Session 13: Assessment of sustainability : approaches in egg and dairy production systems in NL

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Sustainability assesment issues

- For whom?
- Identification of issues and indicators: participation, stakeholders selection and equitable communication
- Availability of relevant and measurable indicators, simplification
- Weighting of indicators, indirect for issues
- Reference values: national averages, law/regulation based, stakeholder based
- Aggregation level
- Trade offs
- Variability between farms and application for improvement

Housing systems layers: 13 farms each

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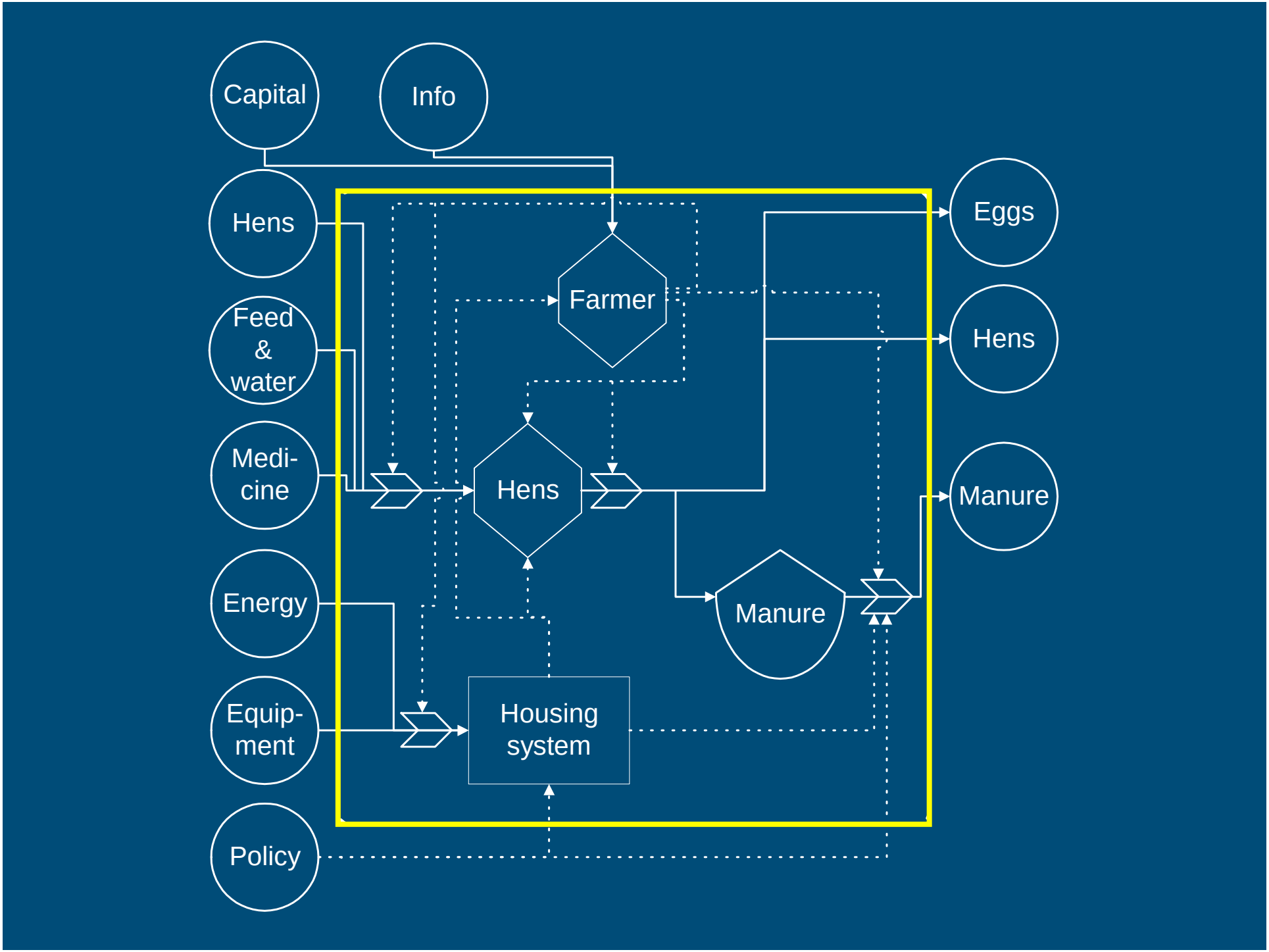
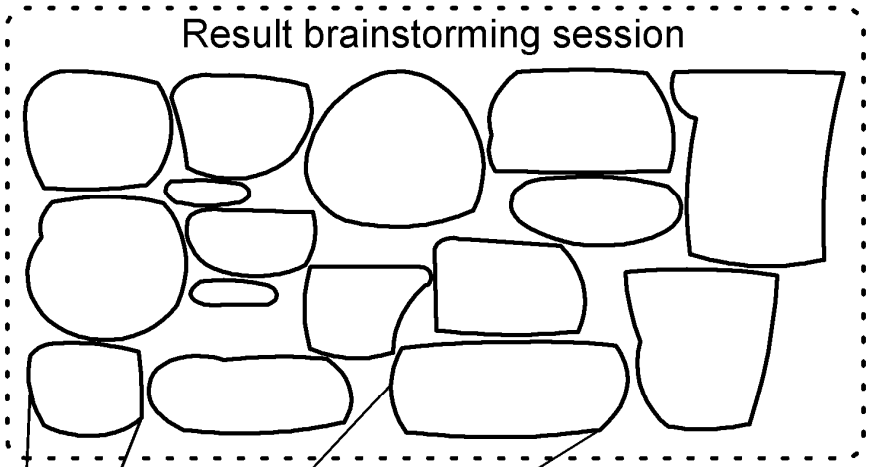

