



Impact Report



What you eat matters the most

This year marks the 50th anniversary of Earth Day. And as we deal with a global pandemic and witness rising oceans and a warming planet, the truth is that most of us haven't heard of ocean acidification or nitrogen runoff, or get the significance of 350 PPM and how our face masks are connected to bat habitats 6,536 miles away.

We are spending time with our families, getting things done, and having dinner. We are busy living and staying safe, often too busy to consider too much of anything in too much detail.

Most of us, though, do sense something is off. We sense that these abstract, often hard-to-understand disturbances reflect things we're doing. That they are all pointing in the same direction. That somehow we are dragging risk closer to us.

It's during moments like these when it's often easier to see some obvious truths. We are sensing that there is no natural world where the human animal is separate from all animals. There is only this small, interconnected world where every breath of air and bite of food is made up of molecules that have been associated with another living thing. That there is not human health, climate health, or animal health; there is only health.

The World Health Organization defines health as a state of well-being. And we need to care much, much more about our health. Whether it's the biodiversity in Borneo's rainforests, the conditions of an egg-laying hen in Beijing, the air quality in Mumbai, or the food we feed our families—we are seeing that health does not respect the walls between species, political parties, or borders. “We cannot have well humans on a sick planet,” said Thomas Berry, a naturalist and family farmer.

This view of health starts with our most important choice: what we eat every day. More than anything else, this decision matters most.



Josh Tetrick
Co-Founder & CEO

Contents

Part I

Starting point ⁴

Part II

Our approach ⁸

Part III

JUST Egg ¹⁴

Part IV

What's next ²²



Part I

Starting point



The evidence is clear: Our food system needs to be transformed for the sake of our planet and the future of humankind.

Marco Lambertini
Director General, WWF International

Our mission

Our mission is to build a more just food system that makes it easier for everyone to eat well.

Eating well means eating food that nourishes our bodies. Eating food that strengthens the planet. Eating food that tastes exceptionally good—and is accessible to everyone. If a decision—from technologies developed to products launched—increases the probability of achieving this mission, we'll do it. If a decision decreases that probability, we won't. That's our operating principle, whether privately held or publicly traded.

Our mission is big because it has to be.

Our planet is in a climate emergency and it's getting worse. The world's population is expected to hit nearly 10 billion people by 2050, and our current model for feeding the world—destroying forests to gain more arable land, depleting our oceans of fish and seafood, confining animals in small cages, and pushing addictive junk food— isn't just wrong, it won't work. Our food system is accelerating climate change, and climate change is accelerating crop loss. It's a vicious cycle that, together, we can and need to break.

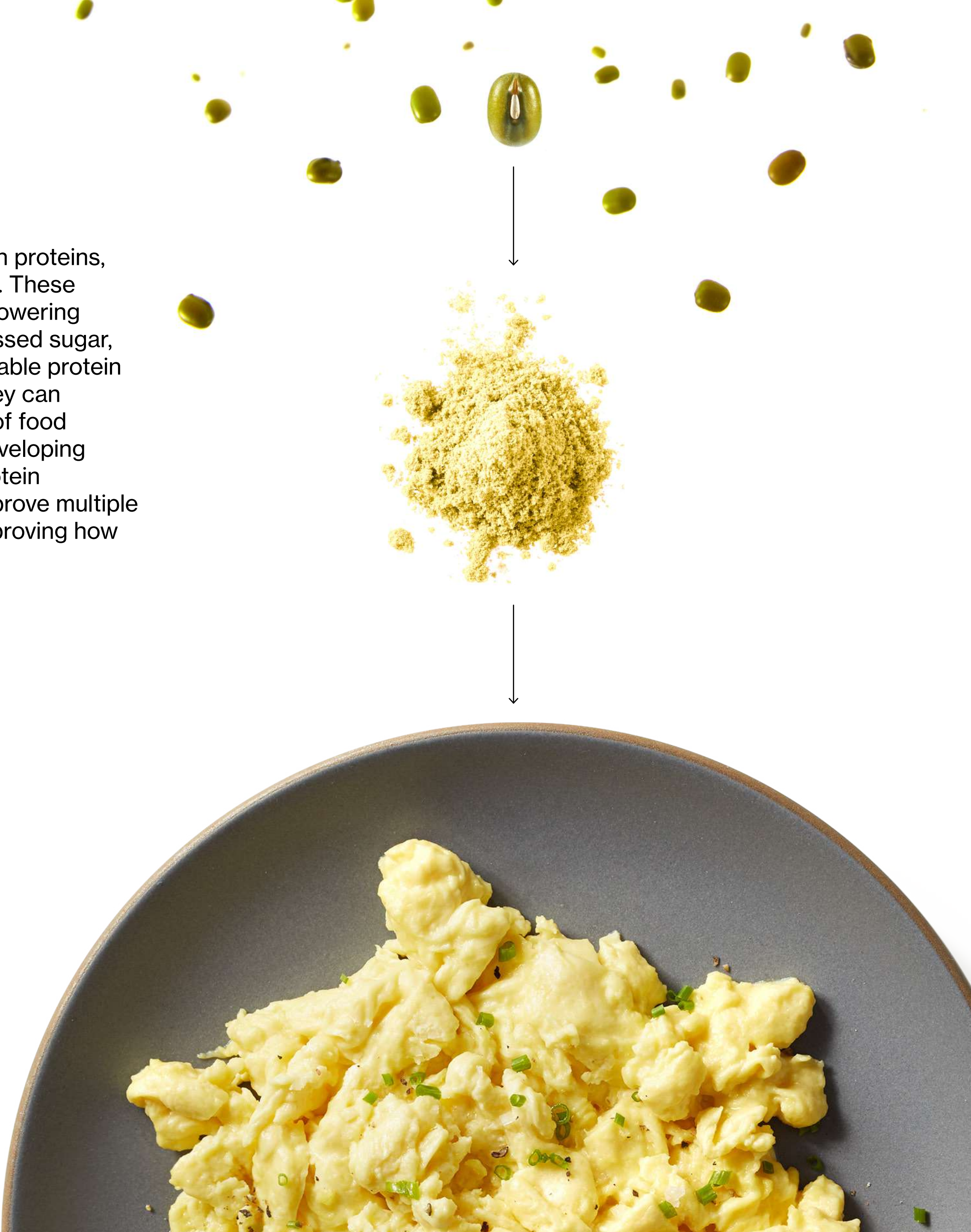
From moms and dads trying to make the right decisions at the grocery store to scientists and chefs creating new products and dishes, **we are the ones who, collectively, will build a just food system.**

How we get there

Small steps aren't enough to achieve that mission. One product or one market will not get us there. To help heal our planet and feed the world, we need to rethink how we produce food for everyone—for meat lovers and plant lovers, college kids and their grandparents, working class and the well-off.

So we looked beyond traditional crops and began exploring every tool in the plant kingdom: 391,000+ species of plants all around the world that have never been explored for how they can make our pasta, meat or eggs better.

