Comments and expectations from Dairy to NAS - Sustainability Considerations for the Future of Animal Agriculture Science Research

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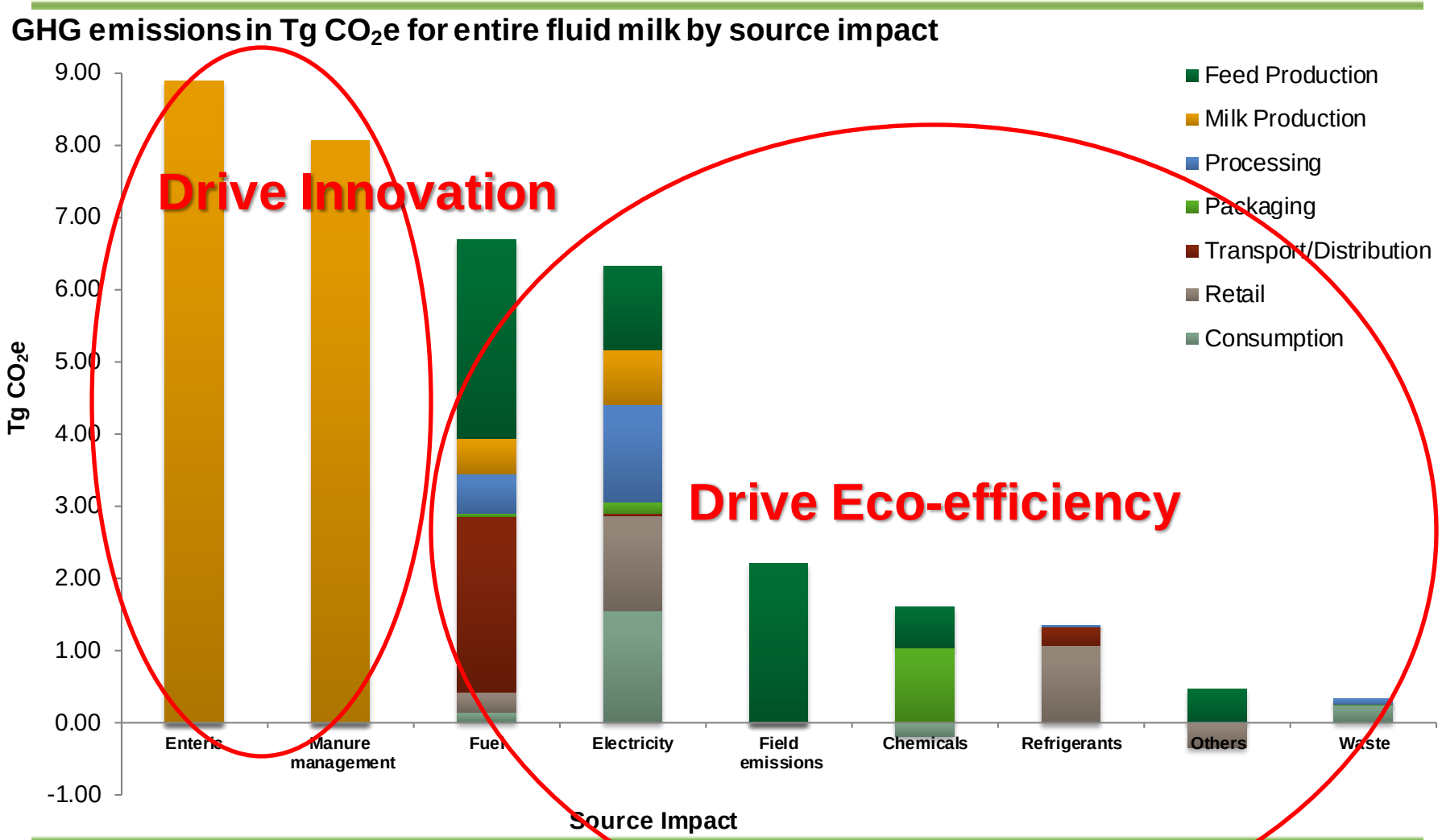
103 companies & 142 professionals in the Sustainability Council

Leading 11 project teams with over 800 industry members contributing over $6M

$11M investment in environmental assessment science identifies opportunities to drive innovation and efficiency



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LCA lessons learned: focus on what matters

Low environmental outliers resulted from best management practices – not size, region or age.

