# PURPOSE LED, PERFORMANCE DRIVEN Sustainability.

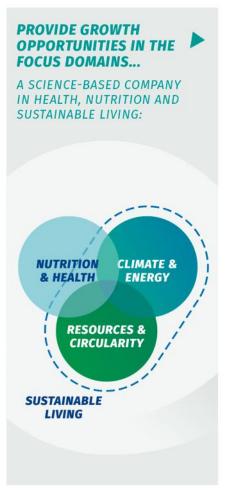


David Blakemore
President DSM Animal Nutrition and Health
Kaiseraugst, Switzerland



### PURPOSE LED, PERFORMANCE DRIVEN





### **IMPROVE**

Improve and adapt our own operational impact by further improving safety, decreasing our emissions and stepping up our use of renewable energy.

### **ENABLE**

Enable our customers and partners to deliver sustainable and healthy solutions for the planet and society.

### **ADVOCATE**

Advocate for the future we believe in and fully accept our responsibilities as an active part of society



## Solving two great challenges of our time - it's in our DNA

### **CLIMATE CHANGE**

**REDUCE** our own footprint

ENABLE low carbon economy ADVOCATE climate action



DSM # 1 in our industry



DSM # 2



Carbon pricing leadership



DSM # 7 Corporate Knights A global science-based company active in health, nutrition and materials

Recognized for impactful work in malnutrition and sustainable solutions

Ranked 2<sup>nd</sup> in Fortune Magazine's 2017 Change the World list for positive social impact<sup>1</sup>



1. Fortune, <u>This Former Chemical Company</u> Went 'Green' - and It's Stock Took Off

### **MALNUTRITION**















## Healthy, balanced nutrition within planetary boundaries

### Our key nutrition goals



Advocate healthy, balanced nutrition



Increase the nutrient content & quality of feed & food



Enable the feeding of a growing population within the natural resources available



Reduce the eco-footprint of producing food (keep within planetary boundaries)



# For our animal nutrition business we focus on six platforms for sustainable animal production





















We work at species and country level to make tangible, measurable impacts

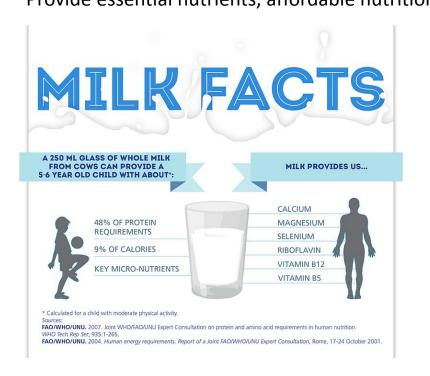




### Dairy plays an important role in feeding the world:

Providing nutrient-rich and affordable foods & drinks and supporting 1 billion people's livelihoods

### Dairy products are key to nutrition and health Provide essential nutrients, affordable nutrition



### **Cows are unique converters**

Consume non-edible substances to produce high-quality protein



### They support our socio-economic situation

Globally, one billion livelihoods tied to dairy





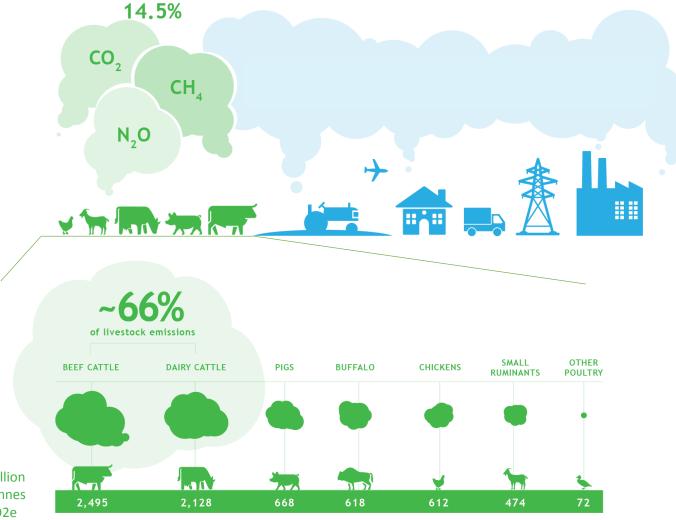
### Unfortunately, dairy cattle is also an important contributor to global climate change

