



# FORUM ACUSTICUM EURONOISE 2025

## THE SONIC (RE)DESIGN OF URBAN PLACES: AUDITORY TRANSFORMATIONS IN THE HAGUE (NL) AND KIRUNA (S)

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### ABSTRACT

Sounding Urban Places is a research project funded by the [European ERA-NET Cofund program ENUTC \(\*Urban Transformation Capacities\*\)](#). The project aims to enhance the quality of life (for all living beings) in two selected residential areas and public (urban) spaces – one in The Hague (NL) and the other in Kiruna (S) – through an artistically inspired (re-)design of the sonic environment. A key aspect of the project is the contrasting urban transitions taking place in these two cities. In The Hague, the selected area is undergoing a transformation from an industrialized zone to a residential neighborhood, while Kiruna is experiencing a transition shaped by the increasing extraction of valuable raw materials, a transition leading to the rebuilding of its city center further removed from the mining area.

The project explores the following central questions:

- How can artistic and practice-based sonic interventions, drawing on the imagination of sound artists and inhabitants, enhance wellbeing and sustainability in these urban areas?
- How can sound art, sound studies, historical research, and ethnographic fieldwork, contribute to the development of methods for documenting long-term changes in soundscapes?

The project's objectives are threefold:

- To develop artistic and practice-based sonic interventions that promote wellbeing and sustainability.
- To establish participatory and cross-disciplinary methods for documenting change in soundscapes over time.
- To foster creative engagement with stakeholders and local communities.

**Keywords:** *sound art, sound studies, co-creation, sustainability, citizen science*

### 1. INTRODUCTION

Sounding Urban Places is a collaborative research project involving a multidisciplinary team of researchers from Sweden and the Netherlands, including (sound) artists, landscape architects, historians, ethnographers, and sound studies scholars. The project aims to enhance the quality of life (for all living beings) in two urban areas: De Binckhorst, a district in The Hague (NL), and Kiruna (S). A key focus of the project is the contrasting urban transformations taking place in these cities. De Binckhorst is undergoing a transition from an industrial zone to a residential area [1], while Kiruna is experiencing an almost opposite transformation—a large-scale relocation of its city center driven by mining operations [2].

As these transitions unfold in real time, the researchers have a unique opportunity to analyze changes in the sonic environment by comparing past and emerging soundscapes. Besides, this project also opens the possibility to raise awareness among (landscape) architects, urban planners, project developers, and city

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councils of the direct impact that architectural and infrastructural transitions have on a site's sonic character. Thoughtful sonic (re)design, the project argues, can significantly enhance the overall experience of an urban space.

A central question guiding Sounding Urban Places is the role of art and sound artists in shaping the sonic (re)design of these evolving urban landscapes. By applying consistent premises, focal points, and methodologies, the research team can compare outcomes across both locations, identifying both similarities and differences in their sonic transformations.

## 2. RESEARCH QUESTIONS AND OBJECTIVES

Building on the context outlined above, the following research questions have been formulated:

- How can sound art and sound studies, in conjunction with historical research and ethnographic fieldwork, contribute to the development of methods for documenting long-term changes in soundscapes?
- How can artistic and practice-based sonic interventions, drawing on the imagination of both researchers and local inhabitants, enhance wellbeing and sustainability in De Binckhorst and Kiruna?
- How can various stakeholders and individual citizens be actively involved in designing more engaging and attractive sonic environments in these urban areas?

These research questions translate into the following objectives:

- To develop participatory and cross-disciplinary methods for documenting long-term changes in the soundscapes of these two urban sites;
- To design and implement site-specific artistic and practice-based sonic interventions that enhance general wellbeing and sustainability;
- To facilitate the dissemination of these methodological developments and foster meaningful engagement with stakeholders and local communities through creative initiatives.

