SUSTAINABILITY AND ENVIRONMENTAL IMPACTS OF FEED ADDITIVES

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You are feeding the world successfully







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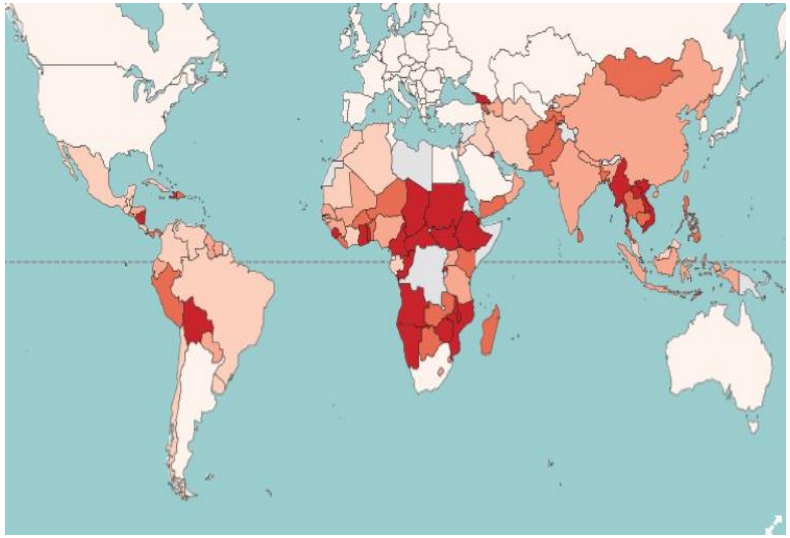
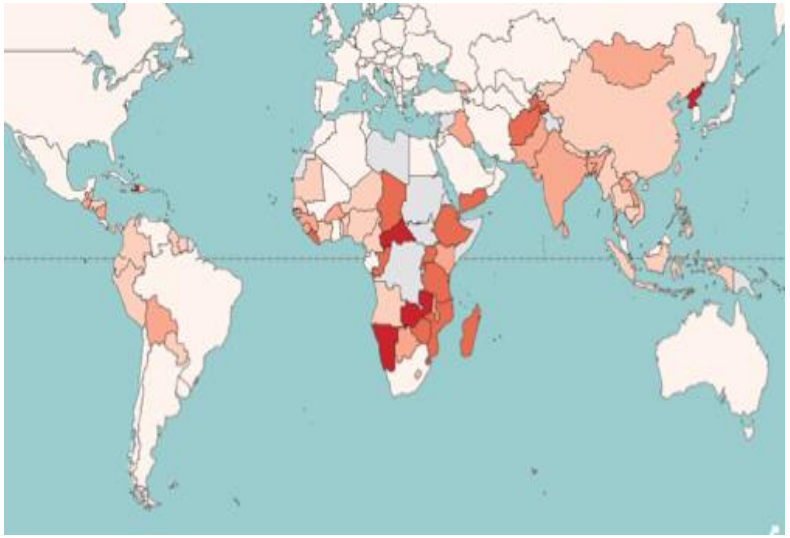
Humans are winning the battle for food security

- People in chronic hunger conditions decreased from 25% (in 1992) to 12% (in 2015)
- Life expectancy went up from 52 (1960) to 71 years (2014).
- More population, more food and a higher life expectancy





