



# FARM FOUNDATION® FORUM

DEFINING SUSTAINABILITY: INDUSTRY  
LEADERS ON ACTIONABLE GOALS

DECEMBER 12, 2023



Today's webinar is made possible by a grant from Farm Credit

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# MARTHA KING

Vice President, Programs and Projects  
Farm Foundation

# MEET FARM FOUNDATION

A 501(C)(3) NON-PROFIT AT THE INTERSECTION OF AGRICULTURE AND SOCIETY



Farm Foundation is an  
**ACCELERATOR**  
of practical solutions for agriculture.

We accelerate  
**PEOPLE AND IDEAS**  
into  
**ACTION.**



## OUR MISSION AND VISION GUIDE OUR WORK

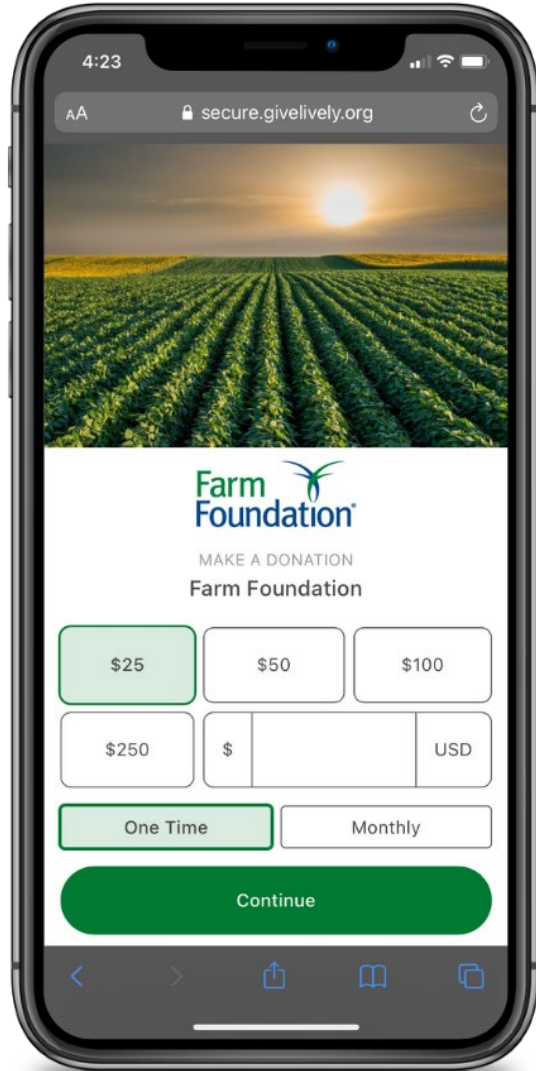
### **MISSION:**

To **build** trust and understanding at the intersections of agriculture and society.

### **VISION:**

To **build** a future for farmers, our communities, and our world.

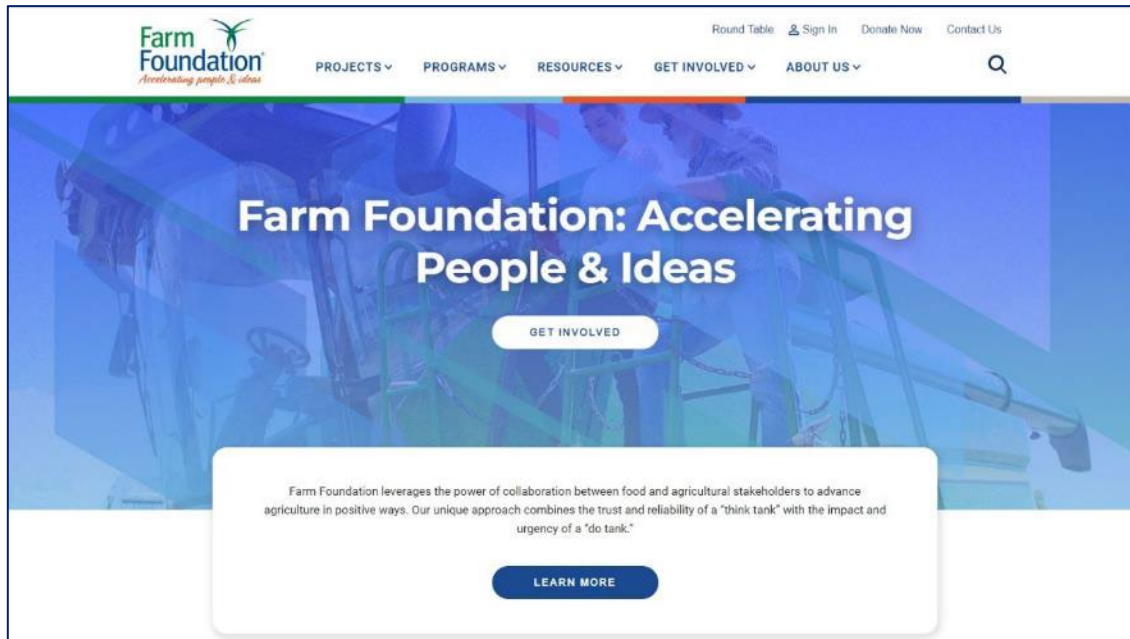
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## See link in chat function

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- Help us continue to provide valuable content like today's Forum

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# IMPORTANT NOTES

- Submit questions by clicking on the **Q&A Button** at the bottom of your screen.
- Please **include your name and company** so questions may be contextually understood.
- Due to **time limits**, we may not be able to ask all questions submitted.
- This Forum is being recorded and will be posted on our website at **farmfoundation.org** as well as the Farm Foundation **YouTube** channel.
- Please take the **short survey** at the conclusion of the Forum.





# FARM FOUNDATION® FORUM

## DEFINING SUSTAINABILITY: INDUSTRY LEADERS ON ACTIONABLE GOALS

NOVEMBER 12, 2023



Today's webinar is made possible by a grant from Farm Credit

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## TREY MALONE, PH.D. - MODERATOR

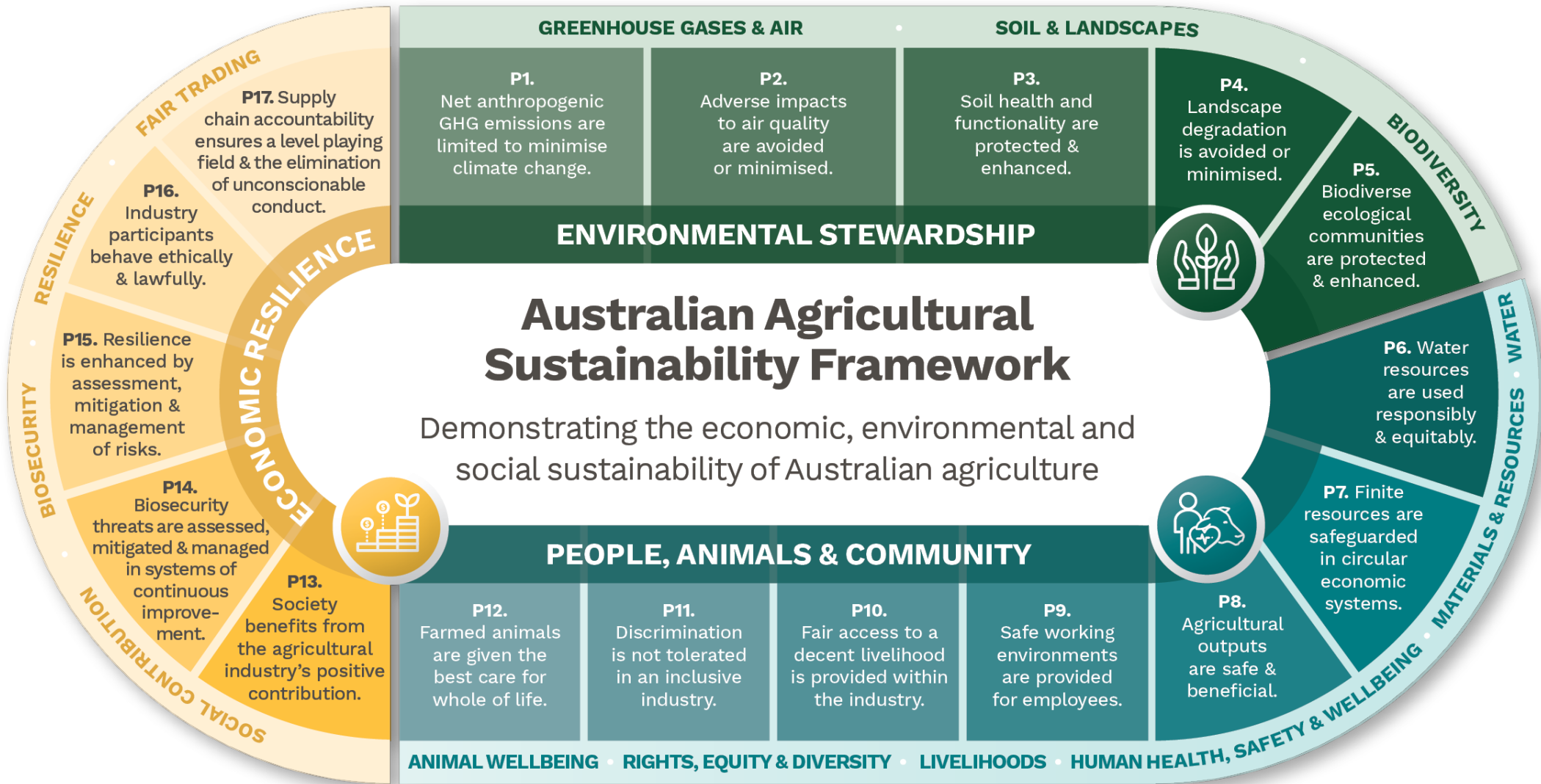
Assistant Professor, Department of Agricultural Economics  
and Agribusiness, University of Arkansas  
Farm Foundation Agricultural Economics Fellow





