FACT SHEET: REJECT MANURE BIOGAS AS A METHANE SOLUTION

Incentivizing manure biogas production harms environmental justice, contributes to industry consolidation, and crowds out funding for truly effective conservation practices. It is a greenwashing measure that insufficiently reduces methane emissions while further entrenching the inherently unsustainable and unjust systems of industrial animal agriculture and fossil fuel energy.

Industrial Animal Agriculture Is an Environmental and Public Health Hazard

Concentrated animal feeding operations (CAFOs), also known as factory farms, are heavily polluting facilities that threaten rural economies, public health, and quality of life for surrounding communities, which are disproportionately communities of color and low-income communities.[1] This is primarily due to the massive amounts of manure — as much as one billion tons — that that industrial-scale farms generate.[2] The waste causes considerable water and air pollution and threatens the health of surrounding communities.[3,4]

Factory farms are also major drivers of climate change, accounting for nearly 60% of emissions from the global food system and 36% of total U.S. methane emissions.[5] Because methane is a powerful but short-lived climate pollutant, rapidly reducing methane emissions is critical to meeting global climate targets.[6]

However, rather than regulate the industrial animal agriculture industry's methane emissions, policies on both the federal and state levels reward these industrial-scale polluters through incentives and taxpayer-funded subsidies that encourage the expansion of manure biogas, or factory farm gas, under the guise of climate change mitigation.[7]

Unfortunately, these policies create perverse incentives for CAFOs to:

1. Use manure management strategies that maximize methane generation.
2. Expand livestock herds to produce as much manure as possible.
3. Consolidate such that even fewer farms confine an even larger number of animals to produce as much manure as possible.

What Is Manure Biogas?

During anaerobic digestion, bacteria break down animal waste in a closed, oxygen-free environment known as a digester. What is left behind from bacteria "eating" the waste is a combination of gases, primarily methane and carbon dioxide, called "biogas" or "factory farm gas," as well as solid and liquid material (also called "digestate" and "effluent").

The captured gas can be used to generate heat or electricity on-site or electricity sold onto the electric grid, processed into so-called "Renewable Natural Gas," or converted to Compressed Natural Gas (CNG) or Liquefied Natural Gas (LNG) and used as vehicle fuel.

Manure Biogas Is Incompatible With the Goals of Environmental Justice and Public Health

- Manure biogas systems are typically only feasible at the largest CAFOs and rely on the existence and perpetuation of the most hazardous manure management practices that contribute to air and water pollution.[8]
- Factory farm gas systems have no impact on:
  - Greenhouse gas emissions from feed production and enteric fermentation.
  - Most forms of localized air and water pollution from CAFOs that threatens public health and the environment.
  - The overuse of antibiotics administered to livestock, a driver of antibiotic resistance in humans.
  - Farmers locked in unfair contracts or workers facing dangerous working conditions on factory farms and in slaughterhouses.
  - The suffering of more than nine billion animals raised for food in intolerably cruel conditions.
- Manure biogas generates additional environmental and public health concerns for communities living near CAFOs, including increased ammonia emissions during anaerobic digestion,[9] higher concentrations of nutrients in digestate that contribute to water pollution,[10] and new pipelines and trucks to transport manure or biogas.
- Burning factory farm gas creates even more toxic air pollution than burning fossil gas.[11]

Incentivizing Manure Biogas Is an Ineffective Way to Reduce Agricultural Methane Emissions

Methane reductions from CAFOs with digesters are **likely overstated** by the U.S. federal government.[12]

- Research found that herd sizes at dairies with digesters **grew 3.7% year-over-year**, which is 24 times the growth rate for overall dairy herd sizes, driving increased GHG emissions from animal feed production, enteric fermentation, and manure.[13]
- The federal government assumes that without digesters, CAFOs would utilize the most methane-generating and harmful practice of storing liquid manure maintained in large lagoons or deep pits, but there are alternative manure management practices that generate fewer methane emissions and are less harmful than digesters.

