

Definitions and data sources for explanatory variables used in ESVD ecosystem service value functions

Variable	Aggregation	Units	Data source	Dates covered by dataset or date of publication of the data	Resolution (m)
Ecosystem Condition	Mean	Index (0-100)	https://data-gis.unep-wcmc.org/portal/home/item.html?id=fabf96ab5e0c4becbd456ffc6f690113	Aggregate of datasets with various dates	20000
Protection status	Percentage of area	Percentage (0-100)	World Database of Protected Areas (WDPA)	Up to date showing current protected areas	Not applicable
Fragmentation	Mean	km ²	https://developers.google.com/earth-engine/datasets/catalog/CSP_HM_GlobalHumanModification	2016	1000
Biodiversity	Mean	index (0-1)	Biodiversity intactness https://doi.org/10.1126/science.aaf2201	2015 (or 2000-2015)	927
Pollution	Mean	kg m ³	Particulate matter concentration https://doi.org/10.1029/2008JD011115	Per day for 2016-2021 for ECMWF/CAMS/NRT	44528
Land cover / Land use (LC/LU)	Percentage of area for each LC/LU category	Percentage (0-100)	Land Cover CCI	1992-2015 (tiff) + 2015-2019 (netCDF)	309
Ecosystem diversity	Index (normalized dispersion of EVI)	Index (0-1)	Global habitat heterogeneity https://doi.org/10.1111/geb.12365	One dataset based on 2001-2005 data	928
Manmade features/infrastructure at study site (e.g. public facilities, visitor centre, car park etc.)	Percentage of area	Percentage (0-100)	https://developers.google.com/earth-engine/datasets/catalog/JRC_GHSL_P2_016_BUILT_LDSMT_GLOBE_V1	4 datasets covering: <1975, 1975-1990, 1990-2000, 2000-2014	38

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Human modification index (https://map.unbiodiversitylab.org/earth)	Mean	Index (0-1)	https://map.unbiodiversitylab.org/earth?basemap=grayscale&coordinates=21.1686086,-44.6169704,1&layers=human-modification-index_100 (excludes Antarctica)	Dataset for 1990, 2000, 2010 and 2015	300
Ecosystem connectivity	Mean	Percentage of connected protected land (0-100)	https://resourcewatch.org/data/explore/bio040-Protected-Area-Connectivity?section=All+data&selectedCollection=&zoom=3.999999999999999996&lat=0.5273363048124838&lng=9.250488281249638&pitch=0&bearing=0&basemap=dark&labels=light&layers=%255B%257B%2522dataset%2522%253A%2522c8f384bf-b0f3-46ae-a543-0e1126e11736%2522%252C%2522opacity%2522%253A1%252C%2522layer%2522%253A%25229e9bf3f1-c492-4acb-8897-784f728f98c2%2522%257D%255D&aoi=&page=1&sort=createdAt&sortDirection=-1	2016	Not applicable
Net Primary Productivity	Mean	kg*C/m ²	Example ee.ImageCollection("MODIS/006/MOD17A3HGF")	One dataset per year for 2000-2021	500
Human Appropriation of Net Primary Productivity	Mean	Millions of kg of carbon per m ²	https://sedac.ciesin.columbia.edu/data/collection/hanpp	1995	28000
Landscape diversity	Mean	Index (0-1)	https://developers.google.com/earth-engine/datasets/catalog/CSP_ERGo_1_0_Global_ALOS_topoDiversity	One dataset for 2006-2011	270

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Species that are non-native	Mean	# species / km ²	Species richness of non-native (alien) species https://mol.org/patterns/aliens	2016	
Population density	Mean	Persons per km ²	https://developers.google.com/earth-engine/datasets/catalog/CIESIN_GPWv411_GPW_Population_Density	5 datasets : 2000 - 2005 - 2010 - 2015 - 2020	927.67
Population profile (mean age)	Mean	Years	https://developers.google.com/earth-engine/datasets/catalog/WorldPop_GP100m_pop_age_sex_cons_unadj	One dataset per year for 2000-2020	92.7
Income per capita	Mean	USD	https://ourworldindata.org/grapher/gdp-per-capita-worldbank	Values per year. Time coverage varies among countries	country level
Income inequality	Mean	gini index (0-1)	https://data.oecd.org/inequality/income-inequality.htm	Values per year. Time coverage varies among countries	country level
Night time light	Mean	nanoWatts/cm ² /sr	https://developers.google.com/earth-engine/datasets/catalog/NOAA_VIIRS_DNB_MONTHLY_V1_VCMCFG	One dataset per month from Apr-2012 to Jun-2022	463
Accessibility – time to nearest town/city	Time to nearest town/city	Minutes	https://pubmed.ncbi.nlm.nih.gov/29320477/	2015	1000
Accessibility - road density	Mean	m/km ²	https://www.globio.info/download-grip-dataset	Dataset published in 2018	8000