# RICHARD HEATH

Executive Director,  
Australian Farm Institute



## P1: Net anthropogenic emissions are limited to minimise climate change

- Criteria 1:** GHG emissions are reduced throughout lifecycle
- Criteria 2:** Carbon emissions are sequestered throughout lifecycle
- Criteria 3:** Where necessary (if C1 & C2 are impracticable) GHG emissions are offset throughout lifecycle by purchasing recognised credits or participating in recognised projects

### Indicators & Metrics

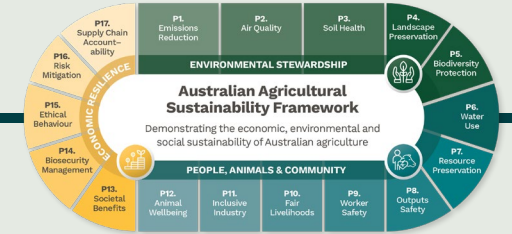
Net industry emissions	→	✓
Industry emissions intensity	⊘	✗
Share of energy from renewables	→	✗
Emissions per kg liveweight livestock	↑	⊖
Emissions per tonne Hot Standard Carcase Weight (HSCW) livestock	→	⊖
Carbon sequestration in on-farm vegetation per area	⊘	✗
Nitrous oxide emissions	→	✓

### Progress

→
⊘
→
↑
→
⊘
→

### Reporting

✓
✗
✗
⊖
⊖
✗
✓



### KEY: graphics & terms

Progress towards the principle	Ability to report on indicators
↑ Moving in a positive direction	✓ Good access to multiple sets of robust data
→ Neutral / stayed about the same	⊖ Reasonable access to some reliable data
↓ Moving in a negative direction	✗ Limited access to some sets of unverified data
⊘ Unable to report	⊘ Insufficient data

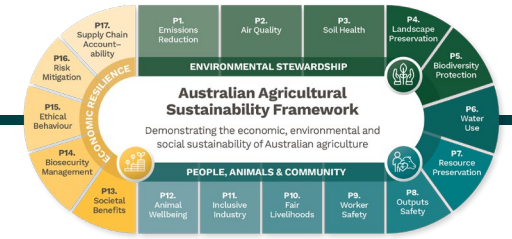
<b>Principles</b>	are overarching <u>statements</u> about a desired outcome.
<b>Criteria</b>	are <u>conditions</u> to be met to comply with a principle.
<b>Indicators*</b>	are measurable <u>states</u> enabling assessment whether criteria have been met.
<b>&amp; Metrics*</b>	are <u>measures of quantitative assessment</u> which provide context via comparative data.
<b>Measures</b>	are non-contextual <u>numbers, figures, descriptions (i.e. data)</u>

\* NB: these two terms are often interchangeable

# AASF PRINCIPLE 1

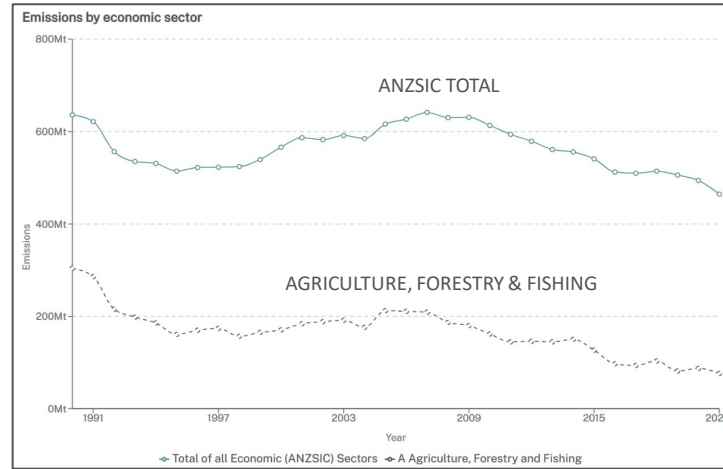


## P1: Net anthropogenic emissions are limited to minimise climate change



### Examples of progress

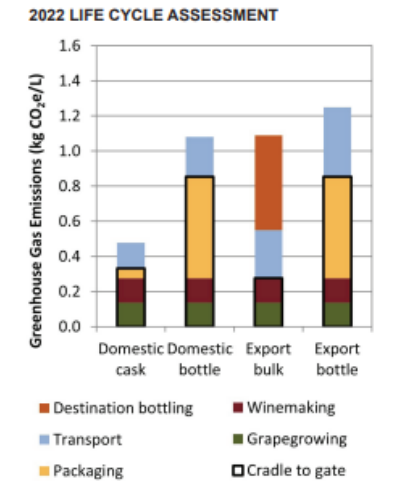
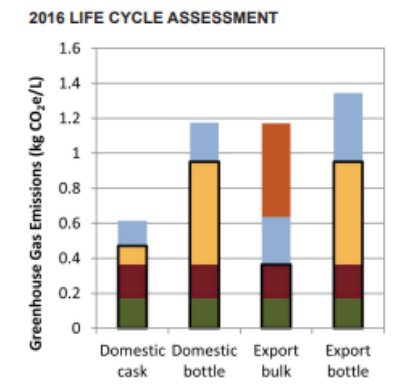
- Australian beef industry **reduced net emissions (CO<sub>2</sub>e) 64.1%** 2005 > 2020
- Sheep meat & wool emissions intensity **reduced by 9%** 2005 > 2020
- Aust. dairy industry **reduced emissions intensity 23.5%** 2010 > 2020
- Emissions from production / distribution of Aust. wines **reduced by 10%** 2016 > 2022



Emissions by Australian economic sector 1990-2021. Source: [DCCEEW National Greenhouse Gas Accounts](#)

INDICATOR	DATA	TREND
10.1 Percentage total CO <sub>2</sub> e reduced by beef industry from a 2005 baseline	<b>64.07%</b> (2020)	●
10.2 Net emissions: Mt of CO <sub>2</sub> e emitted by the beef industry	<b>45.21</b> (2020)	●
10.3 kg CO <sub>2</sub> e emitted per kg liveweight when raising beef	<b>13.1</b> (2020)	●
10.4 kg CO <sub>2</sub> e emitted per tonne HSCW when processing beef	<b>476</b> (2022)	●
10.5 Percentage CO <sub>2</sub> e captured and reused in processing	<b>10.5%</b> (2022)	●
10.6 Carbon sequestered in on-farm vegetation (Mt CO <sub>2</sub> e)	<b>28.42</b> (2020)	●

Australian beef industry GHG Emissions & Carbon Capture report. Source: [Australian Beef Sustainability Framework 2023 Annual Update](#)

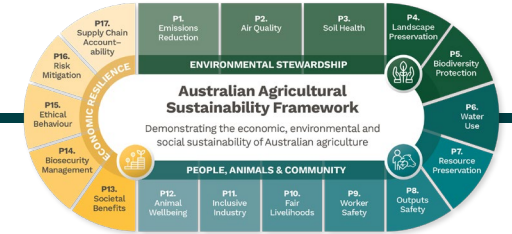


GHG emissions over the life cycle of Australian wine delivered to domestic and export markets, 2016-2022. Source: [AWRI](#)

# AASF PRINCIPLE 1



## P1: Net anthropogenic emissions are limited to minimise climate change



- Criteria 1:** GHG emissions are reduced throughout lifecycle
- Criteria 2:** Carbon emissions are sequestered throughout lifecycle
- Criteria 3:** Where necessary ... GHG emissions are offset throughout lifecycle by purchasing recognised credits or participating in recognised projects

