Ecosystem Service	**Biotic filtration, sequestration and storage of waste**
CICES class name	Filtration/sequestration/storage/accumulation by micro-organisms, algae, plants, and animals
CICES Section	Regulation & Maintenance (Biotic)
CICES Class code	2.1.1.2

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**
[1] Filtering and buffering: -Soil organic carbon [%] -Acetate esterase enzyme activity [not provided] -Bulk density [g * cm^{-3}] -Basal soil respiration [mg CO_2 * g^{-1}]	Not provided	
[3] Soil carbon (0-100cm)	kg C * m^{-2}	
[2] Natural attenuation/ clean groundwater: Indicator value calculated as: $$I = \frac{\sum \lvert \log(\frac{i}{i_{max}}) \rvert}{n}$$ With: I – Indicator value, i – variable i measured, i_{max} – maximum ecologic potential of variable i in benchmark reference, n – number of variables Where performance is considered better than in the benchmark and deviation, therefore, has a positive effect, $\lvert \log(\frac{i}{i_{max}}) \rvert$ subtracted from the sum instead of added. For this ES, variables were: -Soil organic matter [% dw] -Bacterial biomass [mg C *g dw^{-1}]	-	 , 

-pH in KCl -Physiological diversity bacteria [bBiolog. CLPP: Hill's slope] -Water suluble P (Pw) [mg * l^{-1}] and extractable P (PAL) [mg * kg^{-1}]		

Table 2: Farm Scale

Indicator	Unit	Indicator values from
[4] Share of nitrogen retained during water passage between agricultural sub-catchment and sea. Values were scaled [0-1]	%	
[4] Share of farmers that express clearly a value and care for the health of the land. Values were scaled to [0-1]	%	

Table 3: Regional Scale

Indicator	Unit	Indicator values from
[10] Nitrate leaching	kg * ha^{-1} * yr^{-1}	
[5] Nitrogen loss	kt N	
[8] Risk of nitrate leaching: exchange frequency of the soil water in the root layer. Infiltration rate divided by field capacity	%	
[4] Share of nitrogen retained during water passage between agricultural sub-catchment and sea. Values were scaled [0-1]	%	
[6] Mechanical filtration capacity: infiltration capacity, calculated as: $$C = soil_{perm} * (1 - s)$$ With: C – mechanical filtration capacity, $soil_{perm}$ – soil permeability [cm * d^{-1}], s – share of anthropogenic surface sealing	cm * d^{-1}	,
[6] Physicochemical filtration capacity, calculated as: $$C = CEC * (1 - s)$$ With: C – physicochemical filtration capacity, CEC – effective cation exchange capacity [cmol(+) * kg dm^{-1}], s – share of anthropogenic surface sealing)	cmol(+) * kg dm^{-1}	,
[9] Share of natural forest cover in municipality's surface. Values were normalized [0-1] using benchmark values where available and observed values otherwise.	%	

[4] Share of farmers that express clearly a value and care for the health of the land. Values were scaled to [0-1]	%	
[7] Nutrient regulation: Assigned values depend on the land cover class. The matrix defined by Burkhard et al., 2012 (DOI:10.1016/j.ecolind.2011.06.019) was adapted and used in this study.	Index 0 - 5	
[11] Water purification and provision, calculated as: $$W = NPP * (1 - VCNPP) * IC_s * S_{cf}$$ With: W – water purification and provision, NPP – Net Primary Production calculated from NDVI-values and expressed on a relative scale set to [0 – 1000], VCNPP – coefficient of variation of NPP [0 – 1], IC_s – soil infiltration capacity [0 – 1], S_{cf} – slope average correction factor of the study area [0 – 1]	-	
[11] Waste purification, calculated as: $$W = NPP * (1 - VCNPP) * I_w * O_w * 1.75$$ With: NPP – Net Primary Production [0-1000], VCNPP – coefficient of variation of NPP [0–1], I_w – water input to the system [0–1], O_w – water bodies occupancy percentage and flat floodplain area [0–1]	-	

Table 4: Multinational Scale

Indicator	**Unit**	**Indicator values from**
[12] Nutrient regulation: Values were assigend for Corine land cover classes, based on values published by Burkhard et al. (2009; DOI: 10.3097/LO.200915) and modified for the context of riparian zones.	Index 0 - 5	

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* The ecosystem service discussed on this factsheet is not a focus of the cited paper