Developing an LCA based consumer guide for environmental and animal welfare performance for meat products

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Presentation outline

- Background
- Methods: environmental performance
- Methods: animal welfare performance
- The consumer guide of Pigs in peril
- Follow up
  - on making equivalency factors for animal welfare
  - on including land use change (see others)

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Background

- Study commissioned by Pigs in Peril & Friends of the Earth
- Aim: to develop a consumer guide which enables the consumer in choosing on environmental and animal welfare performance

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Method: environmental performance

- Inventory based on Dutch animal production systems
- Recipe ecosystems score (Goedkoop et. Al 2009) used for impact assessment

  One adaptation

  - Higher species density assumed for South East Asia and South America

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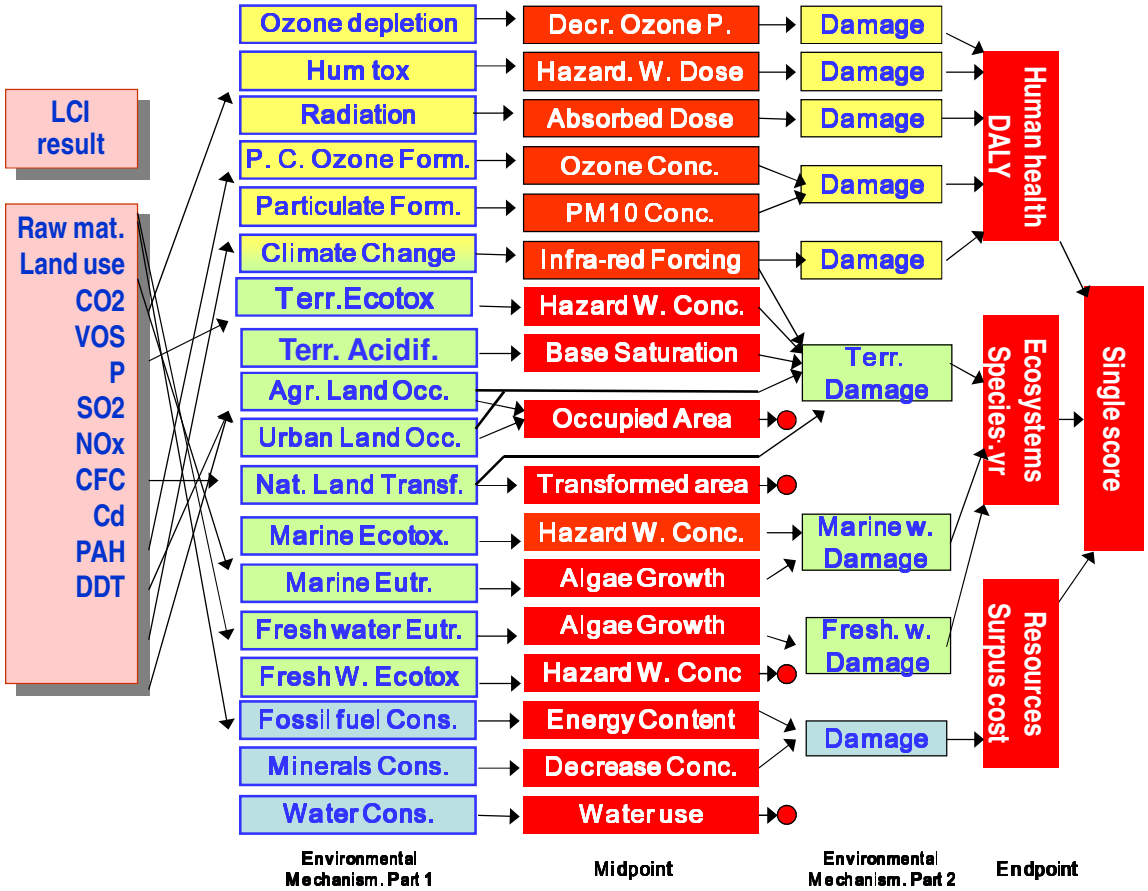
ReCiPe Impact assessment



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Environmental performance Inventory results

