

## **Nitrogen footprints for major imported food commodities**

### **Background**

Nitrogen footprints of food production and consumption has been proposed as an environmental indicator to quantify and highlight how individuals, organizations or countries contribute through their consumption to nitrogen pollution. In an ongoing research project at Division Physical Resource Theory, we are investigating and calculating the N footprint of Swedish food production and consumption, and we are analyzing the possibilities to develop this indicator from current methods suggested in the research literature.

In this project, we are doing a thorough scrutiny of N flows and emissions in Swedish agriculture and food production, but as Sweden has a large food import there is a great need for more knowledge of N footprints of imported food.

### **Task description**

This thesis involves a broad literature review to find data on N use and emissions in the production of major important food products and/or commodities and to calculate N footprints for these products. The work also includes a comparison with the calculated N footprints for Swedish food products when possible (e.g. imported pork meat versus domestic) and an analysis of similarities and differences between domestic and imported food. In short, following shall be done:

- Select major import food product/commodities for the analysis (in collaboration with FRT researchers).
- Literature review (a) of calculated and reported N-footprint for those food products.
- Additional literature review (b) on N-use and emissions in agriculture and horticulture in the production of the food products (e.g. through LCA-studies) and with this data, calculate N-footprints.
- Assessment of the two sets of N-footprints from a) and b), e.g. in terms of data availability, data uncertainty and representativeness, investigating possible large variations between the two sets.
- Compare (when possible) the footprint indicators for imported food with corresponding indicator values for Swedish agriculture/food products and analyse potentials for improvements.

### **Schedule and prerequisite**

This master thesis proposals is planned for one student to be carried out in the spring semester 2020. As the results in the project will be used in a research project that ends in December 2020, it is positive if the work can start already in the autumn 2019.

Suitable background is chemistry/chemical engineering and courses/knowledge in environmental system analysis (e.g. LCA), biomass production and nutrient cycling.

### **Contact information**

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