

Systems perspectives on nutrient management

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20130827 - GABBS

Sustainable development

*"My son, one day,
all of this will be
yours!"*

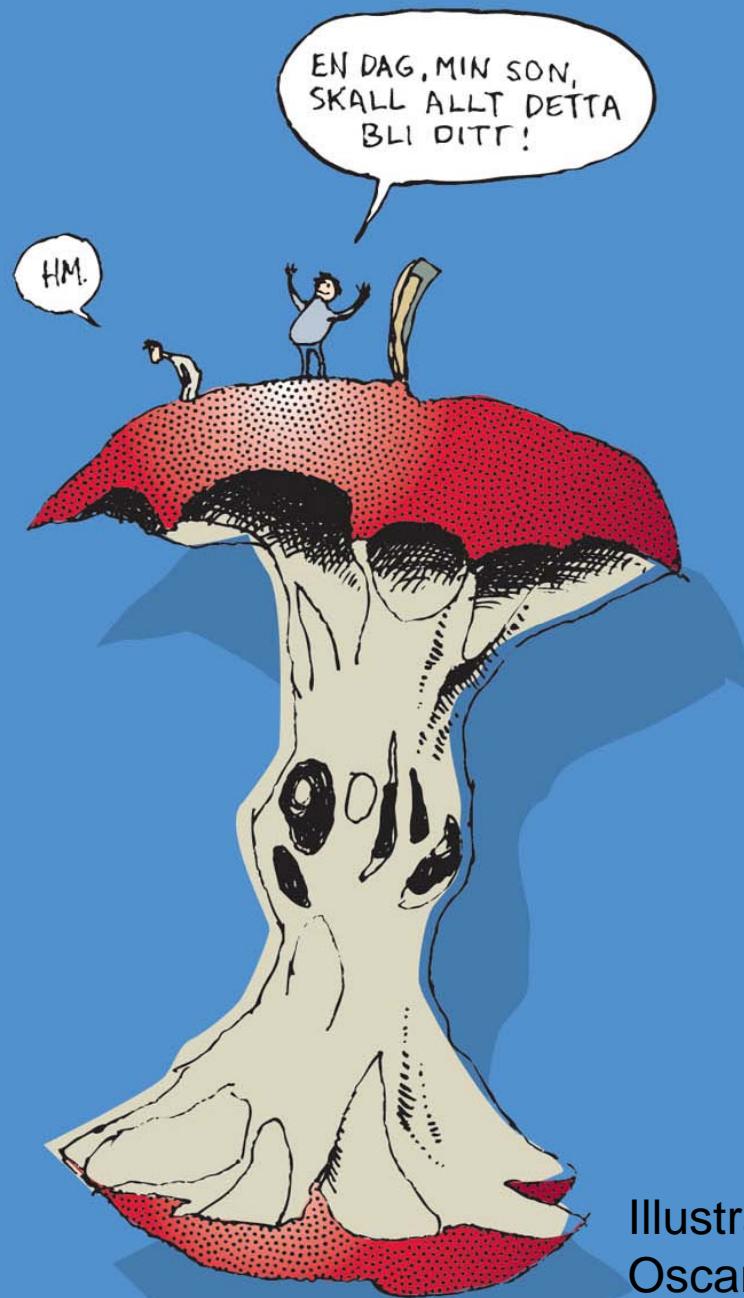


Illustration:
Oscar Alarik

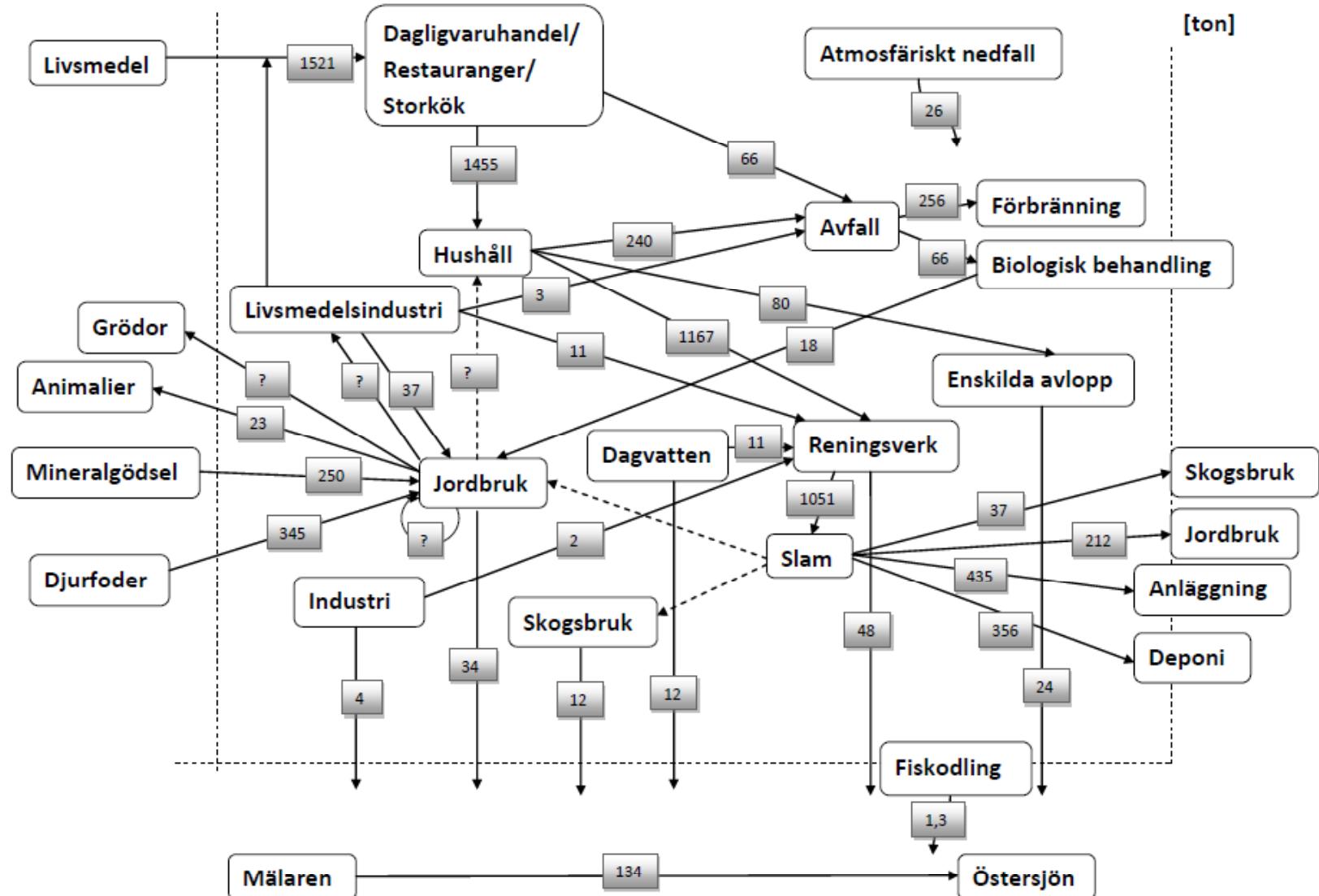
Sustainable nutrient management

- what is your
definition?



Illustration:
Oscar Alarik

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“The bigger picture”