Collectively, these species make up 18 billion proteins, 108 million fats, and 4 million carbohydrates. These natural tools in grains, legumes, and other flowering plants have the potential to eliminate processed sugar, saturated fats, and sodium, bringing sustainable protein and nutrient density to the food system. They can significantly improve the flavor and texture of food in your refrigerator and street markets in developing countries. And if efficiently distributed, a protein discovery in one bean (for example) can improve multiple billion-dollar food categories, potentially improving how hundreds of millions eat in the next decade.



Part II

Our approach



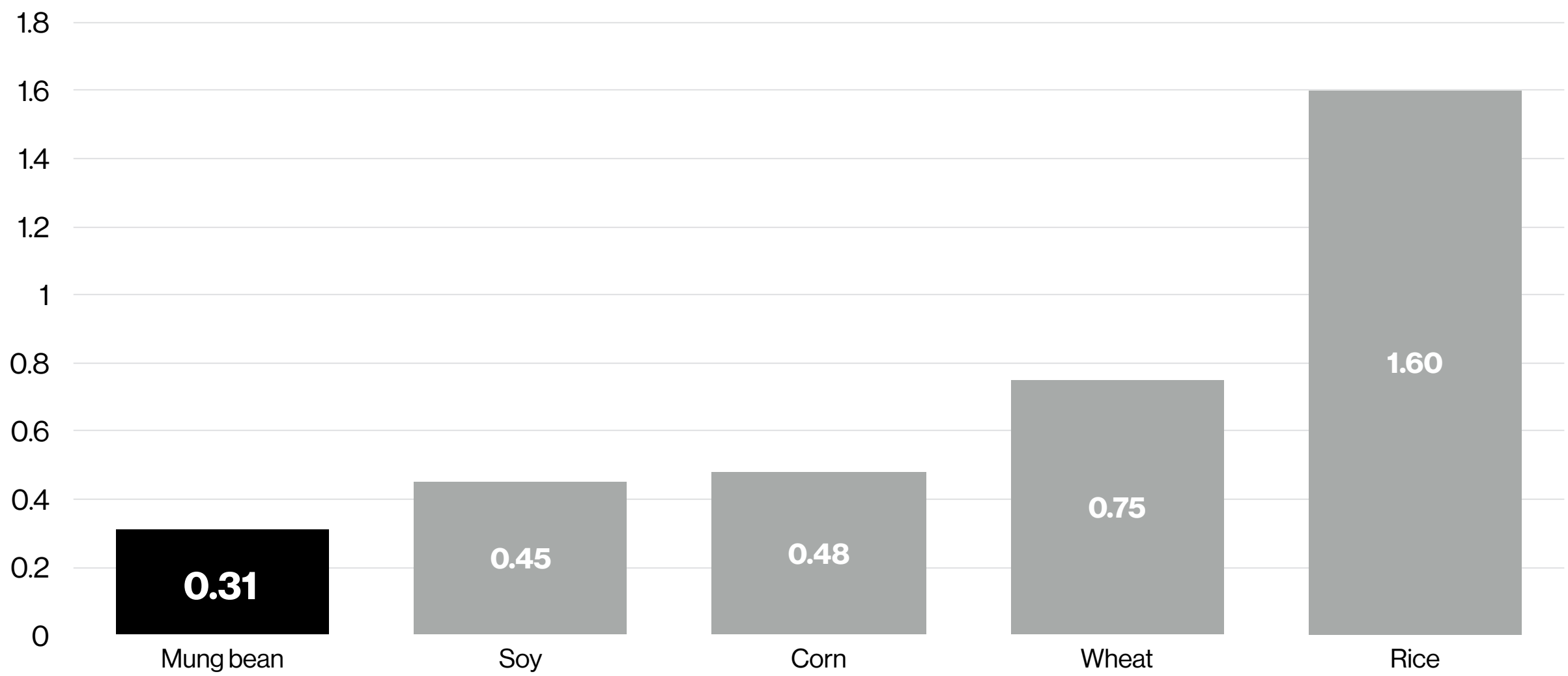


391,000+

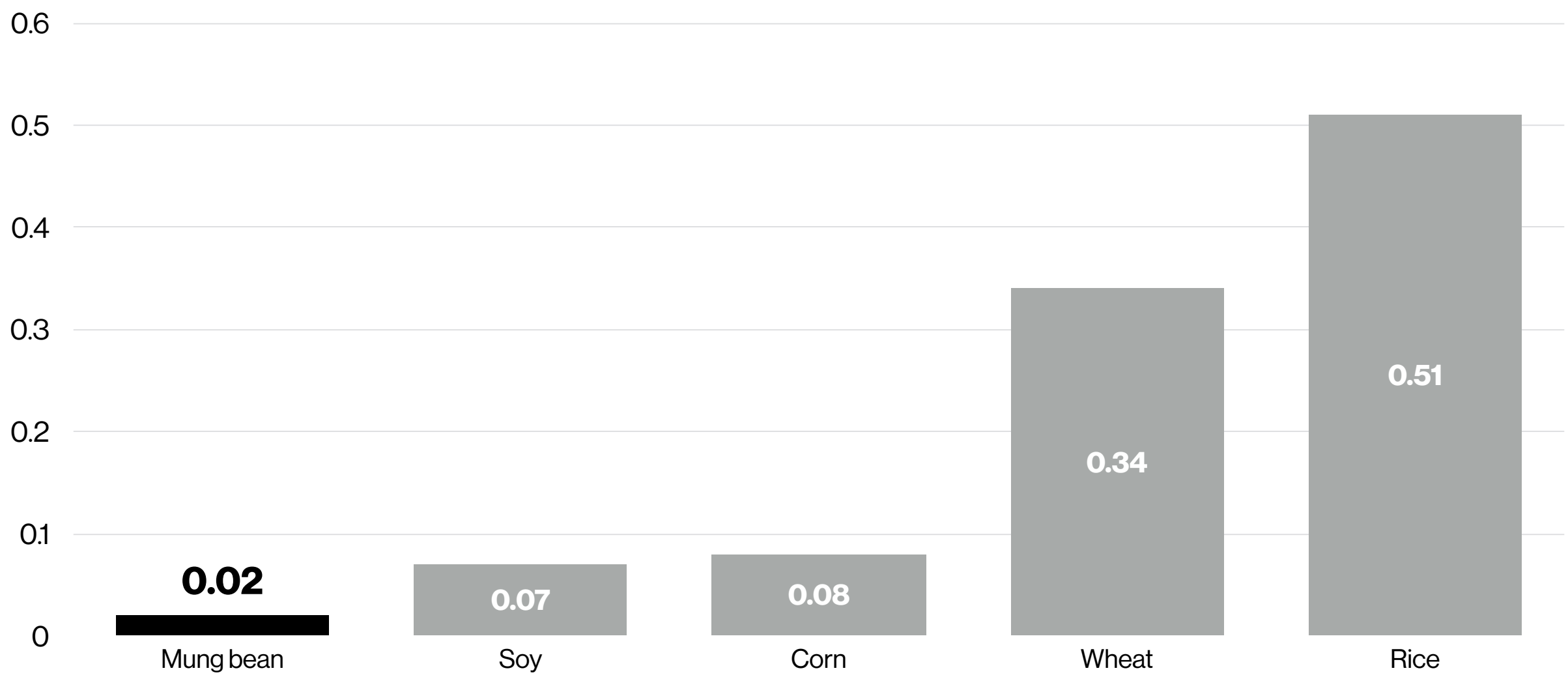


JUST Egg’s secret ingredient: a 4,400-year-old legume called the mung bean which contains a protein that magically scrambles like an egg. Through our discovery process at JUST, we were able to find something that had already sustainably impacted the food system for thousands of years and turn it into a meal that will impact it for thousands more.

