

# Feeding the Planet

The growing global population and pressure on planetary resources threaten global food security. Reducing emissions and ensuring food safety and security are crucial, meaning tomorrow's food may look vastly different from today's.



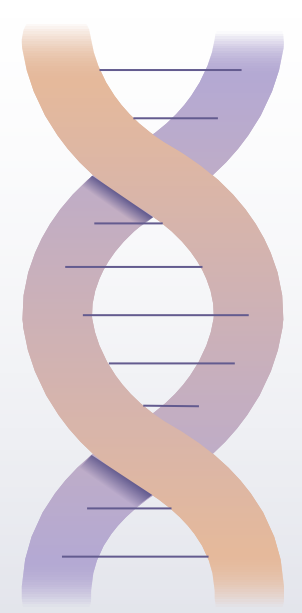
## Tomorrow's Food Sources Need to be Diversified

Synthetic biology processes like precision fermentation are crucial in reducing the overall environmental impact of food production.

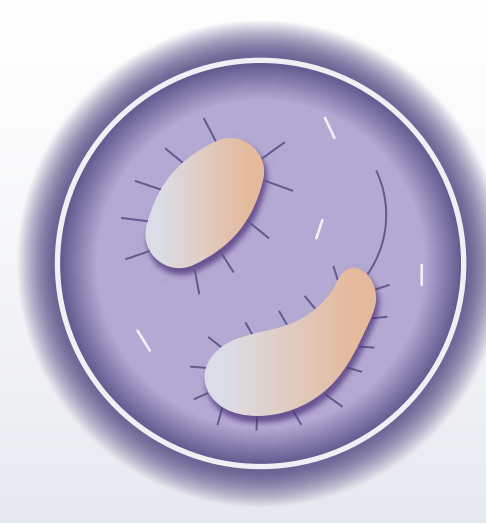
### Precision Fermentation Process

01

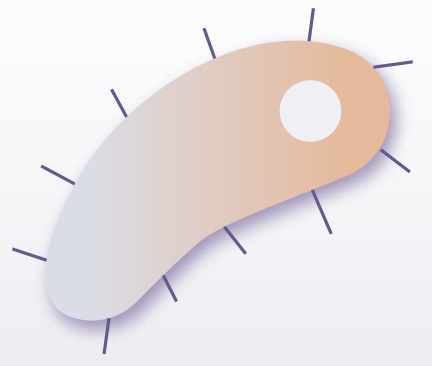
Creation of dairy-producing microbes.



Dairy genes



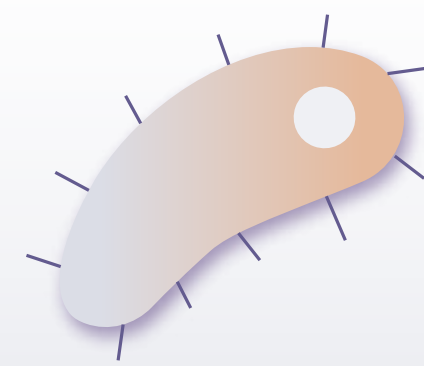
Host microorganisms (e.g. yeast)



