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*“The Role of the Poultry Industry in Feeding the World in 2050”
Symposium*



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Mega trends affecting the industry in the future

PSA 15 July 2014

feeding the future



Prof. Leo den Hartog
Director R&D and Quality Affairs Nutreco
Wageningen University

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Our challenge: surging demands

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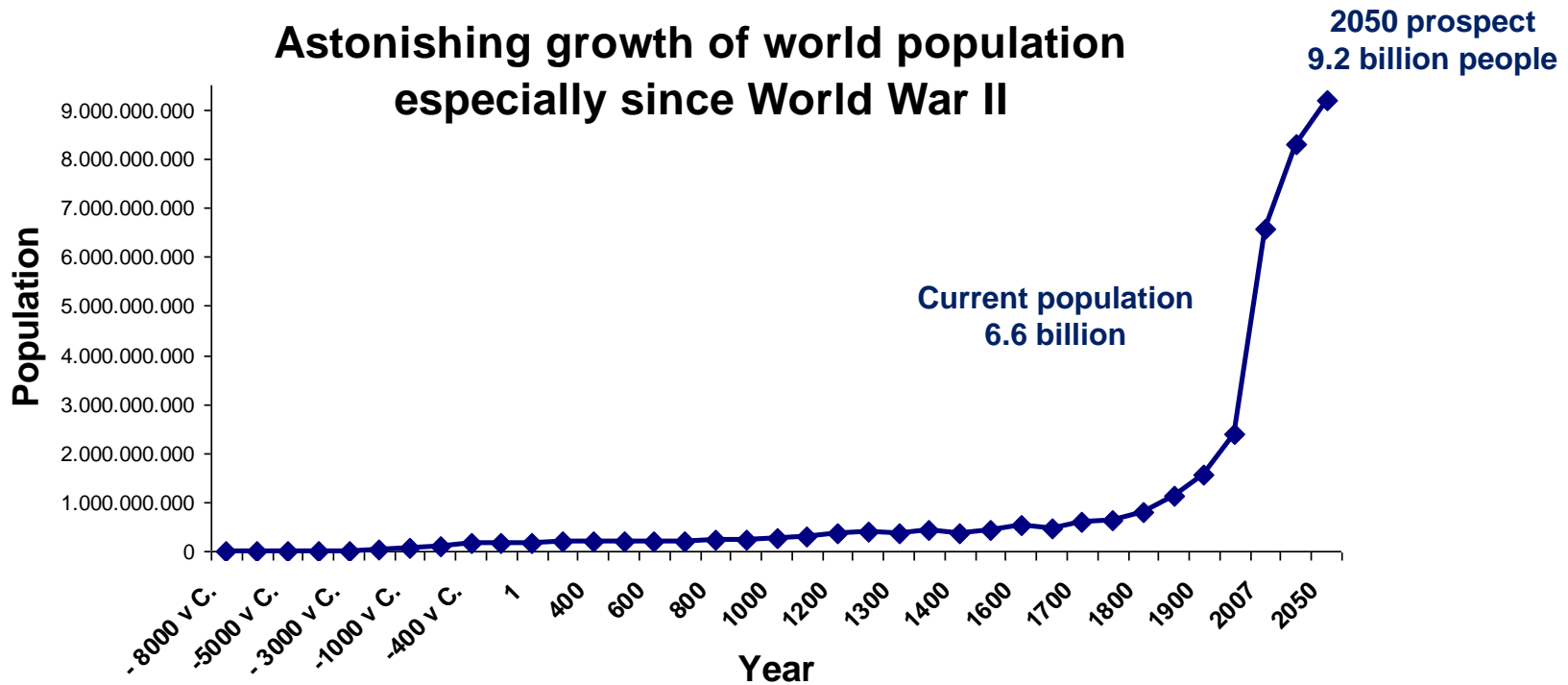
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Consumer acceptance

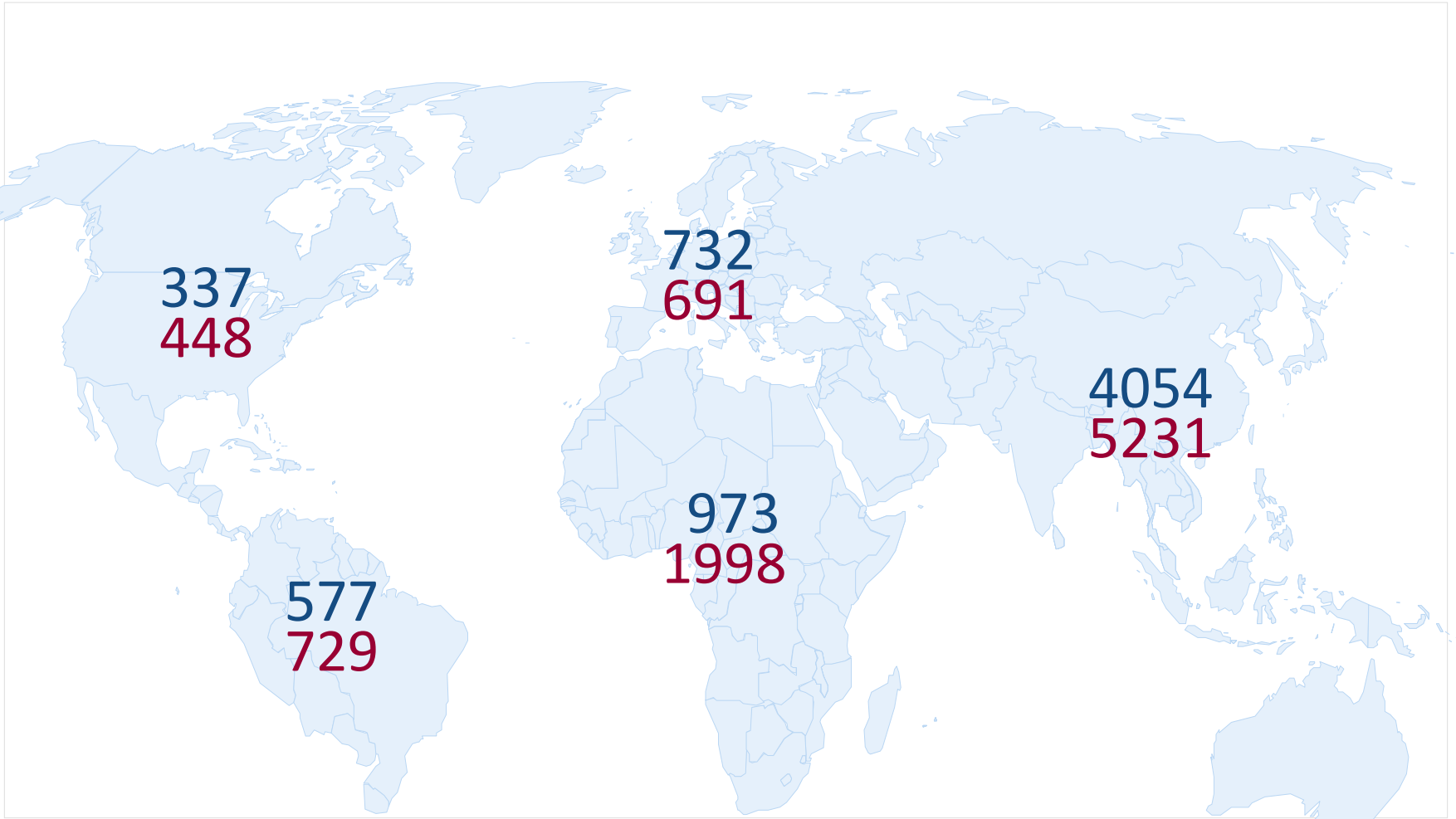
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Take home message