Indicator	Sources	Indicator Alignment	Data Source
<b>1</b> <b>Emissions per kg liveweight livestock</b>	Australian Beef Sustainability Framework	Emissions per kg liveweight when raising beef	<a href="#">Integrity Ag &amp; Environment – E.SUB.0010</a>
	Australian Sheep Sustainability Framework	Emission intensity per kg liveweight (LW) when raising sheep	<i>(Likely as above but unclear)</i>
	Australian Chicken Meat Federation	Kg feed per kg liveweight produced	<a href="#">ACMF Current Footprint</a>
	<a href="#">Global Farm Metric Framework</a>	Global Farm Metric Framework Aim 1 – Climate	<i>No data collected – guidance framework</i>
		Global Farm Metric Framework Aim 13 – positive impacts of farming on people and planet increase and are valued	<i>No data collected – guidance framework</i>
		<a href="#">SDG 12.2: By 2030, achieve the sustainable management and efficient use of natural resources</a>	<i>No data collected – guidance framework</i>
	U.N. Sustainable Development Goals	<a href="#">SDG 2.4: By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production ...</a>	<i>No data collected – guidance framework</i>
	<a href="#">Taskforce on Climate-Related Financial Disclosures – Recommendation b.</a>	Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions and the related risks	<i>No data collected – guidance framework</i>
	<a href="#">Taskforce on Climate-Related Financial Disclosures - Recommendation c.</a>	Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets	<i>No data collected – guidance framework</i>
	<a href="#">Taskforce on Nature-Related Financial Disclosures Recommendations</a>	Greenhouse Gas Emissions	<i>No data collected – guidance framework</i>
Natural Capital Measurement Catalogue	Productive output per unit energy input	<a href="#">Natural Capital Assessment – Dependencies – Energy</a>	
<b>Carbon sequestration in on-farm vegetation per area</b>	Australian Beef Sustainability Framework	Carbon sequestration in on-farm vegetation	<a href="#">CSIRO – B.CCH.2301</a>
	Australian-Grown Horticulture Framework	Carbon sequestration of horticultural plantings (CO2e)	<i>Indicator data not yet gathered</i>
	<a href="#">SAI Platform Regenerative Agriculture Framework</a>	Carbon sequestration per area	<i>Indicator data not yet gathered</i>
	U.N. Sustainable Development Goals	<a href="#">SDG 2.4: By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems ...</a>	<i>No data collected – guidance framework</i>
		Global Farm Metric Framework Aim 1 – Climate	<i>No data collected – guidance framework</i>
	<a href="#">Global Farm Metric Framework</a>	Aim 13 – positive impacts of farming on people and planet increase and are valued	<i>No data collected – guidance framework</i>
		Aim 17 – Monitoring the impacts of farm practices on the farm and on the outside world drives constant improvement	<i>No data collected – guidance framework</i>
	<a href="#">Taskforce on Nature-Related Financial Disclosures Recommendations</a>	Greenhouse Gas Emissions	<i>No data collected – guidance framework</i>
<a href="#">Taskforce on Climate-Related Financial Disclosures – Metrics and Targets – Recommendation c.</a>	Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets	<i>No data collected – guidance framework</i>	



## P5: Biodiverse ecological communities are protected and enhanced

- Criteria 9:** Farms support a diverse range of beneficial flora and fauna species
- Criteria 10:** Farm-related ecosystems are functioning and thriving

### Indicators & Metrics

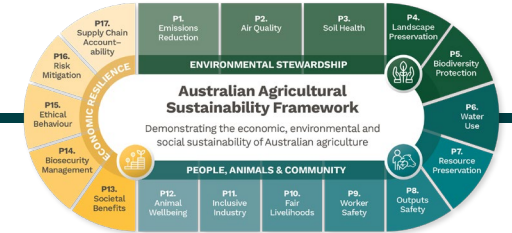
% Agricultural land actively managed for biodiversity outcomes	→	↓
Total net deforestation	↑	↑
% Agricultural operations actively engaged in pollinator protection	⊘	↓
% Total agricultural property with undisturbed native vegetation	↓	↓
Total number of species in farm area	⊘	↓

### Progress

### Reporting

### Work in progress

- [The Australian Farm Biodiversity Certification Scheme](#)
  - promote biodiversity friendly farming by certifying farms / businesses
- [Australian-Grown Horticulture Sustainability Framework](#)
  - Proportion of nursery plants sold that are Australian native or can provide biodiversity value
- [Australian Sheep Sustainability Framework](#)
  - Maintaining and increasing biodiversity in the sheep industry



### Examples of progress

- Carbon + Biodiversity (C+B) Pilot
- All Aus ag sustainability frameworks highlight biodiversity
- Net positive improvement in Aust. forest & woodland cover
- >50% farms protecting resources for conservation



OVERSIZE





# GREGORY BOHRER

Director, Natural Capital,  
Walmart

# Walmart Sustainability

Greg Bohrer, Director, Natural Capital  
Farm Foundation  
December 12, 2023  
[Gregory.Bohrer@walmart.com](mailto:Gregory.Bohrer@walmart.com)



