

## 10.14 Modelled C and N cycling in soil

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Modelled C and N Cycling	Biodiversity
<b>Description and justification</b>	This indicator assessed the soil fertility, in terms of nutrients, structure and C and N cycling.
<b>Definition</b>	Nutrient cycling is one of the most important processes of nutrients that occur in an ecosystem: their use, movement, and recycling in the environment. Valuable nutrients like carbon, oxygen, hydrogen, phosphorus, and nitrogen are recycled in the ecosystem to allow the life of organisms. Nutrient cycles are inclusive of both living and non-living components and involve biological, geological, and chemical processes, which is the reason that these nutrient circuits are known as biogeochemical cycles. Carbon cycling is essential to all life as it is the main constituent of living organisms. It serves as the backbone component for all organic polymers, including carbohydrates, proteins, and lipids. Carbon compounds, such as carbon dioxide (CO <sub>2</sub> ) and methane (CH <sub>4</sub> ), circulate in the atmosphere and influence global climates. Nitrogen cycling is a necessary component of biological molecules. Some of these molecules include amino acids and nucleic acids.
<b>Strengths and weaknesses</b>	- Soil sample collecting could be time and money consuming.
<b>Measurement procedure and tool</b>	This Indicator must be measured in the field so that laboratory analyses for soil organic matter and nutrient content can be better related to actual field conditions at time of sampling.  C and N cycling can be achieved from soil respiration that depends from soil temperature and water-filled pore space (WFPS), which serves as an excellent integrator of physical, chemical and biological soil properties and aeration dependent microbial processes important to C and N cycling in soil (Parkin et al., 1996).
<b>Scale of measurement</b>	t/ha/year
<b>Data source</b>	

<b>Required data</b>	Soil samples
<b>Data input type</b>	Semi-quantitative
<b>Data collection frequency</b>	Annually
<b>Level of expertise required</b>	High
<b>Synergies with other indicators</b>	Indicators related to soil fertility (soil available nutrients, texture and structure)
<b>Connection with SDGs</b>	2
<b>Opportunities for participatory data collection</b>	
<b>Additional information</b>	
<b>References</b>	<a href="https://www.thoughtco.com/all-about-the-nutrient-cycle-373411">https://www.thoughtco.com/all-about-the-nutrient-cycle-373411</a> Parkin, T.B., Doran, J.W. and Franco-Vizcaino, E. (1996) Field and laboratory tests of soil respiration. in: Doran, J.W. and Jones, A.J. (eds) Methods for Assessing Soil Quality, Soil Science Society of America, Special Publication no. 49, Madison, Wisconsin. Pankhurst C., Gupta V.V.S.R. (1997), <i>Biological Indicators of Soil Health</i> . CAB International

## 10.15 Equivalent used soil

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Equivalent used soil	Biodiversity
<b>Description and justification</b>	This is an indicator of the amount of soil (mainly peat) saved thanks to the soil produced by the NBS. Peat is the main constituent of organic substrates typically used for ornamental plant cultivation. In recent years, due to a recognition of the ecosystem service provision potential of peatlands, the supply of peat has reduced. The NBS, producing suitable soil for cultivating ornamental plant, will go in the direction to find new materials to replace peat.