and Yang, 2018) (Feng et al., 2018) (Kapedani, Herssens, and Verbeeck, 2019) (Lorek and Spangenberg, 2019) (Ali and Alzu'bi, 2017) (Ellsworth-Krebs, Reid, and Hunter, 2015) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Kaoula and Bouchair, 2020) (Nguyen, Bokel, and Dobbelsteen, 2019) (Pérez-Fargallo et al., 2018) (Cheng, Bae, and Horton, 2019) (Päätalo, 2016) (Sánchez-Garrido and Yepes, 2020) (Croitoru et al., 2016) (Sharafeddin, Arocho, and Anderson, 2019) (Ignjatovic, Ignjatovic, and Sudimac, 2018) (Rodrigues Moreno, de Morais, and de Souza, 2017) (Ahmed and Alipour, 2019) (Rydborg, Lauring, and Brunsgaard, 2019) (Adabre et al., 2020)
F14	Carbon footprint – GHG emissions	(Henderson, Ganah, and John, 2016) (Rehkopf, Rowlands, and Tobert, 2016) (Sanhueza-Durán et al., 2019) (Adabre et al., 2020) (J. Yang and Yang, 2015) (Oyebanji, Liyanage, and Akintoye, 2017) (Boeckermann, Kaczynski, and King, 2019) (Zare Mohazabieh, Ghajarkhosravi, and Fung, 2015) (Aldossary, Rezgui, and Kwan, 2015) (Schneider-Skalska, 2019) (Ruiz-Pérez et al., 2019) (Saldaña-Márquez et al., 2019) (Prochorskaite et al., 2016) (Shama and Motlak, 2019) (Wu et al., 2017) (Castellano, Ribera, and Ciurana, 2016) (Roshanfekr, Tawil, and Goh, 2016) (Kovacic, Reisinger, and Honic, 2018) (Marín et al., 2015) (Asad Poor, Thorpe, and Goh, 2018) (Tsuang and Peng, 2018) (Djebbar, Salem, and Mokhtari, 2018) (Matthews, Friedland, and Orooji, 2016) (Karatas and El-Rayes, 2015) (Daly, 2017) (Tupenaite et al., 2017) (Saldaña-Márquez et al., 2018) (Bazan-Krzywoszańska et al., 2017) (Dokic, Gligorijevic, and Damjanovic, 2015) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (Verovsek and Juvancic, 2018) (Han and Yang, 2018) (Dong et al., 2018) (Vega-Azamar et al., 2017) (Ali and Alzu'bi, 2017) (Ellsworth-Krebs, Reid, and Hunter, 2015) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Kaoula and Bouchair, 2020) (Pérez-Fargallo et al., 2018) (Cheng, Bae, and Horton, 2019) (Verovsek, Juvancic, and Zupancic, 2015) (Päätalo, 2016) (Abass and Tucker, 2020) (Croitoru et al., 2016) (Ignjatovic, Ignjatovic, and Sudimac, 2018) (Ahmed and Alipour, 2019) (Rydborg, Lauring, and Brunsgaard, 2019) (Karji et al., 2019)
F15	Water management (consumption rate, irrigation systems, recycling, etc.)	(Henderson, Ganah, and John, 2016) (Rid, Lammers, and Zimmermann, 2017) (Rehkopf, Rowlands, and Tobert, 2016) (Woo, Kim, and Lee, 2018) (Sanhueza-Durán et al., 2019) (Popova, Glebova, and Karakozova, 2018) (Ganiyu, Fapohunda, and Haldenwang, 2016) (J. Yang and Yang, 2015) (Oyebanji, Liyanage, and Akintoye, 2017) (Peruzzini et al., 2016) (Zhang, Chen, and Jin, 2015) (McHunu and Nkambule, 2019) (Tomšić and Šijanec Zavrl, 2018) (Boeckermann, Kaczynski, and King, 2019) (Yildiz, 2015) (Chohan, Irfan, and Awad, 2015) (Willems, 2015) (Al-Jebouri et al., 2017) (Schneider-Skalska, 2019) (Ruiz-Pérez et al., 2019) (Prochorskaite et al., 2016) (Gan et al., 2017) (Shama and Motlak, 2019) (Wu et al., 2017) (Castellano, Ribera, and Ciurana, 2016) (Roshanfekr, Tawil, and Goh, 2016) (Wahi et al., 2018) (Karatas and El-Rayes, 2015) (Daly, 2017) (Tupenaite et al., 2017) (Said et al., 2016) (Saldaña-Márquez et al., 2018) (Perrucci, Vazquez, and Aktas, 2016) (Tomovska and Radivojevic, 2017) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (Han and Yang, 2018) (Kapedani, Herssens, and Verbeeck, 2019) (Vega-Azamar et al., 2017) (Ali and Alzu'bi, 2017) (Zasada et al., 2020) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Kaoula and Bouchair, 2020) (Nguyen, Bokel, and Dobbelsteen, 2019) (Verovsek, Juvancic, and Zupancic, 2015) (Ahmed and Alipour, 2019) (Karji et al., 2019) (Adabre and Chan, 2019a) (Adabre et al., 2020)
F16	Use of renewable/clean resources (solar, wind, geothermal, renewable material, etc.)	(Nasrabadi and Hataminejad, 2019) (Sanhueza-Durán et al., 2019) (Oyebanji, Liyanage, and Akintoye, 2017) (Tomšić and Šijanec Zavrl, 2018) (Boeckermann, Kaczynski, and King, 2019) (Zare Mohazabieh, Ghajarkhosravi, and Fung, 2015) (Chohan, Irfan, and Awad, 2015) (Akinyede, Fapohunda, and Haldwang, 2017) (Aldossary, Rezgui, and Kwan, 2015) (Al-Jebouri et al., 2017) (Schneider-Skalska, 2019) (Saldaña-Márquez et al., 2019) (Gan et al., 2017) (Shama and Motlak, 2019) (Roshanfekr, Tawil, and Goh, 2016) (Marín et al., 2015) (Wahi et al., 2018) (Djebbar, Salem, and Mokhtari, 2018) (Karatas and El-Rayes, 2015) (Daly, 2017) (Tupenaite et al., 2017) (Mohtat and Zargar, 2018) (Saldaña-Márquez et al., 2018) (Perrucci, Vazquez, and Aktas, 2016) (Bazan-Krzywoszańska et al., 2017) (Dokic, Gligorijevic, and Damjanovic, 2015) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (Dong et al., 2018) (Kapedani, Herssens, and Verbeeck, 2019) (Vega-Azamar et al., 2017) (Ali and Alzu'bi, 2017) (Ellsworth-Krebs, Reid, and Hunter, 2015) (Nguyen, Bokel, and Dobbelsteen, 2019) (Cheng, Bae, and Horton, 2019) (Verovsek, Juvancic, and Zupancic, 2015) (Croitoru et al., 2016) (Sharafeddin, Arocho, and Anderson, 2019) (Ignjatovic, Ignjatovic, and Sudimac, 2018) (Rydborg, Lauring, and Brunsgaard, 2019) (Karji et al., 2019) (Adabre and Chan, 2019a) (Henderson, Ganah, and John, 2016) (Alrashed and Asif, 2015) (Rehkopf, Rowlands, and Tobert, 2016) (Ganiyu, Fapohunda, and Haldenwang, 2016) (Adabre et al., 2020) (J. Yang and Yang, 2015)
F17	Opportunity for social cohesion/integrity/ interaction/connectivity (common use areas, facility sharing, etc.)	(Rid, Lammers, and Zimmermann, 2017) (Karji et al., 2019) (Le, Ta, and Dang, 2016) (Adabre et al., 2020) (Oyebanji, Liyanage, and Akintoye, 2017) (A. Olanrewaju and Tan, 2018) (Haarhoff, Beattie, and Dupuis, 2016) (Gilderbloom, Riggs, and Meares, 2015) (Yildiz, 2015) (Chohan, Irfan, and Awad, 2015) (Yu et al., 2017) (Akinyede, Fapohunda, and Haldwang, 2017) (Tanganco, Alberto, and Gotangco, 2019) (Ezennia and Hoskara, 2019) (A. L. Olanrewaju et al., 2017) (Schneider-Skalska, 2019) (Saldaña-Márquez et al., 2019) (Prochorskaite et al., 2016) (Gan et al., 2017) (Seo and Kwon, 2017) (Colistra, 2019) (Wu et al., 2017) (Tsuang and Peng, 2018) (Daly, 2017) (Tupenaite et al., 2017) (A. Olanrewaju, Yeow, and Lim, 2016) (Manoochehri, 2015) (Mohtat and Zargar, 2018) (Hagbert and Femenías, 2016) (Saldaña-Márquez et al., 2018) (Maciejko and Wojtyszyn, 2020) (Dokic, Gligorijevic, and Damjanovic, 2015) (Verovsek and Juvancic, 2018) (Feng et al., 2018) (Huang, Mori, and Nomura, 2018) (Lorek and Spangenberg, 2019) (Wittmann, Kopacik, and Leitmannova, 2019) (Ali and Alzu'bi, 2017) (Yuliastuti, Haryanto, and Haryanti, 2020) (Zasada et al., 2020) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019) (Verovsek, Juvancic, and Zupancic, 2015) (Abass and Tucker, 2020) (Sharafeddin, Arocho, and Anderson, 2019) (Ignjatovic, Ignjatovic, and Sudimac, 2018) (Ahmed and Alipour, 2019)
F18	Re-use/recycle (materials, water, waste, etc.)	(Rid, Lammers, and Zimmermann, 2017) (Rehkopf, Rowlands, and Tobert, 2016) (Tomšić and Šijanec Zavrl, 2018) (Boeckermann, Kaczynski, and King, 2019) (Chohan, Irfan, and Awad, 2015) (Tanganco, Alberto, and Gotangco, 2019) (Nasrabadi and Hataminejad, 2019) (Willems, 2015) (Al-Jebouri et al., 2017) (Schneider-Skalska, 2019) (Saldaña-Márquez et al., 2019) (Shama and Motlak, 2019) (Wu et al., 2017) (Castellano, Ribera, and Ciurana, 2016) (Roshanfekr, Tawil, and Goh, 2016) (Kovacic, Reisinger, and Honic, 2018) (Marín et al., 2015) (Asad Poor, Thorpe, and Goh, 2018) (Tsuang and Peng, 2018) (Daly, 2017) (Tupenaite et al., 2017) (Mohtat and Zargar, 2018) (Hagbert and Femenías, 2016) (Saldaña-Márquez et al., 2018) (Perrucci, Vazquez, and Aktas, 2016) (Maciejko and Wojtyszyn, 2020) (Dokic, Gligorijevic, and Damjanovic, 2015) (Tomovska and Radivojevic, 2017) (Han and Yang, 2018) (Dong et al., 2018) (Arkhangelskaya and Arkhangelskaya, 2020) (Ali and Alzu'bi, 2017) (Ali and Alzu'bi, 2017) (Zasada et al., 2020) (Kaoula and Bouchair, 2020) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019) (Sánchez-Garrido and Yepes, 2020) (Rydborg, Lauring, and Brunsgaard, 2019) (Karji et al., 2019) (Oyebanji, Liyanage, and Akintoye, 2017) (Adabre and Chan, 2019a) (Ganiyu, Fapohunda, and Haldenwang, 2016) (Adabre et al., 2020)
