Ecosystem Service	Mass movement control
CICES class name	Buffering and attenuation of mass movement
CICES Section	Regulation & Maintenance (Biotic)
CICES Class code	2.2.1.2

Brief Description

- Reducing the frequency and/or severity of landslides and avalanches that would otherwise harm people and/or their property
- The reduction in the speed of movement of solid material by virtue of the stabilizing effects of plants and animals (e.g. earthworms increase aggregate stability) that mitigates or prevents damage to human or human health

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: Regional Scale

Indicator	Unit	Indicator values from
[1] Spring litter in un-mown plots (alpine grasslands; high amounts of litter increase risk of snow gliding)	Not specified	🖥️
[2] Number of landslide per year	#	🖥️ , 🖥️ , 🖥️
[2] Area affected by landslide	ha	
[3] Supply of landside regulation, based on: 1.) deriving a formula for calculating landslide risk by using an Analytic Hierarchy Process (AHP) 2.) creating an ES potential map (high risk= low potential, low risk = high potential)	Index 0 - 5	🖥️

(Expert assessment was used to assign discrete values for each class of variables in AHP process and mapping of ES potential).		

Table 2: National Scale

Indicator	Unit	Indicator values from
[4] Expert assessment for each land use class based on the indicators: soil cover; trees; landslides; flooding; debris flow (units not given)	very negative (−3) to very positive (+3)	
[5] Density of hedgerows	Not specified	

References

No.	Citation
1	Quétier F, Lavorel S, Daigney S, de Chazal J (2009) Assessing ecological and social uncertainty in the evaluation of land-use impacts on ecosystem services. Journal of Land Use Science 4(3): 173-199. DOI: 10.1080/17474230903036667
2	Adhikari S, Baral H, Nitschke CR (2018) Identification, Prioritization and Mapping of Ecosystem Services in the Panchase Mountain Ecological Region of Western Nepal. Forests 9(9): 554. DOI: 10.3390/f9090554
3	Dang KB, Burkhard B, Muller F, Dang VB (2018) Modelling and mapping natural hazard regulating ecosystem services in Sapa, Lao Cai province, Vietnam. Paddy and Water Environment 16(4): 767-781. DOI: 10.1007/s10333-018-0667-6
4	Helfenstein J, Kienast F (2014) Ecosystem service state and trends at the regional to national level: A rapid assessment. Ecological Indicators 36: 11-18. DOI: 10.1016/j.ecolind.2013.06.031
5	Maes J, Liquete 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. Ecosystem Services 17: 14-23. DOI: 10.1016/j.ecoser.2015.10.023