Sektion für Landwirtschaft
Section for Agriculture
Section d'Agriculture
Sección de Agricultura

# From the individual to society – a holistic perspective on climate change

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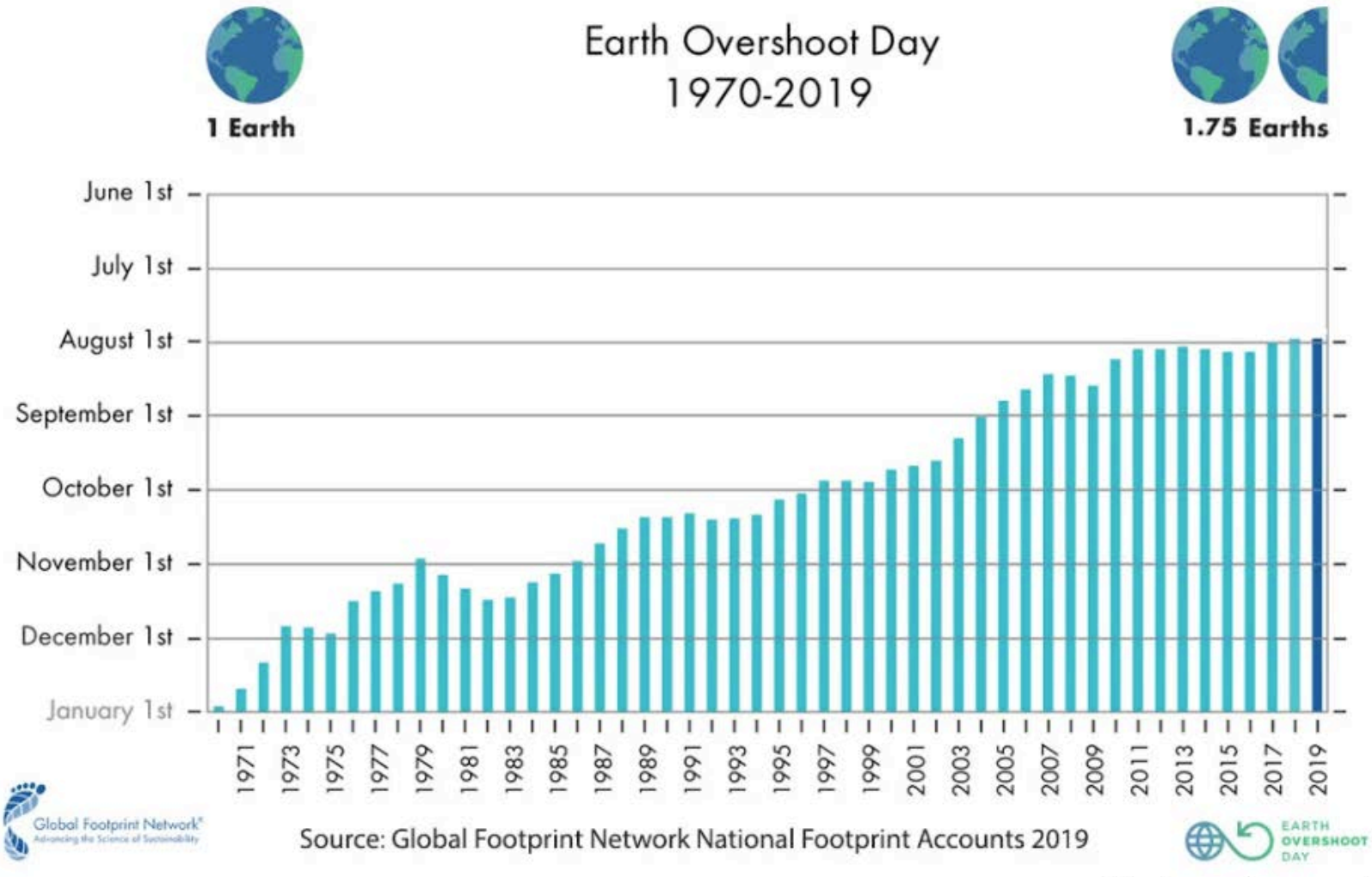
Agriculture and Youth Conference: Breathing with the Climate Crisis