F19	Housing-related policies/strategies/ guidelines/plans/ decision-making procedures	(Henderson, Ganah, and John, 2016) (Alrashed and Asif, 2015) (Rehkopf, Rowlands, and Tobert, 2016) (Karji et al., 2019) (Bintoro et al., 2019) (J. Yang and Yang, 2015) (Chohan, Irfan, and Awad, 2015) (Zare Mohazabieh, Ghajarkhosravi, and Fung, 2015) (Aldossary, Rezgui, and Kwan, 2015) (Willems, 2015) (Al-Jebouri et al., 2017) (Sang and Yao, 2019) (Roshanfekr, Tawil, and Goh, 2016) (Kovacic, Reisinger, and Honic, 2018) (Marín et al., 2015) (Asad Poor, Thorpe, and Goh, 2018) (Daly, 2017) (Tupenaite et al., 2017) (Saldaña-Márquez et al., 2018) (Dokic, Gligorijevic, and Damjanovic, 2015) (Tomovska and Radivojevic, 2017) (Verovsek and Juvancic, 2018) (Hagbert and Femenías, 2016) (Han and Yang, 2018) (Dong et al., 2018) (Kapedani, Herssens, and Verbeeck, 2019) (Ali and Alzu'bi, 2017) (Ellsworth-Krebs, Reid, and Hunter, 2015) (Kaoula and Bouchair, 2020) (Nguyen, Bokel, and Dobbelsteen, 2019) (Lorek and Spangenberg, 2019) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019) (Päätalo, 2016) (Pérez-Fargallo et al., 2018) (Cheng, Bae, and Horton, 2019) (Croitoru et al., 2016) (Rodrigues Moreno, de Morais, and de Souza, 2017) (Sharafeddin, Arocho, and Anderson, 2019) (Ahmed and Alipour, 2019) (Rydborg, Lauring, and Brunsgaard, 2019) (Adabre and Chan, 2019a)

	Factors	References
F20	Building's basic services (safe drinking water availability, access to electricity, sewer, sanitation, etc.)	(Aghimien, Aigbavboa, and Ngwari, 2018) (Adabre et al., 2020) (J. Yang and Yang, 2015) (Oyebanji, Liyanage, and Akintoye, 2017) (Adabre and Chan, 2019a) (Zhang, Chen, and Jin, 2015) (A. Olanrewaju and Tan, 2018) (Yildiz, 2015) (Akinyede, Fapohunda, and Haldwang, 2017) (Sang and Yao, 2019) (Ezennia and Hoskara, 2019) (A. L. Olanrewaju et al., 2017) (Schneider-Skalska, 2019) (Saldaña-Márquez et al., 2019) (Wu et al., 2017) (Karatas and El-Rayes, 2015) (Manoochehri, 2015) (Hagbert and Femenías, 2016) (Saldaña-Márquez et al., 2018) (Bazan-Krzywoszańska et al., 2017) (Dokic, Gligorijevic, and Damjanovic, 2015) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (Soyinka and Siu, 2018) (R. Y. M. Li, Cheung, and Shoaib, 2018) (Huang, Mori, and Nomura, 2018) (Kapedani, Herssens, and Verbeeck, 2019) (Mou, He, and Zhou, 2017) (Vega-Azamar et al., 2017) (Lorek and Spangenberg, 2019) (Ali and Alzu'bi, 2017) (Ellsworth-Krebs, Reid, and Hunter, 2015) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Nguyen, Bokel, and Dobbelsteen, 2019) (Verovsek, Juvancic, and Zupancic, 2015) (Abass and Tucker, 2020) (Sánchez-Garrido and Yepes, 2020) (Sharafeddin, Arocho, and Anderson, 2019) (Seo, Chung, and Kwon, 2018) (Rodrigues Moreno, de Morais, and de Souza, 2017) (Rydborg, Lauring, and Brunsgaard, 2019)
F21	Noise level – Acoustic design – Aural comfort	(Mulliner and Maliene, 2015) (Rehkopf, Rowlands, and Tobert, 2016) (Sanhueza-Durán et al., 2019) (Nuuter, Lill, and Tupenaite, 2015) (Adabre et al., 2020) (A. Olanrewaju and Tan, 2018) (Chohan, Irfan, and Awad, 2015) (Sang and Yao, 2019) (Tanganco, Alberto, and Gotangco, 2019) (Ezennia and Hoskara, 2019) (Chan and Adabre, 2019) (A. L. Olanrewaju et al., 2017) (Chan and Adabre, 2019) (Schneider-Skalska, 2019) (Djebbar, Salem, and Mokhtari, 2018) (Manoochehri, 2015) (Hagbert and Femenías, 2016) (Saldaña-Márquez et al., 2018) (Bazan-Krzywoszańska et al., 2017) (Maciejko and Wojtyszyn, 2020) (Dokic, Gligorijevic, and Damjanovic, 2015) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (Soyinka and Siu, 2018) (R. Y. M. Li, Cheung, and Shoaib, 2018) (Han and Yang, 2018) (Arkhangelskaya and Arkhangelskaya, 2020) (Kapedani, Herssens, and Verbeeck, 2019) (Lorek and Spangenberg, 2019) (Ali and Alzu'bi, 2017) (Ellsworth-Krebs, Reid, and Hunter, 2015) (Nguyen, Bokel, and Dobbelsteen, 2019) (Pérez-Fargallo et al., 2018) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019) (Cheng, Bae, and Horton, 2019) (Sánchez-Garrido and Yepes, 2020) (Croitoru et al., 2016) (Ignjatovic, Ignjatovic, and Sudimac, 2018) (Rodrigues Moreno, de Morais, and de Souza, 2017) (Ahmed and Alipour, 2019) (Rydborg, Lauring, and Brunsgaard, 2019)
F22	Building codes/energy standards/technical specifications/ regulations	(Nasrabadi and Hataminejad, 2019) (Karji et al., 2019) (Popova, Glebova, and Karakozova, 2018) (Bintoro et al., 2019) (McHunu and Nkambule, 2019) (Haarhoff, Beattie, and Dupuis, 2016) (Chohan, Irfan, and Awad, 2015) (D. Li et al., 2016) (Tanganco, Alberto, and Gotangco, 2019) (Ezennia and Hoskara, 2019) (Willems, 2015) (Ruiz-Pérez et al., 2019) (Shama and Motlak, 2019) (Seo and Kwon, 2017) (Roshanfekr, Tawil, and Goh, 2016) (Djebbar, Salem, and Mokhtari, 2018) (Mihnovits and Nisos, 2016) (Osman et al., 2016) (Tupenaite et al., 2017) (Manoochehri, 2015) (Mohtat and Zargar, 2018) (Hagbert and Femenías, 2016) (Said et al., 2016) (Al-Jebouri et al., 2017) (Wahi et al., 2018) (Saldaña-Márquez et al., 2018) (Perrucci, Vazquez, and Aktas, 2016) (Bazan-Krzywoszańska et al., 2017) (Dokic, Gligorijevic, and Damjanovic, 2015) (K. Yang and Cho, 2016) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (Soyinka and Siu, 2018) (Verovsek and Juvancic, 2018) (Han and Yang, 2018) (Dong et al., 2018) (Ali and Alzu'bi, 2017) (Yuliastuti, Haryanto, and Haryanti, 2020) (Sánchez-Garrido and Yepes, 2020) (Seo, Chung, and Kwon, 2018) (Ahmed and Alipour, 2019)
F23	Investment/finance measures (subsidies, financial risk/support options, Investment cost, return of investment, payback period, profitability, cost-benefit data, budget adaptability)	(Rid, Lammers, and Zimmermann, 2017) (Karji et al., 2019) (Le, Ta, and Dang, 2016) (Nuuter, Lill, and Tupenaite, 2015) (Ganiyu, Fapohunda, and Haldenwang, 2016) (A. Olanrewaju and Tan, 2018) (Tomsić and Šijanec Zavrl, 2018) (Yildiz, 2015) (Chohan, Irfan, and Awad, 2015) (Sang and Yao, 2019) (Tanganco, Alberto, and Gotangco, 2019) (A. L. Olanrewaju et al., 2017) (Al-Jebouri et al., 2017) (Schneider-Skalska, 2019) (Saldaña-Márquez et al., 2019) (Prochorskaite et al., 2016) (Shama and Motlak, 2019) (Wu et al., 2017) (Castellano, Ribera, and Ciurana, 2016) (Marín et al., 2015) (Djebbar, Salem, and Mokhtari, 2018) (Mihnovits and Nisos, 2016) (Tupenaite et al., 2017) (Manoochehri, 2015) (Saldaña-Márquez et al., 2018) (Tomovska and Radivojevic, 2017) (R. Y. M. Li, Cheung, and Shoaib, 2018) (Feng et al., 2018) (Dong et al., 2018) (Arkhangelskaya and Arkhangelskaya, 2020) (Kapedani, Herssens, and Verbeeck, 2019) (Wittmann, Kopacik, and Leitmannova, 2019) (Zasada et al., 2020) (Ellsworth-Krebs, Reid, and Hunter, 2015) (Cui et al., 2018) (Verovsek, Juvancic, and Zupancic, 2015) (Sánchez-Garrido and Yepes, 2020) (Sharafeddin, Arocho, and Anderson, 2019) (Seo, Chung, and Kwon, 2018)