Global population developments



World population in 40 years (mln.)



1

Surging demand



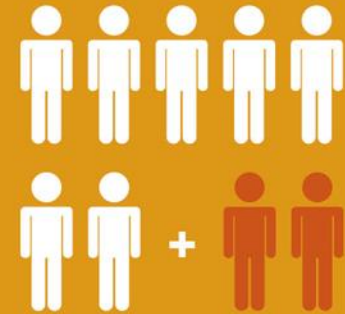
**Growing
Middle Class**
3 billion more by 2030



Urbanisation
50% to 70% by 2050



**Converging
diets**
Globally 37 to 50 kg meat,
83 to 99 kg dairy by 2050



**Growing
population**
7 to 9 billion by 2050

Growing demand for animal protein



7 billion people consuming on average
37 kg of meat and
83 kg of dairy....



9 billion people consuming on average
50 kg of meat and
99 kg of dairy....



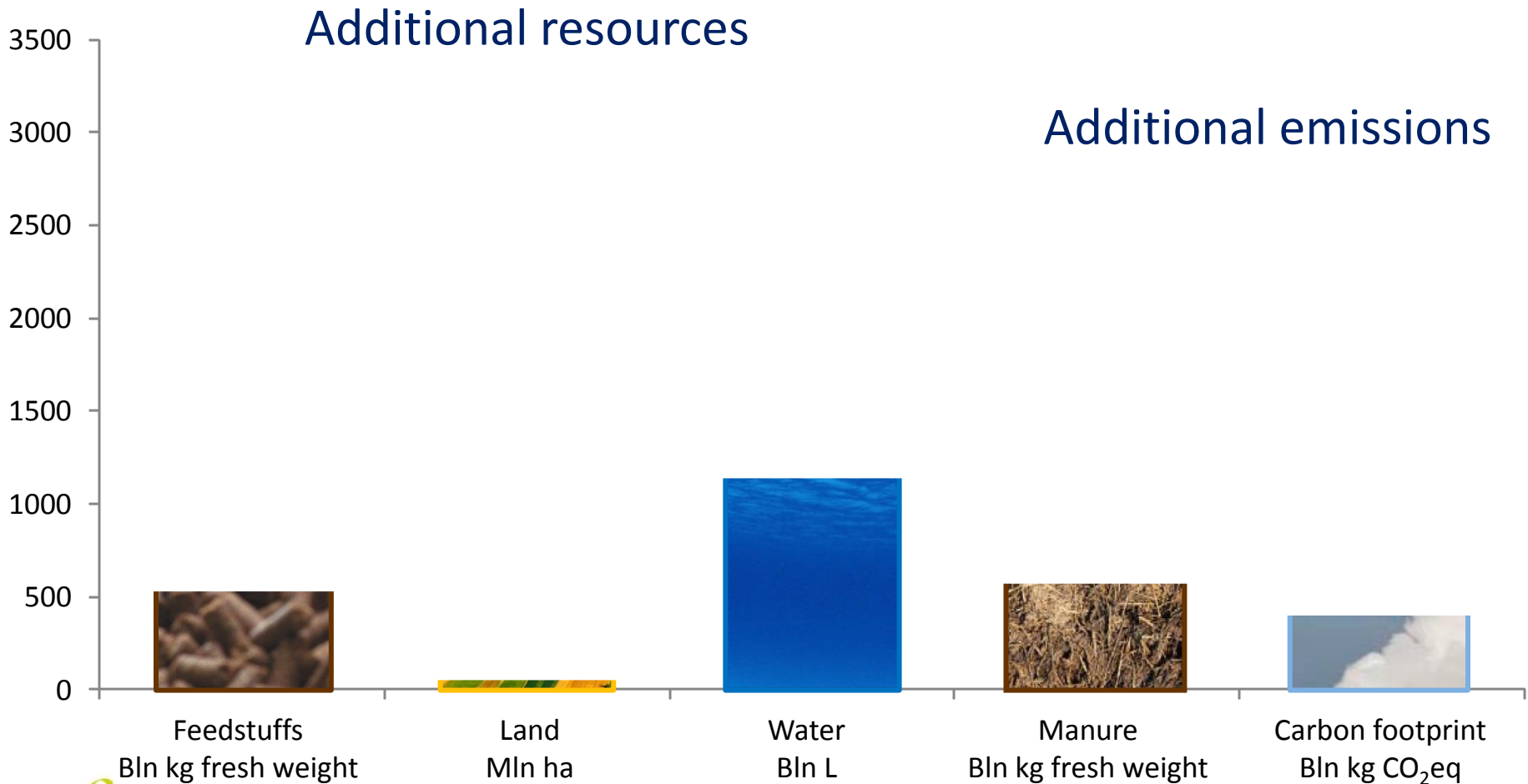
Production increase needed by 2050:

+ 53%

+ 75%



Resources and emissions related to increased dairy demand



2 Struggling supplies



Adverse
weather



Biofuel
production

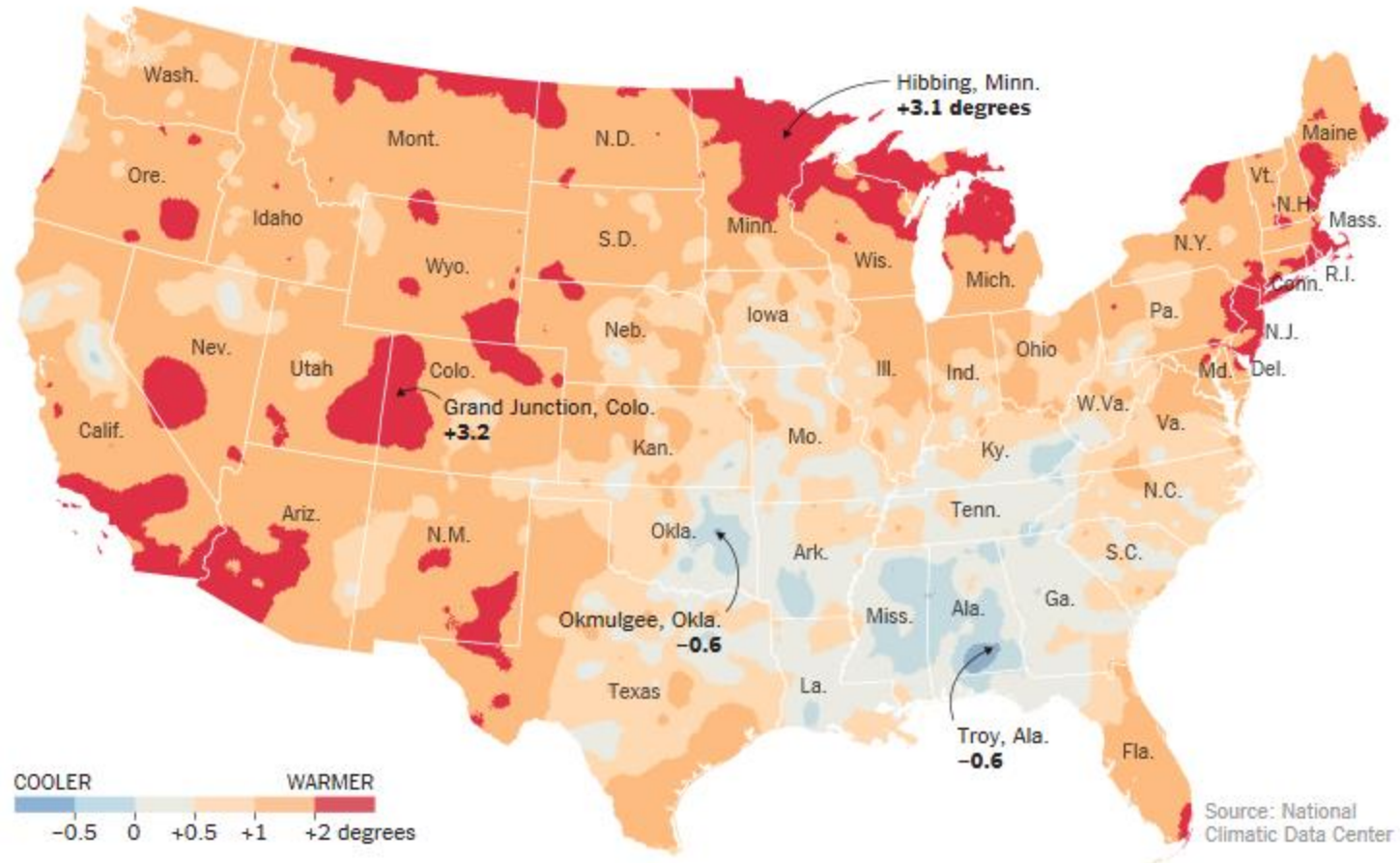


Low stocks

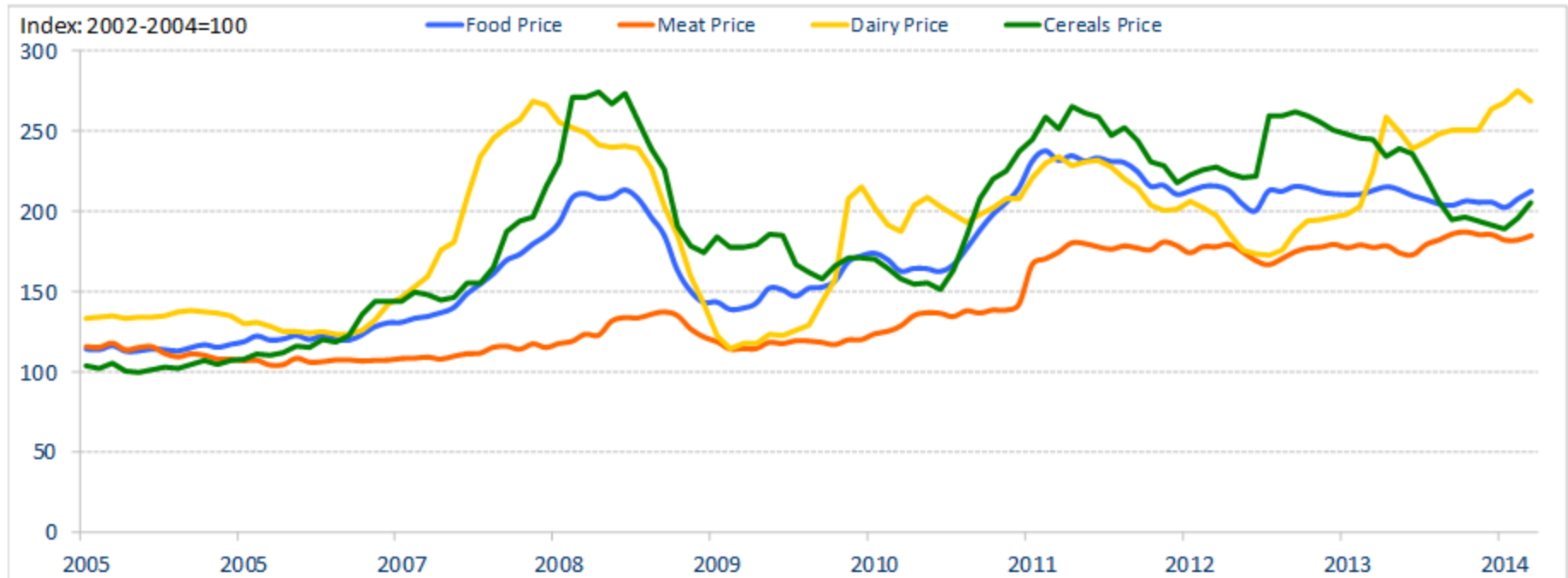


Price
speculations

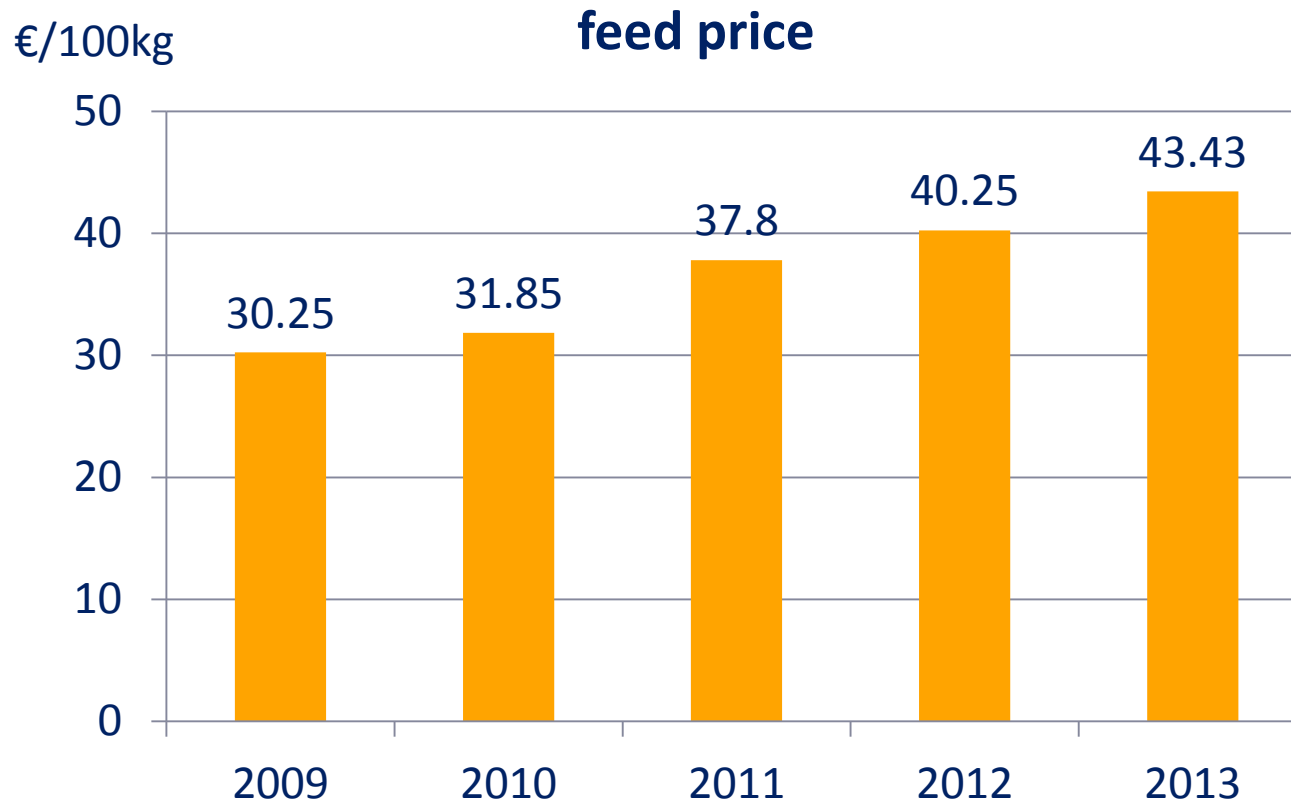
US climate has already changed



FAO food price index



Broiler feed price development



Top 5 producing areas (%)

	Poultry meat	Eggs
1	USA 100	China 100
2	China 72	EU 37
3	Brazil 58	USA 19
4	EU 40	India 12
5	Russia 18	Japan 9

Source: FAO stat 2014

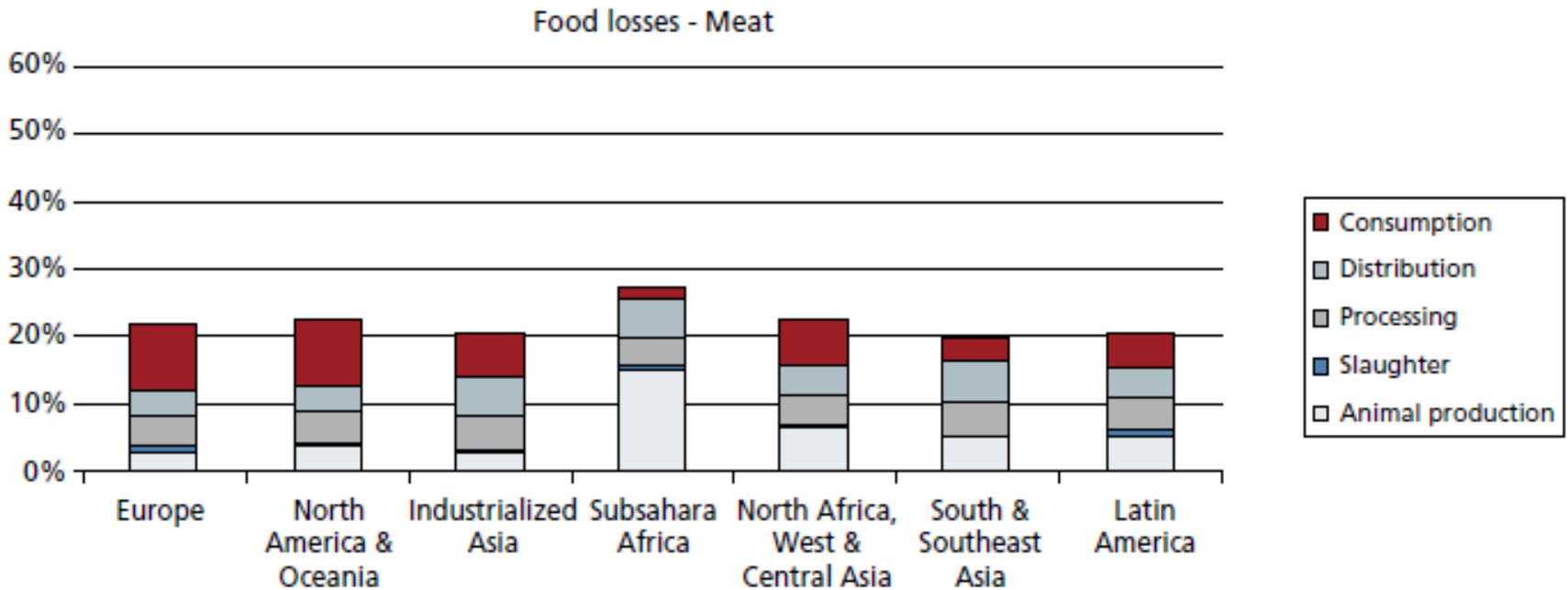


Largest population and crop production not in the same countries... (in %)

Region	Pop.	Corn	Wheat	Soy
N. America	7.8	44.8	13.3	42.7
S. America	5.8	9.2	2.5	42.6
Europe	11.9	10.8	36.4	1.2
Africa	15.1	7.0	3.8	0.8
Asia	55.9	27.8	37.8	12.4
Oceania	0.4	0.1	3.2	0.0

Global food losses and waste

Part of the initial production lost or wasted for meat products at different stages



Sustainability becomes part of our business model

Evolution of food production & consumption

1945-1960: Food security

Elimination of poverty

1960-1980: Rationalisation and modernisation

1980-2000: Consciousness

Environment, animal welfare, antibiotics, ...

