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Animal Agriculture Is The Missing Piece In Climate Change Media Coverage

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Background

For many years now, climate researchers have been warning that the world can't meet its Paris Agreement climate goals of limiting global warming to 1.5°C without reducing meat consumption. Multiple studies have affirmed that between 11.1% and 19.6% of global emissions come from meat and dairy production, and leading global food and climate agencies are also in agreement, recommending that people, particularly those in the Global North, reduce meat consumption in favor of a plant-rich diet.

The effects of animal agriculture on the environment and climate are vast: It is a leading cause of deforestation, it's responsible for significant biodiversity loss and pollution, and emits large amounts of greenhouse gases, particularly methane. Methane alone is the cause of over 25% of global warming, for which reason reducing methane emissions is critical. If emissions continue as they are now, the food sector alone is enough to push global warming past that 1.5°C limit, while just reducing meat consumption could get the world much closer to our emissions goal. In the United States, this reduction would mean that the average person would consume about 70% fewer animal products on a daily basis, with the greatest reductions coming from red meat and chicken—92% less red meat and 81% less chicken, according to EAT-Lancet Commission recommendations.

Despite the extensive research supporting the reduction of animal product consumption, there's long been a disconnect between what the research shows and what the public understands. According to a recent consumer study conducted by Purdue researchers: "The belief that 'eating less meat is better for the environment,' which is strongly supported by many climate and environmental researchers, is at an all-time low" (Lusk & Polzin, 2023). The reason for this disconnect is multifaceted, but at least one factor is the information the public receives regarding the connection between animal agriculture and climate change.

Given the role of the media in informing the public about important issues like climate change, this partner project between Faunalytics and Sentient Media sought to understand how the media communicates the environmental implications of animal agriculture to readers. By analyzing recent climate articles from top U.S. media outlets, we drilled down on how often the media makes the connection between animal agriculture and climate change when reporting on climate issues, and how reporting on animal agriculture in relation to climate change misses the mark.

Key Findings

1. **Only 7% of climate articles mentioned animal agriculture and they rarely discussed its impact on climate change.** Across the 1,000 articles we examined, only a handful of stories reported in depth on the connection between consuming animal products and climate change. Most articles that mentioned animal agriculture failed to discuss the emissions and environmental degradation caused by the industry, let alone the importance of reducing meat consumption or switching to a plant-based diet to fight climate change. When diets were discussed, the effectiveness of plant-based diets was sometimes downplayed or, more often than not, presented almost as an afterthought rather than a legitimate strategy to mitigate climate change.

2. **The animal agriculture industry is often portrayed as a victim of climate change rather than a significant cause.** Our qualitative analysis revealed that instead of citing animal agriculture's negative environmental impact, climate articles that discussed the industry in any depth generally focused on how climate change is impacting animal agriculture. Multiple articles discussed how flooding, drought, and heatwaves have caused livestock losses both in the U.S. and abroad, and how this affects the livelihoods of farmers, while failing to mention the role that the animal agriculture industry plays in the climate crisis.

3. **There are countless missed opportunities to discuss animal agriculture in the context of climate change.** Energy, transportation, emissions, and fossil fuels were given the spotlight in climate coverage: These topics were mentioned in up to 68% of climate articles but were rarely tied to animal agriculture, despite the connections and parallels between them. For instance, transportation is responsible for roughly the same amount of emissions as the animal agriculture industry and is part of that industry, yet just 8% of climate articles mentioning transportation also referenced animal agriculture.

4. **Impactful subsectors of animal agriculture are also not given enough attention by the media.** Cattle farming is responsible for about 62% of animal agriculture emissions (FAO, 2022), yet cows were mentioned in just 30% of animal agriculture articles. Similarly, methane came up in 22% of animal agriculture articles despite accounting for 54% of the sector's emissions.

Recommendations

For Journalists

- **Lead with the consensus of scientific evidence.** Whether it's reporting on what drives food sector emissions or by what percent feed additives can reduce methane, climate reporting should identify areas of consensus as well as points of disagreement in the field. Because the food-climate beat is a rather narrow one, the media industry needs to create and follow more accurate reporting guides for this coverage area. Sentient Media has developed a tip guide here: Food and Farming Reporting Guide.

- **Every story is a climate story—look for opportunities to expand coverage.** Whether your role is reporting on the Farm Bill or writing new recipes, all food and farming stories are an opportunity to inform readers about how what we eat drives climate change. At the same time, climate journalists can add reporting on food-related emissions to their coverage, like the Inflation Reduction Act or deforestation in the Amazon.

- **Show readers the connection between what we eat and climate emergencies.** Many climate stories are covering climate as a crisis by reporting on emergencies like drought, flooding and deforestation. But the deforestation and drought that harms animals is also driven by what we eat. Stories about harm to animals or costs to farmers are also an opportunity to make the connection to our own behavior and steps that we can take to make an impact.

- **Avoid framing the issues in a way that pits one sector against another.** Whether we should worry more about cattle ranches or air travel is a distraction. Climate researchers agree that we need to be reducing emissions from all sectors.

- **Treat food and farming like a science**. Whether you are reporting on how a farm is implementing a climate-smart agriculture grant or looking into new alternative proteins, carefully check facts and be wary of results that seem too good to be true. The best ways to develop scientific literacy in this area are to speak with a wide range of scientists in different disciplines, keep up with the latest research, and take note of funding disclosures.

For Animal And Climate Advocates

- **Interact with climate stories that get it right.** Show news outlets the climate topics you care about and want to see more of by sharing the article on social media, posting a positive comment, or even reaching out to the news outlet to tell them. News outlets want you to engage with their stories and will publish ones that are likely to get more traction, so show them that reporting on animal agriculture in climate stories is of interest to you and other readers.
- **Share your knowledge and opinions by writing a letter to the editor or an op-ed.** If a news outlet has recently published a climate piece that you have strong feelings about—in support or disagreement—writing a letter to the editor may be an effective way to convey your feedback. If you're a strong writer and have a lot to say, you can submit an op-ed (opinion editorial or article). This is a great opportunity to (politely) correct misconceptions, cite better sources, and call for action—encourage readers to reduce their meat consumption or to fight for more funding to go toward plant-based agriculture rather than subsidizing animal agriculture.
- **Tip off news outlets about interesting discussions that are happening around the role of animal agriculture in climate change.** If an interesting study about animal agriculture's implications for climate change is getting some buzz in the scientific or animal advocacy communities, you can tag a news outlet on social media or reach out to see if they'll pick up the story. Look for an email or phone number to contact them with tips — ideally, reach out to a reporter or the editor of their climate or science section if they have one. Make sure to prepare a convincing pitch, showing that you have newsworthy information.
- **Join forces with other advocates or organizations to interact with the news on social media.** Remember, there is strength in numbers. Form a group of advocates to like and comment on good stories or reach out to news outlets to cover the issue of animal agriculture more extensively in climate stories. If you're a climate expert, consider writing an op-ed with other experts in your field to make a bigger statement. With more people showing interest in how animal agriculture impacts the climate, news outlets may be more likely to include this issue in their climate coverage.
- **Use your own platform to educate the public on the animal agriculture industry's contributions to climate change.** According to Faunalytics (2023), having climate concerns can make a big difference in people's openness to pro-animal actions, such as supporting Meatless Mondays. As a result, if you're an animal advocate, incorporate an environmental perspective into your advocacy efforts. For example, use your diet campaign to tell people how reducing their meat consumption can have a positive impact on the climate, or let politicians and decision-makers know that animal agriculture is a leading cause of deforestation and food sector emissions when you lobby for farmed animals.

Applying These Findings

We understand that reports like this have a lot of information to consider and that acting on research can be challenging. Faunalytics is happy to offer pro bono support to advocates and nonprofit organizations who would like guidance applying these findings to their own work. Please visit our Office Hours or contact us for support.

If you're a journalist looking to cover the food-climate intersection, remember to check out Sentient Media's Food and Farming Reporting Guide for tips.

Behind The Project

Research Team

The project's lead authors were Constanza Arévalo (Faunalytics) for the quantitative analyses and Jenny Splitter (Sentient Media) for the qualitative findings. Dr. Jo Anderson (Faunalytics) reviewed and oversaw the work.

Acknowledgements

We would like to thank Ana Bradley, Executive Director of Sentient Media, who provided valuable input about this research throughout the process. We would also like to thank an anonymous funder for their generous support of this research.

Finally, we are very grateful to all the climate journalists who are already putting in the effort to report on animal agriculture's impact on climate change and the ways we can all help mitigate this critical issue.

Research Terminology

At Faunalytics, we strive to make research accessible to everyone. We avoid jargon and technical terminology as much as possible in our reports. If you do encounter an unfamiliar term or phrase, check out the Faunalytics Glossary for user-friendly definitions and examples.

Research Ethics Statement

As with all of Faunalytics' original research, this study was conducted according to the standards outlined in our Research Ethics and Data Handling Policy.

Method

This study used recent climate articles from top U.S. media outlets to analyze how often and how well the media makes the connection between animal agriculture and climate change when reporting on climate issues. To do so, we obtained the 100 most recent publications that included the keyword “climate” in the title from each of the following ten major U.S. media outlets, for a total of 1,000 news articles:

1. The Wall Street Journal
2. The New York Times
3. New York Post
4. Los Angeles Times
5. The Washington Post
6. Reuters
7. Star Tribune
8. Chicago Tribune
9. The Boston Globe
10. CNN

Media outlets were selected based on a combination of site ranking and web traffic data. Article dates ranged from 2/15/21 to 9/29/22, though how far back articles went varied by news outlet. The date ranges for articles from each outlet can be found in the *Supplementary Materials*.

Article Categorization

Using software to automate the process, we searched all 1,000 articles for the presence of keywords describing ten climate-related themes, which are listed in Table 1 below. Most themes are associated with ultimate human-derived causes of climate change. That is, themes that represent human activities that are known to cause climate change. Exceptions to this are the fossil fuels and emissions themes, which capture proximate causes—direct contributors to climate change that are the result of human activities—and the regenerative agriculture theme, which is often discussed as a way to mitigate climate change.

See the *Supplementary Materials* section for the full list of keywords within each theme. If any of the keywords from a particular theme were found within the body text of an article, we categorized it as including that theme. More than one category could apply to each article. For example, an article containing the phrases “land clearing” and “cars” would be tagged as containing the themes of land use changes and transportation.