## 3. SONIC DESIGN OF URBAN ENVIRONMENTS

Several reports [3, 4] indicate that exposure to excessive or excessively loud sounds has a detrimental effect on the wellbeing of living beings. Despite repeated warnings from international organizations such as the WHO, which identify noise pollution as one of the most pressing challenges of contemporary life, the imagining of future living conditions in sustainable urban

environments continues to prioritize the visual aspect. When it comes to addressing sound in densely populated areas, three primary issues emerge:

- Architects, urban planners, and property developers are typically well-versed with the legal regulations concerning noise pollution and sound insulation, but often lack knowledge or attention to proper and positive sound design;
- When sound in urban environments is addressed, it is almost always approached negatively, relying on models instead of real-world experiences. Sound is typically measured in decibels, focusing solely on loudness without accounting for other important parameters (timbre, frequency, resonance, harmony).
- Sound is often treated as a discrete element, separated from other important factors such as social, political, economic, ecological and technological concerns.

Not so much to refute noise problems, but to supplement these rather limited conceptions of sound, Sounding Urban Places builds upon five key premises:

- Sound is an integral component of our habitat and environment, deserving of serious attention. On the one hand, sounds can trigger or stimulate specific behaviors; on the other hand, both humans and non-humans always already contribute to their sonic environment simply by producing sounds.
- Sound should not only be considered in negative terms. It can positively enhance the experience of a place. Through thoughtful sound design, spaces can be transformed to feel quieter, livelier or otherwise more engaging.
- Sound is intricately connected to and interacts with non-acoustic elements. Therefore, interventions (or refraining from them) in an existing soundscape not only affect the site's acoustic qualities but also extend their impact to social interaction, safety, health, economic activities, ecological measures, technological advances, etc.
- Sound design should not be the sole domain of natural sciences but should also, and perhaps even primarily, involve contributions from the humanities and the arts. Sound artists, in particular, should be considered as urban (co-)designers, as they often approach sound in a creative and constructive manner.





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## 4. RESEARCH METHODS AND TECHNOLOGIES

As outlined above, Sounding Urban Places employs comparable research methods in both The Netherlands and Sweden to facilitate a better comparison of the two sites—De Binckhorst and Kiruna. The project adopts a *methodological pluralism*, which combines methods from multiple disciplines: (a) the humanities (cultural analysis, critical theory); (b) the hard sciences (applied research, experimentation); (c) the social sciences (action research, participant observation, field study); and (d) artistic research (research in and through art practices).

While the project began with clearly defined research questions, it is simultaneously *discovery-led*, meaning that it evolves through (informed) intuition, trial and error, serendipity, and unsystematic searching. This methodological pluralism – here most often a fusion of experimentation, participatory practice, interpretation of that practice, analysis, and artistic interventions – also deconstructs rigid divisions between fact and value or action and interpretation. Furthermore, the diverse backgrounds and expertise of the researchers codetermine the research object and approach, influencing the what, how, and why of the project.

To make this pluralism more tangible, the following methods have been employed:

- Fieldwork strategies from ambient anthropology [5], ecological sound art [6], and soundscape acoustics [7];
- Soundscape recording and soundwalking [8] to reveal “other possibilities of how things might be and relate to each other; they can be steps toward more or less substantial sonic interventions, changes that directly affect the sonic ambiance of a particular place” [9].
- Sensor technologies, which have already demonstrated their value in settings such as industrial environments, for example audifying ground vibrations in a harbor [10].

A particularly significant and pervasive research method that permeates the work in De Binckhorst as well as Kiruna is “citizen science.” The researchers tap into the knowledge of local inhabitants and workers. This engagement includes the following activities:

- Soundwalks, organized with and led by locals, to gain insight into what they find interesting, pleasant, or, conversely, irritating with the environment.