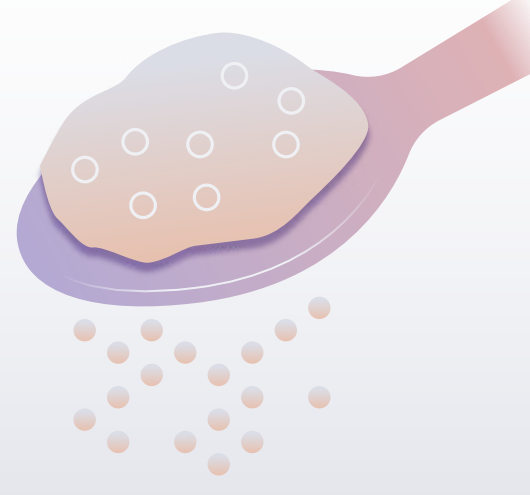
Dairy-producing microbes

02

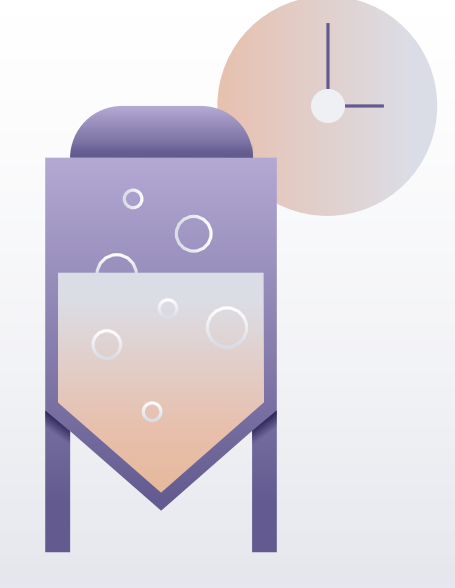
Fermentation of dairy-producing microbes results in new dairy proteins.



Dairy-producing microbes



Feedstock (sugar)



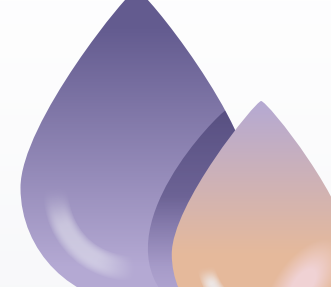
Fermentation

03

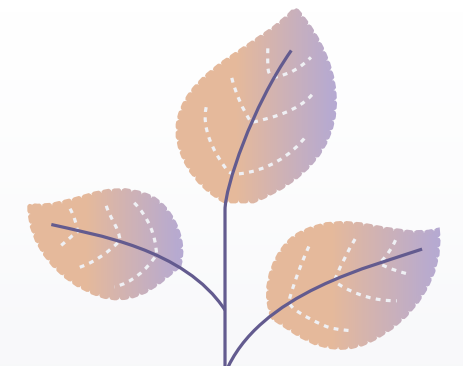
New dairy proteins can be used to create common milk products.