Table 1. Climate-Related Themes

Theme	Rationale for Theme Inclusion	Example Keywords
Animal Agriculture	The practice of raising animals for human consumption or use produces large amounts of greenhouse gases and is a major contributor to deforestation and land degradation.	livestock, meat, dairy, aquaculture
General Agriculture	Agriculture, which includes both plant-based and animal agriculture, is a big contributor to greenhouse gas emissions and deforestation.	farm, farming, crop production, plantation
Land Use Changes	Transformations of the land, such as deforestation and urban sprawl, release large amounts of greenhouse gases and reduce the availability of natural areas that act as carbon sinks.	deforestation, land clearing, logging, urban expansion
Mining, Manufacturing & Energy Production	Mining, manufacturing, and energy production rely on the use of fossil fuels, which emit large amounts of greenhouse gases.	factories, electricity, energy, power plant, mining
Transportation	The use of vehicles generates large amounts of greenhouse gases by burning fossil fuels.	car, jet, plane, car exhaust
Residential	Greenhouse gases are emitted as a result of heating, cooling, and powering homes and buildings.	air conditioning, refrigerants, stove, furnace
Consumerism	The production of consumer goods results in greenhouse gas emissions. When discarded, these goods tend to end up in landfills, which are also a large source of emissions.	consumerism, shopping, plastic waste, fast fashion
Fossil Fuels	Fossil fuels, which have a high carbon content, are extracted from the earth and burned as fuel, releasing large amounts of carbon dioxide.	coal, oil, natural gas
Emissions	Greenhouse gas emissions cause climate change by trapping heat in the earth's atmosphere.	CO2, methane, nitrous oxide, water vapor
Regenerative Agriculture	Regenerative agriculture includes many strategies that are thought to combat climate change by taking carbon from the atmosphere and storing it in the soil.	topsoil regeneration, carbon farming, cover crop, agroforestry

Accuracy Checks

We checked the accuracy of our search method by reviewing at least three randomly-selected articles flagged with each theme, adjusting our keywords when needed. We repeated this process until we were confident that articles were being correctly categorized into the ten themes. We then conducted a final stage of manual review of any articles flagged with the animal agriculture theme, reading them in their entirety and eliminating any that didn't actually discuss animal agriculture.

Analyses

Most quantitative analyses for this report were simple descriptive statistics to determine percentages. Additionally, we ran Kendall's rank test to examine the correlation between a media outlet's political leaning and how often it referred to animal agriculture in articles about climate change. Political leanings were sourced from mediabiasfactcheck.com. For more details on how this was carried out, please see the *Supplementary Materials*.

For the qualitative analysis, one author read all articles classified as containing the animal agriculture theme, analyzing how animal agriculture was discussed in each story and noting trends in coverage. She also read a randomly selected sample of approximately 10 articles *not* flagged with the animal agriculture theme to identify any missed opportunities to include animal agriculture in the reporting.

Results

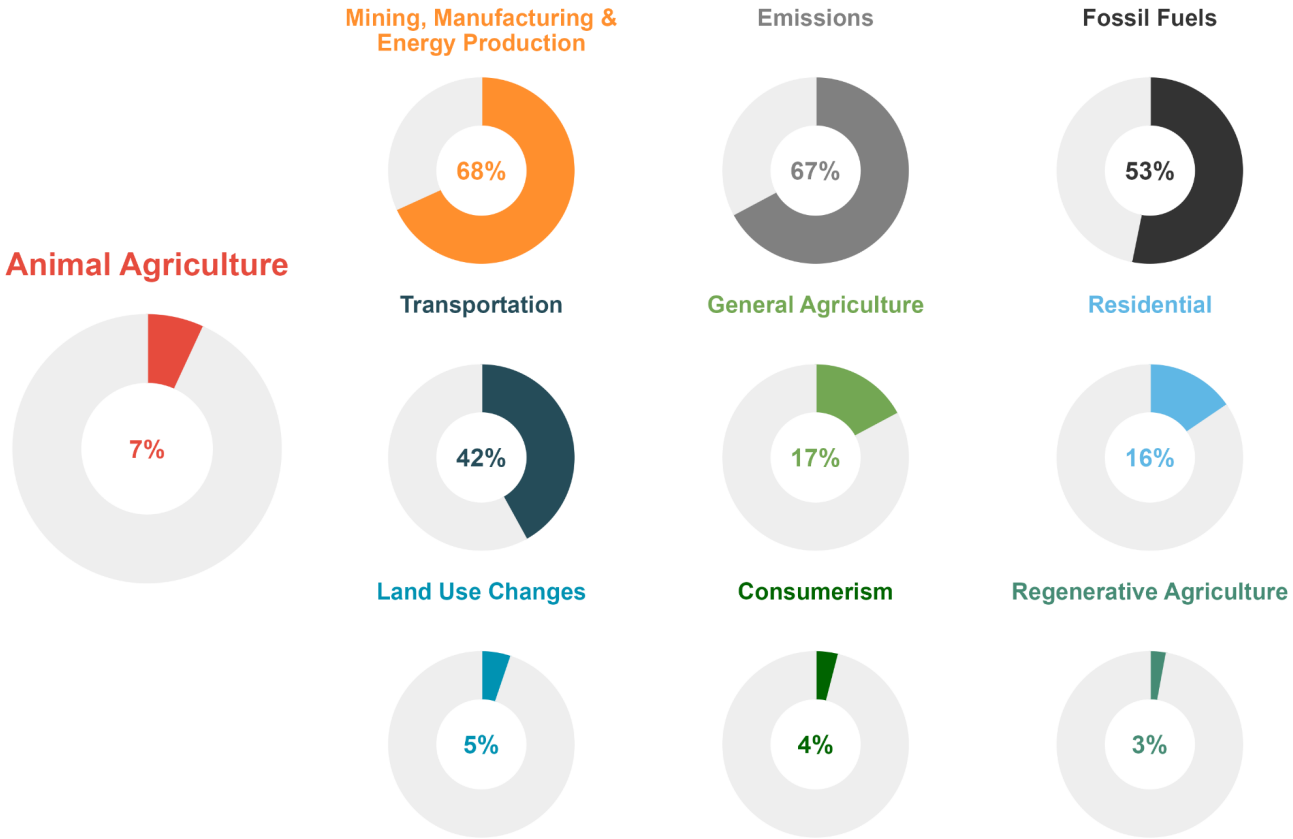
This study's pre-registration, analysis code, and data are available on the Open Science Framework. Please note that the full length articles are not included with our data because most require subscriptions to access.

Overall Frequency Of Themes

We categorized 1,000 articles about climate change according to their climate-related themes, as shown in Figure 1 below.

Overall, animal agriculture was mentioned in only 7% of articles about climate change, making it one of the least-discussed causes of climate change by the media. Mining, manufacturing, and energy production, and emissions were discussed much more often, appearing in 68% and 67% of articles, respectively.

Figure 1. Theme Coverage in Climate Articles



Note that the percentages don't add up to 100% because multiple themes were often covered within the same article.

Frequency Of Animal Agriculture Subsectors

As noted above, roughly 7% of climate articles mentioned animal agriculture, or 69 articles out of 1,000. Table 2 below shows the frequency of those 69 articles mentioning different animal agriculture subsectors like the cattle industry, pork industry, and chicken industry. In other words, when climate articles *do* mention animal agriculture, which subsectors do they touch on? Cows came up the most, appearing in about 30% of articles that mentioned animal agriculture, while pigs were the least mentioned.

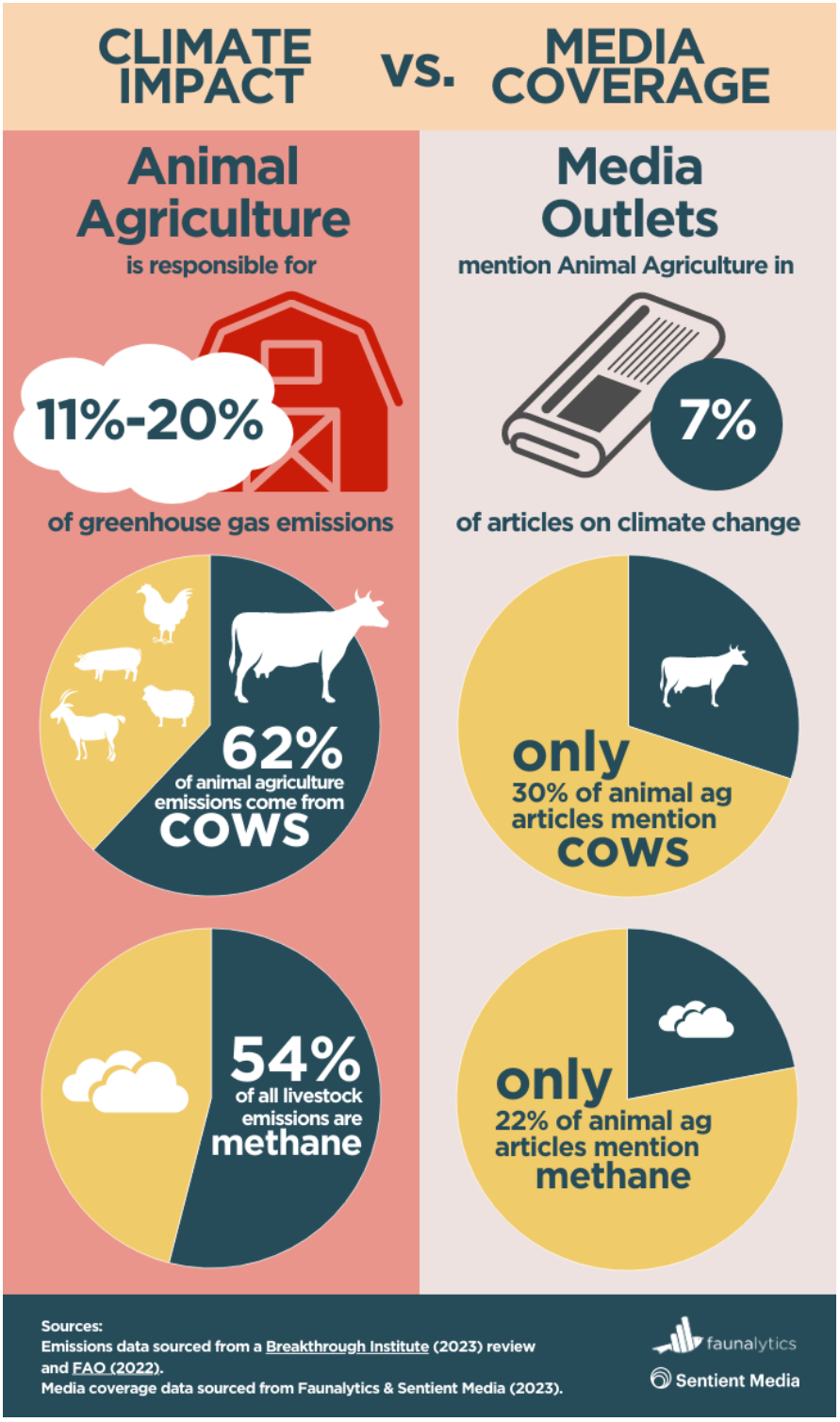
Table 2. Individual Keyword Mentions by Industry

Industry	% of Mentions	Example Keywords
Cattle	30%	cow, cattle, dairy
Fish	17%	aquaculture, seafood, fisheries
Chicken	13%	chickens, hens, poultry
Sheep	7%	sheep, lamb
Pork	4%	pig

The farming of some animal species is responsible for more greenhouse gas emissions than others. We might expect that climate media would cover the subsectors responsible for the most emissions more often. As Figure 2 shows, cows are responsible for the most animal agriculture emissions—62%—and they did receive the most media coverage of any subsector, but only 30% of articles touching on animal agriculture mentioned cattle farming in particular.