- A digital online platform – [Sound Up – Sounding Urban Places](#) – enabling residents and users to upload their own recorded audio files. These recordings not only provide information about sounds that are liked or disliked, but also highlight sounds that are at risk of disappearing and (therefore) should be preserved. These files were also used for *Stimulated Recall* (see below).
- Participatory Geographic Information Systems (PGIS) are employed to combine geospatial data with sketch maps, representing people’s spatial knowledge of sound effects as two-dimensional maps [11]. These geographic maps, with identified sound memories or experiences, spatially locate the residents’ values about their living environment. Implementing PGIS has been essential for developing a place-based strategy aimed at improving quality of life.
- Collaborations with cultural and community organizations – including local schools – not only help gather knowledge about how the current soundscape is perceived; it also offers ideas on how the sound of these areas should evolve in the (near) future. Schools, in particular, provide excellent opportunities for subprojects focused on sound design in urban spaces.
- *Stimulated Recall* [12], an approach of retrospection, is used to deepen understanding. Field recordings made in both sites are played during in-depth interviews with residents. Short audio clips are used to evoke memories and experiences related to place, as mediated through sound.<sup>1</sup> These interviews are transcribed and subjected to qualitative analysis, contributing to a better understanding of the positive and negative experiences of place through sound. Additionally, the narratives derived from these interviews are incorporated into installation works and podcasts, transformed through artistic creation.

## 5. TENTATIVE METHODOLOGICAL CONCLUSIONS

Although the research project is set to conclude at the end of 2025, some preliminary results, observations, and conclusions, along with planned events, are already emerging.

<sup>1</sup> What becomes clear from this method is that memory is not static but developing, also on the basis of previous memories of the same place; this will also affect future memories.





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Two of the initial research questions (see Section 2 above) were methodological in nature: How can sound art/studies contribute to documenting long-term changes in soundscapes? and How can different stakeholders be involved in the design of a sonic environments? We outline several observations that provide tentative answers to these questions:

- *Engagement with Citizens in De Binckhorst*: It proved challenging for the residents of De Binckhorst to listen attentively to their environment and imagine potential sonic alternatives. Raising awareness about their sonic ambiance and prompting critical reflection (e.g., envisioning alternatives) was not an easy task. Moreover, finding the right vocabulary to describe the sonic environment was often difficult. When it came to imagining changes, it appeared easier for participants to think about removing sounds rather than adding new ones.
- *Soundwalks and Artistic Interventions*: Despite the challenges, the more artistically oriented soundwalks, the invitation to record and upload sounds to the [Sound UP](#) map, and specific listening exercises helped participants change their habitual listening perspectives. These methods allowed them to consider their sonic environment as a musical composition, thus transforming how they interacted with it.
- *Use of Listening Devices*: The use of various listening devices or media (e.g., microphones, headphones, hydrophones, sensors, streaming, etc.) also contributed to raising awareness of the sonic environment. Certain sounds, which were previously inaudible to the human ear, could now be experienced with specific equipment. This further enhanced participants' attentiveness to their surroundings.
- *Sonic Memories and Affective Associations*: Despite the initial difficulties, many participants exhibited strong sonic memories and affective associations during the soundwalks. For example, some relived sounds that had disappeared from particular locations. The memory of certain sounds, particularly those tied to past experiences, seemed to have a significant emotional impact on participants.
- *Emotional Connections to Sound*: The question of whether people miss certain sounds is not solely based on the sounds themselves but also on the circumstances in which they were heard. In De Binckhorst, for instance, a former auto service owner fondly remembered the sounds of the

neighboring businesses. These sounds reminded him of the positive relationships between the companies. This connection between sound and social context is an important aspect of the project's findings.

- *Local and Individual Circumstances*: In Kiruna, a preliminary analysis of *Stimulated Recall* interviews revealed that the experience of place through sound is highly dependent on local and individual circumstances. For instance, a recording of vibrations caused by nightly mining blasts was used in interviews, revealing that some informants associated these noises with a sense of home – an unexpected relationship to a traditionally negative sound.
- *Imagining an Ecologically Sustainable City*: In the interviews, participants in Kiruna were asked to imagine an ecologically sustainable city and how such a city might sound. Preliminary results confirm the researchers' expectations: most participants mentioned soundscapes with natural variation (wind and birdsong), while machine noise was almost consistently referred to as a negative feature. Sounds of destruction and construction work were frequently referenced, especially as they related to the ongoing urban transformation. There was a strong acceptance among citizens of the necessity of the mining process for their city's survival. The ongoing relocation of the city center to a safer distance from the mines, was generally accepted as a necessary condition for life in Kiruna.
- *Engaging People Through Digital Means*: To further engage citizens in actively designing their future sonic environment, digital or virtual tools may be used. For instance, in De Binckhorst, schoolchildren were involved in a project where they could design their own vision for a future school building using Minecraft software. Through the Sound UP project, these kids were provided with the tools and skills to add an auditory layer to their visual designs, enabling a more holistic approach to urban planning.

