

Circular Food Systems for Low Footprint Nutrition Security

A Transformative Research Agenda as Next GRA Flagship

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The vision

Towards integrated **crop-livestock** within a circular system production, that maximizes the overall production of nutritious human edible food, minimizes the environmental impact, **reduces the emission of greenhouse gases**, and **enhances soil carbon sequestration**.



Initiative for a Global Flagship Programme



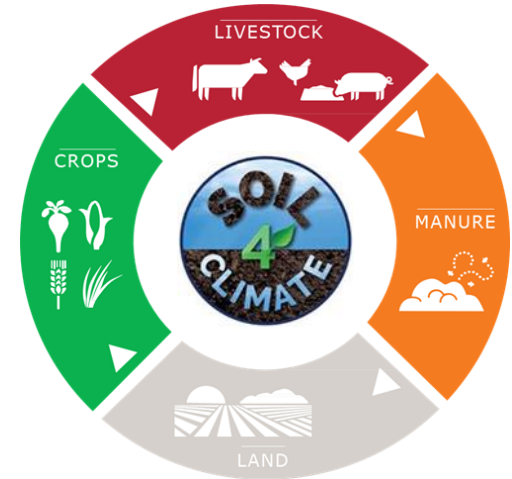
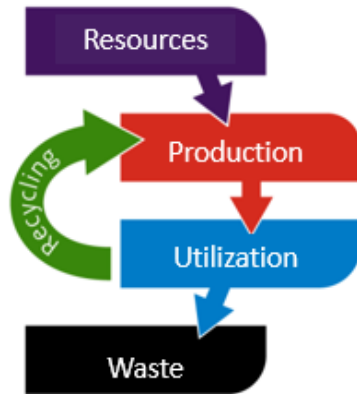
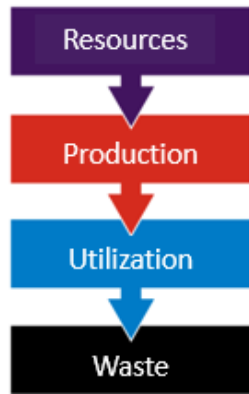
Concept Note (August 2017)



- Understanding circularity of food systems at farm/national/regional/local scales
- Developing innovations to optimize food-feed-fuel production systems
- Assessing the feasibility and potential of circular food systems
- Developing best practices in integrative crop; livestock; manure and soil management

Double purpose food/feed crops; production and digestibility of alternative feeds; manure versus green or chemical fertilization; soil carbohydrate dynamics.

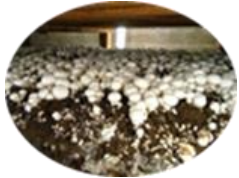
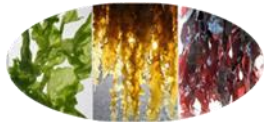
From Linear to Circular, no Waste



- **Use all agro-biomass (crop residuals, food waste, manure) to produce food**
- **Optimize resource use efficiency at agrofood system level**