The figure provides a side-by-side comparison of actual greenhouse gas emissions from animal agriculture (per FAO, 2022) versus how they are covered in the media. It should be kept in mind that many estimates exist regarding animal agriculture's contributions to global emissions, ranging anywhere from 11% to nearly 20%.

Figure 2. Actual Greenhouse Gas Emissions from Animal Agriculture Versus Media Coverage

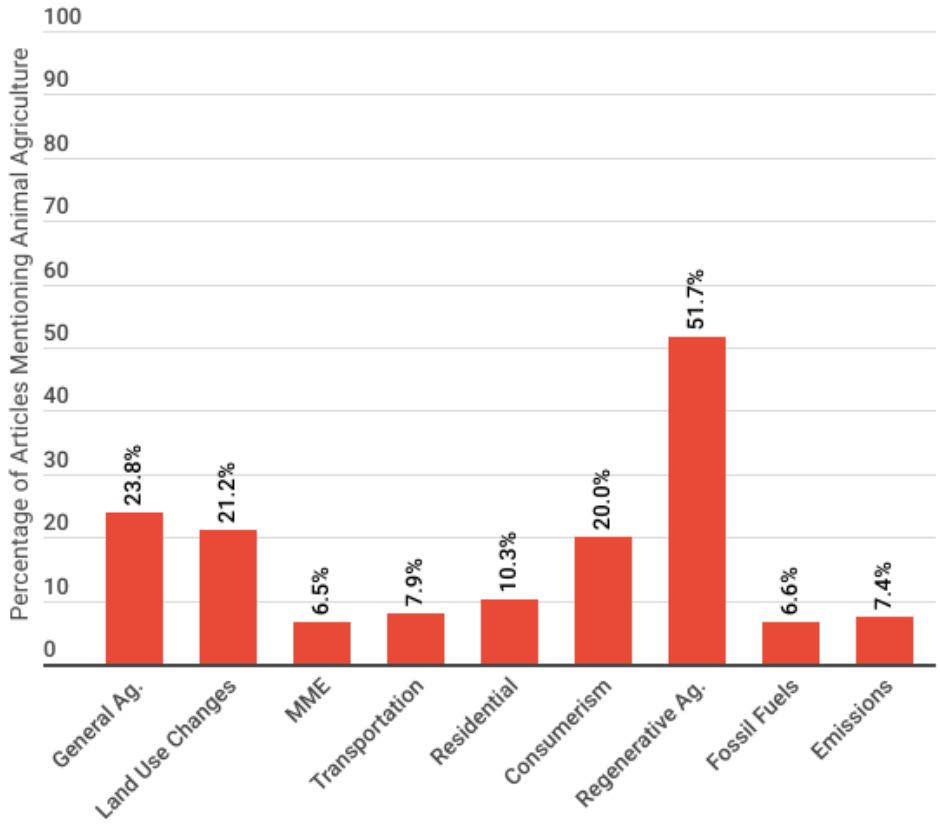


Animal Agriculture Alongside Other Causes Of Climate Change

Animal agriculture was covered in climate articles alongside each other climate-related theme at least once, but some pairings were much more common than others. For example, 52% of the articles categorized as regenerative agriculture also brought up animal agriculture, while only 7% of articles that discussed emissions also mentioned animal agriculture.

Certain themes, particularly emissions, could have brought up animal agriculture at a much higher rate given the relationship between the two. We expand on this missed opportunity in the *Animal Agriculture Narrative In Climate Articles* section.

Figure 3. Animal Agriculture Mentions by Theme



MME: Mining, Manufacturing & Energy Production

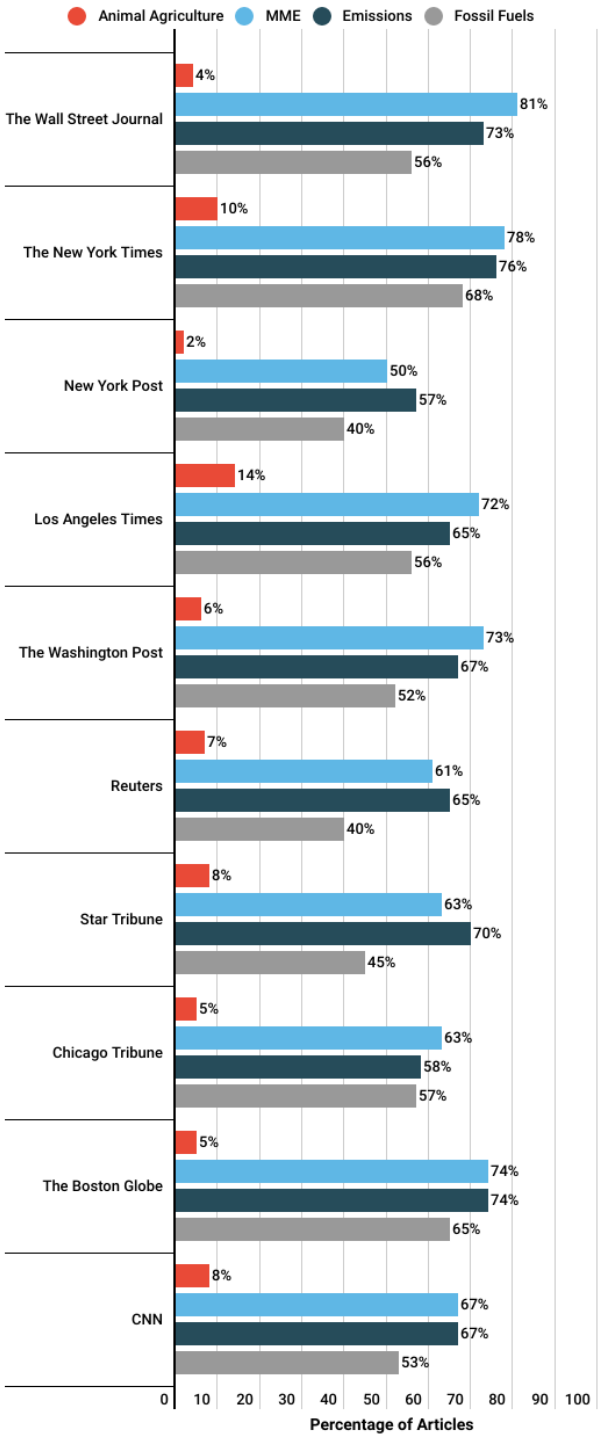
Coverage By Media Outlet

To better understand the extent to which outlets differ in their coverage of animal agriculture, we analyzed how often each of the media outlets referenced animal agriculture in climate articles, as compared to other causes of climate change. Animal agriculture came up much less often than other causes like emissions and mining, manufacturing, and energy production, which all media outlets discussed the most. These were always followed by fossil fuels, then transportation. The general agriculture and residential themes were usually covered to a greater extent than animal agriculture as well.

As a reminder, we considered 100 climate articles per media outlet. Although all outlets mentioned animal agriculture at least occasionally, it was more overlooked by some outlets than others. For instance, the Los Angeles Times mentioned animal agriculture in 14% of articles, while the New York Post only mentioned animal agriculture in 2% of the articles we analyzed.

In comparison, the Los Angeles Times discussed mining, manufacturing, and energy production in 72% of their climate articles, emissions in 65%, and fossil fuels in 56%. The New York Post mentioned mining, manufacturing, and energy production in 50% of their articles, emissions in 57%, and fossil fuels in 40%. Regardless of outlet, the amount of coverage animal agriculture gets in comparison to other causes of climate change is minimal. The figure below shows how infrequently the animal agriculture theme was brought up in climate articles compared to the top three most common themes.

Figure 4. Media Outlet Coverage of Animal Agriculture Versus the Top-Discussed Causes of Climate Change



MME: Mining, Manufacturing & Energy Production

To see how all ten themes were covered by each media outlet, check the *Supplementary Materials*.

Political Leaning And Animal Agriculture Mentions

The correlation between media outlets' political leaning and animal agriculture mentions points to a small but statistically significant negative association between the two variables (τ = -.08, p < .05). Specifically, the more left-leaning a media outlet is, the more likely they were to mention animal agriculture in articles about climate change.

The Animal Agriculture Narrative In Climate Articles

Our qualitative analysis of all animal agriculture articles and a selection of non-animal agriculture ones found several trends. We present these with examples below, citing specific articles in parentheses using their associated numbers from this spreadsheet. Overall, news outlets failed to make the connection between climate change and animal agriculture, and there was a general tendency to miss opportunities to discuss the impact of diet on climate change in the articles that did bring up animal agriculture.

Most Climate Coverage Ignores Emissions From Animal Agriculture

Not every climate story is an animal agriculture story, but we observed many examples of reporting that missed a vital opportunity to address food sector emissions.

Example 1: Coverage Of Energy Transition

Several articles discussed energy transition—that is, shifting the energy sector from depending largely on the use of fossil fuels to the use of renewable sources (e.g. solar and wind energy)—but didn't take the opportunity to bring in relevant information about the food sector. For example, two Wall Street Journal pieces (309, 762) focused on congressional negotiations around climate legislation but neglected to mention how the new policies would address—or fail to address—rising food-sector emissions. Instead they, as well as a New York Times story about the passage of climate legislation (7), focused primarily on the issue of energy transition.

Example 2: Coverage Of Climate Impact On Wildlife

Stories that cover climate impacts on wildlife are a natural fit to mention meat consumption and its climate impact because livestock farming is one of the leading drivers of deforestation, which not only reduces natural habitats for wild animals but also removes vital natural carbon sinks that help offset carbon emissions. Despite this connection, many such stories made no mention of cattle ranches or other aspects of livestock production.

In one Reuters story (559), the coverage of how climate is impacting agriculture failed to make any mention of the cattle ranching industry or soy feed crops (Song et al., 2021), even though both are major contributors to food sector emissions (Poore & Nemecek, 2018) and deforestation (Pendrill et al., 2019)—driving the very risks this story aimed to explore in its coverage. The story even went so far as to talk about impacts to the "water-intensive" beverage industry while ignoring entirely the water-intensive cattle ranching industry.

Similarly, a Los Angeles Times story about wild animals in Zimbabwe (1000) reported on the devastation to wildlife as a result of climate change but missed an opportunity to connect what we eat in the U.S. to these impacts.

Example 3: Coverage Of Regenerative Agriculture

Some stories mentioned an approach to farming called "regenerative agriculture" as a climate solution without reporting on how the solution falls short. According to research (Newton et al., 2020), regenerative agriculture is usually implemented by farms through one or more of the following practices: reducing or eliminating tilling the soil, planting cover crops, and growing a rotation of crops and livestock rather than the more industrialized approach of farming as much of a single type of crop or farm animal as possible.

Yet there are two important areas of inquiry journalists are missing in their regenerative agriculture reporting: First, conflicting evidence on whether agricultural soils can successfully store carbon, and second, the massive amount of land that would be required to replace factory farmed beef with regenerative beef.

