





"Urban gaps in small cities in the "Upper Middle Rhine Valley" - How to address urban vacancies with Citizen Science?!"

10th EUGEO Congress, Vienna 2025, Session 165

Jonas Birke, Bernhard Köppen Department for Geography University of Koblenz



## I. Vacancy & Urban Gaps



### **Definition**

no uniform definition of vacancy

#### **Urban Gaps**

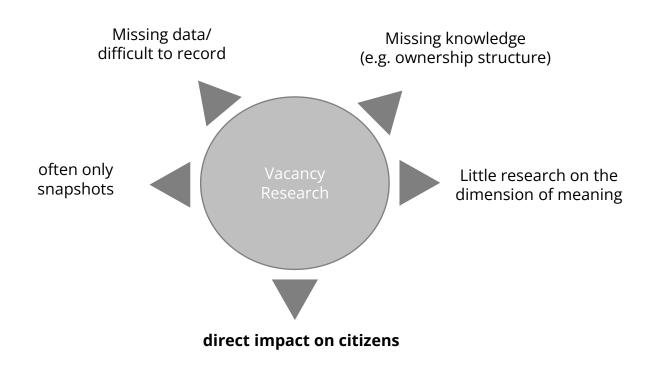
- all types of vacancy (residential, retail, etc.)
- isolated vacancy/building gaps
- Vacancy that characterises the townscape



Category	fluctuating vacancy	structural vacancy	speculative vacancy	dysfunctional vacancy
Definition	offered for rent	Lack of demand	deliberately kept away	Construction- related defects
Vacancy period	< 3 months	> 6 months	unclear	several years

## II. Citizen Science & Vacancy Research





=> Citizen Science as solution??



# III. The Upper Middle Rhine Valley



- 4 municipalities (1.500-3.000 Inhabitants)
- well-known wine-growing Region
- Summer tourism
- Unesco World Heritage Site (since 2002)
- declining Population
- rising vacancy rates (up to 19%)
- little scientific research/data





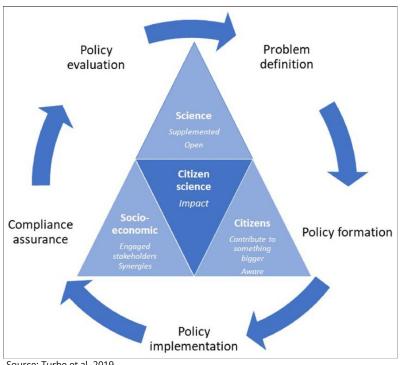


## IV. Methods – Citizen Science Approach



### Principles of Citizen Science (Robinson et al. 2018)

- **Active involvement** in the entire research process
- Collaboration on equal terms
- transparent Communication + Feedback
- Citizen Science as participation tool
- **freely** accessible Results

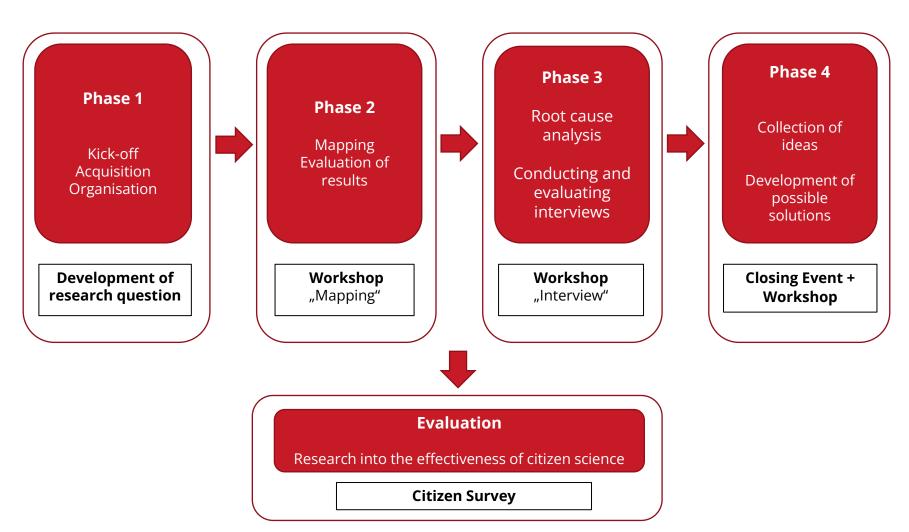


Source: Turbe et al. 2019





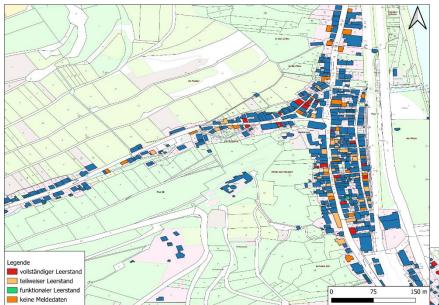






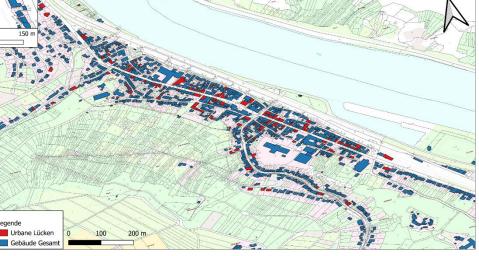
# V. Results - Mapping





- 40% of vacant properties are characteristic of the townscape
- 61% of vacant properties are in need of renovation
- 60% residential use; 30% retail/commercial -> often mixed use