Source: http://www.fao.org/hunger/en/

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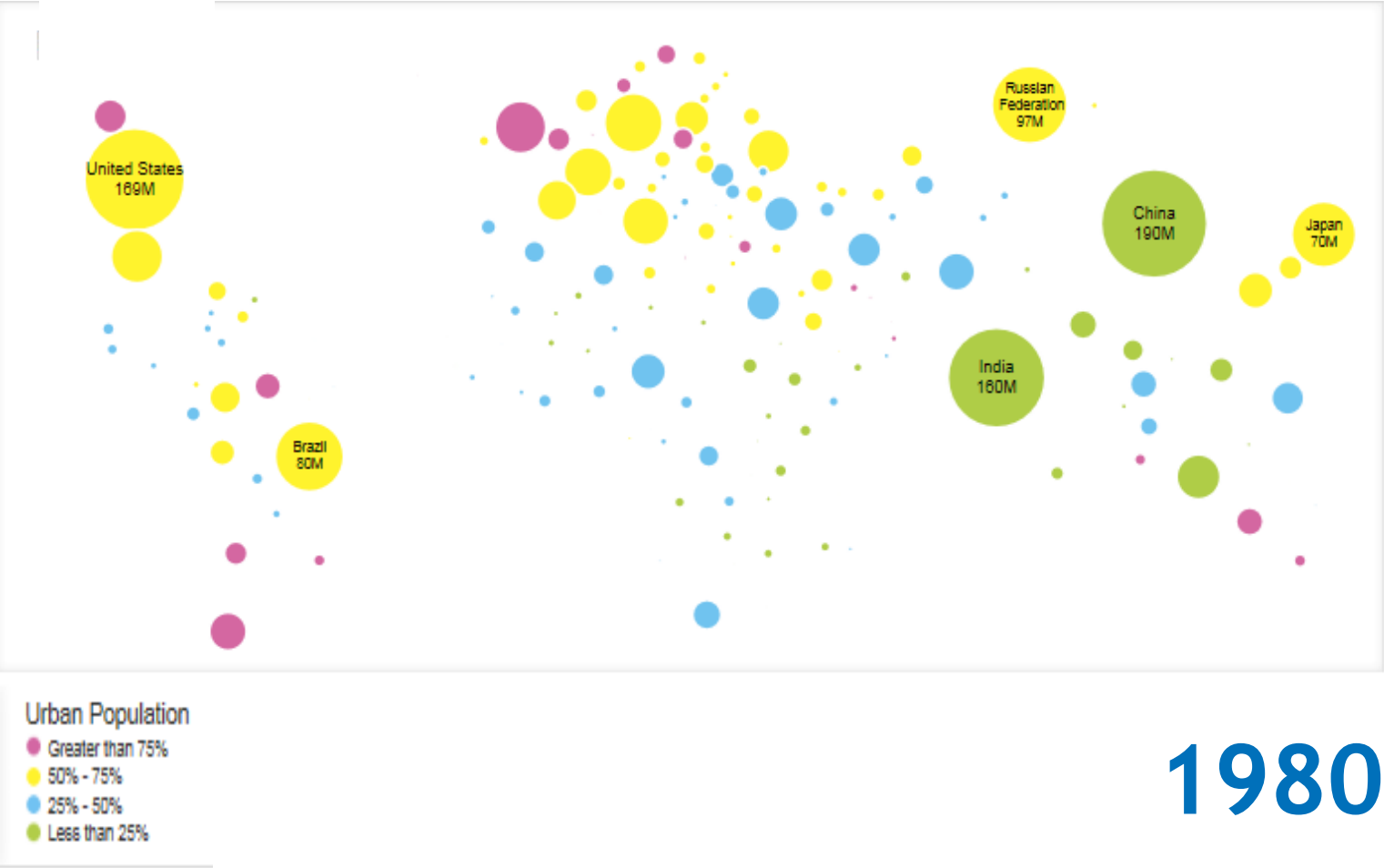
Urban population requires more efficient food production



