©IDOSR PUBLICATIONS ISSN: 2550-7966

International Digital Organization for Scientific Research IDOSRJHSS111000

IDOSR JOURNAL OF HUMANITIES AND SOCIAL SCIENCES 11(1): 77-81, 2026.
https://doi.org/10.59298/IDOSRJHSS/2026/1117781

Soundscapes and Acoustic Ecology in Urban Planning and Public Art

Kato Bukenya T.

Faculty of Business and Management Kampala International University Uganda

ABSTRACT

Soundscapes and acoustic ecology have emerged as critical dimensions in contemporary urban planning and public art, reframing sound from a by-product of urbanisation into a valuable resource that shapes spatial experience, identity, and wellbeing. This study examines the theoretical foundations of acoustic ecology, emphasizing the transition from noise control toward a holistic understanding of soundscapes as socio-cultural, ecological, and aesthetic systems. It synthesizes methodologies for assessing urban sound environments, including quantitative acoustic measurements and qualitative participatory approaches, highlighting their relevance in evidence-based planning. The paper further explores the role of sound design in public art and sonic placemaking, demonstrating how interdisciplinary collaborations can enrich urban environments, foster social cohesion, and enhance sensory engagement. Through selected case studies, the analysis reveals how sound-integrated interventions improve urban identity, encourage community participation, and address issues of alienation and placelessness. Policy and governance frameworks are also examined, with attention to participatory models, technological tools, and evolving regulatory standards that support inclusive soundscape management. The study identifies key challenges, including balancing noise reduction with experiential richness, managing stakeholder conflicts, and ensuring long-term sustainability of sound-based interventions. Ultimately, it argues for the integration of acoustic considerations into urban planning processes as a means to promote healthier, more inclusive, and culturally resonant cities, while outlining future directions for interdisciplinary research and practice.

Keywords: Acoustic Ecology , Urban Soundscapes , Sonic Placemaking, Public Art and Sound Design and Urban Planning and Wellbeing

INTRODUCTION

Urban settlements are characterised by simultaneous, overlapping processes that emulate dense web structures in nature [1]. Rapid urbanisation combined with globalisation transforms the structure and texture of urban settlements with profound consequences for cities and public art [1]. Understanding the formation and evolution of cities requires an examination of diverse spatial, social, and territorial practices, and their associated phenomena through the lens of contemporary theories and practices of webs, topologies, tectonics, and other expressions [2].

Foundations of Acoustic Ecology

From a focus on the functional and scientific aspects of sonic environments, and on the notion of soundscape design, the shift toward a more programmatic and artistic view within the planning and design disciplines has coincided with the recognition of sonic environment as a resource intensified interest in acoustic design per se, in the artistic usage of sound, and in placemaking [1]. Thus, soundscape analysis and soundscape design are emerging as two complementary branches of acoustic ecology and macroecolology already widely applied in general ecology [2]. The study of sound environments within urban design and planning calls for broadening the urban-design knowledge base to include auditory perception and the organization of sound materials in the sound environment [3]. Because learning the sound attributes and configuring sonic resources of an urban soundscape are fundamental requirements for the design of urban acoustic environments, this theme is introduced by presenting basic concepts of auditory perception relevant to urban planning and design [4]. The mechanics of sound perception, including the classification of sounds and the governing psychoacoustics, are examined. A

typology of sounds related to anthropogenic activities and conditioning features of sound propagation in urban settings delineate the design domain. Finally, a model of the urban-aural crisis is proposed to trigger the pursuit of sonic design from a resource-oriented perspective [2, 3].

Soundscapes as Urban Resources

Recognizing sound as an urban resource is an important step toward enhancing the quality of life in cities and towns [2]. Different categories of urban sound, including cultural, ecological, and economic characteristics, have special features that can support the objectives of place-making while improving a community's urban identity. Successful urban development and revitalization depend on a clear understanding of both cultural and non-cultural aspects of sound [3]. A wealth of literature on sound ecology offers detailed descriptions of the ecosystem services associated with sound. Excessive sound pressure levels and annoying sounds can sterilize the soundscape of a community and trigger health problems in individuals, but the absence of sound is equally undesirable[4]. By contrast, desired sounds can improve social bonding, promote mental health, stimulate the economy, and reinforce a community's identity [4]. These positive features contribute to the consideration of sound as an additional resource and the addition of sound to the list of requested urban components along with visual, tactile, olfactory, and taste inputs. Policies, technologies, and frameworks for the incorporation of sound into urban development as an urban resource may therefore be relevant [4]. Frameworks for incorporating sound into urban branding and the design of the public realm have already been proposed in academic and professional planning literature 1. Considerations range from sound aware outdoor advertisement to the incorporation of sound into the design criteria of open spaces such as squares, parks, and pedestrian walkways. As a result, the branding of the public realm can benefit from an additional layer of identity based on sound characteristics, providing an opportunity for broader listening experiences [3].