Carbon footprint (kg of CO2e/kg of crop)



Water used (average kg of water/kg of crop)



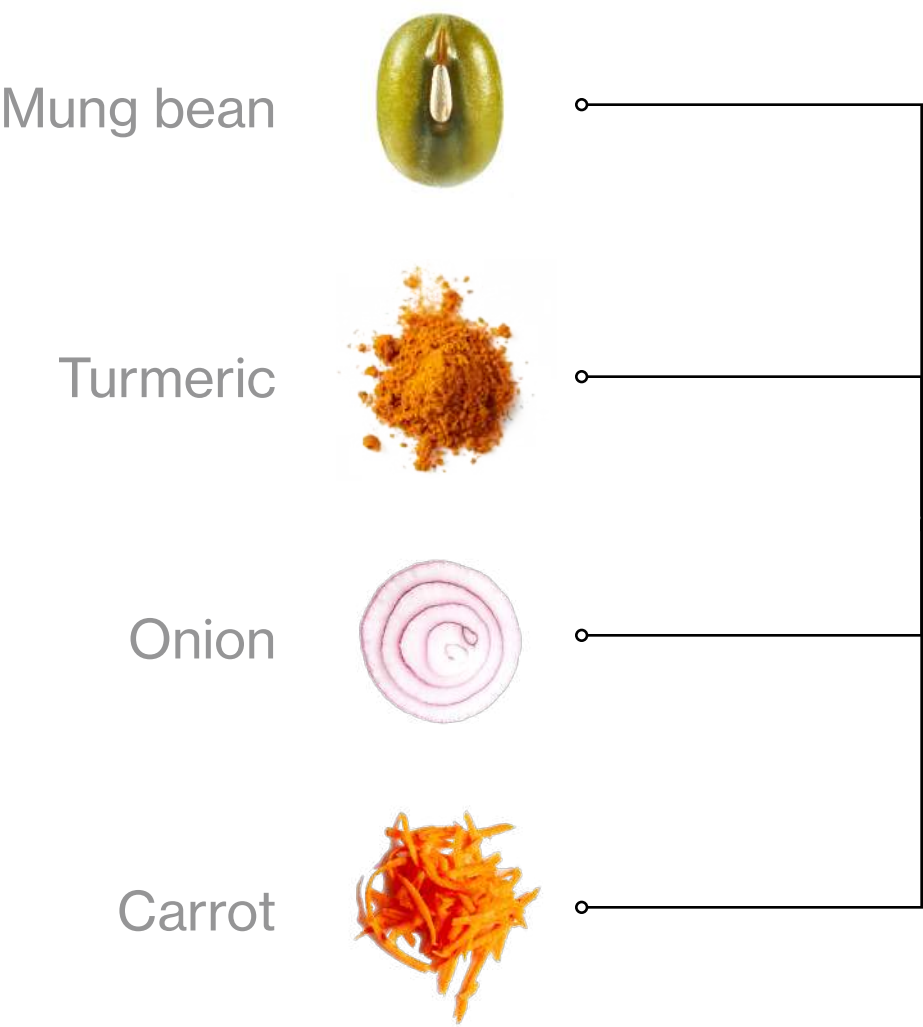
Craswell et al (2007), Mekonnen, Hoekstra (2011), Zhang et al (2017), Castanheira, Freire (2013), Clune (2016)

How we measure sustainability of our ingredients and products

We developed “CONDOR.”
JUST has created a life-cycle assessment tool, which we call “CONDOR,” that allows us to measure various key performance indicators including, greenhouse gas emissions, land use, and water consumption, per ingredient and aggregated per product.

The framework is actualized as a custom-built information technology platform that references and compiles information from multiple external data sets. These data sets come from various publicly available models.

We compare CONDOR data about JUST Egg to other protein sources.
We used published data for surface and groundwater consumption, GHG emissions and land use for tofu (soy and water), eggs, poultry meat, pork and beef, and compared to our data for JUST Egg.



| | |
|--|-------------------|
| mass of various greenhouse gases produced | kg GHGs |
| mass of volatile gas produced | kg VOCs |
| mass of nitrogen oxide gas produced | kg NOx |
| mass of other greenhouse gases produced (20+) | kg GHGs |
| mass of particulates sized <2.5 micrometers produced | kg PM <2.5 µm |
| mass of particulates sized 2.5 - 10 micrometers produced | kg PM 2.5 - 10 µm |

| Sustainability Category of Direct Impacts | | Environmental | | | | Social | | | |
|--|---------------------|---------------|-------|-----------|-----------------|----------------|------|-----------|------|
| Key Performance Indicator (KPI) | KPI Units | Air+Climate | Water | Land+Soil | Energy+Minerals | Plants+Animals | Home | Community | Work |
| mass of particulates sized 2.5 - 10 micrometers produced | kg PM 2.5 - 10 µm | ● | | | | | | | |
| mass of various chlorofluorocarbons produced (10+) | kg CFCs | ● | | | | | | | |
| mass of various hydrochlorofluorocarbons produced (30+) | kg HCFCs | ● | | | | | | | |
| mass of other ozone depleting substances produced (5+) | kg (various) | ● | | | | | | | |
| mass of various volatile organic compounds produced (100+) | kg VOCs | ● | | | | | | | |
| mass of various radionuclides produced (10+) | kg radionuclides | ● | | | | | | | |
| mass of various nitrogen oxides gases produced | kg Nox | ● | ● | | | | | | |
| mass of various sulfur oxides gases produced | kg Sox | ● | ● | | | | | | |
| mass of ammonia gas and liquids produced | kg NH4 | ● | ● | | | | | | |
| mass of hydrogen chloride gas produced | kg HCL | ● | ● | | | | | | |
| mass of hydrogen fluoride gas produced | kg HF | ● | ● | | | | | | |
| mass of sulfuric acid mist produced | kg H2SO4 mist | ● | ● | | | | | | |
| mass of dissolved nitrogen produced | kg N | | ● | | | | | | |
| mass of dissolved phosphorus produced | kg P | | ● | | | | | | |
| mass of various chemical pollutants produced (50+) | kg chem. Pollutants | ● | ● | ● | | ● | ● | ● | ● |
| mass of raw coal consumed (equivalent at point of mine) | kg raw coal | | | | ● | | | | |
| mass of raw natural gas consumed (equivalent at point of well) | kg raw natural gas | | | | ● | | | | |
| mass of crude oil consumed (equivalent at point of well) | kg crude oil | | | | ● | | | | |

| | |
|--|-------------------------|
| mass of raw natural gas consumed (equivalent at point of well) | kg raw natural gas |
| mass of crude oil consumed (equivalent at point of well) | kg crude oil |
| electric energy consumed from hydropower sources | kWh hydroelectric power |
| electric energy consumed from solar power sources | kWh solar power |
| electric energy consumed from wind power sources | kWh wind power |
| electric energy consumed from geothermal power sources | kWh geothermal power |
| electric energy consumed from biomass power sources | kWh biomass power |

Partnerships that support farmers

Farmers are already living the effects of climate change.