Soil scientists are extremely divided on whether regenerative practices like cover cropping and reduced tillage can successfully sequester carbon in soil. In a nutshell, in order to successfully offset carbon emissions, the practice must be permanent. That is, it must remove carbon permanently from the atmosphere. But due to discoveries that upended the field of soil science, it's become clear that carbon is finicky, and efforts to get it to stay put in agricultural soils are typically not effective.

In addition, a 2020 peer-reviewed study of a regenerative livestock operation found that the farm needed 2.5 times as much land as conventional animal farming to raise the same amount of meat (Rowntree et al., 2020). Any food sector climate solution that needs large amounts of land will come at a climate cost, what scientists call a "carbon opportunity cost," because it involves giving up that carbon reserve that was keeping carbon out of the atmosphere (Hayek et al., 2021).

A story for Reuters (916) reported on $3 billion in U.S. Department of Agriculture funding for climate-smart farming and forestry projects:

> *The program will fund 70 projects across 50 states and Puerto Rico that would encourage farmers to cut emissions in various ways. This would include planting cover*

> *crops to enhance soil health and absorb carbon, improving manure management to cut methane emissions, and collecting data on environmentally friendly beef and bison grazing practices.*

Yet there was no reporting on the efficacy—or at least the debate over efficacy—of these practices, especially the evidence suggesting carbon added to farmland soils does not stay put in the ground and the massive amount of land required to raise "environmentally friendly beef."

Even Stories That Cover Animal Agriculture Fail To Report On Emissions

Even stories that mentioned animal farming often failed to report on the connection between farming and climate change accurately. According to our quantitative analysis, the stories that most commonly included the animal agriculture theme were those that discussed agriculture in general and regenerative agriculture in particular.

Example 1: Coverage Of General Agriculture

Many stories that fell under the general agriculture theme framed their coverage in terms of how farms of all kinds have been impacted by climate change—mentioning livestock in terms of losses to drought or flooding, for example, alongside crops like corn.

A Boston Globe article (955) reported on the impacts of the drought on livestock in terms of costs to the farmer, quoting a public health expert:

> *Bernstein said he's also worried about the effect on the health of farmers, especially the stress from worrying about crops and livestock. Researchers have observed increased rates of suicide in farming communities during severe drought, and the financial burden can affect farmers' access to health care.*

A Washington Post article (402) reporting on drought conditions also mentioned that ranchers were struggling to provide water for their livestock. The issue was further discussed in a story by CNN (871):

> *Bennet and Kelly said the drought is severe for farmers in their states, who are being forced to make tough choices for their crops and livestock. About 80% of Arizona's Colorado River allocation goes toward watering crops, Kelly said.*

Drought conditions during the summer of 2022 did imperil livestock populations, forcing farmers to sell animals for slaughter when temperatures made it impossible to keep them cool and hydrated. But these stories also missed an opportunity to inform readers of how their dietary choices contribute to climate emissions. Beef consumption, for example, is a leading driver of food sector emissions.

Example 2: Coverage Of Meat Reduction As Climate Action

In some stories the reporter characterized meat reduction as ineffective individual action (77):

> *"Some of us were thinking cake and ice cream. Swain was thinking climate change. Could he ask well-wishers to pledge to step up their efforts to reduce greenhouse gas emissions? Could he find a way to urge them to go beyond individual choices, such as eating less meat or driving an electric car, and employ the change-making power of democratic action?"*

Others framed it as a fringe Democratic culture-war effort along with banning gas stoves (11):

> *Another Climate Corps option is to become a "clean energy educator." ... Brace yourself for teach-ins on the sins of meat eating and natural-gas stoves.*

Another example of the lack of seriousness given to meat reduction as a climate change mitigation strategy comes from a Chicago Tribune story (80) that reported on individual actions to combat climate change but made no mention of eating less meat, instead recommending that readers buy locally grown food. This is not only a missed opportunity but an example of misleading reporting: Data suggests that most food sector emissions come from livestock methane emissions and land use, while transportation emissions account for a mere 6% of food system emissions. Shifting to a plant-rich diet then, primarily reducing beef consumption, and curbing food waste are far more effective for reducing food sector emissions.

Furthermore, two New York Post stories about celebrities (549, 551) mentioned meat consumption with other consumer actions like private flights and plastic use without any context for the emissions associated with any of these actions. Meanwhile, another Chicago Tribune story (926) did not report emissions figures but did include the recommendation to eat less meat:

> *Both Yudt and Duncan say solutions often start as baby steps. Here are some things all of us can do to quell the climate crisis.*
>
> - *Minimize plastic use. Even though many towns have recycling programs, Duncan said, only a small percentage of the materials collected actually get recycled.*
> - *Pick up litter.*
> - *Be mindful of the companies from which you buy products.*
> - *Cut back on meat consumption.*

Climate journalists may be hesitant to recommend individual actions for fear of letting corporate polluters off the hook, but climate models recommend both forms of action necessary to curb emissions: institutional change as well as individual dietary change. A 2021 study from Project

Drawdown found that dietary change is one of the most powerful forms of household climate action—both shifting to a plant-rich diet and curbing food waste.

Example 3: Coverage Of Regenerative Agriculture As A Solution To Animal Ag

Other animal agriculture stories touched on the theme of regenerative agriculture—and reported on this farming practice as a climate solution.

Advocates for it claim that regenerative agriculture practices can sequester carbon and reduce overall emissions. Otherwise known as carbon farming, the idea is that practices like cover cropping, crop rotations, and tillage reduction remove carbon from the atmosphere and store them in agricultural soils. In some cases, regenerative farms that raise meat even call their operations "carbon neutral." However, as discussed above, numerous climate researchers and soil scientists point to two problems with these claims: first, that studies show added carbon in soil is inconsistent and not permanent, so it is not a true carbon offset, and second, that regenerative farms that produce meat require significantly more land to produce the same amount of food as conventional animal farming (Rowntree et al., 2020).

Two stories reported on federal funding of climate solutions in the farm sector—in both cases primarily conservation or regenerative farm approaches—without investigating what drives food sector emissions and whether these methods are effective at curbing those emissions.

The first, an article from The Wall Street Journal (409) covered federal funding for farm conservation. While it accurately reported that 24% of emissions comes from the food sector, it also included cover crops and industry-led efforts to reduce cattle farms' methane emissions through feed additives without reporting on the efficacy of either solution. What's missing from most reporting on feed additives—a commonly considered method to reduce methane emissions—is that this methane reduction strategy is only practical on the feedlot. Because that's just part of a cow's life cycle, the actual efficacy for these additives is much lower than typically reported, 8.8% according to calculations by researchers.

The second story, from The New York Times (413), covered regenerative practices and "climate-smart agriculture" by beginning with a description of a farm that raises grass-fed cows and goats and "receives a little help from the Agriculture Department." The reporter mentioned scientific doubt about the efficacy of regenerative farming for sequestering carbon but did not fully interrogate whether raising cattle can be "climate-friendly." The article lacked even a basic explanation of what drives food-sector emissions: namely, methane from cows no matter what they're fed, and second, land use to grow feed crops and provide pasture for grazing. The New York Times has provided similar information to readers on other occasions but is inconsistent in doing so.

Some Animal Agriculture Stories Got It Right

Though rare, there were several bright spots in the coverage of animal agriculture, notably several CNN stories that reported accurately on food-sector emissions.

Some stories only briefly mentioned animal agriculture. For instance, a Reuters story (408) mentioned both meat reduction and plant-based foods as a solution:

> *Research to be presented on Tuesday looked at how 40 big companies including agricultural producers and food retailers could fare under scenarios called key to reducing emissions, such as if governments impose carbon emissions prices or if consumers reduce their consumption of meat.*
>
> *The study, seen by Reuters News, found the companies' value would decline by an average of around 7% by 2030, equivalent to some $150 billion in investor losses, if they did not adopt new practices.*
>
> *At the same time, business areas like plant-based meat and forest restoration offer the same companies big new opportunities, the report states.*

A Los Angeles Times article (95) referenced a news story from Inside Climate on ranching and soil health, highlighting that the science does not support rancher claims that their activities benefit the land.

Three stories from CNN reported explicitly on the connection between meat and climate change. One article (466) profiled a scientist who adopted a plant-based diet after switching his field of study to climate science:

> *At the crossroads of his two major interests—health and climate—Springmann's research was showing how his plant-based diet lowered his carbon footprint.*
>
> *"My initial thought was, 'If I know it's healthier and it's more environmentally sustainable (to not eat animal products), why wouldn't I do that?'"*
>
> *With his meat-eating days over, he dug deeper into the correlation of diet and environment—specifically, how eating less animal-based products could help slow the climate crisis. It's a topic he said did not get a lot of attention 15 to 20 years ago.*
>
> *"At that time, most of the climate change research was really sort of on the production side—power plants and how to reduce carbon dioxide emissions. The link between climate change, greenhouse gas emissions and the food system was really in the baby stage."*

Another story (685) reported on the impact of companion animal food, citing their "meat-heavy" ingredient list as a source of emissions. And a third article (356) covered research that showed

the best way to reduce your dietary emissions is to focus on what you eat—namely animal-based foods—rather than buying locally-grown foods:

> *Land use and farm-stage emissions, including the application of fertilizers and production of methane in the stomachs of cattle, account for more than 80% of the footprint for most foods.*
>
> *Transport is responsible for less than 10% of their final carbon impact; for beef it's less than 1%. The remainder of a food's emissions mostly occur during processing, packaging, and retail.*
>
> *"Eating locally would only have a significant impact if transport was responsible for a large share of food's final carbon footprint," Ritchie wrote in the report. "For most foods, this is not the case."*

Conclusions

Not Enough Attention Is Given To Animal Agriculture's Role In The Climate Crisis

Although all news outlets covered animal agriculture to some extent, the vast majority of climate reporting included in this study—93%—made no mention of animal agriculture. Even the small percentage of stories that did cover animal agriculture mostly failed to make the connection between meat consumption and rising climate emissions and environmental degradation. Most articles only briefly mentioned animal agriculture and, if discussed in greater detail, more often than not it was in terms of how climate change is affecting the animal agriculture industry rather than the other way around. In fact, of all the climate stories analyzed in this study, only a handful explicitly covered animal agriculture's effects on climate change.

In most stories that touch on animal agriculture, news outlets are missing a critical opportunity to inform readers about the impact of what they eat. The themes most covered by all news outlets were mining, manufacturing, and energy production, emissions, fossil fuels, and transportation, yet these also happened to be the themes that were least likely to be discussed alongside animal agriculture in climate articles. And it isn't due to a lack of relation between them — for instance, agriculture is the number one source of methane in the world, most of which comes from livestock production, and it's estimated that 20% of animal agriculture emissions come from the use of fossil fuels along supply chains (FAO, 2013). Furthermore, at a global scale, animal agriculture is responsible for a similar percentage of greenhouse gas emissions as the transportation sector, yet it receives far less coverage in the media.

Although research on this topic is lacking, previous research supports and expands on our finding that there is a tendency for the media to give little attention to how animal agriculture contributes to climate change.

