

What is Sustainability in the Cattle Industry?

ComeCarne Convention
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NAMI NORTH AMERICAN
MEAT INSTITUTE

Who We Are

- Represent 95% of red meat and 70% of turkey processing companies in the U.S. and their suppliers throughout North America
- Member profile (721):
 - Packer/Processors – 396
 - Supplier/Equipment – 237
 - Associate – 79
 - Academic - 9

North American Meat Institute

- #1 Priority: Food Safety
- Regulatory and Scientific Affairs
- International Affairs
- Legislative Affairs
- Animal Handling and Welfare
- Customer Outreach/Public Affairs

Meat and Poultry Industry Engagement

- U.S. Agriculture Trade Dialogue on Trade Agreements, American Farm Bureau Federation, U.S. Chamber of Commerce [Trade] Coalition
- USDA Agricultural Technical Advisory Committee (Chair) – Animal Products
- U.S. EU Transatlantic Meat Dialogue
- Meat and Poultry Industry Trade Policy Council (AFBF, NAMI, NCBA, NCC, NPPC, NTF, USAPEEC and USMEF)
- Beef and Pork Market Access Groups (NAMI, NCBA, USMEF, NPB, NPPC)
- Food and Agriculture Export Alliance
- NAFTA Regulatory Cooperation Working Group
- Meat Industry International Stewardship Advisory Council

Overview

- What is *sustainability*?
- Three-pillar approach
 - Economic
 - Social
 - Environmental
- Sustainability in the cattle/meat industry

What is *Sustainability*?

- Definition¹
 - “Capable of being sustained”
- What is “sustained”?
 - “To give support or relief to”
 - “To nourish”
 - “Keep up, prolong”

¹Merriam-Webster online dictionary, <https://www.merriam-webster.com/dictionary/sustainable>

What is *Sustainability*?

- Has the term been hijacked?
 - Literal sense vs. societal views
 - Broader scope needed
 - Focused on food animal (cattle) production

What is *Sustainability*?

- “Sustainability focuses on meeting the needs of the present without compromising the ability of future generations to meet their needs.”²

²“Sustainability.” Investopedia website,
<https://www.investopedia.com/terms/s/sustainability.asp>

Concept of Sustainability

- The Three Pillars, or the Triple Bottom Line^{3,4}
 - Economic
 - Social
 - Environmental

³“Sustainability.” Investopedia website,

<https://www.investopedia.com/terms/s/sustainability.asp>

⁴Elkington, J. Partnerships from *Cannibals with Forks: The Triple Bottom Line*. Environmental Quality Management, Autumn 1998.

Pillar I: Economic

- A business must be sustained as well
 - Livestock production
 - Meat production

Pillar I: Economic

- Cattle production (U.S.)⁵
 - All cattle and calves: 93,704,600 head in 2017
 - 30,578,000 head slaughtered in 2017
- Beef production (U.S.)⁵
 - 26,173,000,000 pounds in 2017

⁵USDA ERS, 2017 Livestock Report,
<https://www.ers.usda.gov/data-products/livestock-meat-domestic-data/livestock-meat-domestic-data/#Livestock%20and%20poultry%20slaughter>