Capital
Info
Hens
Feed & water
Medi-cine
Energy
Equip-ment
Policy
Farmer
Hens
Housing system
Manure
Eggs
Hens
Manure

Results workshop



List of EES issues

Welfare and health
Environment
Quality
Ergonomics
Economy
Consumer concerns
Knowledge and innovation

SWOT issues	Strength	Weakness	Opportunity	Threat
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....

Review of literature and consultation with experts

Outlook on Agriculture 33 (2004) 267-276

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Criteria for selection of indicators

- Relevance
- Simplicity
  - understandable
  - aggregate information
- Quality
  - sensitivity
  - reliability
  - target value
- Availability of data

Animal welfare:

Animal Needs Index (TGI)

Feather condition

Behaviour

Appl. Anim. Beh. Sci. 90 (2005) 277-291

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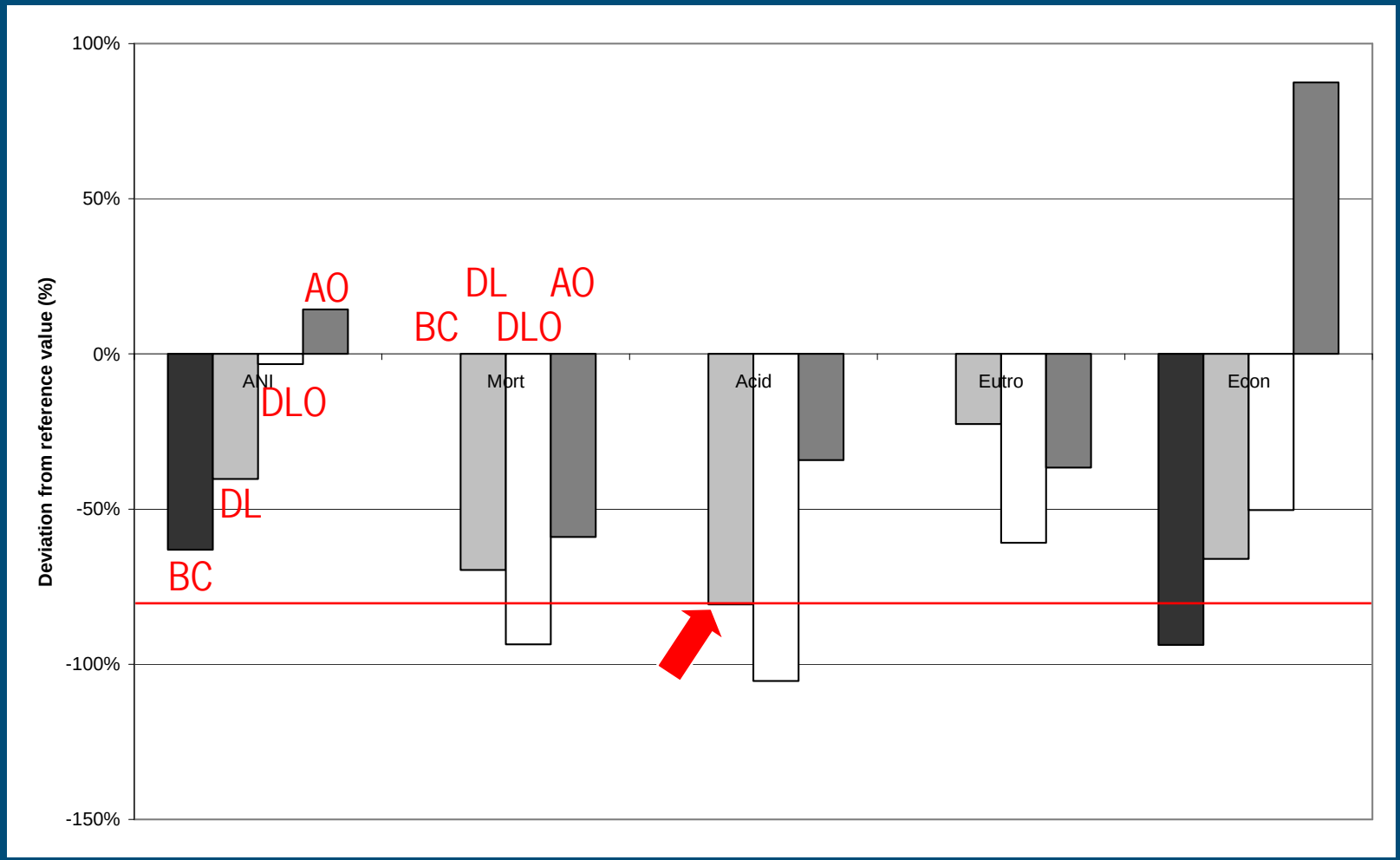
Modified Amoeba