2000-2010: Food safety & food quality

Healthy, fresh, tasty, convenient, ...

Today & Tomorrow:

Technology & Sustainability



3

Issues in animal production

Medicated feed



Animal Protein



Zoonoses

Community impact

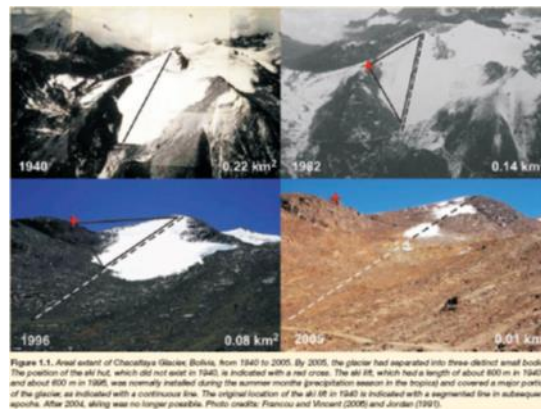


Reauthorisation of feed additives

GMO policy



Scarcity of resources



Food security

Biodiversity & climate change



Animal health & welfare



Antibiotic resistance

Re-authorisation of feed additives

Most existing feed additives (2200) need re-authorisation

- Approvals 600 feed additives withdrawn
- Consequences for labelling and 'health' claims

Nutreco involved in >20 strategic dossiers



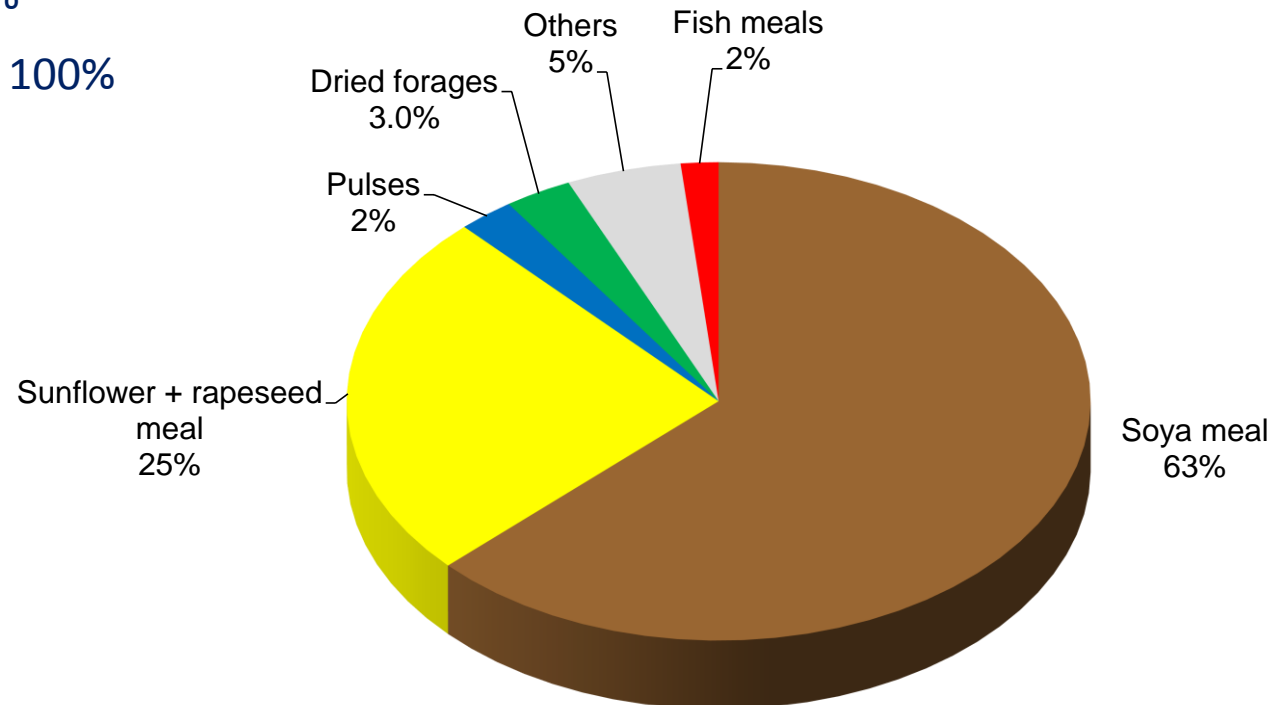
High dependency on raw material imports in EU

Self sufficiency:

- Proteins: 32%
 - Soybean: 3%
 - Fishmeal: 62%
- Carbohydrates : > 100%

Total compound feed production: 154 mio tons

Total soybean import: 34 mio tons

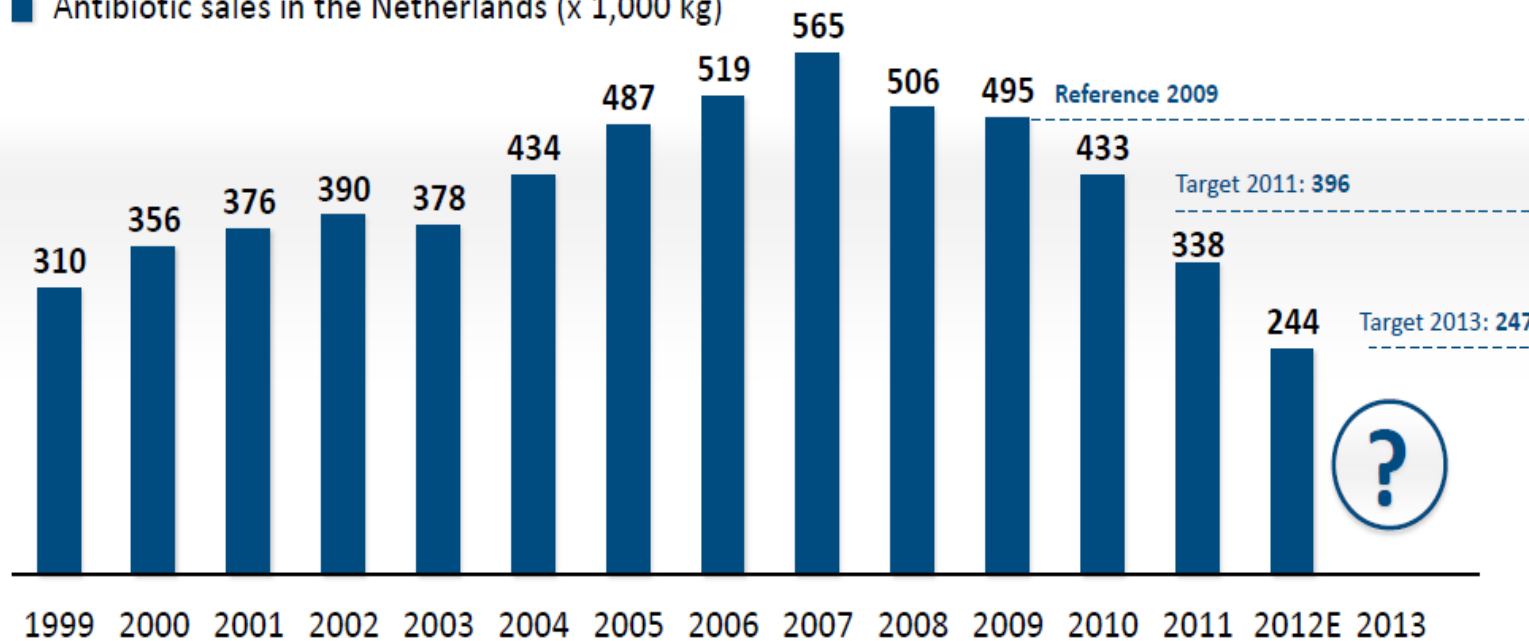


Proteins used in feed (Fefac 2013)

Antibiotic use in the Netherlands

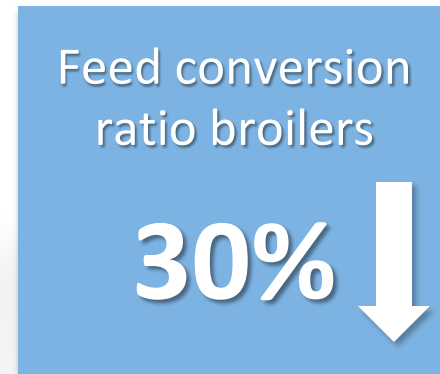
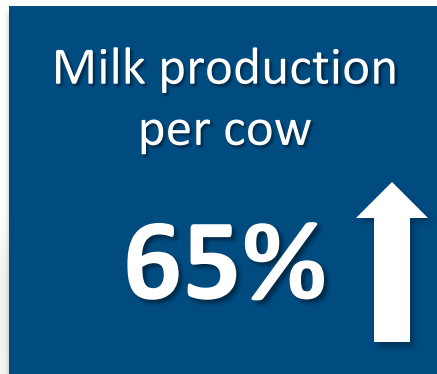
Much has been achieved ... but it has also resulted in challenges

■ Antibiotic sales in the Netherlands (x 1,000 kg)

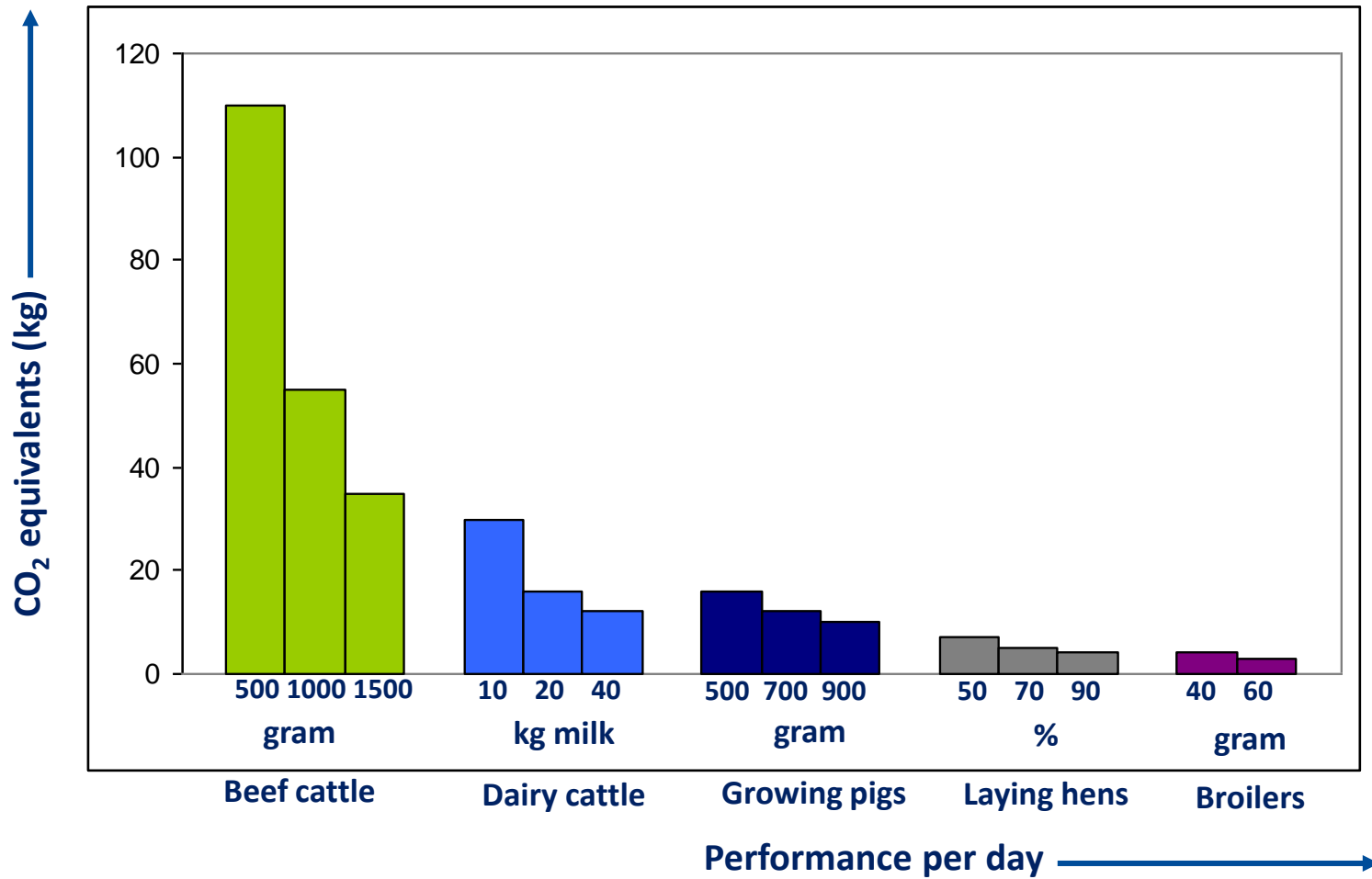


Sustainable advances in animal protein production (NL)