Our Nutrient World

The challenge to produce more food and energy with less pollution



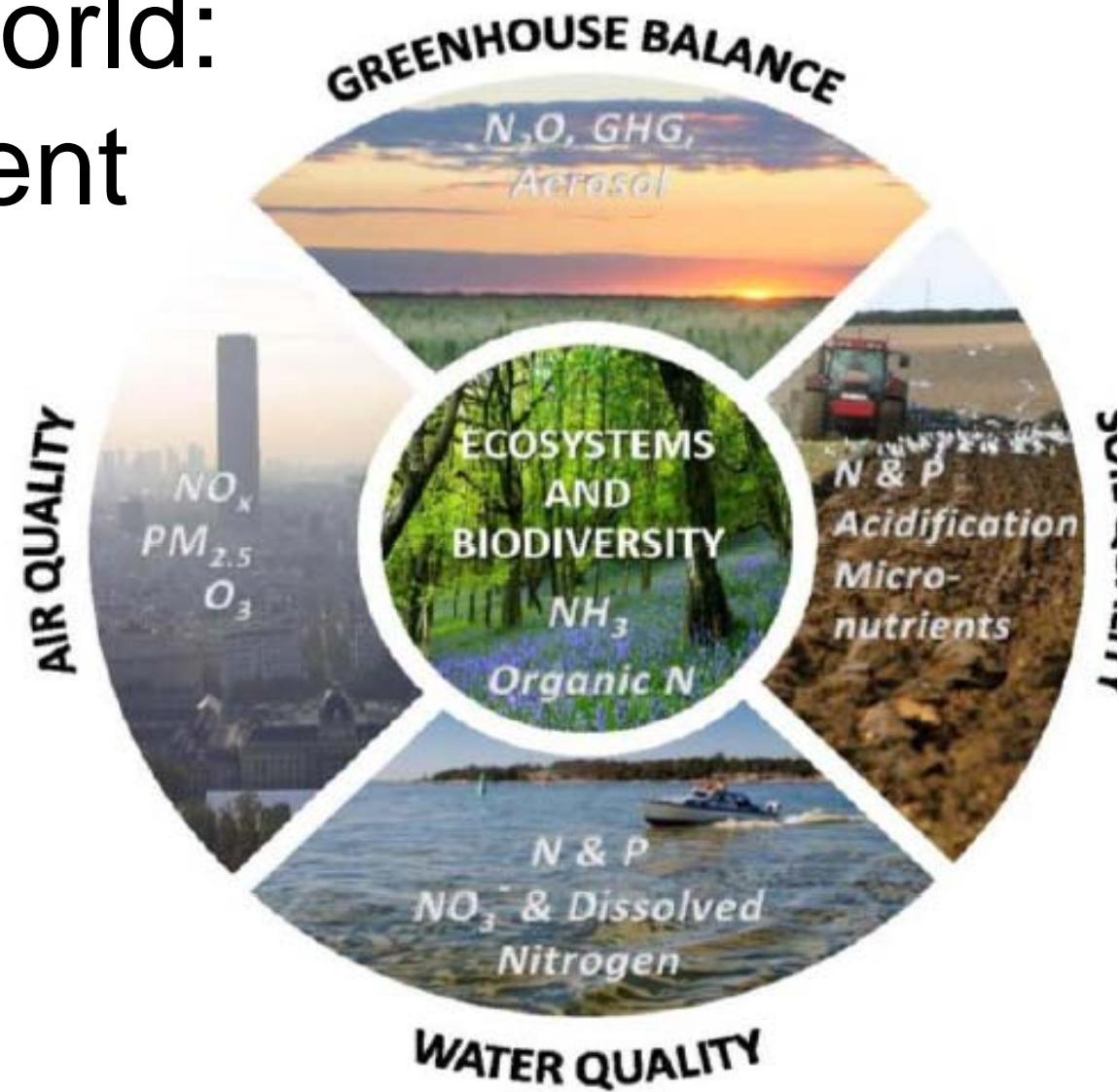
Prepared by the Global Partnership on Nutrient Management
in collaboration with the International Nitrogen Initiative

Sutton et al (2013)

On behalf of the Global Partnership on Nutrient Management and the International Nitrogen Initiative.

Our nutrient world:

- Five "Nutrient Threats"



Sutton et al (2013)

Our nutrient world - Key messages

- Too much and too little nutrients
- Nutrients are an increasing threat requiring urgent action – mainly N_r
- Solutions must address N and P cycles on local to global scales
- 10 key actions to produce more food and energy with less pollution
- A new intergovernmental focus is needed

GPNM - Global Partnership on Nutrient Management

- a global platform to steer dialogues and actions to promote effective nutrient management www.gpa.unep.org