- Indicators: Animal Needs Index, mortality, acidification, eutrophication, income per full time worker
- In the next slide ANI set at 100 points, mortality, acidification and eutrophication set at the level of the battery cage result, annual income set at agreed standard for agriculture.
- In the second slide standards set at national avarage including all laying poultry systems.
- Reference choice does not effect differences for indicators between systems. For regional and international comparisons an agreed reference value is important.

Modified AMOEBA (basic, relative to battery cage)



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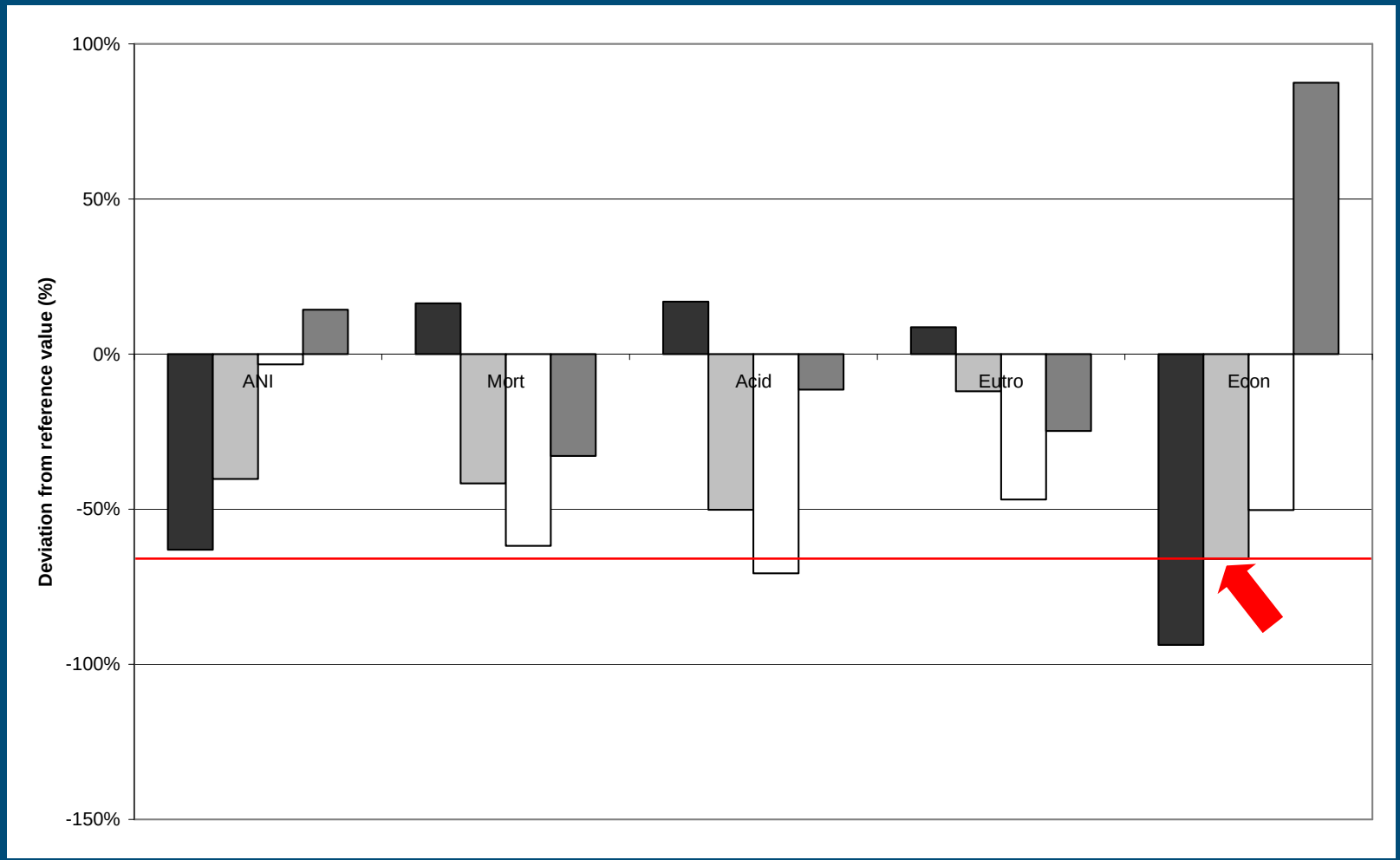
Modified AMOEBA (relative to nat. average)