And they will be on the front lines in addressing it.

For all the talk about agriculture harming the planet, farmers aren't the culprit. They're doing their job: addressing the rising demand for traditional crops and livestock, all while climate change accelerates crop loss and makes their jobs only harder. Farmers—as much as anyone—should profit from a changing food system that rewards sustainability and innovation.

We are working with supply partners who source from farmers on multiple continents and are developing new mung bean production opportunities for beneficial economic and environmental impact.

Since mung beans have a short harvest cycle—just 60–90 days, depending on the climate—and require very little water, they can be rotated with other crops, and even used as a cover crop in systems of regenerative agriculture. With specialty and minor crops like mung beans expanding beyond their traditional growing regions to supply the demand for plant-based foods, it's a new opportunity for farmers and rural communities.

We are developing strong partnerships in communities across the world that support farms of many sizes and will make expansion of JUST Egg possible.

By equitably sourcing our mung beans, we are providing economic growth to communities and lessening the environmental toll on their land and water.



We love forests and farmland

And we believe in wild places being left wild.

Food production has had possibly the largest impact on the world's ecosystems of any human activity. And while, ounce per ounce, beef and pork production is more destructive than egg production, they all take a tremendous toll on our environment. One-third of global arable land is used to grow feed—including the soy and corn put into feed for egg laying hens.

Clearing land for agriculture leads to deforestation and loss of high conservation value habitat. It's the primary cause of the burning and destruction of the Amazon rainforest. Improper soil management can release greenhouse gases and cause significant fertile soil loss. Farmers are faced with tough choices for where and how to produce crops, and suppliers, which form the bridge between the world's farmers and the world's food brands, don't often encourage sustainable practices through their supply chains...unless brands demand it.

This is why we stand by a commitment to source responsibly and promote sustainable land management throughout our supply chains:

- We strive to source mung beans, oils and other major ingredients (1% or more of our formulations) only from sources that are in current agricultural production, not converted from forest or non-agricultural use for our supply.

- We do not source from high conservation value habitats. This reduces the risk of biodiversity loss and increased greenhouse gas emissions that can occur when forests are cleared for agriculture.

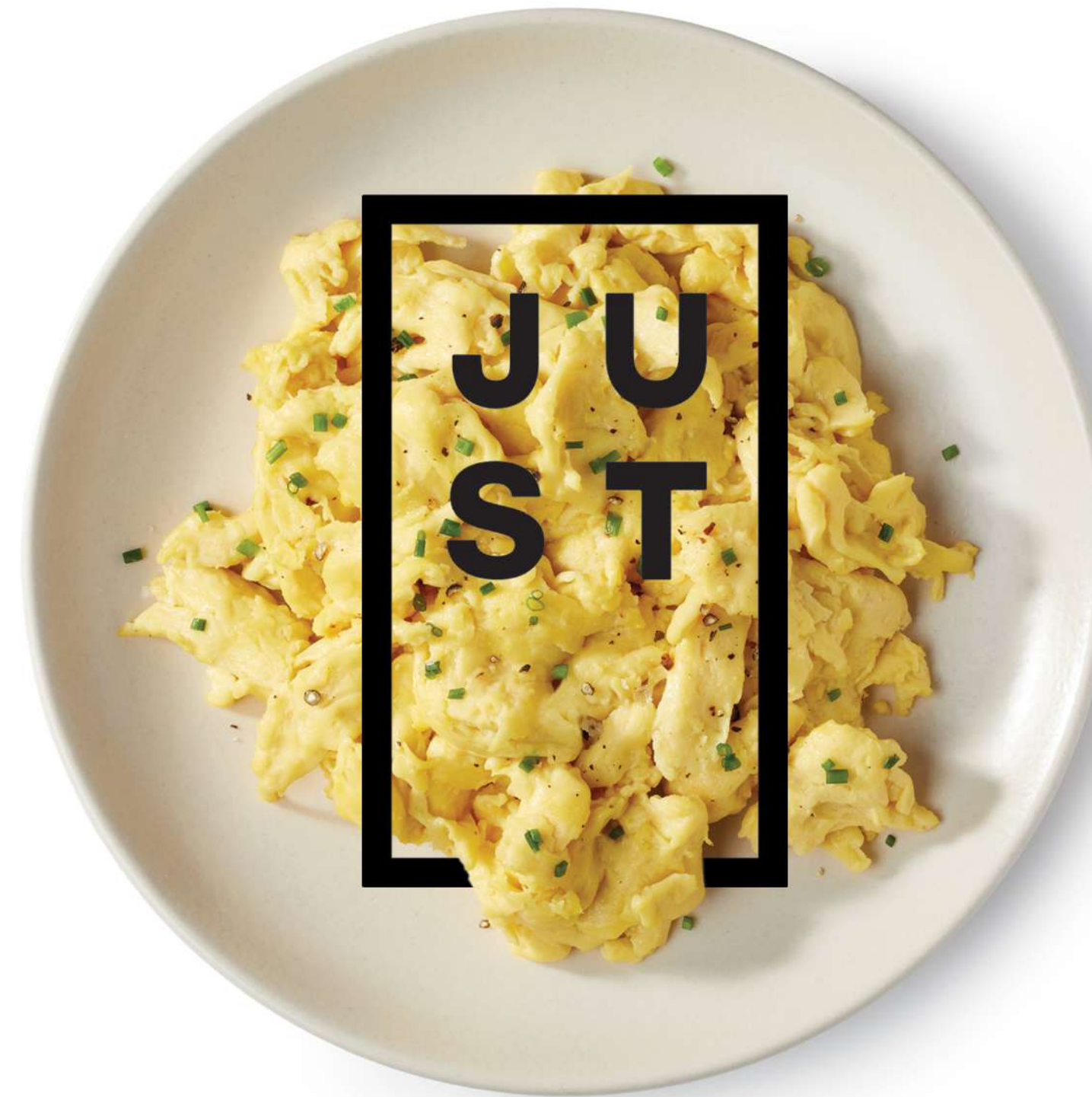
- Through our supply partnerships, we encourage responsible, sustainable soil management practices among farmers and suppliers in order to prevent encroachment on forested areas or sensitive habitats.



Part III
JUST Egg



A just food system



starts with a better egg.