~90% of the GHG can be explained by ~22 variables, for example:

- Feed rations
- Herd demographics
- Energy used for dairy production (electricity, fuel, biofuel)
- Manure management

Water footprint has similar drivers

- Irrigation efficiency

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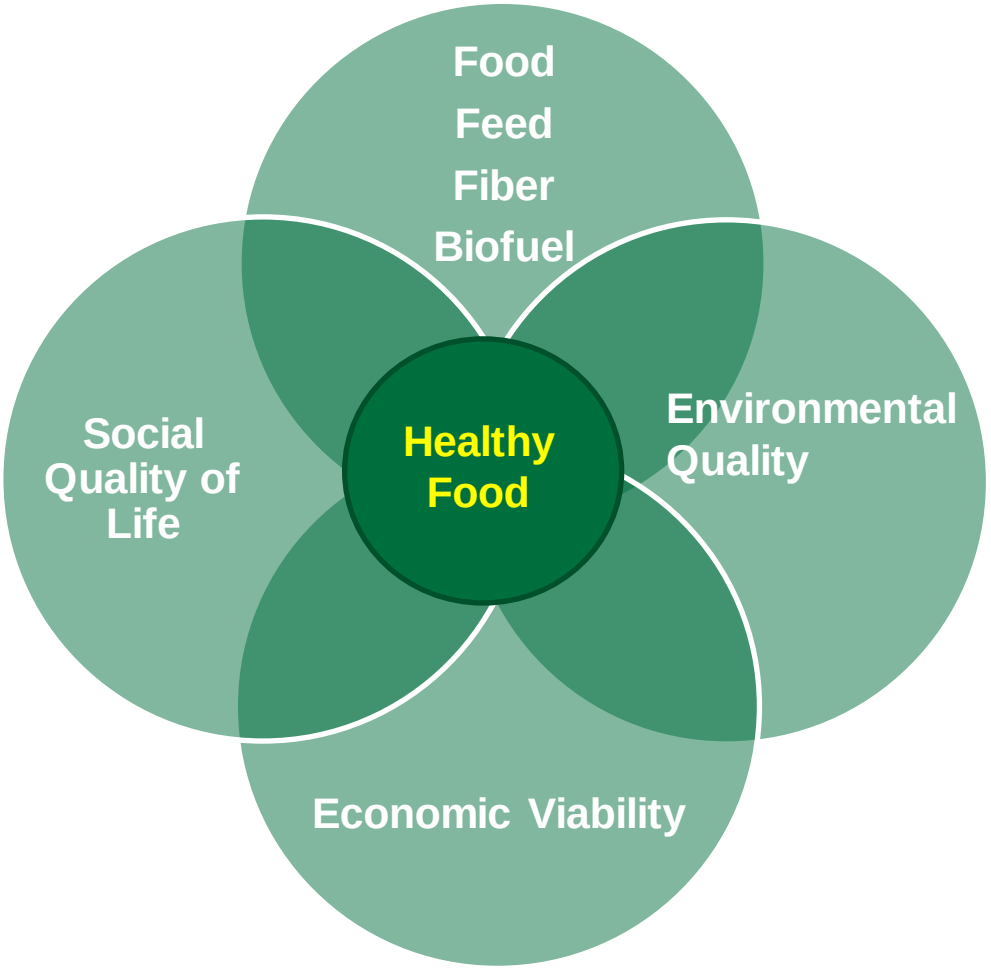
The need for a sustainable food system

- Satisfy human food, feed and fiber needs, and contribute to biofuel needs
- Enhance quality of life for farmers, farm workers and society as a whole
- Sustain economic viability of agriculture
- Enhance environmental quality and the **resource base (nutrients such as nitrogen and phosphorus)**



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Toward Sustainable Agricultural Systems in the 21st Century, 2010
National Research Council, National Academies Press, Washington, D.C.