Methodologies for Assessing Urban Sound Environments

Soundscape studies demand an evidence-based, formal synthesis of concepts, theories, and practices; present clearly with objective analysis and precise terminology [5]. Measurement, analysis, and participatory approaches provide rigorous, reproducible means to assess urban sound environments. Acoustic characterization quantifies sound features; qualitative techniques capture semantic and experiential dimensions. These frameworks support understanding of sound alongside spatial, social, and temporal contexts [6]. Acoustic measurement protocols, indicators, and data collection methods such as portable devices and telephone apps enable urban sound characterization [7]. Observations can quantify levels and events, monitor variation spatially or temporally, assess exposure, and relate to socio-demographic factors such as sex or age. In combination with sound exposure measurements, observations assess attitudes and behaviours that influence soundscape perception [7]. Qualitative methodologies such as participatory mapping and co-design can complement measurement, drawing on stakeholder and community knowledge. Experiences, values, priorities, and sensitivities guiding soundscape perception can shape interventions and set design objectives, filters, or selection criteria. Formal co-design allows citizens to contribute actively to project outcomes while sharing ideas, knowledge, and preferences [4].

Sound Design in Public Art

Sound design in public art evaluates and creates urban soundscapes by facilitating cross-modal synergies between visual and sonic art forms, and promoting collaborative processes among different urban stakeholders. Objectives include enriching urban contexts, fostering a sense of belonging, and revealing overlooked qualities of the sonic environment [3]. Methods focus on the development of acoustic design artefacts (recordings, videos, and installations) and hybrid approaches to urban soundscape planning that are compatible with existing practices. The notion of sonic placemaking highlights art's role in enhancing daily interactions with the soundscape and stimulating pro-social behaviour, while ambient sound anthropology investigates the long-term effects of an auditory-led artistic process on perceptions of the sonic environment and of the city [4]. Successful cases combine sound art with the design of the public realm, urban furniture, and public infrastructure (e.g., lighting, water, vegetation), and incorporate participatory design and co-design. Outdoor installations, installations designed specifically for urban parks, and multi-sensory events attract larger audiences and provoke different kinds of interactions than a mainstream indoor art show [5], thereby extending the reach and relevance of the work and capitalising on the opportunities provided by environmental challenges. Eligible projects should link sound-related objectives with wider objectives regarding urban space, mobility, or the public realm, while maintaining both flexibility and a certain form of sound design. Participation of sound-art practitioners extends the scope of the initiative beyond planning objectives and increases the likelihood of ongoing collaboration within the city [6]. Risks include overspecification of design parameters, which may alienate experts or practitioners; detachment from emerging technologies or evolving concepts in these domains; and restricting interdisciplinary collaborations to specific sectors or to the organisation of individual events. Adherence to cycles across problem definition, diagnosis, and prospective or existing solutions, ensures that contributions remain pertinent to ongoing developments [7]. Similarly, acquiring an in-depth understanding of the overall soundscape is essential to avoid excessive generality or redundancy with prior assignments. Ongoing projects addressing aspects such as sound-

induced ecosystem services, acoustic quality, aurality, and materials have fed into the initiative prior to its formal launch in early 2020 [1].