For the planet
93% less CO₂e
98% less water
86% less land
Sustainable sourcing



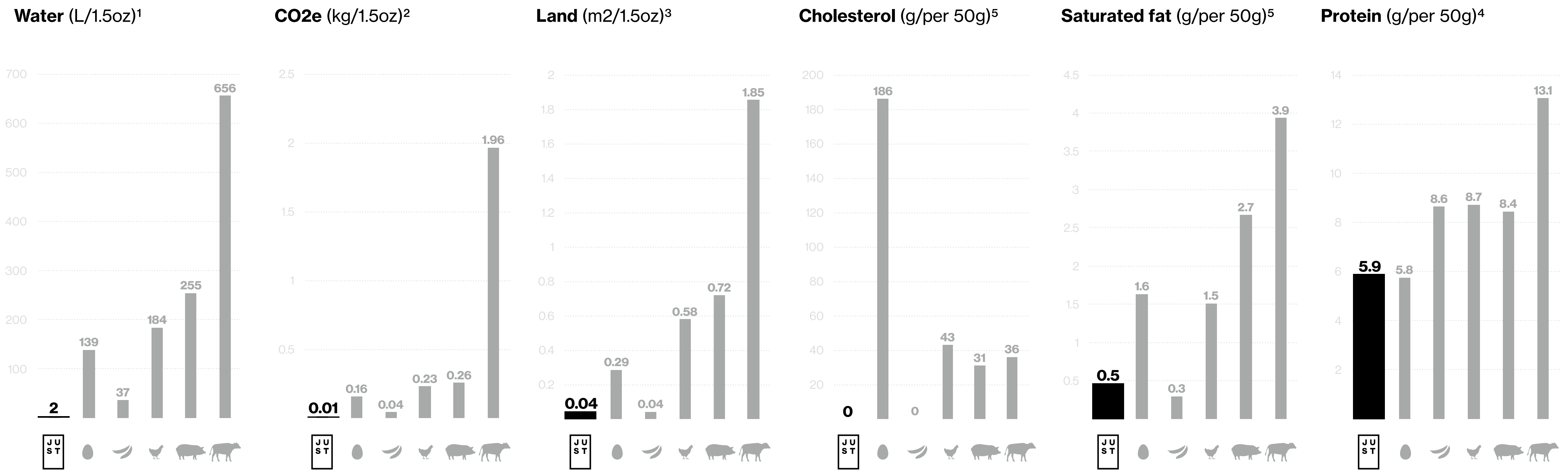
For you
High in protein
No cholesterol
Less saturated fat
Non-GMO



Meat and dairy provide only 18%
of our calories and 37% of our protein,
yet use up 83% of our farmland.

Science, 01 Jun 2018

The most sustainable protein



¹Water Footprint ²FAO ³Journal of Cleaner Production ⁴USDA
⁵Average nutritional of JUST Egg Liquid and JUST Egg Folded combined; Egg, Whole, Cooked, Hard-boiled; Tofu, raw, firm, prepared with calcium sulfate; Chicken, ground, raw; Pork, fresh, ground, raw; Beef (Ground Sirloin 90% lean, broiled patty)




JUST Egg uses 98% less water

Surface and Groundwater Consumption

Liters of surface and groundwater consumed per 1.5 oz, and per 1 kg, of product.

We calculate the total amount of surface water and groundwater consumed within the supply chains of JUST Egg, measured in terms of liters. This indicator is synonymous with and described elsewhere as “blue water.”



**JUST Egg has a
93% smaller
carbon footprint**

Greenhouse Gas (GHG) Emissions

Kilograms of GHGs emitted per 1.5 oz,
and per 1 kg, of product.

GHGs are chemicals that contribute to global climate change. In global agriculture, the most significant contributors to climate change are land conversion (e.g., forested areas and marshes converted to cropland), enteric fermentation by cattle and other ruminants, manure applied to pastureland, and the production and use of synthetic fertilizers (IPCC, 2014).

Our model accounts for these emissions from our supply chain, measured in kilograms of CO₂e.



**JUST Egg uses
86% less land**

Land Use

Square meters of land required to produce 1.5 oz and 1 kg of the main ingredient being compared.

Mung bean and other ingredients in JUST Egg are the principle components in the land use assessment for JUST Egg.

Measuring the impact

40,000,000

40 million egg equivalents
We have now sold the JUST Egg equivalent of more than 40 million eggs.

1,489,714,186

1.48 billion gallons of water
A single chicken egg takes 53 gallons of water to produce. By making JUST Egg directly from plants, we use 98% less water. We've saved the equivalent of 1,900 Olympic-size swimming pools filled with water.

5,996,564

Just under 6 million kgs of CO2e
By making JUST Egg directly from plants, we use 93% less CO2e. We've saved the CO2e equivalent of over 12 million miles driven by an average passenger vehicle.

2,435

2,435 acres
Instead of using land to grow crops to feed chickens, we can make eggs directly from plants. We've already used 2,435 fewer acres of land.

Part IV

What's next



Continuous improvement for people and the planet

We spent nearly 4 years finding a plant protein that would scramble like an egg. But coming up with our first version of JUST Egg was just the beginning. Our version 2.0 is already on the shelves, providing better taste and functionality—from delicious frittatas to omelets and French toast. And with every new release, our team of scientists and chefs can make JUST Egg even better—improving our sustainability, lowering cost, and making it even more nutritious. It’s fulfilling our mission: making it easier to eat well, for ourselves and the planet.

‘20

‘21

‘22

Sustainability

- | | | |
|--|---|--|
| <ul style="list-style-type: none">• Improved packaging to eliminate waste• Develop sustainable land management commitments in supply chain• Improved protein yield per bean through technological improvements | <ul style="list-style-type: none">• Introduction of contract farming to build equitable sourcing from farm to product• Sales of byproducts created during protein isolation, reducing waste and closing the loop• Implement sustainable land management program | <ul style="list-style-type: none">• Expansion of contract farming• Modifying supply chain to reduce impact at every stage of protein process—from de-hulling to milling and isolation |
|--|---|--|

Access

- | | | |
|---|--|---|
| <ul style="list-style-type: none">• Expansion across North America, Europe and Asia• Introduction of new JUST Egg products | <ul style="list-style-type: none">• Significant cost reductions to make it more accessible and expand global reach | <ul style="list-style-type: none">• The lowest cost protein, available in developing regions for as little as 4.7¢ per “egg”• Development of ambient product for more universal delivery and sales |
|---|--|---|

Nutrition

- | | | |
|---|---|--|
| <ul style="list-style-type: none">• Improve macronutrition (higher protein)• Develop B12 fortification | <ul style="list-style-type: none">• Increase antioxidant content• Address micronutrient deficiency for key demographics (e.g., Vitamin A and D3 for pregnant women in China) | <ul style="list-style-type: none">• Continued antioxidant improvement• Continue to customize for key demographics, including particular needs of children |
|---|---|--|



We shall escape the absurdity of growing a whole chicken in order to eat the breast or wing, by growing these parts separately under a suitable medium.

Winston Churchill
The Strand, 1931

Demand for animal protein is exploding

We are running out of water and arable land to feed enough animals to meet the escalating demand for conventional meat. And the more we try — by, say, burning down rainforests to grow more feed — the worse our climate crisis gets.