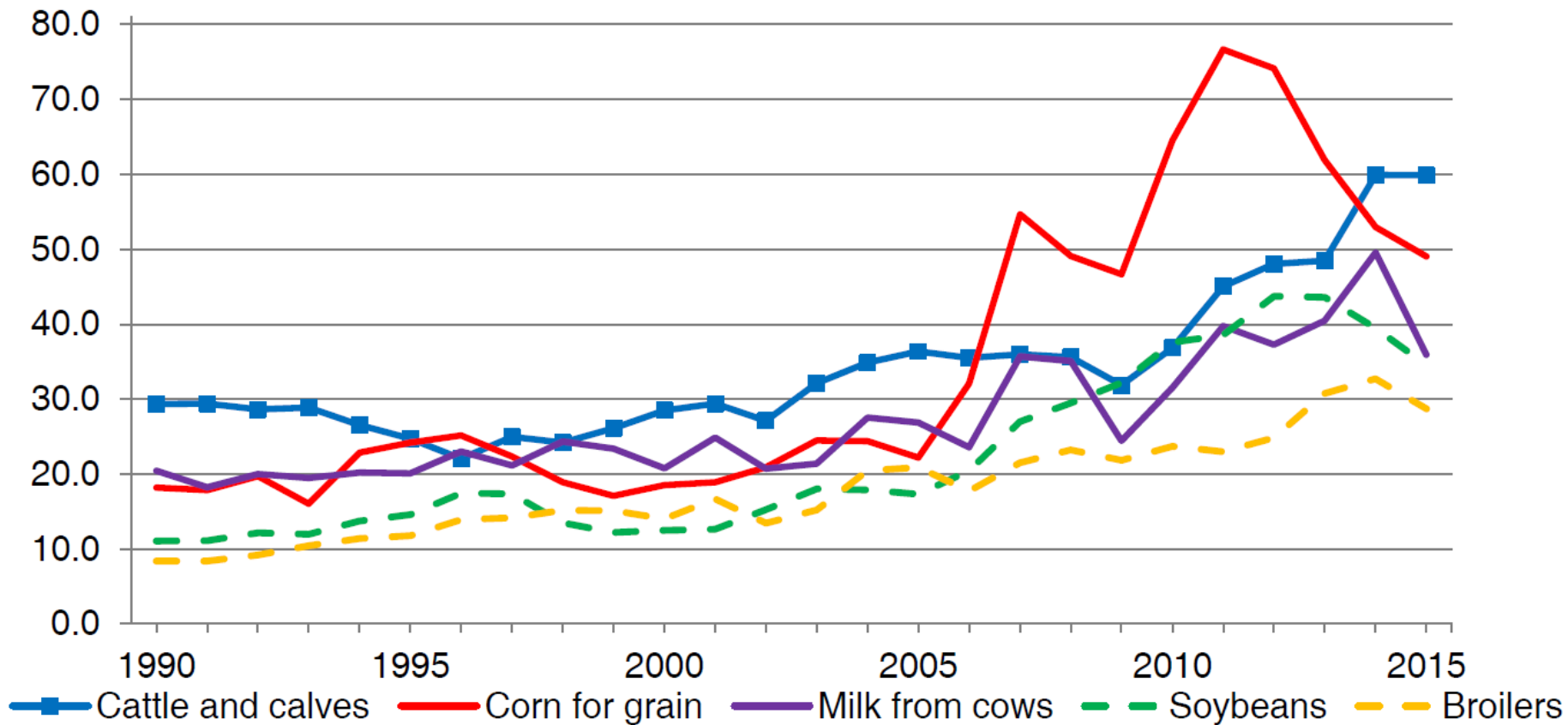
Pillar I: Economic

- Cattle production ranks 1st in U.S. cash receipts⁶ for agricultural commodities
 - \$78.2 billion in cash receipts
 - 21% of the ERS's forecasted total cash receipts of \$377 billion from agricultural commodities
 - Agriculture, food, and related industries contribute 5.5% to U.S. GDP
 - America's farms contribute 1%

⁶USDA NASS 2016 Cattle Industry Overview, https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&uact=8&ved=0ahUKewjskqHiypnZAhUpU98KHTf1CYMQFgg6MAI&url=http%3A%2F%2Fusda.mannlib.cornell.edu%2Fusda%2Fcurrent%2FUSCatSup%2FUSCatSup-06-24-2016.pdf&usg=AOvVaw3ll1Pb0t6oGOG_gt2ZFhBG

Value of Production by Commodity by Year – United States

Billion dollars



USDA ERS, <https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/ag-and-food-sectors-and-the-economy/>

Pillar I: Economic

- \$16.2 billion U.S. meat and poultry exports in 2016
 - Beef and beef variety meats
 - 1.12 MT
 - \$6.3 billion
 - Top markets
 - Japan
 - Korea
 - Mexico
 - Canada
 - Top 10 markets = 91% of total beef exports

Pillar I: Economic

- Sustainable business practices are not to be overlooked
- Without one pillar, the stool falls over



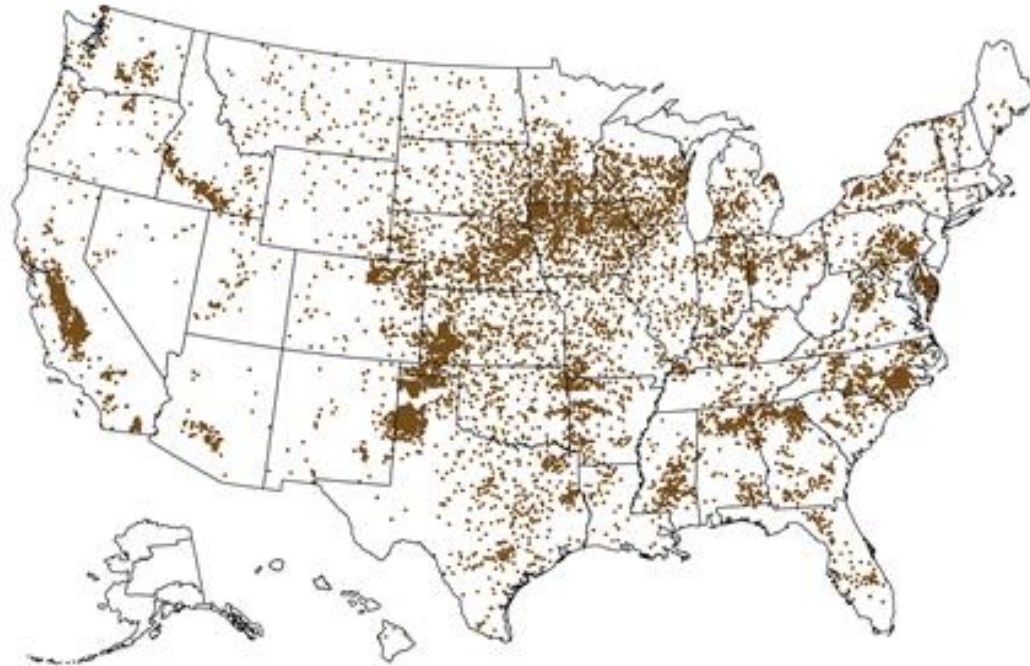
Pillar II: Social

- Walter Goldschmidt
 - “The Goldschmidt Hypothesis”⁷
 - Communities surrounded by industrial farms are more likely to be communities that are not socially or economically healthy.

⁷Goldschmidt, W. 1978. As You Sow: Three Studies in the Social Consequences of Agribusiness. Allanheld, Osmun and Co. Publishers, Inc., Montclair, NJ.

Pillar II: Social

Market value of livestock, poultry, and their products sold in 2012



1 dot = \$20 million

Source: USDA, Economic Research Service using data from USDA, National Agricultural Statistics Service, 2012 Census of Agriculture.

Pillar II: Social

- Different structures lead to different outcomes⁸
 - Smaller number of large farms (the current trend)
 - Larger number of small farms
 - Medium-sized farms

⁸Heady and Sonka. 1974. Farm size, rural community income, and consumer welfare. *Am. J. Ag. Econ.* 56 (3): 534-542.