In addition to finding low coverage of animal agriculture in climate media in the U.S. and United Kingdom, one study found that governments and the large-scale animal agriculture industry are not held as accountable as consumers. In other words, they found more mentions of the need for individual dietary change than to reform government policies or agricultural practices (Kristiansen et al., 2020).

Another study found that despite scientific consensus on the connection between animal agriculture and climate change, the media often treats it as a debate, presenting both "sides" to an argument that doesn't really exist (Fry et al., 2022). Consequently, there is evidence that the media is downplaying the role of animal agriculture even when it *is* discussed in relation to climate change. Research shows that false balance reporting—when journalists present both sides of an issue, even when one side has greater evidence to back it up—can cause people to doubt the scientific consensus on issues like climate change (Imundo & Rapp, 2022), making this a particularly dangerous approach given the seriousness of the issue.

Misinformation And Missing Information In Climate Coverage

Overall, animal agriculture tended to be covered rather briefly, and almost always in the context of another cause of climate change, such as transportation or mining, manufacturing, and energy production, for example. In many of these stories, outlets covered animal agriculture as part of general agriculture or, in some cases, regenerative agriculture—often in ways that included inaccuracies or missing key facts and context about emissions from meat. For instance, in the case of regenerative agriculture, the purpose is to mitigate climate change and environmental degradation. Despite the clear scientific evidence that most agricultural emissions come from livestock farming and that it has detrimental consequences on the environment, over half of regenerative agriculture articles mentioned livestock farming, often in the context of incorporating it into these "climate-smart" practices, without presenting any data about the negative effects of animal agriculture.

In another missed opportunity, many articles brought up the effects of climate change on farmers around the world but failed to consider the global repercussions of U.S. consumption of animal products. For example, meat consumed in the U.S. is often imported, so an increase in demand for beef in the U.S. can result in an increase in deforestation in the Amazon to make room for more cows, increasing emissions in South America and reducing a very important global carbon sink.

The Media's Role In Communicating Climate Change Information

A study by the Reuters Institute (2022) found that in the U.S., 24% of people pay attention to major news organizations for climate change news, though roughly the same percentage of people say they don't pay attention to climate change at all. As the researchers from the study acknowledge, polarized politics and media coverage play a role in "driving down interest in and attention to climate change as an issue." As we saw in this study's results, political leaning may also play a part in whether animal agriculture is brought up when communicating about climate change—left-leaning media outlets tend to discuss animal agriculture more often than right-leaning ones. However, all news outlets, regardless of political leaning, failed to give enough attention to animal agriculture, let alone discuss its consequences on the environment in depth.

Evidence recently came to light about the meat industry's influence in blocking the Intergovernmental Panel on Climate Change (IPCC) from recommending plant-based diets to fight climate change. With reports of global significance like this excluding the influence of animal agriculture from their narratives, along with the media failing to properly cover this issue, it's not surprising that very few people around the world are aware that animal agriculture is a leading cause of climate change. They instead think that other human-derived causes of climate change, like transportation, are of much greater concern.

Through their role in communicating important issues to the public, news outlets have the unique ability to bridge the gap between climate science and public knowledge. However, as this and other studies show, more needs to be done in terms of informing readers about how animal agriculture impacts the environment and the importance of shifting global diets to mitigate climate change.

Caveats & Limitations

As with all reports, this one has some important caveats and limitations to bear in mind.

First, our study was limited to just 100 climate articles per news organization, which, depending on the news outlet, is only a small sample of all the climate articles they have published. Furthermore, this meant that for some news outlets, article dates spanned only a month if climate change was a frequently covered topic, while for others it was a year or more—this influenced the kind of content that was covered. We briefly considered web scraping — the process of extracting data from a website with an automated tool—but it presented technical and legal challenges because the articles are paywalled. We purchased a one-month subscription from each outlet where it was required in order to obtain access for this study.

Second, in an effort to select the most relevant climate change articles for analysis in this study, we only included articles that contained the word *climate* in their titles, which may have excluded some relevant articles. However, doing so allowed us to use quick and objective criteria for article selection.

One further caveat is that a few articles were included in our data set more than once. News outlets will occasionally republish articles that originally came from another outlet, meaning that some of the articles we looked at were repeated. For instance, “World Bank Leader, Accused of Climate Denial, Offers a New Response” (988) was originally published by The New York Times on September 22, 2022, and republished by the Boston Globe (987) the same day, thus appearing twice in our data set. We decided to include repeated articles in our analyses given that republishing exposes them to a new audience and still reflects the climate change content the outlet is willing to publish.

Finally, we would like to note that some keywords that were used to classify articles into our ten themes could have been classified differently. For instance, the term *energy* could apply to multiple categories. Although we decided to use it as a keyword for our mining, manufacturing, and energy production theme, it could have also been included in the residential or transportation themes. We categorized keywords as accurately as possible, but article classifications may have looked a little different had certain keywords been applied differently.

Future Directions

While this study answered our research questions, it also gave rise to a few new ones. For instance, it could be useful to know how coverage of animal agriculture with respect to climate change has changed over time. While 7% coverage is much lower than it should be, it begs the question of whether this is an improvement compared to a few years ago.

Additionally, a comparative media analysis could be useful to get a sense of how coverage of this issue may differ across countries. This could be particularly informative if we were to compare countries where animal agriculture plays an important role in the local culture and economy versus countries where this is less true.

Finally, gaining a better understanding of how news outlets approach the intersection of food and climate change and identifying the decision makers within the outlets could provide further valuable information regarding the trends observed in this study.

Supplementary Materials

Article Extraction

As mentioned in the *Method* section, we obtained 1,000 articles from ten major U.S. media outlets, which were selected based on site ranking and web traffic data. Two news outlets—USA Today and Newsday—were excluded due to limited search functions.

To select articles, we conducted a search for the keyword "climate." We then sorted by date and selected the 100 most recent articles that included the word "climate" in their title. We used the same cutoff date of September 29, 2022 for article extractions from all media outlets—all articles had to have been published before that date.

Computer-Assisted Article Review

Using the *quanteda* package for R software, we searched for the following keywords in all articles. A "." indicates any character, so the word may be completed in any way (e.g., *ranch.* can be *ranches* or *ranching*). Keywords were determined after reviewing a number of expert sources on the causes of climate change (UN Climate Action, NASA, EPA, Government of Canada, IPCC, EU), discussion among the study's researchers, and later adapted following a series of accuracy checks.

Note that we applied exclusions to certain keywords to ensure that articles were properly categorized. For example, the keyword "farm." excluded the terms "farmer," "solar farm," and "wind farm," which would have miscategorized articles into the animal agriculture theme. While these exclusions are not shown here, they can be found in the categorization code on the Open Science Framework.

The final set of keywords used was as follows:

Animal Agriculture
- meat
- dairy
- rear
- .husbandry
- ranch
- factory farm.
- pasture.
- rangeland.
- grazing practices
- livestock
- cattle
- ruminant.

General Agriculture
- farm.
- farmland
- .agricultur.
- horticulture
- vineyard
- crop production.
- plantation.
- cultivat.
- harvest
- growing season

Mining, Manufacturing & Energy Production
- industrial
- mines
- mining
- oil and gas
- factories
- factory
- manufactur.
- facility
- facilities
- electricity
- energy

- cows
- sheep
- lamb
- lambs
- poultry
- chicken farm.
- chickens
- hens
- pig
- pigs
- aquaculture
- aquafarm.
- fish farm
- pisciculture
- fisheries
- seafood
- salmon farm
- salmon hatcher.
- tuna
- lobster farm.
- shrimp

Residential

- residential
- building codes
- home efficiency
- refrigera.
- air condition.
- appliance.
- stove
- furnace
- insulation
- light.bulb
- home energy
- heating and cooling
- heating system.
- rooftop solar

Land Use Changes

- deforestation
- land clearing
- land fragment.
- logging
- forests are logged
- timber
- urban expansion.
- road construction
- urban sprawl
- land.use change
- raze.

Consumerism

- consumerism
- electronics
- packaging
- single.use plastic
- plastic pollution
- plastic waste
- microplastic.
- landfills
- shopping
- black friday
- materialism
- fast fashion
- food waste

Regenerative Agriculture

- regenerative.
- carbon farming
- no-till farming
- agroecological farming
- sustainable agriculture
- agroforestry
- topsoil regeneration
- crop rotation
- cover crop.
- organic farming
- go organic
- compost
- power plant

Transportation

- transportation
- vehicle.
- car
- cars
- automobile.
- trucks
- buses
- .plane
- jet
- jets
- aircraft.
- cruise
- traffic
- exhaust emissions
- car exhaust
- autos

Emissions

- emissions
- methane
- CO2
- carbon dioxide
- nitrous oxide
- water vap.
- greenhouse.gas.
- air pollut.
- ozone
- carbon footprint
- smog

Fossil Fuels

- coal
- oil
- natural gas
- petroleum
- fossil.fuel.

Accuracy Checks

To check the accuracy of our search method, we reviewed at least three randomly-selected articles flagged with each theme to ensure that they reflected that category (e.g., articles flagged as containing the animal agriculture theme actually discussed animal agriculture) and that they did not contain mentions of any themes they were not flagged as containing (e.g., articles flagged with the animal agriculture theme, but not the consumerism theme, should not include discussions of consumerism). If we found instances of miscategorization, we adjusted the keywords to better capture the themes, reran the analysis, and repeated the accuracy check. We repeated this process 12 times, at which point we reached our final set of keywords.

Following the computer-assisted review of articles, we conducted a final stage of manual review of any articles flagged as containing the animal agriculture theme. In this final review, we read all animal agriculture articles in their entirety and eliminated those that had been miscategorized despite containing keywords pertaining to the theme (e.g., space debris landing on a sheep farm).