	Beef	Pork	Pork organic
kg CO2-eq	38,3	4,5	6,1
kg CO2eq due to land use	1,2	1,2	2,4
arable land South america and South East Asia (m2*years)	1,3	4,4	2,4
arable land total (m2*years)	5,7	7,7	12,2
arable land EU/USA (m2*years)	4,4	3,3	0,3
gras land EU/USA (m2 * years)	54,6	0	
arable land organic (m2*years)			9,5
kg NH3	0,139	0,026	0,034
g Cu/kg	0,09	0,083	0,08
g Zn/kg	0,23	0,32	0,32
Sensitivity analysis			
land conversion (m2/m2 *years)	0,002293	0,0036	0,002766
land conversion in SA/SEA (m2/m2*years)	0,01307	0,02772	0,033745

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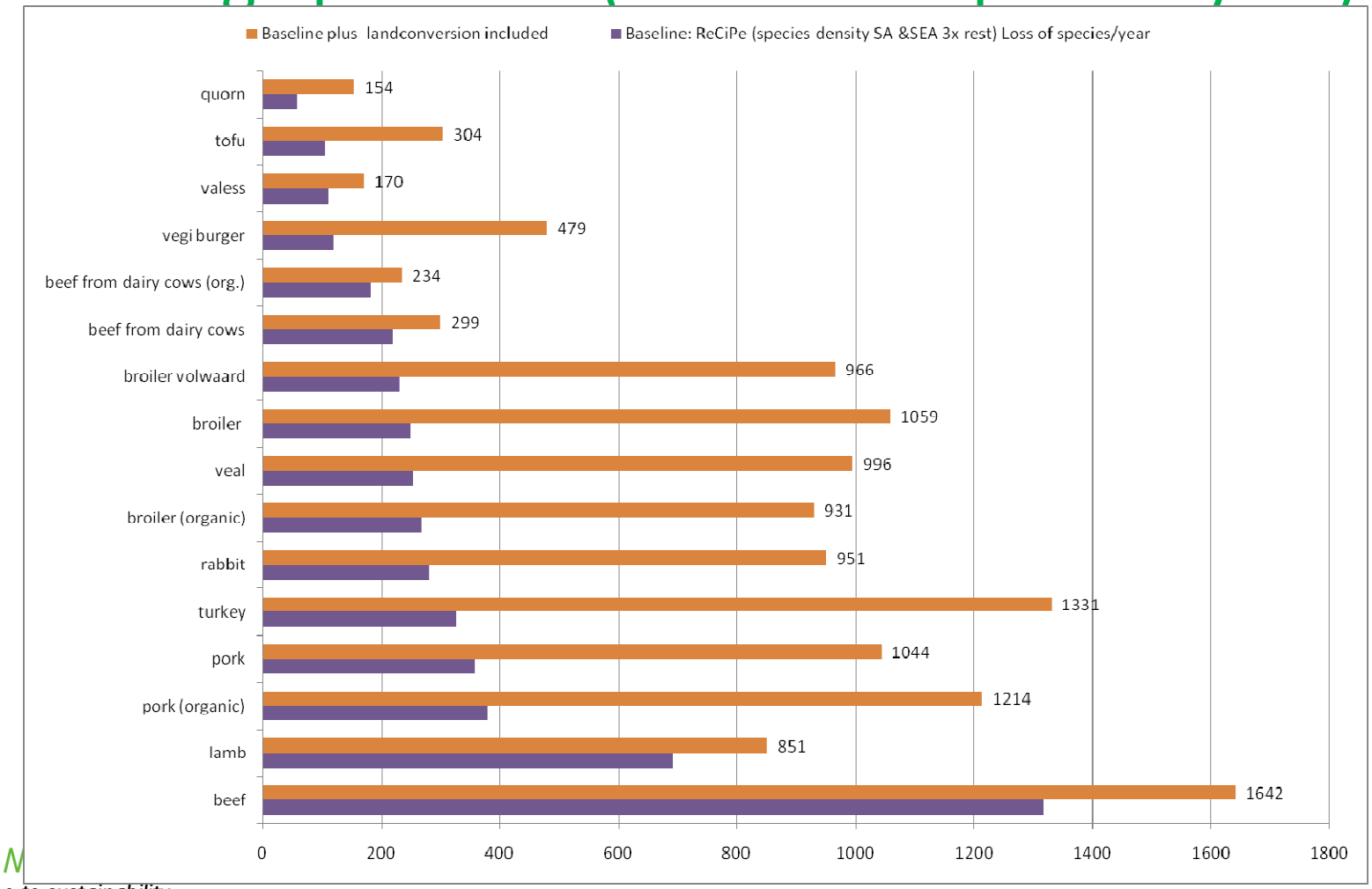
Env. Performance Impact assessment results of average products (10e-9 lost species*year)