Pillar II: Social

- Smaller number of large farms⁸
 - Lower costs of production
 - Can supply markets at lower prices
 - Use of fewer total farm inputs
 - Including labor
 - Fewer purchases made locally

⁸Heady and Sonka. 1974. Farm size, rural community income, and consumer welfare. *Am. J. Ag. Econ.* 56 (3): 534-542.

Pillar II: Social

- Larger number of small farms⁸
 - Modest cost to consumer
 - Greater income generation for rural community as a whole
 - More purchases made locally
 - Greater burden on families operating the farms
 - Incomes at levels characterizing poverty

⁸Heady and Sonka. 1974. Farm size, rural community income, and consumer welfare. *Am. J. Ag. Econ.* 56 (3): 534-542.

Pillar II: Social

- Medium-sized farms⁸
 - Income more compatible with adequate family income
 - Generation of nonfarm rural income
 - Reasonable consumer food costs

⁸Heady and Sonka. 1974. Farm size, rural community income, and consumer welfare. *Am. J. Ag. Econ.* 56 (3): 534-542.

Pillar II: Social



- Rural America
 - Culture
 - Socioeconomic status
- Rural vs. Urban America
 - Misunderstanding

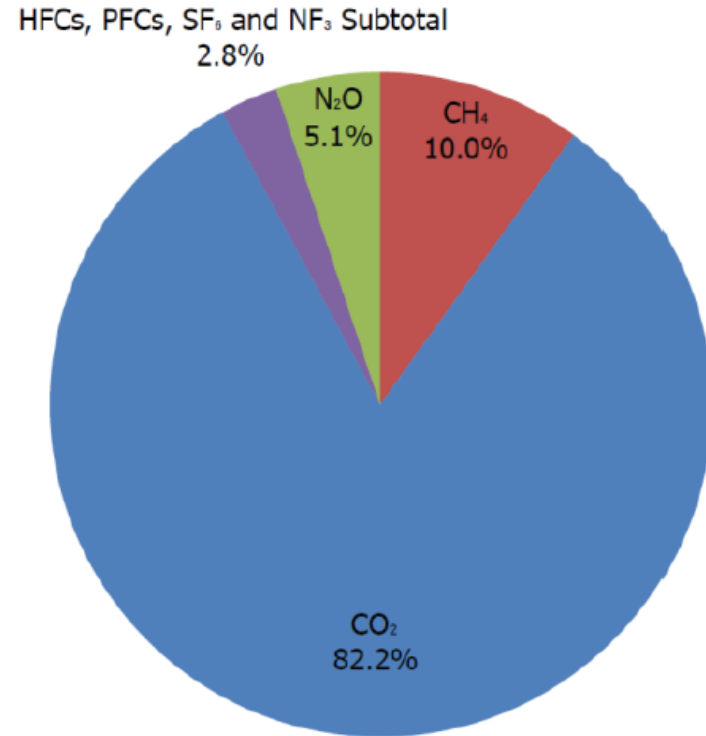
Pillar II: Social

- “Our results suggest that it is *who* you are (rather than *what kind* of farm you operate) that most influences the frequency and quality of interpersonal relationships with neighbors and the community.”⁹

⁹Jackson-Smith and Gillespie. 2007. Impacts of farm structural change on farmers’ social ties. *Soc. & Nat. Resources*. 18 (3): 215-240.

Pillar III: Environmental

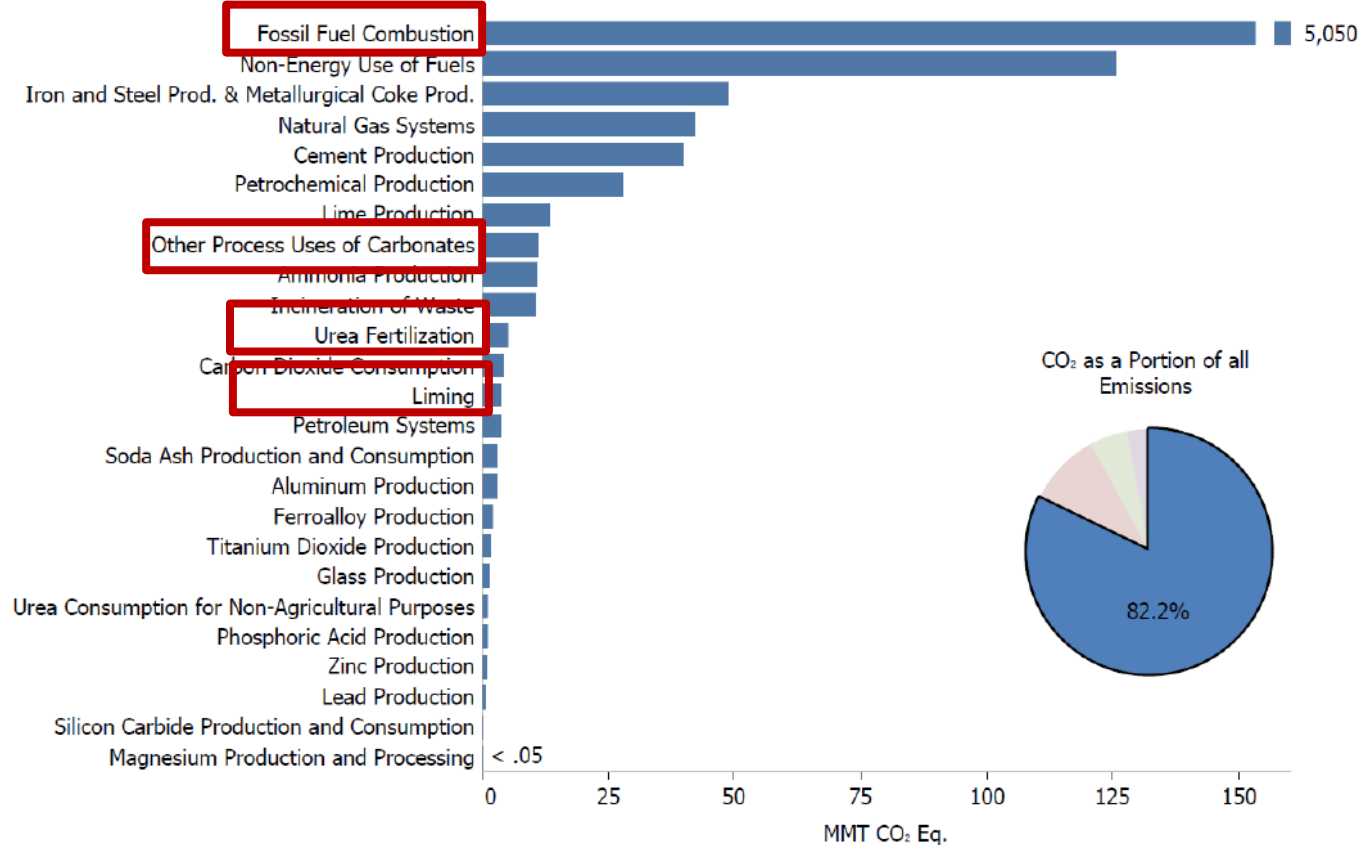
- EPA's Emissions Inventory¹⁰
 - Figure ES-4: 2015 U.S. Greenhouse Gas Emissions by Gas