Planetary Boundaries – Rockström et al 2009

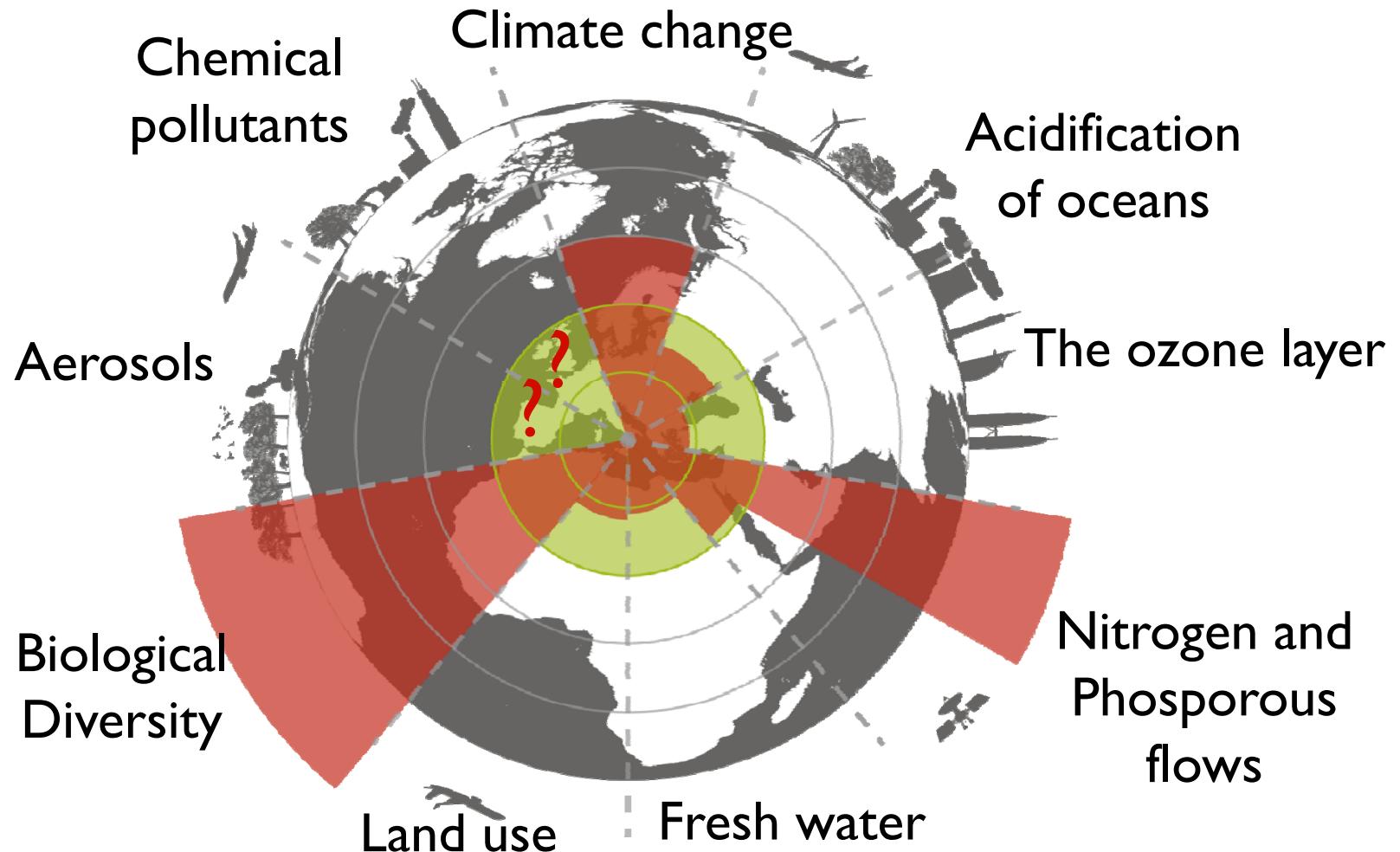


Illustration: Erik Rosin

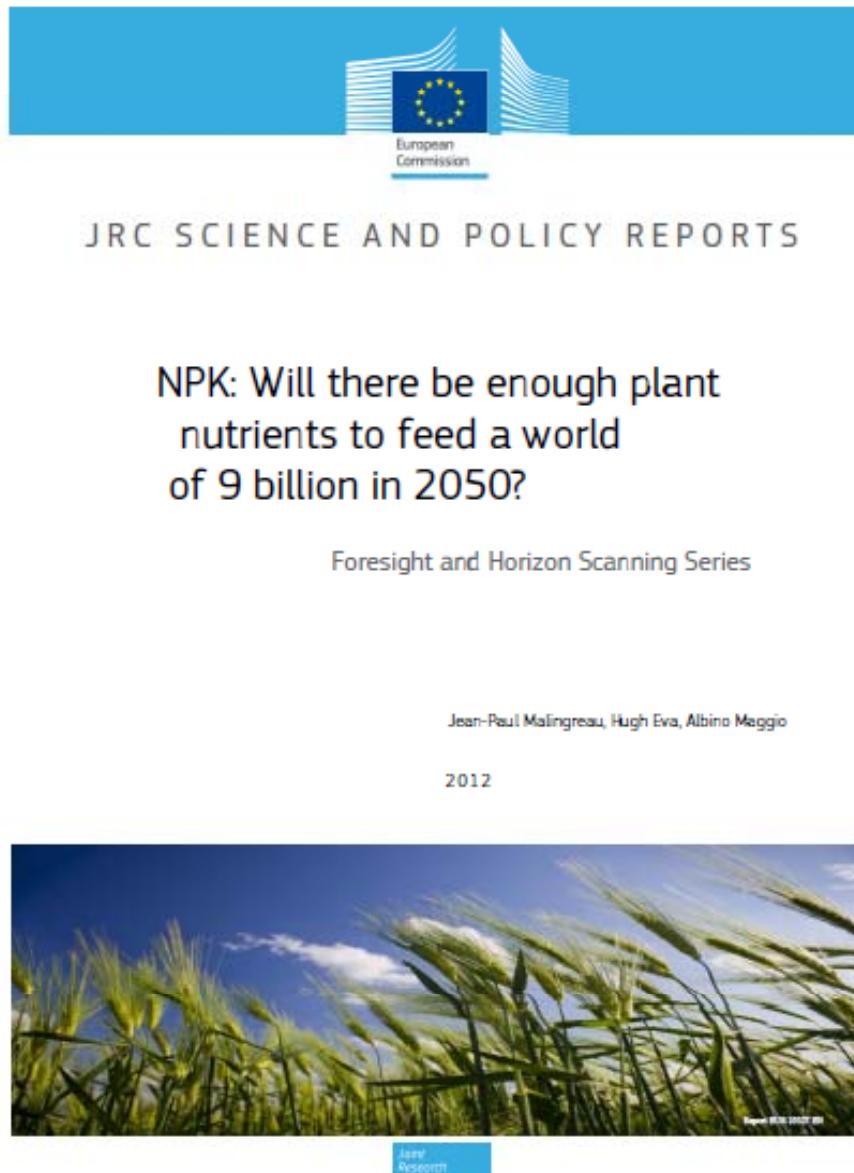


Will there be enough
plant nutrients to feed a
world of 9 billion in 2050?

Photo: Linus Dagerskog

JRC Report

- NPK: *Will there be enough plant nutrients to feed a world of 9 billion in 2050?*

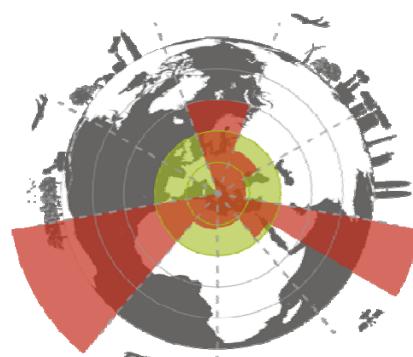


Conclusions

1. We need to start implementing a global strategy for NPK use today
2. We need to have applicable and practical alternatives developed, fully tested and implemented in 2040