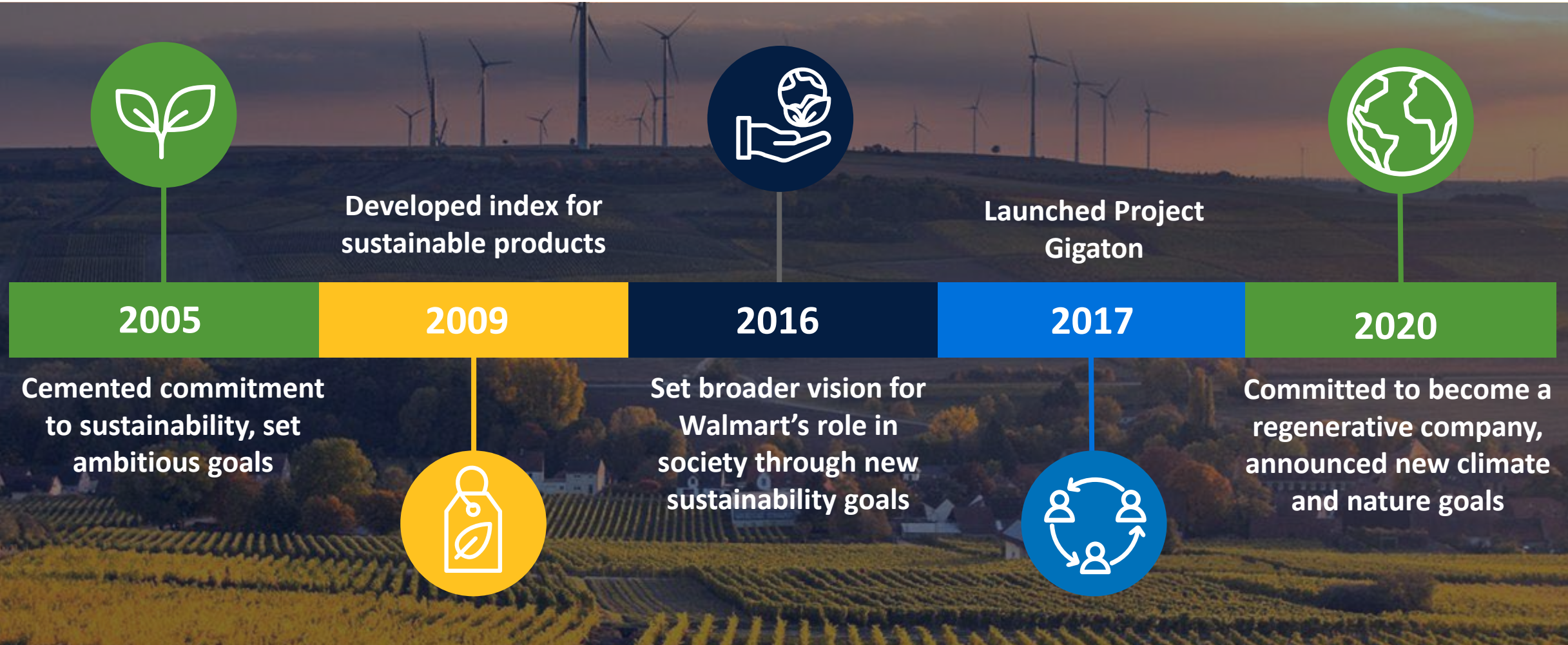
GLOBAL RESPONSIBILITY

# Our Path to Regeneration

# Walmart and Hurricane Katrina

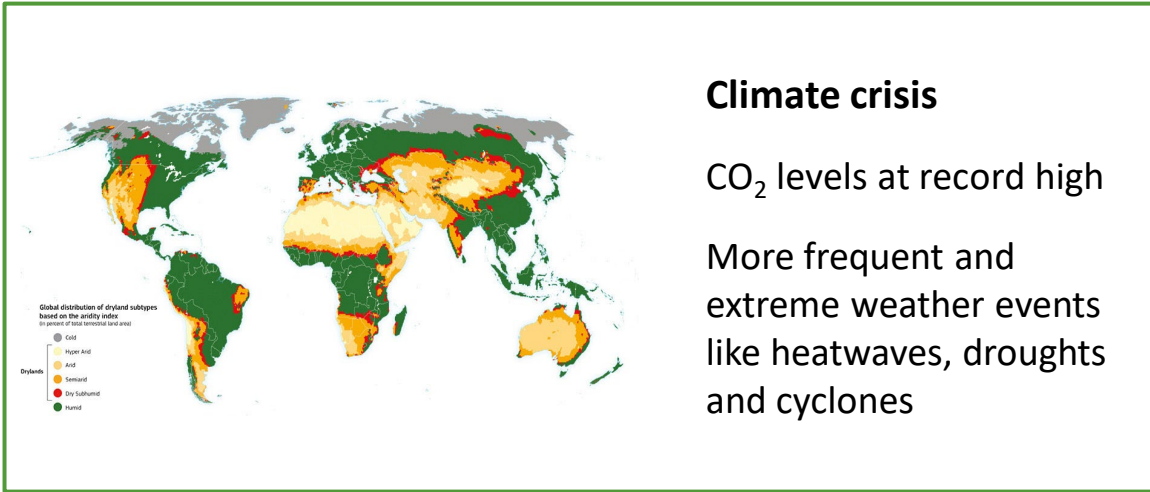


# Highlights from Our Journey



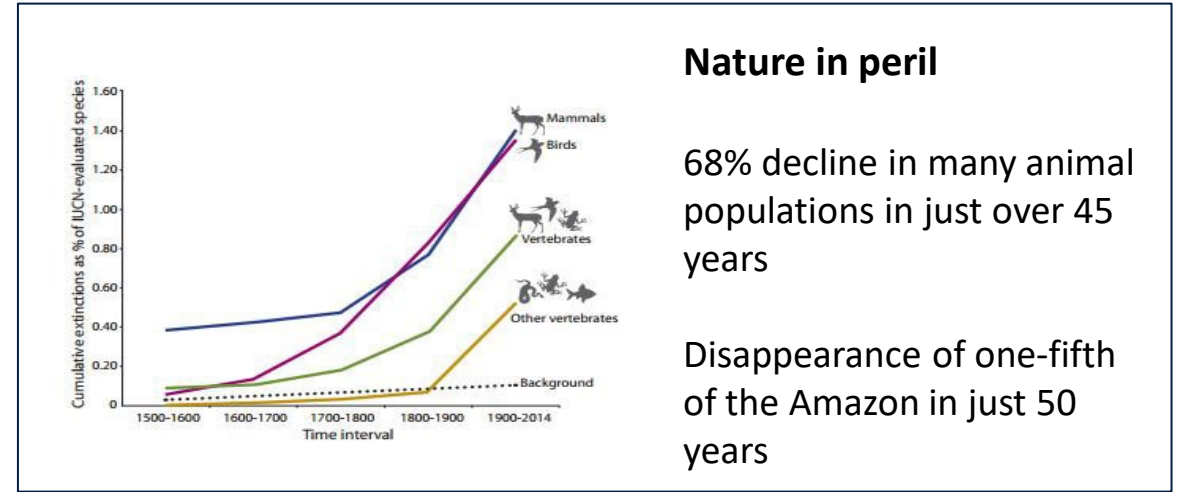


# Why Now?



## Climate crisis

CO<sub>2</sub> levels at record high  
 More frequent and extreme weather events like heatwaves, droughts and cyclones



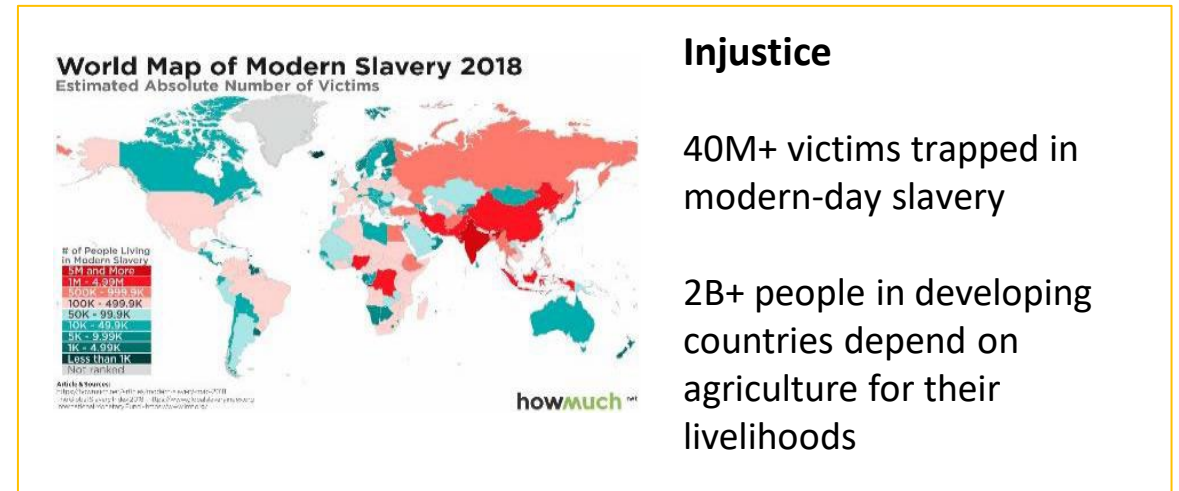
## Nature in peril

68% decline in many animal populations in just over 45 years  
 Disappearance of one-fifth of the Amazon in just 50 years



## Waste on the rise

Annual flow of plastic into the ocean set to nearly triple by 2040  
 One-third of all food produced in the world is never eaten



## Injustice

40M+ victims trapped in modern-day slavery  
 2B+ people in developing countries depend on agriculture for their livelihoods

Source: Climate: NOAA/ IPCC/ UCI; Nature: WWF Living Planet 2020, 2018; Waste: Pew Trusts / FAO; People: Global Slavery Index 2018 / FAO



## Our Customers Are #1 and They Care About Sustainability (But it Must be Premium-Free and Easy)

- **78% of consumers** say that a sustainable lifestyle is important to them and **30% are more likely** to purchase products with sustainable credentials.<sup>1</sup>
- Products making environment and social responsibility-related claims averaged **28% cumulative growth** over the past 5-year period, versus **20% cumulative growth** for products without them.<sup>2</sup>

However, price premiums or complicated messaging act as barriers in this intention to action journey.

**We create value for our customers by addressing the issues that matter to them through our business – and aspire to make the more sustainable choice the everyday choice for them, without a price premium or sacrificing on quality or durability.**

1: [NielsenIQ](#) report 2022; 2: McKinsey & Company and NeilsonIQ joint [report](#), 2023.



“

Walmart is on a path to become a regenerative company, one dedicated to placing nature and humanity at the center of our business practices.”

---

**Doug McMillon**

President and CEO, Walmart Inc.

# Our aspirations and strategies for each issue aim for shared value and whole-system change through business, philanthropy and collaboration

## SOCIETAL IMPACT



Create  
shared value



Catalyze  
whole-systems  
change



**Lead through  
the business**



Use **philanthropy**  
to accelerate  
social impact



**Collaborate**  
with others

## BUSINESS IMPACT

# Our Approach

# Becoming a Regenerative Company: Walmart's Priority Issues

Our purpose: Helping people save money and live a better life

Through core products and services: Health and wellness, food, apparel and financial services



## Opportunity

- Good jobs and advancement for associates
- Growth for suppliers, sellers and local economies
- Equity and inclusion at Walmart and beyond



## Sustainability

- Climate and renewable energy leadership
- Zero waste in operations, products, packaging
- Regeneration of natural resources: forests, land, oceans
- Dignity of people in supply chains
- Sustainable product supply chains



## Community

- Serving communities
- Access to safer, healthier products and services
- Disaster preparedness & response



## Ethics & Integrity

- Highest ethical and compliance standards
- Strong corporate governance
- Engagement in public policy
- Digital citizenship
- Respect for human rights

# What does regeneration mean for sustainability?

## Our approach

**Our position:** We are a people-led, tech-powered omnichannel retailer dedicated to helping people save money and **live better**.

**Our commitment:** To become a regenerative company, dedicated to placing nature and humanity at the center of our business practices.



### Climate

Galvanize collective action to reduce emissions through our advocacy, supplier engagement, philanthropy, and innovation in product supply chain practices, while taking steps to strengthen resilience against climate change



### Nature

Foster sustainable production of commodities (regenerative agriculture and fisheries; preventing deforestation), transition operations to more regenerative practices, and support conservation and restoration of critical ecosystems



### Waste

Aspire to achieve zero waste in our global operations and work with suppliers, customers and communities to accelerate adoption of innovative packaging and products designed for circularity



### People

Create economic opportunities for people working in supply chains, and work with others to tackle the biggest risks to worker dignity

## WHY for Customer

- **Live better:** Shop intentionally and prioritize brands and products that align with things that matter
- **Trust and loyalty:** Products are at everyday low prices while being good for families, the people who made them and the planet

## WHY for Company

- **Shared value:** Addressing societal issues in ways that strengthen our business –for example, social license to operate, surety of supply, energy security, cost, risk management, new revenue streams, innovation

## WHY for Associates

- **Inspiring hearts and minds:** Purpose-driven work while playing a direct role in sustainability, across all teams/functions
- **Community effect:** Associates are our customers and little steps can make a big difference, both at work and at home

