

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

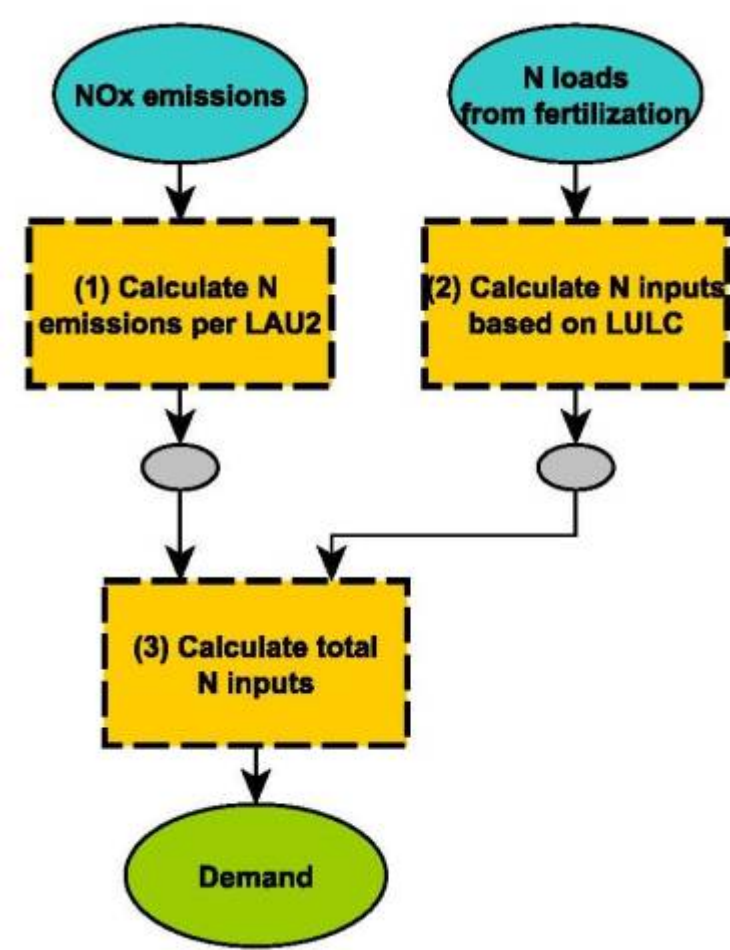
The N loads quantities per agricultural areas are based on literature (Bundesministerium für land- und forstwirtschaft, umwelt und wasserwirtschaft, 2017), the average N input per municipality is then calculated.

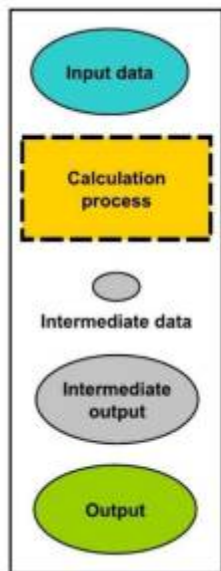
lucode	Land use type	N load
110	Urban fabric	10
120	Industrial, commercial and transport units	10
130	Mine, dump and construction sites	10
140	Artificial, non-agricultural vegetated areas	10
210	Arable land	113
220	Permanent crops	117
230	Pastures	118

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

(3) Calculate total N inputs

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





Input data→ elements that hold a value or a reference to data stored on disk. It is usually a spatial explicit information coming from official sources.

Calculation process→ the actual operation performed on the data. The number preceding the item refers to the number in the model description.

Intermediate data→ for each calculation process intermediate data is generated. This data, however, is usually not significant itself, but is used as an input for the next calculation step.

Intermediate output→ is intermediate data that has a significance for the ES evaluation.

Output→ is the result of the calculation process. It is typically one of the ES indicators, either Supply, Demand or Flow.

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_im_Ackerbau_und_Gruenland_7_Auflage.pdf)

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