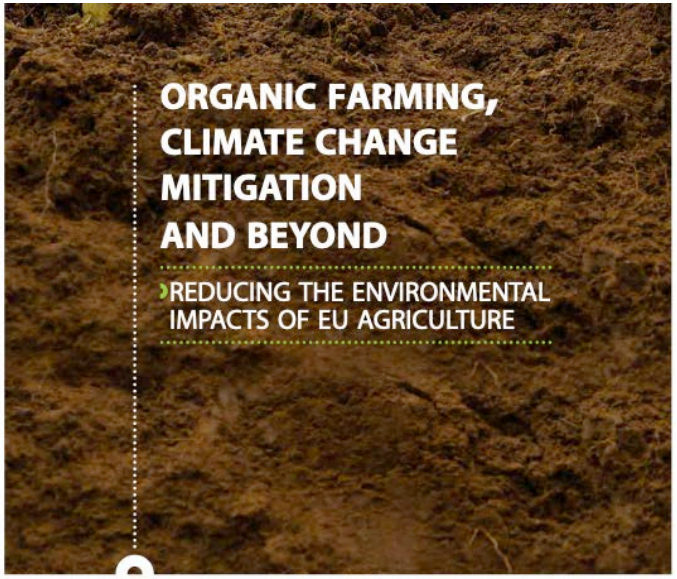
12.02.2021

# Introduction





# Agricultural Emissions




IFOAM EU GROUP MAKING EUROPE MORE ORGANIC

FiBL

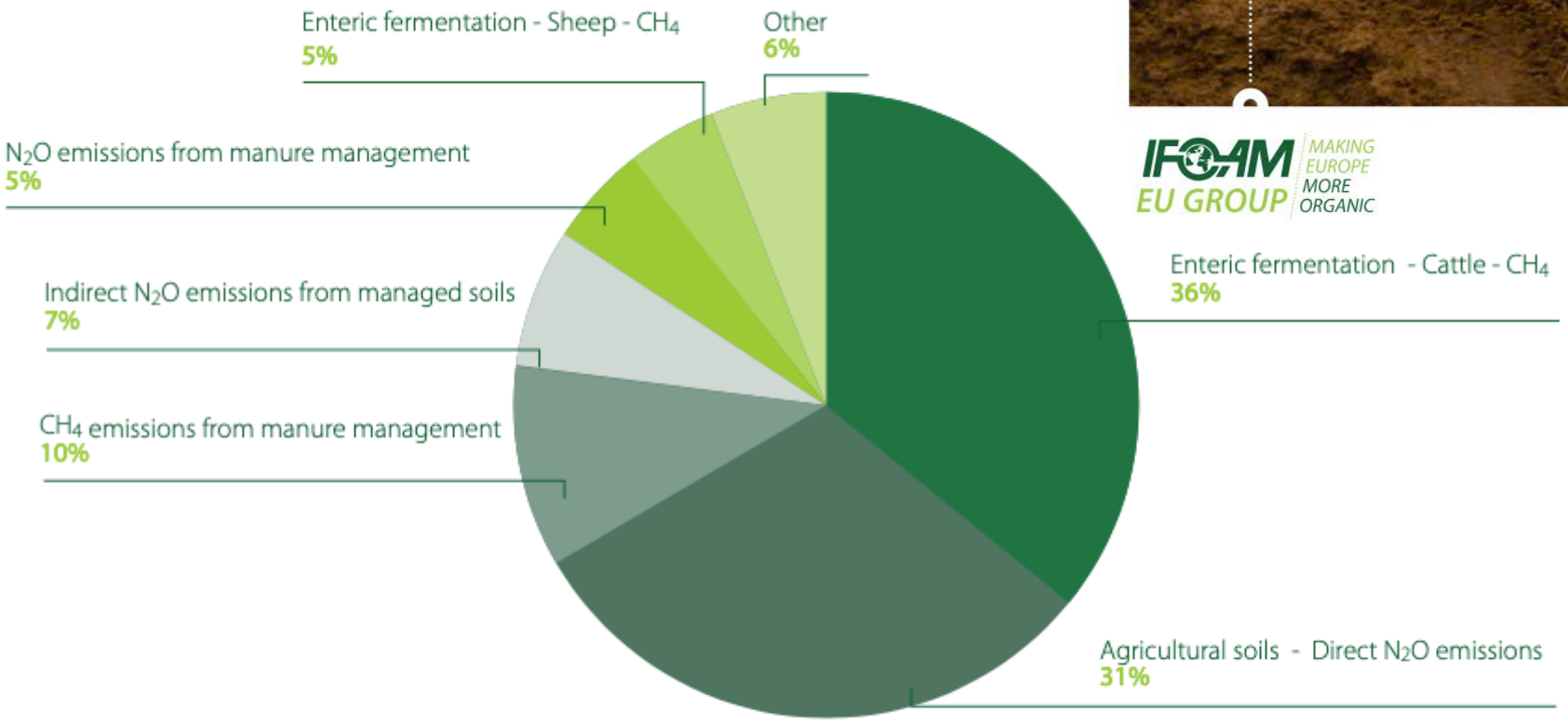
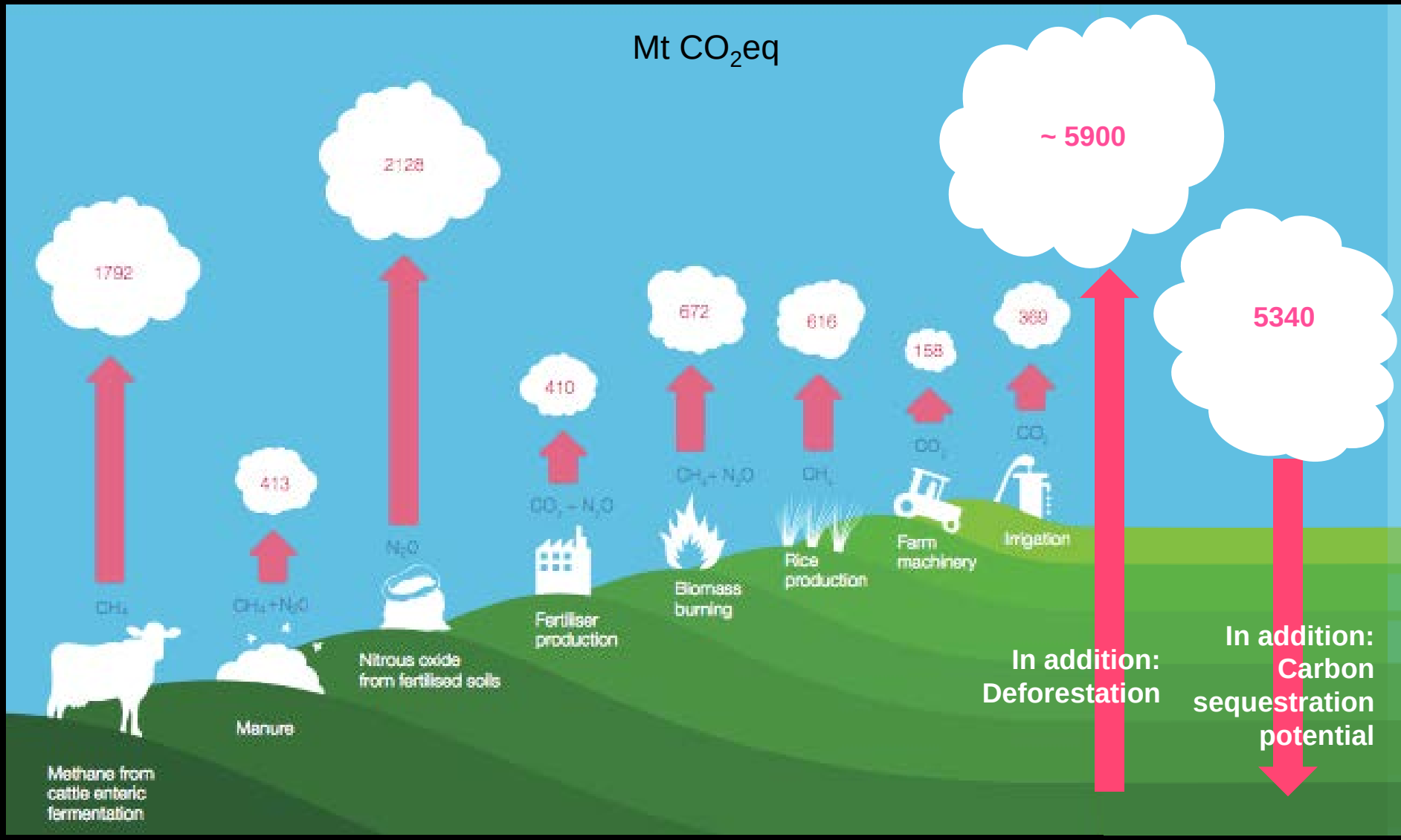
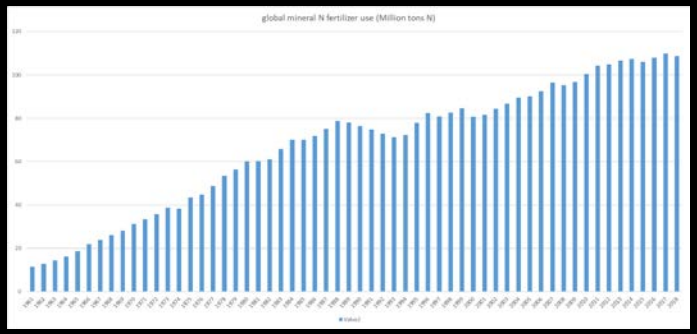


