

EPNB 2022

Nitrogen Budget Switzerland

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On behalf of the Federal Office for Agriculture and the Federal Office for the Environment of Switzerland

Agenda

1. Introduction & Method
2. Updated N-Budget of Switzerland
3. Main results across sectors
4. Refinement of flows related to the waste sector
5. Conclusions

Introduction

- Previous N-Budget of Switzerland was last updated in 2010 for 2005
- Update required in the context of the future development of Switzerland's agricultural policy with a focus on "closing of nutrient cycles"

Goals

- **Update** of the existing N-Budget of Switzerland (-> *which deviates from the EPNB Guidance documents*)
- **Refinement** of N-Flows related to:
 - Food waste
 - Fermentation plants
 - Slaughter by-products

-> Refined N-budget as a base for the development of measures to reduce N-losses

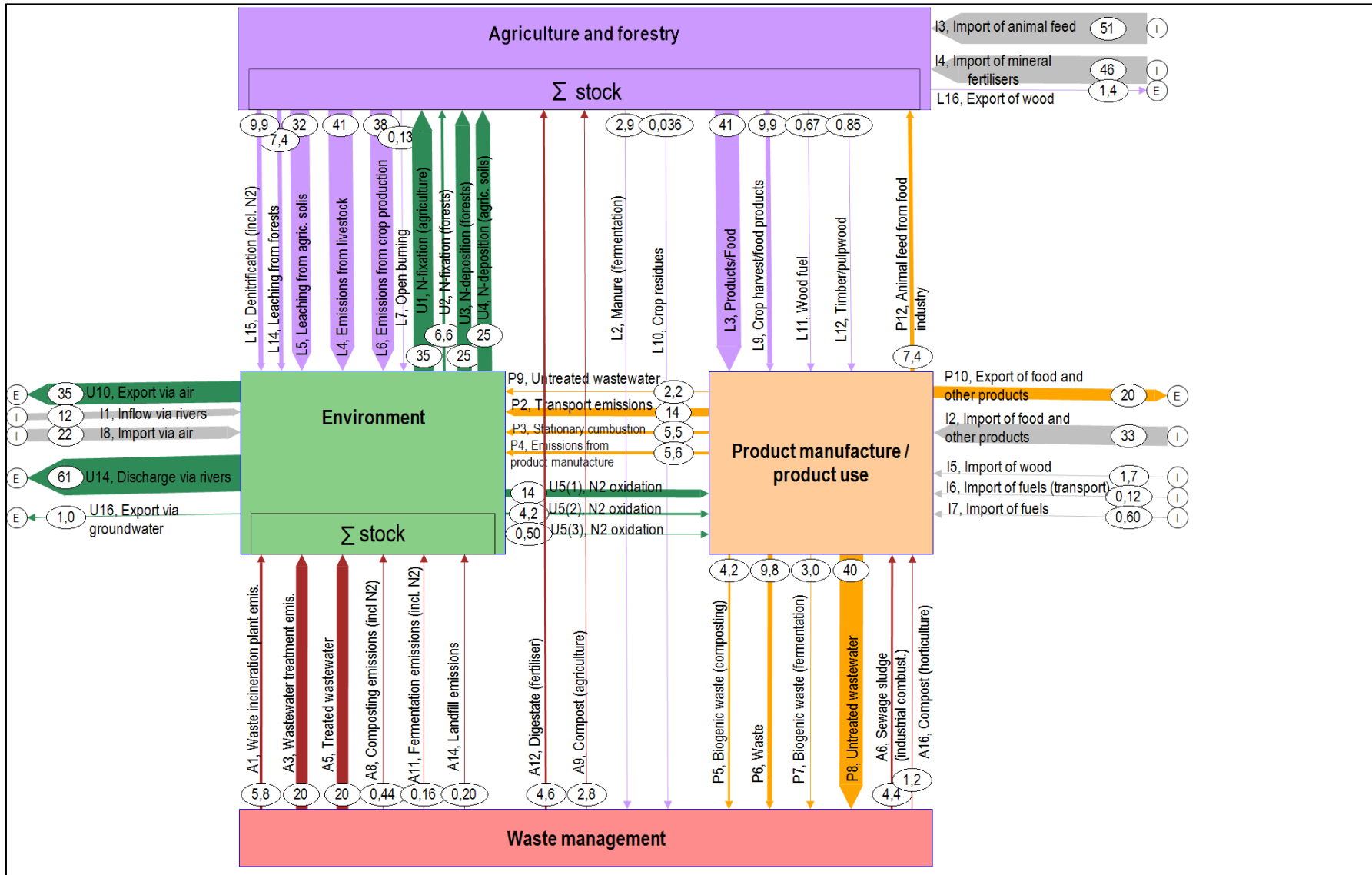
Method

- Update of the existing N-budget for 2018 (Average 2017-2019)
- Data sources: national statistics, studies, information from experts
- Assessment of uncertainties of each N-flow
- Visualisation in the Software STAN

Switzerland's N-budget in comparison to the EPNB Guidance:

- Different sectoral structure
 - Agriculture and Forestry
 - Environment
 - Product manufacture/use
 - Waste Management
 - Import/Export

