

<b>Data collection frequency</b>	
<b>Level of expertise required</b>	Medium
<b>Synergies with other indicators</b>	
<b>Connection with SDGs</b>	3
<b>Opportunities for participatory data collection</b>	
<b>Additional information</b>	
<b>References</b>	Kronenberg J., Andersson E., Rall E., Haase D., Kabisch N., Cummings C., Cvejić R. (2017). Guide to Valuation and Integration of Different Valuation Methods. A Tool for Planning Support. GREEN SURGE project Deliverable 4.4, University of Copenhagen, Copenhagen, Denmark.

### 8.32 Visual access to green space

**Project Name:** proGIreg (Grant Agreement no. 776528)

**Author/s and affiliations:** Carmen de Keijzer<sup>1</sup>, Payam Dadvand<sup>1</sup>

<sup>1</sup> *Fundacion Privada Instituto de Salud Global Barcelona, Barcelona, Spain*

Visual access to green space	Green Space Management Health and Wellbeing
<b>Description and justification</b>	Visual access to green space is an indicator of exposure to green spaces. Previous experimental studies have shown short-term looking at green spaces could have mental health benefits such as reducing stress, restoring attention, and improving mood. An emerging body of evidence is also suggestive of the health benefits of the long-term visual exposure to green spaces.
<b>Definition</b>	Self-reported amount of green space in the view from windows at home and the frequency of looking at the view.
<b>Strengths and weaknesses</b>	A strength of this indicator is that few epidemiological studies have considered visual access to green space in the long-term association between green spaces and health. A limitation is that the indicator is self-reported.

<b>Measurement procedure and tool</b>	<p>The indicator is obtained using a survey which is taken by a sample of the general population. The survey includes a section with the following questions:</p> <p><i>"At home, how much green space (trees, grasses, flowers, etc.) can you see through the following window(s)?"</i> with possible answers on a scale from 0 (no green space/no window) to 4 (all of the view completely filled green space)</p> <p><i>"How often (during the day) do you look out through the following window(s)?"</i> with possible answers on a scale from 0 (no window/never) to 3 (often)</p> <p>This survey is repeated before and after the implementations of NBS in order to observe a potential change in visual exposure to green and blue spaces.</p>
<b>Scale of measurement</b>	General population in residential neighbourhoods
<b>Data source</b>	
<b>Required data</b>	Questionnaire data
<b>Data input type</b>	Continuous variables
<b>Data collection frequency</b>	Twice; once before the implementation of the nature-based solutions and once after.
<b>Level of expertise required</b>	Low
<b>Synergies with other indicators</b>	This indicator is related to other indicators of exposure to green space
<b>Connection with SDGs</b>	<p>Good health and wellbeing: accumulating evidence demonstrates that increased green space exposure has been associated with better health and wellbeing. An increased visual exposure to green spaces is likely to contribute to improved health and wellbeing.</p> <p>Sustainable cities and communities: The implementation of nature-based solutions may contribute to increased visual exposure to nature and to sustainable cities and communities.</p>
<b>Opportunities for participatory data collection</b>	The questionnaires are self-reported and as such are reported by the citizens themselves.
<b>Additional information</b>	
<b>References</b>	<p>Van den Bosch et al (2015) Autonomic Nervous System Responses to Viewing Green and Built Settings: Differentiating Between Sympathetic and Parasympathetic Activity. <i>Int J Environ Res Public Health</i>; 12(12): 15860–15874</p> <p>Berto (2014) The role of nature in coping with psycho-physiological stress: a literature review on restorativeness. <i>Behav Sci (Basel)</i>. 2014 Oct 21; 4(4):394-409</p>

Bratman et al (2012) The impacts of nature experience on human cognitive function and mental health. *Annals of the New York Academy of Sciences*; 1249(1): 118-136

Abkar et al (2010) Influences of viewing nature through windows. *Australian Journal of Basic and Applied Sciences*; 4(10): 5346-5351

### 8.32.1 Viewshed

**Project Name:** PHUSICOS (Grant Agreement no. 776681)

**Author/s and affiliations:** Gerardo Caroppi<sup>1,2</sup>, Carlo Gerundo<sup>2</sup>, Francesco Pugliese<sup>2</sup>, Maurizio Giugni<sup>2</sup>, Marialuce Stanganelli<sup>2</sup>, Farrokh Nadim<sup>3</sup>, Amy Oen<sup>3</sup>

<sup>1</sup> *Aalto University, Department of Built Environment, Espoo, Finland (gerardo.caroppi@aalto.fi)*

<sup>2</sup> *University of Naples Federico II (UNINA), Department of Civil, Architectural and Environmental Engineering, Naples, Italy*

<sup>3</sup> *Norwegian Geotechnical Institute (NGI), Oslo, Norway*

Viewshed	Place Regeneration Green Space Management
<b>Description and justification</b>	Some NBS could contribute to enhance landscape enjoyment increasing the amount of perceivable scenic sites. If the project foreseen the built of new natural trails, the scenic enjoyment of new viewsheds could be a co-benefit for population and tourists.
<b>Definition</b>	A viewshed is the geographical area that is visible from a location. It includes all surrounding points that are in line-of-sight with that location and excludes points that are beyond the horizon or obstructed by terrain and other features (e.g., buildings, trees).  This Indicator could be calculated both in the Baseline Scenario taking into account the viewshed from all the scenic sites already existing, and in the Design Scenarios (e.g., NBS Scenario, Hybrid Scenario, Grey Scenario) considering, in addition, the new scenic sites created by the project.
<b>Strengths and weaknesses</b>	It is easy to be estimated and rapidly provides information concerning the benefits achievable in terms of landscape perception. It could be difficult to find accurate data concerning digital terrain models.
<b>Measurement procedure and tool</b>	Given the vector data of the scenic site locations (point features) and a digital terrain model of the study area, common GIS software tools allow to achieve.