August 2021  
Author: Francesca Rosa

**Folder /inputdata/VS**

VS stands for Vulnerability Scores.

This folder contains the files and the scripts needed to obtain the VS for plants.

The LC-Impact methodology documentation1 does not provide the VS for plants (and neither does the publication on which the LC-Impact methodology is based2), but it provides the CFs for plants. Therefore, it was possible to obtain the VS as ratio between the global CFs for plants (file: */original-files/PerTaxonAndAggregated global CF\_Average\_July 17th 2016.csv*) and the regional CFs for plants (file: */original-files/Ch6 PSLregional v01.csv*). The global and the regional CFs have been organized in a single table (*Global\_Regional\_species-lost\_LCImpact.csv*) and the ratio is available in *VS\_plants\_LU.csv*. The CFs are land-use- and ecoregion-specific, so the ratios have been obtained per ecoregion and per land use class. The VS should be ecoregion-specific but not land-use specific. Hence, to obtain one VS per ecoregion we took the average of the values for the different land uses, which slightly differed (probably due to numerical rounding when the CFs were calculated for the LC-Impact methodology). The script *VS\_plants.R* was used for the averaging and the results were saved in *VS\_plants.csv*. The VS calculated were copied in the */input\_data/ecoregions\_data/Ecoregions\_description.csv* in the column VS\_plants (the rest of the file Ecoregions\_descriptoin.csv comes from Chaudhary et al, 20152).

**Subolder /inputdata/VS/tests\_alternative-VS**

Results and scripts to test alternative options. Most of the files have names which are self explicative or provide enough information to understand their content. For those which are not:

*comparison\_VS.xlxs* : comparison of various versions of VS (ration between global and regional CFs of the LC-Impact methodology, Chaudhary et al. (2015)2, Chaudhary & Brooks (2018))3.

Ecoregions\_description\_Chaudhary2015-2018.csv : VS from Chaudhary et al. (2015)2 and Chaudhary & Brooks (2018)3.

*Ecoregions\_description\_GEP.csv* : VS have been replaced by the GEP4, which are not available for plants yet though.

*Ecoregions\_description\_VS-from-ratio-LCImpact.csv* : VS for all species groups have been obtained as ratio between the global and regional CFs of the LC-Impact methodology.

*Ecoregions\_description\_VSplants\_TL0.5.csv* : VS have been obtained as a ratio between the global and regional CFs of the LC-Impact methodology assuming a threat level of 0.5 for plants.

*Ecoregions\_description\_VSplants\_TL1.csv* : VS have been obtained as a ratio between the global and regional CFs of the LC-Impact methodology assuming a threat level of 1 for plants.

*VS\_plants\_mamm\_birds.csv* : VS for plants, mammals and birds obtained from the ration between the global and regional CFs of the LC-Impact methodology using the script VS\_plants-mamm-birds.R.

*VS\_plants-mamm-birds.R* : script used to produce VS\_plants\_mamm\_birds.csv.

(1) Chaudhary, A.; Verones, F.; De Baan, L.; Pfister, S.; Hellweg, S. Chapter 11 - Land Stress: Potential Species Loss Form Land Use. *LC-IMPACT Version 1.0, www.lc-impact.eu.* **2016**.

(2) Chaudhary, A.; Verones, F.; De Baan, L.; Hellweg, S. Quantifying Land Use Impacts on Biodiversity: Combining Species-Area Models and Vulnerability Indicators. *Environ. Sci. Technol.* **2015**, *49* (16), 9987–9995. https://doi.org/10.1021/acs.est.5b02507.

(3) Chaudhary, A.; Brooks, T. M. Land Use Intensity-Specific Global Characterization Factors to Assess Product Biodiversity Footprints. *Environ. Sci. Technol.* **2018**, *52* (9), 5094–5104. https://doi.org/10.1021/acs.est.7b05570.

(4) Kuipers, K. J. J.; Hellweg, S.; Verones, F. Potential Consequences of Regional Species Loss for Global Species Richness: A Quantitative Approach for Estimating Global Extinction Probabilities. *Environ. Sci. Technol.* **2019**, *53* (9), 4728–4738. https://doi.org/10.1021/acs.est.8b06173.