

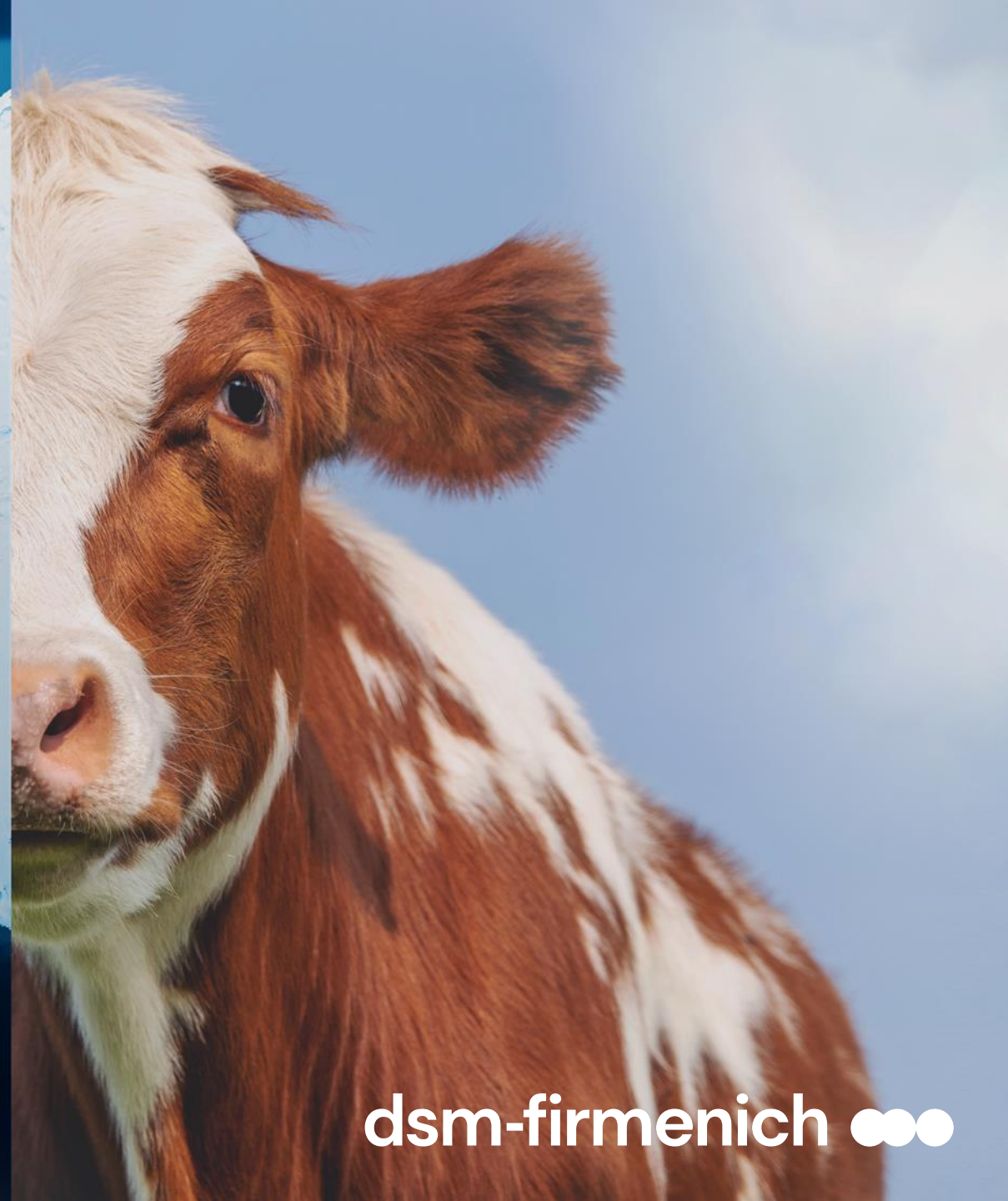
How cows can help us fight climate change

– an overview of lessons learned internationally

Mark van Nieuwland
Mark.Nieuwland-van@dsm-firmenich.com

Bovaer[®]

dsm-firmenich 



A journey of collaboration to enable impact at scale

100+ on farm trials/pilots and 70+ peer review publications and rapidly expanding set of commercial partnerships

16
North America

8 beef and 8 dairy trials with up to 82% methane reduction

Strategic partnership with:



63
Europe

48 dairy, 4 beef, 7 calf, and 4 sheep trials with up to 46% methane reduction

Collaboration with:



8
Latin America

5 beef and 3 dairy trials with up to 55% methane reduction

Collaboration with:



27
Oceania

15 beef, 6 dairy and 6 calf trials with up to 90% methane reduction

Collaboration with:



100+ trials/pilots conducted or ongoing across 21 countries



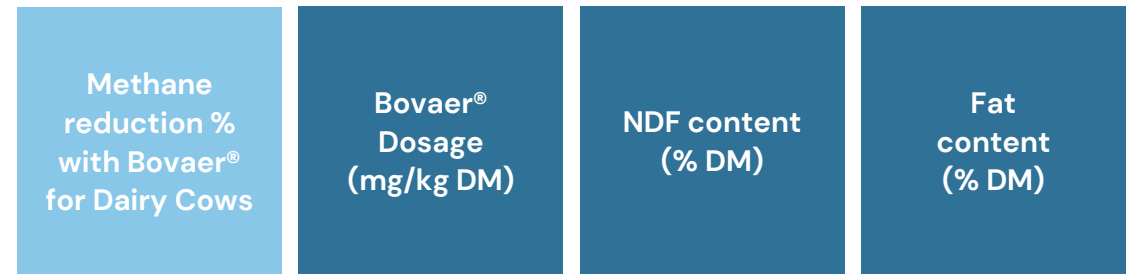
Bovaer® has already saved an estimated **85,000+ tons CO2e**