Outskirts	Transition area	Town centre
18%	12%	70%



#### V. Results - Interviews



#### **Causes for vacancy**

- Lack of financing for renovation
- Conflict of interest
- unresolved ownership issues
- Lack of ideas for use
- Lack of infrastructure/amenities in the municipality





=> Lack of exchange/communication





#### V. Results - Ideas/Solutions



#### **Culture**

- Rehearsal rooms for musicians/artists
- Museum (e.g. for regional history)
- Rooms for clubs/events



### Work/Living

- Living space for students
- Welcome rooms for new residents
- Co-Working Spaces



#### Commercial

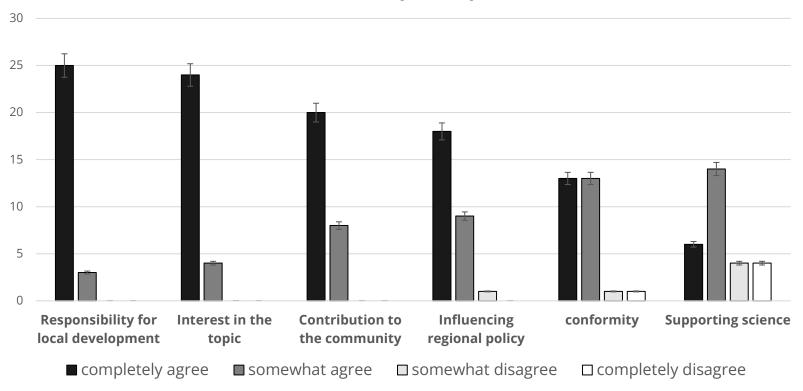
- Pop-Up-Stores
- Alternating small businesses (e.g. craftsmen)
- Themed accommodation (e.g. wine hotel)
- Regional mini-outlet for local products



## **IV. Results – Motivational Aspects**



### **Reasons for participation**







Challenges	Potential
unknown <b>distribution of roles</b>	motivation + participation
Conflicts of interest (e.g. <b>politically</b> )	valuable <b>access to knowledge</b>
<b>sociodemographic</b> factors	<b>needs-oriented</b> research

#### **Future Research:**

Greater involvement of marginalised groups?

Maintaining participation after the project?





Thank You for your attention!!

### VII. References



Aristeidou, Maria; Scanlon, Eileen; Sharples, Mike (2017): Profiles of engagement in online communities of citizen science participation. In: Computers in Human Behaviour 74, 246-257.

Asah, Stanley T.; Lenentine, Miku M.; Blahna Dale J. (2014): Benefits of urban landscape eco-volunteerism: Mixed Methods Segmentation Analysis and Implications for Volunteer Retention. In: Landscape and Urban Planning 123, 108-113.

Beck, Donizete; Mitkiewicz, Juliana (2025): A systematic literature review of citizen science in urban studies and regional urban planning: policy, practical, and research implications. In: Urban Ecosystems 28(85), 1-21.

Bonney, Rick; Cooper, Caren; Dickinson, Janis, L.; Kelling, Steve; Phillips, Tina; Rosenberg, Kenneth; Shirk Jennifer Lynn (2009): Citizen Science: A Developing Tool for Expanding Science Knowledge and Scientific Literacy. In: BioScience 59(11), 977-984.

Bonney, Rick; Philipps, Tina B.; Ballard, Heidi L.; Enck, Jody W. (2015): Can citizen science enhance public understanding of science? In: Public Understanding of Science 25(1), 2-16. https://doi.org/10.1177/0963662515607406 (Original work published 2016).

Bruyere, Brett; Rappe Silas (2007): Identifying the Motivations of Environmental Volunteers. In: Journal of Environmental Planning and Management 50, 503-516. https://doi.org/10.1080/09640560701402034.

Campos, Rita; Monteiro, José; Carvalho, Cláudia (2021): Engaged Citizen Social Science or the public participation in social science research. In: JCOM 20(06), A06. https://doi.org/10.22323/2.20060206

Cappa, Francesco; Rosso, Federica; Giustiniano, Luca; Porfiri, Maurizio (2020): Nudging and citizen science: The effectiveness of feedback in energy-demand management. In: Journal of Environmental Management 269, 1-13.

Compagnucci, Lorenzo; Spigarelli, Francesca (2020): The Third Mission of the university: A systematic literature review on potentials and constraints. In: Technological Forecasting and Social Change, 161 (December). https://doi.org/10.1016/j.techfore.2020.120284

Conrad, Cathy C.; Hilchey Krista G. (2011): A review of citizen science and community-based environmental monitoring; issues and opportunities. In: Environmental Monitoring and Assessment 176, 273-291.

