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THE MEATLESS MEAT REVOLUTION



# Feeding the World: The Role of Sustainable Agriculture in Global Food Security



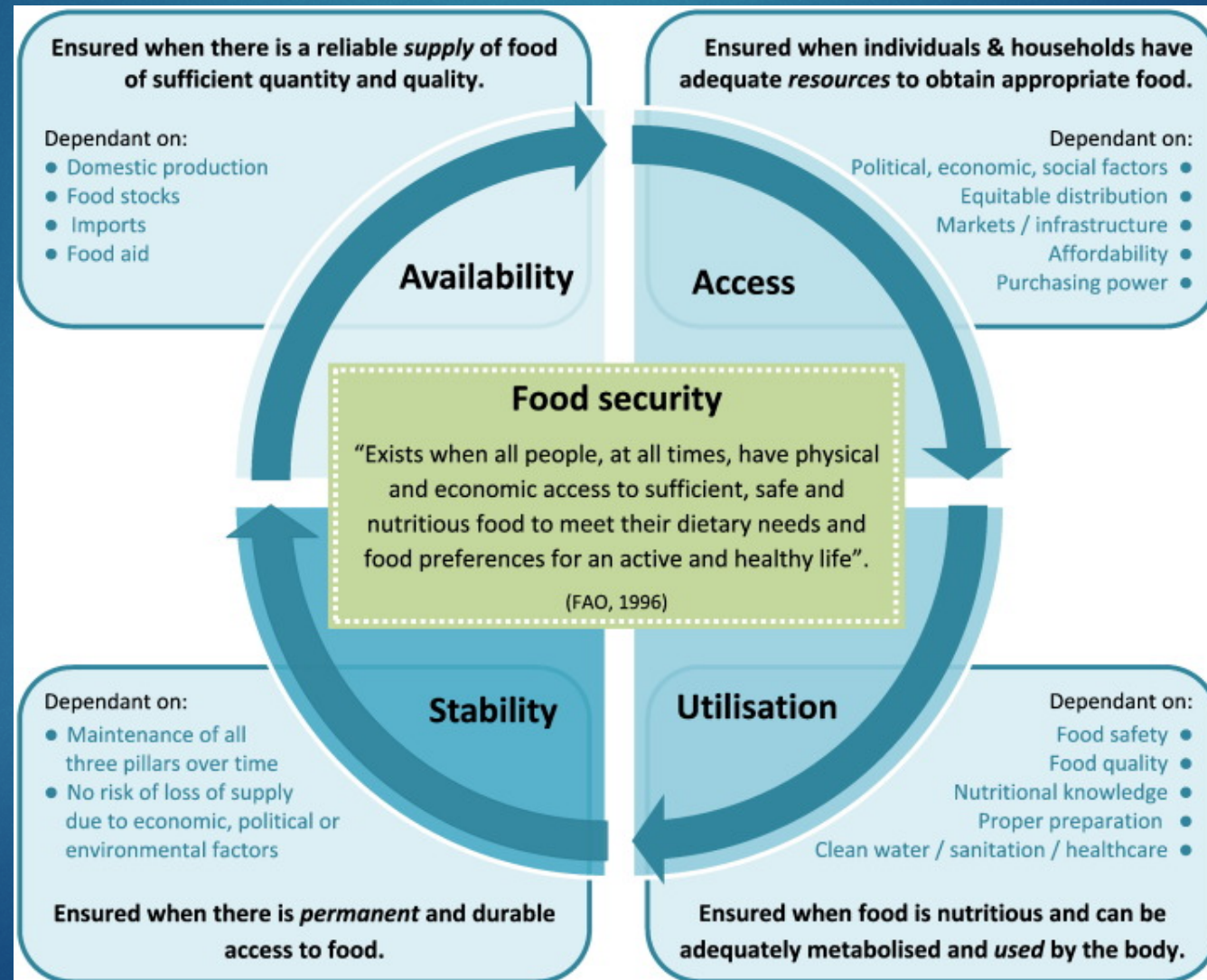


When they asked me to speak at the 'Plant-Powered Perspectives Conference', I wanted to find a topic that shows why our company and others like it, which make only plant-based foods, are so important. Even though the market for plant-based foods has its highs and lows, it might make some people doubt. But when we look closely at the need for more food and how to farm without harm, it's clear we're doing the right thing. This is the best way to make sure we leave a healthy planet for the next generations.