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Results/conclusions

- Stakeholder involvement : broad perspective and support
- Good results of aviary system: Higher revenues through higher prices for outdoor eggs: 1.75 ct per egg and higher numbers per fte in aviary
- And lower housing costs per hen compared to deep litter
- Quantification in practice allows comparisons between and within systems
- Final assessment for selection of alternative system in 2012 depends on the strategy of the poultry farmer

Dairy production systems

Compare the integral environmental impact of conventional and organic milk production systems in the Netherlands

And associate with net farm income

10 conventional and 11 organic farms, year 2003

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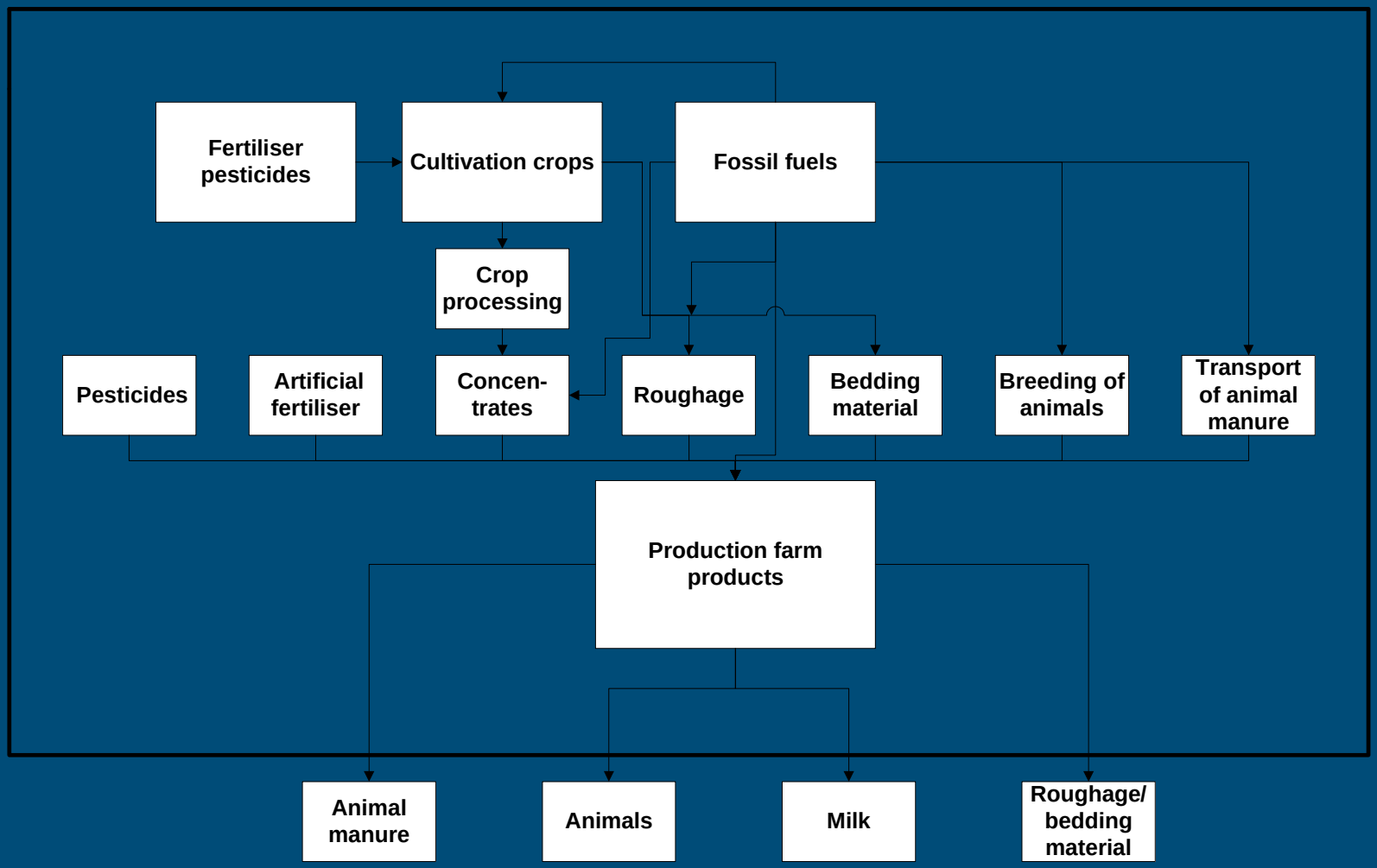
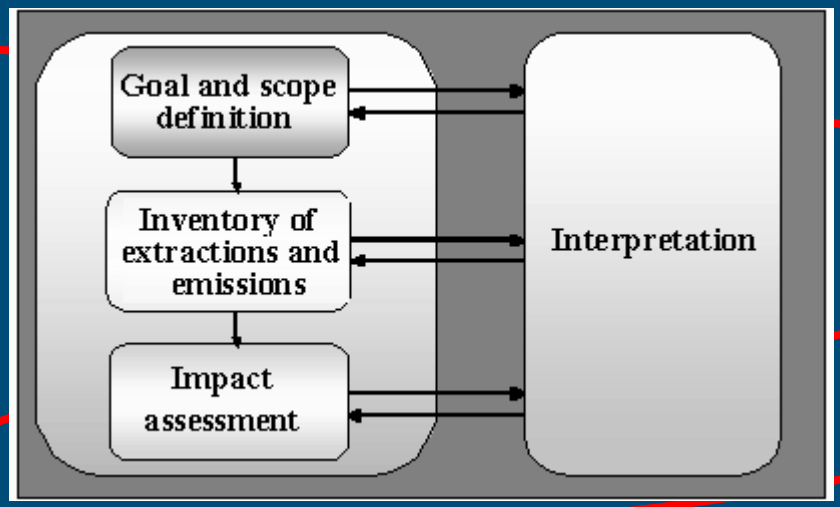
System boundaries