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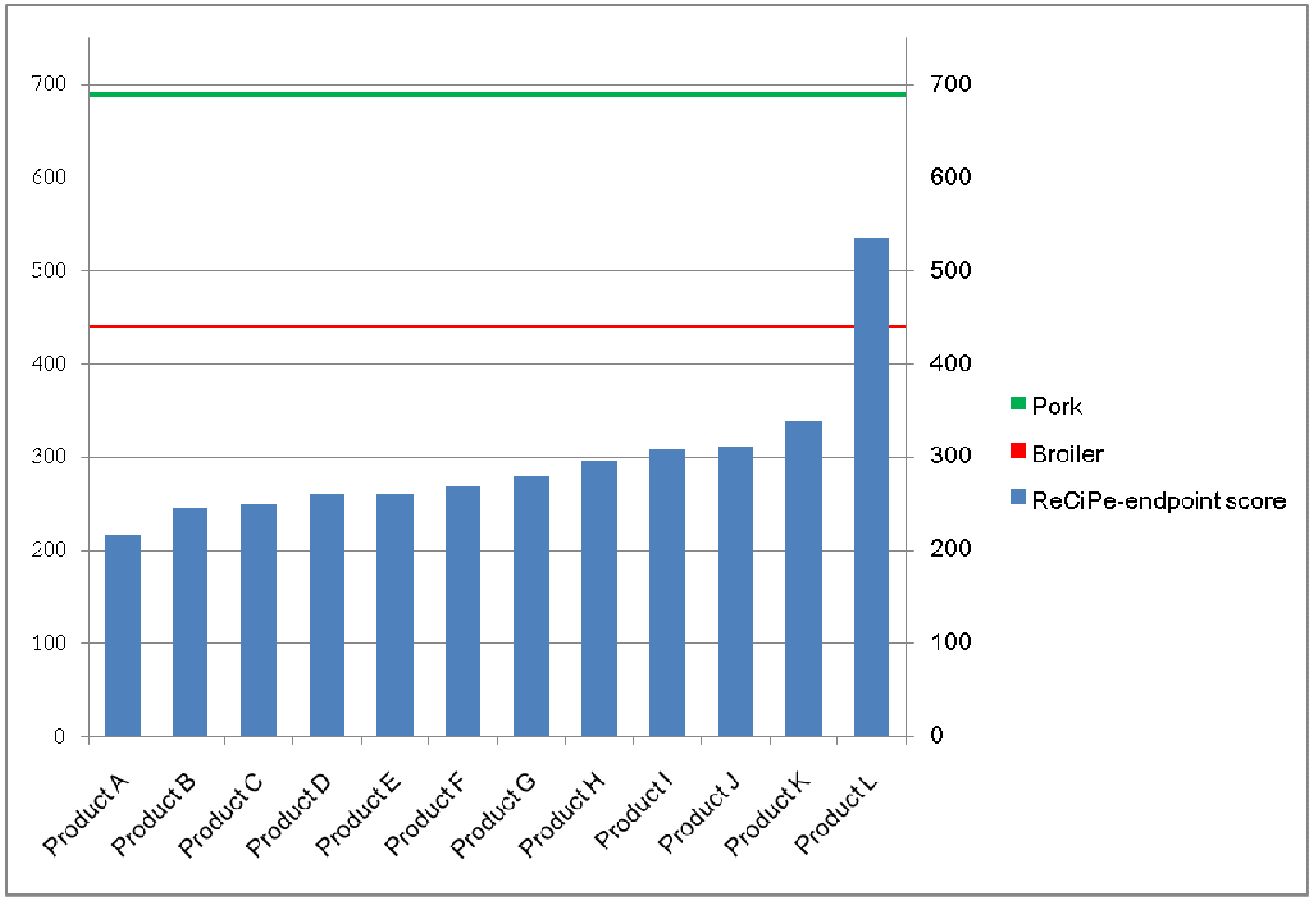
Env. Performance vegetarian products varies



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Animal welfare performance on system level

Values based on
Expert judgment
Query under
17 welfare experts
According to de Jonge 2008

turkey	1
broiler	
rabbit	
veal	2,5
pork	
broiler (volwaard)	5
beef	
broiler (label rouge)	6,5
broiler organic	
beef (dairy cows)	7
veal (organic)	
pork (organic)	
beef (organic)	8
beef (dairy cows organic)	
lamb	9
lamb (organic)	10