# What Does Regeneration Mean for Sustainability?



Spurring a circular economy, eliminating waste along the product chain



Decarbonizing operations



Restoring, renewing, replenishing and conserving natural resources



Adopting regenerative practices in agriculture, forest management and fisheries

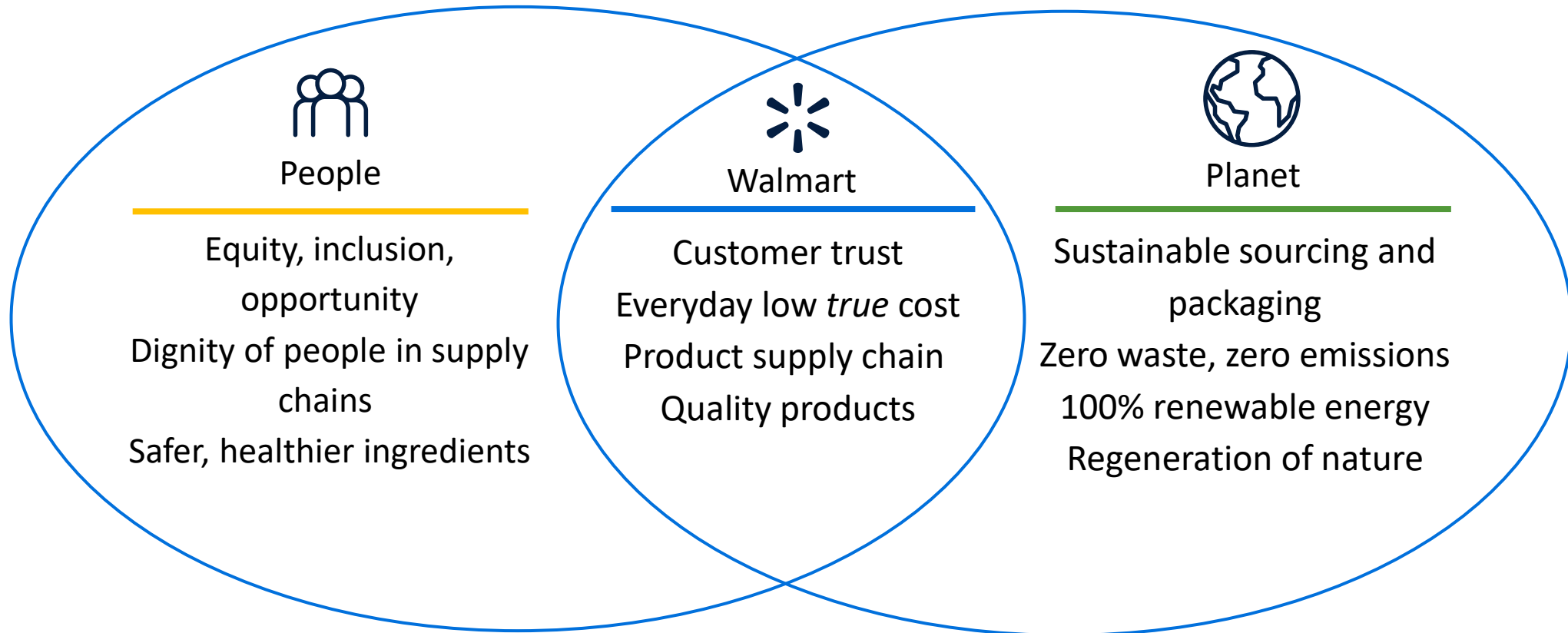


Advancing prosperity, equity for associates, customers, people across our supply chains



# Our Ambition

Become a regenerative company; to help people live better and restore and replenish our planet



# Our Sustainability Goals

Aiming to become a regenerative company to help people live better and restore and replenish our planet



## Climate

Target **zero emissions** across global operations by 2040

Achieve **100% renewable energy** by 2035

Reduce or avoid **1 gigaton of greenhouse gas emissions** across supply chain by 2030



## Nature

With the Walmart Foundation, help **protect, more sustainably manage or restore ~50M acres of land and 1M square miles of ocean** by 2030

Source **~20 key commodities more sustainably** by 2025

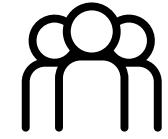


## Waste

Generate **zero waste** in key market operations by 2025

Achieve 100% private brand **recyclable, reusable, or industrially compostable packaging** by 2025

Aim for a 15% absolute reduction of our **virgin plastic footprint** by 2025



## People

Make **responsible recruitment standard business practice** by ~2026

Expand **economic opportunity for small-scale suppliers** through direct farm, inclusive sourcing

Invest additional **\$350B in products that support American jobs** by 2031

# Our Focus

# Our Sustainability Progress as of 2022/FY23\*



## Climate

**46%** of global electricity needs supplied by renewable sources in 2021

**23.2%** reduction in scopes 1 and 2 emissions (2021 vs. 2015 baseline)

**>5.2K suppliers** engaged in Project Gigaton and **>750M metric tons of CO2 emissions** reduced or avoided since 2017 (according to supplier reports)



## Nature

**2M acres of land conserved** through the Walmart Acres for America program

**\$43M** invested by the Walmart Foundation to help protect, restore, and/or more sustainably manage nature since 2021

Investing in and working with suppliers to **source from place-based efforts**

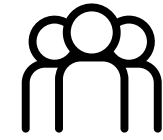


## Waste

**63%** of global private brand packaging estimated to be recyclable, reusable or industrially compostable in 2022

**78%** of global operational waste diverted from landfill and incineration in 2022

**96%** of Walmart U.S. private-brand food supplier-reported sales came from items carrying “Best if Used By” or “Use By” standardized date label in FY2023



## People

**99%** of Walmart U.S. fresh produce and floral net sales came from suppliers who have endorsed the Ethical Charter on Responsible Labor Practices in FY2023

**1M smallholder farmers** expected to be reached in India, Mexico and Central America through Walmart Foundation grants to expand market access since 2017



# Project Gigaton: Driving Action With Suppliers Toward Regeneration

Aiming to reduce or avoid 1 billion MT of emissions by 2030

Cumulative 750+ million MT CO2e avoided and 5,200+ suppliers engaged since 2017 (supplier reported)

+175 million MT CO2e avoided in FY2023 (supplier reported)



## Energy

Renewable Energy

Energy Efficiency

## Nature

Regenerative Agriculture

Forestry

## Waste

Food, Solid Waste Reduction

Recycling, Composting

## Packaging

Recycled Content

Recyclability Reduction

## Transportation

Optimized Shipping

Zero Emission Vehicles

## Product Use & Design

Design Optimization

Sustainable Sourcing

Major Contributors



ProjectGigaton™



NATURE

## Protecting, Restoring Nature

Transform food, product supply chains to be more regenerative.

- Walmart, Walmart Foundation set a goal to help **protect, more sustainably manage, or restore ~50M acres of land, 1M square miles of ocean by 2030.**
- Expands on our existing goal to **source 20+ key commodities like seafood, cotton, beef, etc. more sustainably by 2025.**
- Focus on critical landscapes that produce food, products to:
  - Continue supporting Acres for America's conservation efforts;
  - Promote regenerative agriculture practices, more sustainable fisheries management, forest protection, restoration;
  - Invest in, work with suppliers to source from place-based projects to help preserve natural ecosystems, improve livelihoods.



### NATURE SPOTLIGHT:

*Place-based partnerships*



NATURE

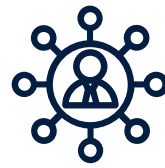
# Levers for Positive Impact



## Direct Sourcing & Private Brand

Work with suppliers to:

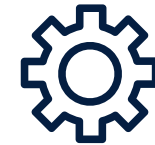
- Advance adoption of nature-friendly policies, certifications
- Source from established place-based projects
- Develop sustainably-sourced product, ingredient lines



## Supplier Engagement & Reporting

Work with suppliers to:

- Encourage the development and reporting of nature efforts
- Incubate supplier-led coalition efforts



## Capacity Building & Investment

Target investments to:

- Evolve standards to increase strength, credibility
- Support place-based projects, capacity



NATURE

## Arkansas Rice

Place-based initiative in collaboration with Indigo Ag to source our Great Value brand rice from Arkansas.

- Started in 2021, the initiative focuses on incentivizing landscape-level changes by working with multiple partners in the value chain.
- The project aims to **help farmers implement on-farm practices that demonstrate water and land stewardship**, including:
  - Crop rotation from legumes (such as soybeans);
  - Fertilizer management;
  - Zero-grade rice production;
  - Multiple-inlet irrigation with computerized hole-selection;
  - Furrow irrigation;
  - Wetting and drying irrigation.
- In 2022, the program expanded to encompass more than 9,500 acres of Arkansas farmland.
- Anticipated outcomes include:
  - A reduction in GHG emissions of more than 2,000 MT;
  - A reduction of 1.5 billion gallons of water usage relative to regionally standard practices.
- We have committed to further expand this initiative in 2023 to encompass an estimated 13,100 acres of farmland.



### NATURE SPOTLIGHT:

*Place-based partnerships*





## Northern Great Plains Beef

Placed-based partnership helping bring more sustainable, regenerative practices to the beef industry.

- The Walmart Foundation, McDonald's, Cargill invest ~\$6M to support WWF's grassland management efforts.
- Help combat climate change, reverse nature loss by:
  - Improving the health of **1M acres** of grasslands by 2025;
  - Increasing underground carbon storage;
  - Improving water quality;
  - Creating better wildlife outcomes.
- Ranchers are the heart of the Northern Great Plains and manage **70%+** of the remaining intact grass lands.
- Supports ranchers in planning and improving their operations ecologically, economically.

# Our Future

# What Does a Regenerative Future Look Like?



Less resources are needed because **what gets made gets used** – again and again



Natural systems of the planet **begin to heal**



Producers can **grow their businesses, livelihoods**



Communities have access to **safer, healthier products**



Drivers of systemic disparities have been tackled; society is **equitable and inclusive**



Workers in our global supply chains can **work without fear** of forced labor or harassment



People have access to **affordable, nutritious food** and know how to make better food choices



Harmful greenhouse gas emissions are reduced and sequestered to **preserve our climate**



# Sustainability Resources

To learn more, please visit the [Sustainability section](#) of the Walmart corporate site. Those interested in learning more about our philanthropic work to advance sustainability can visit the [Walmart.org site](#).

