

Indicator theme (old)	D Biodiversity
Component (FDES)	1: Environmental Conditions and Quality
Sub-component (FDES)	1.2: Land Cover, Ecosystems and Biodiversity
Indicator topic (FDES)	1.2.2: Ecosystems and biodiversity
Indicator	D-8.1 Landscape fragmentation

ID and name in indicator guidelines D8 Biodiversity - no direct correspondence

First publication 9/22/2021 Latest update

Indicator definition	<p>This indicator measures landscape fragmentation outside strongly fragmented urban areas as the area-weighted average effective mesh density in km⁻¹. Effective mesh density is the density of unfragmented landscape elements ("meshes") per unit area, in this case square km. Fragmentation occurs when parts of the landscape are divided by "fragmentation geometry", i.e. sealed surfaces or transport infrastructure.</p> <p>The indicator corresponds to the EEA indicator on "Landscape fragmentation pressure and trends in Europe", which is already being used by EU countries. Other MS are encouraged to introduce similar ecosystem classification and monitoring systems, to be able to produce data to feed into this indicator.</p>
Unit of measure	Mesh density in km ⁻¹
Coverage	Landscape fragmentation
Spatial aggregation	National territory
Reference period	End of reporting year or nearest date within that calendar year
Update frequency	Every three years
Purpose	The indicator provides a measure of large-scale connectivity and permeability of the landscape outside major urban centers, which is critical to the conservation of mobile biodiversity, as well as the functionality of large-scale ecosystem processes and their ability to adapt to climate change by allowing adaptive range adjustments of flora and fauna.
Policy context	<p>Natural and near-natural ecosystems with their biodiversity have strong intrinsic values, provide multiple ecosystem services to human societies, and thereby support sustainable development and human wellbeing on Earth. They enable nature-based solutions to a wide range of challenges to Society. Their capacity to provide these services depends partly on their connectivity, which – as the inverse of fragmentation – is measured by this indicator.</p> <p>The indicator is relevant to SDG target 15.5 ("Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species"). Because of its link to transport infrastructure, it is also relevant to SDG target 15.9 ("Integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts")</p>

Link with SDG indicators

SDG indicators	Comments
15.3.1 Proportion of land that is degraded over total land area	Indirectly related
15.4.2 Mountain Green Cover Index	Indirectly related

Policy references

Title and weblink	Comments
United Nations Convention on Biological Diversity (CBD) https://www.cbd.int/	

United Nations Convention on Biological Biodiversity: First Draft of the Post-2020 Global Biodiversity Framework

<https://www.cbd.int/doc/c/914a/eca3/24ad42235033f031badf61b1/wg2020-03-03-en.pdf>

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions.

EU Biodiversity Strategy for 2030. Bringing nature back into our lives.

<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1590574123338&uri=CELEX:52020DC0380>

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm

Recommendation No. 16 (1989) of the standing committee on areas of special conservation interest of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention)

https://search.coe.int/bern-convention/Pages/result_details.aspx?ObjectId=0900001680746c25

Council of Europe Landscape Convention

The CoE Landscape Convention supports the conservation, planning and management of landscapes throughout Europe. It aims at landscape quality, to which its connectivity contributes.

<https://www.coe.int/en/web/conventions/full-list/-/conventions/treaty/176?module=treaty-detail&treatyenum=176>

Methodology for indicator calculation Effective mesh size is calculated from available electronic map data (e.g. TeleAtlas Multinet, Open Street Map) following the methodology as per below.

Methodology references

Title of the reference document	Link
Landscape division, splitting index, and effective mesh size: new measures of landscape fragmentation	https://link.springer.com/article/10.1023/A:1008129329289
Implementing Landscape Fragmentation as an Indicator in the Swiss Monitoring System of Sustainable Development (Monet)	https://www.sciencedirect.com/science/article/pii/S0301479707001387
Supporting information on EEA indicator “Landscape fragmentation pressure and trends in Europe”	https://www.eea.europa.eu/data-and-maps/indicators/mobility-and-urbanisation-pressure-on-ecosystems-2/assessment

Data and statistics needed to compile the indicator

ID	Data item	FDES topic
228	Amount and geographical distribution of fragmentation geometry	
229	Country area (excluding major urban areas)	1.1.3: Geological and geographical information

Comments