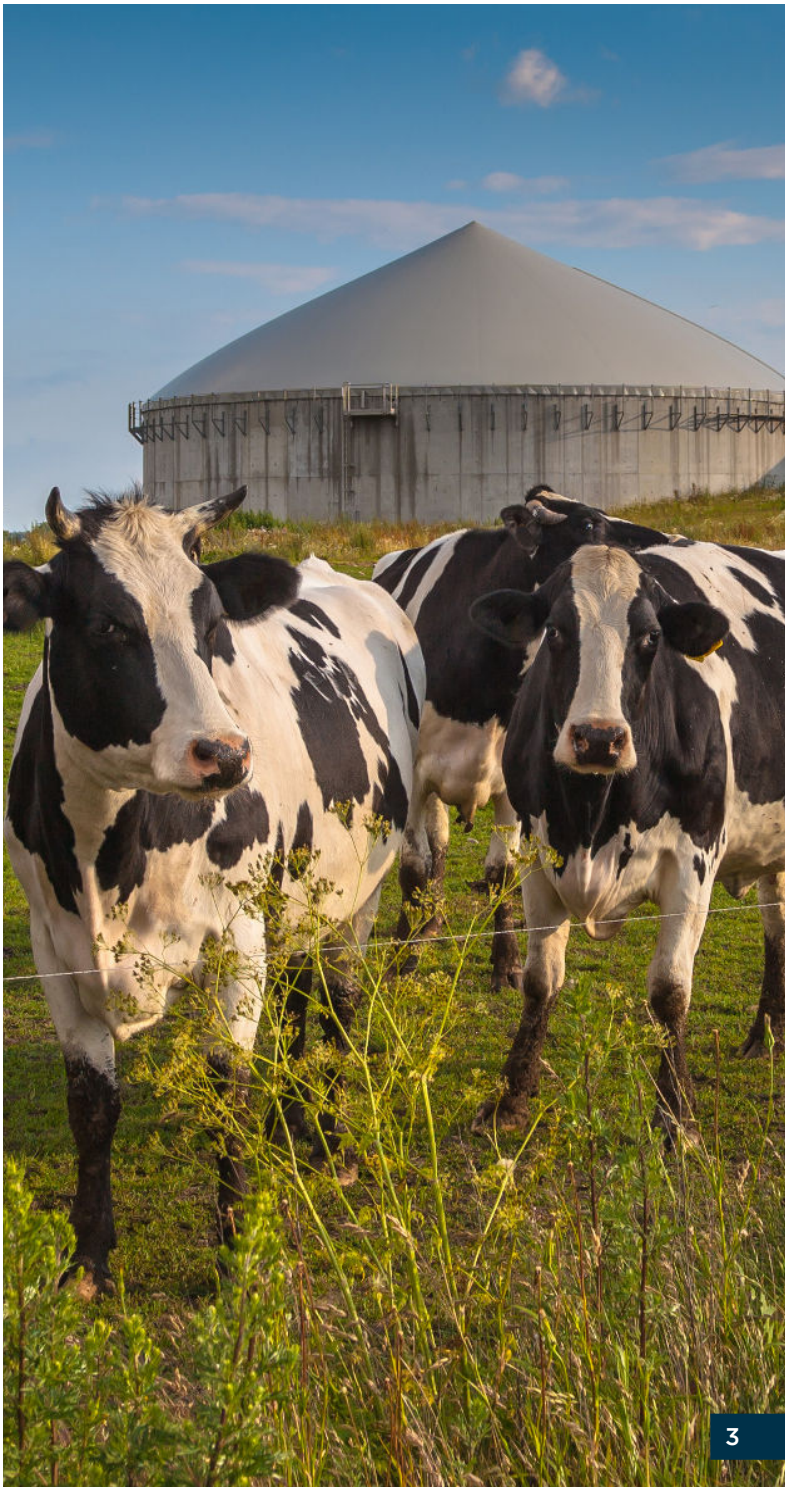
Despite extensive public investments in digesters, the U.S. government is **not monitoring or reporting on methane emissions** from CAFOs with digesters or collecting basic information such as animal populations in ways necessary to understand whether these investments yield actual greenhouse gas reductions.

Even the overstated reductions from digesters will **fail to reduce agricultural methane emissions** in alignment with United States' commitment to the Global Methane Pledge to reduce methane emissions by 30% from 2020 levels by 2030.[14]

- The Biden administration's proposal to reduce agricultural methane emissions — largely by installing new digesters — would only reduce agricultural methane emissions by 9% by 2030 in a best-case scenario.[15]

Alternatives to Factory Farm Gas Are Less Expensive, More Effective, and Less Harmful

