

# Swedish NFC-progress in response to the Call for data 2015 - 2017

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## NFC priorities and current focuss

- ➔ CL acidification: continue work on lakes and as much as feasible co-ordinate efforts with national work connected to **Swedish Environmental Objectives** (co-funding of the work possible/necessary)
- ➔ CL for nitrogen as a nutrient: to continue focuss on Natura 2000 areas and to continue using CL  $N_{emp}$ , no plans to revise CL submitted in the last 2 calls.
- ➔ To continue JEG DM (16th meeting will be held at Sitges Spain October 26 – 28, 2016, contact [filip.moldan@ivl.se](mailto:filip.moldan@ivl.se) if you want furthter info.)

# THE RIKSDAG HAS ADOPTED 16 OBJECTIVES FOR ENVIRONMENTAL QUALITY IN SWEDEN



Reduced Climate Impact



Clean Air



Natural Acidification Only



A Non-Toxic Environment



A Protective Ozone Layer



A Safe Radiation Environment



Zero Eutrophication



Flourishing Lakes and Streams



Good-Quality Groundwater



A Balanced Marine Environment,  
Flourishing Coastal Areas and Archipelagos



Thriving Wetlands



Sustainable Forests



A Varied Agricultural Landscape



A Magnificent Mountain Landscape



A Good Built Environment

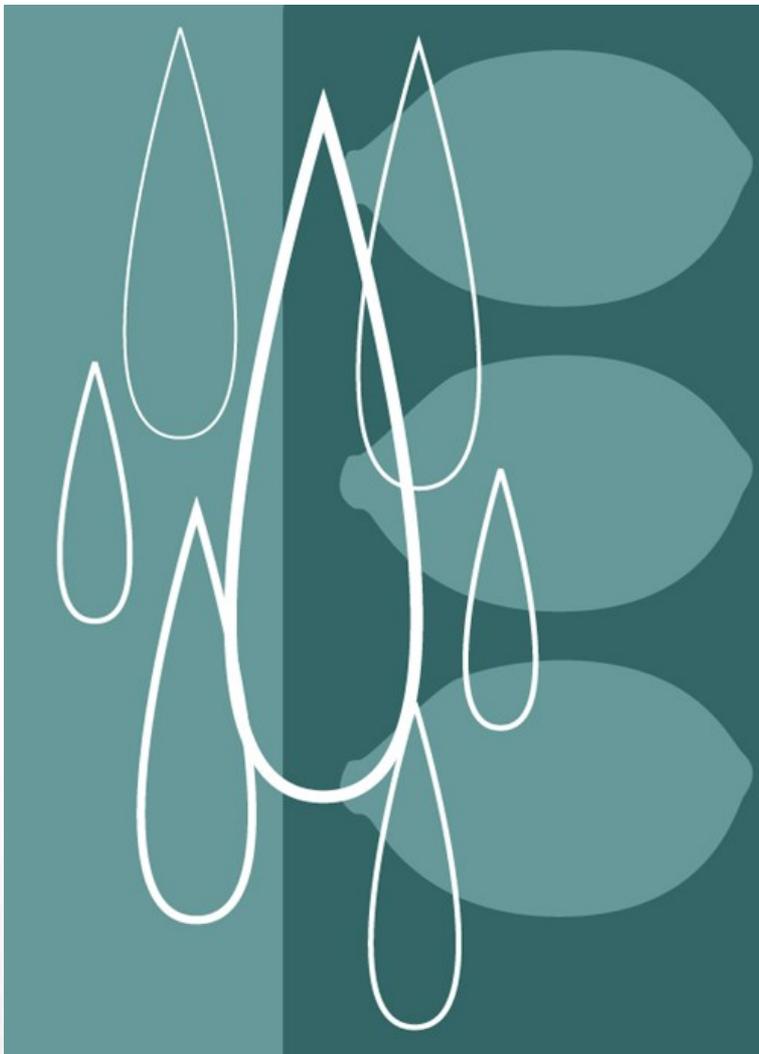


A Rich Diversity of Plant and Animal Life

These were set to:

- promote sustainable development
- to guide environmental efforts in Sweden
- to point the way to a sustainable society

ILLUSTRATIONER: TOBIAS ELYGÅR



# Natural Acidification Only

The acidifying effects of deposition and land use must not exceed the limits that can be tolerated by soil and water.