¹⁰EPA. 2017. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2015. Executive Summary.

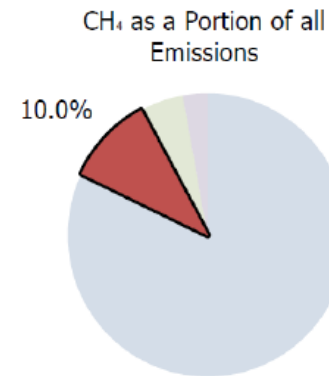
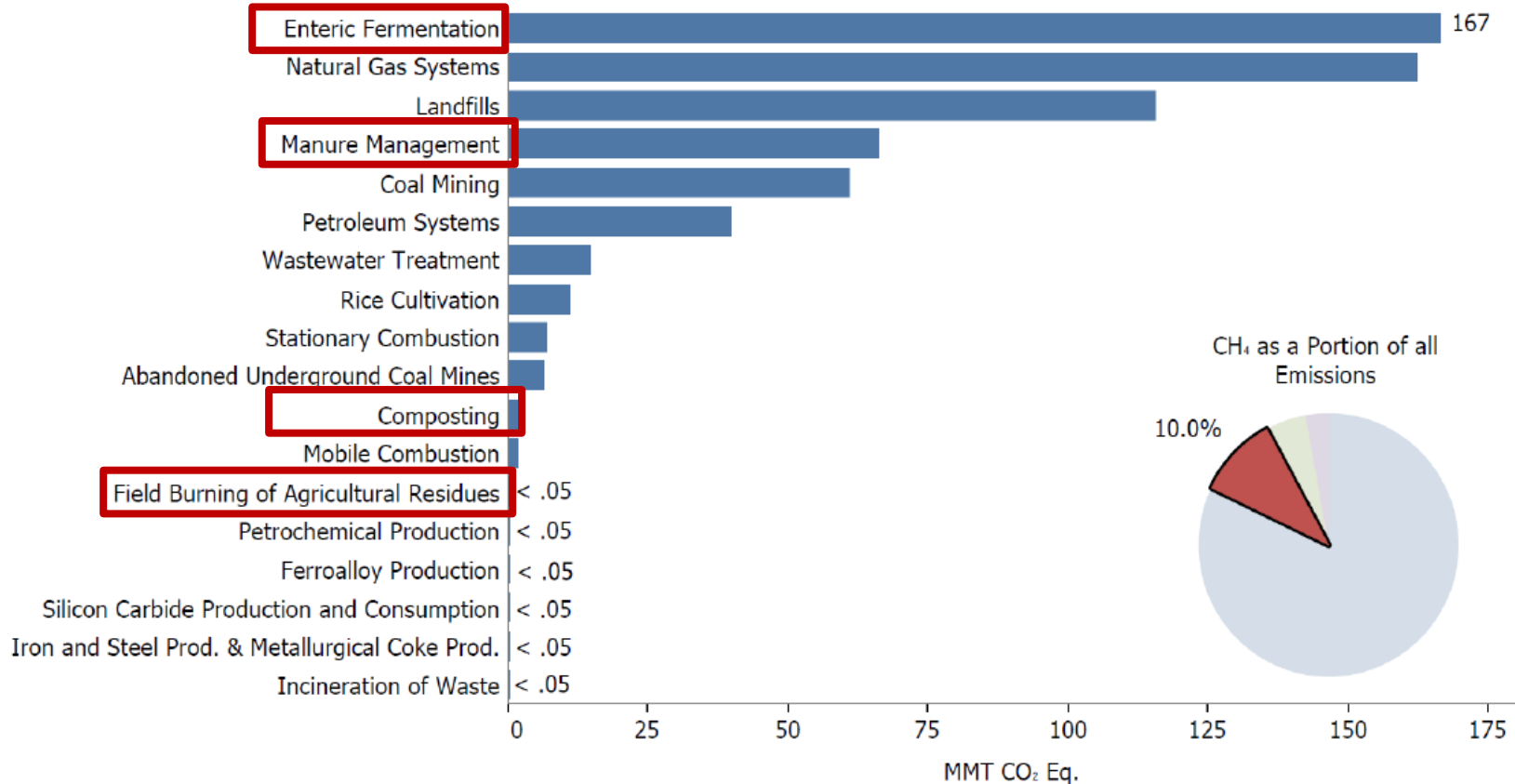
Pillar III: Environmental