F24	Pollution (air, water, land)	(Rid, Lammers, and Zimmermann, 2017) (Karji et al., 2019) (Aghimien, Aigbavboa, and Ngwari, 2018) (Adabre et al., 2020) (J. Yang and Yang, 2015) (Oyebanji, Liyanage, and Akintoye, 2017) (Adabre and Chan, 2019a) (Zhang, Chen, and Jin, 2015) (D. Li et al., 2016) (Sang and Yao, 2019) (Tanganco, Alberto, and Gotangco, 2019) (Ezennia and Hoskara, 2019) (Al-Jebouri et al., 2017) (Gan et al., 2017) (Shama and Motlak, 2019) (Castellano, Ribera, and Ciurana, 2016) (Marín et al., 2015) (Tupenaite et al., 2017) (Manoochehri, 2015) (Mohtat and Zargar, 2018) (Saldaña-Márquez et al., 2018) (Dokic, Gligorijevic, and Damjanovic, 2015) (Mou, He, and Zhou, 2017) (Lorek and Spangenberg, 2019) (Ali and Alzu'bi, 2017) (Nguyen, Bokel, and Dobbelsteen, 2019) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019) (Cheng, Bae, and Horton, 2019) (Ignjatovic, Ignjatovic, and Sudimac, 2018) (Henderson, Ganah, and John, 2016) (Chan and Adabre, 2019) (Le, Ta, and Dang, 2016) (Popova, Glebova, and Karakozova, 2018) (Ganiyu, Fapohunda, and Haldenwang, 2016) (Henderson, Ganah, and John, 2016) (Nasrabadi and Hataminejad, 2019) (Rehkopf, Rowlands, and Tobert, 2016)
F25	Climatic/microclimatic conditions (air temperature, humidity, wind speed, solar radiation, heat island effect, etc.)	(Alrashed and Asif, 2015) (Sanhueza-Durán et al., 2019) (Roosli et al., 2015) (Zhang, Chen, and Jin, 2015) (Tomsić and Šijanec Zavrl, 2018) (Yildiz, 2015) (Aldossary, Rezgui, and Kwan, 2015) (Saldaña-Márquez et al., 2019) (Djebbar, Salem, and Mokhtari, 2018) (Mohtat and Zargar, 2018) (Saldaña-Márquez et al., 2018) (Bazan-Krzywoszańska et al., 2017) (Sari, Nuryanti, and Ikaputra, 2019) (Dokic, Gligorijevic, and Damjanovic, 2015) (Tomovska and Radivojevic, 2017) (R. Y. M. Li, Cheung, and Shoaib, 2018) (Han and Yang, 2018) (Kobylarczyk, 2018) (Dong et al., 2018) (Arkhangelskaya and Arkhangelskaya, 2020) (Wittmann, Kopacik, and Leitmannova, 2019) (Ali and Alzu'bi, 2017) (Zasada et al., 2020) (Ellsworth-Krebs, Reid, and Hunter, 2015) (Kaoula and Bouchair, 2020) (Nguyen, Bokel, and Dobbelsteen, 2019) (Vega-Azamar et al., 2017) (Pérez-Fargallo et al., 2018) (Päätalo, 2016) (Sánchez-Garrido and Yepes, 2020) (Croitoru et al., 2016) (Ignjatovic, Ignjatovic, and Sudimac, 2018) (Seo, Chung, and Kwon, 2018) (Rodrigues Moreno, de Morais, and de Souza, 2017) (Rydborg, Lauring, and Brunsgaard, 2019) (Karji et al., 2019) (Adabre and Chan, 2019a)
F26	Land use (Mixed-use building/community, zoning plans, re-using a developed area instead of new developments, land use change, amount of land supplied, etc.)	(Henderson, Ganah, and John, 2016) (Karji et al., 2019) (Nuuter, Lill, and Tupenaite, 2015) (Ganiyu, Fapohunda, and Haldenwang, 2016) (Oyebanji, Liyanage, and Akintoye, 2017) (Tomsić and Šijanec Zavrl, 2018) (Sang and Yao, 2019) (Ezennia and Hoskara, 2019) (A. L. Olanrewaju et al., 2017) (Al-Jebouri et al., 2017) (Schneider-Skalska, 2019) (Prochorskaite et al., 2016) (Shama and Motlak, 2019) (Seo and Kwon, 2017) (Wu et al., 2017) (Roshanfekr, Tawil, and Goh, 2016) (Tsuang and Peng, 2018) (Mihnovits and Nisos, 2016) (Osman et al., 2016) (Tupenaite et al., 2017) (A. Olanrewaju, Yeow, and Lim, 2016) (Saldaña-Márquez et al., 2018) (Dokic, Gligorijevic, and Damjanovic, 2015) (Tomovska and Radivojevic, 2017) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (R. Y. M. Li, Cheung, and Shoaib, 2018) (Feng et al., 2018) (Kobylarczyk, 2018) (Mou, He, and Zhou, 2017) (Wittmann, Kopacik, and Leitmannova, 2019) (Ali and Alzu'bi, 2017) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019) (Sánchez-Garrido and Yepes, 2020) (Sharafeddin, Arocho, and Anderson, 2019) (Ahmed and Alipour, 2019)
F27	Natural light – Solar radiation (availability, intensity, etc.)	(Rid, Lammers, and Zimmermann, 2017) (Karji et al., 2019) (Woo, Kim, and Lee, 2018) (Adabre et al., 2020) (Oyebanji, Liyanage, and Akintoye, 2017) (Adabre and Chan, 2019a) (Tomsić and Šijanec Zavrl, 2018) (Haarhoff, Beattie, and Dupuis, 2016) (Gilderbloom, Riggs, and Meares, 2015) (Yildiz, 2015) (Al-Jebouri et al., 2017) (Schneider-Skalska, 2019) (Prochorskaite et al., 2016) (Gan et al., 2017) (Shama and Motlak, 2019) (Seo and Kwon, 2017) (Wu et al., 2017) (Castellano, Ribera, and Ciurana, 2016) (Osman et al., 2016) (Tupenaite et al., 2017) (Manoochehri, 2015) (Hagbert and Femenías, 2016) (Said et al., 2016) (Saldaña-Márquez et al., 2018) (Dokic, Gligorijevic, and Damjanovic, 2015) (Tomovska and Radivojevic, 2017) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (Soyinka and Siu, 2018) (Mou, He, and Zhou, 2017) (Vega-Azamar et al., 2017) (Lorek and Spangenberg, 2019) (Zasada et al., 2020) (Nguyen, Bokel, and Dobbelsteen, 2019) (Seo, Chung, and Kwon, 2018) (Ahmed and Alipour, 2019)
F28	Built-up density	(Rid, Lammers, and Zimmermann, 2017) (Le, Ta, and Dang, 2016) (Sanhueza-Durán et al., 2019) (Roosli et al., 2015) (Chohan, Irfan, and Awad, 2015) (Tanganco, Alberto, and Gotangco, 2019) (Ezennia and Hoskara, 2019) (Aldossary, Rezgui, and Kwan, 2015) (Willems, 2015) (Al-Jebouri et al., 2017) (Prochorskaite et al., 2016) (Seo and Kwon, 2017) (Castellano, Ribera, and Ciurana, 2016) (Marín et al., 2015) (Djebbar, Salem, and Mokhtari, 2018) (Mihnovits and Nisos, 2016) (Karatas and El-Rayes, 2015) (Saldaña-Márquez et al., 2018) (Maciejko and Wojtyszyn, 2020) (Dokic, Gligorijevic, and Damjanovic, 2015) (Tomovska and Radivojevic, 2017) (R. Y. M. Li, Cheung, and Shoaib, 2018) (Han and Yang, 2018) (Feng et al., 2018) (Dong et al., 2018) (Kapedani, Herssens, and Verbeeck, 2019) (Ali and Alzu'bi, 2017) (Kaoula and Bouchair, 2020) (Nguyen, Bokel, and Dobbelsteen, 2019) (Verovsek, Juvancic, and Zupancic, 2015) (Croitoru et al., 2016) (Sharafeddin, Arocho, and Anderson, 2019) (Rodrigues Moreno, de Morais, and de Souza, 2017) (Ahmed and Alipour, 2019) (Rydborg, Lauring, and Brunsgaard, 2019)

	Factors	References
F29	Building typology (single-family, attached, apartment, etc.)	(Rid, Lammers, and Zimmermann, 2017) (Woo, Kim, and Lee, 2018) (Adabre et al., 2020) (Adabre and Chan, 2019a) (Haarhoff, Beattie, and Dupuis, 2016) (Yildiz, 2015) (A. L. Olanrewaju et al., 2017) (Al-Jebouri et al., 2017) (Schneider-Skalska, 2019) (Saldaña-Márquez et al., 2019) (Prochorskaite et al., 2016) (Shama and Motlak, 2019) (Asad Poor, Thorpe, and Goh, 2018) (Mihnovits and Nisos, 2016) (Daly, 2017) (Osman et al., 2016) (Tupenaite et al., 2017) (Manoochehri, 2015) (Hagbert and Femenías, 2016) (Said et al., 2016) (Saldaña-Márquez et al., 2018) (Bazan-Krzywoszańska et al., 2017) (Dokic, Gligorijevic, and Damjanovic, 2015) (Soyinka and Siu, 2018) (R. Y. M. Li, Cheung, and Shoaib, 2018) (Han and Yang, 2018) (Kobylarczyk, 2018) (Vega-Azamar et al., 2017) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Abass and Tucker, 2020) (Ignjatovic, Ignjatovic, and Sudimac, 2018) (Seo, Chung, and Kwon, 2018) (Ahmed and Alipour, 2019) (Rydborg, Lauring, and Brunsgaard, 2019) (Karji et al., 2019)