Integrating Acoustic Considerations into Urban Planning

Integrating acoustic considerations into urban planning involves soundscape evaluation, design, and management practices [1]. Formally, urban sound plans addresses challenges such as urban noise and intentionally generated artificial soundscapes that rely on noise masking to make the urban environment more pleasant. Adaptation of frameworks and tools from environmental acoustics, including soundscape auralisations, soundscape visualisations, and cross-modal approaches, offers evidence-based methods for assessment [3]. Attention to soundscape elements, acoustic comfort, well-being, and quality of urban life has increased, leading to the need for a soundscape design theory that addresses the spatial dimension of sound through auralisation of design proposals and relies on unacceptable sound sources occurring at the same time to define sonic comfort[4]. The common use of noise as the main descriptor of sound is gradually being replaced by broader concepts such as sound experience, sound perception, and soundscape [4]. The role of qualitative sound dimensions is being advanced through the introduction of acoustic design artefacts that support urban sound design, the use of soundscape characteristic indicators, and the comparison between laboratory assessments and in situ evaluations. Standards such as ISO 12913-1:2014 guide the conceptualisation of soundscape, separating the description of acoustic signals from the specification of their aesthetic qualities and emotional responses [4]. Sonic placemaking connects place, sound, and identity in urban environments through practices known as sonic rupture and through the design of sound art installations integrated with public projects intended to create significant yet perishable urban sound environments. Non-participant observation represents a viable approach for soundscape design, avoiding the bias inherent in other evaluative techniques and fitting seamlessly into urban planning processes [4].

Policy and Governance for Soundscapes

The governance of soundscapes has been recognized within the framework of urban planning and public policies, with the establishment of normative standards, regulatory principles, and policies focused on environmental sound [1]. A growing number of spatially aware sound sensors, mobile sound mapping tools, and community-based noise-monitoring programs have emerged, shifting the urban sound perspective from noise mitigation to soundscape evaluation [1]. Though noise regulations still prevail, and citizen engagement tends to favour noise complaints over soundscape desires, an increasing number of soundscape frameworks considering not only sound levels and music genres but also proactivity and resistance [4] are gradually being adopted across multiple countries. Communities still adopt a less directive approach to soundscape governance compared to other environmental dimensions, yet, consent programs and participatory frameworks involving local stakeholders allow citizens in the wider governance landscape to exercise greater consultation and accountability [5]. Communities are thus allowed to plant the seeds of their proposed agendas, with focus on awareness of existing acoustics. Involving community members in the monitoring process is equally critical given the very subjective nature of sound perception. Systems that include participatory mapping and modelling elements then demonstrate an even deeper engagement, eventually leading to co-creation and co-design of new soundscapes [6].

Case Studies: Public Art and Soundscapes in Practice

The practice of associating public art with soundscapes emerges in diverse urban contexts ranging from art capitals to low-density towns [3]. This section synthesizes key insights from three varied case studies, connecting their objectives, methods, results, and indicators of successful implementation. The examples suggest benefits such as enhanced social interaction, attentiveness to spatial characteristics, and improved perception of environmental facilities [4]. They address urban issues of alienation, placelessness, and under-appreciation of everyday sounds. Even when project objectives differ, lessons and factors identified on each occasion remain broadly relevant and transferable elsewhere [4]. Replicating the case-study approaches in new settings appears feasible, yet careful long-term maintenance of art installations and supporting materials demands attention in both case studies and potential expansions [4].

Social, Cultural, and Health Implications of Urban Sound

Sound, as both an ecological input and a cultural output, is critical to the liveability and vibrant identity of cities; it promotes social ties, collective memories, and community cohesion [5]. At the individual level, sound reflects personal experiences and aspirations, influencing decisions about residence, public space engagement, and cultural expression. While not always explicitly recognized, the social, cultural, and health aspects of sound are embedded in broader notions of quality of life and place-making [4]. Urban sociologists acknowledge sound as one of many identity-defining urban attributes, including climate, greenery, light, and smell [3]. Yet sound nevertheless exerts pervasive influence on well-being. Socially and culturally derived aspects of soundscapes shape societal interactions, while auditory physiopathologies such as stress, fatigue, sleep disturbance, anxiety, hypertension, and cardiovascular diseases arise from acoustic disturbances [4]. Residents respond differently according to demographic and cultural factors [6]. The salience of specific sound sources e.g., environmental noise from traffic and industry versus mellow duration sounds from nature, children, or birds, also varies across regions and national

contexts. Moreover, the balance of predicted theoretical deterioration in mental aspects against enhancement in physical health leads to feelings toward perceived soundscape quality [5].

