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# IMPEL

## DEPOSITION OF NITROGEN

*THE SILENT DEGRADATION OF BIODIVERSITY*

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IMPEL - Murcia

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Tilburg, the Netherlands



# (Again) emphasizing urgency

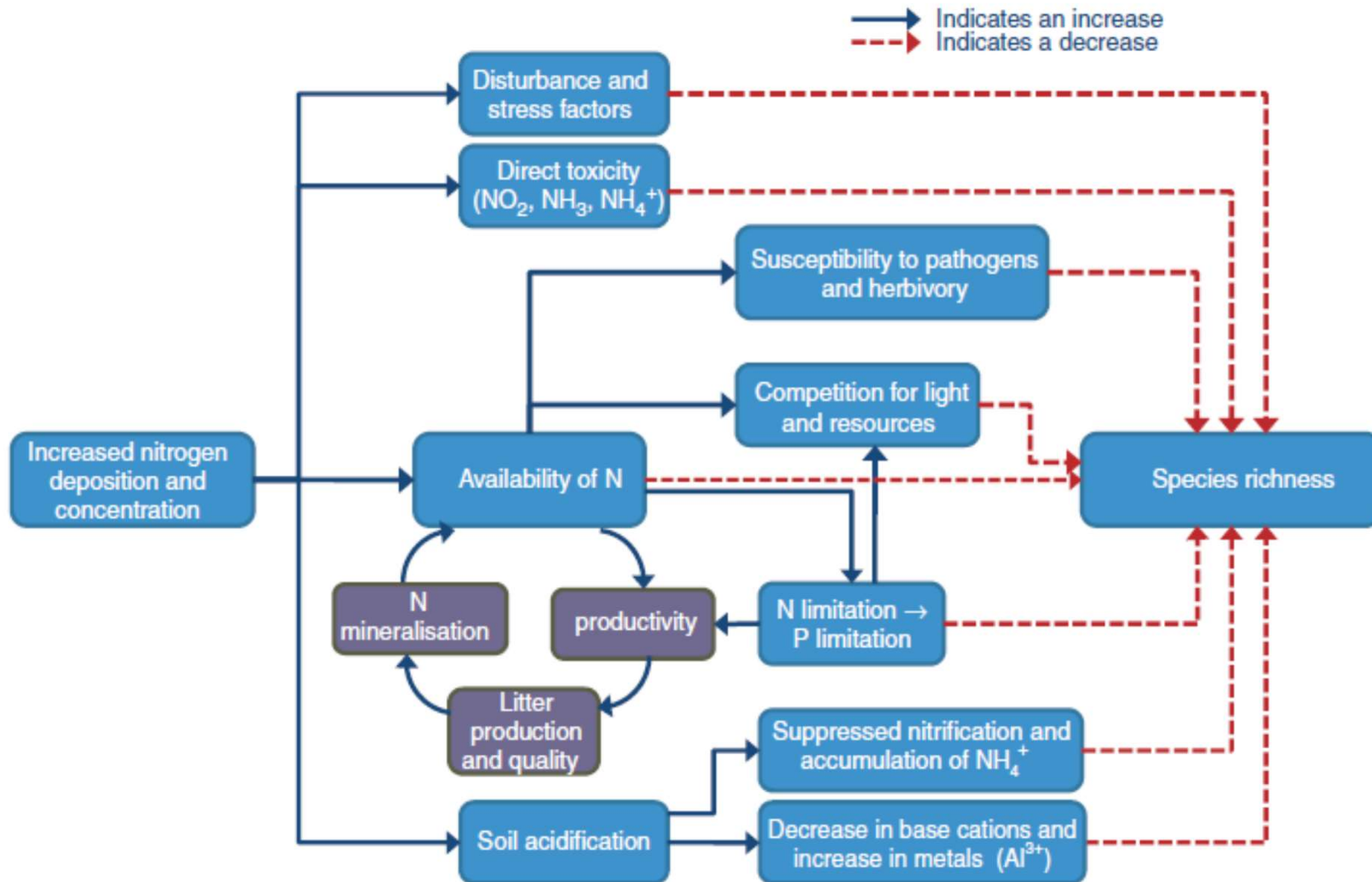
- Large number of studies identify increased nitrogen inputs, particularly via atmospheric nitrogen deposition, as a **major culprit of biodiversity loss** in both terrestrial and aquatic ecosystems worldwide
- Increased nitrogen deposition may affect plant sensitivity to factors such as drought , frost, and pathogens etc (Bobbink et al., 1998).
- Drought means less chalk in soil (a base) → high deposition of nitrogen leads to more acidification (nitrification process), cumulative effect