Enabling a 21st century sustainable food system requires:

1. Reduce waste and ineffectiveness
2. Manage for and adapt to natural resource constraints
3. Advance farm technologies for yields and optimize use of nutrients within a bioeconomy

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Public and private research partnerships are critical

USDA Memorandum of Understanding (MOU)

On December 15, 2009, Copenhagen, DK

USDA recognized the work of dairy producers and the entire industry with a Memorandum of Understanding (MOU)

Renewed April 24, 2013, Washington, DC

"This historic agreement, the first of its kind, will help us achieve the ambitious goal of drastically reducing greenhouse gas emissions while benefiting dairy farmers. "

-- Secretary Tom Vilsack

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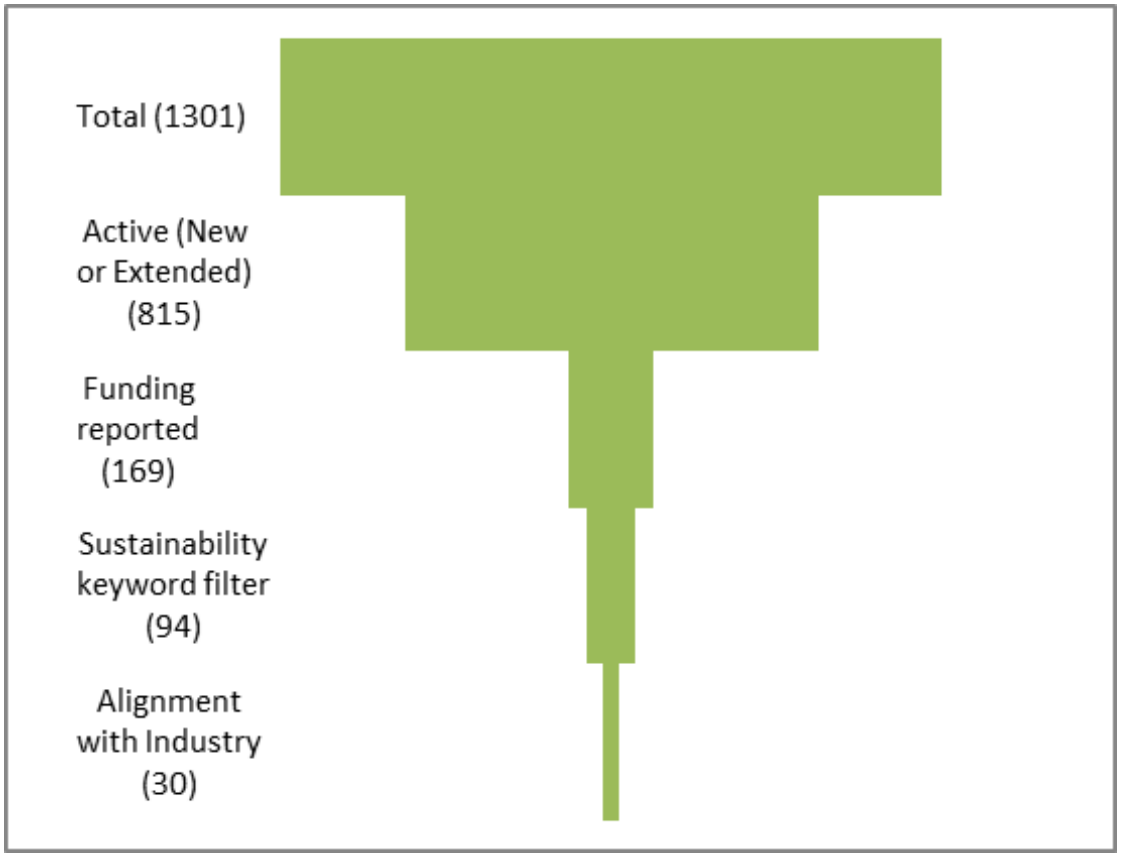
Current USDA research related to Sustainability and Adaptation is likely underfunded

Research projects with potential for public private partnership aligned to Sustainability



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Note: Dairy research from CRIS database with environmental and/or environmental with business drivers connected

Keys to Successs for the Current Statement of Task

- Balanced approach
  - Footprint vs. Handprint
  - Environmental impact vs. business outcomes
  - Biological systems with interdependencies and possibility to enhance the agricultural production
- Focus on strength
- Sustainable food systems
- Holistic view: whole supply chain approach
- Economics needs to be addressed in the context of research