F30	Flexibility/adaptability (design, construction, function)	(Alrashed and Asif, 2015) (Woo, Kim, and Lee, 2018) (A. Olanrewaju and Tan, 2018) (Yildiz, 2015) (Tanganco, Alberto, and Gotangco, 2019) (Ezennia and Hoskara, 2019) (A. L. Olanrewaju et al., 2017) (Gan et al., 2017) (Shama and Motlak, 2019) (Seo and Kwon, 2017) (Colistra, 2019) (Roshanfekr, Tawil, and Goh, 2016) (Kovacic, Reisinger, and Honic, 2018) (Asad Poor, Thorpe, and Goh, 2018) (Manoochehri, 2015) (Hagbert and Femenías, 2016) (Said et al., 2016) (Saldaña-Márquez et al., 2018) (Bazan-Krzywoszańska et al., 2017) (Dokic, Gligorijevic, and Damjanovic, 2015) (Tomovska and Radivojevic, 2017) (Soyinka and Siu, 2018) (Kobylarczyk, 2018) (Huang, Mori, and Nomura, 2018) (Vega-Azamar et al., 2017) (Wittmann, Kopacik, and Leitmannova, 2019) (Ellsworth-Krebs, Reid, and Hunter, 2015) (Kaoula and Bouchair, 2020) (Nguyen, Bokel, and Dobbelsteen, 2019) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019) (Cheng, Bae, and Horton, 2019) (Abass and Tucker, 2020) (Ignjatovic, Ignjatovic, and Sudimac, 2018) (Rodrigues Moreno, de Morais, and de Souza, 2017) (Ahmed and Alipour, 2019)
F31	Neighborhood spatial layout (street layout and network, space between blocks, pedestrian paths, open space layout, human scale features, public furniture, disables accessibility, etc.)	(Rid, Lammers, and Zimmermann, 2017) (Le, Ta, and Dang, 2016) (Ganiyu, Fapohunda, and Haldenwang, 2016) (Roosli et al., 2015) (Oyebanji, Liyanage, and Akintoye, 2017) (Adabre and Chan, 2019a) (A. Olanrewaju and Tan, 2018) (Tomšić and Šijanec Zavrl, 2018) (Yildiz, 2015) (Chohan, Irfan, and Awad, 2015) (Akinyede, Fapohunda, and Haldwang, 2017) (Tanganco, Alberto, and Gotangco, 2019) (Willems, 2015) (Al-Jebouri et al., 2017) (Schneider-Skalska, 2019) (Prochorskaite et al., 2016) (Gan et al., 2017) (Seo and Kwon, 2017) (Roshanfekr, Tawil, and Goh, 2016) (Marín et al., 2015) (Asad Poor, Thorpe, and Goh, 2018) (Tupenaite et al., 2017) (Mohtat and Zargar, 2018) (Said et al., 2016) (Maciejko and Wojtyszyn, 2020) (Dokic, Gligorijevic, and Damjanovic, 2015) (K. Yang and Cho, 2016) (Tomovska and Radivojevic, 2017) (Kapedani, Herssens, and Verbeeck, 2019) (Lorek and Spangenberg, 2019) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Sánchez-Garrido and Yepes, 2020) (Sharafeddin, Arocho, and Anderson, 2019) (Rydborg, Lauring, and Brunsgaard, 2019)
F32	Construction method/ techniques/technologies (prefabrication, light/ heavy structure, energy efficient techniques, traditional method, etc.)	(Karji et al., 2019) (Woo, Kim, and Lee, 2018) (Aghimien, Aigbavboa, and Ngwari, 2018) (Tomšić and Šijanec Zavrl, 2018) (Gilderbloom, Riggs, and Meares, 2015) (Chohan, Irfan, and Awad, 2015) (D. Li et al., 2016) (Tanganco, Alberto, and Gotangco, 2019) (Ezennia and Hoskara, 2019) (A. L. Olanrewaju et al., 2017) (Schneider-Skalska, 2019) (Saldaña-Márquez et al., 2019) (Gan et al., 2017) (Shama and Motlak, 2019) (Seo and Kwon, 2017) (Roshanfekr, Tawil, and Goh, 2016) (Wahi et al., 2018) (Tsuang and Peng, 2018) (Daly, 2017) (Osman et al., 2016) (Said et al., 2016) (Arifin, Rasyid, and Osman, 2020) (R. Y. M. Li, Cheung, and Shoaib, 2018) (Verovsek and Juvancic, 2018) (Kobylarczyk, 2018) (Huang, Mori, and Nomura, 2018) (Vega-Azamar et al., 2017) (Wittmann, Kopacik, and Leitmannova, 2019) (Ali and Alzu'bi, 2017) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019) (Verovsek, Juvancic, and Zupancic, 2015) (Abass and Tucker, 2020) (Seo, Chung, and Kwon, 2018) (Ahmed and Alipour, 2019)
F33	Passive/green/ low-energy/ near-zero-energy/plus energy design/principles	(Alrashed and Asif, 2015) (Sanhueza-Durán et al., 2019) (Ganiyu, Fapohunda, and Haldenwang, 2016) (Roosli et al., 2015) (Oyebanji, Liyanage, and Akintoye, 2017) (Zhang, Chen, and Jin, 2015) (Zare Mohazabieh, Ghajarkhosravi, and Fung, 2015) (Chohan, Irfan, and Awad, 2015) (Schneider-Skalska, 2019) (Shama and Motlak, 2019) (Wu et al., 2017) (Kovacic, Reisinger, and Honic, 2018) (Marín et al., 2015) (Djebbar, Salem, and Mokhtari, 2018) (Matthews, Friedland, and Orooji, 2016) (Daly, 2017) (Mohtat and Zargar, 2018) (Perrucci, Vazquez, and Aktas, 2016) (Bazan-Krzywoszańska et al., 2017) (Maciejko and Wojtyszyn, 2020) (Tomovska and Radivojevic, 2017) (Han and Yang, 2018) (Dong et al., 2018) (Arkhangelskaya and Arkhangelskaya, 2020) (Kaoula and Bouchair, 2020) (Nguyen, Bokel, and Dobbelsteen, 2019) (Pérez-Fargallo et al., 2018) (Cui et al., 2018) (Cheng, Bae, and Horton, 2019) (Päätalo, 2016) (Sánchez-Garrido and Yepes, 2020) (Croitoru et al., 2016) (Rodrigues Moreno, de Morais, and de Souza, 2017) (Rydborg, Lauring, and Brunsgaard, 2019)
F34	Lighting systems (indoor lights, street lights, open space lights, etc.)	(Mulliner and Maliene, 2015) (Rid, Lammers, and Zimmermann, 2017) (Adabre et al., 2020) (Rehkopf, Rowlands, and Tobert, 2016) (Zare Mohazabieh, Ghajarkhosravi, and Fung, 2015) (Peruzzini et al., 2016) (A. Olanrewaju and Tan, 2018) (Ezennia and Hoskara, 2019) (Chan and Adabre, 2019) (A. L. Olanrewaju et al., 2017) (Gan et al., 2017) (Wu et al., 2017) (Mihnovits and Nisos, 2016) (Karatas and El-Rayes, 2015) (Tupenaite et al., 2017) (Said et al., 2016) (Bazan-Krzywoszańska et al., 2017) (Maciejko and Wojtyszyn, 2020) (Dokic, Gligorijevic, and Damjanovic, 2015) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (Han and Yang, 2018) (Arkhangelskaya and Arkhangelskaya, 2020) (Kapedani, Herssens, and Verbeeck, 2019) (Vega-Azamar et al., 2017) (Zasada et al., 2020) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Nguyen, Bokel, and Dobbelsteen, 2019) (Cheng, Bae, and Horton, 2019) (Croitoru et al., 2016) (Sharafeddin, Arocho, and Anderson, 2019) (Ignjatovic, Ignjatovic, and Sudimac, 2018) (Adabre and Chan, 2019a) (Popova, Glebova, and Karakozova, 2018)
F35	Housing occupancy rate – Community population	(Rehkopf, Rowlands, and Tobert, 2016) (Le, Ta, and Dang, 2016) (Bintoro et al., 2019) (Peruzzini et al., 2016) (McHunu and Nkambule, 2019) (D. Li et al., 2016) (Ezennia and Hoskara, 2019) (Willems, 2015) (Al-Jebouri et al., 2017) (Schneider-Skalska, 2019) (Castellano, Ribera, and Ciurana, 2016) (Kovacic, Reisinger, and Honic, 2018) (Djebbar, Salem, and Mokhtari, 2018) (Mihnovits and Nisos, 2016) (Karatas and El-Rayes, 2015) (Daly, 2017) (Tupenaite et al., 2017) (Mohtat and Zargar, 2018) (Saldaña-Márquez et al., 2018) (Bazan-Krzywoszańska et al., 2017) (Maciejko and Wojtyszyn, 2020) (K. Yang and Cho, 2016) (Arifin, Rasyid, and Osman, 2020) (Kobylarczyk, 2018) (Lorek and Spangenberg, 2019) (Ellsworth-Krebs, Reid, and Hunter, 2015) (Nguyen, Bokel, and Dobbelsteen, 2019) (Pérez-Fargallo et al., 2018) (Cheng, Bae, and Horton, 2019) (Rodrigues Moreno, de Morais, and de Souza, 2017) (Adabre and Chan, 2019a)
F36	Overall/lifecycle costs of the building	(Mulliner and Maliene, 2015) (Chan and Adabre, 2019) (Aghimien, Aigbavboa, and Ngwari, 2018) (Nuuter, Lill, and Tupenaite, 2015) (McHunu and Nkambule, 2019) (Tomšić and Šijanec Zavrl, 2018) (D. Li et al., 2016) (Akinyede, Fapohunda, and Haldwang, 2017) (Tanganco, Alberto, and Gotangco, 2019) (Chan and Adabre, 2019) (A. L. Olanrewaju et al., 2017) (Gan et al., 2017) (Shama and Motlak, 2019) (Tsuang and Peng, 2018) (Mihnovits and Nisos, 2016) (Karatas and El-Rayes, 2015) (A. Olanrewaju, Yeow, and Lim, 2016) (Saldaña-Márquez et al., 2018) (Dokic, Gligorijevic, and Damjanovic, 2015) (Soyinka and Siu, 2018) (Dong et al., 2018) (Arkhangelskaya and Arkhangelskaya, 2020) (Kapedani, Herssens, and Verbeeck, 2019) (Mou, He, and Zhou, 2017) (Wittmann, Kopacik, and Leitmannova, 2019) (Ali and Alzu'bi, 2017) (Kaoula and Bouchair, 2020) (Cheng, Bae, and Horton, 2019) (Verovsek, Juvancic, and Zupancic, 2015) (Päätalo, 2016) (Sharafeddin, Arocho, and Anderson, 2019)