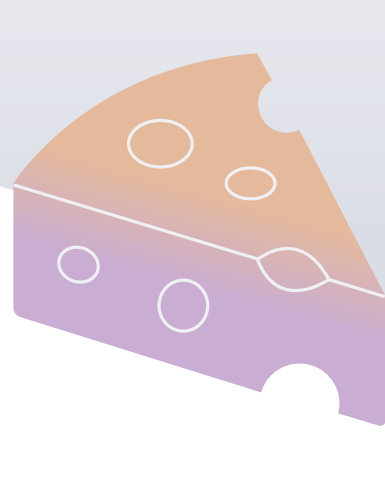
Dairy proteins



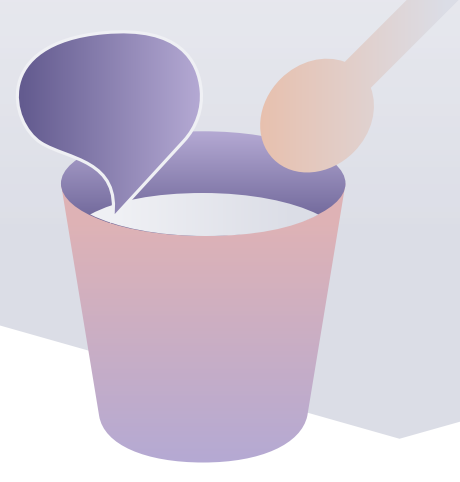
Fats



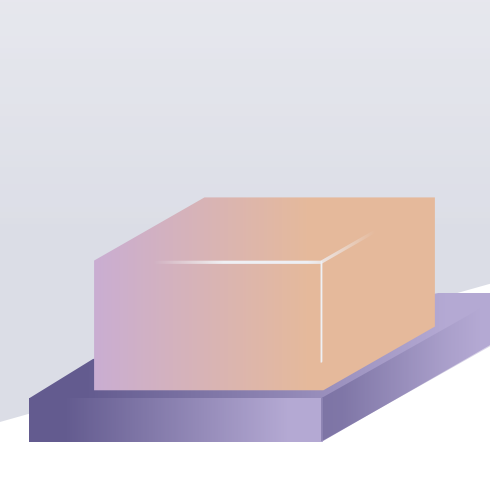
Plant-based ingredients



Cheese



Yogurt



Butter



Ice cream

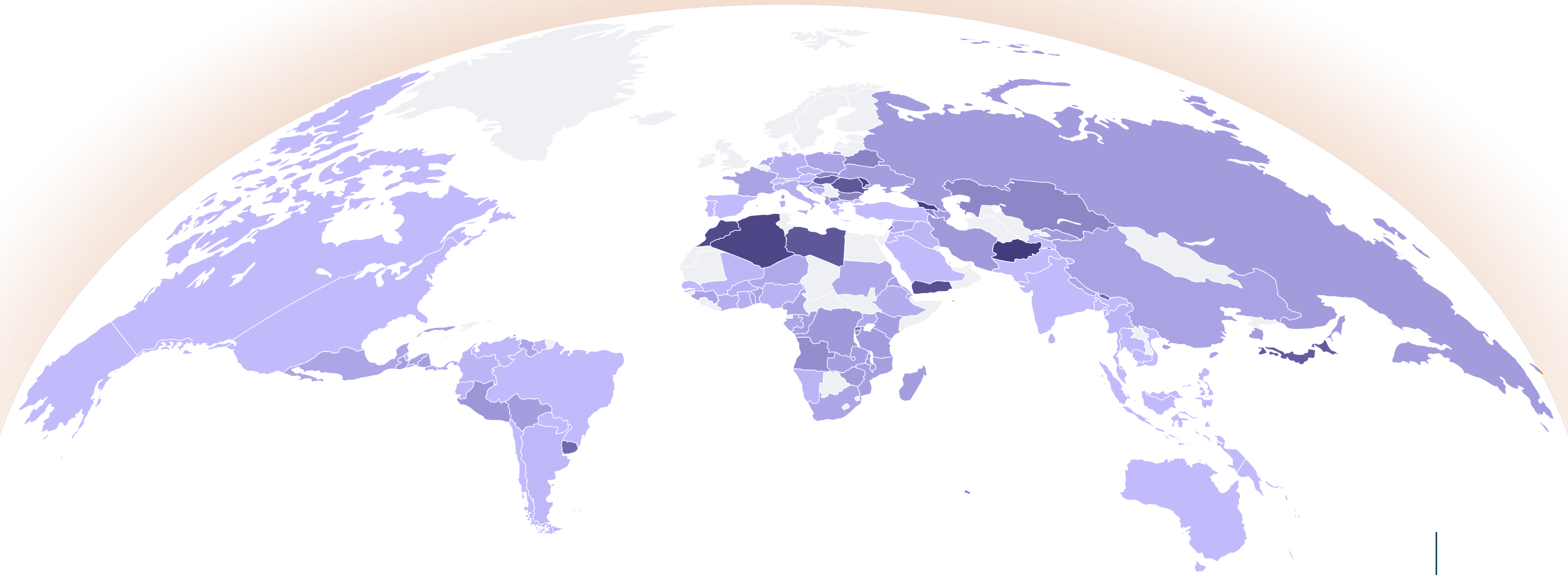
Source: Change Foods via Dubai Future Forum, 2021

## Tomorrow's Food Needs to Be Resilient

In 2022, global corn production was 1.1 metric tons per hectare less than expected due to climate change and other environmental factors.