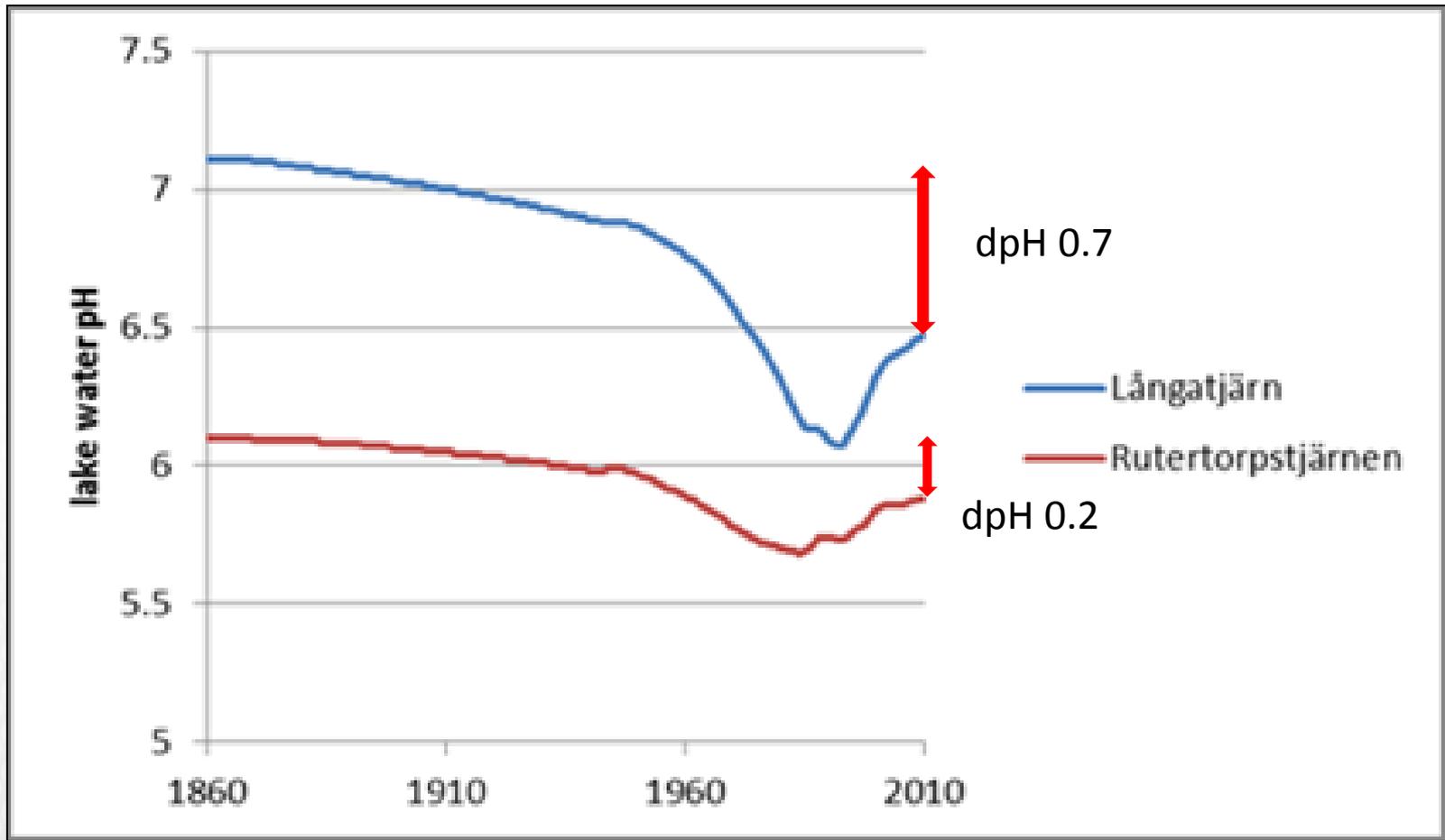
In addition, deposition of acidifying substances must not increase the rate of corrosion of technical materials located in the ground, water main systems, archaeological objects and rock carvings.

Illustration: Tobias Flygar

# “Natural Acidification Only” has four specifications aiming at air pollution, forestry, acidified waters and acidified soils:

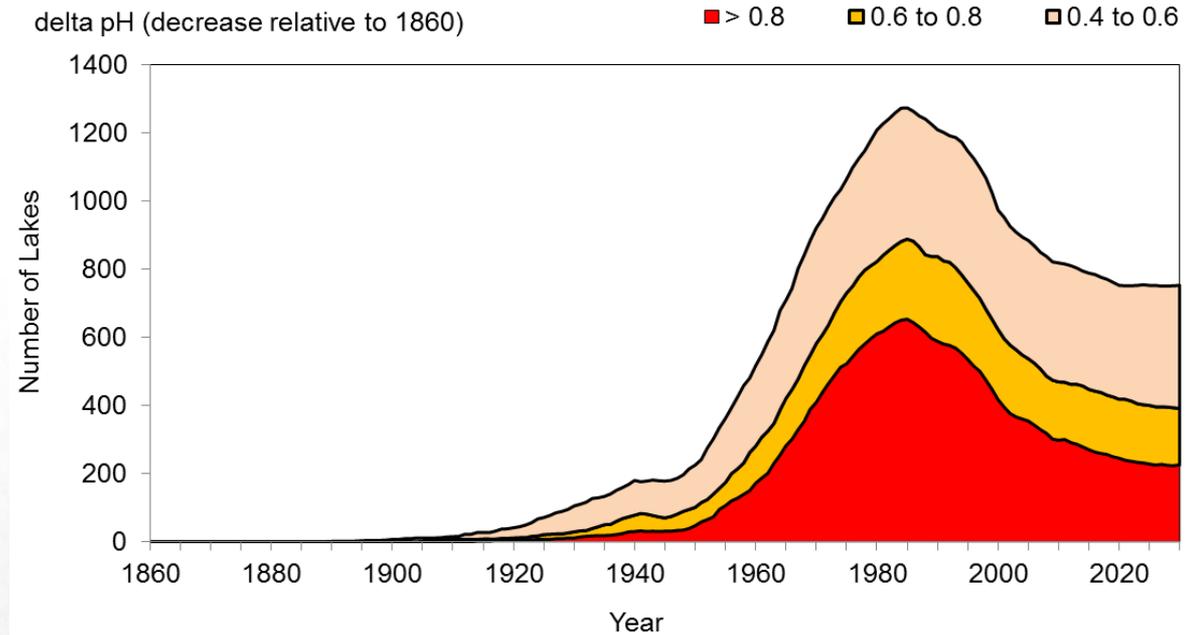
- the **deposition** of airborne sulphur and nitrogen compounds from Swedish and international sources does **not result in the critical load for acidification** of soil and water **being exceeded** in any part of Sweden,
- the contribution of **land use** to the acidification of soil and water is counteracted by **adjusting forestry** to the acidification sensitivity of the site,
- **independently of liming**, lakes and watercourses achieve at least good status regarding acidification in accordance with the Swedish Water Quality Management Ordinance (2004:660), and
- acidification of the soil **does not accelerate corrosion** of technical materials and archaeological objects in the ground and **does not damage the biodiversity** of land and water ecosystems.

# How to define an acidified body of water in the context of "Natural acidification only"?



# Acidification and recovery in lakes

- Out of 2903 model-lakes, the highest number of lakes with  $\text{dpH} > 0.4$  was about 1300 (early '80s)
- The number has fallen to today's approximately 800 lakes
- Weighted to all of the Swedish lakes, this means that about 10% of the lakes are still acidified



Moldan et al., 2013. AMBIO 42:577–586

## Swedish approach to CL acidity

- Use the same criteria for good status and for critical loads (acidity)
- ANC/pH limit set individually for each evaluated lake so that it guarantees lake pH <0.4 units below pre-industrial level
- For the currently acidified lakes there is an issue of how fast the recovery needs to be achieved (submission 2015 CL: in year 2100)
- Defining timeframe results in situation where not even 100% deposition reduction guarantees non-exceedance of CL, because it does not guarantee recovery (or more precisely: not before the next ice age...)

## New since the last CL submission

- ➔ New set of MAGIC model runs at 3200 lakes, according to latest knowledge (new lake chemistry, latest EMEP deposition, latest forestry scenarios)
- ➔ Revision (slight) of the calculation methodology (acidifying role of nitrogen more in line with the mapping manual, ANC limits adjusted for lakes at both ends of ANC scale)
- ➔ We are considering also to change the reference point in time. In previous submission the CL were not exceeded if lakes recovered by 2100 (work in progress).

## In summary:

- ➔ Currently Sweden - through Swedish EPA - supports chair of EB, chair of WGE, chair of ICP IM, chair of JEG DM and Sweden is lead country for ICP Materials. Plus Sweden regularly participates in ICP Waters, IM, Vegetation and ICP M&M. There is a plan to get involved in TFRN. CLRTP-related work clearly has priority and receives support.
- ➔ There will be Swedish response to the call, but not to the biodiversity modelling part.
- ➔ Adjustments to the previously submitted  $Cl_{\text{acidity}}$  are not expected to change the map – not too much.
- ➔ Combining CLRTAP-related work with national needs opens for co-funding opportunities which are increasingly important.