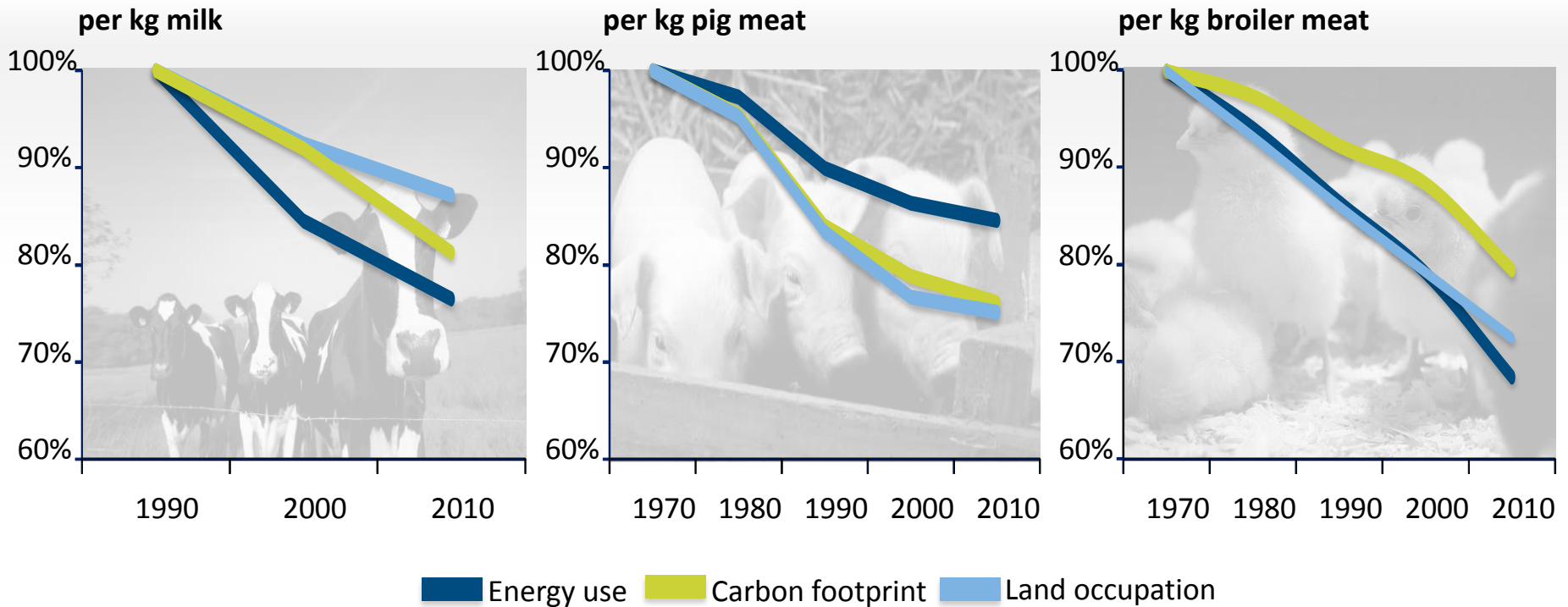
From 1975 to 2010 animal protein production became more efficient



Emissions per kg edible protein depending on animal performance



Sustainable advances in animal protein production (NL)

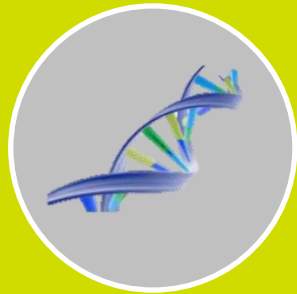




On average worldwide the productivity of farm animals is *30-40% below their genetic potential* because of suboptimal conditions and health status

4

The power of innovation for sustainable animal production



(Gen)omics:

Radical changes



Micro system- and
Nanotechnology:

Radical changes



Information and
Communication
Technology:

Continuous
changes

Research is key

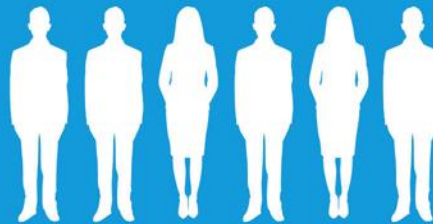
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Research units worldwide



>250

Research experts



More than

50

years of dedicated R&D
knowledge and experience

>60

Collaborations with
research institutions
worldwide



Over 25
nationalities



Annual investment
in R&D



Animal Nutrition research centres



Swine



Ruminants



Poultry



Ingredients



Agresearch



Food

Key focus areas for innovation at Nutreco



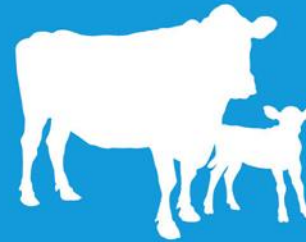
Life start

- Young animal feed
- Young animal vitality and later life performance



Health & Welfare

- Supporting intestinal health
- Nutritional solutions for transition periods



Feed efficiency

- Feed additives for production efficiency
- Reducing emissions



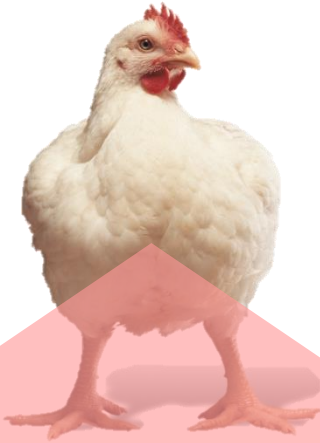
Application Solutions

- Precision feeding
- Services & models for quantitative nutrition
- Optimised feed value and predictable performance