1980

Source: http://www.unicef.org/sowc2012/urbanmap/

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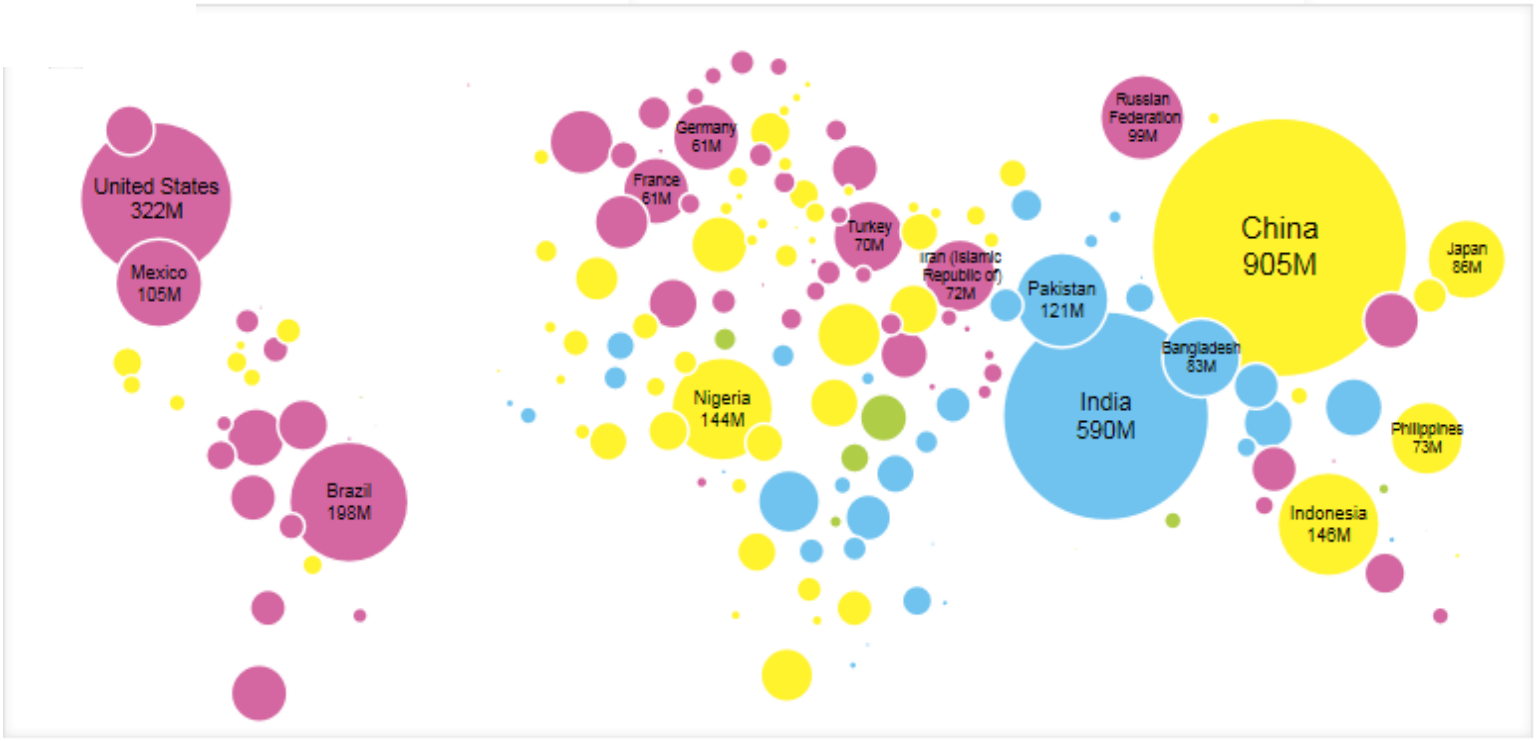

2030

Source: http://www.unicef.org/sowc2012/urbanmap/

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2050 global demands & constraints

Demand

+70% Agricultural production

+110% cereals
+140% soybeans
+135% meat

Source: Rabobank, 2012; Mensbrugghe, D. van der, et al., 2009; FAO 2006

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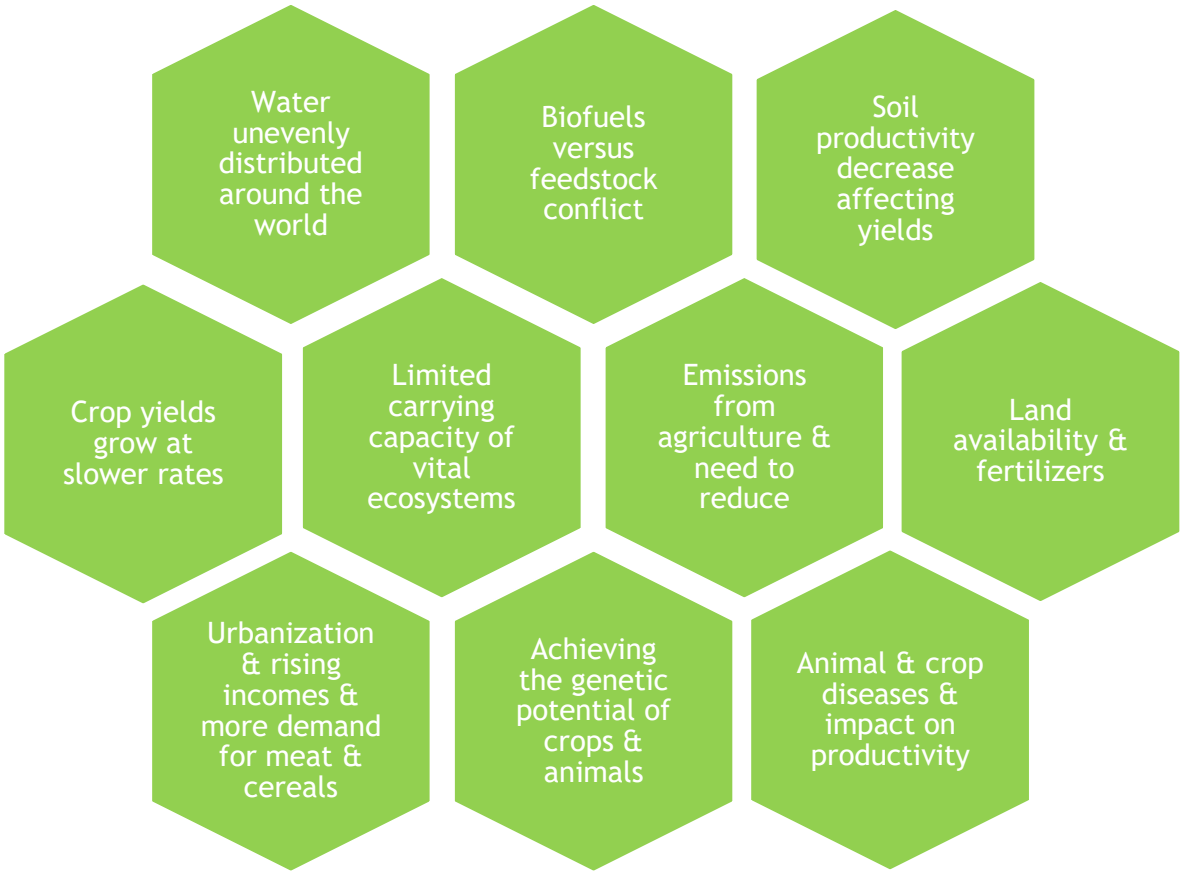