F37	Operation cost (energy/ water/telephone bills, technology investment price, etc.)	(Mulliner and Maliene, 2015) (Rid, Lammers, and Zimmermann, 2017) (Nuuter, Lill, and Tupenaite, 2015) (Gilderbloom, Riggs, and Meares, 2015) (Yildiz, 2015) (Ezennia and Hoskara, 2019) (A. L. Olanrewaju et al., 2017) (Hostland et al., 2015) (Schneider-Skalska, 2019) (Shama and Motlak, 2019) (Asad Poor, Thorpe, and Goh, 2018) (Osman et al., 2016) (Tupenaite et al., 2017) (Manoochehri, 2015) (Mohtat and Zargar, 2018) (Soyinka and Siu, 2018) (Vega-Azamar et al., 2017) (Wittmann, Kopacik, and Leitmannova, 2019) (Zasada et al., 2020) (Ellsworth-Krebs, Reid, and Hunter, 2015) (Kaoula and Bouchair, 2020) (Nguyen, Bokel, and Dobbelsteen, 2019) (Pérez-Fargallo et al., 2018) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019) (Cheng, Bae, and Horton, 2019) (Abass and Tucker, 2020) (Sharafeddin, Arocho, and Anderson, 2019) (Seo, Chung, and Kwon, 2018) (Ahmed and Alipour, 2019) (Bintoro et al., 2019) (Oyebanji, Liyanage, and Akintoye, 2017)
F38	Aesthetical quality	(Nasrabadi and Hataminejad, 2019) (Karji et al., 2019) (Chan and Adabre, 2019) (Bintoro et al., 2019) (A. Olanrewaju and Tan, 2018) (Chohan, Irfan, and Awad, 2015) (Akinyede, Fapohunda, and Haldwang, 2017) (A. L. Olanrewaju et al., 2017) (Willems, 2015) (Schneider-Skalska, 2019) (Gan et al., 2017) (Shama and Motlak, 2019) (Wu et al., 2017) (Wahi et al., 2018) (Tsuang and Peng, 2018) (Manoochehri, 2015) (Said et al., 2016) (Maciejko and Wojtyszyn, 2020) (Dokic, Gligorijevic, and Damjanovic, 2015) (Han and Yang, 2018) (Feng et al., 2018) (Kapedani, Herssens, and Verbeeck, 2019) (Wittmann, Kopacik, and Leitmannova, 2019) (Ali and Alzu'bi, 2017) (Zasada et al., 2020) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Nguyen, Bokel, and Dobbelsteen, 2019) (Päätalo, 2016) (Abass and Tucker, 2020)
F39	Traffic – Car dependency – Parking area	(Rid, Lammers, and Zimmermann, 2017) (Woo, Kim, and Lee, 2018) (Nuuter, Lill, and Tupenaite, 2015) (Gilderbloom, Riggs, and Meares, 2015) (Yildiz, 2015) (Tanganco, Alberto, and Gotangco, 2019) (Ezennia and Hoskara, 2019) (A. L. Olanrewaju et al., 2017) (Al-Jebouri et al., 2017) (Seo and Kwon, 2017) (Castellano, Ribera, and Ciurana, 2016) (Osman et al., 2016) (Tupenaite et al., 2017) (Hagbert and Femenías, 2016) (Said et al., 2016) (Arifin, Rasyid, and Osman, 2020) (R. Y. M. Li, Cheung, and Shoaib, 2018) (Huang, Mori, and Nomura, 2018) (Kapedani, Herssens, and Verbeeck, 2019) (Mou, He, and Zhou, 2017) (Wittmann, Kopacik, and Leitmannova, 2019) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Verovsek, Juvancic, and Zupancic, 2015) (Abass and Tucker, 2020) (Sharafeddin, Arocho, and Anderson, 2019) (Seo, Chung, and Kwon, 2018) (Ahmed and Alipour, 2019) (Karji et al., 2019)

	Factors	References
F40	Space functionality	(Nasrabadi and Hataminejad, 2019) (Chan and Adabre, 2019) (Roosli et al., 2015) (J. Yang and Yang, 2015) (Zhang, Chen, and Jin, 2015) (A. Olanrewaju and Tan, 2018) (Yildiz, 2015) (Chohan, Irfan, and Awad, 2015) (Akinyede, Fapohunda, and Haldwang, 2017) (Sang and Yao, 2019) (Tanganco, Alberto, and Gotangco, 2019) (Chan and Adabre, 2019) (A. L. Olanrewaju et al., 2017) (Aldossary, Rezgui, and Kwan, 2015) (Schneider-Skalska, 2019) (Asad Poor, Thorpe, and Goh, 2018) (Tupenaite et al., 2017) (A. Olanrewaju, Yeow, and Lim, 2016) (Mohtat and Zargar, 2018) (Hagbert and Femenías, 2016) (Maciejko and Wojtyszyn, 2020) (Feng et al., 2018) (Kapedani, Herssens, and Verbeeck, 2019) (Cui et al., 2018) (Verovsek, Juvancic, and Zupancic, 2015) (Ignjatovic, Ignjatovic, and Sudimac, 2018) (Rydborg, Lauring, and Brunsgaard, 2019)
F41	Participatory actions (design, management, bottom up governance, educational programs, etc.)	(Rid, Lammers, and Zimmermann, 2017) (Rehkopf, Rowlands, and Tobert, 2016) (Aghimien, Aigbavboa, and Ngwari, 2018) (Adabre et al., 2020) (J. Yang and Yang, 2015) (Oyebanji, Liyanage, and Akintoye, 2017) (Adabre and Chan, 2019a) (Yildiz, 2015) (Sang and Yao, 2019) (Schneider-Skalska, 2019) (Prochorskaite et al., 2016) (Gan et al., 2017) (Shama and Motlak, 2019) (Wu et al., 2017) (Tsuang and Peng, 2018) (Manoochehri, 2015) (Mohtat and Zargar, 2018) (Hagbert and Femenías, 2016) (Dokic, Gligorijevic, and Damjanovic, 2015) (Verovsek and Juvancic, 2018) (Kobylarczyk, 2018) (Lorek and Spangenberg, 2019) (Wittmann, Kopacik, and Leitmannova, 2019) (Zasada et al., 2020) (Verovsek, Juvancic, and Zupancic, 2015) (Abass and Tucker, 2020) (Sharafeddin, Arocho, and Anderson, 2019)
F42	Housing/community administration and management (cost/time/risk/maintenance management, etc.), and the types (self-managed, co-managing, etc.)	(Henderson, Ganah, and John, 2016) (Rid, Lammers, and Zimmermann, 2017) (Le, Ta, and Dang, 2016) (Bintoro et al., 2019) (J. Yang and Yang, 2015) (Oyebanji, Liyanage, and Akintoye, 2017) (Yildiz, 2015) (Akinyede, Fapohunda, and Haldwang, 2017) (Sang and Yao, 2019) (Ezennia and Hoskara, 2019) (Al-Jebouri et al., 2017) (Schneider-Skalska, 2019) (Prochorskaite et al., 2016) (Gan et al., 2017) (Shama and Motlak, 2019) (Wu et al., 2017) (Castellano, Ribera, and Ciurana, 2016) (Tsuang and Peng, 2018) (Osman et al., 2016) (Said et al., 2016) (Saldaña-Márquez et al., 2018) (Verovsek and Juvancic, 2018) (Kobylarczyk, 2018) (Wittmann, Kopacik, and Leitmannova, 2019) (Verovsek, Juvancic, and Zupancic, 2015) (Sharafeddin, Arocho, and Anderson, 2019)
F43	Accessible house (easy physical accessibility for pedestrians/cars/elders/disables/etc.)	(Rid, Lammers, and Zimmermann, 2017) (Nasrabadi and Hataminejad, 2019) (Le, Ta, and Dang, 2016) (Woo, Kim, and Lee, 2018) (Nuuter, Lill, and Tupenaite, 2015) (Bintoro et al., 2019) (Adabre et al., 2020) (Oyebanji, Liyanage, and Akintoye, 2017) (Gilderbloom, Riggs, and Meares, 2015) (Akinyede, Fapohunda, and Haldwang, 2017) (Shama and Motlak, 2019) (Castellano, Ribera, and Ciurana, 2016) (Roshanfekr, Tawil, and Goh, 2016) (Mihnovits and Nisos, 2016) (Saldaña-Márquez et al., 2018) (Sari, Nuryanti, and Ikaputra, 2019) (Maciejko and Wojtyszyn, 2020) (Arifin, Rasyid, and Osman, 2020) (Kapedani, Herssens, and Verbeeck, 2019) (Wittmann, Kopacik, and Leitmannova, 2019) (Ellsworth-Krebs, Reid, and Hunter, 2015) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019) (Verovsek, Juvancic, and Zupancic, 2015) (Abass and Tucker, 2020) (Sharafeddin, Arocho, and Anderson, 2019) (Seo, Chung, and Kwon, 2018)
F44	Structural quality and durability	(Nasrabadi and Hataminejad, 2019) (Le, Ta, and Dang, 2016) (Ganiyu, Fapohunda, and Haldenwang, 2016) (McHunu and Nkambule, 2019) (Tomšić and Šijanec Zavrl, 2018) (Chohan, Irfan, and Awad, 2015) (Akinyede, Fapohunda, and Haldwang, 2017) (Tanganco, Alberto, and Gotangco, 2019) (Al-Jebouri et al., 2017) (Ruiz-Pérez et al., 2019) (Saldaña-Márquez et al., 2019) (Gan et al., 2017) (Roshanfekr, Tawil, and Goh, 2016) (Mihnovits and Nisos, 2016) (Osman et al., 2016) (A. Olanrewaju, Yeow, and Lim, 2016) (Mohtat and Zargar, 2018) (Maciejko and Wojtyszyn, 2020) (Tomovska and Radivojevic, 2017) (Soyinka and Siu, 2018) (Feng et al., 2018) (Dong et al., 2018) (Arkhangelskaya and Arkhangelskaya, 2020) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Cui et al., 2018) (Ignjatovic, Ignjatovic, and Sudimac, 2018)
F45	Natural hazards and the related resilience/repair (earthquake, flooding, etc.)	(Rid, Lammers, and Zimmermann, 2017) (Karji et al., 2019) (Bintoro et al., 2019) (Oyebanji, Liyanage, and Akintoye, 2017) (Zhang, Chen, and Jin, 2015) (McHunu and Nkambule, 2019) (Tomšić and Šijanec Zavrl, 2018) (Chohan, Irfan, and Awad, 2015) (Gan et al., 2017) (Shama and Motlak, 2019) (Matthews, Friedland, and Orooji, 2016) (Osman et al., 2016) (Mohtat and Zargar, 2018) (Saldaña-Márquez et al., 2018) (Perrucci, Vazquez, and Aktas, 2016) (Sari, Nuryanti, and Ikaputra, 2019) (Dokic, Gligorijevic, and Damjanovic, 2015) (Soyinka and Siu, 2018) (Han and Yang, 2018) (Feng et al., 2018) (Arkhangelskaya and Arkhangelskaya, 2020) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019) (Verovsek, Juvancic, and Zupancic, 2015) (Seo, Chung, and Kwon, 2018) (Rydborg, Lauring, and Brunsgaard, 2019)