Key Outcomes of the study

- Provide research ideas that can transform agriculture as positive contributor to society as a whole
- Look at U.S. Food systems in context to meet global demands that will face rising demand needs and increasingly finite resources, while in U.S. need to have adaptation strategy for growth
- Identify innovative research solutions that find sustainable balance of yield, community, labor, health, animal health, water use and quality, climate m mitigation and adaptation for an advanced agriculture food systems and bioecomies
- Identify and develop a research community
  - create a network of researchers
  - advance sharing and collaboration needs, (strengthen COP research alliance)
- Assess current research, gaps, and funding (public and private) required to advance US and Global research community
- Identify solutions to increase education and resource capacity training programs for the farms and scientist of 2050

How would your organization use the committee's final report?

- As a guiding document to address the bold questions that will allow us to prioritize and plan research recommendations
- Build resources for research through public and private sector
- Identify researchers in this space who can help us
- Communicate results to thoughtleaders of the challenges and opportunities

Finally we ask you to develop a quest for research

- Provide a guiding document to address the bold questions that will allow research community to quest for how a farm system and our products can represents much more to our communities than just a glass of milk

- Ask bold questions
  - What's the value of cow? What is the function?
  - What's the role of dairy in sustainable food systems?
  - Given, highly integrated and interdependent food systems, how do biological systems interplay for products and co-products? How could this be enhanced?
  - How can we cycle and understand nutrients within the bioeconomy? How might we optimize for mitigation and adaptation?

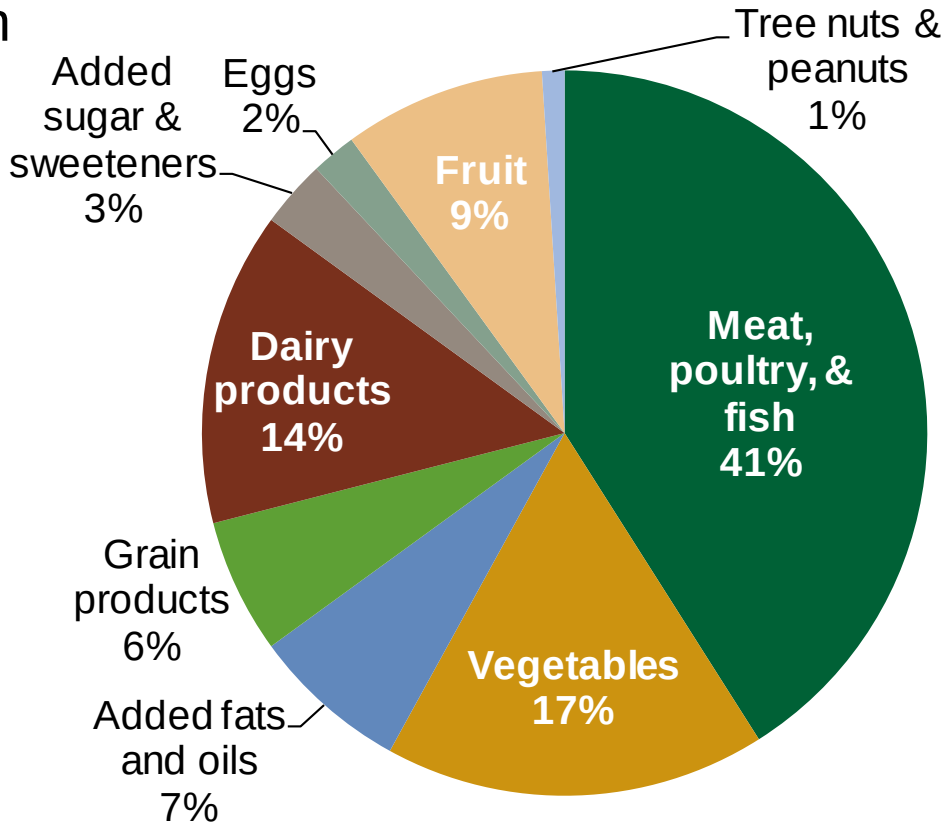
Begin, be bold and venture to be wise.
-Horace