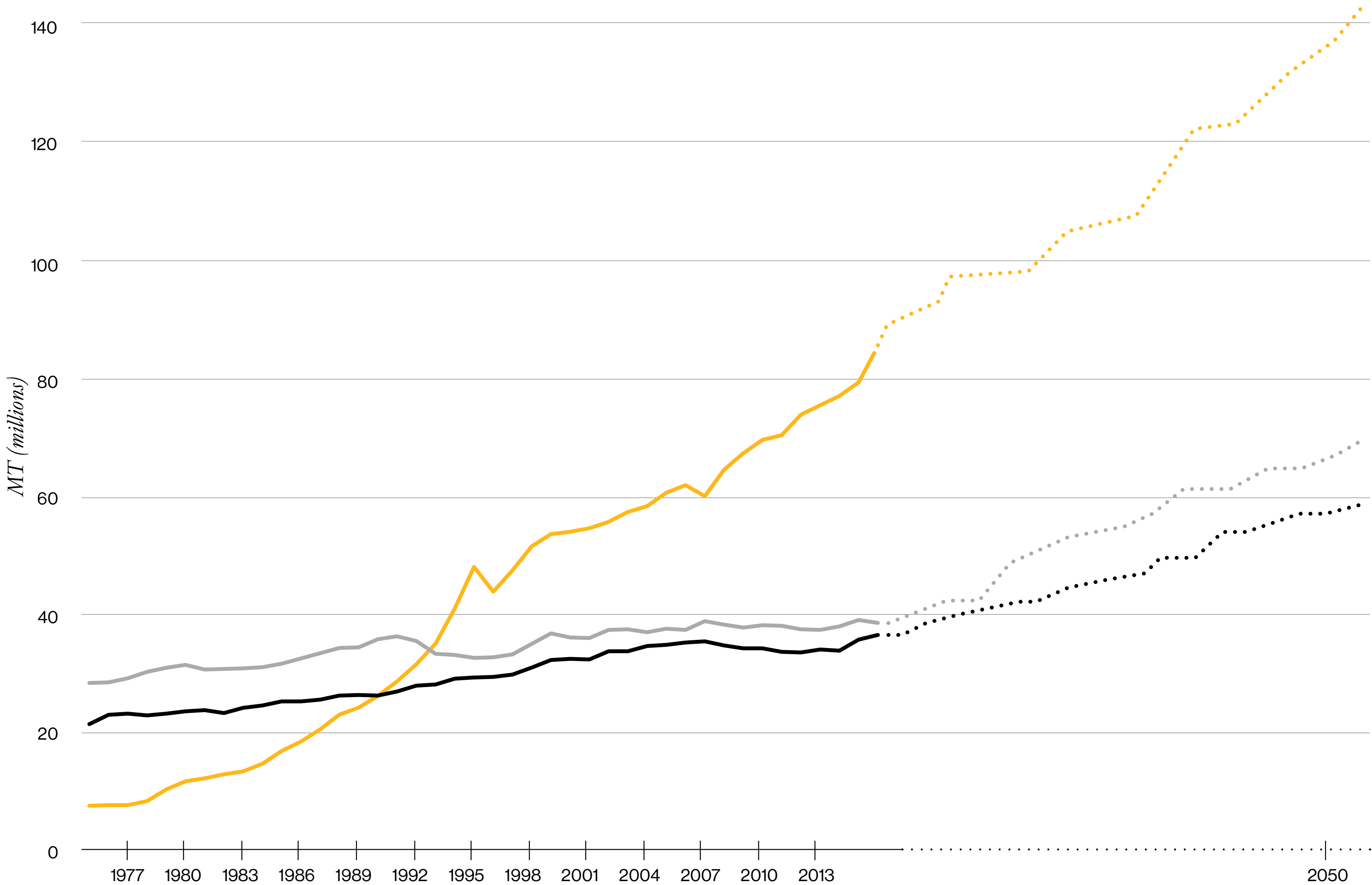
So, in addition to plant-based innovation, JUST is developing cultured meat — it’s real meat grown from cells, without ever needing to confine or slaughter an animal.

As we researched more of the functional potential of plants, we found that they can do even more than create plant-based foods: they can enable animal cells to grow sustainably and efficiently outside of an animal.

The truth is that it’s unlikely that the families in Birmingham, Brussels, or Beijing will consistently choose plant-based alternatives over chicken, beef, pork, and seafood. We love plant-based foods, but they, alone, will not let us achieve our mission.

Our cultured meat technology gives us an important tool to address rising demand of animal protein without destroying our planet.

— China
— USA
— EU



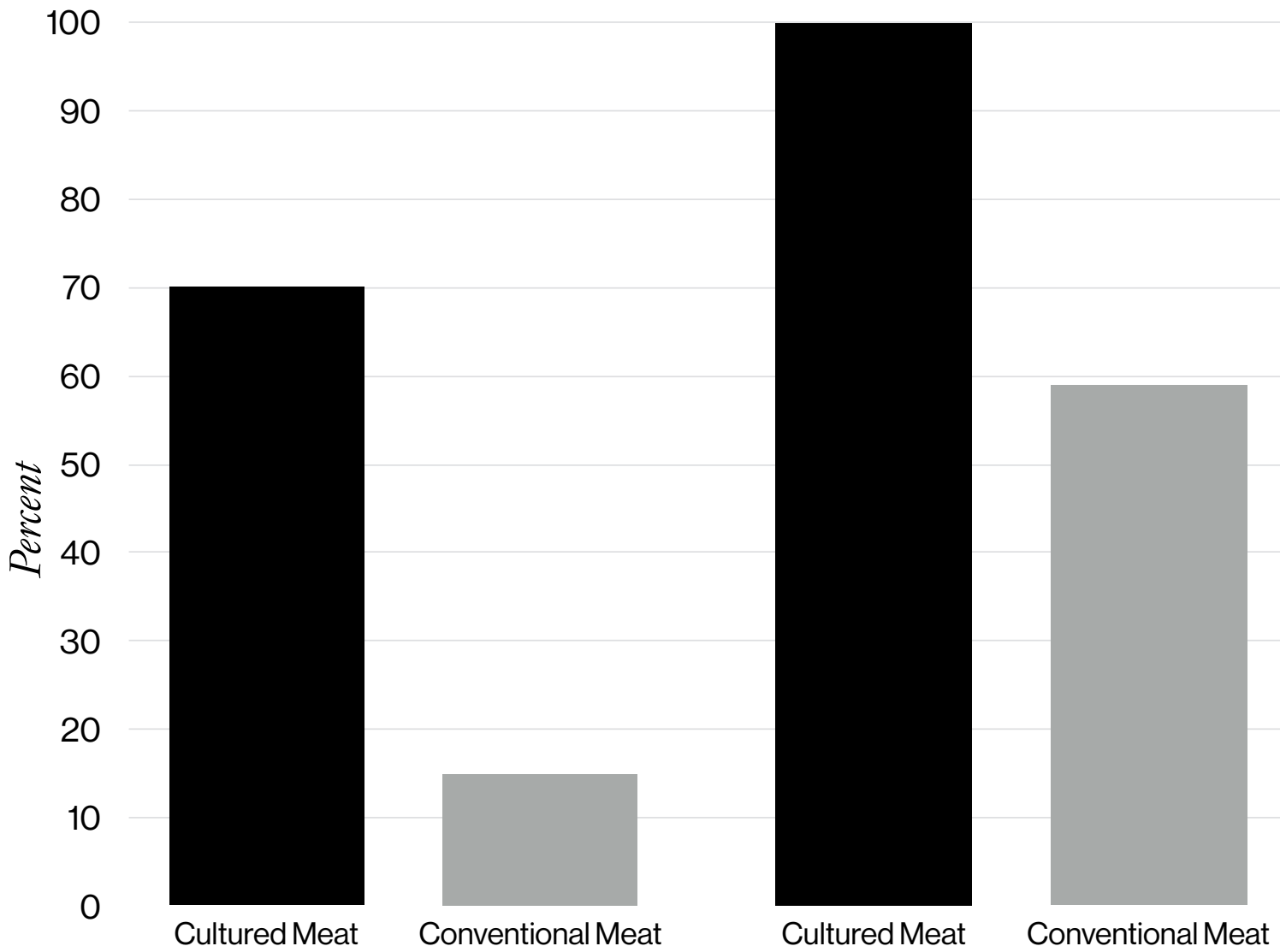
A more efficient meat

While the technology has yet to scale in order to perform a complete life-cycle analysis, initial estimates suggest that cultured meat will have significant reductions in greenhouse gas emissions, water use, and land use. By producing only meat for consumption, calories are not spent regulating an animal’s blood temperature or growing bones, feathers, or skin. There are additional benefits too: with no slaughter process, the risk of E. coli and other bacterial contamination is significantly reduced; antibiotic use can be eliminated; and instead of clearing forests and grasslands for animal feed, we can actually return some land to native prairies and forests to capture carbon.

