Empowering communities: effective engagement strategies in citizen science projects addressing odour pollution. Topic VI- Community and participation

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Tackling odour pollution is a complex issue depending on multiple variables. Several odour sources may be involved, emitting different or similar smells, increasing the difficulty of clearly identifying the origin of the nuisance caused over the affected population - and potentially conflicting views on the severity of each. Odour problems can turn into emotional issues as those affect people's well-being directly, and communities living with them may feel exasperated, while those causing them may act defensively when the issue is raised. It is therefore essential to frame the problem carefully and accurately together with all the stakeholders involved: to establish exactly what it is and how it affects people, using facts and figures to turn people's stories and experiences into clear datasets that objectivise the perceived impact. The good news is that people have the local knowledge of the situations of maximum impact on their daily lives and can contribute to creating unique data to produce Odour Management Plans according to their pains and needs that can significantly reduce the perceived pollution at a lower cost for the emitters.

And that's why citizen science is key. Establishing a clear picture helps to take emotion out of discussions, while produced data shows the necessary evidence to enable all stakeholders to work towards a common goal. This paper seeks to highlight the fundamental role of engagement strategies in facilitating meaningful participation and impactful outcomes drawing from the success of the European **H2020 project D-NOSES (Distributed Network for Odour Sensing, Empowerment and Sustainability)**. This project validated a citizen science methodology in 10 case studies in Europe, Chile and Uganda that involved stakeholders from the quadruple-helix (industries, academia, the public sector and citizens) to provide real-time odour monitoring in the impact area from the receptor point of view. The work recently contributed to the publication of the Spanish standard UNE 77270:2023 "Construction of collaborative odour maps through citizen science". Citizens were engaged in all phases of the research process, from the very definition of the research question. The engagement of the targeted citizen groups was made possible through ad hoc strategies, coming from ethnographic fieldwork, surveys, interviews and group discussions, along with specialised tools like conversation, round table talk tools, or field activity method cards. Citizens were trained through sensory walks to guarantee high quality of the reported data, which included the type and subtype of odour, the intensity and the hedonic tone, mapped through the OdourCollect App at any location and time. Finally, co-creation sessions were organised for collective data analysis. The discussion will showcase how these tools foster collaboration, encourage dialogue, and empower stakeholders from industries, academia and the public sector, together with local communities, to collectively work towards viable solutions.

This work intends to shed light on the importance of meticulously framing odour issues, acknowledging their emotional impact while understanding the area, the socio-economic realities and cultural dynamics of the affected neighbourhood. It emphasises the necessity of understanding the social fabric, cultural nuances, and geographical aspects of affected areas as foundational pillars for effective engagement strategies and ambient odour monitoring. Results demonstrate the high potential of citizen science for an inclusive odour impact assessment, offering valuable insights and unique, cost-effective datasets to industries involved, while fostering constructive dialogue among stakeholders.