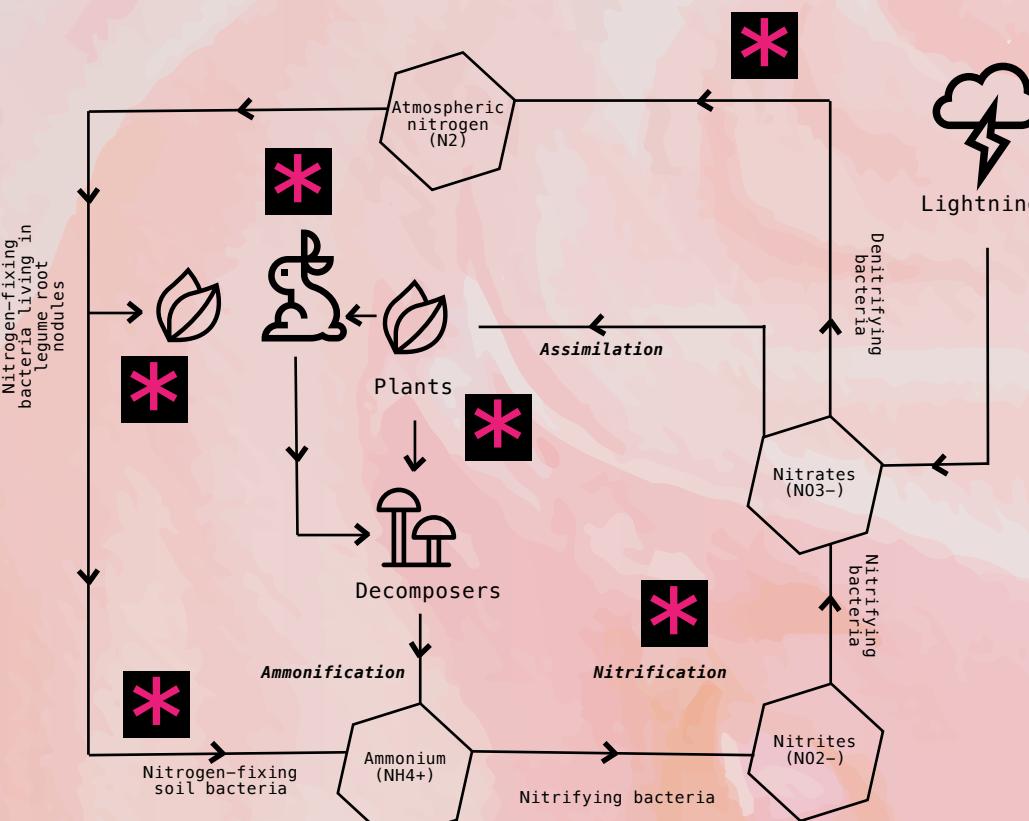


# THE IMPACT OF THE PAPER INDUSTRY ON BIOCHEMICAL FLOWS

NITROGEN (N) + PHOSPHORUS (P)

## NITROGEN

- Nitrogen is an important part of many cells and processes such as amino acids, proteins and even our DNA.
- N is also needed to make chlorophyll in plants, which is used in photosynthesis to make their food.