F46	Building orientation	(Alrashed and Asif, 2015) (Nasrabadi and Hataminejad, 2019) (Le, Ta, and Dang, 2016) (Sanhueza-Durán et al., 2019) (Aldossary, Rezgui, and Kwan, 2015) (Willems, 2015) (Shama and Motlak, 2019) (Wahi et al., 2018) (Asad Poor, Thorpe, and Goh, 2018) (Djebbar, Salem, and Mokhtari, 2018) (Manoochehri, 2015) (Mohtat and Zargar, 2018) (Saldaña-Márquez et al., 2018) (Maciejko and Wojtyszyn, 2020) (Han and Yang, 2018) (Huang, Mori, and Nomura, 2018) (Ali and Alzu'bi, 2017) (Nguyen, Bokel, and Dobbelsteen, 2019) (Cheng, Bae, and Horton, 2019) (Verovsek, Juvancic, and Zupancic, 2015) (Päätalo, 2016) (Croitoru et al., 2016) (Rodrigues Moreno, de Morais, and de Souza, 2017) (Ahmed and Alipour, 2019) (Rydborg, Lauring, and Brunsgaard, 2019)
F47	Natural ventilation	(Rid, Lammers, and Zimmermann, 2017) (Nasrabadi and Hataminejad, 2019) (Sanhueza-Durán et al., 2019) (Chohan, Irfan, and Awad, 2015) (Aldossary, Rezgui, and Kwan, 2015) (Willems, 2015) (Seo and Kwon, 2017) (Kovacic, Reisinger, and Honic, 2018) (Marín et al., 2015) (Asad Poor, Thorpe, and Goh, 2018) (Djebbar, Salem, and Mokhtari, 2018) (Karatas and El-Rayes, 2015) (R. Y. M. Li, Cheung, and Shoaib, 2018) (Feng et al., 2018) (Dong et al., 2018) (Kapedani, Herssens, and Verbeeck, 2019) (Ali and Alzu'bi, 2017) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Kaoula and Bouchair, 2020) (Nguyen, Bokel, and Dobbelsteen, 2019) (Pérez-Fargallo et al., 2018) (Cheng, Bae, and Horton, 2019) (Seo, Chung, and Kwon, 2018) (Rodrigues Moreno, de Morais, and de Souza, 2017) (Ahmed and Alipour, 2019)
F48	Walkability/bikeability (auto-free zones, sidewalks, bike routes, etc.)	(Rid, Lammers, and Zimmermann, 2017) (Karji et al., 2019) (Woo, Kim, and Lee, 2018) (Oyebanji, Liyanage, and Akintoye, 2017) (Tomšić and Šijanec Zavrl, 2018) (Haarhoff, Beattie, and Dupuis, 2016) (Gilderbloom, Riggs, and Meares, 2015) (Al-Jebouri et al., 2017) (Schneider-Skalska, 2019) (Saldaña-Márquez et al., 2019) (Shama and Motlak, 2019) (Colistra, 2019) (Castellano, Ribera, and Ciurana, 2016) (Roshanfekr, Tawil, and Goh, 2016) (Wahi et al., 2018) (Hagbert and Femenías, 2016) (Saldaña-Márquez et al., 2018) (Maciejko and Wojtyszyn, 2020) (Arifin, Rasyid, and Osman, 2020) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019) (Verovsek, Juvancic, and Zupancic, 2015) (Abass and Tucker, 2020) (Sharafeddin, Arocho, and Anderson, 2019) (Ahmed and Alipour, 2019)
F49	Access to workplaces (distance/time of travel)	(Mulliner and Maliene, 2015) (Karji et al., 2019) (Le, Ta, and Dang, 2016) (McHunu and Nkambule, 2019) (A. Olanrewaju and Tan, 2018) (Haarhoff, Beattie, and Dupuis, 2016) (Tanganco, Alberto, and Gotangco, 2019) (A. L. Olanrewaju et al., 2017) (Shama and Motlak, 2019) (Seo and Kwon, 2017) (Colistra, 2019) (Wu et al., 2017) (Castellano, Ribera, and Ciurana, 2016) (Daly, 2017) (Tupenaite et al., 2017) (Mohtat and Zargar, 2018) (Said et al., 2016) (Dokic, Gligorijevic, and Damjanovic, 2015) (R. Y. M. Li, Cheung, and Shoaib, 2018) (Vega-Azamar et al., 2017) (Kaoula and Bouchair, 2020) (Abass and Tucker, 2020) (Seo, Chung, and Kwon, 2018)
F50	Local materials	(Chan and Adabre, 2019) (Ganiyu, Fapohunda, and Haldenwang, 2016) (Zhang, Chen, and Jin, 2015) (A. Olanrewaju and Tan, 2018) (D. Li et al., 2016) (Akinyede, Fapohunda, and Haldwang, 2017) (Shama and Motlak, 2019) (Wu et al., 2017) (Roshanfekr, Tawil, and Goh, 2016) (Tupenaite et al., 2017) (A. Olanrewaju, Yeow, and Lim, 2016) (Mohtat and Zargar, 2018) (Perrucci, Vazquez, and Aktas, 2016) (Sang and Yao, 2019) (Dokić, Gligorijevic, and Damjanovic, 2015) (Han and Yang, 2018) (Arkhangelskaya and Arkhangelskaya, 2020) (Mou, He, and Zhou, 2017) (Ali and Alzu'bi, 2017) (Cheng, Bae, and Horton, 2019) (Sánchez-Garrido and Yepes, 2020) (Croitoru et al., 2016) (Ignjatovic, Ignjatovic, and Sudimac, 2018)
F51	Construction cost (material, transport, labor, equipment and installation, etc.)	(Roosli et al., 2015) (Ganiyu, Fapohunda, and Haldenwang, 2016) (A. Olanrewaju and Tan, 2018) (Tomšić and Šijanec Zavrl, 2018) (A. L. Olanrewaju et al., 2017) (Nasrabadi and Hataminejad, 2019) (Willems, 2015) (Al-Jebouri et al., 2017) (Schneider-Skalska, 2019) (Saldaña-Márquez et al., 2019) (Gan et al., 2017) (Shama and Motlak, 2019) (Roshanfekr, Tawil, and Goh, 2016) (Daly, 2017) (Tupenaite et al., 2017) (Mohtat and Zargar, 2018) (Sari, Nuryanti, and Ikaputra, 2019) (Tomovska and Radivojevic, 2017) (Soyinka and Siu, 2018) (Dong et al., 2018) (Ali and Alzu'bi, 2017) (Pérez-Fargallo et al., 2018)
F52	Household/project team overall satisfaction rate	(Chan and Adabre, 2019) (Peruzzini et al., 2016) (Haarhoff, Beattie, and Dupuis, 2016) (Boeckermann, Kaczynski, and King, 2019) (Sang and Yao, 2019) (Tanganco, Alberto, and Gotangco, 2019) (Chan and Adabre, 2019) (A. L. Olanrewaju et al., 2017) (Schneider-Skalska, 2019) (Seo and Kwon, 2017) (Wu et al., 2017) (A. Olanrewaju, Yeow, and Lim, 2016) (Manoochehri, 2015) (Saldaña-Márquez et al., 2018) (Dokic, Gligorijevic, and Damjanovic, 2015) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (Feng et al., 2018) (Lorek and Spangenberg, 2019) (Wittmann, Kopacik, and Leitmannova, 2019) (Ellsworth-Krebs, Reid, and Hunter, 2015) (Abass and Tucker, 2020)
F53	Employment/business activity rate/opportunities in the area	(Karji et al., 2019) (Nuuter, Lill, and Tupenaite, 2015) (Oyebanji, Liyanage, and Akintoye, 2017) (Yildiz, 2015) (Tanganco, Alberto, and Gotangco, 2019) (Ezennia and Hoskara, 2019) (A. L. Olanrewaju et al., 2017) (Gan et al., 2017) (Wu et al., 2017) (Wahi et al., 2018) (Tsuang and Peng, 2018) (Tupenaite et al., 2017) (A. Olanrewaju, Yeow, and Lim, 2016) (Manoochehri, 2015) (Mohtat and Zargar, 2018) (Dokic, Gligorijevic, and Damjanovic, 2015) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (R. Y. M. Li, Cheung, and Shoaib, 2018) (Wittmann, Kopacik, and Leitmannova, 2019) (Zasada et al., 2020) (Sharafeddin, Arocho, and Anderson, 2019)

	Factors	References
F54	Compatibility with household/community cultural values or heritage	(Roosli et al., 2015) (McHunu and Nkambule, 2019) (Tanganco, Alberto, and Gotangco, 2019) (Schneider-Skalska, 2019) (Prochorskaite et al., 2016) (Shama and Motlak, 2019) (Mohtat and Zargar, 2018) (Sari, Nuryanti, and Ikaputra, 2019) (Dokic, Gligorijevic, and Damjanovic, 2015) (Mou, He, and Zhou, 2017) (Oyebanji, Liyanage, and Akintoye, 2017) (Wu et al., 2017) (Roshanfekr, Tawil, and Goh, 2016) (Kobylarczyk, 2018) (Zasada et al., 2020) (Sharafeddin, Arocho, and Anderson, 2019) (Seo, Chung, and Kwon, 2018) (Rydborg, Lauring, and Brunsgaard, 2019) (Bintoro et al., 2019) (Chan and Adabre, 2019)
F55	Shading options – Rain protection	(Rid, Lammers, and Zimmermann, 2017) (Woo, Kim, and Lee, 2018) (Roosli et al., 2015) (Aldossary, Rezgui, and Kwan, 2015) (Seo and Kwon, 2017) (Marín et al., 2015) (Wahi et al., 2018) (Asad Poor, Thorpe, and Goh, 2018) (Tsuang and Peng, 2018) (Djebbar, Salem, and Mokhtari, 2018) (Han and Yang, 2018) (Ali and Alzu'bi, 2017) (Nguyen, Bokel, and Dobbelsteen, 2019) (Cheng, Bae, and Horton, 2019) (Verovsek, Juvancic, and Zupancic, 2015) (Croitoru et al., 2016) (Sharafeddin, Arocho, and Anderson, 2019) (Ahmed and Alipour, 2019) (Rydborg, Lauring, and Brunsgaard, 2019)