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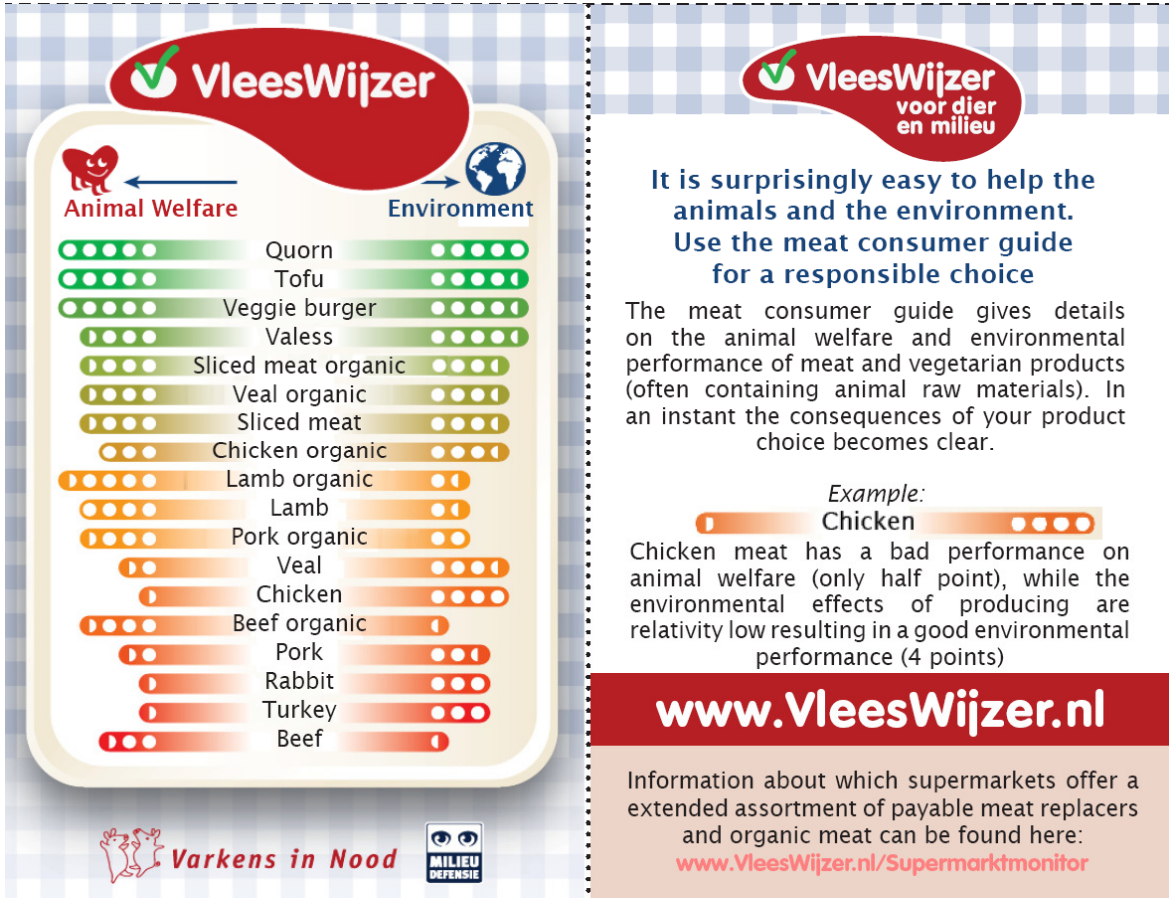
The Consumer Guide



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Animal welfare: how to proceed from system level → product level

Analogue to DALY concept with regard to factor loss of quality of life

Welfare loss = Qt $_{\text{animal production}}$ * Loss of welfare factor

Three issues:

- How to deal with different time (lifespan) perspective of animals in husbandry
- How to deal with intrinsic value: are all individuals equal, notwithstanding differences in species
- Is welfare loss a linear scale

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Animal welfare
from system level → product level

Most straightforward:

- We do not have enough information and knowledge to value the time aspect of welfare loss between species → ignoring differences in time of suffering
- We assume every individual of equal value

→ (coherent with intrinsic value concept)

- We assume welfare loss to be a linear scale
- We assume Dutch organic lamb farming a situation of no welfare loss

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Animal welfare
from system level → product unit