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## Lower Saxony has Germany's highest concentration of large-scale pig farms

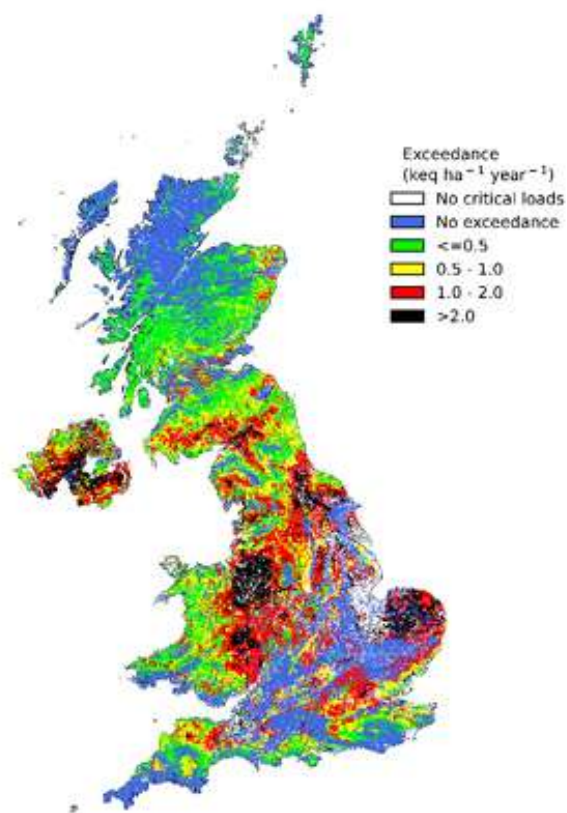
● Pig macrofarms active in 2020



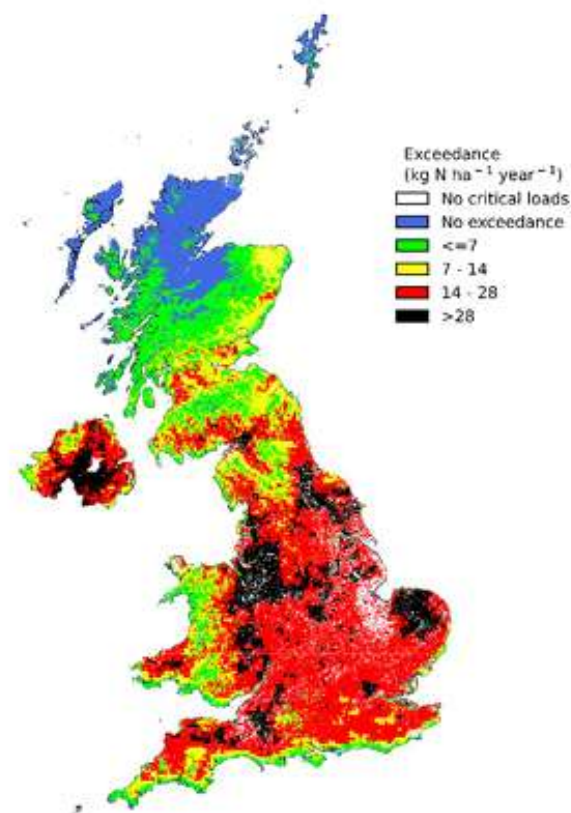


The area of N-sensitive habitats UK with exceedance of nutrient N critical loads decreased from 74.4% (69,781 km<sup>2</sup>) in 2010, to 67.7% (63,470 km<sup>2</sup>) in 2019.