Figure ES-5: 2015 Sources of CO₂ Emissions¹⁰



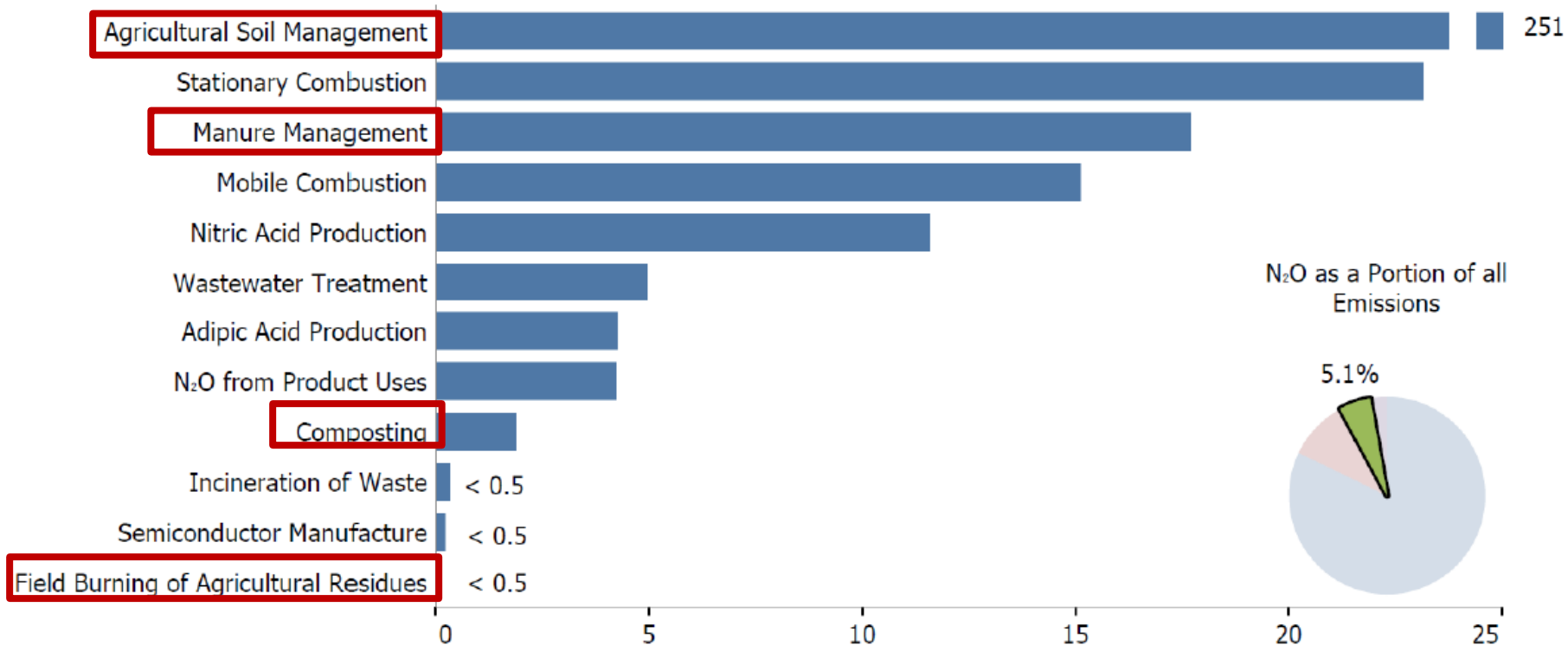
Pillar III: Environmental

Figure ES-5: 2015 Sources of CH₄ Emissions¹⁰



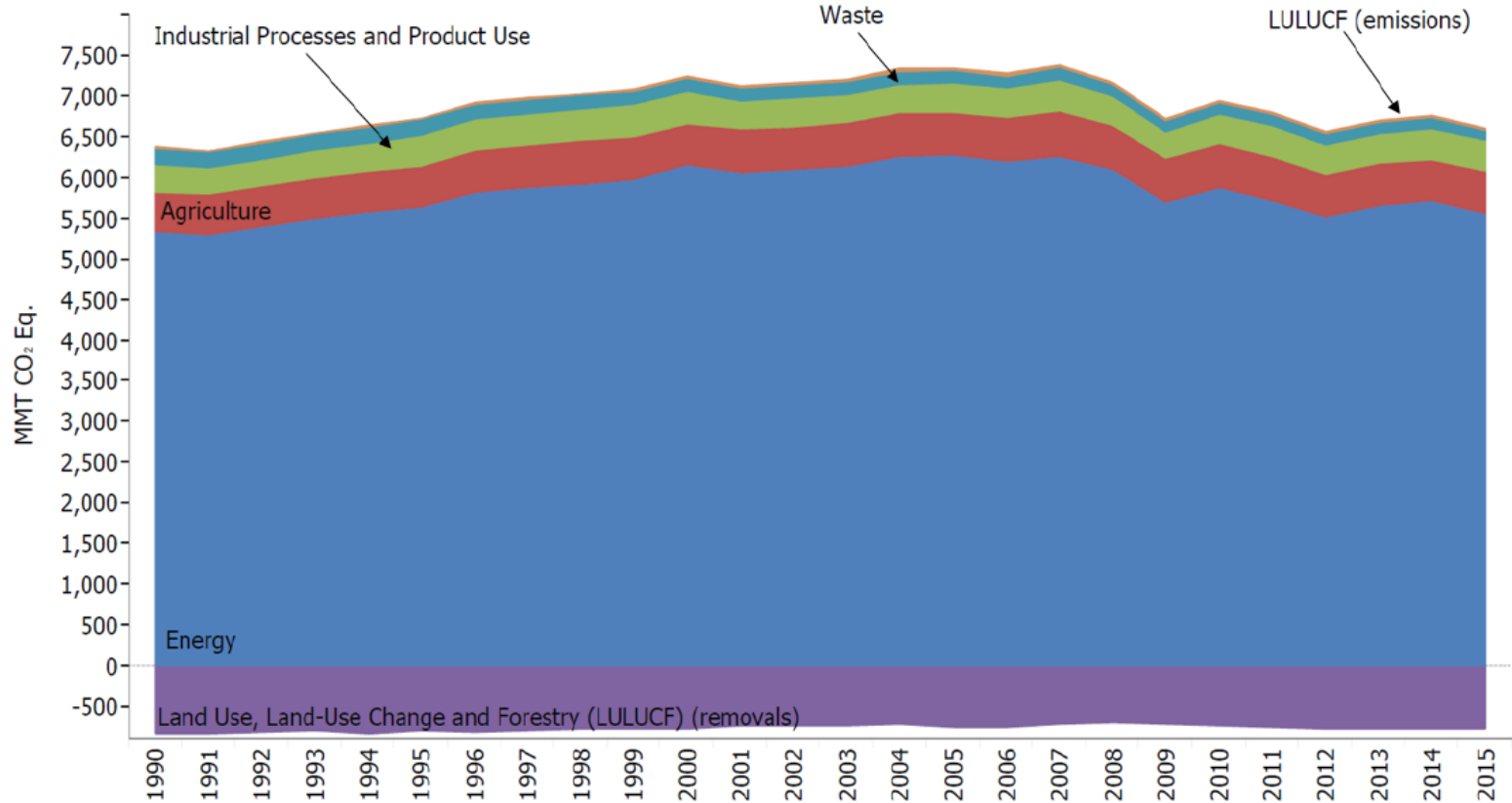
Pillar III: Environmental

Figure ES-5: 2015 Sources of N₂O Emissions¹⁰



Pillar III: Environmental