Media Outlet Leaning And Animal Agriculture

We sought to evaluate whether there was an association between media outlets' political leaning and frequency of animal agriculture coverage in their climate articles. To do this, we assigned a 1 or a 0 to each article, depending on whether or not it discussed animal agriculture—1 if it mentioned animal agriculture, 0 if it did not. For political leaning, we created a scale from 1 to 5, where 1 = left bias, 2 = left-center bias, 3 = least biased, 4 = right-center bias, and 5 = right bias, according to ratings obtained from mediabiasfactcheck.com. From most politically left-leaning to most politically right-leaning, the media outlets are (screenshots were taken on 11/11/22):

1. CNN (left bias)

2. The New York Times (left-center bias)

3. The Washington Post (left-center bias)

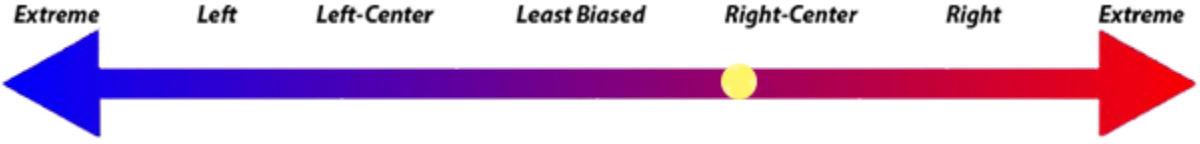
4. Los Angeles Times (left-center bias)

5. Star Tribune (left-center bias)

6. The Boston Globe (left-center bias)

7. Reuters (least biased)

8. Chicago Tribune (right-center bias)



9. The Wall Street Journal (right-center bias)

10. New York Post (right-center bias)

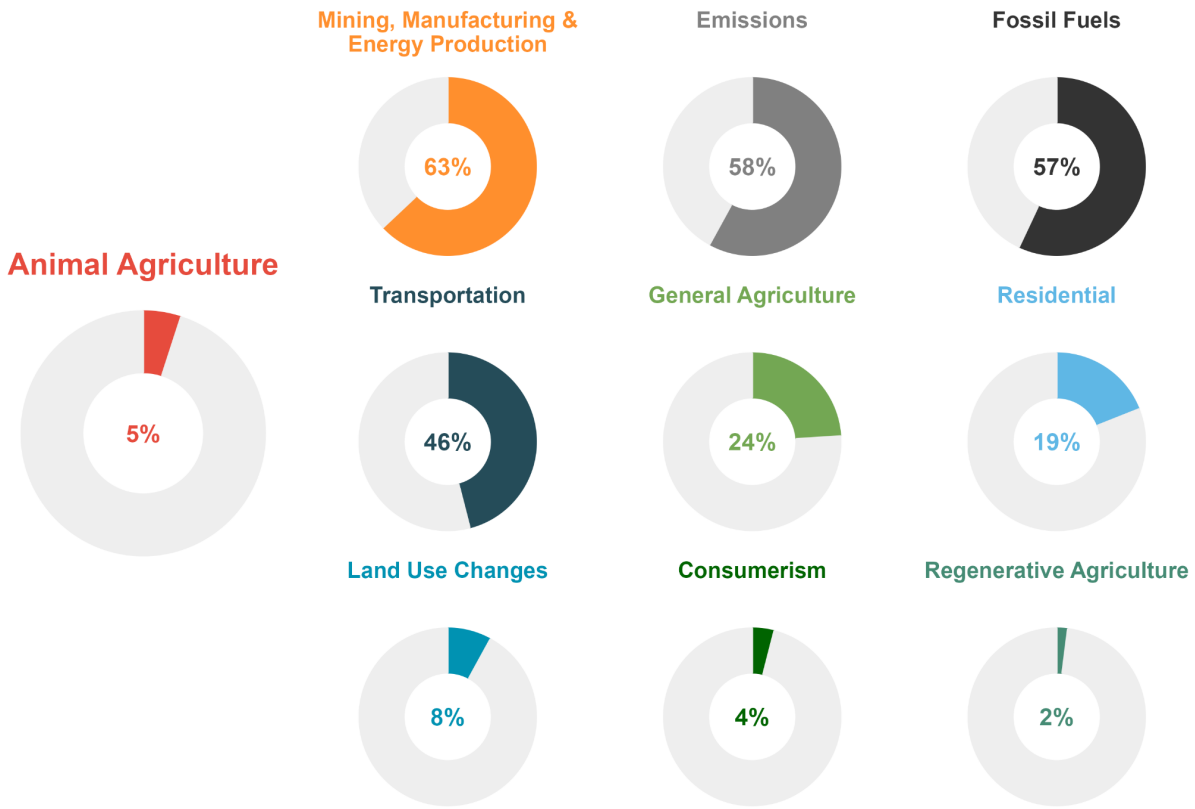
Detailed Coverage By Media Outlet

The following figures provide an in-depth view of how often each media outlet covered the ten climate-related themes.

Chicago Tribune

Climate articles from the Chicago Tribune ranged from September 2021 to September 2022.

Figure 5. Themes Covered by the Chicago Tribune

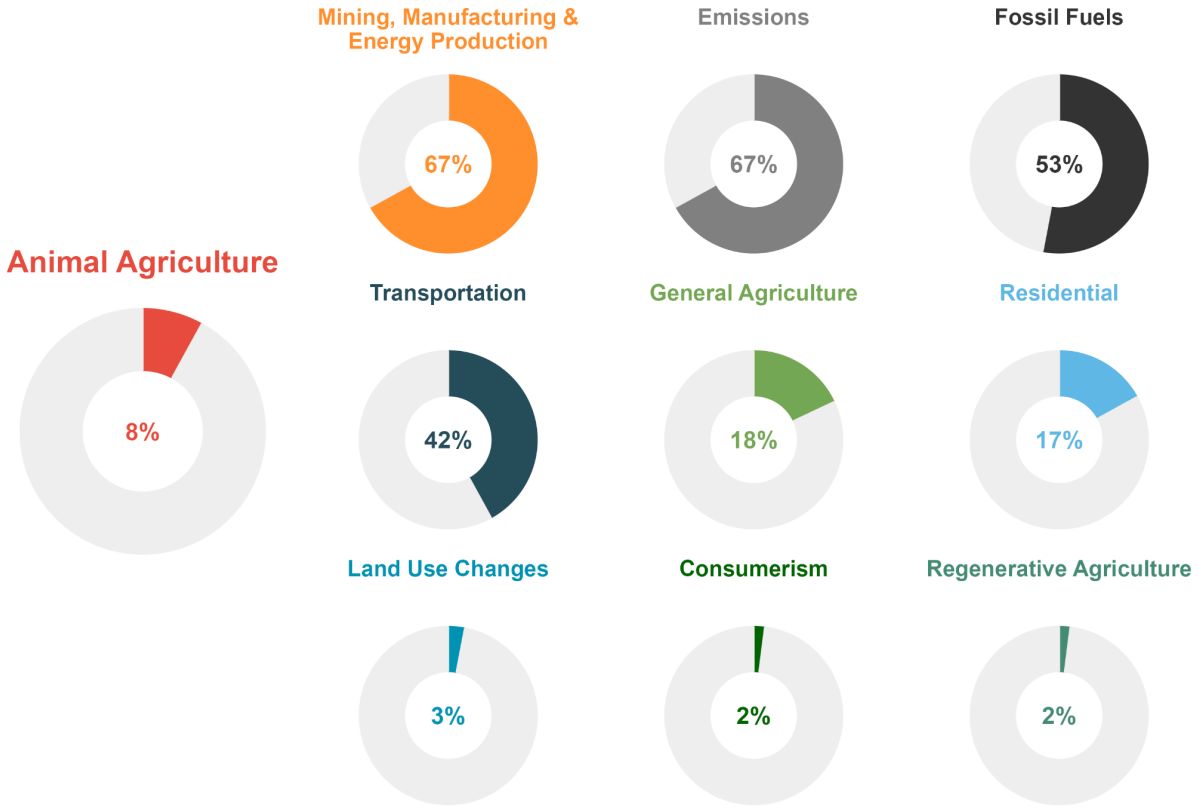


Note that the percentages don't add up to 100% because multiple themes were often covered within the same article

CNN

Climate articles from CNN ranged from May 2022 to September 2022.

Figure 6. Themes Covered by CNN

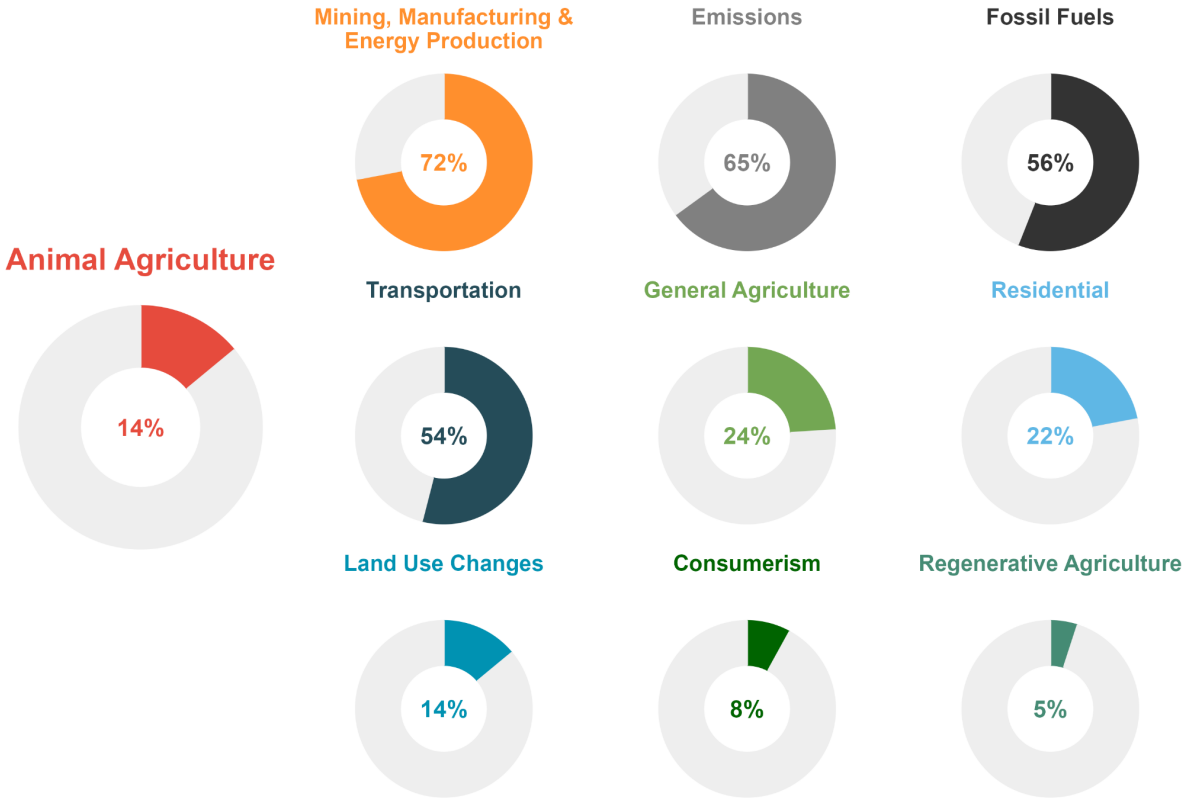


Note that the percentages don't add up to 100% because multiple themes were often covered within the same article

Los Angeles Times

Climate articles from the Los Angeles Times ranged from April 2022 to September 2022.