(a) Acidity



(b) Nutrient nitrogen



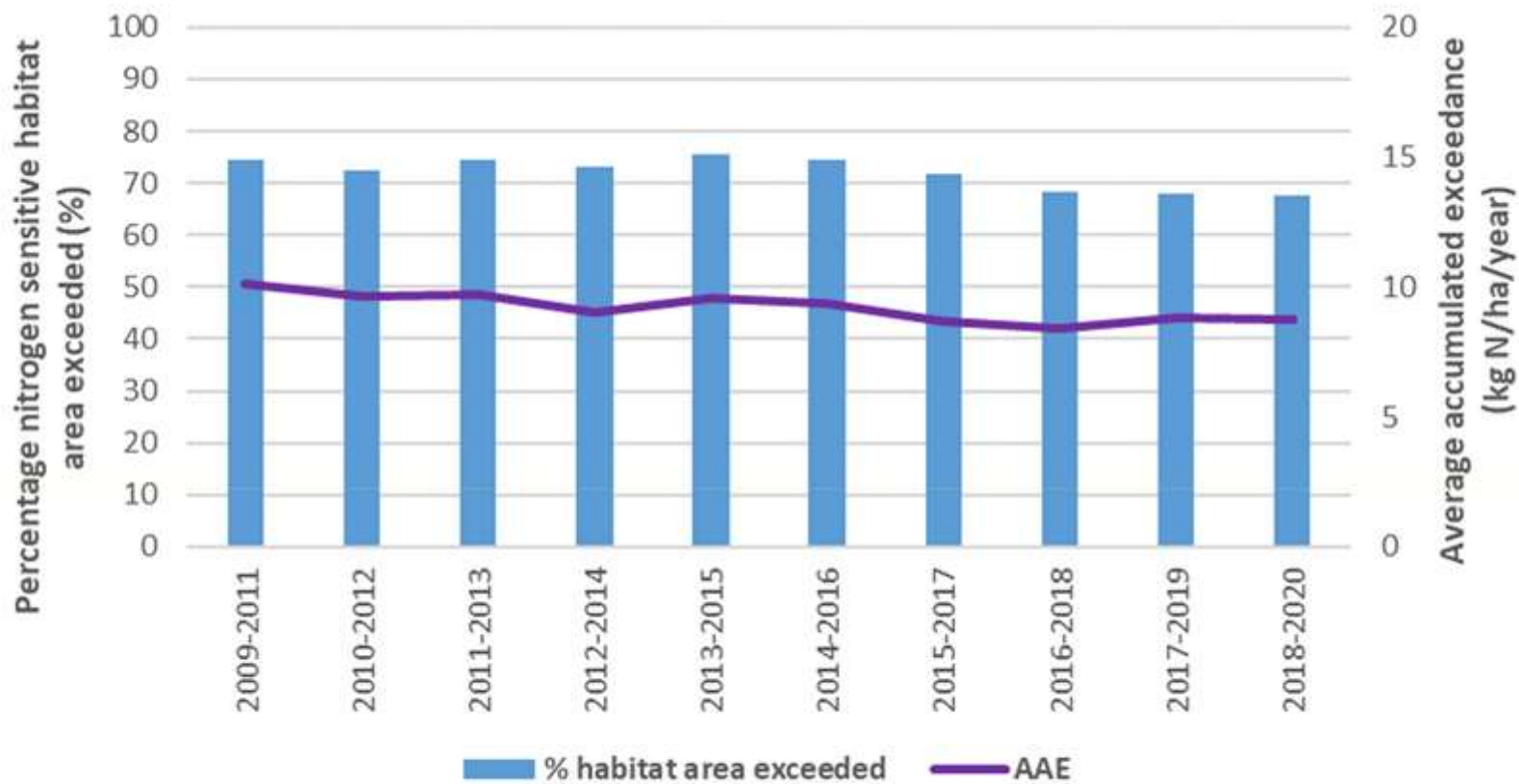


Figure 2.3: Nutrient nitrogen: Percentage area of nitrogen-sensitive habitats with exceedance of nitrogen critical loads in the UK by year, and Excess Nitrogen (Average Accumulated Exceedance in  $\text{kg N ha}^{-1} \text{ year}^{-1}$ ).