Appendix

One out of three food calories is wasted

- 29% of America's food supply was lost from human consumption
- Estimated total value at retail and consumer levels was $165.6 billion
- 273 pounds of food per person
- Disposal costs add one billion dollars in local taxes annually

Food waste by retail value ($165.6B total)



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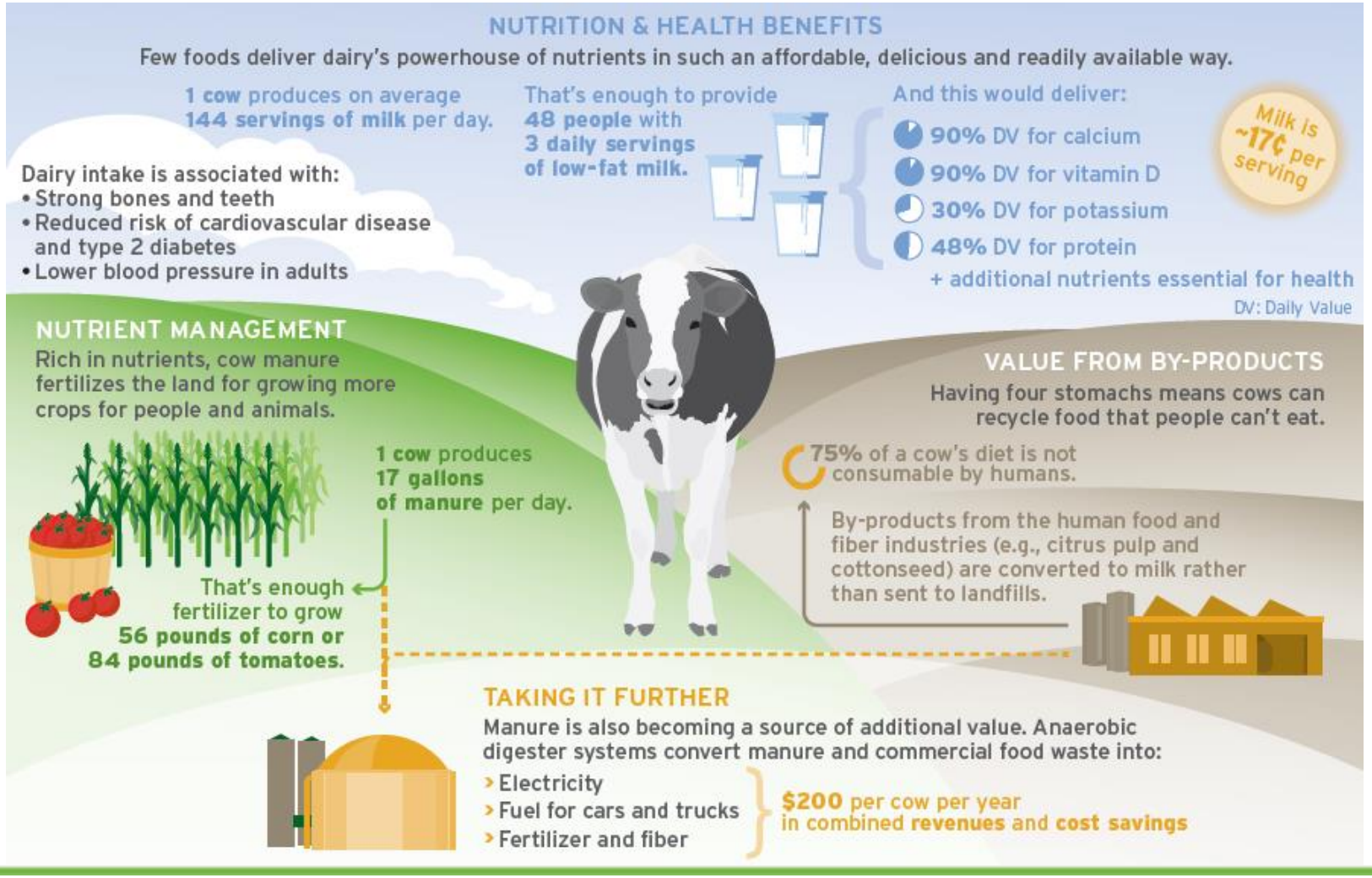
Source: J. Buzby, and J. Hyman. "Total and per capita value of food loss in the United States", Food Policy, 37(2012):561-570.