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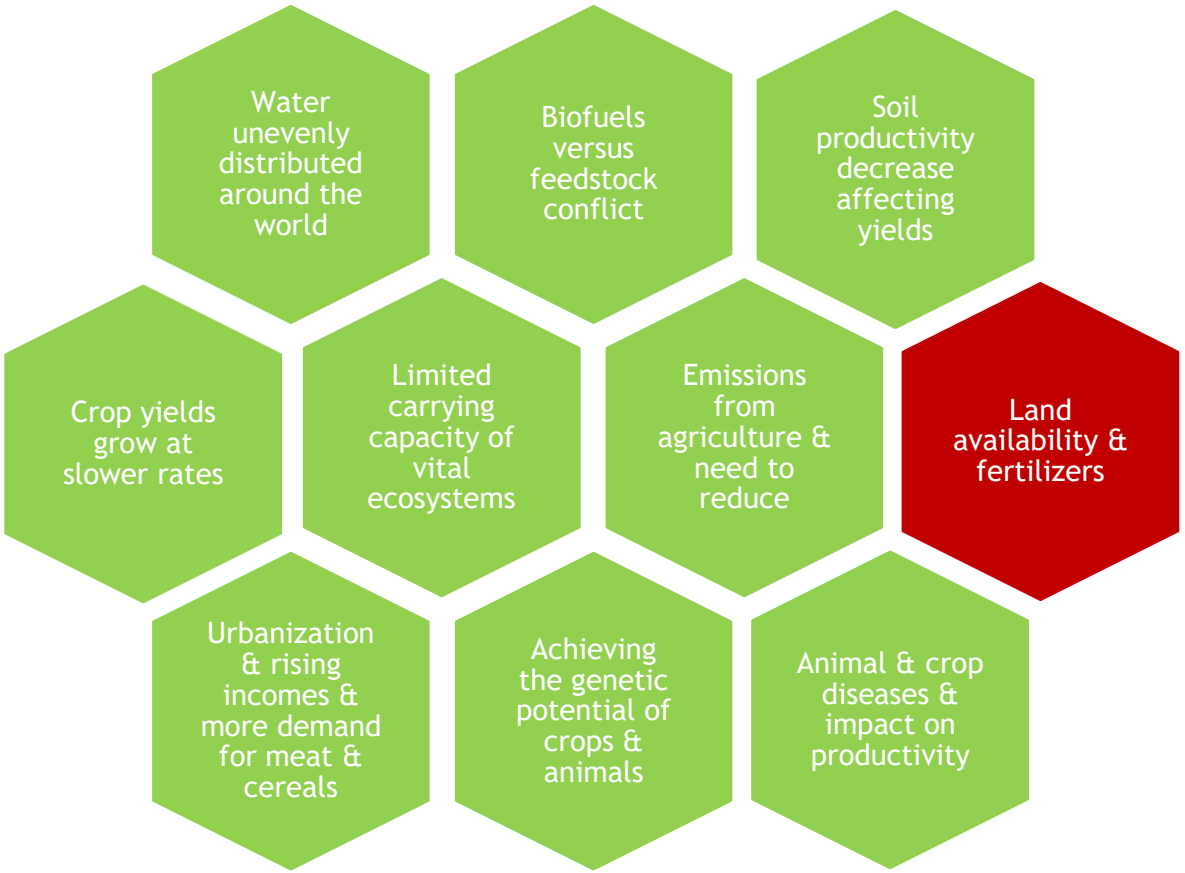