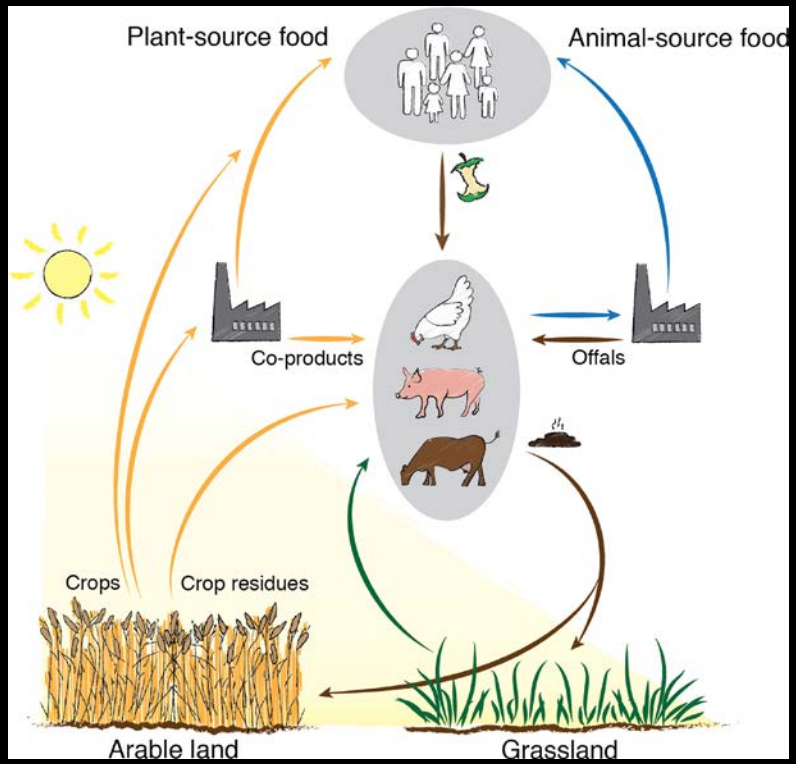

Figure 4: Agricultural GHG emissions breakdown for the EU, 2014

Source: Danila et al., 2016, page 437




Bellarby et al. 2008
Old data, but still illustrates the situation also today



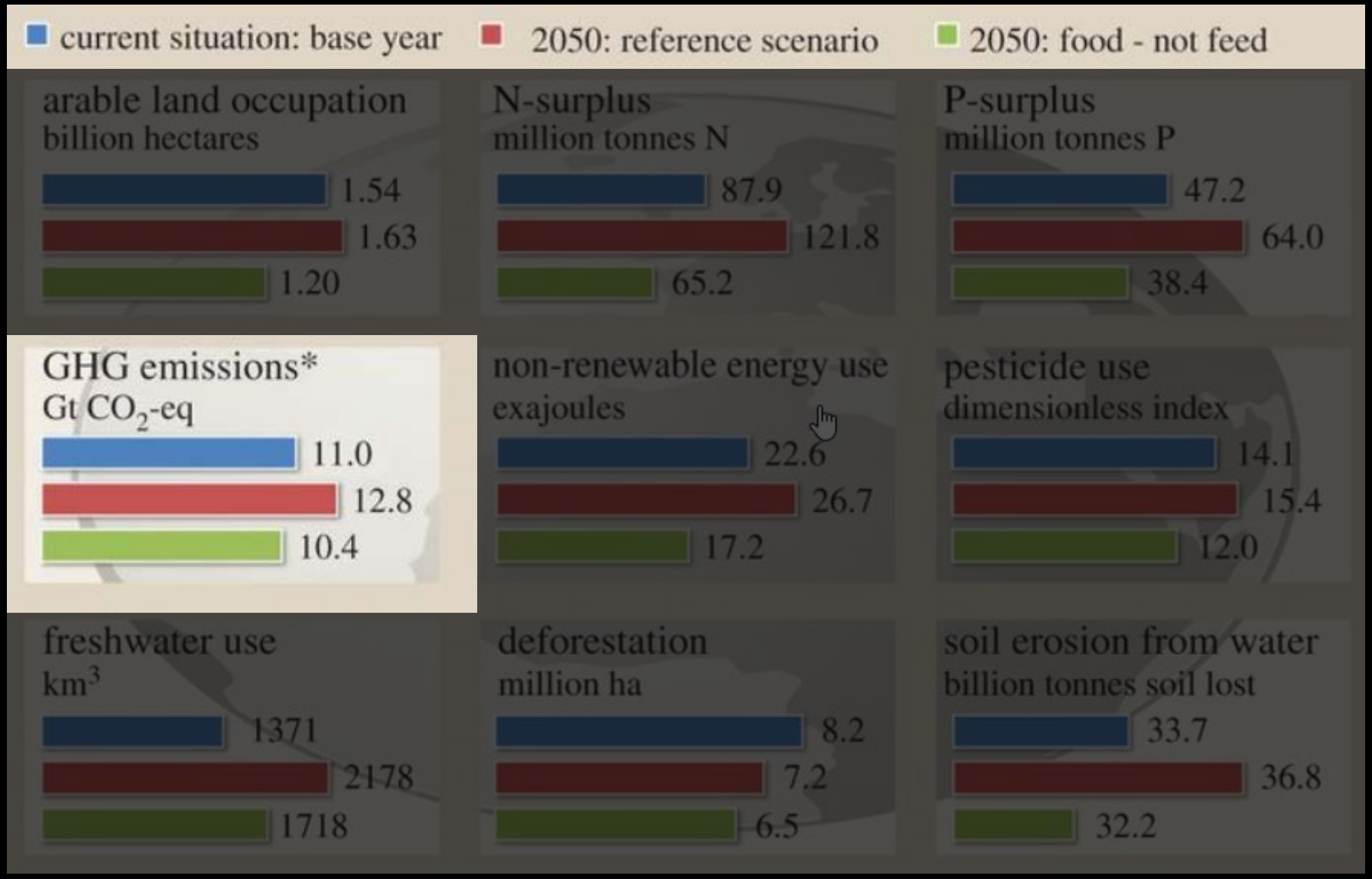




FAOSTAT 2021; FiBL; van Zanten et al. 2018

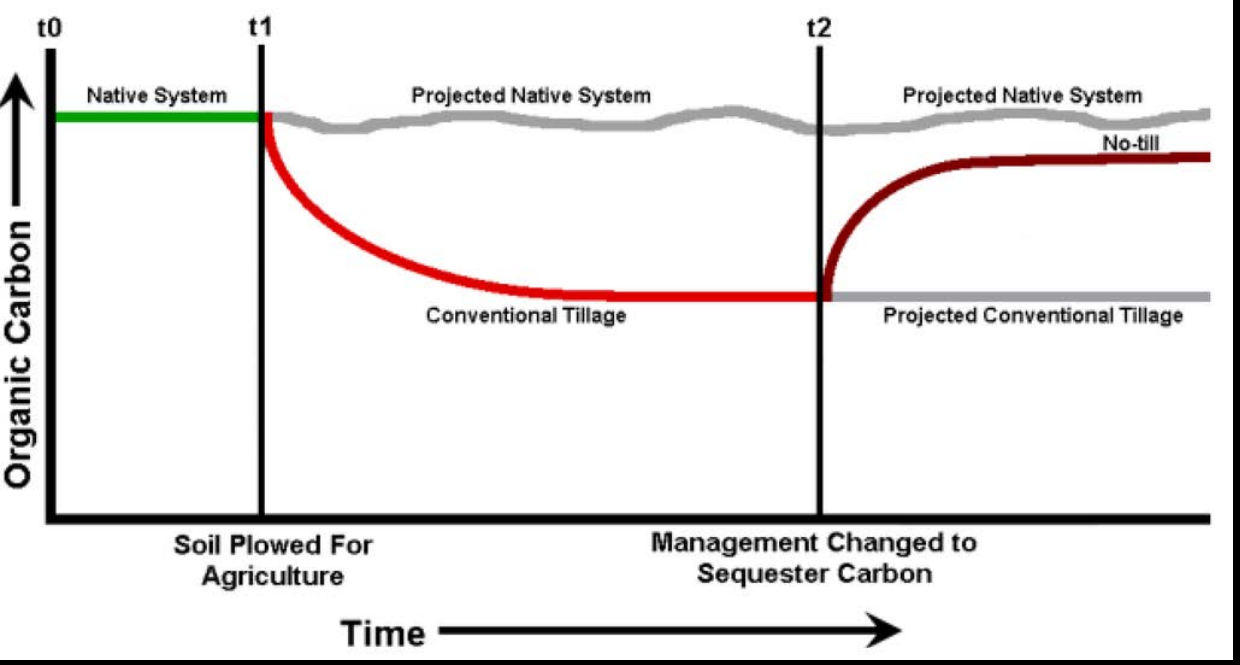
# Climate change mitigation and organic agriculture

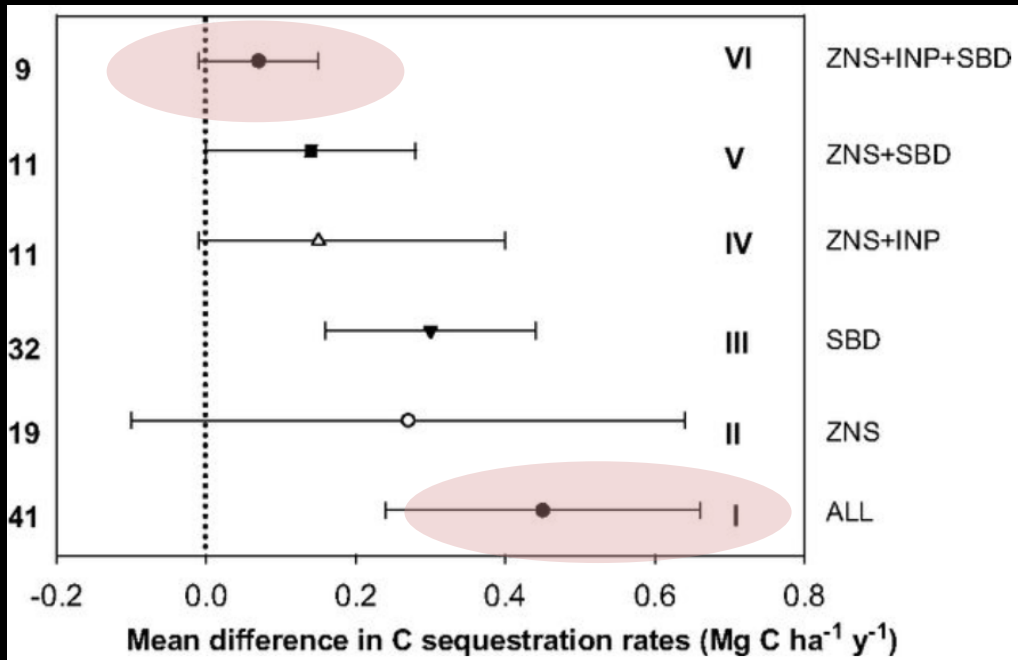
| Scenario: Linear increase to 50% organic agriculture from 2016 to 2030 in the EU<br><br>Emission sources/sinks | Cumulative emission reductions up to 2030, in % (equivalent to average reductions per year in this period, %) | Emission reductions in 2030 after having reached the conversion to 50% organic agriculture | Emission reductions beyond 2030, assuming a constant 50% share of organic agriculture |
|---|---|---|---|
| **Increased soil organic carbon** | 5.5% | 18-19% | 18-19% in 2030 to 0% in 2060, assuming that the sequestration rate drops to 0 over 30 years |
| **Reduced production of mineral N fertilizers** | 4-5% | 9-10% | 9-10% |
| **Reduced application of mineral N fertilizers (assuming some compensation by increased legume shares)** | 2-3% | 5% (assuming that about half the reduction from reduced mineral N fertilizer application is compensated by legumes) | 5% (assuming that about half the reduction from reduced mineral N fertilizer application is compensated by legumes) |
| **Total** | 12-14% | 32-34% | 32-34% (2030) to<br><br>14-15% (2060) |