F56	Building's/neighborhood's identity/reputation/popularity	(Rid, Lammers, and Zimmermann, 2017) (Karji et al., 2019) (J. Yang and Yang, 2015) (Yildiz, 2015) (Schneider-Skalska, 2019) (Shama and Motlak, 2019) (Wu et al., 2017) (Marín et al., 2015) (Wahi et al., 2018) (Tsuang and Peng, 2018) (Tupenaite et al., 2017) (Manoochehri, 2015) (Sari, Nuryanti, and Ikaputra, 2019) (Verovsek and Juvancic, 2018) (Feng et al., 2018) (Ali and Alzu'bi, 2017) (Ellsworth-Krebs, Reid, and Hunter, 2015) (Verovsek, Juvancic, and Zupancic, 2015) (Oyebanji, Liyanage, and Akintoye, 2017)
F57	Private/semi-public outdoor space (courtyard, garden, greenhouse, green roof, etc.)	(Rid, Lammers, and Zimmermann, 2017) (Nasrabadi and Hataminejad, 2019) (Rehkopf, Rowlands, and Tobert, 2016) (Yildiz, 2015) (Prochorskaite et al., 2016) (Castellano, Ribera, and Ciurana, 2016) (Wahi et al., 2018) (Asad Poor, Thorpe, and Goh, 2018) (Manoochehri, 2015) (Maciejko and Wojtyszyn, 2020) (R. Y. M. Li, Cheung, and Shoaib, 2018) (Wittmann, Kopacik, and Leitmannova, 2019) (Ali and Alzu'bi, 2017) (Zasada et al., 2020) (Nguyen, Bokel, and Dobbelsteen, 2019) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019) (Cui et al., 2018) (Ahmed and Alipour, 2019)
F58	Privacy	(Nuuter, Lill, and Tupenaite, 2015) (Yildiz, 2015) (Tanganco, Alberto, and Gotangco, 2019) (Wu et al., 2017) (Tupenaite et al., 2017) (Manoochehri, 2015) (Mohtat and Zargar, 2018) (Saldaña-Márquez et al., 2018) (Sari, Nuryanti, and Ikaputra, 2019) (Maciejko and Wojtyszyn, 2020) (Feng et al., 2018) (Huang, Mori, and Nomura, 2018) (Wittmann, Kopacik, and Leitmannova, 2019) (Ali and Alzu'bi, 2017) (Ellsworth-Krebs, Reid, and Hunter, 2015) (Sharafeddin, Arocho, and Anderson, 2019)
F59	Presence/preservation of cultural heritage/natural resource (ponds, preserved greenery, topographical contours, etc.)	(Karji et al., 2019) (Yu et al., 2017) (Schneider-Skalska, 2019) (Gan et al., 2017) (Wu et al., 2017) (Wahi et al., 2018) (Asad Poor, Thorpe, and Goh, 2018) (Tupenaite et al., 2017) (Mohtat and Zargar, 2018) (Tomovska and Radivojevic, 2017) (Wittmann, Kopacik, and Leitmannova, 2019) (Verovsek, Juvancic, and Zupancic, 2015) (Seo, Chung, and Kwon, 2018) (Roosli et al., 2015) (J. Yang and Yang, 2015)
F60	Pleasant view/scenery	(Zare Mohazabieh, Ghajarkhosravi, and Fung, 2015) (Tanganco, Alberto, and Gotangco, 2019) (Ruiz-Pérez et al., 2019) (Djebbar, Salem, and Mokhtari, 2018) (Dokić, Gligorijević, and Damjanović, 2015) (Han and Yang, 2018) (Arkhangelskaya and Arkhangelskaya, 2020) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Cheng, Bae, and Horton, 2019) (Ignjatovic, Ignjatovic, and Sudimac, 2018) (Manoochehri, 2015) (Hagbert and Femenías, 2016) (Kaoula and Bouchair, 2020) (Nguyen, Bokel, and Dobbelsteen, 2019) (Rydborg, Lauring, and Brunsgaard, 2019)
F61	Maintenance cost	(Roosli et al., 2015) (A. Olanrewaju and Tan, 2018) (Tanganco, Alberto, and Gotangco, 2019) (A. L. Olanrewaju et al., 2017) (Schneider-Skalska, 2019) (Prochorskaite et al., 2016) (Castellano, Ribera, and Ciurana, 2016) (Said et al., 2016) (Tomovska and Radivojevic, 2017) (R. Y. M. Li, Cheung, and Shoaib, 2018) (Kobylarczyk, 2018) (Kapedani, Herssens, and Verbeeck, 2019) (Wittmann, Kopacik, and Leitmannova, 2019) (Seo, Chung, and Kwon, 2018)
F62	Renovation/repair/reconstruction cost (material, transportation, etc.)	(Nuuter, Lill, and Tupenaite, 2015) (Oyebanji, Liyanage, and Akintoye, 2017) (A. Olanrewaju and Tan, 2018) (Tanganco, Alberto, and Gotangco, 2019) (A. L. Olanrewaju et al., 2017) (Gan et al., 2017) (Roshanfekr, Tawil, and Goh, 2016) (Karatas and El-Rayes, 2015) (Mohtat and Zargar, 2018) (Dokić, Gligorijević, and Damjanović, 2015) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (Arkhangelskaya and Arkhangelskaya, 2020) (Sánchez-Garrido and Yepes, 2020) (Manoochehri, 2015)
F63	Greening the building (plants, green wall/roof, garden, etc.) and types of greening/plants	(Nasrabadi and Hataminejad, 2019) (Aldossary, Rezgui, and Kwan, 2015) (Wahi et al., 2018) (Hagbert and Femenías, 2016) (Maciejko and Wojtyszyn, 2020) (R. Y. M. Li, Cheung, and Shoaib, 2018) (Huang, Mori, and Nomura, 2018) (Zasada et al., 2020) (Cui et al., 2018) (Rehkopf, Rowlands, and Tobert, 2016) (Ahmed and Alipour, 2019) (Karji et al., 2019) (Adabre and Chan, 2019a) (Adabre et al., 2020)
F64	Light pollution/quality – Visual comfort	(Tomšić and Šijanec Zavrl, 2018) (Al-Jebouri et al., 2017) (Shama and Motlak, 2019) (Wu et al., 2017) (Marín et al., 2015) (Karatas and El-Rayes, 2015) (Tupenaite et al., 2017) (Saldaña-Márquez et al., 2018) (Tomovska and Radivojevic, 2017) (Feng et al., 2018) (Kapedani, Herssens, and Verbeeck, 2019) (Nguyen, Bokel, and Dobbelsteen, 2019) (Karji et al., 2019)
F65	Innovation (design, management, technologies, etc.)	(Woo, Kim, and Lee, 2018) (Sang and Yao, 2019) (Al-Jebouri et al., 2017) (Saldaña-Márquez et al., 2019) (Shama and Motlak, 2019) (Wahi et al., 2018) (Tupenaite et al., 2017) (Hagbert and Femenías, 2016) (Saldaña-Márquez et al., 2018) (Perrucci, Vazquez, and Aktas, 2016) (Ellsworth-Krebs, Reid, and Hunter, 2015) (Karji et al., 2019) (Marín et al., 2015)
F66	Socio-cultural mixing of the community	(Bintoro et al., 2019) (Adabre et al., 2020) (Oyebanji, Liyanage, and Akintoye, 2017) (Ezennia and Hoskara, 2019) (Gan et al., 2017) (Shama and Motlak, 2019) (Wu et al., 2017) (Manoochehri, 2015) (Hagbert and Femenías, 2016) (Dokic, Gligorijevic, and Damjanovic, 2015) (Huang, Mori, and Nomura, 2018) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Abass and Tucker, 2020)
F67	Fire prevention/emergency measures	(Rid, Lammers, and Zimmermann, 2017) (Le, Ta, and Dang, 2016) (Bintoro et al., 2019) (Zhang, Chen, and Jin, 2015) (Tomšić and Šijanec Zavrl, 2018) (Tanganco, Alberto, and Gotangco, 2019) (Wu et al., 2017) (Djebbar, Salem, and Mokhtari, 2018) (Han and Yang, 2018) (Feng et al., 2018) (Arkhangelskaya and Arkhangelskaya, 2020) (Mou, He, and Zhou, 2017) (Sánchez-Garrido and Yepes, 2020)
F68	Building age – Year of construction	(Sanhueza-Durán et al., 2019) (Popova, Glebova, and Karakozova, 2018) (Bintoro et al., 2019) (Yildiz, 2015) (Said et al., 2016) (Bazan-Krzywoszańska et al., 2017) (Huang, Mori, and Nomura, 2018) (Nguyen, Bokel, and Dobbelsteen, 2019) (Pérez-Fargallo et al., 2018) (Cui et al., 2018) (Ignjatovic, Ignjatovic, and Sudimac, 2018) (Seo, Chung, and Kwon, 2018)
F69	Cost/value of land – Land use rights	(Mulliner and Maliene, 2015) (Gilderbloom, Riggs, and Meares, 2015) (Adabre et al., 2020) (Tanganco, Alberto, and Gotangco, 2019) (Ezennia and Hoskara, 2019) (Chan and Adabre, 2019) (A. L. Olanrewaju et al., 2017) (Gan et al., 2017) (Roshanfekr, Tawil, and Goh, 2016) (Mohtat and Zargar, 2018) (Cui et al., 2018) (Abass and Tucker, 2020)
F70	Household transport costs	(Aghimien, Aigbavboa, and Ngwari, 2018) (Adabre et al., 2020) (Adabre and Chan, 2019a) (Yildiz, 2015) (D. Li et al., 2016) (Seo and Kwon, 2017) (Tupenaite et al., 2017) (Dokic, Gligorijević, and Damjanovic, 2015) (Mou, He, and Zhou, 2017) (Ali and Alzu'bi, 2017) (Seo, Chung, and Kwon, 2018)
F71	Type of tenure (private ownership, shared/private rent, etc.)	(Mulliner and Maliene, 2015) (Rid, Lammers, and Zimmermann, 2017) (Nuuter, Lill, and Tupenaite, 2015) (Tomšić and Šijanec Zavrl, 2018) (Gan et al., 2017) (Tupenaite et al., 2017) (Hagbert and Femenías, 2016) (Dokic, Gligorijević, and Damjanovic, 2015) (Mou, He, and Zhou, 2017) (Wittmann, Kopacik, and Leitmannova, 2019) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019)
