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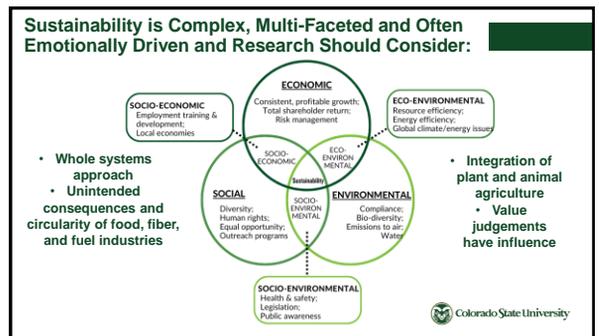
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SEC's Milestone Proposed Climate-Related Disclosure Framework

- The U.S. Securities and Exchange Commission (SEC) proposed a new rule on March 21 that would require U.S.-listed companies to disclose their physical and transition climate-related risks, actions to mitigate those risks, and greenhouse gas (GHG) emissions
- This proposal seeks to **standardize climate impact reporting** in answer to what is a variable alphabet soup of existing frameworks (SASB, GRI, TCFD, CDP, WEF IBC, etc.)
- It would also require companies to provide **annual** progress updates on their climate commitments
- Reporting Scope 1 and Scope 2 are considered reporting table stakes
- Disclosure of **Scope 3 emissions is mandatory only if output of those greenhouse gasses is material or is significant to investors or if companies outline specific targets** for them
- The proposed rule was approved by the SEC in a 3-to-1 vote; the public will now have up to 60 days to comment on the plan

Source: SEC website

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75%

Of millennials believe their investments can influence climate change

84%

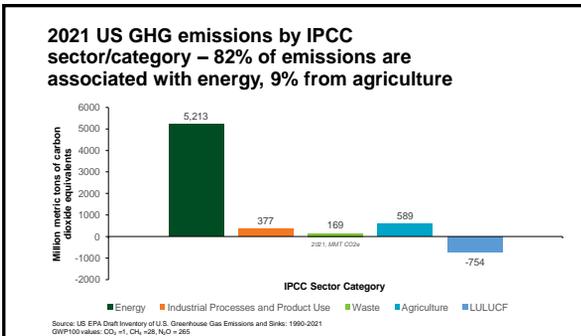
Of millennials believe their investments can help lift people out of poverty



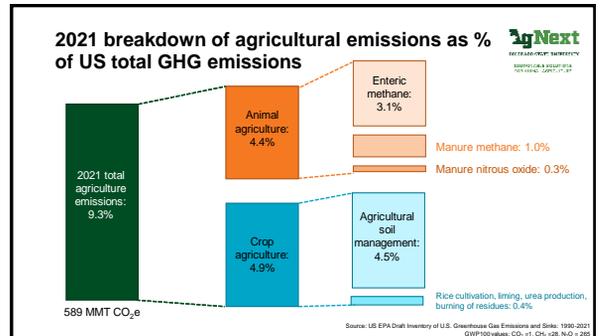
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TECHNOLOGY

Source: Credit Suisse, Making an Impact: Earning Returns on Sustainable Terms

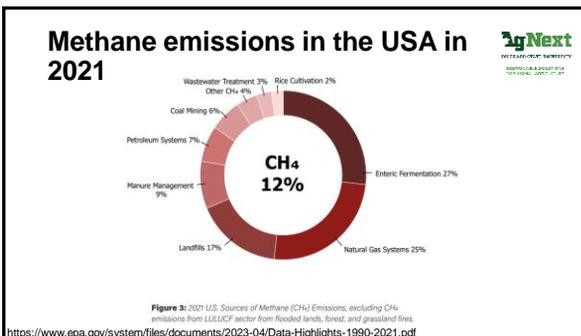
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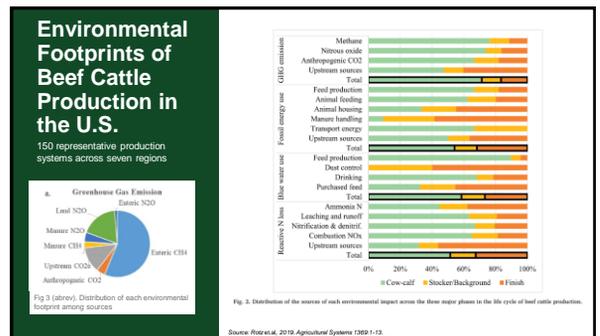
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FOR ANIMAL AGRICULTURE

CLIMATE SMART INNOVATION

CLIMATE SMART PENS
6 Climate-Smart Research Pens
6 GreenFeeds + 12 SmartScales
totaling 1 GreenFeed & 2 SmartScales per pen

50 head pens, total at 300 cattle | 5 SmartFeeds per pen for individual animal intake

The Climate Smart Pen installation at ARDEC is the largest public installation research facility of its encompassing enteric methane feedback systems and cattle GHG emissions.