Sustainable Management of nutrients

N + P + K



Nutrient flows

- conceptual model

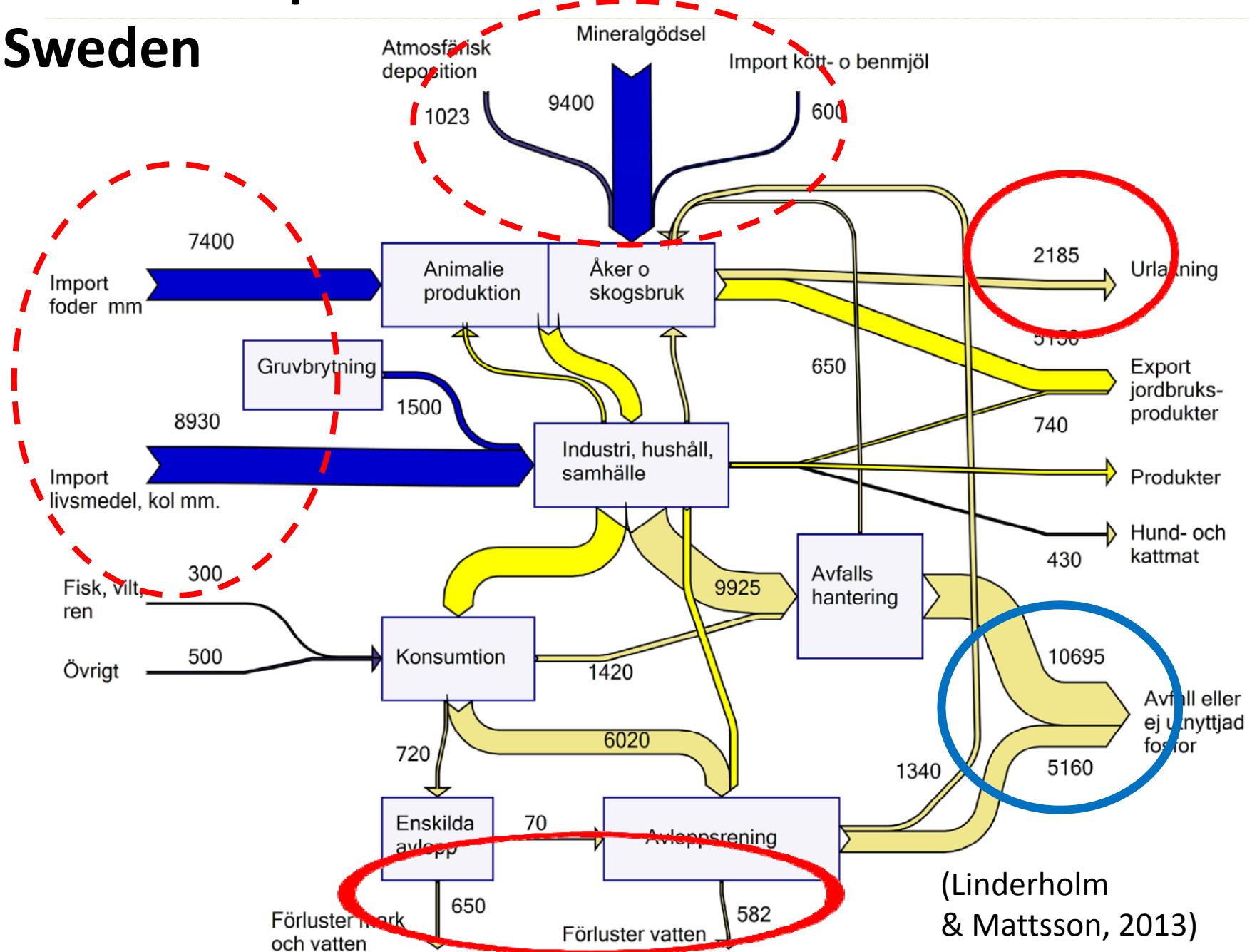