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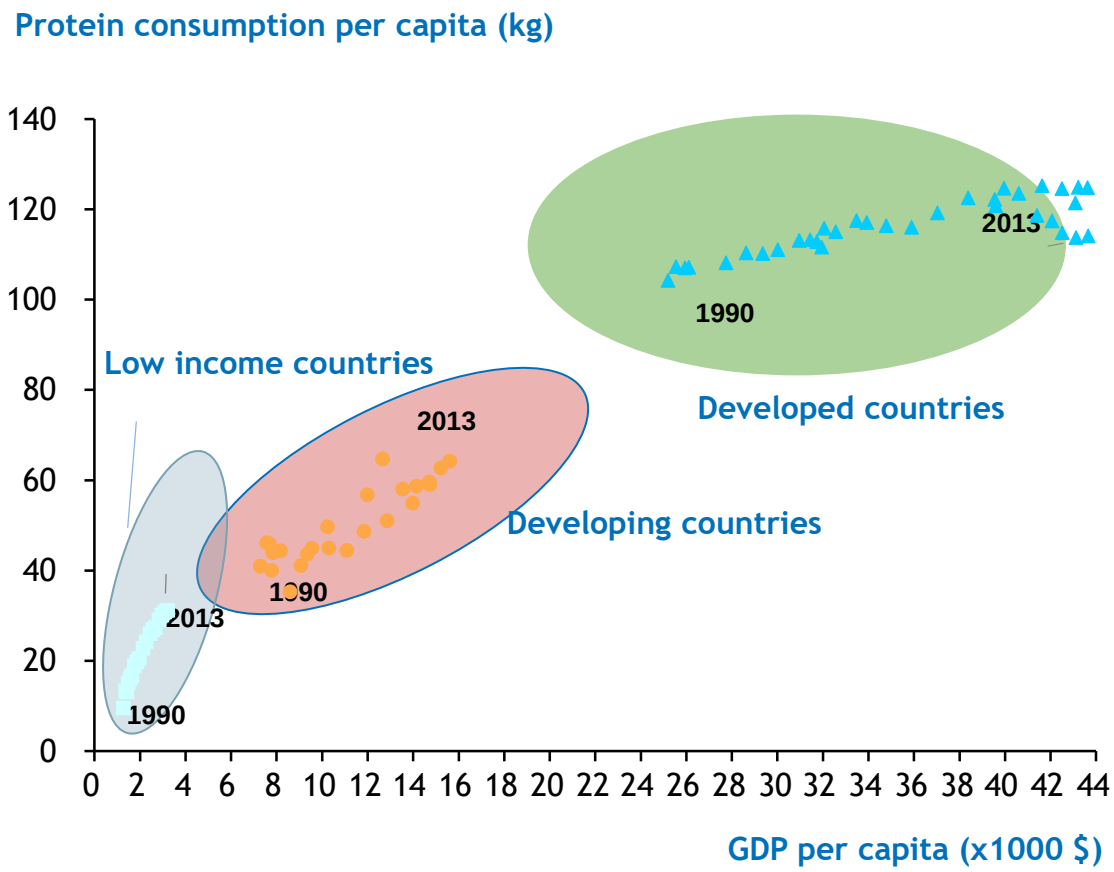
Protein consumption is linked to GDP



Strong correlation between protein consumption and GDP; growth in protein comes from emerging markets

United States

Russia

Vietnam

Source: USDA 1990-2013, EIU, BCG analysis

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We should act now:

- Good quality nutrition is a human right and ending hunger and malnutrition within planetary boundaries is the next step in our civilization.
- So consumption has to change.

We should act now:

- But we have to change the way we produce food as well.

A sustainable food production system..

- ..has to have a positive impact in the wellbeing of **People**
- ..has to be able to generate **Profit** for the producer
- --has to have a low impact on the ecology of the **Planet**

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Animal proteins are important in a healthy, nutritious diet

- A healthy, nutritious diet is fundamental to our physical, mental and economic wellbeing.
- Protein is a key part of a healthy, nutritious diet, and should account for approximately 10-15% of our daily intake.
- The food we get from animals (meat, fish, eggs and dairy) usually has a more complete amino acid profile, and they are seen as ‘high-quality proteins’.

Animal proteins are important in a healthy, nutritious diet

- Animal food sources supply all of the essential amino acids and are an important source of micronutrients (vitamins and minerals) and omega-3 poly-unsaturated fatty acids.
- Animal food sources have been an essential part of food cultures globally for a long time and many people enjoy the texture, the taste and the culture around it.
- Today, the amount of meat, eggs, milk, and fish that the average consumer eats has never been higher.