200 ACRES of irrigated dual-season pasture managed with rotational grazing practices
GreenFeeds combined with SmartFeeds allow for evaluation of dietary and management strategies that impact cattle emissions efficiency and sustainability

IRRIGATED GRAZING PIVOT
2 pasture GreenFeeds emission measurement systems (CH₄, CO₂, H₂) | 2 SmartFeed Pro trailers for precision delivery of feed additives

Healthy grazing and feedlot research in one facility allows researchers to conduct full system evaluation of beef cattle production sustainability and rangeland health.

ADDITIONAL FEEDLOT PENS
Feedlot pens house 10 cattle per pen for a total of 500 additional cattle.
These feedlot pens allow for data replication to determine scalability of solutions.

FEEDING CENTER & COMMODITY STORAGE

CLIMATE SMART RESEARCH PENS

200-ACRE GRAZING PIVOT

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AgNext's enteric methane focus areas

1. Improve empirical models
 - Better understand baselines
2. Develop and test dietary mitigation techniques
3. Understand rumen microbiome controls
 - Future: develop mitigation techniques targeting microbial processes
4. Investigate prospect of developing selection tools for low methane emitting cattle

Overarching: focus on practicality, scalability, economic viability

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Livestock allow us to produce food on land unsuitable for cultivation while enhancing ecosystems

Rangelands store 20% of the globe's soil organic carbon

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The most important thing we can do for soil organic carbon in rangelands is to:

1. Preserve rangelands (avoid conversion)
2. Restore cultivated and degraded lands
3. Practice adaptive livestock management

This does not consider the benefits of other ecosystems services (e.g., wildlife habitat, water storage capacity, etc.), rural community well-being and rural economies

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Source: Sanderson et al., 2020. Cattle, conservation and carbon in the western Great Plains. *Journal of Soil and Water Conservation*

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Grazing Principles

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Objective: Work with the range science community to identify a set of concise, evidence-based, and adaptable principles for successful livestock grazing management on western semi-arid and arid rangelands.

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Methods

1. Distributed a survey that elicited lengthy responses totaling >25,000 words of wisdom about successful grazing management from >80 experts
2. The advisory committee then developed draft principles
3. The draft principles were then returned to the initial survey respondents for further feedback
4. Feedback was also gathered from >100 range professionals in a "campfire conversation" session at the 2023 Society for Range Management Annual Meeting
5. The advisory team further debated and revised to arrive at seven principles, structured as short memorable statements followed by paragraph-length descriptions that highlight key ideas and practices



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Advisory Committee



- Derek Bailey- New Mexico State University
- Kirk Davies- USDA-ARS (OR)
- Justin Derner- USDA-ARS (WY/CO)
- Karen Launchbaugh- University of Idaho
- Aaron Lien- University of Arizona
- Paul Meiman- University of Nevada-Reno
- Leslie Roche- University of California-Davis
- Eric Thacker- Utah State University
- Lance Vermeire- USDA-ARS (MT)
- Kevin Jablonski (CSU)
- Kim Stackhouse-Lawson (CSU)

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Abbreviated seven principles for successful livestock grazing management.



Next Steps:

1. Adapted for use in a guidebook for Colorado ranchers and for use by extension and NRCS across the west
2. Testing on partner ranches



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Pressure to Take Action is Coming from Every Angle




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AgNext Faculty, Leadership Team, and Professional Research Staff

 Dr. Kim Stackhouse-Lawson Director	 Jenn "JM" Rieckamp Head of Strategy and Communications	 Dr. Sara Place Associate Professor of Pasture Systems	 Dr. Jason Lombard Associate Professor and Dairy Systems Specialist	 Dr. Greg Thome Director of Agricultural Modeling and Livestock Assessment	 Dr. Nathan Delay Associate Professor of Livestock Economics
 Dr. John Witten Associate Professor of Livestock Economics	 Dr. Diego Manriquez Assistant Professor and Dairy Systems Specialist	 Dr. Juan Vergara Sustainable Beef Cattle Systems Postdoctoral Fellow	 Dr. Pedro Carvalho Assistant Professor, Forage Specialist	 Dr. EJ Reppert Grazing Research Scientist	 Eliana Costa Martin Research Scholar
 Brooklynn Moore Administrative Coordinator	 Anna Shadbill Grazing Management Outreach and Research Coordinator	 Erica Giesenhagen Communications Coordinator	 Willian Souza Research Scholar	 Luan Moura Research Scholar	

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