Two Swedish cases:

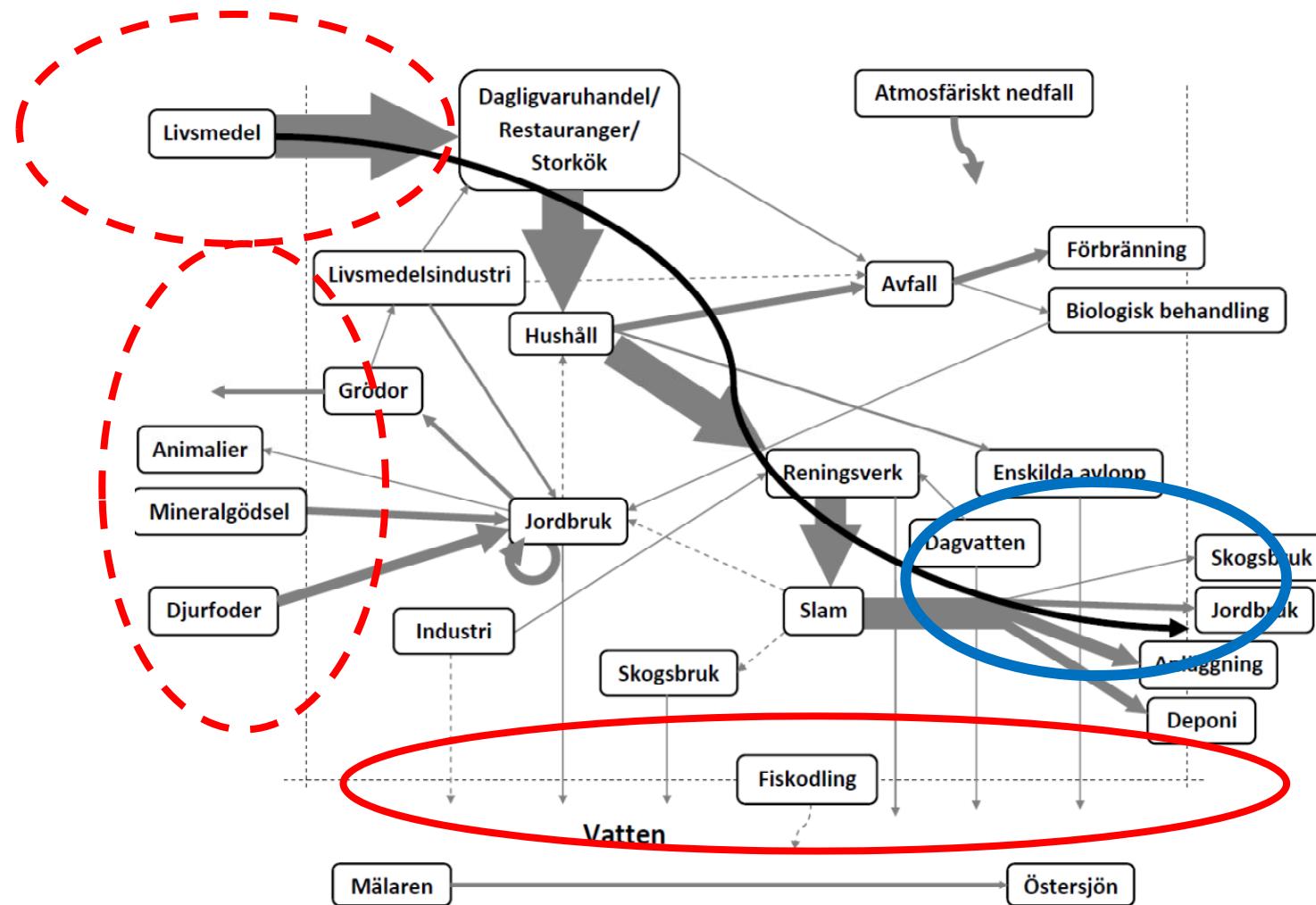
- National and regional flows of Phosphorous