Dairy is a key player in a highly interconnected sustainable food system



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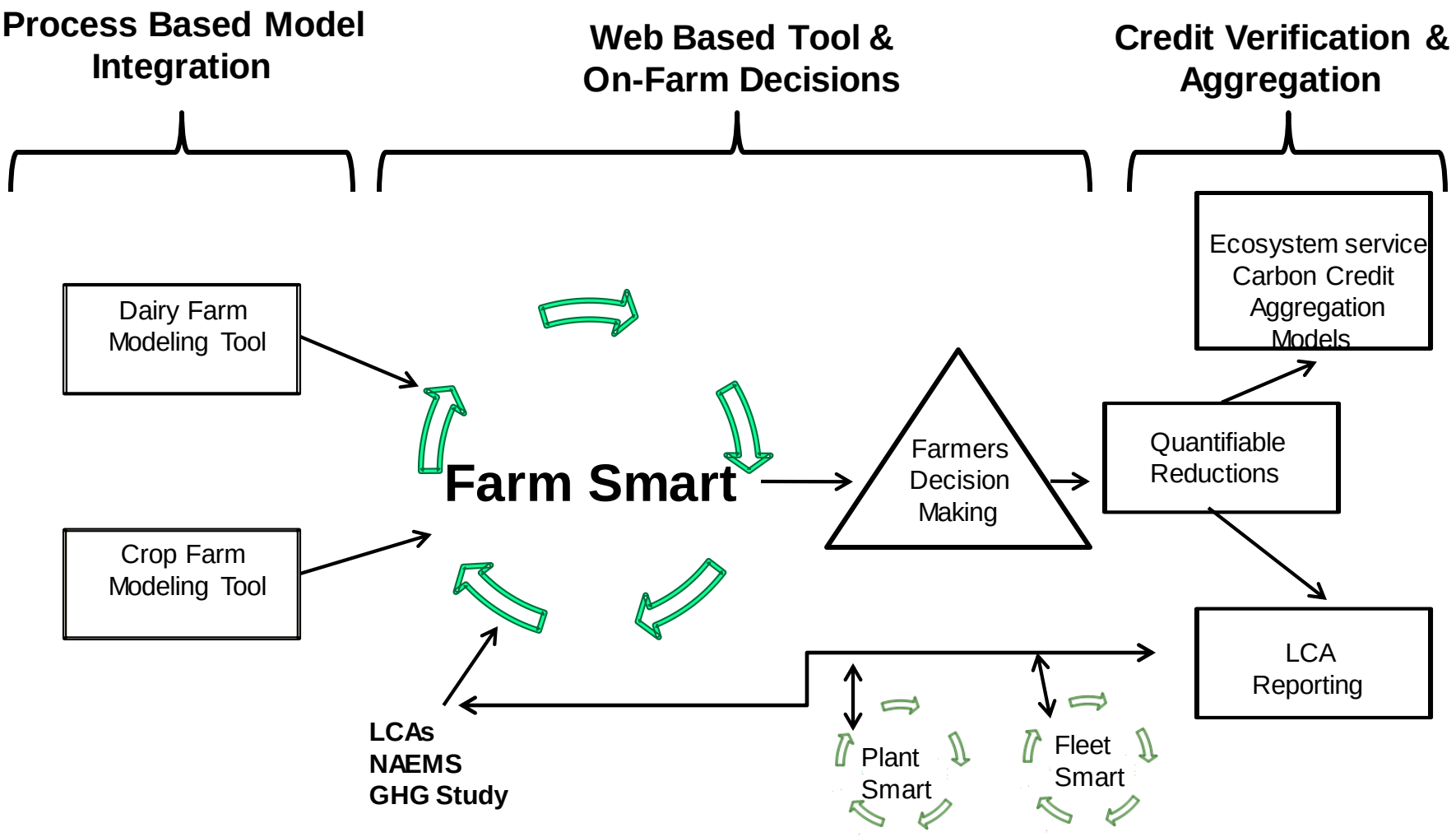
Dairy industry committed to sustainability – sizeable investment ~$11 million



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A VISION FOR BIO-ENERGY COMMUNITIES IN NEW YORK STATE