Feed additives contribute directly to 6 of the 17 sustainable development goals of the UN

Source: http://www.un.org/sustainabledevelopment/sustainable-development-goals/

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What are feed additives:

EU: *'feed additives' means substances, micro-organisms or preparations, other than feed material and premixtures, which are intentionally added to feed or water in order to perform a specific function related to a particular target.*

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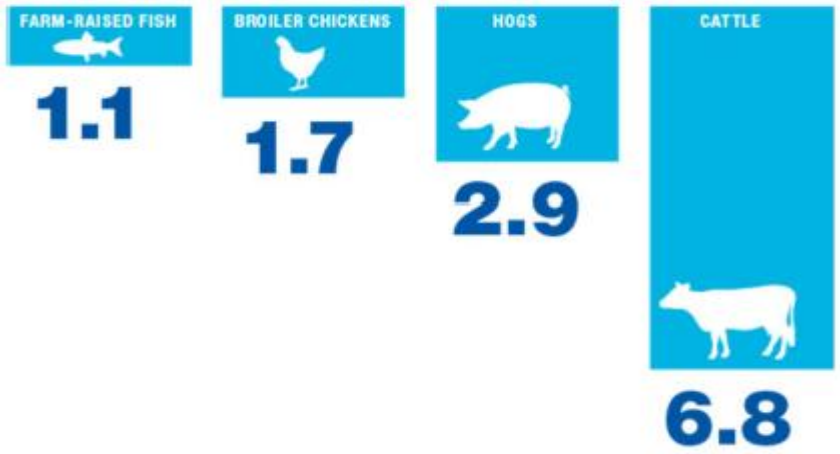
1. Complementing feed formulations, correcting inadequacies

Productivity & drive to reduce FCR

Industry is focused on reducing FCR via feed technology, improved husbandry, improved digestive health and improved bio-security

Vitamins Trace minerals Aminoacids B-Carotene



2 ZERO HUNGER

Reduction of feed and food production cost and increased availability

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Improvement of the welfare and life span of productive animals Higher efficiency in the use of resources

15 LIFE ON LAND

Reduction on the arable land needed per unit of animal protein

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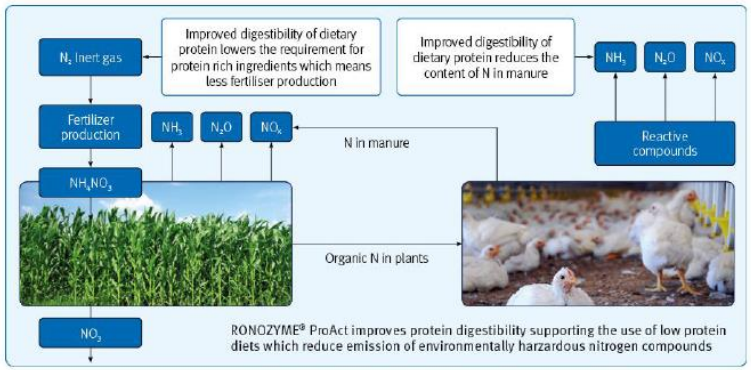
2. Improved digestibility and reduced nutrient excretion

Use of enzymes reduces FCR, feed cost and environmental impact

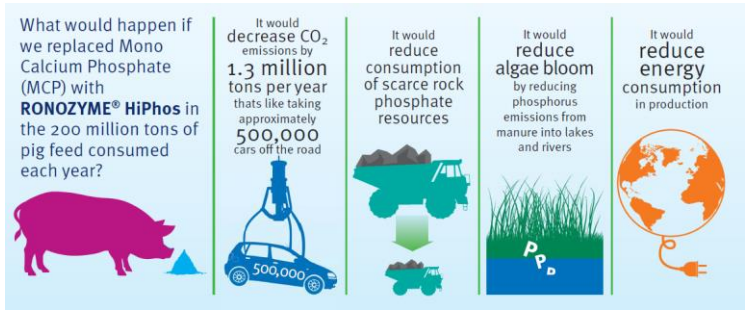
Protease use not only reduces the level of dietary protein needed, but also reduces digestive issues and leads to improved welfare

Phytase Carbohydrase Proteinases Emulsifiers

Protease use not only reduces the level of dietary protein needed, but also reduces digestive issues and leads to improved welfare



Phosphorus is a finite resource. Unlocking plant bound phosphorus through the use of phytase has reduced feed costs and environmental impact of animal production



12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Increase efficiency in the use of resources like energy, water, grains and vegetable proteins