Method: Life Cycle Assessment






Output standardized milk

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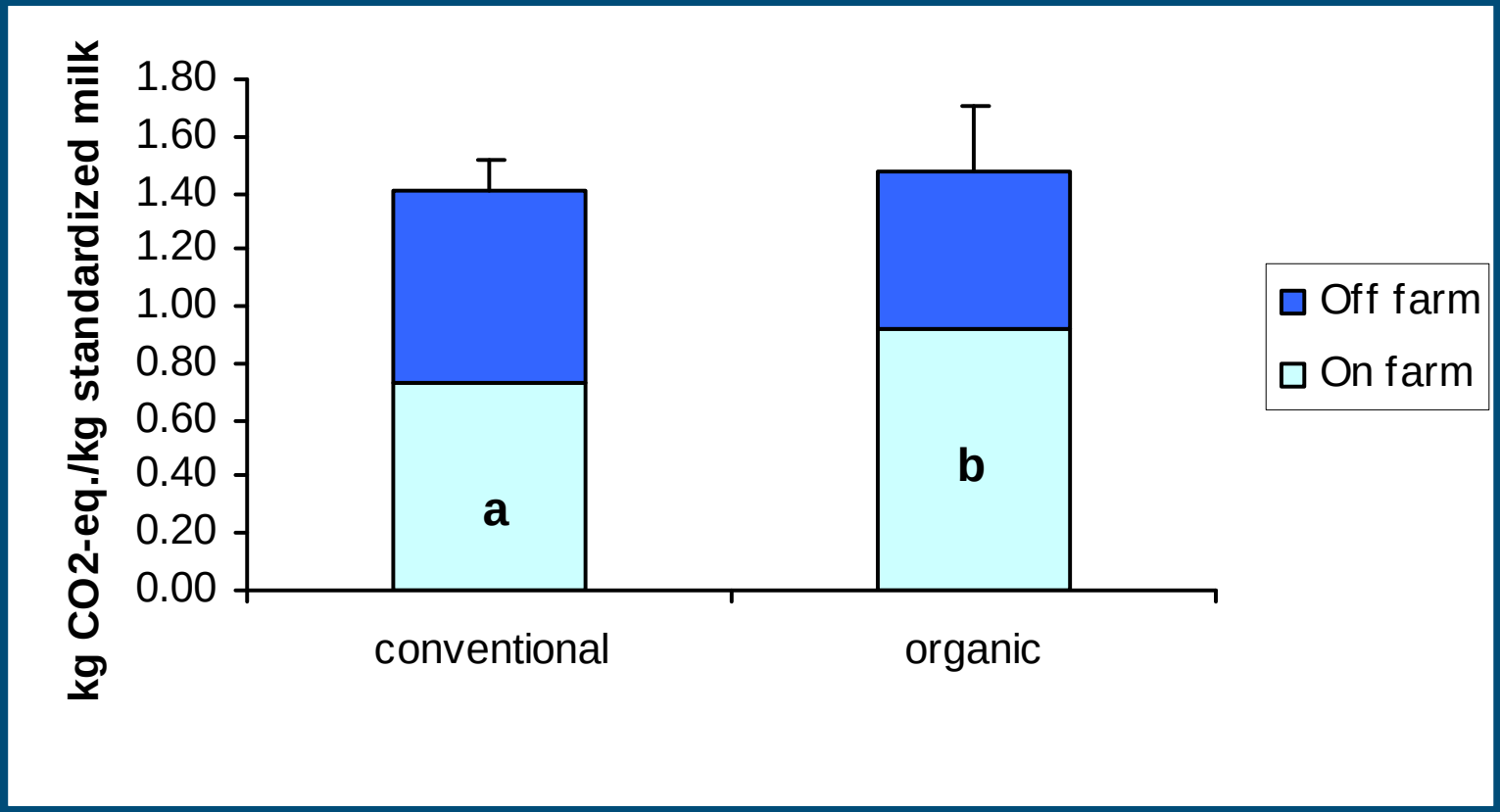
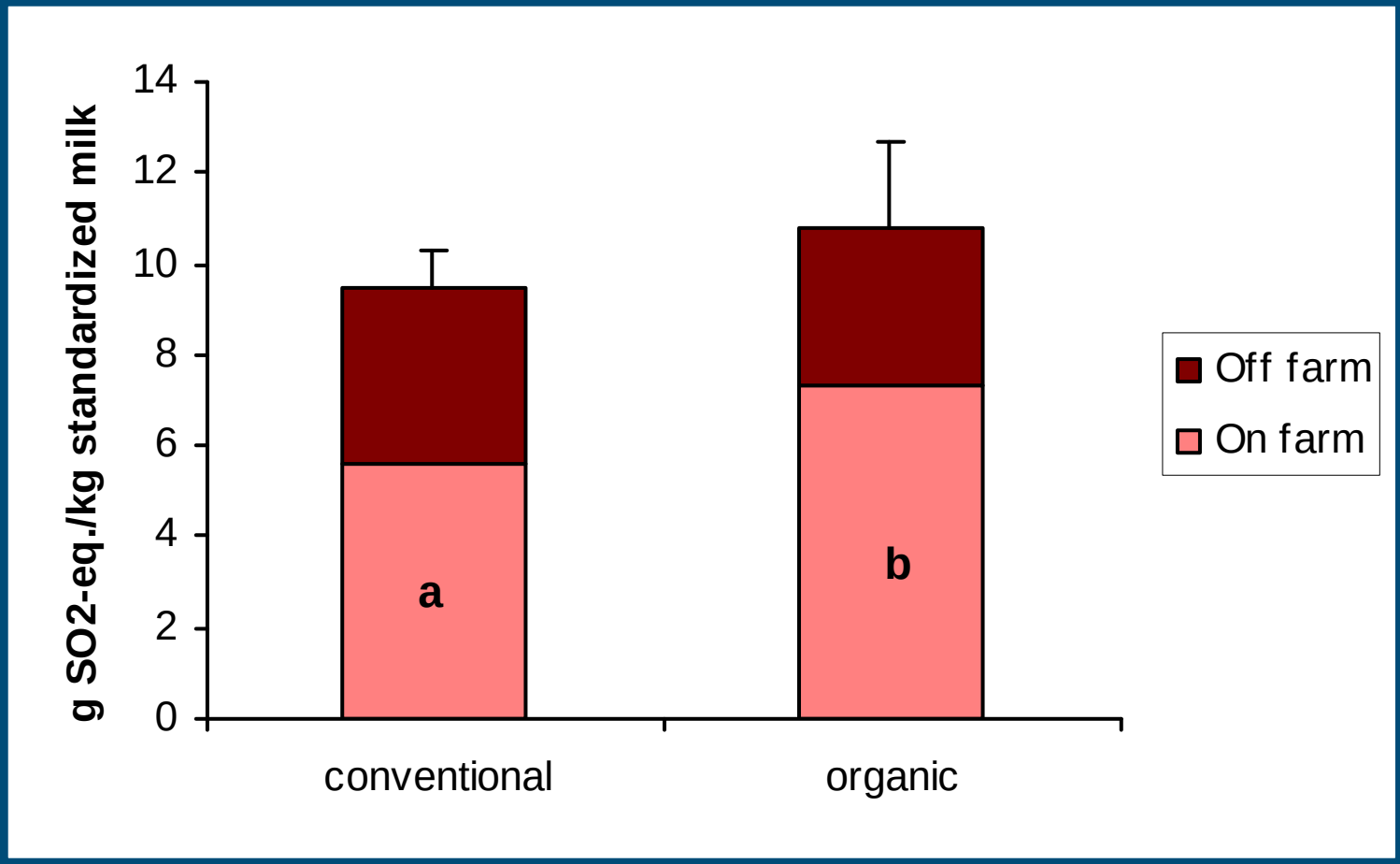
Results - Global Warming Potential