Circularity needs Livestock

SMART FEEDING



FOOD vs. FEED
crops mostly grown for

humans

livestock



VALUE TO MANURE



Perspectives for GHG emissions

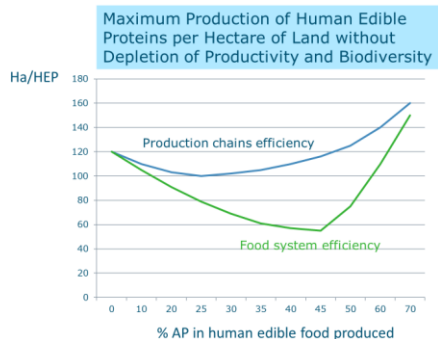


Agricultural GHG emissions:
18 Mton CO₂eq. /year

Direct mitigation potential:
3,5 Mton CO₂eq. /year

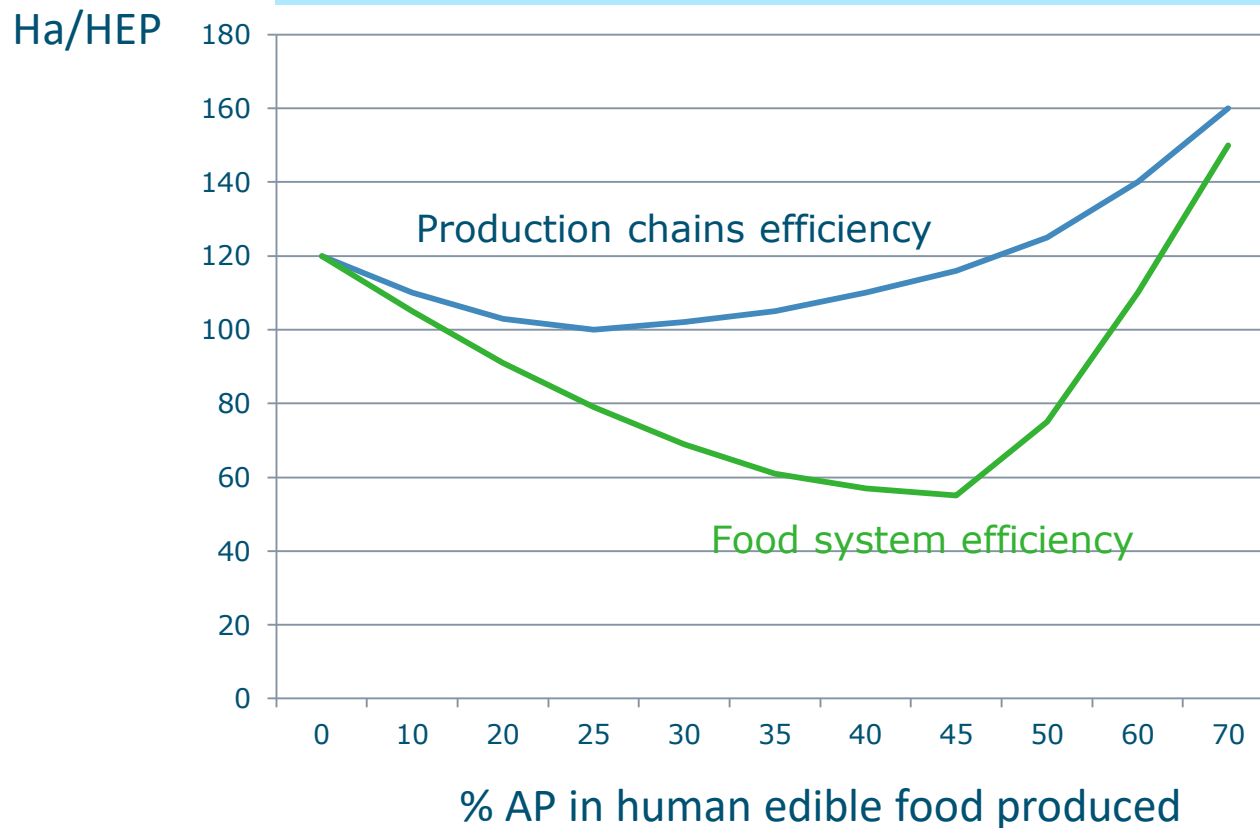
Additional by Circularity:
8,5 Mton CO₂ eq. /year

Balanced Plant: Animal Protein Mix in Food



Balanced Plant: Animal Protein Mix in Food

Maximum Production of Human Edible Proteins per Hectare of Land without Depletion of Productivity and Biodiversity



Source: Prof. Imke de Boer

Next Steps for Flagship Development

- Transform Concept Note in GRA Flagship Format
- Identify Project Ideas
- Exploring Supportive Funds

- Organize a workshop meeting
- Establish a Task Force
- Report to the GRA Council