13 CLIMATE ACTION

Reduction of CO2 and NH3

14 LIFE BELOW WATER

Reduce the risk of over-fishing by increasing the availability of responsibly produced nutritious fish. Reduction of P pollution in fresh water sources

15 LIFE ON LAND

Reduction on the arable land needed per unit of animal protein

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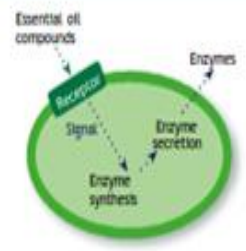
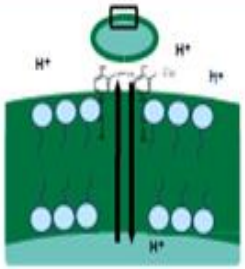
3. Improved gut function

Eubiotics Acidifiers

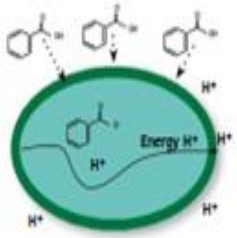
Increased animal productivity, digestibility and reduced use of antibiotics



- Essential oil compounds interact with cell wall receptors in the pancreas and stimulate increased secretion of key digestive enzymes including lipase, amylase and trypsin



- Other essential oils attack the cell walls of specific classes of bacteria, making the cell wall more permeable, making it easier for benzoic acid to enter the cell



- Benzoic acid enters the bacterial cell and disrupts cell function by reducing the pH in the cell, depleting cell energy reserves

3 GOOD HEALTH AND WELL-BEING

Reduction in the use of antibiotic growth promoters

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Healthier animals and therefore increased welfare

14 LIFE BELOW WATER

Reduce the risk of overfishing by increasing the availability of responsibly produced nutritious fish, lower mortality.

15 LIFE ON LAND

Reduction on the arable land needed per unit of animal protein due to increased nutrient utilization

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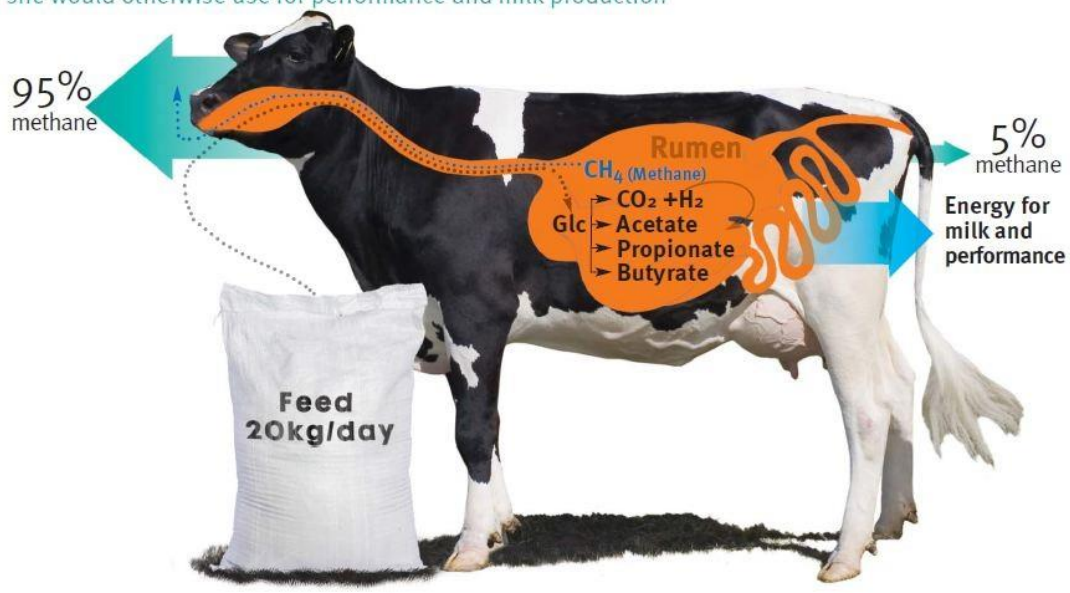
4. Reduction of green house gasses

Reducing emissions through Clean Cow technology

Methane Reducing agents

A cow emits 500l of methane per day, which is equivalent to 10% of the energy she would otherwise use for performance and milk production



12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Reduction on the use of resources needed to produce milk

13 CLIMATE ACTION

Reduction of green house gas emissions by unit of milk produced

15 LIFE ON LAND

Reduction on the arable land needed per unit of animal protein due to increased feed efficiency

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5. Precision feeding to achieve a particular food product characteristic