Efficiency

Conversion rate

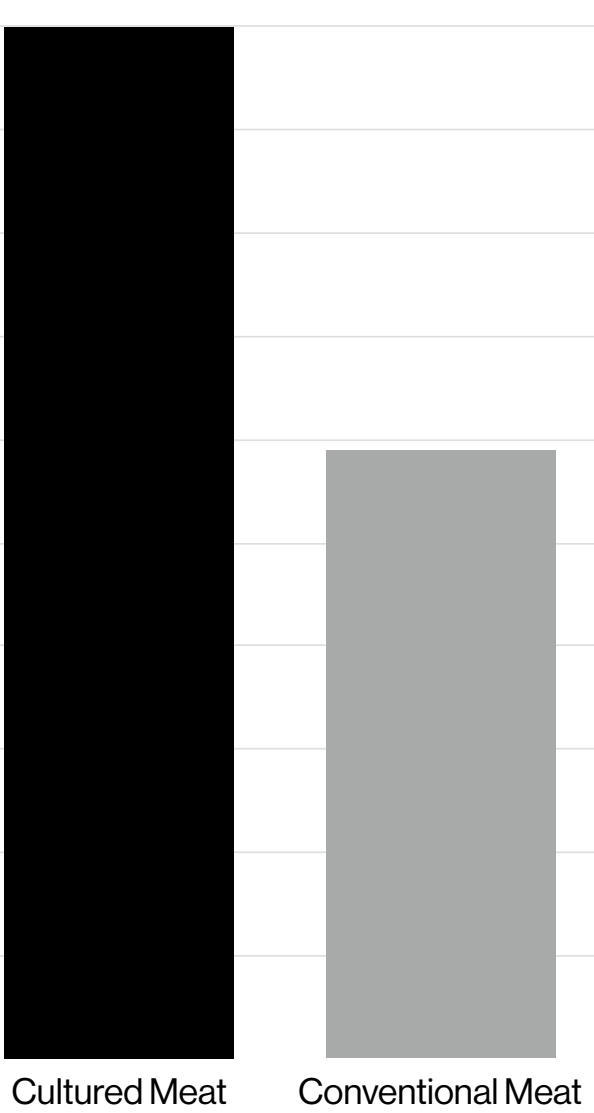
The amount of grain or crops used to feed an animal or cells to the amount of meat produced.



OECD, FAO, A.T. Kearney Analysis

High value meat

The amount of edible meat found in the final product, excluding byproducts like bones and feathers.



USDA, ERS

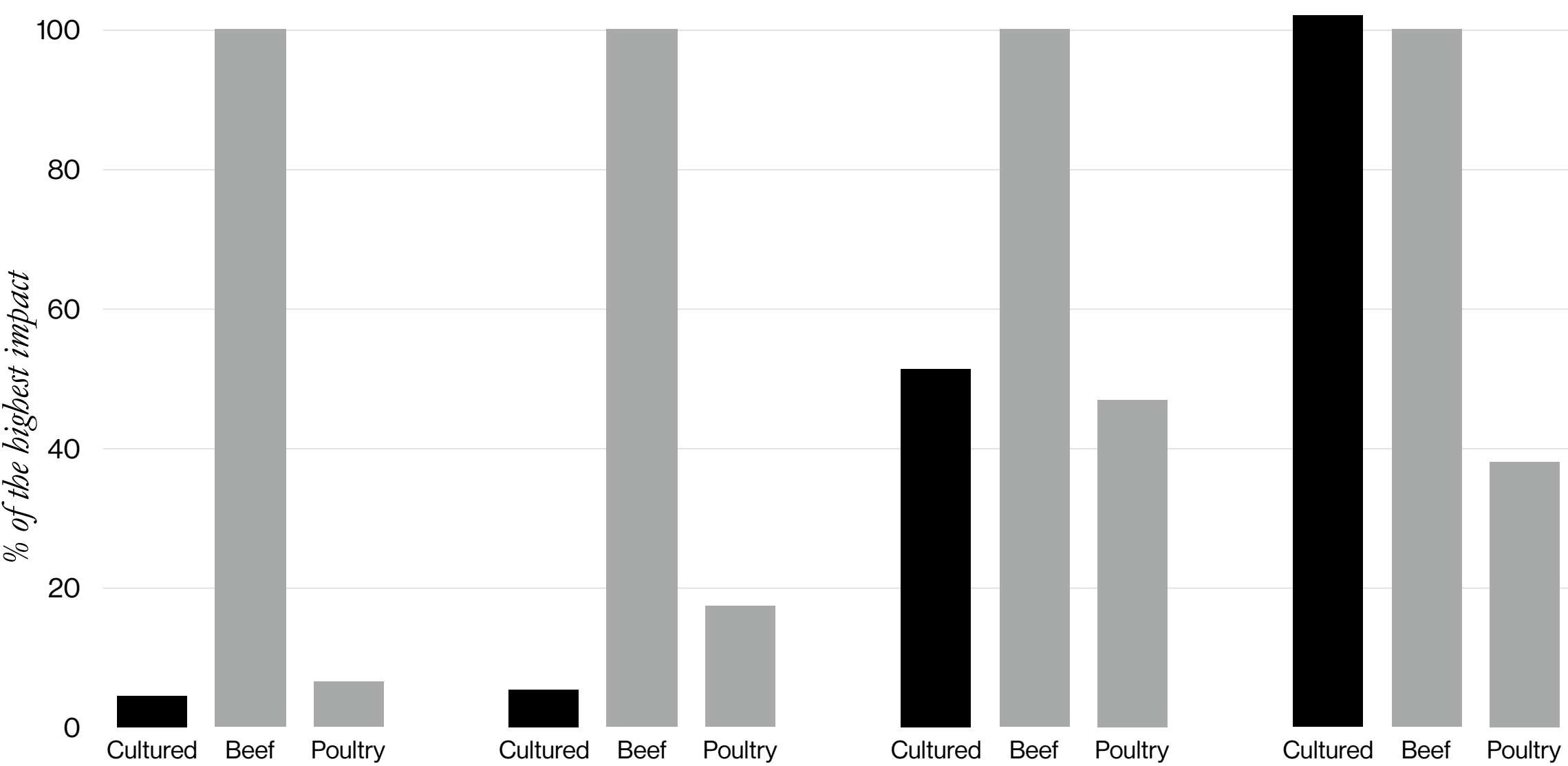
Environmental Impact

GHG emissions Kg CO2e

Land use m²

Water use m³

Energy use GJ



Comparison of environmental impacts of cultured meat with European livestock meat. Tuomisto, H. L., and M. J. de Mattos. 2011.