N-Budget Switzerland

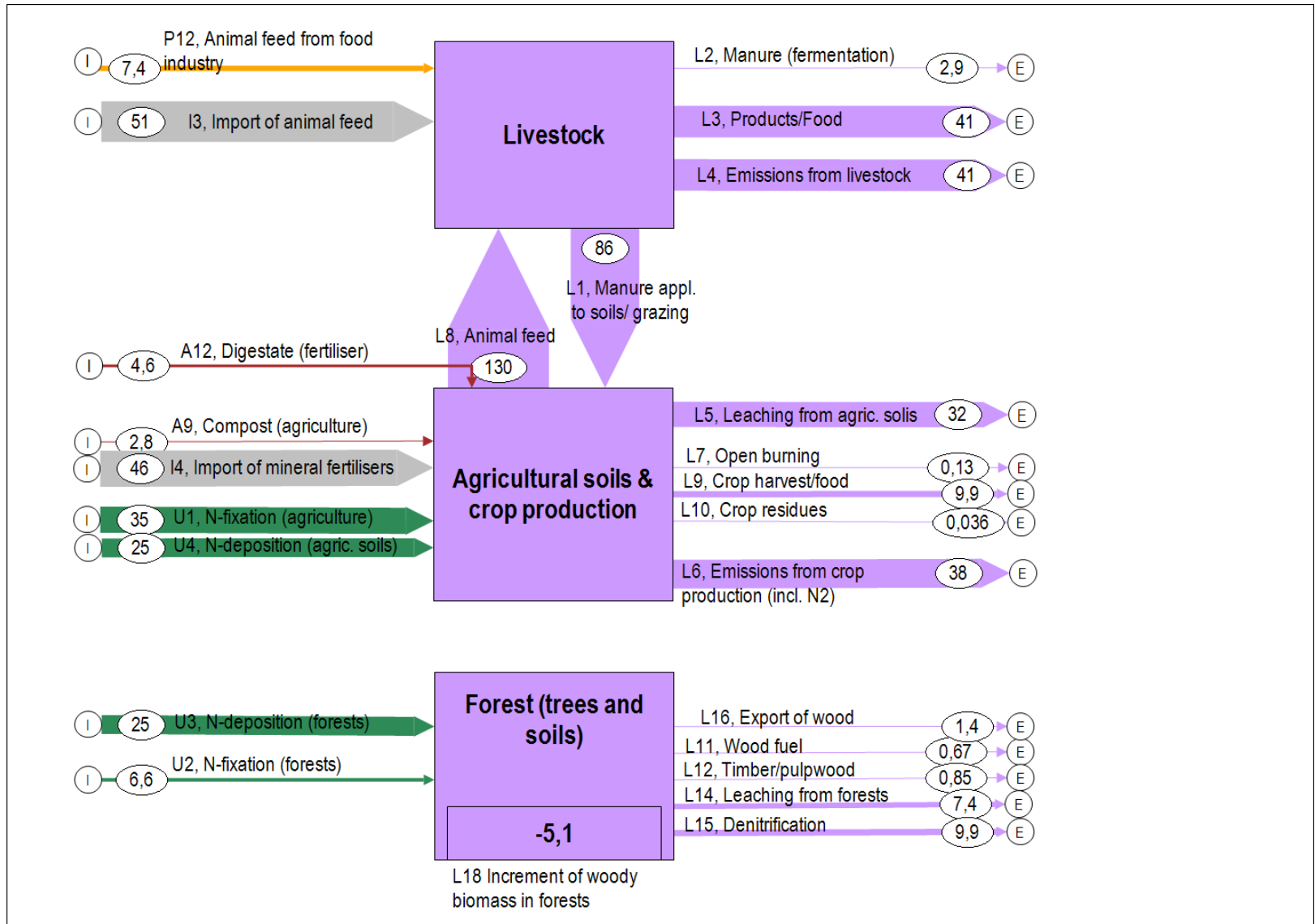


Main results – Trend 2005 - 2018

Imports and Exports

- Strong increase in imports of animal feed (+43%)
 - Slight decrease in import of mineral fertilizer (-10%)
 - Strong increase in imports/exports of food products (import +29%/export +55%) due to increasing population and due to product refinement
 - Decrease in import and export via atmosphere (partly due to changes in the EMEP model)
 - Decreasing export from rivers
- Switzerland is a **net-importer of nitrogen**.
- Possible accumulation in the environment is not fully investigated yet.