In this presentation I want to give short outline on the following topics and show how they point into the direction of plant-based diets as a solution for the given challenges:

- ▶ Global food security: Definition, 4 pillars, current situation, and challenges
- ▶ Growing global population: Numbers, trends, and challenges - including poverty, hunger, and food insecurity
- ▶ Sustainable agriculture: Principles, practices, and its importance for global food security and conservation of our planet's resources
- ▶ Potential of plant-based foods: Statistics, environmental and health benefits, future trends, and technological developments
- ▶ Case Studies: Success Stories in Sustainable Agriculture

# Global food security: Definition, 4 pillars, current situation, and challenges



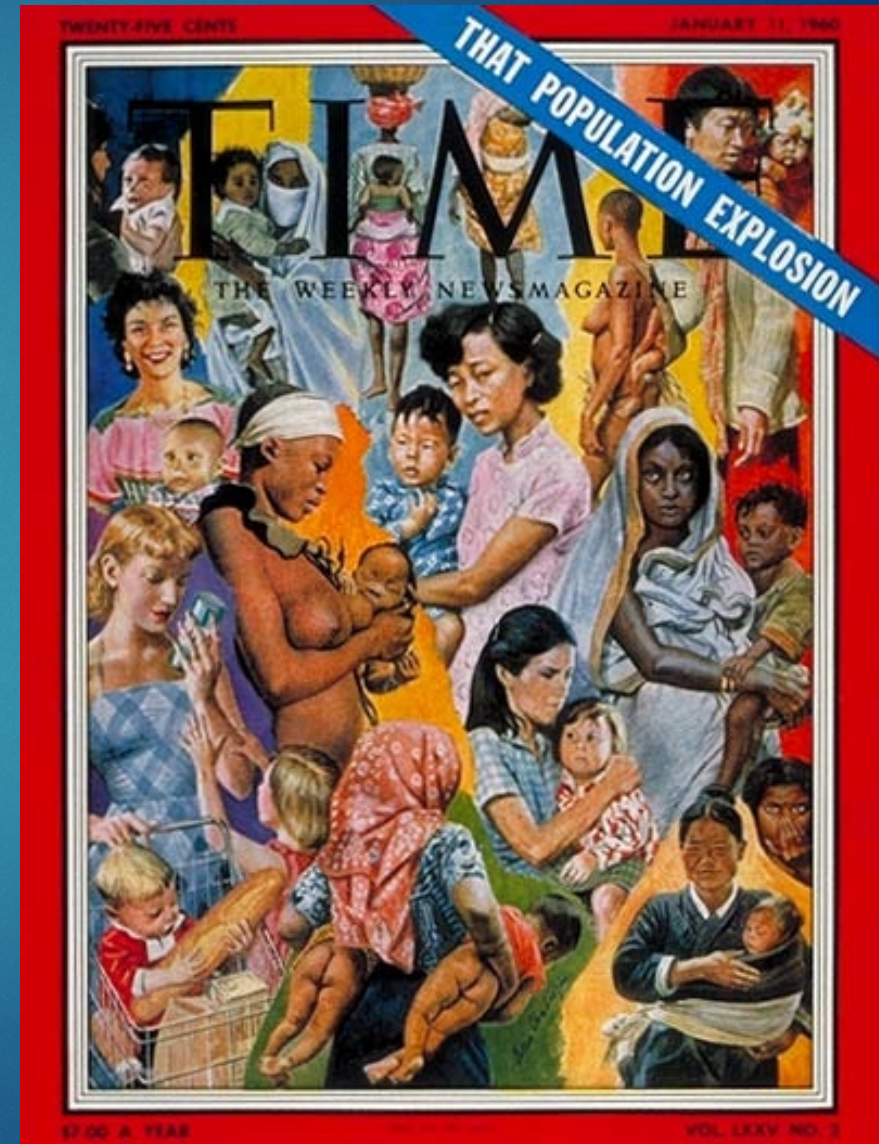
# Global food security:

## Definition, 4 pillars, current situation, and challenges

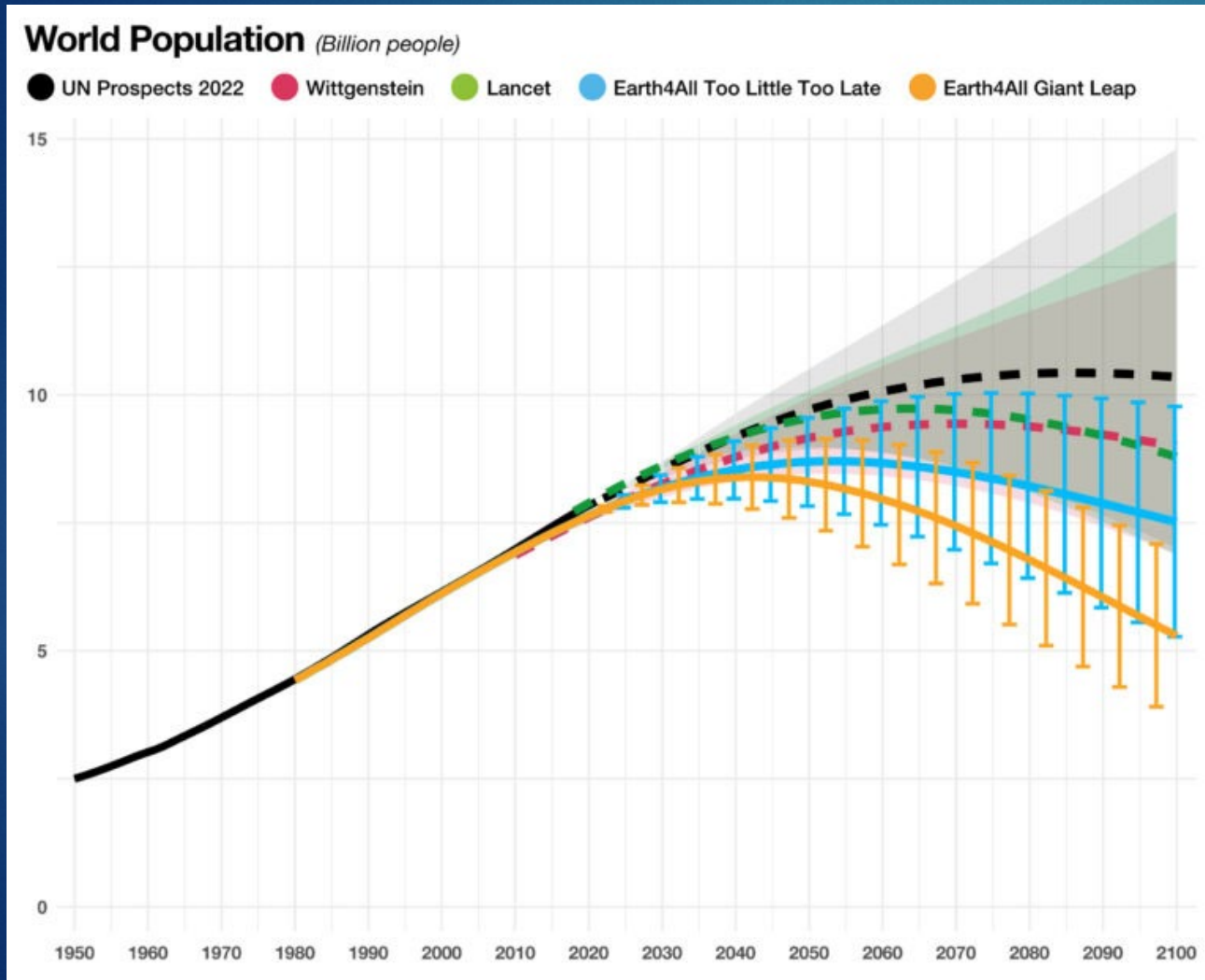
- ▶ 710 million people currently face insufficient food consumption.
- ▶ There are 17 countries with very high levels of hunger.
- ▶ The growing global population is causing increased demand for food.
- ▶ There's inadequate agricultural land use.
- ▶ Climate change is shifting the agricultural landscape.
- ▶ Poverty is the primary driving force behind food insecurity.
- ▶ There's a high percentage of food waste and loss.
- ▶ Food production and distribution are driven by profit.
- ▶ <https://hungermap.wfp.org/>

# The growing global population

- ▶ The global human population nearly tripled between 1960 and 2022.
- ▶ The number of humans on Earth surpassed 8 billion in 2022.
- ▶ Increasingly, people are adopting the "Western diet."
- ▶ Demand for meat products and highly processed foods is surging.
- ▶ Good news: the population's growth is expected to peak at around 9 billion.
- ▶ Bad news: the deceleration in population growth is linked to conflict and disaster.