Figure 7. Themes Covered by the Los Angeles Times

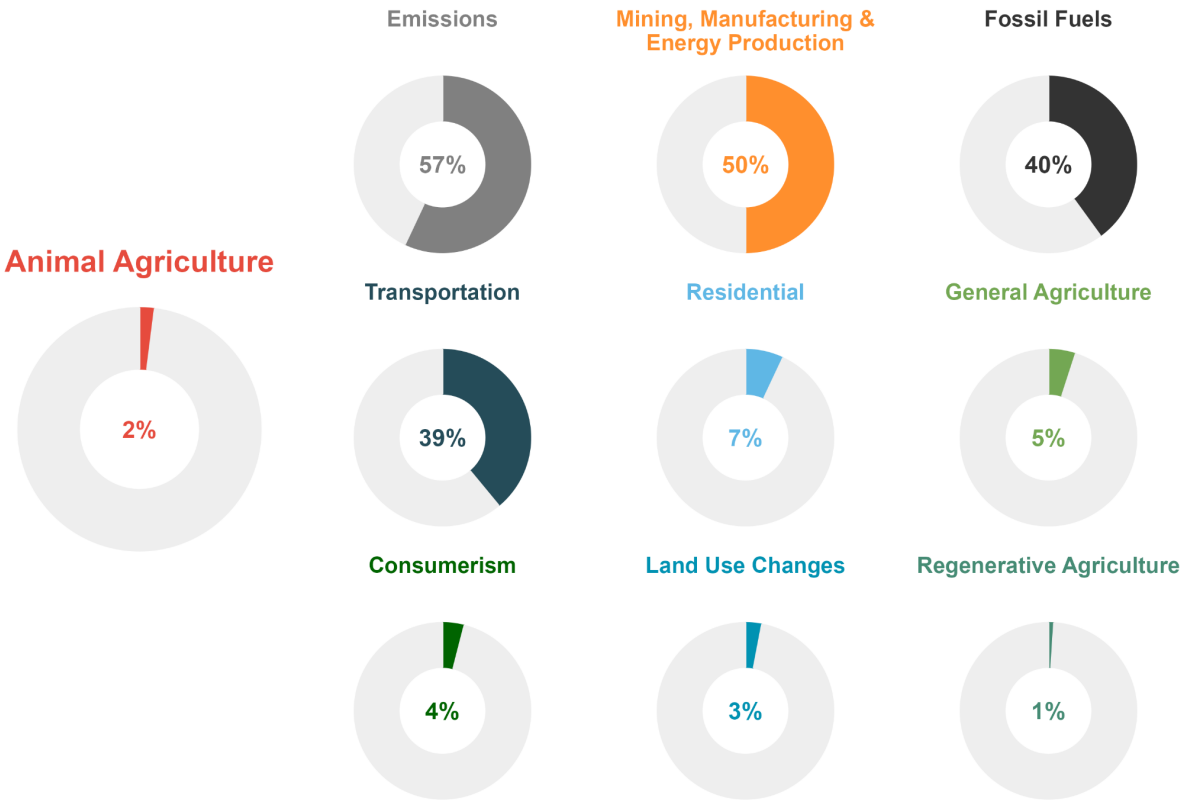


Note that the percentages don't add up to 100% because multiple themes were often covered within the same article

New York Post

Climate articles from the New York Post ranged from November 2021 to September 2022.

Figure 8. Themes Covered by the New York Post

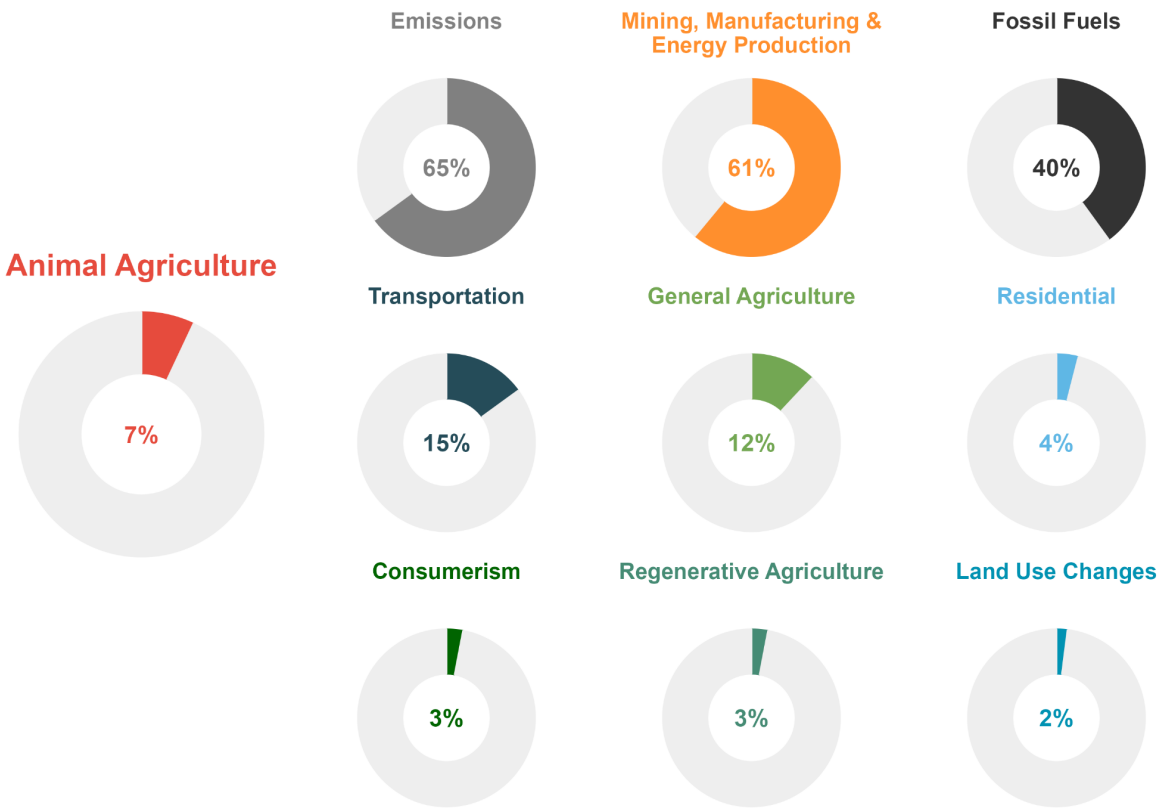


Note that the percentages don't add up to 100% because multiple themes were often covered within the same article

Reuters

Climate articles from Reuters ranged from August 2022 to September 2022.

Figure 9. Themes Covered by Reuters

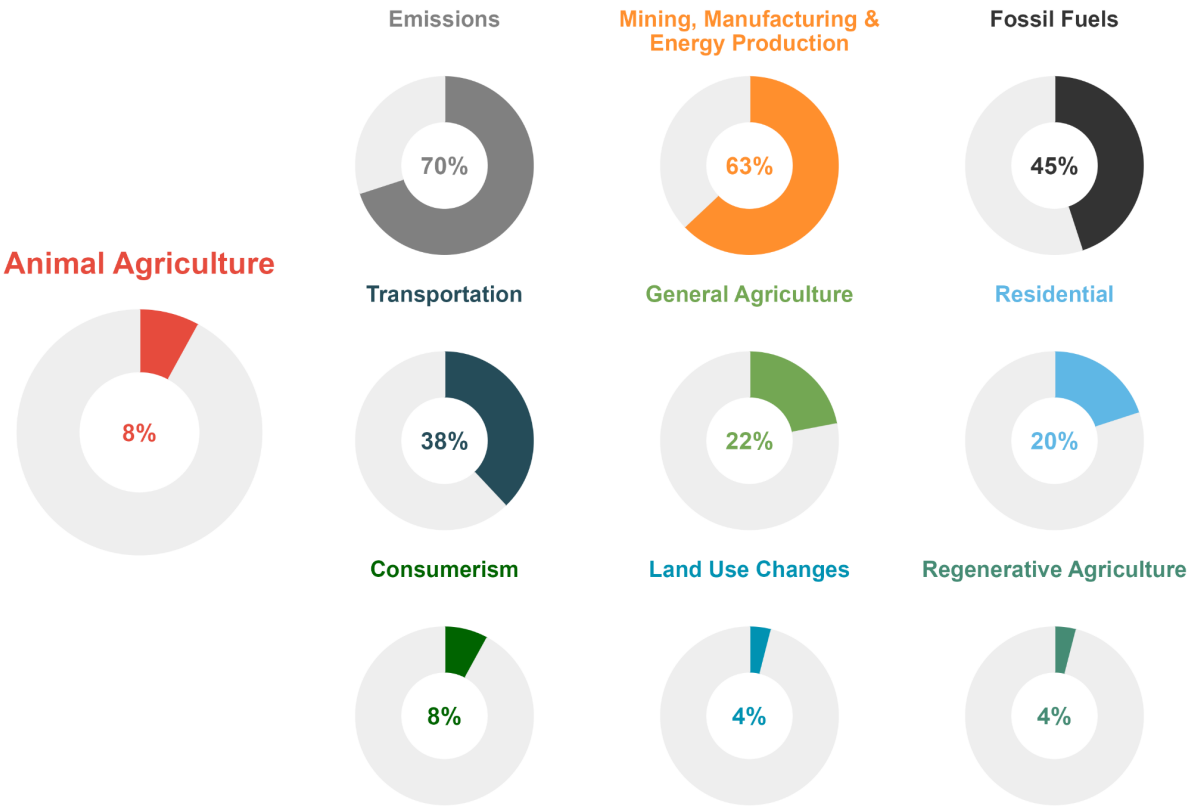


Note that the percentages don't add up to 100% because multiple themes were often covered within the same article

Star Tribune

Climate articles from the Star Tribune ranged from February 2021 to September 2022.

Figure 10. Themes Covered by the Star Tribune

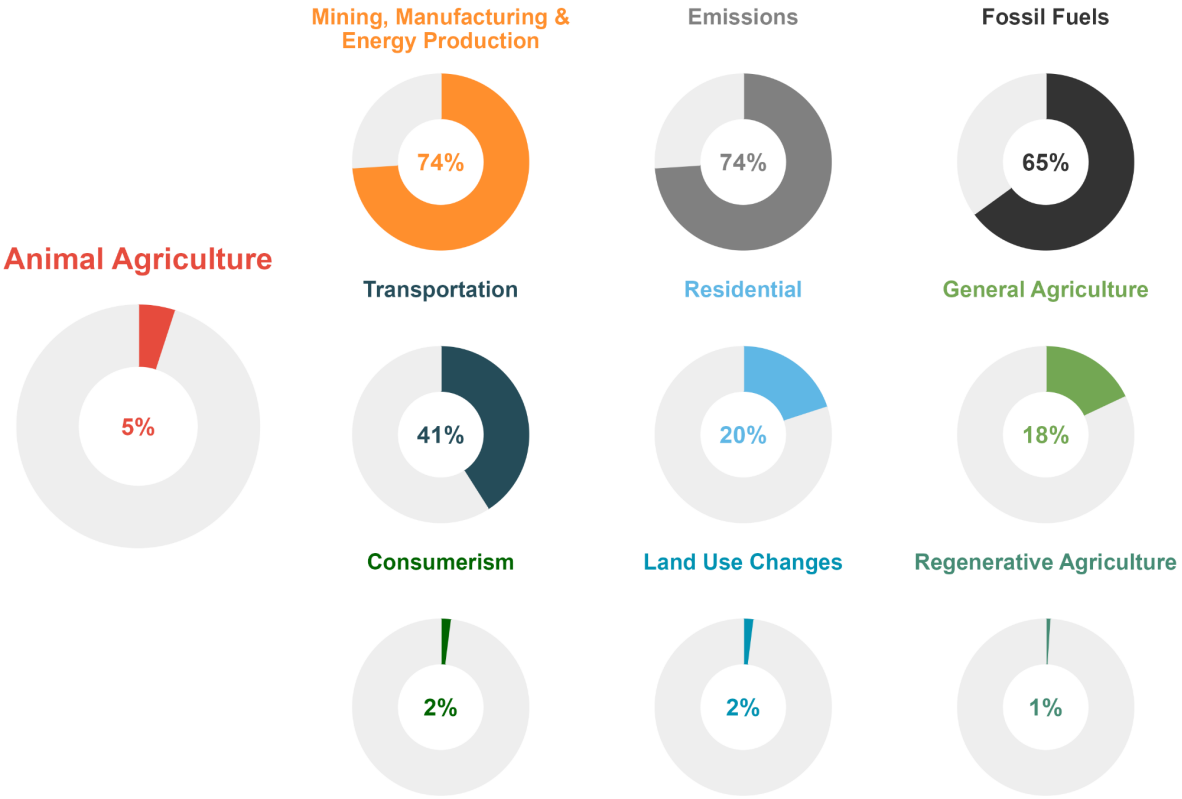


Note that the percentages don't add up to 100% because multiple themes were often covered within the same article

The Boston Globe

Climate articles from The Boston Globe ranged from July 2022 to September 2022.