N-Flows: Agriculture and forestry

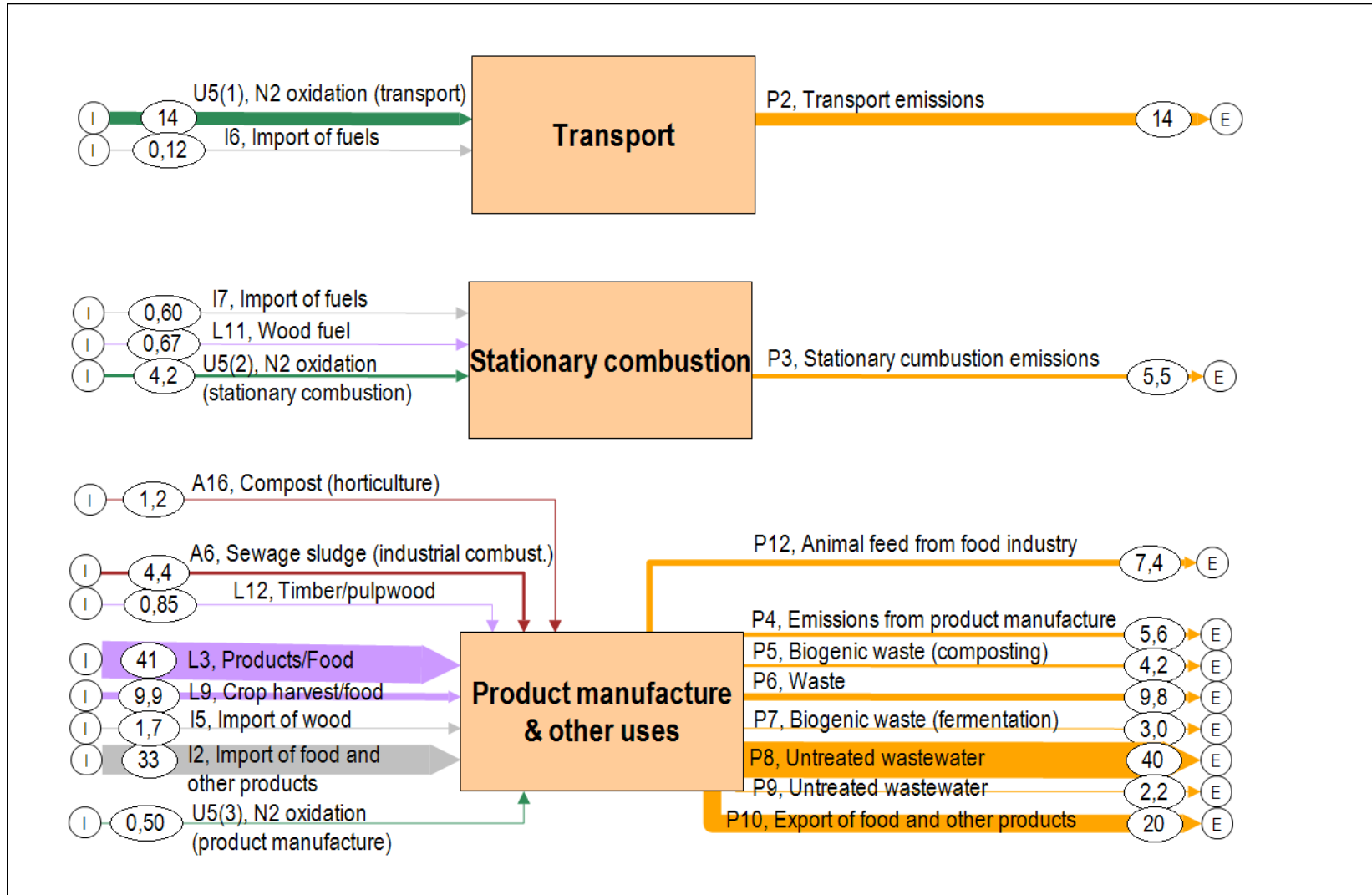


Main results – Trend 2005 - 2018

Agriculture

- N-Flow from **manure application/grazing** remains relatively constant
 - Increasing N-flow from **animal feed** (+8%), with a shift from domestic (-4%) to imported animal feed (+43%)
 - Increasing N-flow from **animal products** (+10%), despite relatively constant meat production, due to a shift in meat production (low protein to high protein content)
 - Slight decrease of **N-losses to the environment** (N-leaching and emissions to the atmosphere) due to improved manure management
- Increase of N-use-efficiency in agriculture by 2 percentage points (from 33% to 35%)