Technological Tools and Data for Soundscape Management

Urban acoustic environments can be managed through a variety of technological tools and data sources. Soundscape design is supported by auralisation and visualisation techniques alongside cross-modal assessment approaches [6]. Acoustic design artefacts and methods that improve soundscapes through qualitative sound analysis feature in urban sound planning. Spatial audio recording and reproduction apply standards such as ISO 12913-1:2014 in the design process. Assessment strategies encompass both in situ and laboratory studies. Management models that promote prosocial behaviour and mitigate antisocial activity focus on adding sounds to public spaces. Research includes urban soundscape case studies, anthropological examinations of ambient sound, and practices in sonic placemaking and urban sound art [7]. The delegation of soundscape management tasks can be formalised through governance mechanisms that define stakeholder roles and synchronise the application of design, assessment, and modelling tools throughout the project lifecycle. Process-oriented frameworks help clarify the objectives to be pursued and allocate relevant measures to subsequent phases of zoning, mobility, public-space design, and landscape planning [8, 9]. Process-oriented frameworks that help clarify objectives and allocate relevant measures support formalisation of soundscape management tasks through governance mechanisms specifying stakeholder roles and synchronising the use of design, assessment, and modelling tools across the project lifecycle. Starting with overarching aims linked to quality of life, typologies identify sound objectives in the fields of public space, mobility, and landscape [10]. Workflows describe connections between these objectives and specific zoning, mobility, public-space, and landscape-design provisions. Urban planners can determine which options are essential or discretionary and systematically evaluate the trade-offs between noise reductions, enhanced sound, and experience at different spatial scales. Scoring rubrics and criteria formalise decision-making under uncertainty and clarify mitigation versus enhancement strategies [1, 7]

Challenges and Trade-offs in Balancing Noise, Quiet, and Experience

Contemporary objectives, decision-making frameworks, and planning instruments often overlook the rich history, principles, and practices of acoustic ecology and soundscape studies [5]. Development pressure creates a climate in which sound permits and public-art funding to address this topic may be deemed less urgent than competing priorities. Integration also evokes tensions among artistic expression, aesthetic quality, urban livability, and stakeholder conflict [6]. Numerous soundscapes that enhance tranquility including those that reduce or relocate unwanted noise coexist with soundscapes that enliven and activate urban public spaces. Balancing competing values requires a systematic understanding of conditions that favour listening, silence, and resonant sound 8. Scoring rubrics for a range of soundscapes can inform project design, ease conflict resolution, and assist negotiations among parties with conflicting objectives [6]. The pursuit of vibrant, active, and participatory public spaces that engage large, diverse audiences is often accompanied by the proliferation of high-volume urban sound [8]. Excessive sound levels can undermine the quality of human experience, which is polyphonic in character yet often dominated by monotonous, forced repetition. Participatory and co-designed soundwalks explore the relationship between spatial practices of urban sound and sculpting and shaping participatory sound literacy. Schematic mapping links spatial practice with acoustic practice, highlighting diverse and conflicting public-space soundscapes [9]. Scores that catalogue auditory experience and outline implications for participatory practice are thus applicable beyond conventional forms of public-art intervention and extend to urban sound and broader societal concerns. Such instruments help clarify the design and management of urban sound, including modes of engagement and amplification [10].

Future Directions for Research and Practice

The methodological, economic, and ecological scope and significance of sound-related policies indicate a growing appetite for rigorous theoretical inquiry and empirical investigation. Research is needed on the study, design, and governance of soundscapes in urban environments and public art [8]. Particular emphasis may be placed on interdisciplinary collaboration and broader socio-cultural, environmental, and technological factors. Addressing these themes according to the principles of soundscape ecology will yield transferable knowledge that supports timelier integration of acoustic considerations into urban planning and public art programs [9]. How can sound, music, and auditory culture inform knowledge production, infrastructure design, and community engagement in the public realm? How can sound technologies script the sonic order of urban spaces while still reflecting a plurality of everyday experiences? [9]How can hearing enhance the immediacy of environmental engagement in urban formations that otherwise privilege the eye? Multi-sensory ecologies responding to these questions may favour an entire spectrum of sensations, relations, and materialities 1. Tempos, rhythms, and speeds are key, as varying sonic flows entwine with numerous material exchanges, pollutions, and movements through the city. Sound, noise, and signal thus span metabolic, mediatic, vibrational, and mobile ecologies, all of which are fundamental to plenitude, re-territorialisation, and the breaking of established boundaries between culture and nature [10].