% numbers: percentages in relation to direct agricultural emissions from the EU



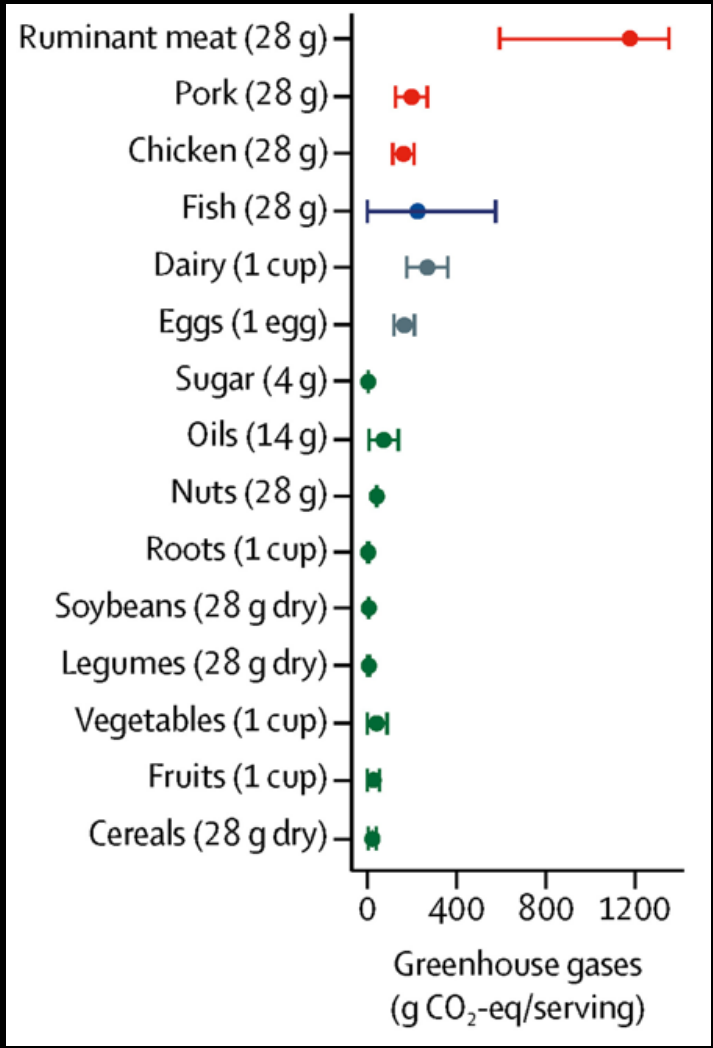

Schader et al. 2015



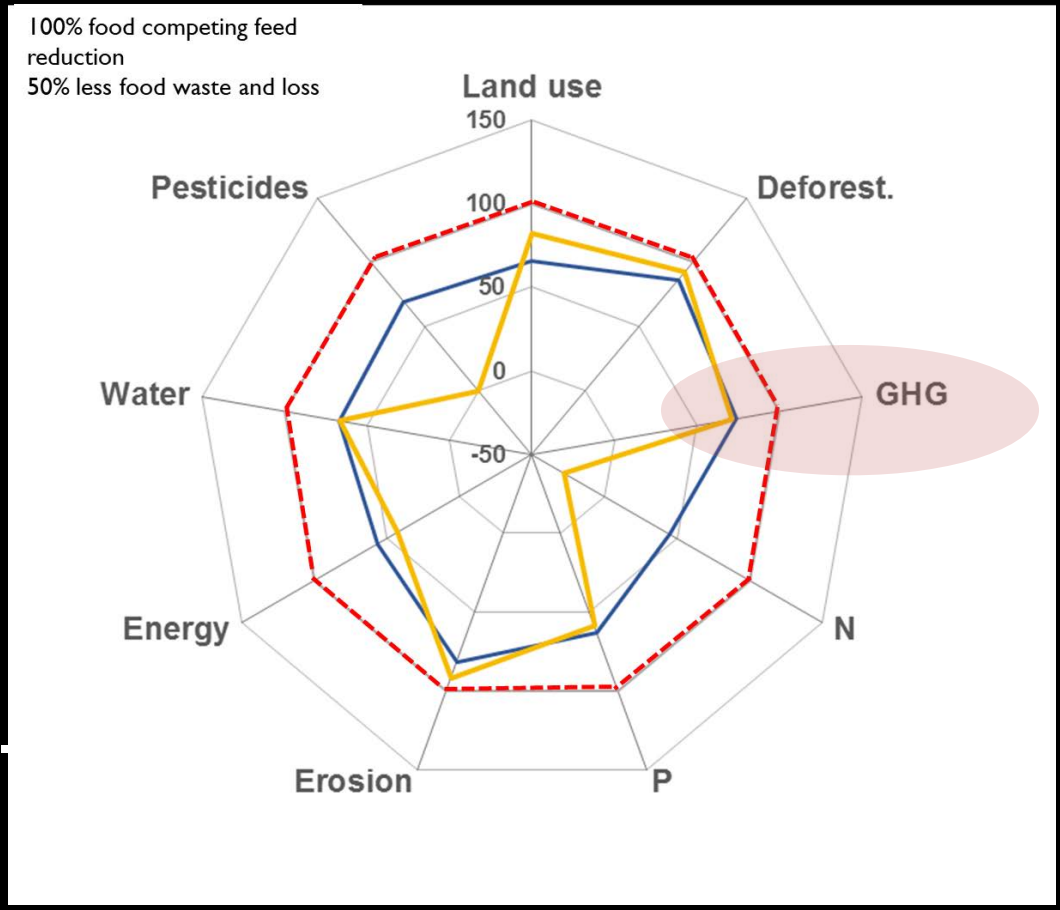




Brevik 2013; Gattinger et al. 2012

# GHG emissions per kg




vs.