# Situation Netherlands

- Complete hold on permits, no more increase of deposition of N until natural habitats show recovery
- bird chicks with broken legs & unborn eggs
- heat stress trees combined with heavy metal ( $\text{Al}^{3+}$ ) poisoning due to drop in soil pH
- leaching of important soil minerals
- years of inaction led to political impasse
- government has no solution yet, nitrogen 'deniers' on the rise



# What is done so far?

- Collected data on status exceedance eutrophication
- CCE Status Report 2022 placed in IMPEL-map
- Average mean of exceedance by nitrogen is 71 % within EU 27
- Enough information (and conformation) for next steps
- Survey ready and passed out
- Analyses of CCE report



# What are the results?

- Eutrophication throughout EU
- Exceedance Critical load N
- Highest exceedances of CL in the Po Valley in Italy, the Dutch German and German-Danish border areas and in north-eastern

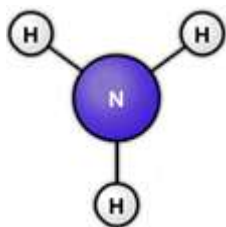
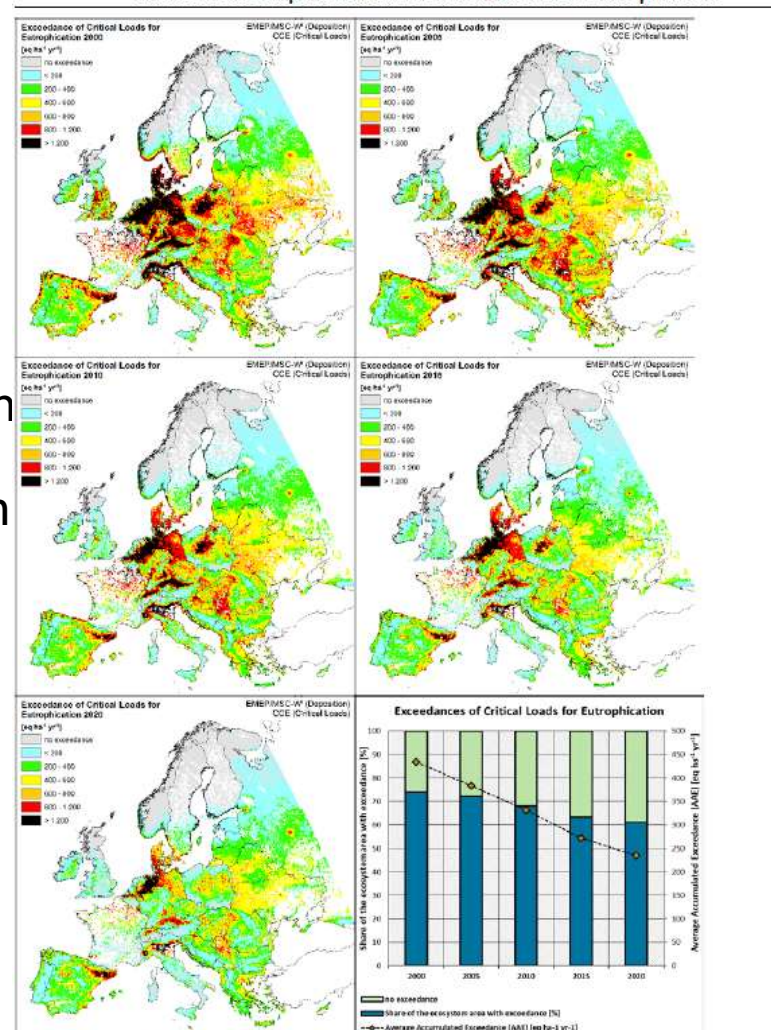


Figure 10: a-e: CL Exceedance for Eutrophication for the years 2000, 2005, 2010, 2015 and 2020; f: Summarized descriptive statistics for exceedance of CL for Eutrophication.