While studies vary, most research suggests the technology will dramatically improve the environmental impact of meat production, with largest gains towards reducing greenhouse gas emissions and being able to return land to pasture. While energy use is higher, this impact can be mitigated through an ongoing transition to clean energy.

Radically transparent

Consumers are rightly demanding more transparency in the food they eat. 94% now say it's important that brands and manufacturers are transparent about what's in their food and how it's made.¹

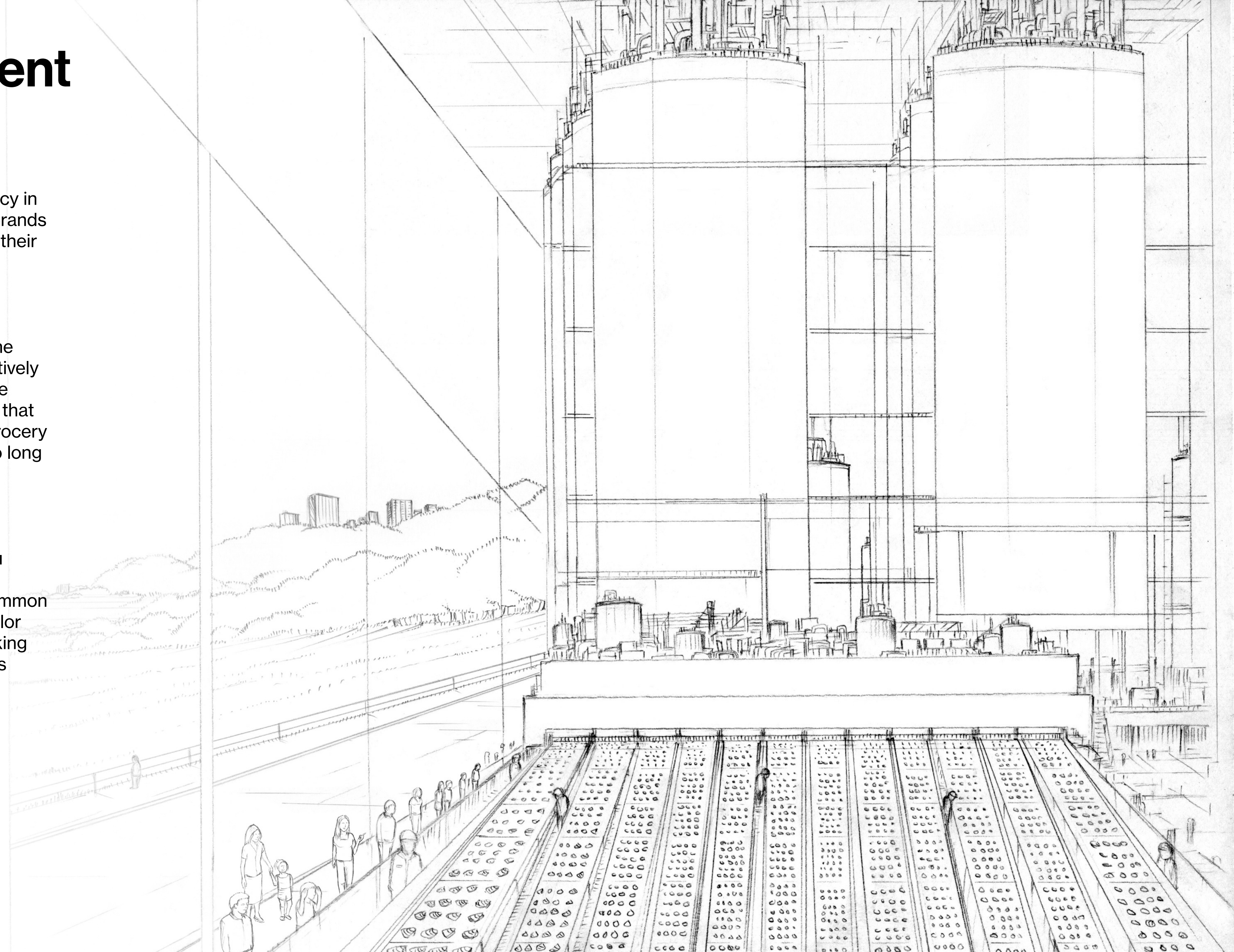
Yet, our food system remains largely in the dark.

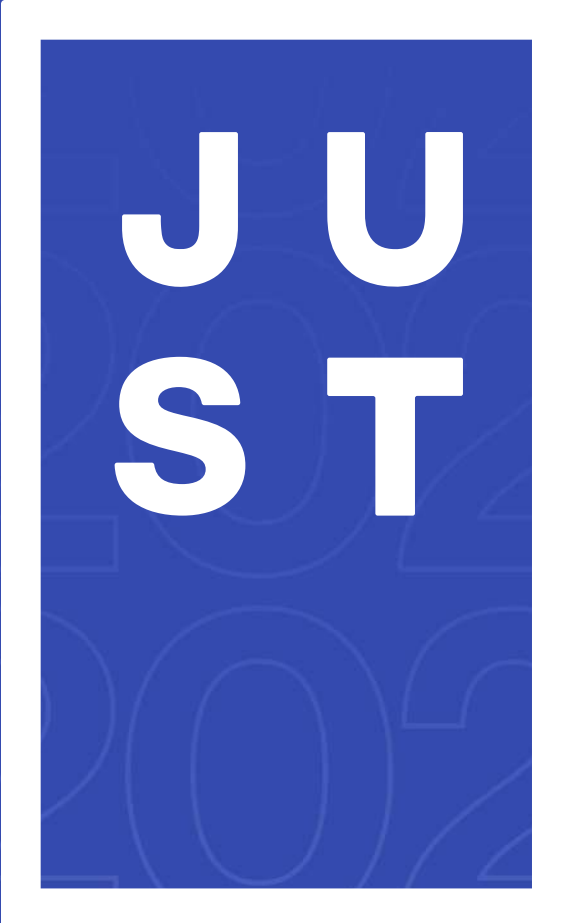
And there's a reason why: consumers would never want to see the way much of our food is made or the ingredients companies pack into them so we addictively buy more. Many of us try not to even think about the animal confinement or dangerous slaughterhouses that make our meals possible. And when we scan the grocery shelves for products, too many labels are either too long to read or completely unrecognizable.

We are working to change this.

It's why we've shared a video² of all 10 steps that it takes to make our JUST Egg product. We show you how we mill the beans, isolate the protein, mix the product, and bottle it for your purchase. We use common ingredients—like turmeric, carrot, and onion—to color and flavor JUST Egg, and we are continuously working to make our ingredients even simpler, and our labels cleaner.

¹The 2016 Label Insight Food Revolution Study ²10 Steps





Impact Report