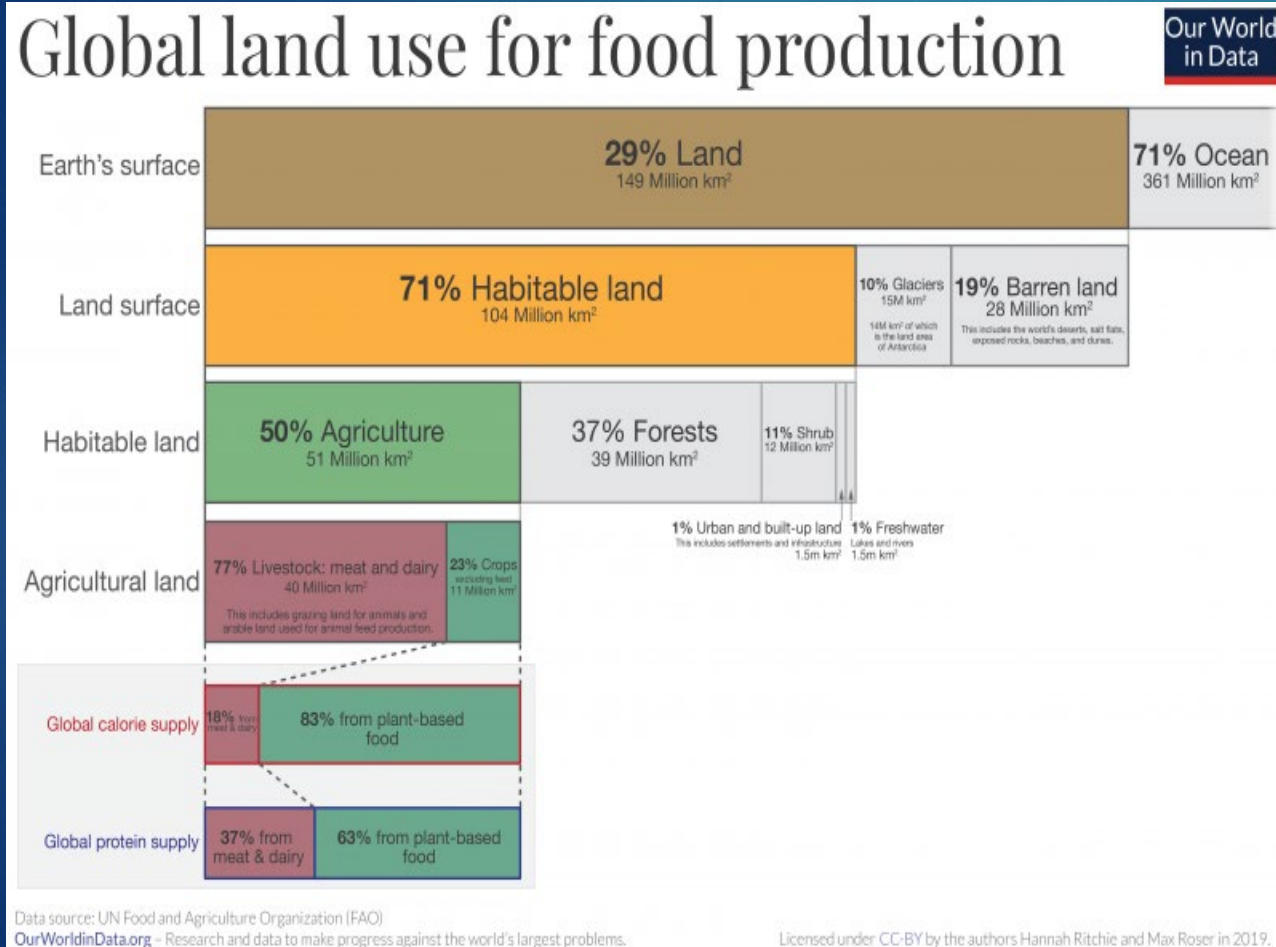


# The growing global population



- ▶ There are five scenarios based on various models.
- ▶ The worst-case scenario projects slightly over 10 billion.
- ▶ Most models anticipate a decline after reaching the peak.
- ▶ Causes for the decline include wars, disasters, technological advancements, and economic growth.
- ▶ For a sustainable and equitable global food supply, substantial investments in poverty alleviation are needed, along with groundbreaking policies on food and energy security, addressing inequality, and promoting gender equality.

