

Filtration of surface water by ecosystem types - Demand

General description

The Water Filtration demand indicator describes the amount of nitrogen that is introduced into the ecosystem per municipality in kg/year. This includes the nitrogen emitted in the atmosphere and then deposited in the landscape and the nitrogen from the fertilization in agriculture.

Input Data

- NOx emissions in the atmosphere. Source: [EMEP, http://www.ceip.at/new_emep-grid/01_grid_data_2015](http://www.ceip.at/new_emep-grid/01_grid_data_2015)
- Nitrogen loads from fertilization per different LULC

Calculation processes

(1) Calculate N emissions per municipality

The Emep gridded data on NOx are used to calculate the average emissions at the LAU2 level, these data are after converted in N equivalent as described in Umweltbundesamt (2017)

(2) Calculate N inputs based on LULC

The N loads quantities per agricultural areas are based on literature (Bundesministerium für land- und forstwirtschaft, umwelt und wasserwirtschaft, 2017), the average N input per municipality is then calculated.

lucode	Land use type	N load
110	Urban fabric	10
120	Industrial, commercial and transport units	10
130	Mine, dump and construction sites	10
140	Artificial, non-agricultural vegetated areas	10
210	Arable land	113
220	Permanent crops	117
230	Pastures	118

14px/inherit;;black;;inherit>240	14px/inherit;;black;;inherit>Heterogeneous agricultural areas	14px/inherit;;black;;inherit>104
14px/inherit;;black;;inherit>310	14px/inherit;;black;;inherit>Forests	14px/inherit;;black;;inherit>0
14px/inherit;;black;;inherit>320	14px/inherit;;black;;inherit>Scrub and/or herbaceous vegetation associations	14px/inherit;;black;;inherit>0
14px/inherit;;black;;inherit>330	14px/inherit;;black;;inherit>Open spaces with little or no vegetation	14px/inherit;;black;;inherit>0
14px/inherit;;black;;inherit>410	14px/inherit;;black;;inherit>Inland wetlands	14px/inherit;;black;;inherit>0
14px/inherit;;black;;inherit>420	14px/inherit;;black;;inherit>Maritime wetlands	14px/inherit;;black;;inherit>0
14px/inherit;;black;;inherit>510	14px/inherit;;black;;inherit>Inland waters	14px/inherit;;black;;inherit>0
14px/inherit;;black;;inherit>520	14px/inherit;;black;;inherit>Marine waters	14px/inherit;;black;;inherit>0

(2) Calculate total N inputs

The total N inputs per municipality are therefore obtained summing up the results from point 1 and point 2.

Bibliography:

Stickstoffoxid-Emissionen, Umwelt Bundesamt, 2017:
<https://www.umweltbundesamt.de/daten/luft/luftschaedstoff-emissionen-in-deutschland/stickstoffoxid-emissionen#textpart-1>

Bundesministerium für land- und forstwirtschaft, umwelt und wasserwirtschaft, 2017, Richtlinie für die sachgerechte düngung im ackerbau und grünland. (
https://www.ages.at/download/0/0/4bfee71413a6aa535d2e753fef27f17769bb2507/fileadmin/AGES2015/Service/Landwirtschaft/Boden_Datein/Broschueren/Richtlinien_fuer_die_sachgerechte_Duengung_i_m_Ackerbau_und_Gruenland_7_Auflage.pdf)

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