ECSA (European Citizen Science Association) (2015): Ten Principles of Citizen Science. Berlin. http://doi.org/10.17605/OSF.IO/XPR2N.

Franco, Stefano; Cappa, Francesco (2021): Citizen Science: involving citizens in research projects and urban planning. In: TeMA: Journal of Land Use, Mobility and Environment 14(1), 114-118.

Haklay, Muki (2012): Citizen Science and Volunteered Geographic Information: Overview and Typology of Participation. In: Sui, Daniel; Elwood, Sarah; Goodchild, Michael (Hg.), Crowdsourcing Geographic Knowledge. Springer, Dordrecht. https://doi.org/10.1007/978-94-007-4587-2 7

Hobbs, Sarah J.; White, Piran C. L. (2012): Motivationen und Barrieren in Bezug auf die Beteiligung der Gemeinschaft an der Erfassung der biologischen Vielfalt. In: Journal of Nature Conservation 20, 364-373. https://doi.org/10.1016/j.jnc.2012.08.002.

Hochschulrektorenkonferenz (2017): Transfer und Kooperation als Aufgaben der Hochschulen. Microsoft Word - Entschließung Transfer und Kooperation\_14112017.docx

Hyder, Keiran; Townhill Bryony; Anderson Lucy; Delany, Jane; Pinnegar, John (2015); Can citizen science contribute to the evidence-base that underpins marine policy? In: Marine Policy 59, 112-120. https://doi.org/10.1016/j.marpol.2015.04.022

Jacobsen, Susan K.; Carlton, Stuart J.; Monroe, Martha C. (2012): Motivation and Satisfaction of Volunteers at a Florida Natural Resource Agency. In: Journal of Park and Recreation Administration 30, 51-67.

Jaeger-Erben, Melanie (2021): Citizen Science. In: Schmohl, Tobias; Philipp, Thorsten (Hg.), Handbuch Transdisziplinäre Didaktik. Transcript Verlag: Bielefeld, 45-56.

Johnson, McKenzie F.; Hannah, Corrie; Acton, Leslie; Popovici, Ruxandra; Karanth, Krithi K.; Weinthal, Erika (2014): Network environmental advocacy. In: Global Environmental Change-Human and Policy Dimensions 29, 235-245. 10.1016/j.gloenvcha.2014.10.006

Jones, Roy; Bryant, Christopher R. (2016): Participatory action research for rural and regional development. In: Geographical Research 54(2), 115-117.

Kim, Gunwoo; Newman, Galen; Jiang, Bin (2020): Urban Regeneration: Community engagement process for vacant land in declining cities. In: Cities 102, 1-12.

Levontin, Liat; Gilad, Zohar; Shuster, Baillie; Chako, Shiraz; Land-Zandstra, Anne; Lavie-Alon, Nirit; Shwartz, Assaf (2022): Standardizing the Assessment of Citizen Scientists' Motivations: A Motivational Goal-Based Approach. In: Citizen Science: Theory and Practice, 7(1): 25, 1–15. doi: https://doi.org/10.5334/cstp.459

Mueller, Johannes; Lu, Hangxin; Chirkin, Artem; Klein, Bernhard; Schmitt, Gerhard (2018): Citizen Design Science: A strategy for crowd-creative urban design. In: Cities 72(A), 181-188.

Park, Yunmi; Newman, Galen; Lee, Jun-Eun; Lee, Sukjin (2021): Identifying and comparing vacant housing determinants across South Korean Cities. In: Applied Geography 136, 1-12.

Pelacho, Maite; Orejudo, Santos; Clemente-Gallardo, Jesùs (2025): Science as a commons: Motivations for continued participation in citizen science projects. In: PloS One 20(6), 1-24.

Robinson, Danielle; Cawthray, Jade; West, Sarah; Bonn, Aletta; Ansine, Janice (2018): Ten principles of citizen science. In: Hecker, Susanne; Haklay, Muki; Bowser, Anne; Makuch, Zen; Vogel, Johannes; Bonn, Aletta (Hrsg.): Citizen Science. Innovation in Open Science, Society and Policy. UCL Press, 27-40.

Rotman Dana; Preece, Jenny; Hammock, Jennifer; Procita, Kezee; Hansen, Derek L.; Parr, Cynthia; Lewis, Darcy; Jacobs, David W. (2012): Dynamic changes in motivation in collaborative Citizen-Science-Projects. Proceedings of the ACM 2012 Conference on Computer Supported Cooperative Work. Seattle, Washington, USA, 217-226. http://dx.doi.org/10.1145/2145204.2145238.

Strasser, Bruno J.; Baudry, Jérôme; Mahr, Dana; Sanchez, Gabriela; Tancoigne, Elise (2019): "Citizen Science and Public Participation. In: Science & Technology Studies, 32(2), 52–76. doi: 10.23987/sts.60425