Broad set of scientific evidence and a robust predictive methane reduction formula are pre-requisites for scaling



For Dairy* the components included in the predictive formula for % methane reduction with Bovaer® are:

*For Beef we will follow the same process and the meta-analysis will be completed later in 2022

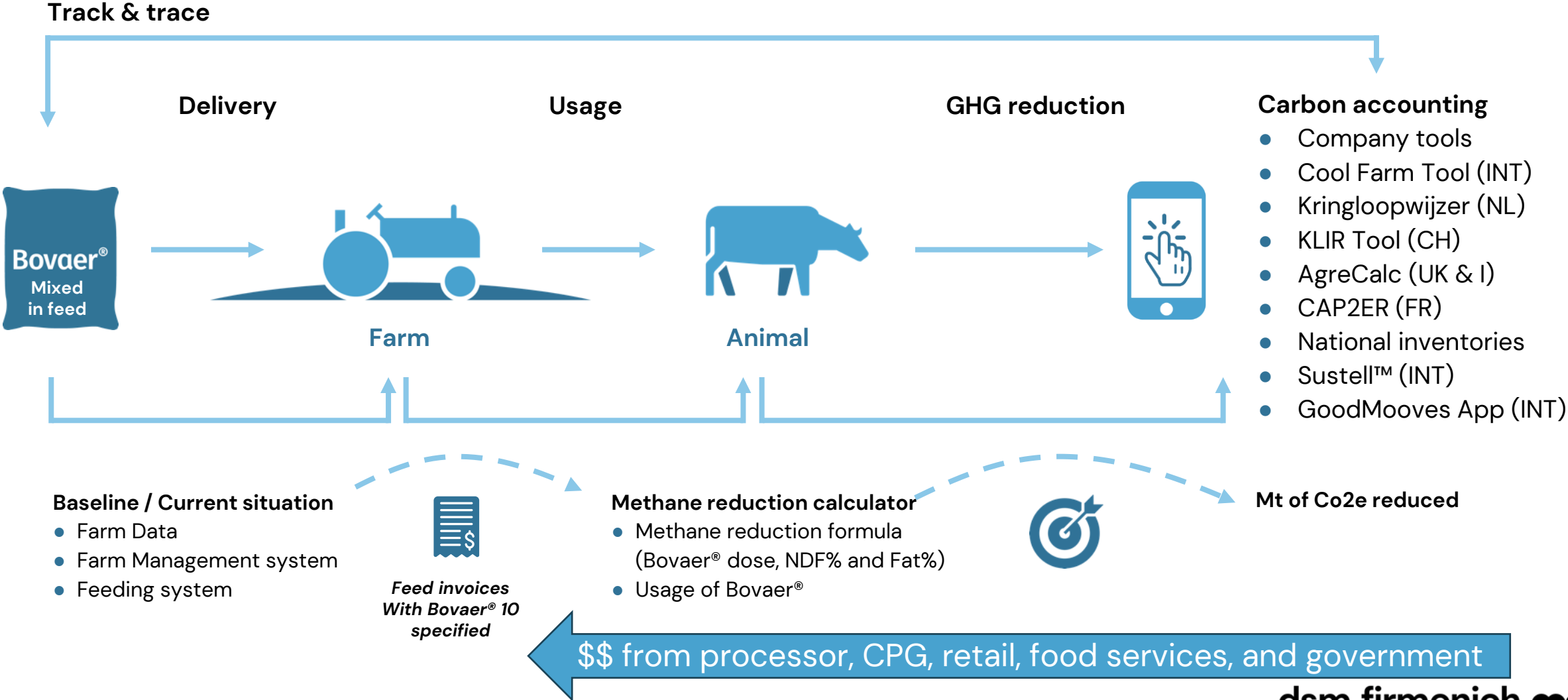


Dairy Formula % Methane Reduction

$$= -32.36 - 0.282 \times (\text{Bovaer}^{\circledR} \text{ dose} - 70.5) + 0.915 \times (\text{NDF} - 32.9) + 3.08 \times (\text{Fat} - 4.2)$$

This formula will be used by national and international carbon foot printing tools such as the Kringloopwijzer (2023), CAP2ER, the Cool Farm Tool (Oct 2022) and Sustell (Oct 2022) to calculate the % methane reduction

Inclusion in carbon accounting tools allows for monetization of enteric methane savings



Key lessons learned on the successful scaling of methane reducing feed additives

- Invest in research AND enabling infrastructure (predictable and credible carbon accounting protocols and practices, low-cost tooling for information sharing, incentives to support early movers, ..)
- It's still early days in Scope 3 reduction efforts, tailor-made support is required to include CH₄ savings into monitoring systems, sustainability & annual reports, and reward systems
- The structure of incentives (\$ per kg Bovaer, \$ per kg ECM, \$ per ton CO₂e saved, \$ per cow/year) can have a vastly different outcome on adoption rates
- Pilot the systems (particularly information and money flow) and build a set of early champions, develop a roadmap for scaling, and execute the roadmap at the speed the market supports
- Keep GHG reductions inside the value chain → this currently offers bigger opportunity than the offset market
- Collaborate, collaborate, collaborate and find like-minded people that want to make this a success