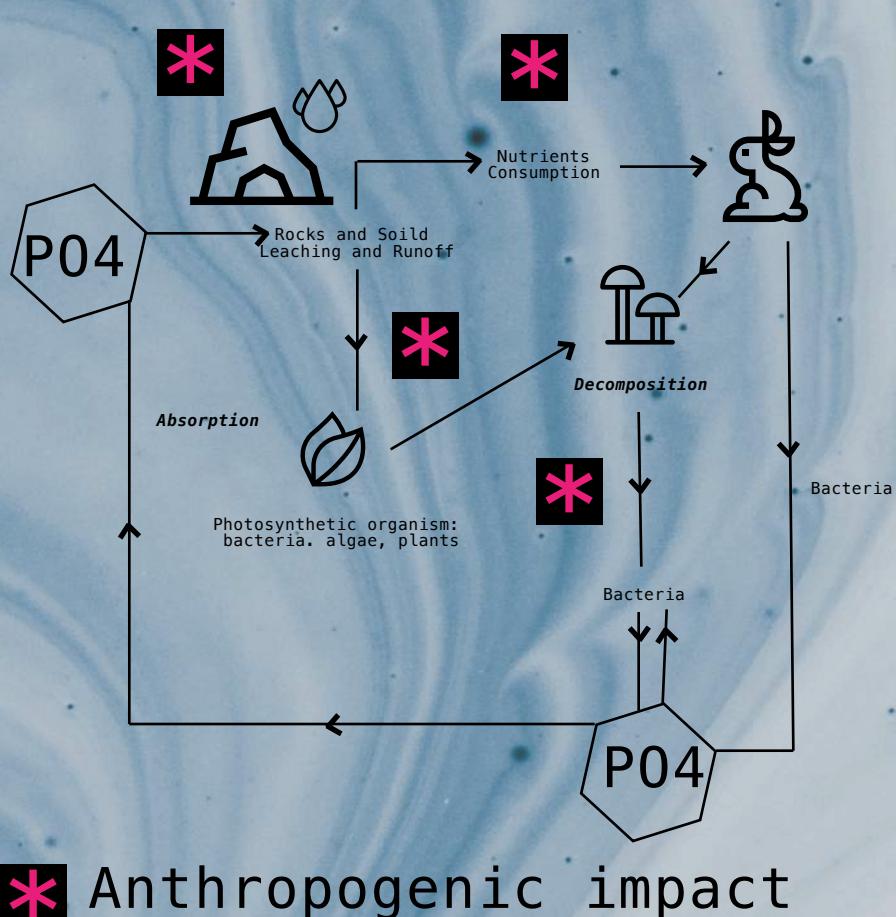


BIOCHEMICAL FLOW ARE BEYOND THE ZONE OF UNCERTAINTY

HIGH RISK LEVEL

**Nitrogen use:** About 121 million tons of  $\text{N}_2$  is used per year into reactive forms to make fertilizer for food production and another non-food cultivation.

**Proposed boundary:** 35 million tons per year or 5 kg per capita.

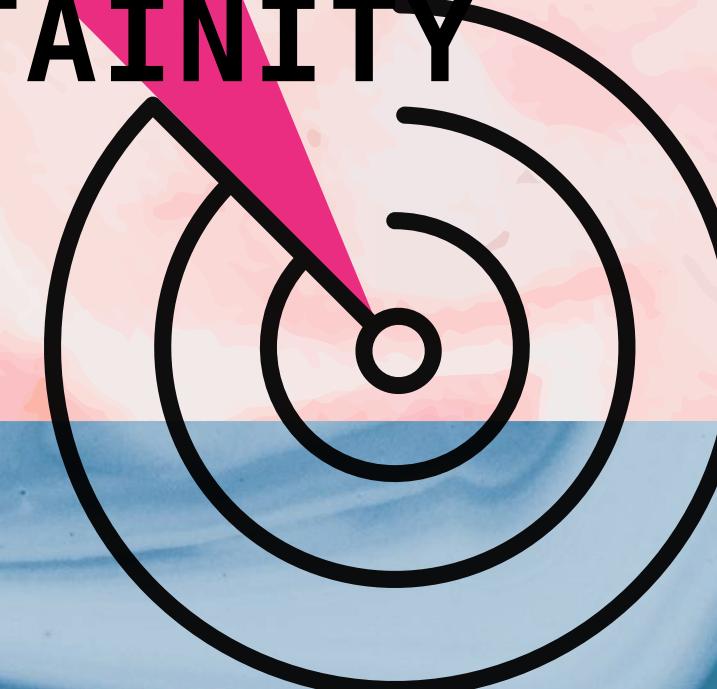


## PHOSPHORUS

- Phosphorus is the 11th most common element on earth, is fundamental to all living things.
- It is essential for the creation of DNA, cell membranes, and for bone and teeth formation in humans.

**Phosphorus use:** About 20 million tons of phosphorus is mined every year and around 8.5–9.5 million tons of it finds its way into the oceans.

**Proposed boundary:** 11 million tons per year.



## PRINTING AND WRITING PAPER LIFE-CYCLE ANALYSIS:

and its impact on N and P flows

focused on the pulp and paper production and final product manufacturing stages