## BLOG POSTS

- [Walmart's Regenerative Approach: Going Beyond Sustainability](#)
- [Toward Regeneration, Together](#)

## VIDEOS

- [Sustainability Anthem](#)
- [2020 Regeneration Doug McMillon Speech](#)
- [Achieving Zero Emissions by 2040](#)
- [Sustainability Milestone Summit 2022](#)
- [Project Gigaton](#) - as featured at the 2022 Sustainability Milestone Summit
- [Creating a Circular Economy](#) - as featured at SMS22
- [Regeneration](#) – as featured at The 2023 Investment Community Meeting



## Sustainability Resources Cont.

Additional resources for each stakeholder group can be found below:

- **Suppliers** can find out more about working with Walmart on sustainability efforts, including Project Gigaton™, by visiting our [Sustainability Hub](#).
- **NGOs** can explore the latest news from Walmart on Sustainability through our [Corporate Blog](#).
- **Investors and other stakeholders** can find out about our approach to Environmental, Social and Governance (ESG) issues by visiting our [reporting site](#).
- **Customers** can shop for products that align with their values through our [Built for Better](#) site.
- **Associates** can get involved, stay up to date and connect with other sustainability advocates across Walmart through our [Workplace Sustainability Group](#).





# PHILIP "P.J." HAYNIE III

Owner/CEO,  
Haynie Farms/Arkansas River Rice







# SYLVIA WULF

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Farm Foundation Round Table Fellow

An aerial photograph of ocean waves, showing white foam and deep blue water, serving as the background for the text.

# AquaBounty

Farm Foundation: Defining Sustainability: Industry Leaders on Actionable Goals

December, 2023

# Aquaculture and Biotechnology

## Approaches to Sustainable Food Systems

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- Why Aquaculture and Why Biotechnology?
- AquaBounty's Approach and Business Model
- Next Generation Agricultural Biotechnology

# Population Growth and Environmental Challenges Creates Need for New Solutions



It is projected that Aquaculture must produce nearly 47.5 million additional tons of fish by 2050 to meet future demand<sup>3</sup>.

*We believe there is a better way!*

## Population Growth:

- Global population projected to grow to more than 9 billion people by 2050 – 26% growth in 30 years<sup>1</sup>, with a growing middle class driving increased protein demand
- Protein consumption is predicted to nearly double from 2017 to 2050, with marine-based proteins gaining a growing market share<sup>2</sup>

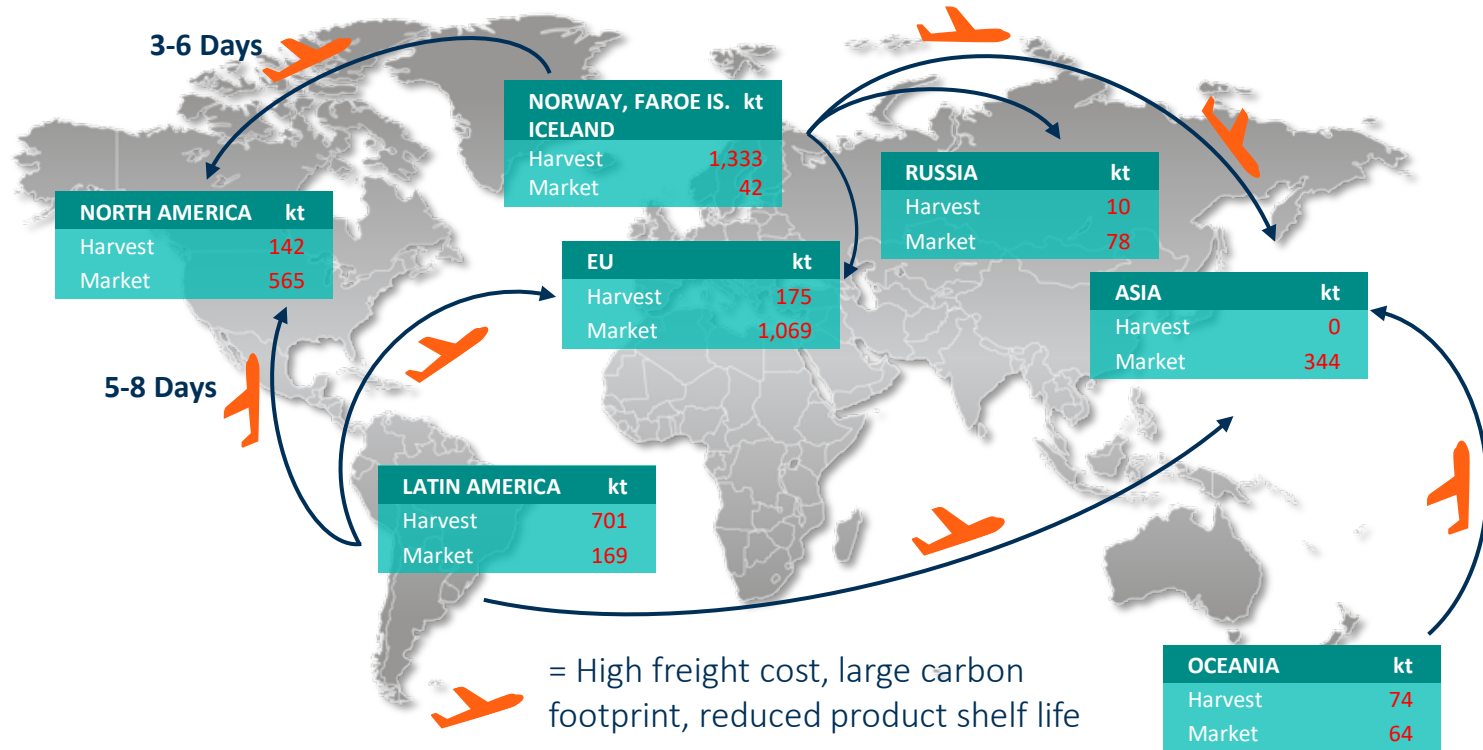
## Environment:

- More than 90% of world's fisheries are fully fished or overfished, according to FAO's The State of World Fisheries and Aquaculture 2020
- Critical impacts on water and energy usage & the need to reduce greenhouse gas emissions
- Viable sea cage farming has significant limitations:
  - Sea lice, algae bloom, ocean contamination

**The ocean and wild fisheries are not the answer  
to feeding our growing population**

# Atlantic Salmon – Large Market With Inefficient Supply Chain

## Land-Based RAS Farming Has Potential to Disrupt The Industry



**Global Atlantic Salmon Market<sup>2</sup> =**  
**2.6 million metric tons<sup>3</sup> worth \$17.1 billion<sup>3</sup>**  
 (Global supply is estimated to grow 4% annually from 2021 to 2026)

### Market Dynamics

#### Demand Drivers:

- Salmon is widely known to be healthy & nutritious<sup>1</sup>
- Growing population and rising middle class, bringing an increased demand for healthy protein
- COVID-19 drove demand for salmon for at home preparation
- Per capita consumption of seafood has increased at an annualized rate of 1.3% over the last five years<sup>5</sup>

#### Inefficient Supply Chain:

- Current sea-cage operations are highly dependent on-air freight
- Supply is constrained in production locations for environmental & regulatory issues related to production methods

1. Salmon Nutrition: Everything You Need To Know About Salmon – NFI, July 1, 2019. A Guide To Eating Seafood During Pregnancy – Dish On Fish, April 25, 2019  
 2. Kontali Analyse - Mowi Handbook 2021  
 3. FAO Statistical Data Search May 11, 2021

4. Undercurrent News (August 30, 2021): US Atlantic Salmon Market in Midst of Unprecedented Rebound  
 5. IBISWorld "Fish & Seafood Aquaculture in the US" April 2021

# AquaBounty is Well Poised to Take Advantage of Fragmented State of Aquaculture

## Market fragmentation plus favorable industry tailwinds ideally position AquaBounty to take market share

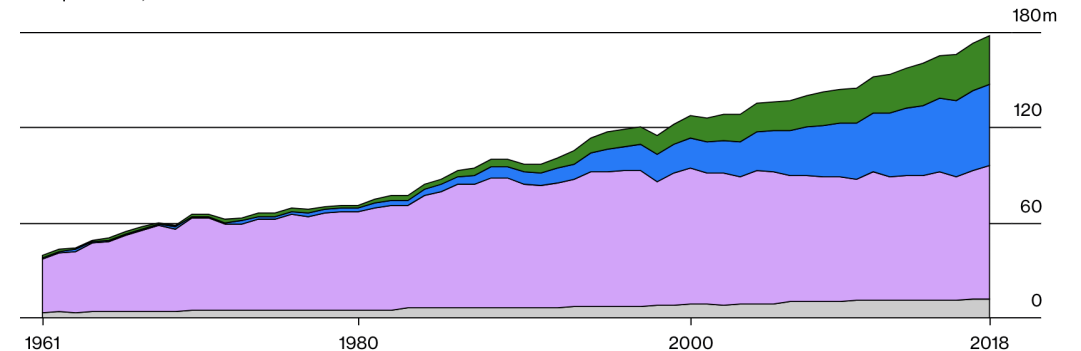
- Aquaculture now supplies the majority of the fish we consume
- Enormous growth potential in land-based farming with shrinking wild salmon sizes and marine-based salmon farms under mounting pressure to clean up or close down
- Fewer than 100 land-based salmon projects globally, some attracting significant interest from private equity and investment banks
- Although more capital intensive than sea based net pens, proponents say land-based salmon farms offer the best opportunity at making seafood sustainable while reducing carbon footprint

## Well-positioned over competitors to produce safe, secure, and sustainable salmon without premium pricing

### Sourcing the World's Fish

Global capture fisheries and aquaculture production, in metric tons

■ Capture fisheries, inland waters ■ Capture fisheries, marine waters ■ Aquaculture, inland waters ■ Aquaculture, marine waters



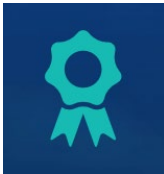
Excludes aquatic mammals; crocodiles, alligators, and caimans; and seaweeds and other aquatic plants.