Vitamins Trace minerals Carotenoids Ω3 and DHA

3 GOOD HEALTH AND WELL-BEING

Enriched animal (milk, eggs and fish) for a better nutrition

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Increase shelf life of meat, eggs and fish, attractiveness

14 LIFE BELOW WATER

Reduce the risk of overfishing by increasing the availability of responsibly produced nutritious fish

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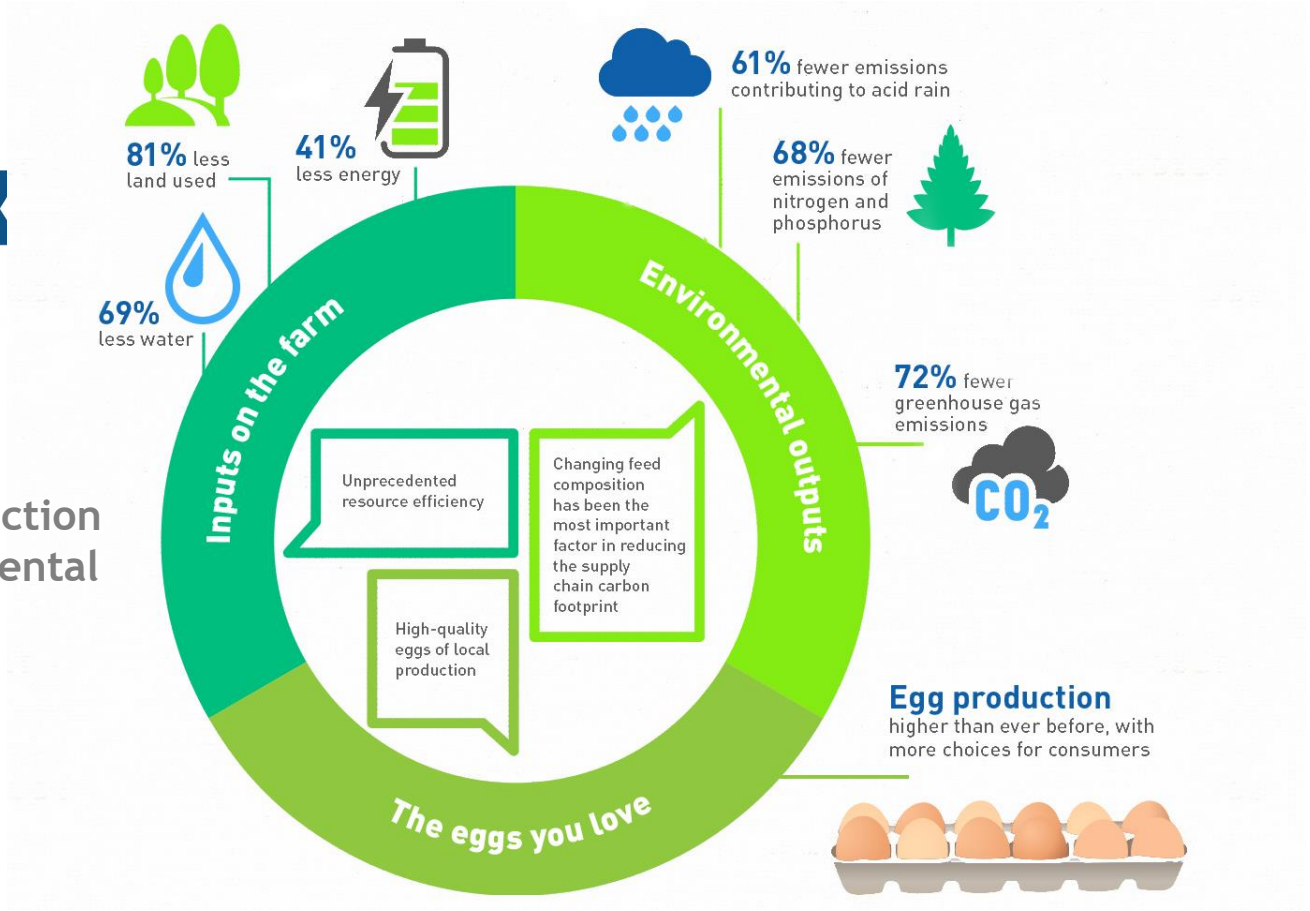
We should act, measure and communicate to farmers, consumers and agencies!

Over the last 50 years:
50% increase egg production
50% smaller environmental footprint



Source: eggfarmers.ca

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So what can you do?

Keep providing a nutritious diet to the world population.
Produce food using the proper feed additives:

- It generates **Profit** for you
- It has a low impact on the ecology of the **Planet**
- It will have a positive impact in the wellbeing of **People**

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