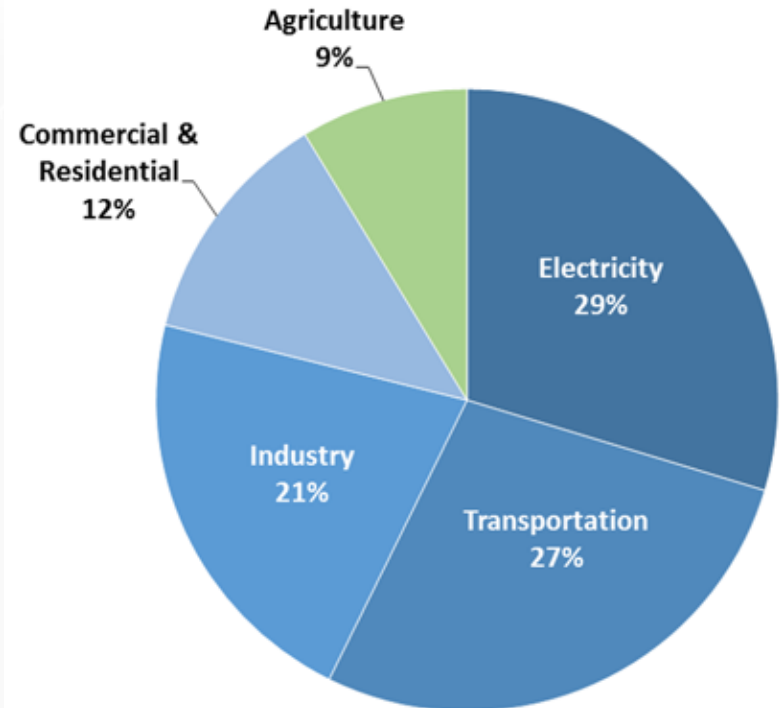
Figure ES-12: U.S. GHG Emissions and Sinks by Sector¹⁰



Pillar III: Environmental

- Leading scientists and the EPA^{10,11}
- Approximately 2.8-4.2% of all GHG emissions in the US from livestock
- Approximately 1.4-2.2% from beef cattle