CONCLUSION

The integration of soundscapes and acoustic ecology into urban planning and public art represents a significant paradigm shift from traditional noise mitigation toward a more holistic, human-centered understanding of urban environments. By recognizing sound as both an ecological input and a cultural resource, planners and designers can create cities that are not only visually appealing but also acoustically meaningful and socially responsive. The evidence demonstrates that thoughtfully designed soundscapes contribute to improved wellbeing, stronger community identity, and enhanced engagement with public spaces. Methodologically, the combination of acoustic measurement tools and participatory approaches provides a robust framework for assessing and shaping urban sound environments. These approaches ensure that both objective sound characteristics and subjective human experiences are accounted for in planning processes. Similarly, the incorporation of sound design into public art initiatives highlights the transformative potential of interdisciplinary collaboration, enabling cities to foster richer, multi-sensory experiences that resonate with diverse populations. However, the advancement of soundscape-oriented urban design is not without challenges. Tensions between noise control and experiential richness, competing stakeholder interests, and the risk of oversimplification or technological determinism require careful navigation. Effective governance frameworks, inclusive participation, and context-sensitive design strategies are therefore essential to achieving sustainable and equitable outcomes. Looking forward, the continued development of acoustic ecology within urban planning will depend on deeper interdisciplinary research, innovative policy frameworks, and the integration of emerging technologies. By embracing sound as a core component of urban experience, cities can move toward more inclusive, adaptive, and resilient futures that reflect the complexity and diversity of everyday life.

REFERENCES

1. Cobianchi, M., Drever, J. L., & Lavia, L. (2021). Adaptive soundscape design for liveable urban spaces: A hybrid methodology across environmental acoustics and sonic art. *Cities & Health*, *5*(1–2), 127–132. https://doi.org/10.1080/23748834.2019.1633756
2. Kang, J. (2023). Soundscape in city and built environment: Current developments and design potentials. *City and Built Environment*, *1*, Article 1. https://doi.org/10.1007/s44213-022-00005-6
3. Eldridge, A., & Kiefer, C. (2018). Toward a synthetic acoustic ecology: Sonically situated, evolutionary agent-based models of the acoustic niche hypothesis. In *ALIFE 2018: The 2018 Conference on Artificial Life* (pp. 296–303). MIT Press. https://doi.org/10.1162/isal_a_00059
4. Xiao, J., Lavia, L., & Kang, J. (2018). Towards an agile participatory urban soundscape planning framework. *Journal of Environmental Planning and Management*, *61*(4), 677–698. https://doi.org/10.1080/09640568.2017.1331843
5. Guo, J. (2019). *The assessment of soundscape quality in urban parks: A case study in Penn Park* [Master's capstone project, University of Pennsylvania].
6. Alvares-Sanches, T., Osborne, P. E., White, P., & Bahaj, A. B. (2019). Spatial variation in sound frequency components across an urban area derived from mobile surveys. *Future Cities and Environment*, *5*(1), Article 1. https://doi.org/10.5334/fce.54
7. Choe, S. H., & Ko, Y. M. (2015). Collective archiving of soundscapes in socio-cultural context. *iConference 2015 Proceedings*.
8. Bild, E., Pfeffer, K., Coler, M., Rubin, O., & Bertolini, L. (2018). Public space users' soundscape evaluations in relation to their activities: An Amsterdam-based study. *Frontiers in Psychology*, *9*, Article 1593. https://doi.org/10.3389/fpsyg.2018.01593
9. Yang, J., & Lu, H. (2022). Visualizing the knowledge domain in urban soundscape: A scientometric analysis based on CiteSpace. *International Journal of Environmental Research and Public Health*, *19*(21), 13912. https://doi.org/10.3390/ijerph192113912
10. Murray, N. (2010). *Sound and space: An architect's investigation* [Doctoral thesis, RMIT University].

CITE AS: Kato Bukenya T. (2026). Soundscapes and Acoustic Ecology in Urban Planning and Public Art. IDOSR JOURNAL OF HUMANITIES AND SOCIAL SCIENCES 11(1): 77-81. https://doi.org/10.59298/IDOSRJHSS/2026/1117781