	Welfare	welfare loss	individuals/kg animal product	welfare loss * individuals	welfare loss EU broiler ecquivalents
➢Turkey	1	90%	0,097	0,0873	0,1454
➢Broiler		90%	0,667	0,6003	1,0000
➢Rabbit		90%	0,694	0,6246	1,0405
➢Veal	2,5	75%	0,015	0,0113	0,0187
➢Pork		75%	0,016	0,0120	0,0200
➢broiler (volwaard)	5	50%	0,667	0,3335	0,5556
➢Beef		50%	0,004	0,0020	0,0033
➢broiler (label rouge)	6,5	35%	0,455	0,1593	0,2653
➢broiler organic		35%	0,455	0,1593	0,2653
➢beef (dairy cows)	7	30%	0,005	0,0015	0,0025
➢veal (organic)		30%	0,015	0,0045	0,0075
➢pork (organic)		30%	0,016	0,0048	0,0080
➢beef (organic)	8	20%	0,004	0,0008	0,0013
➢beef (dairy cows organic)		20%	0,005	0,0010	0,0017
➢Lamb	9	10%	0,056	0,0056	0,0093
➢lamb (organic)	10	0%	0,056	0,0000	0,0000

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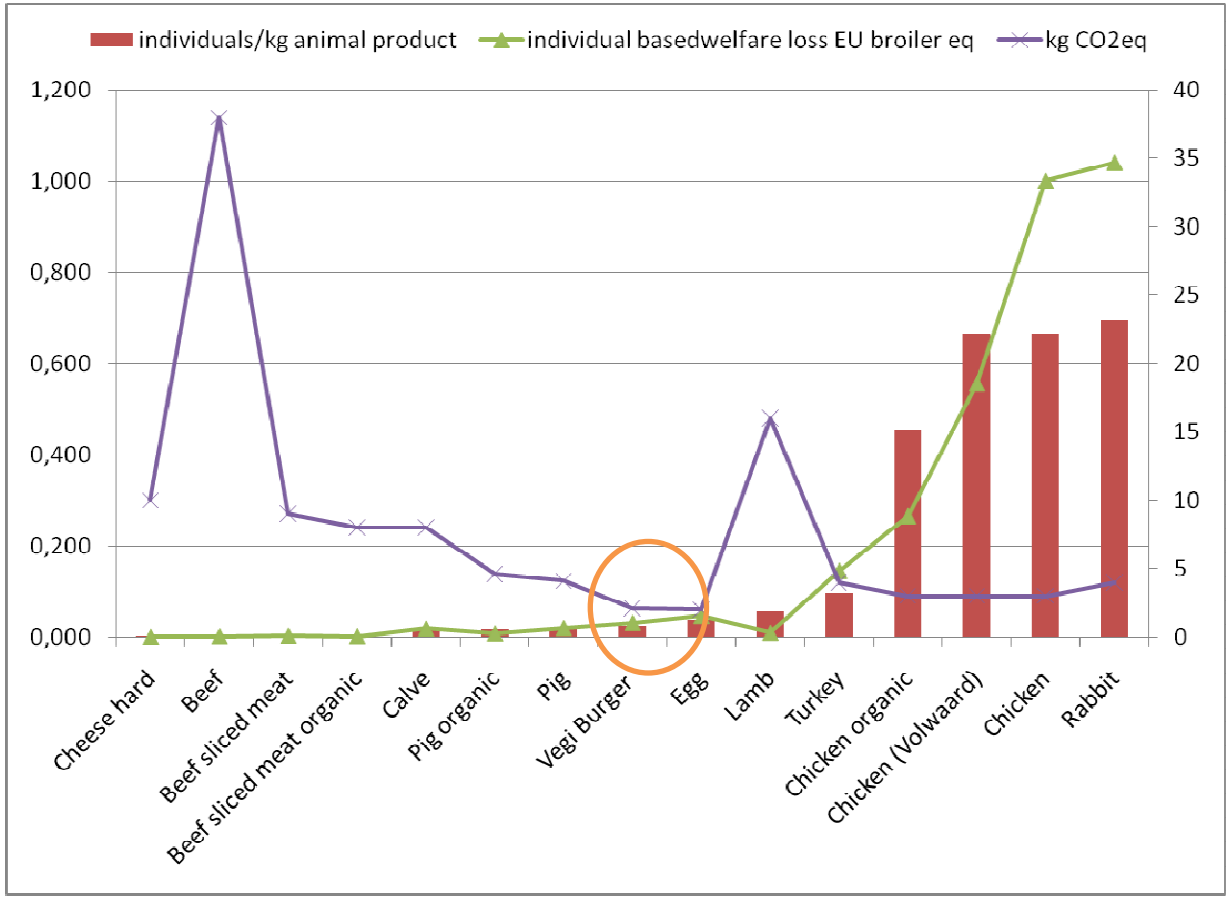
Example of use of welfare impact scores