Source: Own illustration, Coordination Center for Effects

# Results display deplorable state of nature preservation



Table 3: Exceedance of CL for Eutrophication given as share of the i

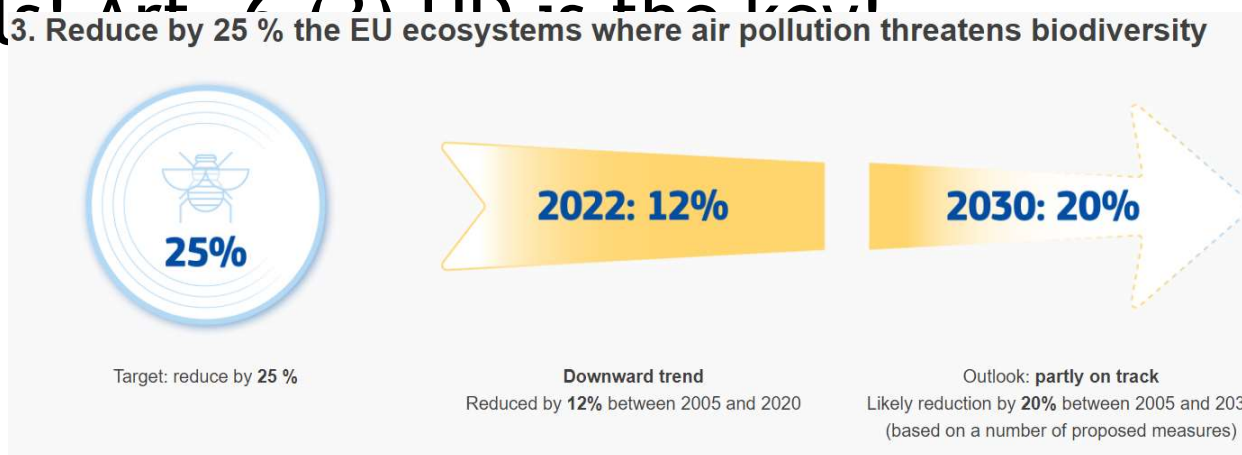
Eutrophication		Exceedance of CL eut				
Country	Eco area [km <sup>2</sup> ]	Share of the Eco Area in [%]				
		2000	2005	2010	2015	2020
Austria	50.588	82	75	68	65	50
Belgium	15.552	88	82	71	59	52
Bulgaria	54.470	92	94	89	83	76
Croatia	36.484	93	95	89	81	81
Cyprus	1.701	100	100	100	100	100
Czech Republic	23.831	99	98	95	91	84
Denmark	6.741	100	100	100	100	100
Estonia	30.735	65	57	56	46	39
Finland	41.141	15	9	9	3	2
France	177.006	85	85	82	69	61
Germany	106.975	88	85	82	78	70
Greece	78.016	100	100	100	100	100
Hungary	30.120	97	96	92	86	78
Ireland	16.776	60	51	37	36	48
Italy	105.946	81	80	73	62	53

Eutrophication		Exceedance of CL eut				
Country	Eco area [km <sup>2</sup> ]	Share of the Eco Area in [%]				
		2000	2005	2010	2015	2020
Latvia	44.389	95	94	94	92	88
Lithuania	26.522	99	99	99	99	98
Luxembourg	1.388	100	100	100	100	100
Malta	35	99	99	99	99	99
Netherlands	3.093	92	88	81	81	76
Poland	95.950	84	79	76	70	67
Portugal	42.199	89	85	85	81	76
Romania	109.564	94	96	92	92	88
Slovakia	26.875	100	98	97	95	91
Slovenia	14.104	93	92	84	75	75
Spain	252.450	97	96	94	92	92
Sweden	58.688	19	17	16	15	15
EU 27	1.451.339	85	84	80	75	71



# HD and zero pollution plan EU

- improving air quality to reduce the number of premature deaths caused by air pollution by 55%
- reducing by 25% the EU ecosystems where air pollution threatens biodiversity;
- IED alone will not be enough to secure these goals! Art. 4 (2) HD is the key!





# What's next?

- Survey shared to gain insight on:
  - *Status legislation, what is the CL used as threshold for nature sites under HD?*
  - *Used tools for calculation of deposition*
  - *Permits and enforcement*
  - *Used strategy for selecting facilities*
- After this: recommendations on enforcing emission cuts based on exceedance CL and poor conservation of natural areas



# What's next?

- After the survey: recommendations based on the results of available and supplied information will follow
- As a reminder: Under Article 6 (3) of Habitats Directive (HD) it is crucial to determine whether a project, such as a livestock farm, can have significant effects on the conservation objectives of a Natura 2000 site and should be subject to an appropriate assessment, a process usually referred to as screening
- **due to their potential impacts on Natura 2000 sites all new or changing farm projects have to undergo the Article 6 (3) procedure!**



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*Thank you!*

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