But some countries were impacted more than others:

### Global Corn Yield Gap 2023, metric tons per hectare



Source: Our World in Data, 2023; USDA, Frontiers in Plant Science, 2021

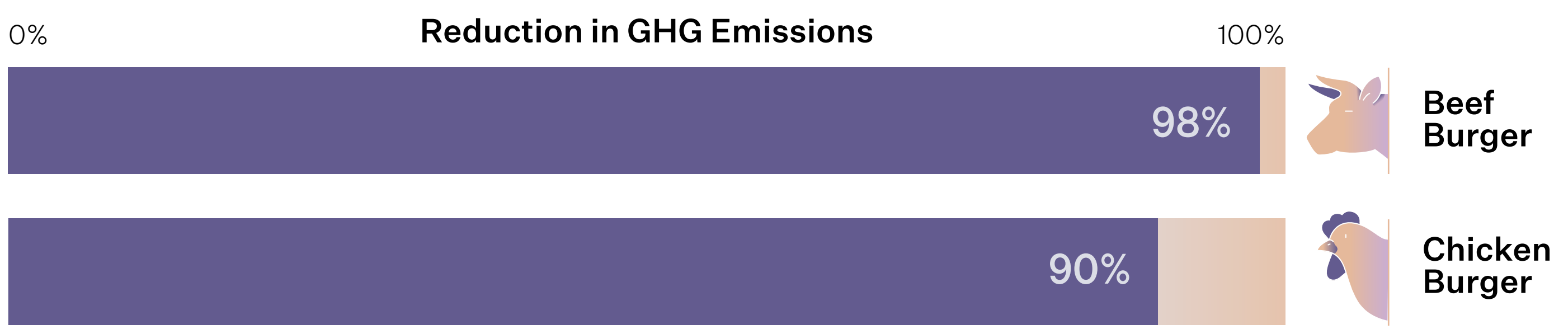
Improving crop resilience is critical for food security. By diversifying crops and using carbon capture techniques, farms can enhance crop yields and while reducing their carbon footprint.

## Tomorrow's Food Needs to Be Sustainable

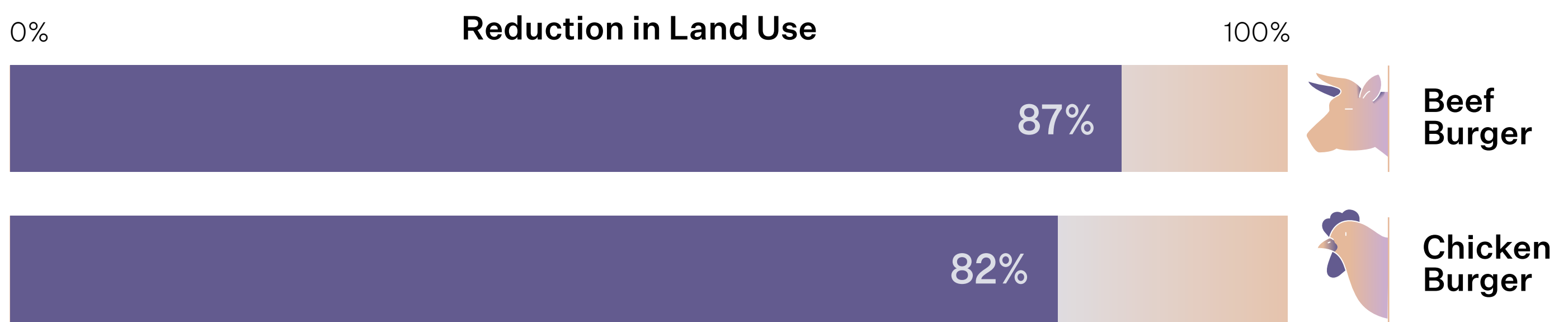
Switching from livestock to plant-based proteins reduces land use, freshwater use, and GHG emissions.

### Plant-Based Soy Protein vs Livestock

#### Reduction in GHG Emissions



#### Reduction in Land Use



Source: Good Food Institute, 2023

The challenges presented by climate change have hurt food production. However, through advances in synthetic biology and sustainability practices, tomorrow's food could differ significantly from today's.

Expand the conversation around the future of food and the connection between food systems and planetary health at the following session at the Dubai Future Forum 2024:

## Earth's Checkup:

How Can We Connect Our Well Being to That of the Planet?