# Sustainable agriculture: Principles, practices, and its importance for global food security and conservation of our planet's resources

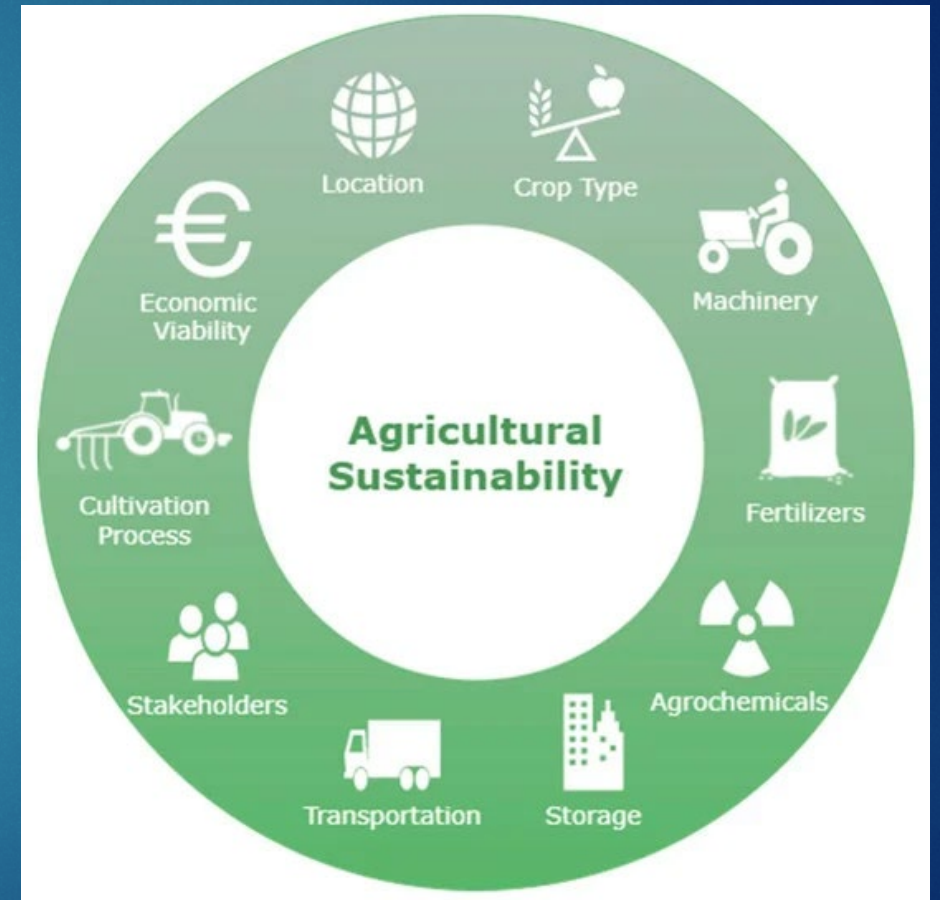


- ▶ Our resources are extremely limited.
- ▶ We have 51 million km<sup>2</sup> of agricultural land.
- ▶ 77% of this land is dedicated to livestock, including meat and dairy production.
- ▶ Over two-thirds of global agricultural land produces just one-fifth of the world's calorie supply.
- ▶ By doubling the land area for crops meant for human consumption, we could potentially increase global calorie production by 78%, while reducing animal-sourced calories by 6%.