## 6. ARTISTIC RESULTS AND PLANNED EVENTS

In the third research question (see Section 2 above) we inquired about the potential of artistic interventions to enhance the wellbeing of all living beings in De Binckhorst and Kiruna. Below is a brief overview of already implemented as well as upcoming artistic events.

- The stories shared and the field recordings made serve as the material for a major installation piece, which





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premiered in June 2025 at the new city center in Kiruna. This quadrophonic soundscape composition represents the city's current sonic environment, while stories told by its inhabitants are played through headphones.

- Simultaneously, these materials contribute to the creation of podcasts, which will first be broadcast on a local radio station in Kiruna. Through these artistic outputs, this project aims to share its findings with the citizens who have contributed to the research, while also offering valuable insights for policy makers and politicians.
- Recordings of interviews with locals are also integrated in geolocated audio walks developed for De Binckhorst [13]. These audio walks are created by Sound UP sound artists in collaboration with [I'm Binck](#), an independent initiative involving entrepreneurs, residents, makers, and organizations from the area.
- The interactive [Sound UP](#) map features, among other things, recordings from both Kiruna and De Binckhorst, collected both recently and in the past by the researchers and residents alike. This map thus also functions as an archive.
- On Instagram there is a live stream every Thursday night called "[listen to the Binckhorst](#)." Each Thursday a microphone is hidden in a different location, allowing listeners to hear everything happening there. One outcome of this event was the revelation of the biodiversity in certain locations within De Binckhorst. Despite the area's industrial, urban, under-construction appearance, with minimal greenery, over 36 different bird species were detected in the recorded audio stream.<sup>2</sup> In other words, it was by and through listening that new insights about the environment and its animal life were uncovered.
- In conjunction with the soundscape composition in Kiruna, a concert will be held in De Binckhorst, featuring several short pieces composed using sounds from this area. This event aims to raise awareness of the cultural and historical significance through sound art/music.
- During workshops at a high-school in De Binckhorst, pupils engaged in field recordings using various recording devices, within the framework of Project-Based Learning. This approach incorporated diverse methodologies to enhance key skills such as listening,

vocabulary development, and critical reflection. As students became attuned to hidden sounds and urban juxtapositions, they demonstrated increased curiosity and sharpened perception. Tailored support helped broaden their lexicon and deepen their critical awareness, while refining their technical skills. Data from activities with a control group indicated that specific didactic methods significantly enhanced sound awareness. As these techniques are honed, students' attention and awareness are expected to expand further. Additionally, conservatory students built their educational skills by designing these workshops, using Participatory Methods. Faculty training played a crucial role, as these practices also benefitted teachers by enhancing their own pedagogical approaches.

- A longer-term goal will be to establish more permanent sonic interventions, such as a thoughtfully designed quiet area, a fountain, an audiovisual artwork (e.g., a wind organ or an aeolian harp), or other physical installations (e.g. moveable screens). For these purposes, some of the data collected is particularly valuable. In Kiruna, the PGIS map will provide an overview of relevant locations. Furthermore, the stimulated recall interviews include a segment where respondents are asked to describe the sound of a sustainable city. The responses to these questions offer suggestions for how local residents imagine improved living environments. Addressing these perspectives through permanent sonic interventions will require a combination of techniques, such as sound masking and artistic approaches, also including the introduction of greater variation in static soundscapes. This process will also necessitate more interaction and consultation with the city councils, project developers, architects, and residents. In addition of raising awareness of how the sonic environment significantly contributes to general wellbeing, livability, and sustainability, it will be necessary to provide compelling arguments to convince these stakeholders that such artistic interventions will bring about a positive change.

## 7. ACKNOWLEDGMENTS

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<sup>2</sup> For the analysis, the application [BirdNET Sound ID](#) was used.





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