

Non-specific interactions with the riverine landscape (national)

Responsible partner: RCSES

Actuality: November 2021

Interpretation

The indicator estimates the opportunities provided by a river landscape for non-specific interactions with the riverine landscape (e.g. taking a walk, cycling, nature observation, staying in the river landscape to relax, picnic, etc.). For regional analyses, an expansion option can be included in the calculation as an additional variable with half the weighting in the summation formula.

For a more detailed representation of specific management areas, the grid cells can be considered with a relative rating between 0-100. For the overall assessment in the context of other ES, this cultural ES assessment was transferred to the 5-level RESI scale (Podschun et al., 2018). An estimation of this ES is possible in each country where suitable data for the calculation are available.

References

- Grizzetti, B., Lanzaova, D., Liqueste, C. & Reynaud, A. (2015). Cook-book for water ecosystem service assessment and valuation, JRC Science and policy Report. European Commission Luxembourg.
- Rabe, S.-E., Gantenbein, R., Richter, K.-F. & Grêt-Regamey, A. (2018). Increasing the credibility of expert-based models with preference surveys – Mapping recreation in the riverine zone. Ecosystem Services.
- Villamagna, A. M., Mogollón, B. & Angermeier, P. L. (2014). A multi-indicator framework for mapping cultural ecosystem services. The case of freshwater recreational fishing. Ecological Indicators 45, S. 255–265

■ Original approach according to River Ecosystem Service Index (RESI) (Podschun et al., 2018)

| Class | Abbr. | Description | | Spatial reference | |
|---|-------|--|---|--|---------|
| Cultural | NWA | Experiencing animals, plants and landscapes (e.g. nature observation, cycling, walking) for the purpose of non-specific recreation | | Floodplain segment or compartment <input checked="" type="checkbox"/> former floodplain <input checked="" type="checkbox"/> active floodplain <input checked="" type="checkbox"/> river | |
| Variable | Abbr. | Unit | Variable description | Data basis | Comment |
| Bank and water body availability | BWA | 0-100 | Sum of normalised bank density per 100m2 and normalised density of water area per 100m2 with final normalisation to UGV | National land cover model | |
| Possibility to experience the terrain | EoT | 0-100 | Possibility to experience a land surface due to its land cover (assessment based on the CORINE classification) | National land cover model | |
| Number of overlapping protected area categories | NPA | 1-100 | Normalised number of protected area categories per 100m2 (cf. Grizzetti et al. 2015) | National parks, biosphere reserve, nature parks, nature reserves, landscape conservation areas, Natura 2000 areas | |

| Calculation | | | | | | |
|---|-----------|---------------------|----------------|---|---------------|--------------------|
| Calculation steps | | | | Indicator | | |
| <p>Nationwide:</p> <p>Calculation of the variables BWA, EoT and NPA in grid cells with 100m resolution.</p> <p>Calculation of the indicator (see column on the right) with a normalization between 0-100</p> <p>Floodplain compartment level:</p> <p>Calculation of the area-weighted mean for the floodplain compartments river, active floodplain and former floodplain (right and left bank respectively).</p> <p>For scaling:</p> <p>Classification into the five-level rating scale via the calculation of quintiles for the all model regions.</p> | | | | $f_{(NWA)} = \sum BWA, EoT, NPA$ | | |
| | | | | → normalize raster between 0-100 (Rabe et al. 2018): | | |
| | | | | $\frac{max_{new} - min_{new}}{max_{old} - min_{old}} \cdot (v - max_{old}) + max_{new}$ | | |
| | | | | v is the resulting raster generated by $f_{(NWA)}$ | | |
| Scaling | Quintiles | > 33.0 – 73.0 | > 23.4 – 33.0 | > 17.9 – 23.4 | > 14.7 – 17.9 | 0 – 14.7 |
| <input checked="" type="checkbox"/> national <input type="checkbox"/> local | | | | | | |
| Evaluation Class | | 5 | 4 | 3 | 2 | 1 |
| Qualitative Evaluation | | Very high provision | High provision | Moderate provision | Low provision | Very low provision |

■ Adaption for Danube-wide application

| Class | Abbr. | Description | | Spatial reference | | |
|---|-----------|--|--|--|---------------|--------------------|
| Cultural | NWA | Experiencing animals, plants and landscapes (e.g. nature observation, cycling, walking) for the purpose of non-specific recreation | | Floodplain segment or compartment <input checked="" type="checkbox"/> former floodplain <input checked="" type="checkbox"/> active floodplain <input checked="" type="checkbox"/> river | | |
| Variable | Abbr. | Unit | Variable description | Data basis | Comment | |
| Bank and water body availability | BWA | categorical | People’s preference to perform various activities next to water are calculated as the length of banks per area unit within a 1000 m radius using Line Density tool, then normalized per segment length | land cover model | | |
| Possibility to experience the terrain | EoT | categorical | Different categories of land use land cover are converted into ordinal data using a lookup table revealing the pedestrian accessibility between 0 and 95 (Thiele 2020) | land cover model | | |
| Number of overlapping protected area categories | NPA | categorical | Presence of protected areas per segment | National parks, biosphere reserve, nature parks, nature reserves, landscape conservation areas, Natura 2000 areas | | |
| Calculation | | | | | | |
| Indicator | | | | | | |
| <div>$f_{(NWA)} = \sum BWA, EoT, NPA$<p>→ normalize raster between 0-100 (Rabe et al. 2018):</p>$\frac{max_{new} - min_{new}}{max_{old} - min_{old}} \cdot (v - max_{old}) + max_{new}$<p>v is the resulting raster generated by $f_{(NWA)}$</p></div> | | | | | | |
| Scaling <input checked="" type="checkbox"/> national <input type="checkbox"/> local | Quintiles | > 33.0 – 73.0 | > 23.4 – 33.0 | > 17.9 – 23.4 | > 14.7 – 17.9 | 0 – 14.7 |
| Evaluation Class | | 5 | 4 | 3 | 2 | 1 |
| Qualitative Evaluation | | Very high provision | High provision | Moderate provision | Low provision | Very low provision |

■ Data sources

| Data set | Data type | Spatial reference | Spatial resolution | Source | Creation date | Comments |
|--|-----------|---------------------------|---|---|---------------|----------|
| BWA, EoT Copernicus riparian zones LCLU (MAES_4) | Polygon | International / Active FP | Minimum Mapping Unit: 0.5 ha Minimum Mapping Width: 10 m | https://land.copernicus.eu/local/riparian-zones/land-cover-land-use-lclu-image | 2012 | |
| NPA e.g. Natura 2000 areas, protected areas | Polygon | International / Segments | | https://www.eea.europa.eu/data-and-maps/data/natura-12 | 2020 | |