Figure 11. Themes Covered by The Boston Globe

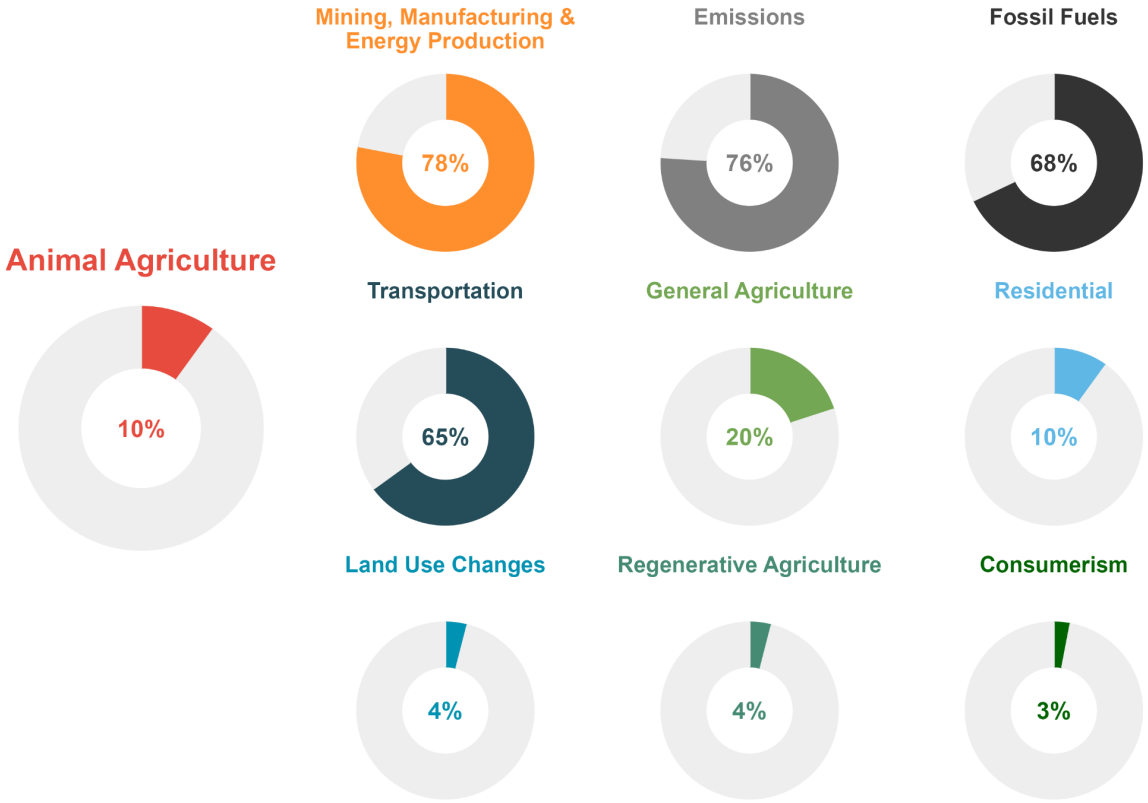


Note that the percentages don't add up to 100% because multiple themes were often covered within the same article

The New York Times

Climate articles from The New York Times ranged from July 2022 to September 2022.

Figure 12. Themes Covered by The New York Times

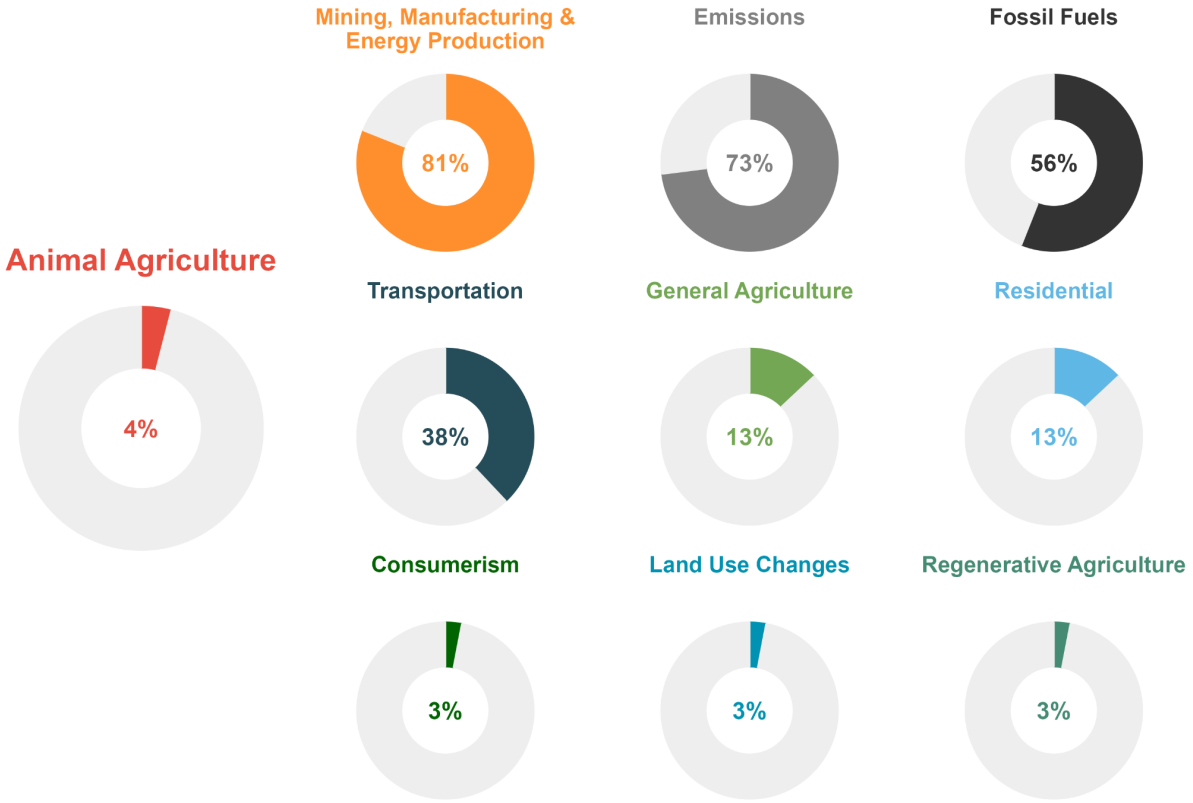


Note that the percentages don't add up to 100% because multiple themes were often covered within the same article

The Wall Street Journal

Climate articles from The Wall Street Journal ranged from June 2022 through September 2022.

Figure 13. Themes Covered by The Wall Street Journal

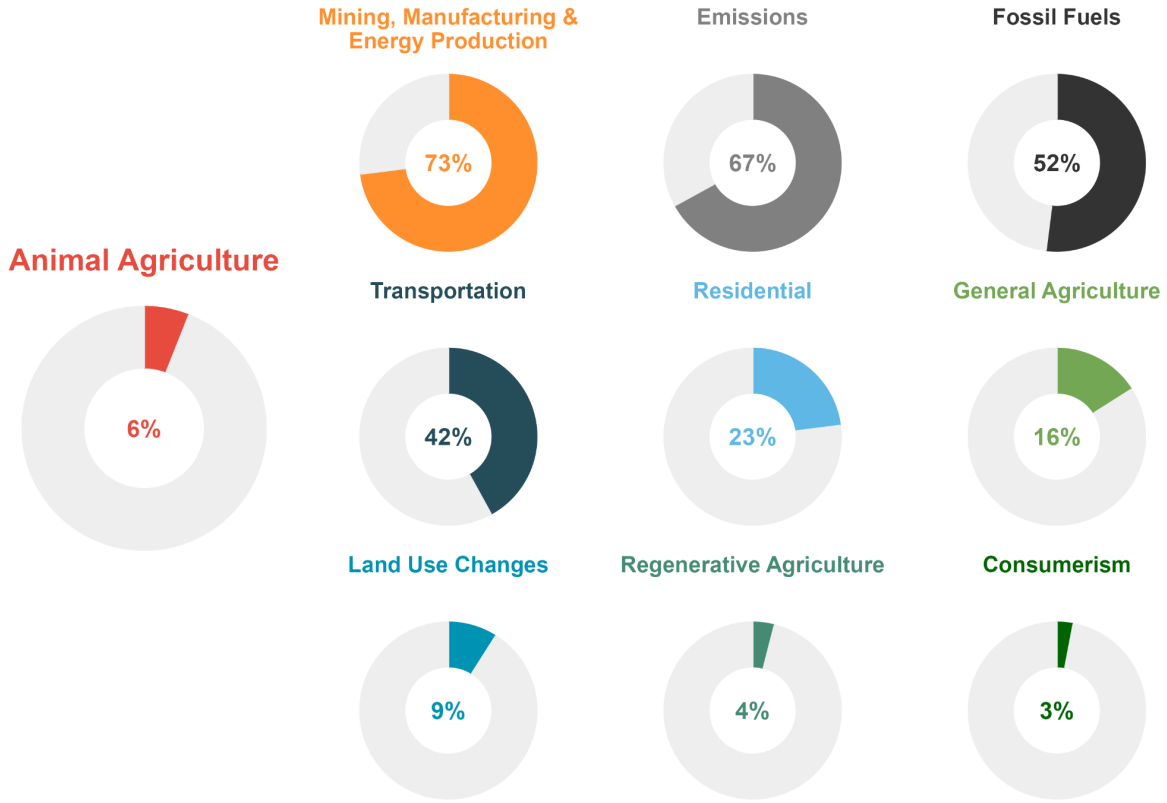


Note that the percentages don't add up to 100% because multiple themes were often covered within the same article

The Washington Post

Climate articles from The Washington Post ranged from August 2022 to September 2022.

Figure 14. Themes Covered by The Washington Post



Note that the percentages don't add up to 100% because multiple themes were often covered within the same article