N-Flows: Product manufacturing / Product use

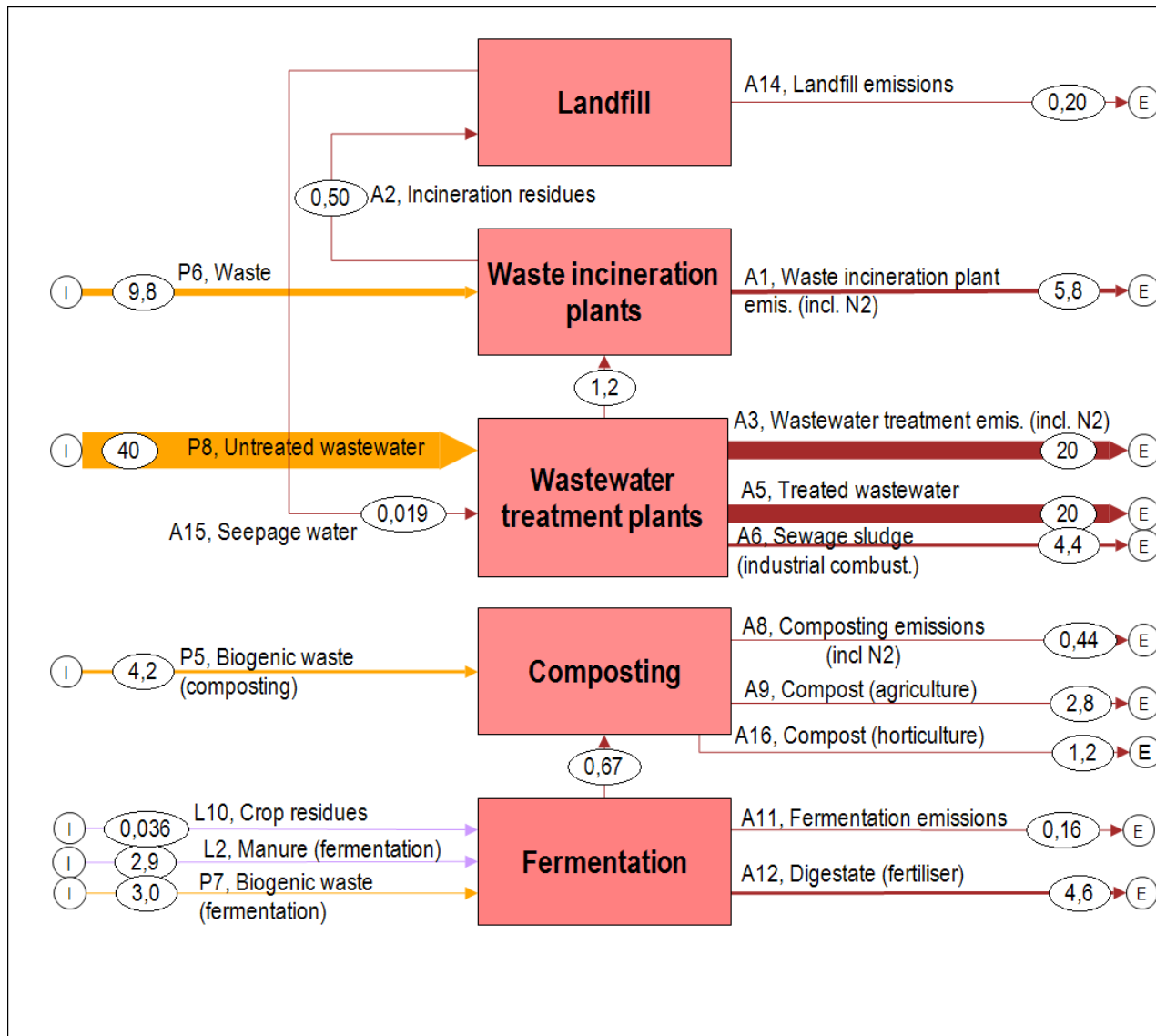


Main results – Trend 2005 - 2018

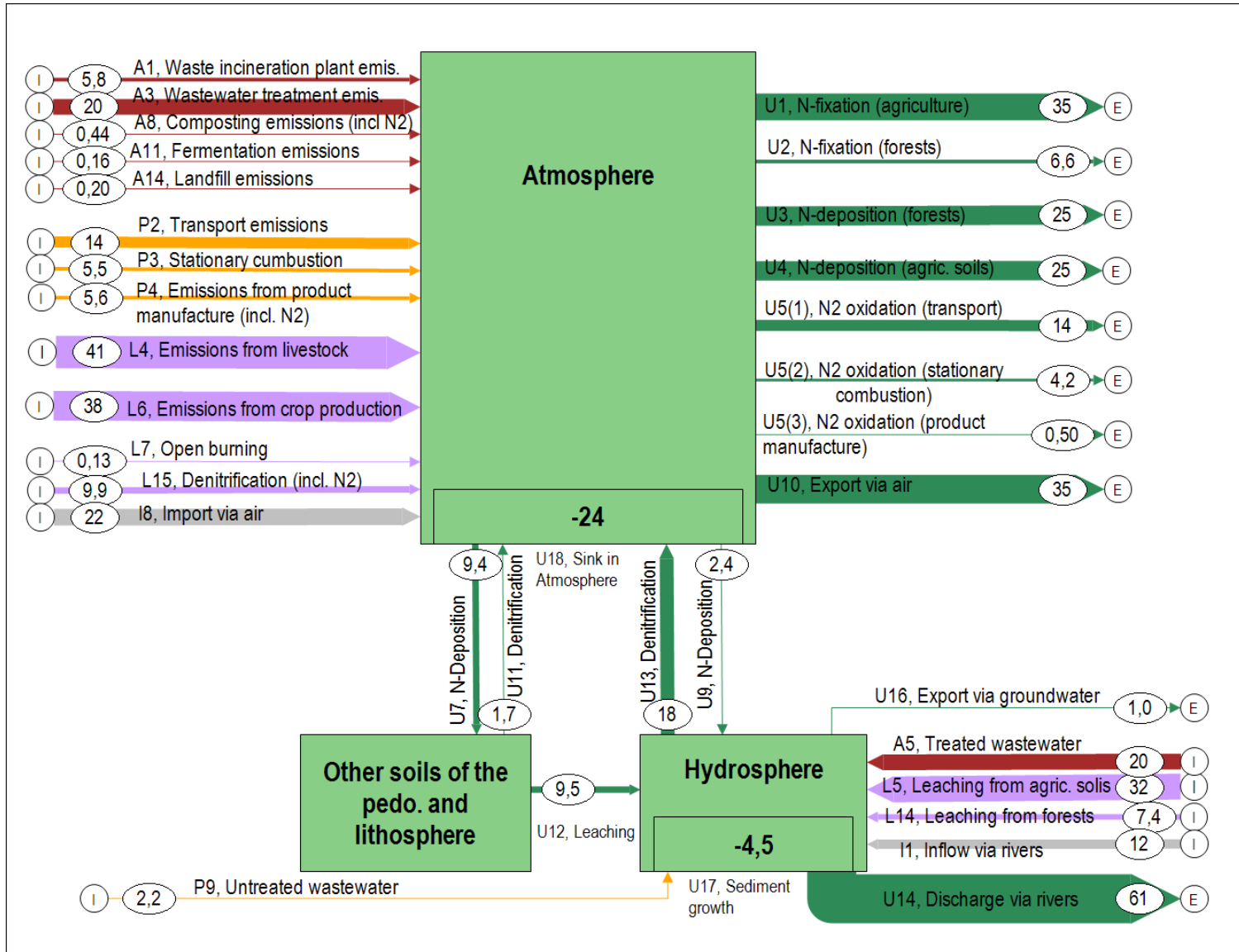
Emissions to the atmosphere

- Reduction of NO_x by 31%
 - Improved vehicle emission standards
 - Energy efficient buildings
 - Improved heating technology/Substitution of fossil fuels
 - Reduction of NH₃ by 8%
 - Improved combustion engines
 - Improvement of manure management
- Reduction of emissions and imports of NO_x and NH₃ is observed.
- Critical loads of sensitive ecosystems are still exceeded in most areas.