Results - Acidification Potential



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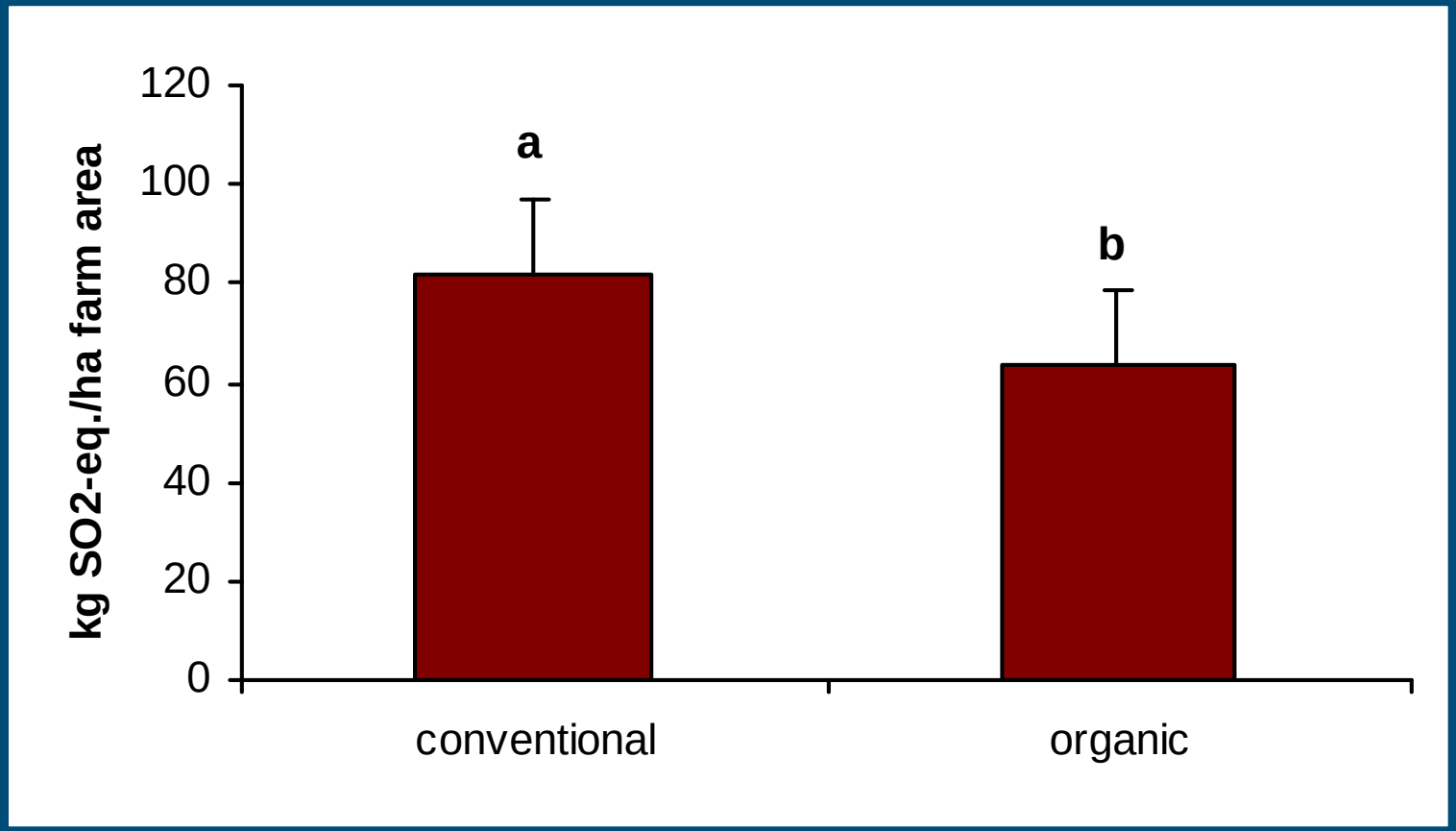
Results - Acidification Potential