# total GHG emissions



Willet et al. 2019; Muller et al. 2017




# Climate change adaptation and agroecology

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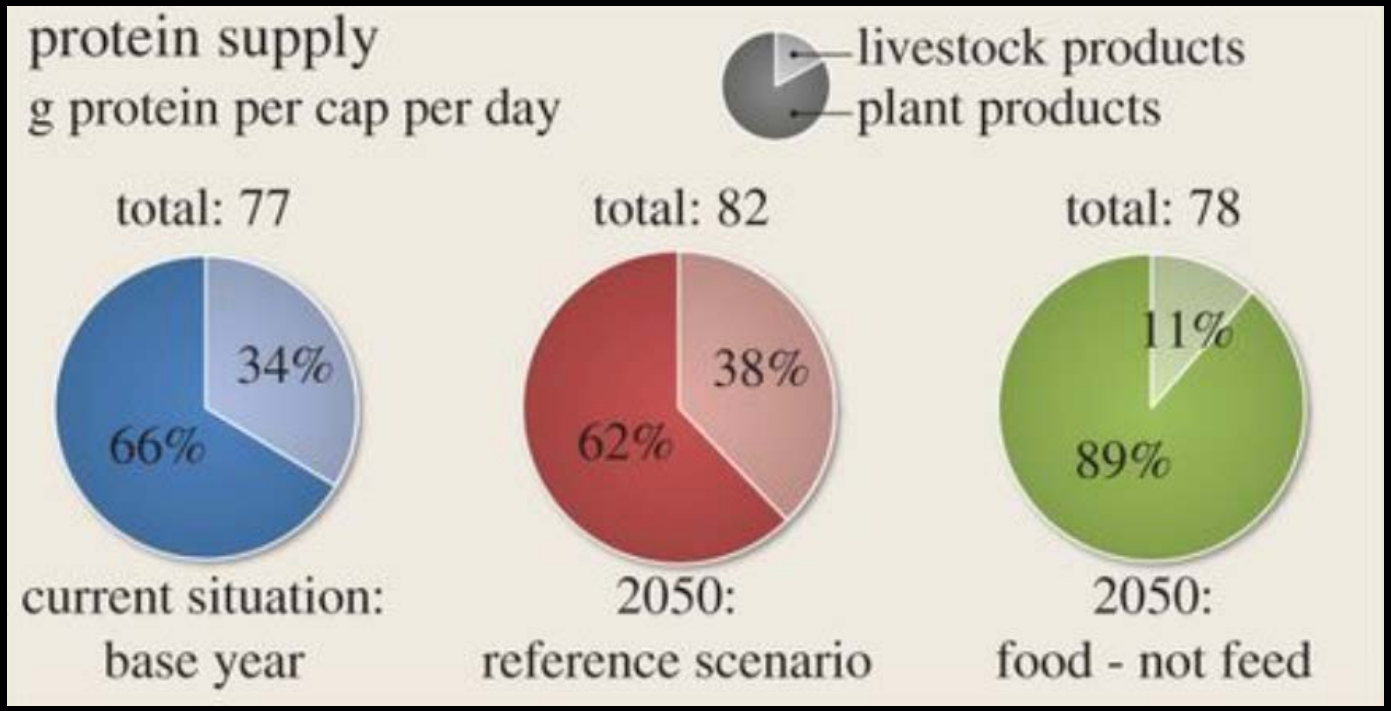
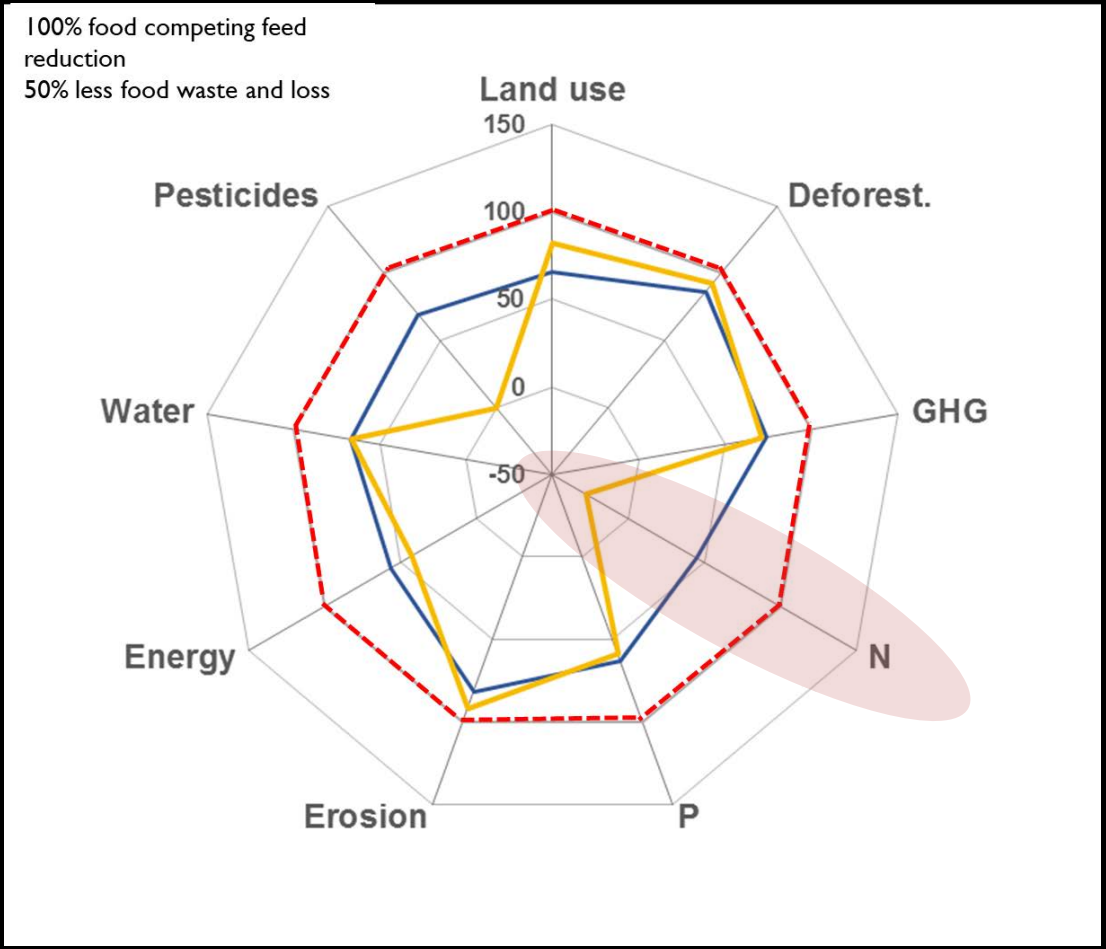
| | | Indicators for climate change adaptation | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Soil health | | Biodiversity | | Plant protection | | | Productivity | | | | | | | | | Employ-ment | Health |
| | | Soil organic carbon | Soil fertility | Species richness/ abundance/ diversity | Stability of species richness/ abundance | Natural plant protection | Weed abundance | Pathogen abundance | Total biomass production | Stability in total production | Yield | Yield stability | Pollination services | Resource use efficiency | Eco-system services stability | Profitability | Stability of costs and profits | Rural employ-ment | Exposure to pesticides |
| Agroecological practices | Organic agriculture | ✓ | ✓ | ✓ | ✓ | | × | ✓ | | | × | × | | | | | | ✓ | ✓ |
| | Low-input systems | | | ✓ | | | | | | | × | | | | | | | | |
| | Agroforestry | | ✓ | ✓ | | | | | ✓ | | | | | | | | | | |
| | No tillage | ✓ | ✓ | | | | | | | | × | | | | | | | | |
| | Reduced tillage | ✓ | ✓ | | | | | | | | | | | | | | | | |
| | Cover crops | ✓ | ✓ | | | | | | | | | | | | | | | | |
| | Biochar | ✓ | | | | | | | | | | | | | | | | | |
| | Organic fertilizers | ✓ | ✓ | | | | | | × | | | | | | | | | | |
| | Crop rot./ diversity/ intercropping | ✓ | ✓ | ✓ | | ✓ | | | | ✓ | | ✓ | | | | ✓ | ✓ | | |
| | Grassland diversity | | | | | | | | | | ✓ | | | | | | | | |
| | Practices enhancing biodiversity & complex landscapes | | | | | ✓ | | | | | ✓ | | ✓ | ✓ | ✓ | | | | |