Data: Food and Agriculture Organization of the United Nations

# Our Purpose and Our Values

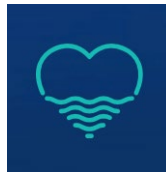
*“Feed the world by transforming aquaculture with technology, creating a safe, secure, and sustainable future.”*

While demonstrating our care for our people, our environment and our fish through our EPIC values



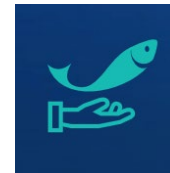
## EXCELLENCE

Doing our best everyday to learn new skills and solve real problems that lead to a better world, a rewarding workplace and fulfilled customers.



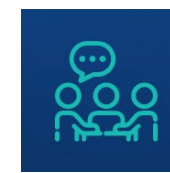
## PASSION

Embracing an authentic belief in our mission and purpose. Doing what we love and loving what we do with dedication and energy.



## INNOVATION

Pioneering change by enabling courage, curiosity and creative thinking. Seeking continuous improvement of methods, practices and technologies.



## COLLABORATION

Respecting our differences as we work together to achieve shared success with humility, compassion and open-mindedness.

*Sustainability (ESG) is fundamental to our Purpose and EPIC Values and a critical foundation as to how we operate our business, deliver results and drive continuous improvement throughout our operations ESG ensures disciplined focus on Sustainable Risk Management.*

# AquaBounty's Journey

**2003**

First regulatory study to the FDA for a New Animal Drug Application (NADA)

**1995**

FDA issues INAD # for AAS salmon

**1989**

First AquAdvantage® (AAS) line was created

**2008**

- FDA approves AquaBounty Canada's hatchery
- AquaBounty Technologies begins construction of a land-based aquaculture farm in Panama

**2009**

Submits final regulatory study to the FDA

**2010/11**

FDA concludes AAS is indistinguishable from Atlantic salmon; safe to eat; and poses no threat to the environment

**2016**

- FDA Import Alert issued prohibiting importation of AAS into USA until labeling requirements announced by FDA
- Health Canada announces approval of AAS for production, sale and human consumption in Canada

**2018**

- Received approval from the FDA to raise AAS Salmon at the Company's Indiana farm
- Commenced production operations at the Indiana farm with traditional Atlantic salmon eggs

**2019**

- FDA lifts the Import Alert allowing importation of AAS eggs into US
- Environment and Climate Change Canada (ECCC) approved the Rollo Bay production facility for the commercial production

**2020**

- Broke ground in Pioneer, Ohio on 10,000 MT farm

**PRESENT**

- Continuous harvesting in Indian
- Broodstock facility in place in Canada
- R&D focus on breeding, genetics, health & nutrition

AquaBounty runs farms efficiently and effectively because we are committed!



# Our Operating Model is designed to facilitate Growth & Expansion

Our operating model allows us to seek out opportunities to grow organically through our internal expertise and inorganically through M&A, JV or investments



## RAS Farming Expertise

- Translatable to new species
- RAS technology improvements in biofiltration, fish husbandry, water quality

## Technology

- Breeding and genetic improvements in salmon and other species
- Fish Health and Nutrition including feed additives/ingredients
- Data solutions to improve operations or fish health
- Regulatory expertise facilitating required approvals

Safe, Secure & Sustainable

# AquaBounty Salmon: Better for the Environment. More for Consumers.

Product of U.S.A.



Better for the Environment. More for Consumers.

## CONSISTENT: Domestic Salmon Supply

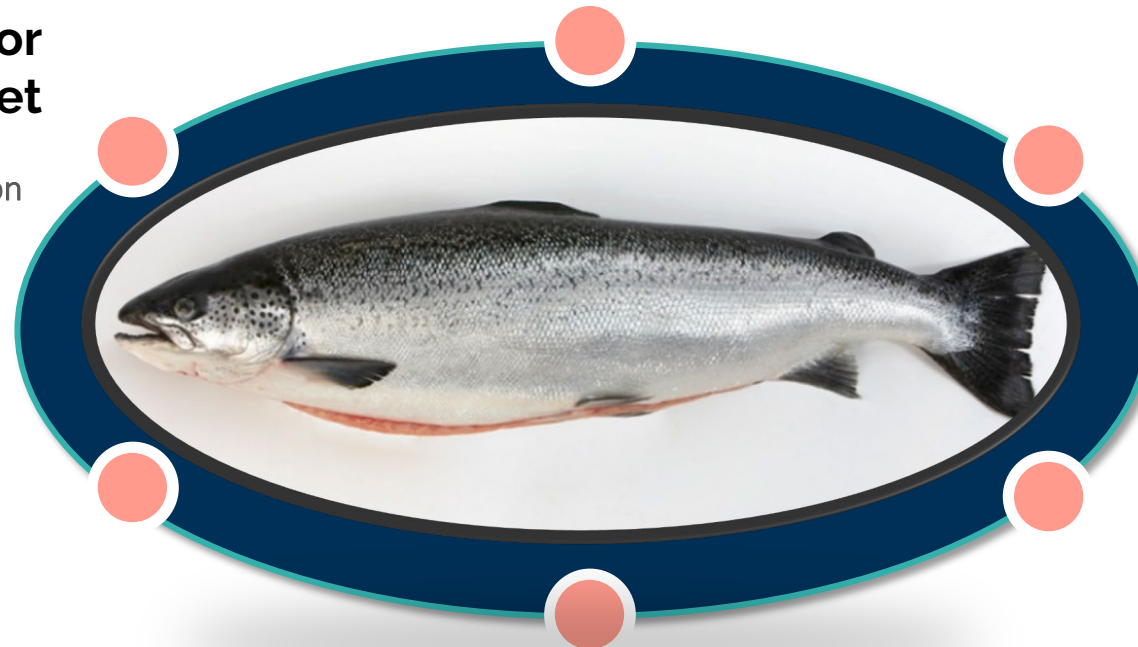
Optimized conditions and carefully monitored, land-based fish farms provide a consistent supply of salmon raised in the U.S.

## SUSTAINABLE: Good For Planet

Greater than 95% water recycled.  
Reduced transportation to consumption results in lower carbon footprint compared to other farming practices  
Waste streams utilized for energy and farming inputs

## EFFICIENT: Less Feed Used

Improvement in Feed Conversion Rate (FCR)<sup>1</sup>



## FRESH: Close Key Markets

Atlantic salmon raised near consumer consumption and delivered fresh

## SECURE: Biosecurity

Designed to prevent escapement and impacts on broader ecosystem and protects against exposure to disease and parasites.

## SAFE: No Antibiotics or Contaminants

Disease-free environment reduces the risk of infections commonly seen in sea-cage farming

1) Effects of combined 'all-fish' growth hormone transgenics and triploidy on growth and nutrient utilization of Atlantic salmon (*Salmo salar* L.) fed a practical grower diet of known composition – Elsevier, May 24, 2013

# Our Operations: Built for Smart and Sustainable Growth



# Optimizing Current Technology While Innovating for the Future

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- Biotechnology leader providing molecular solutions that address problems & opportunities for the global aquaculture industry
- World Class operator of land-based Recirculating Aquaculture Systems
- Committed to the excellent husbandry and nutrition of fish

Seafood Genetics	RAS Technology Enhancements	Nutrition and Disease
<p>Improving &amp; delivering enhanced traits, particularly in salmon:</p> <ul style="list-style-type: none"><li>○ Selective breeding</li><li>○ Gene editing</li><li>○ Accelerated trait delivery</li></ul>	<ul style="list-style-type: none"><li>○ Land-based aquaculture experience expanded to additional species</li><li>○ Maximize system performance</li><li>○ Biofilter optimization</li><li>○ Biomass optimization</li><li>○ Energy efficiency</li></ul>	<ul style="list-style-type: none"><li>○ Better feed formulations</li><li>○ Sustainability of feed</li><li>○ Improve RAS performance</li><li>○ Enhanced performance &amp; resilience</li><li>○ Nutritional profile</li></ul>

# AquaBounty Continues to Achieve Key Milestones

## Scaling the Business

- Made strong strides against our long-term plans to scale commercial production and **expand production capacity**
- Selected Pioneer, OH as location for our **technologically advanced, modern RAS farm**; broke ground in Q1 2022
- Construction progressing on the hatchery and early-rearing areas to increase egg/fry production
- Ramping R&D/Technology investments to support operational improvements

