



<b>Ecosystem Service</b>	<b>Culture or heritage from interactions with nature</b>
<b>CICES class name</b>	Characteristics of living systems that are resonant in terms of culture or heritage
<b>CICES Section</b>	Cultural (Biotic)
<b>CICES Class code</b>	3.1.2.3

### Sample Indicators









Indicator values from			
Experiment or direct measurement		Survey	
Expert assessment		Statistical- or census data	
Model or GIS		Literature values	
Stakeholder participation		Not provided	

Table 1: Field Scale


Indicator	Unit	Indicator values from
<sup>[1]</sup> Quality and number of man-made structures (hedges, stone walls)	Not provided, #	

Table 2: Farm Scale








Indicator	Unit	Indicator values from
<sup>[1]</sup> Quality and number of man-made structures (hedges, stone walls)	Not provided, #	

Table 3: Regional Scale

Indicator	Unit	Indicator values from
<sup>[1]</sup> Quality and number of man-made structures (hedges, stone walls)	Not provided, #	
<sup>[2]</sup> Total area with outstanding historical or cultural significance	ha	
<sup>[9]</sup> Heritage: Participatory mapping. Respondents in an online survey mark on a map area in their region where different cultural ecosystem services are supplied. Then, the proportion	ha	



<p>of markings in each of the investigated land cover classes is calculated. After that, values are calculated for sub-regions. The proportions are multiplied with the area extent of the respective land cover classes in the sub-region and result for all land cover classes are summed up.</p>		
<p><sup>[5]</sup> Share of open land classified as semi-natural grassland (within a 5 km radius around farmhouse)</p>	<p>%</p>	
<p><sup>[3]</sup> Agricultural heritage index: heritage value of the cultivation of native potato varieties, calculated based on the heritage value of the potato species, the systems of knowledge and social networks:</p> <p>The heritage value of the species is represented by:</p> <ul style="list-style-type: none"> <li>-Number of native potato varieties cultivated by the farmer</li> <li>-Type of native potato varieties cultivated by the farmer</li> <li>-Exchange of native potato seed</li> <li>-Quantity of native potato for self-consumption/quantity harvested</li> <li>-Quantity of native potato cultivated/quantity of commercial potato cultivated</li> <li>-Storage and use of own native potato seed</li> </ul> <p>Systems of knowledge are represented by:</p> <ul style="list-style-type: none"> <li>-Cultivation practices used to come from inheritance</li> <li>-Cultivation practices were learned by working at the farm</li> <li>-Main reason to grow native potato is a tradition across generations</li> <li>-Soil fertilization is made with farm-made products (organic fertilizers, algae)</li> </ul> <p>Social networks are represented by:</p> <ul style="list-style-type: none"> <li>-Exchange of native potato seed</li> <li>-Number of know farmers that integrate your network of seed exchange</li> <li>-The farmer participates in "minga", a traditional labour sharing custom between farms</li> <li>-The farmer uses a mix of family and hired labour</li> </ul> <p>The selection and weighing of sub-indicators are based on expert assessment. Indicators are spatially mapped based on distance from the service provider (traditional farmer).</p>	<p>Index 1 - 100</p>	
<p><sup>[3]</sup> Agricultural heritage benefit, based on willingness to pay (WTP) value for the preservation of the traditional potato cultivation and mapped by distributing the total amount in dollar (WTP population share of traditional potato cultivators that live in the region) between all agricultural fields in the region, using "Agricultural heritage index" as weighing factor.</p>	<p>\$ * ha<sup>-1</sup></p>	



[7] WTP - willingness to pay for landscape preservation considering likely landscape changes	€	
[4] Landscape value, based on conformity of land use and land use changes with nationally defined landscape character for the respective region	-	,
[5] Share of farmers surveyed that state that their farm should look well-tended for	%	
[5] Share of farmers surveyed that attach value to cultural heritage elements, such as stone walls, hedgerows, etc.	%	
[5] Share of farmers surveyed that enjoy keeping animals	%	
[6] Negative indicator: Spring litter in un-mown plots (alpine grasslands: this is considered lack of "stewardship" which may diminish cultural heritage value)	Not specified	
[7] Average travel cost of tourists	€ * yr <sup>-1</sup>	
[8] Sense of place: Number of people acknowledging the ecosystem as relevant for their identity, value and the place of their origin	#	,  ,

Table 4: National Scale

Indicator	Unit	Indicator values from
[1] Quality and number of man-made structures (hedges, stone walls)	Not provided, #	
[10] Number of monuments in agricultural areas	#	
[10] Number of certified products that require traditional landscape management	#	

Table 5: Multinational Scale

Indicator	Unit	Indicator values from
[1] Quality and number of man-made structures (hedges, stone walls)	Not provided, #	



## References

No.	Citation
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2	Liu S, Crossman ND, Nolan M, Ghirmay H (2013) Bringing ecosystem services into integrated water resources management. <i>Journal of Environmental Management</i> 129: 92-102. DOI: 10.1016/j.jenvman.2013.06.047
3	Nahuelhual L, Carmona A, Laterra P, Barrena J, Aguayo M (2014) A mapping approach to assess intangible cultural ecosystem services: The case of agriculture heritage in Southern Chile. <i>Ecological Indicators</i> 40: 90-101. DOI: 10.1016/j.ecolind.2014.01.005
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5	Andersson E, Nykvist B, Malinga R, Jaramillo F, Lindborg R (2015) A social–ecological analysis of ecosystem services in two different farming systems. <i>Ambio</i> 44(1): 102-112. DOI: 10.1007/s13280-014-0603-y
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9	Jaligot R, Chenal J, Bosch M, Hasler S (2019) Historical dynamics of ecosystem services and land management policies in Switzerland. <i>Ecological Indicators</i> 101: 81-90. DOI: 10.1016/j.ecolind.2019.01.007
10	Maes J, Liqueste C, Teller A, Erhard M, Paracchini ML, Barredo JI, Grizzetti B, Cardoso A, Somma F, Petersen JE, Meiner A, Gelabert ER, Zal N, Kristensen P, Bastrup-Birk A, Biala K, Piroddi C, Egoh B, Degeorges P, Fiorina C, Santos-Martín F, Naruševičius V, Verboven J, Pereira HM, Bengtsson J, Gocheva K, Marta-Pedroso C, Snäll T, Estreguil C, San-Miguel-Ayanz J, Pérez-Soba M, Grêt-Regamey A, Lillebø AI, Malak DA, Condé S, Moen J, Czúcz B, Drakou EG, Zulian G, Lavalle C (2016) An indicator framework for assessing ecosystem services in support of the EU Biodiversity Strategy to 2020. <i>Ecosystem Services</i> 17: 14-23. DOI: 10.1016/j.ecoser.2015.10.023