Muller et al. in prep



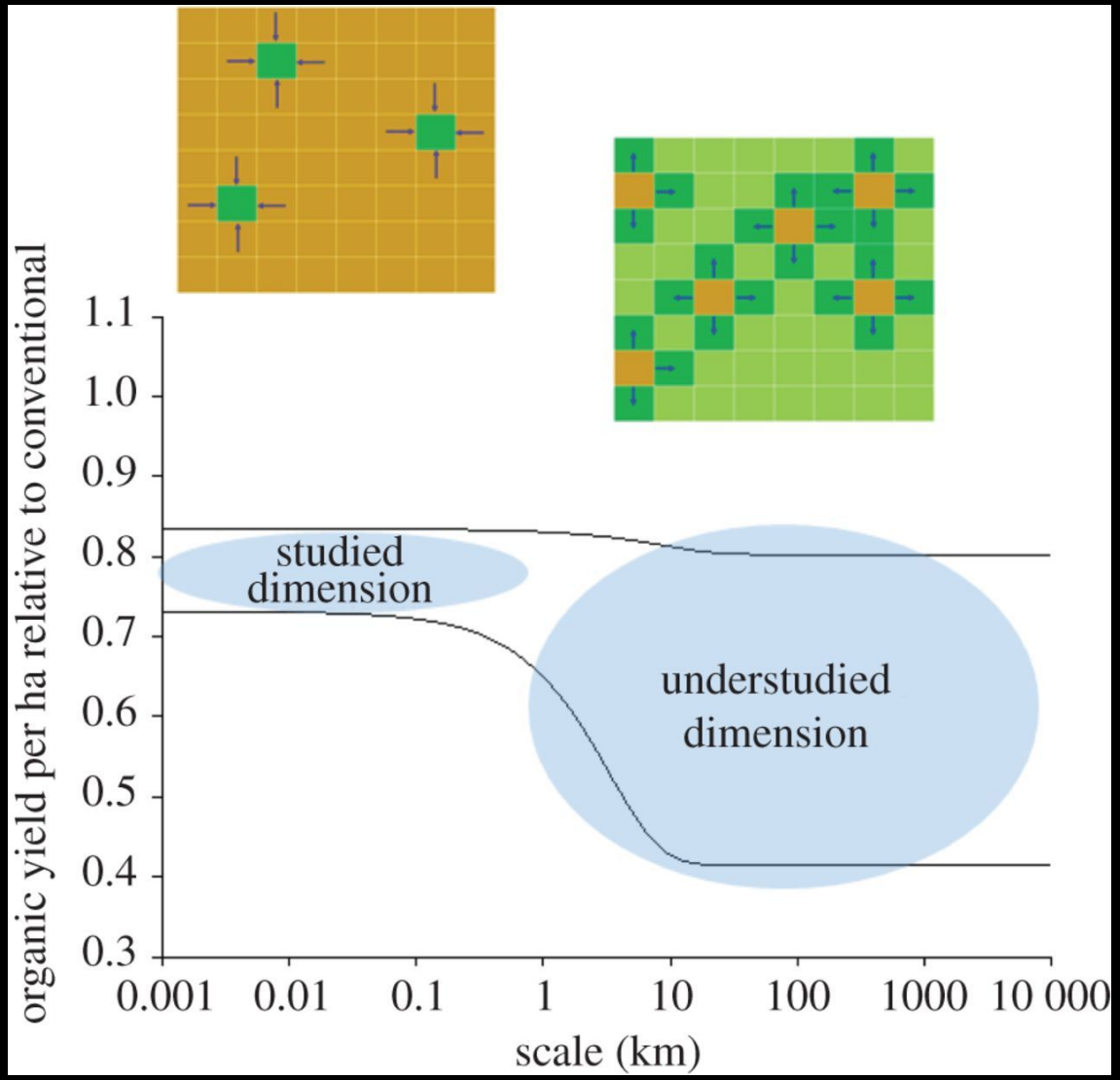



Schader et al. 2015;






Muller et al. 2017






Leifeld 2016

- How to start the needed fundamental transformation?