# Sustainable agriculture: Principles, practices, and its importance for global food security and conservation of our planet's resources

- ▶ A good definition of sustainable agriculture is a production system that meets the needs of the present without compromising the ability of future generations to meet their own needs.
- ▶ The principles of sustainable agriculture can be divided into sub-categories: environmentally sustainable, economically sustainable, and socially sustainable.
- ▶ Increase productivity, employment, and value addition in food systems.
- ▶ Protect and enhance natural resources.
- ▶ Improve livelihood and promote inclusive economic growth.
- ▶ Enhance the resilience of people, communities, and ecosystems.
- ▶ Adapt governance to new challenges.



# Sustainable agriculture: Principles, practices, and its importance for global food security and conservation of our planet's resources

## Few important elements

- ▶ Crop selection
- ▶ Natural fertilizing
- ▶ Natural pest control
- ▶ Improving soil health
- ▶ Postharvest management
- ▶ Storage sustainable and secure
- ▶ Transport
- ▶ Distribution
- ▶ Retail

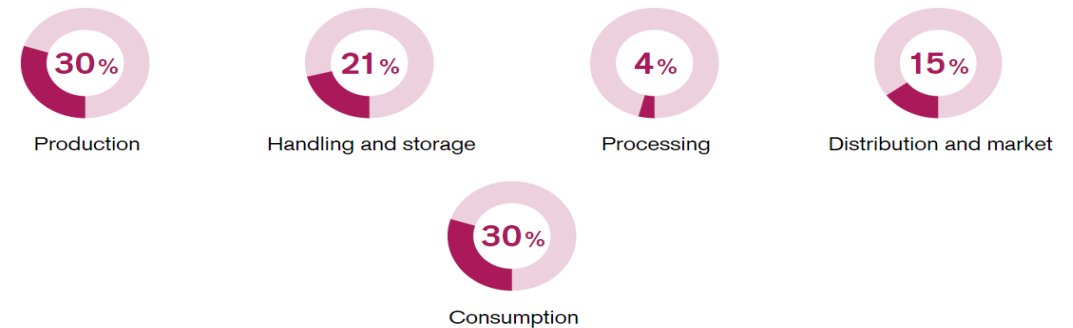


# Sustainable agriculture: Principles, practices, and its importance for global food security and conservation of our planet's resources



Important challenge for a sustainable future:  
Reduce food waste and food loss

## Distribution of total food loss and waste across the supply chain



# Sustainable agriculture: Principles, practices, and its importance for global food security and conservation of our planet's resources

What is the most resource consuming, yet most ineffective element of our current agricultural system?



Feed Conversion Inefficiencies			
	Chicken	Pork	Beef
<b>Feed conversion</b> (feed/live weight)	2.5	5	10
<b>Feed conversion</b> (feed/edible weight)	4.5	9.4	25
<b>Protein content</b> (% of edible weight)	20	14	15
<b>Protein conversion efficiency</b> (5%)	20	10	4

Source: Vaclav Smil, 2002. Eating Meat: Evolution, Patterns, and Consequences

# Sustainable agriculture: Principles, practices, and its importance for global food security and conservation of our planet's resources

## Other negative effects of meat and dairy consumption

- ▶ Animal welfare – Due to the high demand for animal products, it is not possible to ensure the welfare of all livestock.
- ▶ Health issues – High-intensity livestock keeping requires medication, which can be transferred to the food.
- ▶ Plant-based food naturally has benefits compared to foods sourced from animals.
- ▶ The global demand for meat cannot be satisfied without acquiring new agricultural land.

Efficiency of animal products in global feeding:



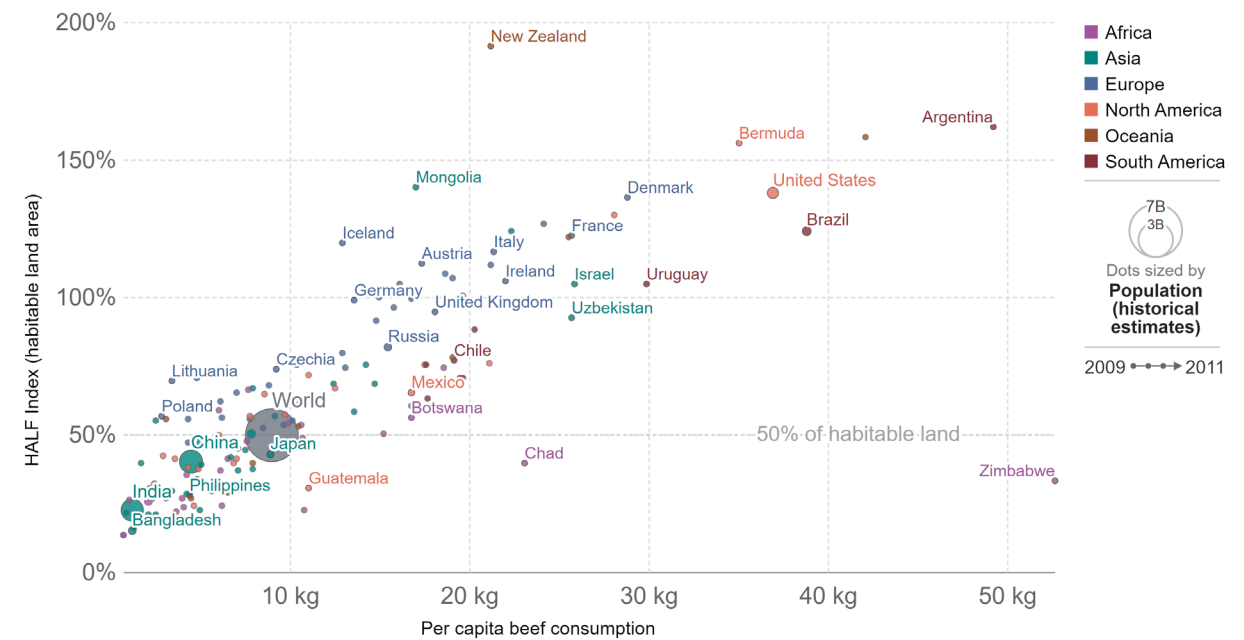
# Potential of plant-based foods: Statistics, environmental and health benefits, future trends, and technological developments

- ▶ The most straightforward and simplest solution for sustainable agriculture is a system primarily based on plant-based diets.
- ▶ Reduced land usage.
- ▶ Reduced water usage.
- ▶ Diverse nutrition.
- ▶ Established health benefits.
- ▶ Simplified distribution.
- ▶ Efficient.
- ▶ More affordable.

## Dietary land use vs. beef consumption, 2009 to 2011

Our World  
in Data

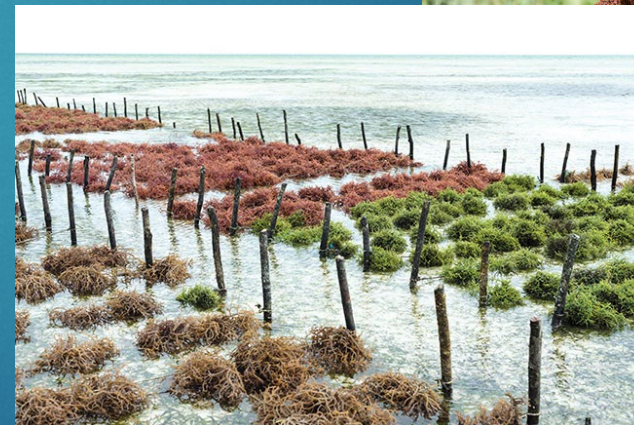
The percentage of global habitable land area needed for agriculture if the total world population was to adopt the average diet of any given country versus annual per capita beef consumption. Globally we use approximately 50% of habitable land for agriculture, as shown by the grey horizontal line.



Source: Alexander et al. (2016); Food and Agriculture Organization of the United Nations  
OurWorldInData.org/meat-production • CC BY

# Potential of plant-based foods: Statistics, environmental and health benefits, future trends, and technological developments

- ▶ New crop selection – climate change
- ▶ Sea growing – algae
- ▶ Vertical farming – closed farming
- ▶ Natural fertilizers
- ▶ Natural pesticides
- ▶ AI crop and farm management
- ▶ AI cycle management



# Conclusion

To achieve global food security, we must radically reduce meat and dairy consumption.

Steering humanity towards a plant-based diet offers only benefits.

We hold responsibility for the future of upcoming generations; thus, we cannot afford to squander our resources.

The transition to plant-based diets might be gradual, but it is essential.

It's our duty to assist people in changing their eating habits.





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**THE FUTURE IS 100% PLANT-BASED!**

Thank you for your attention!