Indicator: Perception of safety

Naturvation challenges: Green space, habitats and biodiversity; Regeneration land use and urban development; Inclusive and equitable governance; Social justice and social cohesion
SDGs: 1, 2, 5, 9, 10, 15, 16
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Date: 10.12.2018

Indicator description
"Perception of safety" assesses the level of perceived public and community safety and citizens' fear of crime and harassment in public green spaces (e.g. parks, urban forests). For certain cases, "*perception of safety"* can report proportions of the population or a proportion of a study sample who feel safe "walking alone after dark", or measure the perception of safety or threat in a neighbourhood or in public parks (1).
The indicator *"perception of safety"* can assess NBS impacts related to the challenge of "Social justice and social cohesion" since crime incidence can be associated with social inequalities. It can also be related to the challenges of "Inclusive and equitable governance", "Green space, habitats and biodiversity" and "Regeneration, land-use and urban development", since an improved and more inclusive urban planning can address citizens' concerns related to safety in public green spaces (illumination, tackling vandalism, access control, presence of technical or specialized staff).
Perception of safety can be measured through different methods, including the use of surveys and questionnaires (e.g. evaluating landscape safety through a photograph questionnaire) (1, 2, 4, 7, 9, 10), interviews (5, 7), GIS or remote sensing & satellite imagery (e.g. aerial photography) (1, 3, 5, 6, 8), as well as field-work observation and experiments (e.g. recording participants self-rated feelings while walking in the forest) (1, 4, 5, 9, 10).

Indicator scoring
The values given to the indicators were based on selected scientific literature (11 papers, 1-11), including 5 empirical studies (1, 2, 6, 9, 10), 2 modelling studies (5-8) and 4 studies (3, 4, 7, 11) with a mix of empirical and modelling methods. The proportion of studies that showed positive benefits for an NBS were used as a base for the scoring and distributed between scores ranging from 1 to 5 according to the proportions of positive impacts. Indications of negative impacts were noted here in the score document as a proportion of studies. When data for benefits of an NBS was not present in the literature it was denoted as no values found.

Scores, perception of safety		
Nature-based solution	**Score**	**Proportions of positive /negative impact (number of studies)**
Parks and (semi)natural urban green areas	2	0.33 / 0.11 (n = 9)
Urban green areas connected to grey infrastructure	4	0.75 / 0 (n = 4)
Blue areas	No score	No values found
External building greens	5	1 / 0 (single value)
Allotments and community gardens	5	1 / 0 (single value)
Green areas for water management	No score	No values found

This project has been funded by the European Union's Horizon 2020 research and innovation programme under grant agreement No. 730243

References

(1) Baran, P. K., Tabrizian, P., Zhai, Y., Smith, J. W. and Floyd, M. F. (2018) 'An exploratory study of perceived safety in a neighborhood park using immersive virtual environments', *Urban Forestry & Urban Greening*, 35, pp. 72–81. doi: 10.1016/j.ufug.2018.08.009.

(2) Chiang, Y.-C., Nasar, J. L. and Ko, C.-C. (2014) 'Influence of visibility and situational threats on forest trail evaluations', *Landscape and Urban Planning*, 125, pp. 166–173. doi: 10.1016/j.landurbplan.2014.02.004.

(3) Chong, S., Lobb, E., Khan, R., Abu-Rayya, H., Byun, R. and Jalaludin, B. (2013) 'Neighbourhood safety and area deprivation modify the associations between parkland and psychological distress in Sydney, Australia', *BMC Public Health*, 13(1), p. 422. doi: 10.1186/1471-2458-13-422.

(4) Cohen, D. A., Han, B., Derose, K. P., Williamson, S., Marsh, T., Raaen, L. and Mckenzie, T. L. (2016) 'The Paradox of Parks in Low-Income Areas: Park Use and Perceived Threats', *Environment and Behavior*, 48(1), pp. 230–245. doi: 10.1177/0013916515614366.

(5) Harvey, C., Aultman-Hall, L., Hurley, S. E. and Troy, A. (2015) 'Effects of skeletal streetscape design on perceived safety', *Landscape and Urban Planning*, 142, pp. 18–28. doi: 10.1016/j.landurbplan.2015.05.007.

(6) Iqbal, A. and Ceccato, V. (2015) 'Is CPTED Useful to Guide the Inventory of Safety in Parks? A Study Case in Stockholm, Sweden', *International Criminal Justice Review*, 26(2), pp. 150–168. doi: 10.1177/1057567716639353.

(7) Lapham, S. C., Cohen, D. A., Han, B., Williamson, S., Evenson, K. R., Mckenzie, T. L., Hillier, A., Ward, P. and Lapham, S. (2016b) 'How important is perception of safety to park use? A four-city survey', *Urban Studies Journal Limited*, 53(12), pp. 2624–2636. doi: 10.1177/0042098015592822.

(8) Locke, D. H., Han, S., Kondo, M. C., Murphy-Dunning, C. and Cox, M. (2017) 'Did community greening reduce crime? Evidence from New Haven, CT, 1996–2007', *Landscape and Urban Planning*. Elsevier, 161, pp. 72–79. doi: 10.1016/J.LANDURBPLAN.2017.01.006.

(9) Martens, D., Gutscher, H. and Bauer, N. (2011) 'Walking in "wild" and "tended" urban forests: The impact on psychological well-being', *Journal of Environmental Psychology*. Elsevier Ltd, 31(1), pp. 36–44. doi: 10.1016/j.jenvp.2010.11.001.

(10) Türkseven Doğrusoy, I. and Zengel, R. (2017) 'Analysis of perceived safety in urban parks: A field study in Büyükpark and Hasanaga Park', *Metu Journal of the Faculty of Architecture*, 34(1), pp. 63–84. doi: 10.4305/METU.JFA.2017.1.7.

(11) Yang, B., Li, S., Elder, B. R. and Wang, Z. (2013) 'Community-planning approaches and residents' perceived safety: A landscape analysis of park design in the Woodlands, Texas', *Journal of Architectural and Planning Research*, 30(4), pp. 311–327.