N-Flows: Waste management



N-Flows Environment



Main results - Trend

Hydrosphere

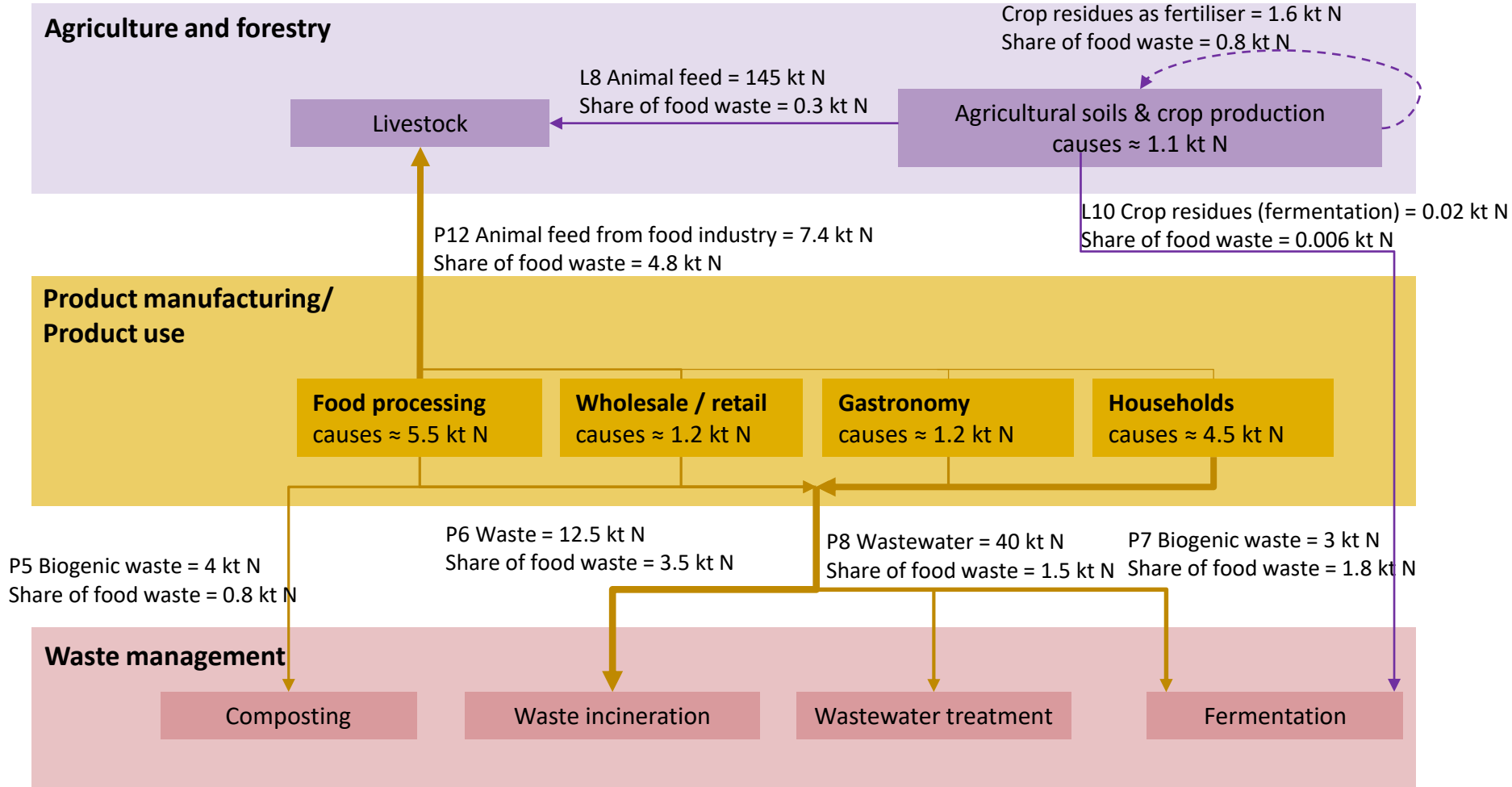
- Constant discharge of waste water from households/industry
 - Improvement of N-elimination in waste water treatment plants
 - Reduction of N-discharge from diffuse sources (due to decreasing nitrogen deposition)
- Reduction of N-discharge in rivers between 2005 and 2018
- Further reduction is required, to achieve the national target for surface waters (-50% compared to 1985).

Refinement of N-flows related to food waste

Food waste occurs along the entire value chain of the food industry:

- Agriculture
- Food Processing
- Wholesale / retail
- Gastronomy
- Households

N-Flows related to Food Waste



Conclusions

Trend 2005-2018

- Several driving N-flows show an increase (import of animal feed, animal products)
- Many N-flows to the environment show a slight decreasing trend (emissions from mobile & stationary combustion, N-discharge in rivers)
- Further reduction of N-losses to the environment is necessary, especially in the agricultural sector.

Refinement of N-flows related to food waste

- Largest sources of food waste are food processing industry and households.
- Further assessment of reduction potential is required.

Thank you for your attention

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