- What is a good life?

  What is a sustainable community?

  What is the role of naturalness?

- How to reach those that are not interested in food, agriculture, sustainability and climate change?

# Food System Perspective

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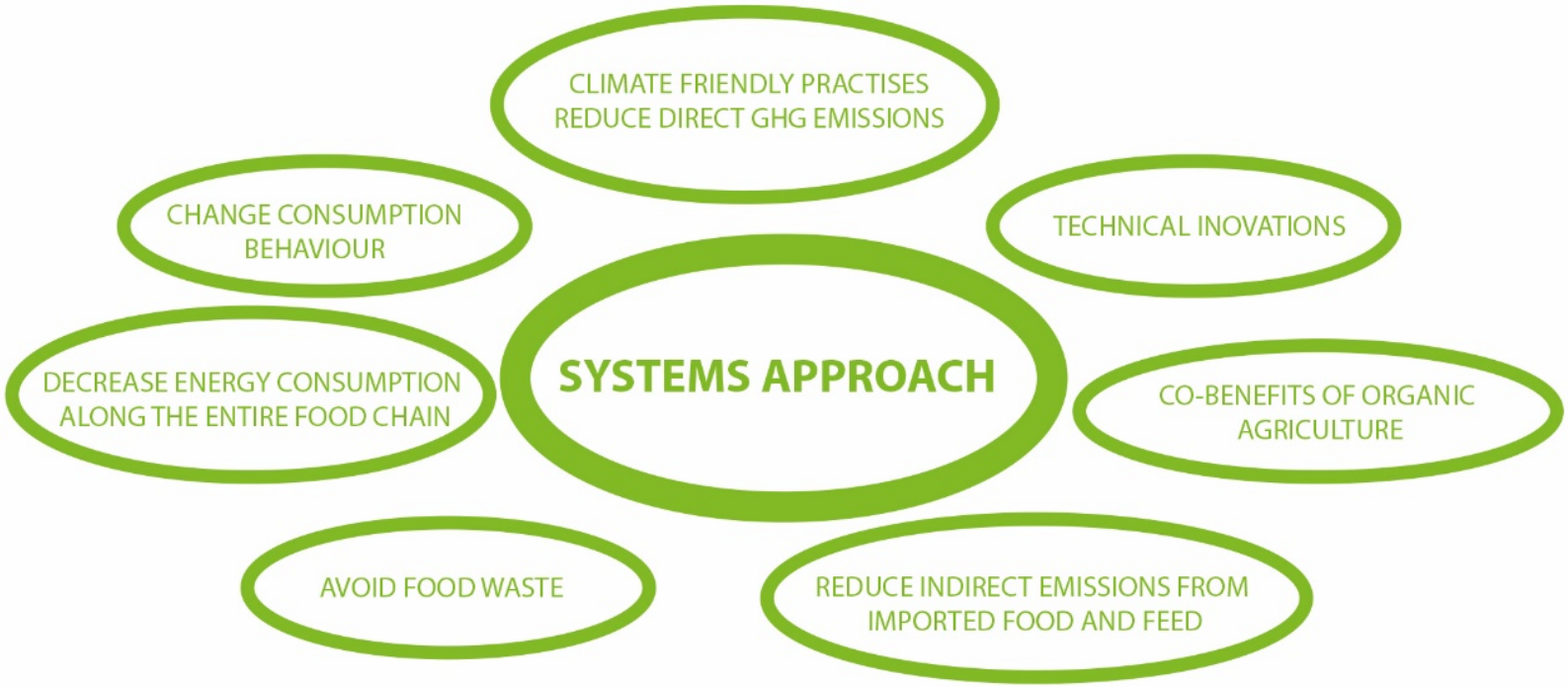
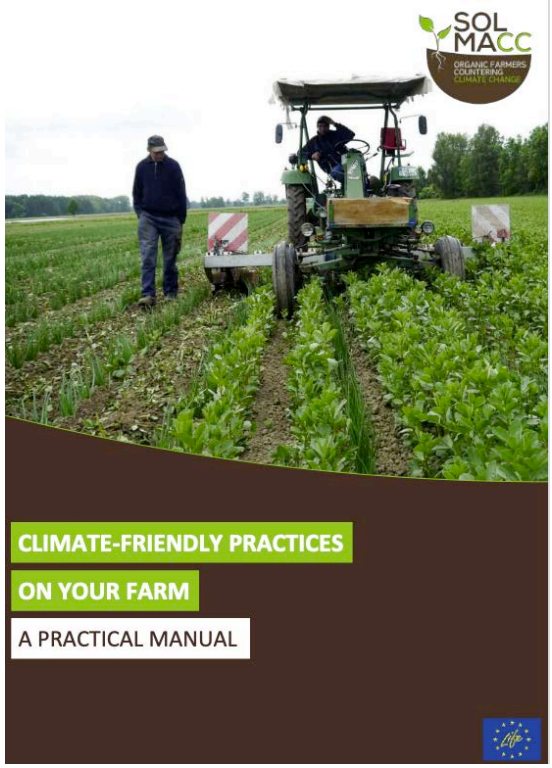


# Organic Agriculture and Climate





**Optimizing Nutrient Management**

- Composting
- Mobile Lifestock Systems
- Biogas Utilization

**Crop Rotation Management**

- Grain and forage legumes
- Harvest Management, drying processes

**Tillage Management**

- Frequency
- Depth
- Machinery used

**Agroforestry and Landscape Elements**

- Alley cropping, silvopastures
- Hedges, fruit trees…

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# From Knowledge to Action


www.livingfarms.net

YouTube Sektion für Landwirtschaft

Sektion.fuer.Landwirtschaft

@Section_for_agriculture

# LIVING FARMS

1) **Watch, reflect and adapt!**

**Love it, change it, leave it**


**2) Move outside your comfort zone!**

**3) Be curious!**


**4) Be brave, but rational!**

1% per day, and

10% testing may be a good


**5) Communicate and share your story!**

**6) Engage with others!**

# Thank you for your Attention!