Total U.S. Greenhouse Gas Emissions
by Economic Sector in 2015

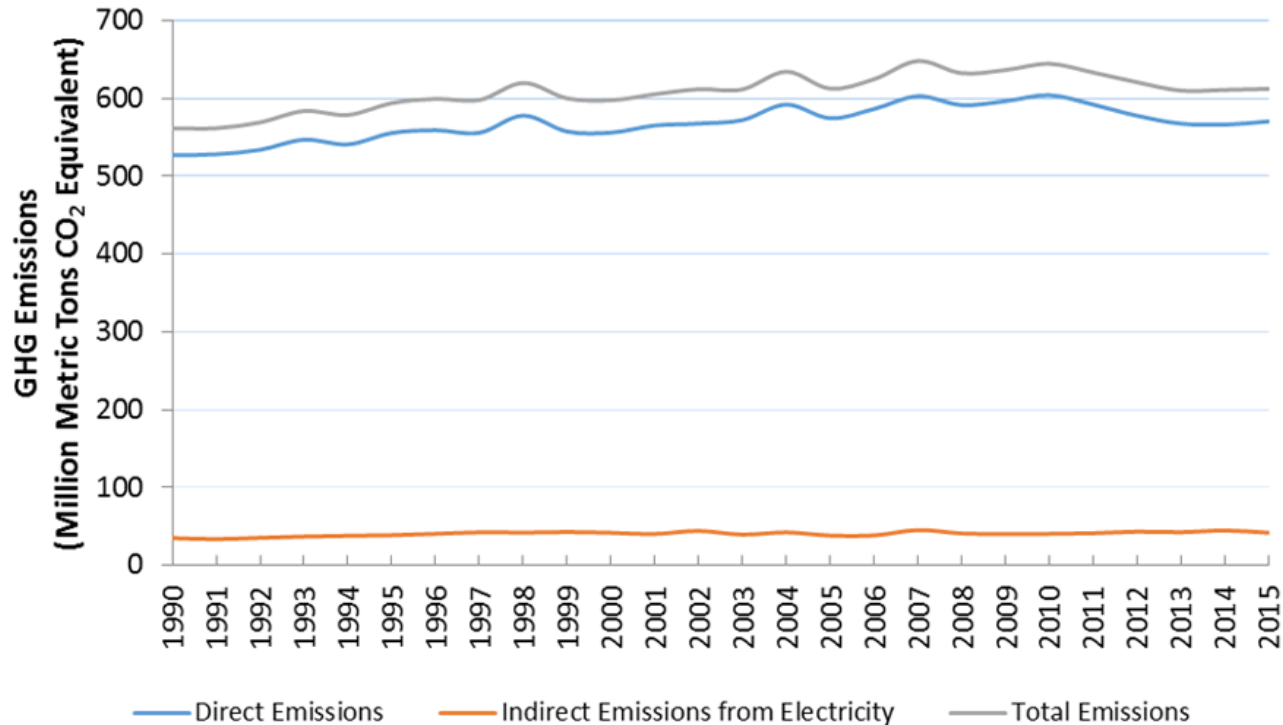


¹⁰EPA. 2017. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2015. Executive Summary.

¹¹Pitesky, Stackhouse, & Mitloehner. 2009. Chapter 1: Clearing the Air. Livestock's contribution to climate change. Advances in Agr. DOI: 10.1016/S0065-2113(09)03001-6

Pillar III: Environmental

Greenhouse Gas Emissions from Agriculture, 1990-2015



Pillar III: Environmental

- EPA's Emissions Inventory¹⁰
 - GHG emissions from agriculture have increased by approximately 8% since 1990
 - One driver is manure-management systems
 - Emission-intensive liquid systems
 - Emissions from other agricultural sources have either remained flat or changed by a relatively small amount

¹⁰EPA. 2017. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2015. Executive Summary.

Pillar III: Environmental

- Grass-fed or grain-fed?
 - Grass-fed
 - Enteric fermentation
 - Grain-fed
 - Manure management

Pillar III: Environmental

- EPA's Recommendation¹²
 - Land and crop management
 - Adjust methods for managing land and growing crops
 - Fertilization practices
 - Drain water from wetland rice soils during growing season

¹²US EPA. 2017. Sources of Greenhouse Gas Emissions.

<https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions#agriculture>

Pillar III: Environmental

- EPA Recommendation¹²
 - Livestock management
 - Adjust feeding practices and other management methods to reduce CH₄ from enteric fermentation
 - Improve pasture quality
 - Increase productivity

¹²US EPA. 2017. Sources of Greenhouse Gas Emissions.

<https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions#agriculture>

Pillar III: Environmental

- EPA Recommendation¹²
 - Manure management
 - Control manner in which manure decomposes
 - Handle manure as a solid or deposit liquid on pasture rather than lagoons
 - » Decrease CH₄, increase N₂O?
 - Capture CH₄ from manure decomposition
 - Store manure in anaerobic containment areas
 - Produce renewable energy

¹²US EPA. 2017. Sources of Greenhouse Gas Emissions.

<https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions#agriculture>

Pillar III: Environmental

- Improvements in livestock production efficiencies are directly related to reductions of the environmental impact¹³
 - Beef
 - 1970: 140 million head → 24 billion pounds of beef
 - 2015: 90 million head → 24 billion pounds of beef
 - 36% fewer head produced the same amount of beef
 - Dairy
 - 1950: 22 million cows → 117 billion pounds of milk
 - 2015: 9 million cows → 209 billion pounds of milk
 - 59% fewer cows produced 79% more milk
- Production efficiencies and GHG emissions are inversely related

¹³Mitloehner. 2015. Livestock and climate change: Facts and fiction.

<http://blogs.ucdavis.edu/egghead/2016/04/27/livestock-and-climate-change-facts-and-fiction/>

How does the cattle industry become “sustainable”?

- It already is...
 - Economically
 - Demand is increasing
 - Socially
 - Culture
 - Rural socioeconomics
 - Environmentally
 - Improvements in production
- The industry changes and adapts every year

Sustainability in the Cattle Industry

- Continuous improvement
 - U.S. Roundtable for Sustainable Beef
 - Global Roundtable for Sustainable Beef
 - Individual company policies
 - Producer management practices
 - Cattle production
 - Commodity production
 - Traditional systems continue to evolve toward more intensive systems that control inputs and outputs to minimize impact and improve efficiency¹⁴

¹⁴Hume, Whitelaw, and Archibald. 2011. The future of animal production: Improving animal productivity and sustainability. J. Ag. Sci. 49: 9-16.