14.5%

Of Green House Gasses (GHG) globally originate from livestock sector

~66%

Originate from cattle sector

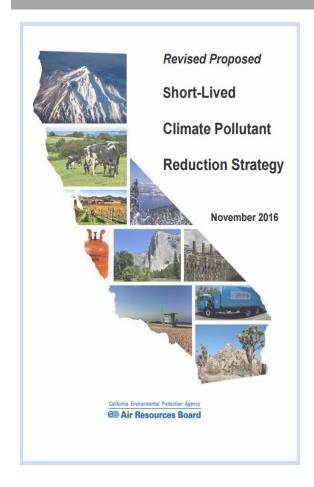


million tonnes CO<sub>2</sub>e



## In California dairy farmer and milk cooperatives are taking action to address sustainability and social responsibility and deliver on targets

**Statewide 2030 Targets for GHG** Reductions Below 1990 Levels

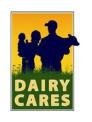


40%

Reduction in methane emissions\*

40% Reduction in F-gases

50% Reduction in black carbon



Flevates and builds awareness of California dairy sustainability issues and solutions



DFA plans to reduce enteric emissions through best practices (e.g. genetic selection, diet optimization, rumen modifiers) and vield improvements

Committed to reduction of 10 MMT CO2 through LAND O'LAKES, INC. Project Gigaton. 100 percent of farmer member's milk supply will be assessed for reduction through the Sustain platform by 2025.



>60% of water used at facilities is recycled and reclaimed water



## New Zealand - 10 years of cooperation across private and public sector to enhance sustainability of dairy



### Government

Target carbon neutrality by 2050. Zero carbon bill includes targets for CO2, methane and nitrous oxide

### Private-Public research

Pastorial Greenhouse Gas Resource Consortium established to develop solutions to reduce GHG impact.

Across sector ~20m NZD annual spend.



### **Dairy companies**

Increasingly making public commitments, and rewarding farmers with premiums >15 cents/kg MS for good stewardship and environmental practices

## Dairy players and Governments across Europe are stepping up commitments and efforts to reduce their GHG emissions

### FrieslandCampina

Launching a new Top Sustainable Dairy Line in 2019

**NL** Government

NL Gov. Has set a target to

the Dairy sector to reduce

methane by 1 Mt CO2e

### Norway

Norway as a country aims to be Carbon Neutral in 2030!

#### **Valio**

Aiming to become Carbon

Neutral in 2030! Voted most
sustainable company in Finland

### **Barry Callebaut**

Aims to be Carbon Neutral in 2025 and using 100% sustainable raw materials by then

#### Tesco

Tesco Sustainable Dairy Group provides all of its 720 farmers with a carbon assessment performed by an expert consultancy and aims to reduce its GHG footprint by 60% in 2025 to reach carbon neutral in 2050

#### **Danone**

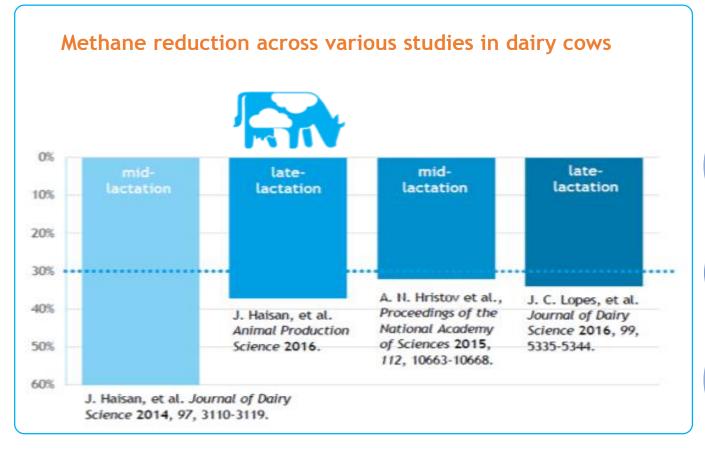
Aims to be Carbon Zero in 2050 and reduce ist GHG by 50% in 2030!





## Having an effective solution for enteric methane could be an important tool

### 3-NOP a promising solution



Journey begins in 2008

Product development

~30% methane reduction

- strong

collaboration

Preparing for Registration globally

Recognized the potential impact of reducing enteric methane from ruminants

Intense collaboration among scientists, dairy and beef sector/value chain, external partners and experts in nutrition, biology, chemistry, engineering and analytics

21 Peer-reviewed studies have shown that 3-NOP has the ability to consistently reduce enteric methane by ~30% for dairy, beef and sheep

Aiming to launch globally in years to come





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