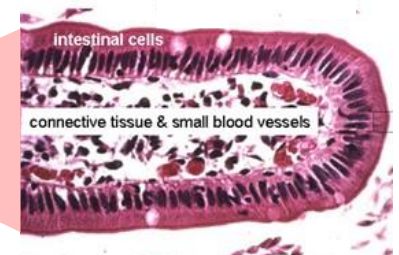
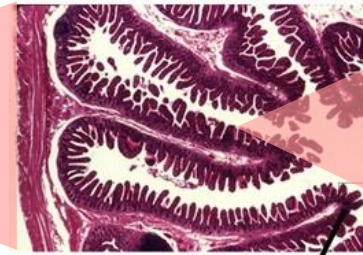
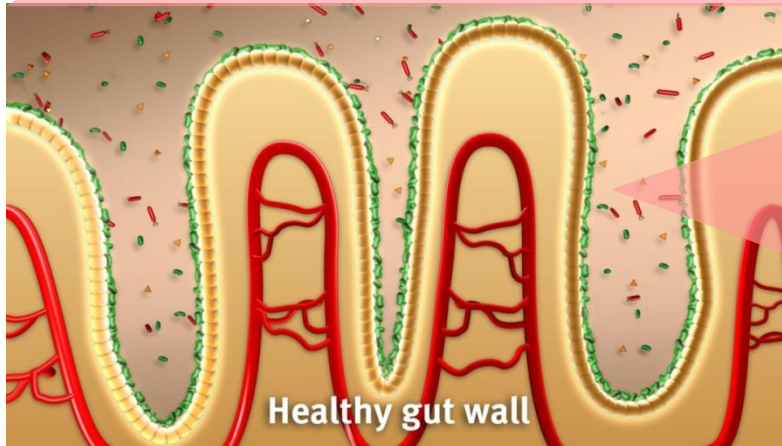
Nutreco sustainability vision 2020



Health & Welfare: Intestinal health

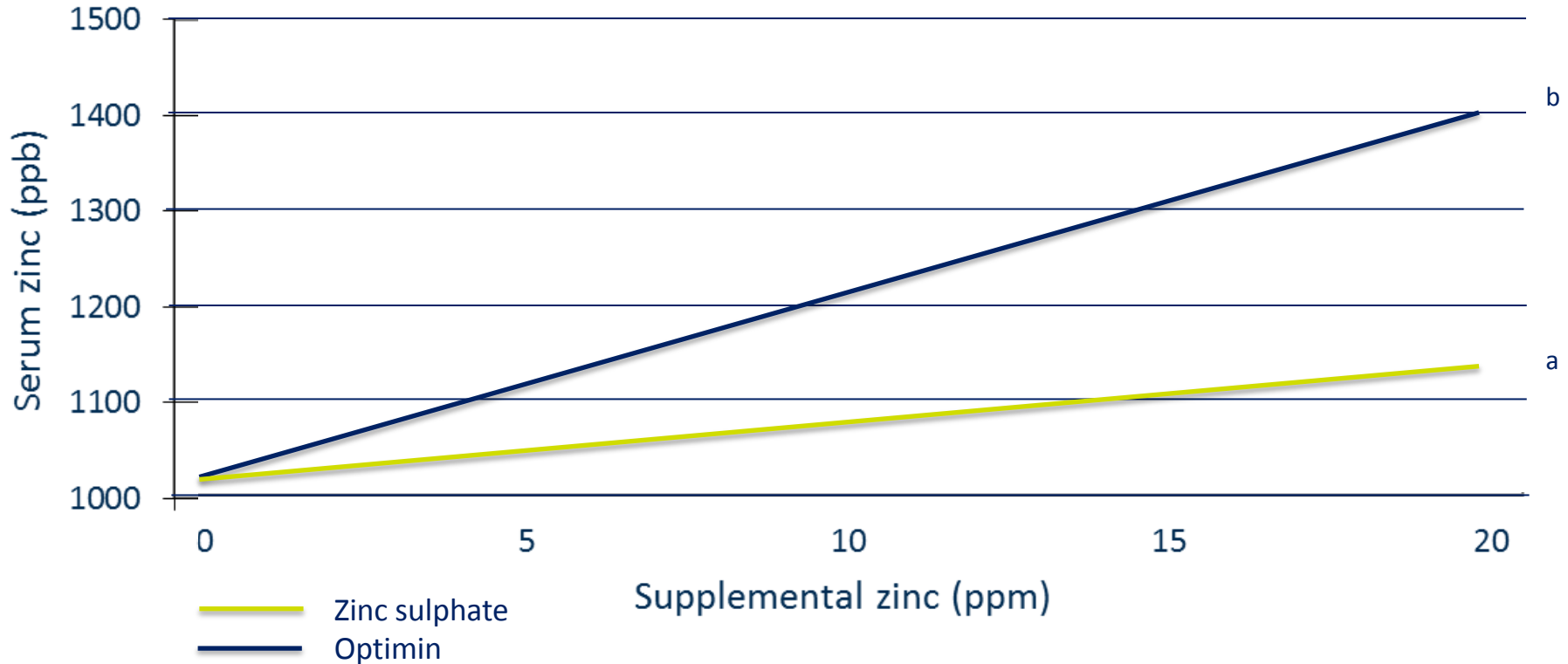


1 A stable microbiota population



2 Structural protective barrier

Increased bioavailability in broilers



Animals: 7 day old chicks individually fed; 12 broilers per diet sampled for serum zinc

Duration: 14 days feeding

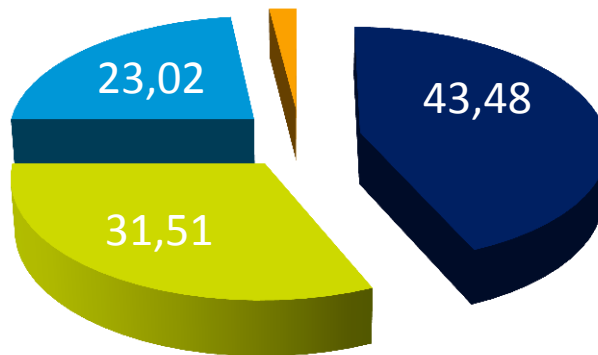
Treatments: Basal diet: 26,3 ppm zinc; added 5, 10 or 20 ppm zinc

5 Consumer acceptance



95% of consumers are food buyers

- Food produced by modern agriculture
- Neutral or supportive of using efficiency-enhancing technologies to grow food



Why?

- Taste
- Cost
- Nutrition
- Other



4% are lifestyle buyers

- Ethnicity and vegetarianism, organic, local and Fair Trade
- Money is not a factor

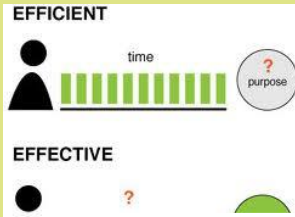
6 The future of animal feeding:

a change in business model is required



Old model

- Maximise productivity
- Food security
- Productivity & Rationalisation



Current model

- Optimise profitability
- Efficiency



New model

- Optimise sustainable profitability
- Balance: Economy, ecology & society



*Sustainable
Precision
Livestock
Farming*

Thank you

feeding the future