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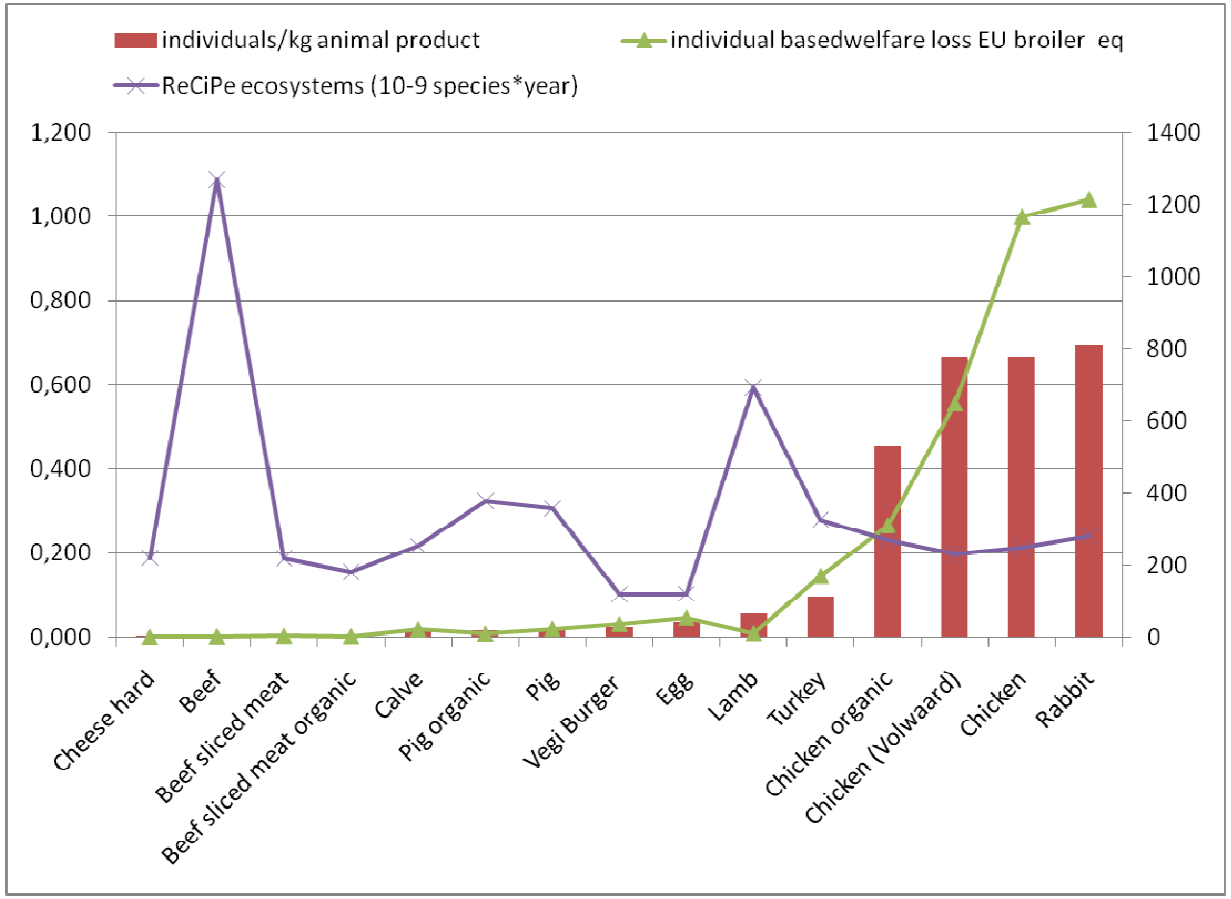

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Conclusions

- A consumer guide based on environmental and animal welfare information is possible:
  - However: more detailed inventories and impact assessment needed
- Animal welfare can be incorporated in LCA and seems useful for LCA's on diets.

Who takes the challenge

- Thank you

- Any Questions

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