Sustainability in the Cattle Industry

- Will reducing consumption help?
 - “Meatless Monday”
 - Reduce US national GHG emissions by 0.6%¹³
 - “Beefless Monday”
 - Reduce US national GHG emissions by 0.3%¹³

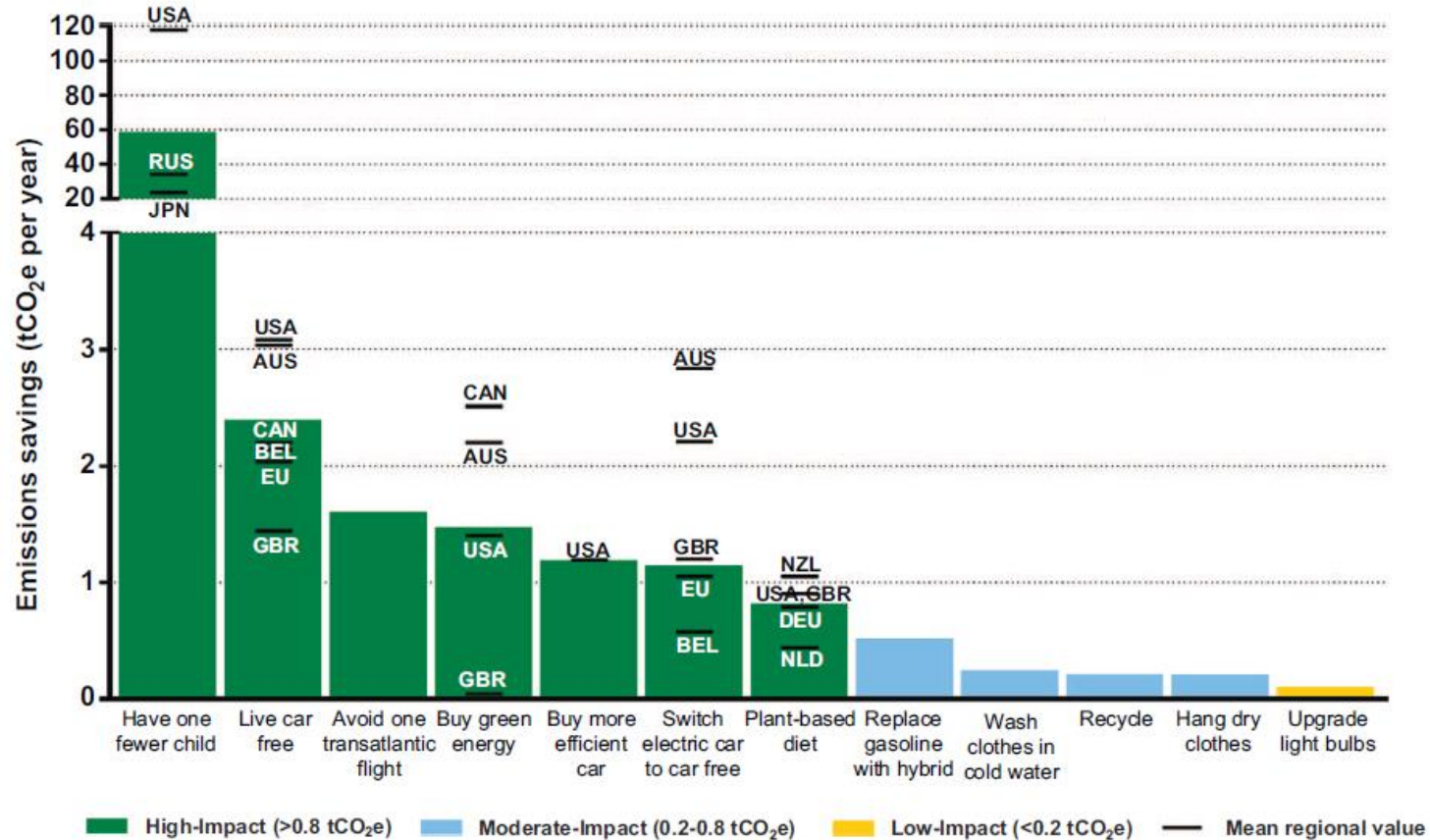
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Sustainability in the Cattle Industry

- Will reducing consumption help?
 - Wynes and Nicholas, 2017
 - The climate mitigation gap: Education and government recommendations miss the most effective individual actions
 - Abstract:
 1. Having one fewer child
 2. Living car-free
 3. Avoiding airplane travel
 4. Eating a plant-based diet

Sustainability in the Cattle Industry



Sustainability in the Cattle Industry

- High-impact¹⁵
 1. Have one fewer child
 2. Live car free
 3. Avoid one transatlantic flight
 4. Buy green energy
 5. Buy a more efficient car
 6. Switch from electric car to car free
 7. Plant-based diet

¹⁵Wynes & Nicolas. 2017. The climate mitigation gap: Education and government recommendations miss the most effective individual actions. *Environ. Res. Letters*. 12.

Sustainability in the Cattle Industry

- Will reducing consumption help?
 - Alternative protein products
 - Plant-based
 - “Animal-based”
 - Life cycle assessments¹⁶
 - Byproducts¹⁷

¹⁶Smetana, Mathys, Knock, & Heinz. 2015. Meat alternatives: Life cycle assessment of most known meat substitutes. In. J. Life Cycle Assess. 20: 1254-1267.

¹⁷Mattick, Landis, & Allenby. 2015. A case for systemic environmental analysis of cultured meat. 14 (2): 249-254.

Sustainability Issues are Bigger than We Like to Think

- Global issue
 - Economic
 - Social
 - Environmental
- Across-industry issue
 - Energy
 - Agriculture
 - Industrial Processes
 - Land use/change
 - On and on and on....
- Be aware of bias!

Questions?

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