Flows of Phosphorous in Sweden

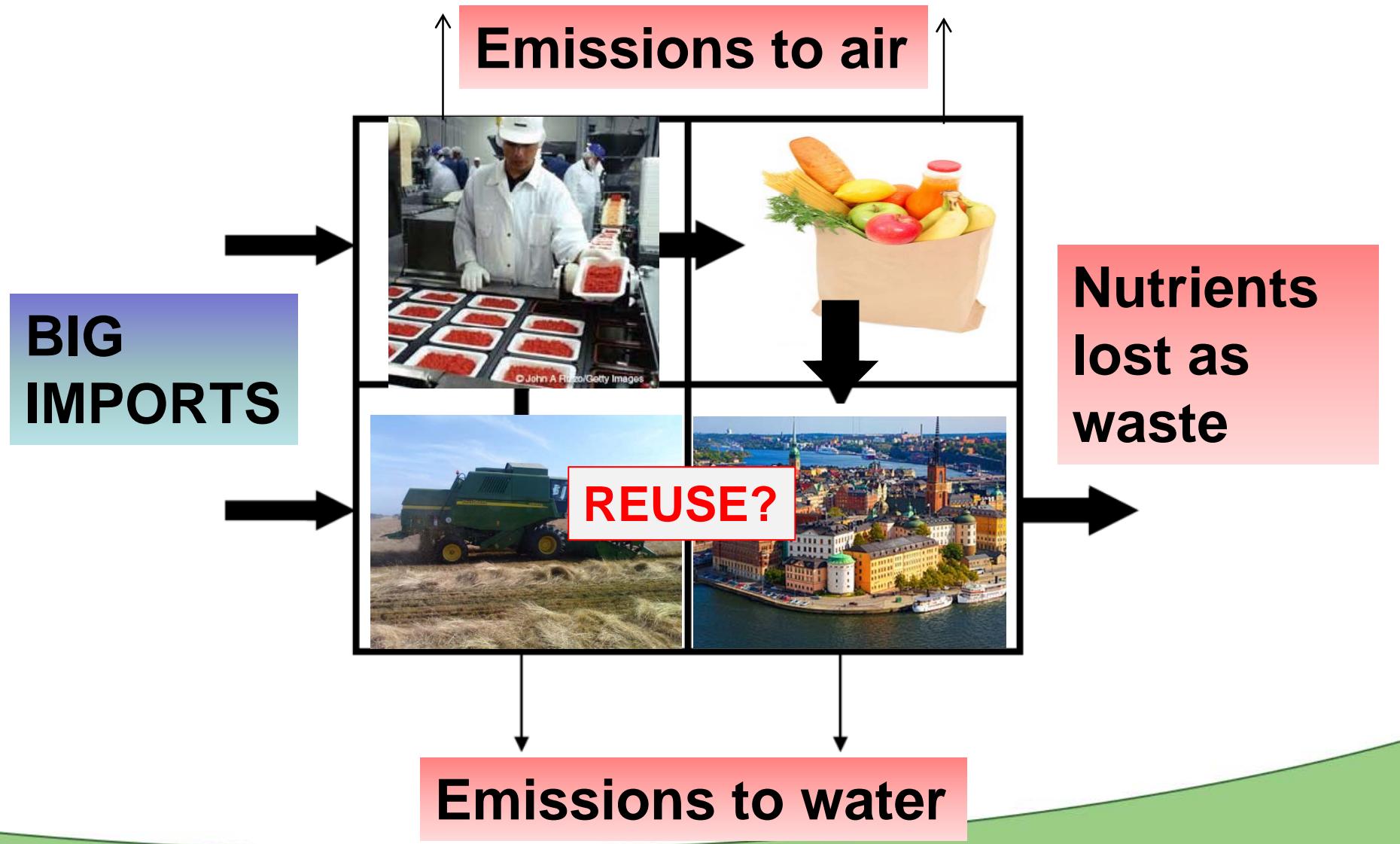


Phosphorous flows in the Stockholm region



(Sörenby, 2010)