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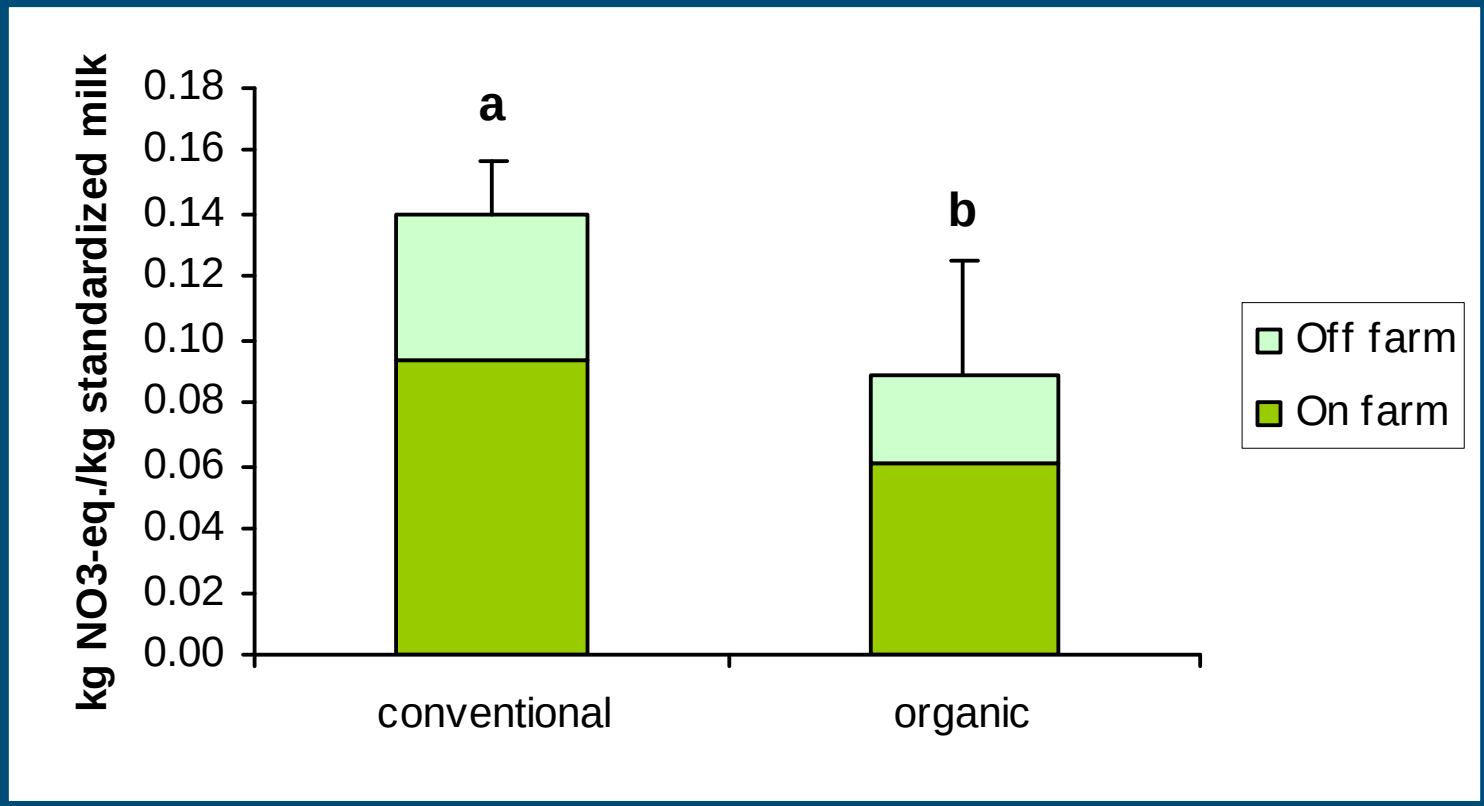
Results - Eutrophication Potential



Conclusions

- Conventional milk production lower land use
- Organic milk production lower energy use and eutrophication
- Similar total acidification and global warming, different partition
- Higher net farm income: lower on farm land use, total land use, energy use on farm, total climate change and on farm climate change, but higher eutrophication and acidification on farm and total
- System comparisons useful ; potential for use of farm data networks for layers and dairy

Thank you

Erwin Mollenhorst How to house a hen: assesing sustainable development of egg production systems

Marlies Thomassen: Environmental impact of dairy cattle production systems

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