## Fine Tuning Production

- Implemented primary processing capability in Indiana farm
- **Continuous harvesting and sale of (GE) salmon** since Q2 2021
- Converted 250 MT facility in PEI to Broodstock facility for **production of both GE and conventional salmon eggs** to meet internal demand and to sell conventional eggs externally

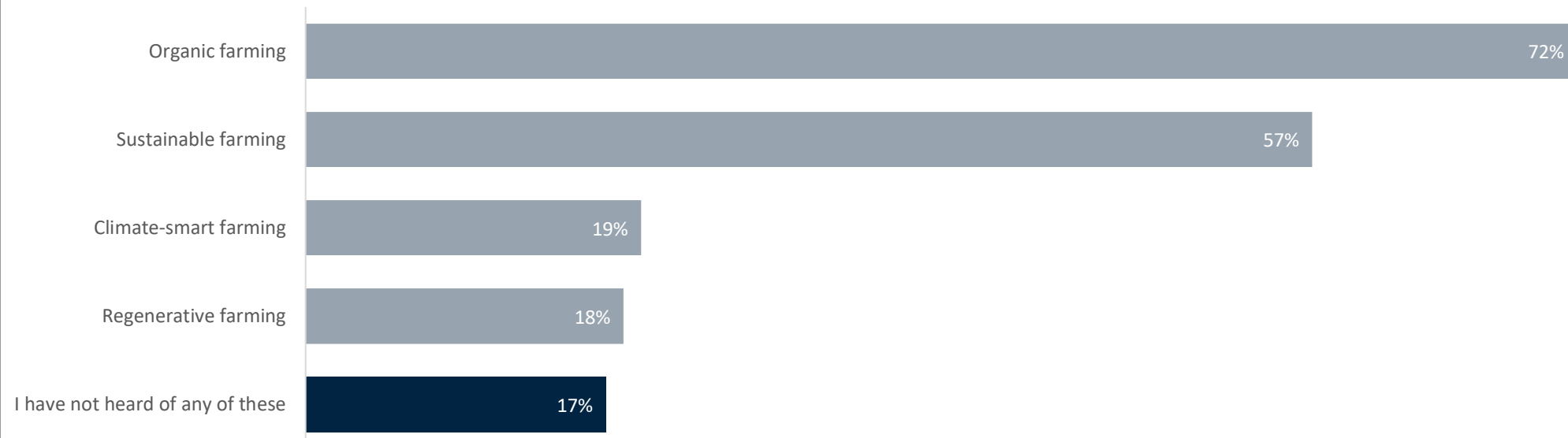
## Commercialized the Business

- **Robust communications platform** in place to engage consumers, customers and the culinary community
- On-going dialogue with **various sales channel partners** to continue refining messaging and pricing
- All harvested GE salmon continue to be sold with demand building
- Indications of interest in **long-term supply agreements**

## Bolstering our Balance Sheet

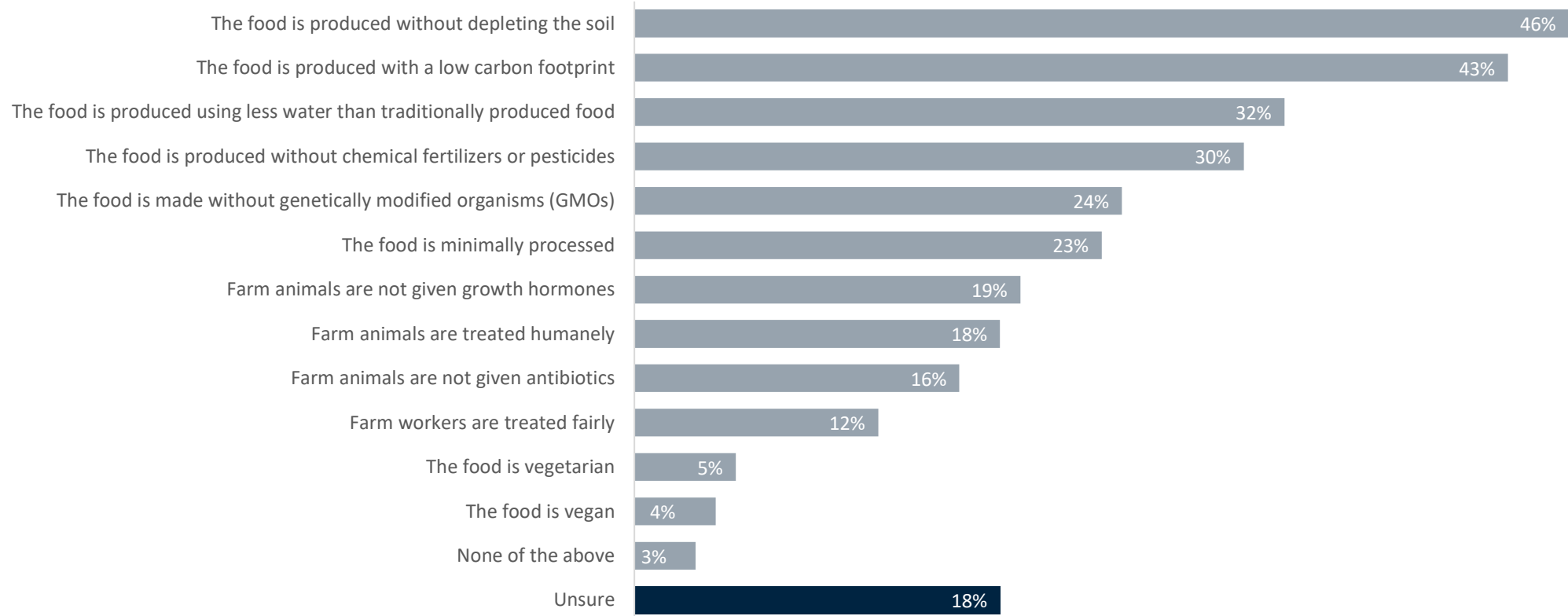
- Completed four equity transactions, providing **net proceeds of \$224 million**
- Toledo-Lucas County Port Authority board has **approved the issuance of up to \$425 million in bonds** to support the financing of the Ohio Farm project
- **Wells Fargo Corporate and Investment Banking** to underwrite and market the bond placement

## Which, if any, of the following phrases have you heard of?



Base: All respondents

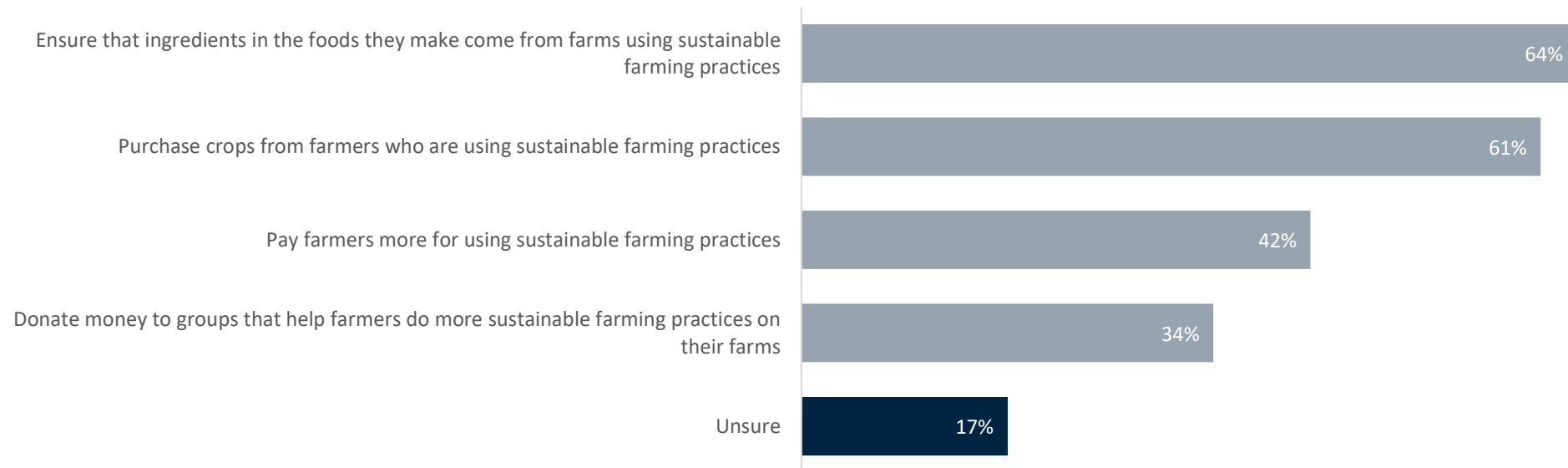
What do you think the phrase "sustainable food" means, as far as you know?  
Please select all that apply. Just make your best guess if you aren't sure.



Base: All respondents

Which, if any, of the following would you expect a company that says that it advances sustainable agriculture to do?

Please select all that apply. Just make your best guess if you aren't sure.



Base: All respondents



# Agriculture Priorities to Strengthen the Bioeconomy

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**GROWING THE BIOECONOMY IS CRITICAL TO SOLVING SOCIETAL  
CHALLENGES**

<b>Grow Trust in Innovation</b>	<b>Address Climate Change and Food Security</b>
<b>Improve Regulatory and Approval Processes to Promote Innovation</b>	<b>Increase Market Access and Acceptance</b>

# Thank you

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# THANK YOU

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