F72	Property value retention – Balanced housing market – Market trends	(Nuuter, Lill, and Tupenaite, 2015) (Tanganco, Alberto, and Gotangco, 2019) (Ezennia and Hoskara, 2019) (Seo and Kwon, 2017) (Manoochehri, 2015) (Hagbert and Femenías, 2016) (Soyinka and Siu, 2018) (Dong et al., 2018) (Lorek and Spangenberg, 2019) (Ellsworth-Krebs, Reid, and Hunter, 2015) (Nguyen, Bokel, and Dobbelsteen, 2019)
F73	Life expectancy of housing – Long lasting house	(Nasrabadi and Hataminejad, 2019) (Roshanfekr, Tawil, and Goh, 2016) (Djebbar, Salem, and Mokhtari, 2018) (Osman et al., 2016) (A. Olanrewaju, Yeow, and Lim, 2016) (Hagbert and Femenías, 2016) (Perrucci, Vazquez, and Aktas, 2016) (Tomovska and Radivojevic, 2017) (A. Olanrewaju, Tan, and Abdul-Aziz, 2018) (Sharafeddin, Arocho, and Anderson, 2019)
F74	Biodiversity/wildlife in the area	(Oyebanji, Liyanage, and Akintoye, 2017) (Tomšić and Šijanec Zavrl, 2018) (Al-Jebouri et al., 2017) (Schneider-Skalska, 2019) (Gan et al., 2017) (Lorek and Spangenberg, 2019) (Wittmann, Kopacik, and Leitmannova, 2019) (Zasada et al., 2020) (Karji et al., 2019)

	Factors	References
F75	Cater for senior citizens/ disables	(A. Olanrewaju and Tan, 2018) (Peruzzini et al., 2016) (A. L. Olanrewaju et al., 2017) (Mihnovits and Nisos, 2016) (Dokic, Gligorijevic, and Damjanovic, 2015) (Tomovska and Radivojević, 2017) (Feng et al., 2018) (Kapedani, Herssens, and Verbeeck, 2019) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019)
F76	Ease of movement inside the building (elevators, stairs, furniture and decoration placement, etc.)	(Le, Ta, and Dang, 2016) (Chohan, Irfan, and Awad, 2015) (Tanganco, Alberto, and Gotangco, 2019) (Ezennia and Hoskara, 2019) (A. L. Olanrewaju et al., 2017) (Ruiz-Pérez et al., 2019) (Djebbar, Salem, and Mokhtari, 2018) (Feng et al., 2018) (Kapedani, Herssens, and Verbeeck, 2019)
F77	Construction time/speed	(Chan and Adabre, 2019) (Ganiyu, Fapohunda, and Haldenwang, 2016) (Akinyede, Fapohunda, and Haldwang, 2017) (Marín et al., 2015) (Perrucci, Vazquez, and Aktas, 2016) (Dong et al., 2018) (Arkhangelskaya and Arkhangelskaya, 2020) (Sánchez-Garrido and Yepes, 2020) (Rydborg, Lauring, and Brunsgaard, 2019)
F78	Smart home/community (smart technologies/ equipment: energy management systems, smart communication, intelligent controlling of home performance, smart toilets, etc.)	(Peruzzini et al., 2016) (Colistra, 2019) (Castellano, Ribera, and Ciurana, 2016) (Tsuang and Peng, 2018) (Hagbert and Femenías, 2016) (K. Yang and Cho, 2016) (Verovsek and Juvancic, 2018) (Verovsek, Juvancic, and Zupancic, 2015)
F79	Sense of belonging	(Adabre et al., 2020) (Yildiz, 2015) (Gan et al., 2017) (Shama and Motlak, 2019) (Wu et al., 2017) (Tsuang and Peng, 2018) (Abass and Tucker, 2020) (Oyebanji, Liyanage, and Akintoye, 2017)
F80	Odors – Olfactory comfort	(Rid, Lammers, and Zimmermann, 2017) (Karji et al., 2019) (Bintoro et al., 2019) (Saldaña-Márquez et al., 2018) (Feng et al., 2018) (Wittmann, Kopacik, and Leitmannova, 2019) (Kaoula and Bouchair, 2020)
F81	Access to the city center/urban space (distance/time of travel)	(Seo and Kwon, 2017) (Tupenaite et al., 2017) (Dokić, Gligorijević, and Damjanovic, 2015) (Huang, Mori, and Nomura, 2018) (Vega-Azamar et al., 2017) (Abass and Tucker, 2020) (Seo, Chung, and Kwon, 2018)
F82	Skilled/local labor and/ or manager	(Karji et al., 2019) (Adabre et al., 2020) (A. Olanrewaju and Tan, 2018) (Chohan, Irfan, and Awad, 2015) (Sang and Yao, 2019) (A. L. Olanrewaju et al., 2017) (Lorek and Spangenberg, 2019)
F83	Security of tenure	(McHunu and Nkambule, 2019) (Tanganco, Alberto, and Gotangco, 2019) (Gan et al., 2017) (Mihnovits and Nisos, 2016) (Osman et al., 2016) (Dokić, Gligorijević, and Damjanovic, 2015) (Soyinka and Siu, 2018)
F84	Standards of living	(Alrashed and Asif, 2015) (Ezennia and Hoskara, 2019) (Roshanfekr, Tawil, and Goh, 2016) (Hagbert and Femenías, 2016) (Abuzeinab, Oltean-Dumbrava, and Dickens, 2016) (Lorek and Spangenberg, 2019)
F85	Administration/ government/ management/design cost	(Rid, Lammers, and Zimmermann, 2017) (Nuuter, Lill, and Tupenaite, 2015) (D. Li et al., 2016) (Chan and Adabre, 2019) (Roshanfekr, Tawil, and Goh, 2016) (Arkhangelskaya and Arkhangelskaya, 2020)
F86	Ease of maintenance/ cleaning (space, equipment)	(J. Yang and Yang, 2015) (Tomšić and Šijanec Zavrl, 2018) (Chohan, Irfan, and Awad, 2015) (Akinyede, Fapohunda, and Haldwang, 2017) (Tanganco, Alberto, and Gotangco, 2019) (Kapedani, Herssens, and Verbeeck, 2019)
F87	Level of physical deterioration	(Popova, Glebova, and Karakozova, 2018) (Ruiz-Pérez et al., 2019) (Shama and Motlak, 2019) (Castellano, Ribera, and Ciurana, 2016) (Manoochehri, 2015)
F88	Green/electric car usage – Carpooling	(Castellano, Ribera, and Ciurana, 2016) (Tsuang and Peng, 2018) (Daly, 2017) (Hagbert and Femenías, 2016)
F89	Community acceptance/ opposition with the project	(Adabre et al., 2020) (Gan et al., 2017) (Shama and Motlak, 2019) (Said et al., 2016)
F90	Economic mixing of the community	(Karji et al., 2019) (Oyebanji, Liyanage, and Akintoye, 2017) (Dokić, Gligorijević, and Damjanovic, 2015) (Seo, Chung, and Kwon, 2018)
F91	Demographic/ethnic mixing of the community	(Karji et al., 2019) (Dokic, Gligorijevic, and Damjanović, 2015) (Wittmann, Kopacik, and Leitmannova, 2019) (Sharafeddin, Arocho, and Anderson, 2019)
F92	Diversity of building typology and/or spatial/ aesthetic forms in the area	(Schneider-Skalska, 2019) (Hagbert and Femenías, 2016) (Dokić, Gligorijević, and Damjanović, 2015)
F93	Openness/closeness of the community (open/ semi-open/gated neighborhoods)	(Woo, Kim, and Lee, 2018) (Huang, Mori, and Nomura, 2018) (Wittmann, Kopacik, and Leitmannova, 2019)
F94	Community agriculture/ gardening	(Wahi et al., 2018) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019) (Zasada et al., 2020)
F95	Mixed tenure community	(Manoochehri, 2015) (Hagbert and Femenías, 2016) (Dokić, Gligorijević, and Damjanović, 2015)
F96	Access to internet (speed, capacity)	(Saldaña-Márquez et al., 2019) (Colistra, 2019) (Mihnovits and Nisos, 2016)
F97	Access to telecommunication service	(Karji et al., 2019) (Tanganco, Alberto, and Gotangco, 2019) (Ahmed and Alipour, 2019)
F98	Access to television/ cable system	(D. Li et al., 2016) (Tanganco, Alberto, and Gotangco, 2019) (K. Yang and Cho, 2016)
	Other	(Manoochehri, 2015) (Suttiwongpan, Tochaiwat, and Naksuksakul, 2019) (Mulliner and Maliene, 2015) (Ezennia and Hoskara, 2019) (Rid, Lammers, and Zimmermann, 2017) (Wittmann, Kopacik, and Leitmannova, 2019) (Dokic, Gligorijevic, and Damjanovic, 2015) (Arkhangelskaya and Arkhangelskaya, 2020) (Aghimien, Aigbavboa, and Ngwari, 2018) (Soyinka and Siu, 2018) (Tupenaite et al., 2017) (J. Yang and Yang, 2015) (Osman et al., 2016) (Mihnovits and Nisos, 2016) (Karatas and El-Rayes, 2015) (Sánchez-Garrido and Yepes, 2020) (Tomšić and Šijanec Zavrl, 2018) (Hagbert and Femenías, 2016) (Ruiz-Pérez et al., 2019) (Lorek and Spangenberg, 2019) (Sang and Yao, 2019) (Adabre and Chan, 2019b; Chan and Adabre, 2019)

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Fig. 1-2 Sanei, Khodadad and Calonge Reillo, 2022

Author's biography

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Acknowledgments

This research is done as a requirement of the author's doctoral studies which is funded by the National Council of Science and Technology of Mexico (CONACYT).