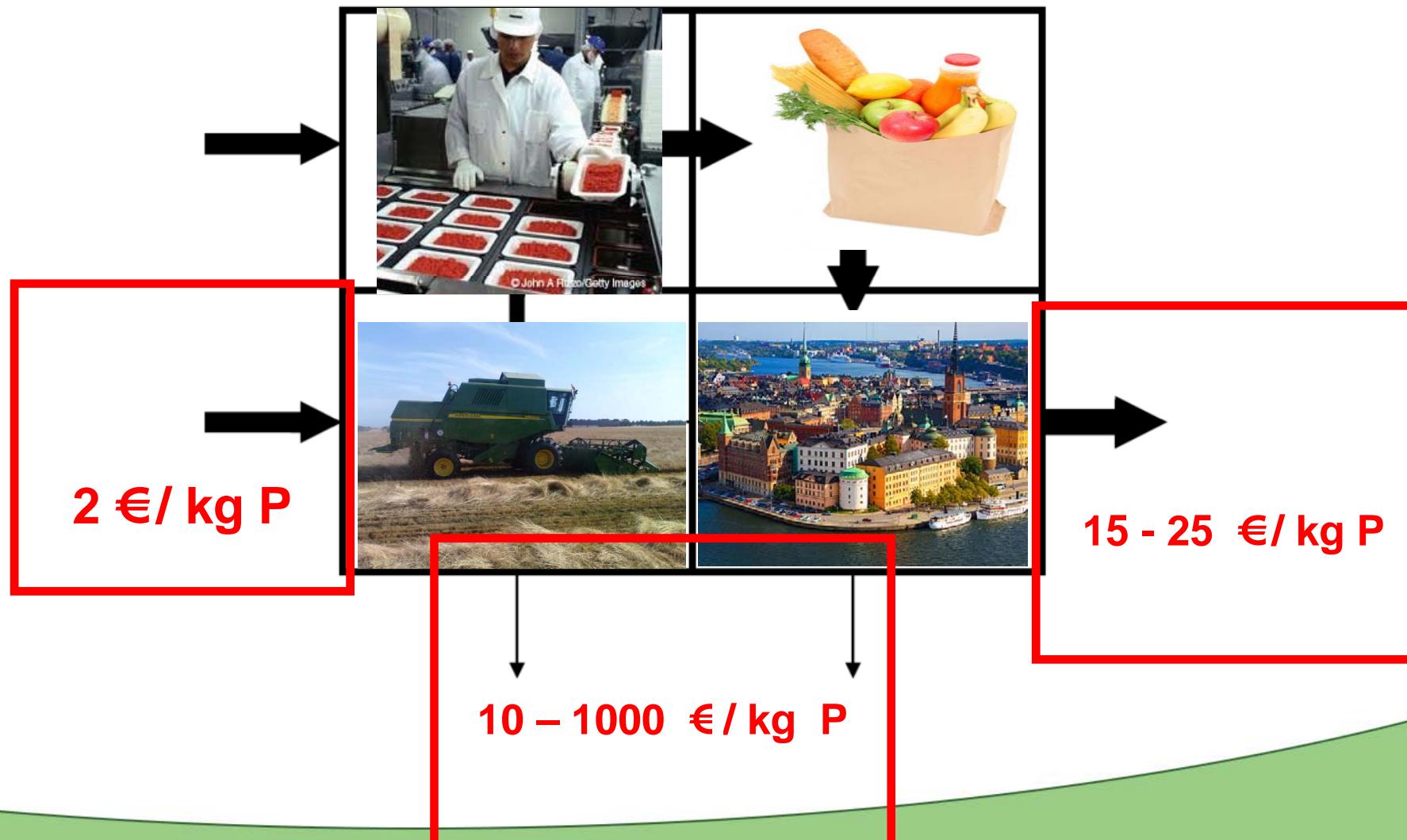
Nutrient flows in Sweden



Calculate costs and benefits related to nutrients



Nutrient economy



Recommendations

- "all systems from farm to national scale"
- I) **avoid excess input** of nutrients and increase reuse of nutrients from other flows in the society,
- II) **reuse nutrients** on the farm / within the system,
- III) **reduce the emissions** from the farm to water and air.

Policy recommendations

- I) create a **platform on national level** for actors to discuss and develop policy for sustainable nutrient management,
- II) develop models to describe **nutrient flows** and the **nutrient economy**
- III) identify efficient **policy activities and instruments** on municipal, national and transnational level



**Business as usual
- a dead end?**

Thank you for your attention!

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