

Indicator: Change in number of crimes

Naturvation challenges: Inclusive and effective governance; Social justice, inequality and social cohesion; Economic development and decent employment

SDGs: 8, 10, 16

Reviewer & author: Sara Rocha, Central European University (CEU), Budapest

Date: 14.12.2018

Indicator description

The indicator measures the effect in the number of recorded crimes (such as robberies), nearby or within an NBS. This indicator can measure the impacts of NBS on the challenges of “Social justice, inequality and social cohesion”, “Inclusive and effective governance” and “Economic development and decent employment”, since crime incidence can be associated with social inequalities and low levels of economic development. Research related to this indicator has shown both positive and negative impacts of nature-based solutions. Weinstein (2015) shows that the availability of neighborhood nature (e.g. parks and gardens) can discourage crime (10) and Donovan and Prestemon (2012) also concluded that large street trees are linked to reduced crime (improved visibility) (2). At the same time other authors have suggested that areas nearby parks can be associated with higher crime rates (1, 5, 6). This indicator can be measured through different methods, including GIS/ remote sensing (e.g. mapping of crime data or use of land use mapping) (2, 4, 8, 10), questionnaires (e.g. reported contact with nature) (10), interviews (3), modelling (1, 2) and the use of survey data or existing datasets (e.g. policy crime records, Urban Audit, Corine database) (1, 2, 4, 10).

Indicator scoring

The search queries were composed of three query sets related to NBS terms, indicator topic and urban context. The values given to the indicators were based on selected scientific literature (10 papers), including 5 empirical studies (4, 5, 7, 8, 9) and 5 studies (1, 2, 3, 6, 10) 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, change in the number of crimes		
Nature-based solution	Score	Proportions of positive /negative impact (number of studies)
Parks and (semi)natural urban green areas	2	0.25 / 0.75 (n = 4)
Urban green areas connected to grey infrastructure	4	0.67 / 0 (n = 3)
Blue areas	No score	No values found
External building greens	No score	No values found
Allotments and community gardens	4	0.67 / 0 (n = 3)
Green areas for water management	No score	No values found





References

- (1) Boessen, A. and Hipp, J. R. (2018) 'Parks as crime inhibitors or generators: Examining parks and the role of their nearby context', *Social Science Research*, 76, pp. 186–201. doi: 10.1016/j.ssresearch.2018.08.008.
- (2) Donovan, G. H. and Prestemon, J. P. (2012) 'The effect of trees on crime in Portland, Oregon', *Environment and Behavior*, 44(1), pp. 3–30. doi: 10.1177/0013916510383238.
- (3) Garvin, E. C., Cannuscio, C. C. and Branas, C. C. (2013) 'Greening vacant lots to reduce violent crime: A randomised controlled trial', *Injury Prevention*, 19(3), pp. 198–203. doi: 10.1136/injuryprev-2012-040439.
- (4) Gorham, M. R., Waliczek, T. M., Snelgrove, A. and Zajicek, J. M. (2009) 'The impact of community gardens on numbers of property crimes in Urban Houston', *HortTechnology*, 19(2), pp. 291–296.
- (5) Groff, E. and McCord, E. S. (2012) 'The role of neighborhood parks as crime generators', *Security Journal*, 25(1), pp. 1–24. doi: 10.1057/sj.2011.1.
- (6) Kim, Y.-A. and Hipp, J. R. (2018) 'Physical Boundaries and City Boundaries: Consequences for Crime Patterns on Street Segments?', *Crime & Delinquency*, 64(2), pp. 227–254. doi: 10.1177/0011128716687756.
- (7) Locke, D. H. et al. (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.
- (8) McCabe J.D. (2014) 'Community gardens to fight urban youth crime and stabilize neighborhoods.', *International Journal of Child Health and Human Development*, 7(3), pp. 223–236. doi: 10.1093/aje/kwr273.
- (9) Sypion-Dutkowska, N., Leitner, M., Sypion-Dutkowska, N. and Leitner, M. (2017) 'Land Use Influencing the Spatial Distribution of Urban Crime: A Case Study of Szczecin, Poland', *ISPRS International Journal of Geo-Information*. Multidisciplinary Digital Publishing Institute, 6(3), p. 74. doi: 10.3390/ijgi6030074.
- (10) Weinstein, N., Balmford, A., Dehaan, C. R., Gladwell, V., Bradbury, R. B. and Amano, T. (2015) 'Seeing Community for the Trees: The Links among Contact with Natural Environments, Community Cohesion, and Crime', *BioScience*, 65(12), pp. 1141–1153. doi: 10.1093/biosci/