- Building and operating anaerobic digesters is expensive; instead, taxpayer dollars should support farmers and ranchers employing meaningful conservation practices.
- Reducing herd sizes by 20% and implementing feasible alternative manure management strategies on 1,500 dairy farms could yield 55% of the reductions that are needed to slash agricultural methane emissions in alignment with the Global Methane Pledge.[16]
- Simply paying dairy producers to reduce their herd sizes would be nearly three times more cost-effective than subsidizing methane digesters without the harms of factory farm gas production.[17]



Key Policy Recommendation: Support a Just Transition Away From Factory Farming and Fossil Fuels

Resources currently supporting manure biogas (i.e., grants and loans for digesters, technical assistance, tax credits, and incentives for biogas production) should be redirected to more cost-effective methane reduction solutions that do not exacerbate environmental injustice and industry consolidation. Instead, policies should support a just transition away from factory farming to ecologically regenerative agriculture and away from fossil fuels to truly renewable energy.

Additional Policy Recommendations:

1. Do not create new funding streams or other policy incentives for manure biogas.
2. Prevent double-dipping between subsidies, tax incentives, and methane-credit markets. Relatedly, ensure greenhouse gas reductions attributed to manure biogas are not double counted.
3. Set a specific methane reduction target and pathway for the agricultural sector aligned with the Global Methane Pledge.
4. Require and improve methane monitoring and reporting from livestock operations.
5. Pursue agricultural methane reduction strategies that support environmental justice and fair markets for producers:
    - Methane emissions from industrial livestock facilities should be monitored, disclosed, and regulated.
    - Leverage procurement to shift federal purchasing and food service toward plant-forward menus.
    - Prioritize funding for pasture-based livestock production in U.S. Department of Agriculture conservation programs.
    - Implement policies such as the Farm System Reform Act that support a just transition to pastured animal production and plant-based food production, including placing a moratorium on large factory farms and providing voluntary buyouts for farmers who want to transition away from operating a CAFO.
6. Reduce food waste.
7. Regulate waste from both CAFOs and digesters, including treatment and application of digestate.
8. Require disclosure of basic data from CAFOs and digester operators and fund and conduct research to assess the impacts of manure biogas policies on methane emissions, industry consolidation, and rural communities.
9. When public funds have already been designated to support manure biogas, grants and loans should include conditions and exclusions to reduce public health and environmental harms and increase transparency.

Learn more at: foe.org/manure-biogas

1 Son, J.-Y., Miranda, M. L., & Bell, M. L. (2021). Exposure to concentrated animal feeding operations (CAFOs) and risk of mortality in North Carolina, USA. Science of the Total Environment, 799, 149407. https://doi.org/10.1016/j.scitotenv.2021.149407

Donham, K. J., Wing, S., Osterberg, D., Flora, J. L., Hodne, C., Thu, K. M., & Thorne, P. S. (2007). Community Health and Socioeconomic Issues Surrounding Concentrated Animal Feeding Operations. Environmental Health Perspectives, 115(2), 317–320. https://doi.org/10.1289/ehp.8836

2 Environmental Protection Agency. (2005). Detecting and mitigating the environmental impact of fecal pathogens originating from confined animal feeding operations: Review, available at https://nepis.epa.gov/Exe/ZyPDF.cgi/P10089B1.PDF?Dockey=P10089B1.PDF

3 Halden, R. U., & Schwab, K. J. (n.d.). Environmental Impact of Industrial Farm Animal Production. The Pew Commission on Industrial Farm Animal Production, 27–29. https://law.lclark.edu/live/files/6699-environmental-impact-of-industrial-farm-animal

Hribar, C. (2010). Understanding Concentrated Animal Feeding Operations and Their Impact on Communities. National Association of Local Boards of Health, 2-3. https://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf

4 Son, J.-Y., Miranda, M. L., & Bell, M. L. (2021). Exposure to concentrated animal feeding operations (CAFOs) and risk of mortality in North Carolina, USA. Science of the Total Environment, 799, 149407. https://doi.org/10.1016/j.scitotenv.2021.149407

Donham, K. J., Wing, S., Osterberg, D., Flora, J. L., Hodne, C., Thu, K. M., & Thorne, P. S. (2007). Community Health and Socioeconomic Issues Surrounding Concentrated Animal Feeding Operations. Environmental Health Perspectives, 115(2), 317–320. https://doi.org/10.1289/ehp.8836

5 Schiermeier, Q. (2019, August 12). Eat less meat: UN climate-change report calls for change to human diet. Nature, 572(7769), 291–292. https://doi.org/10.1038/d41586-019-02409-7

Thompson, A. (2021, September 13). Here's How Much Food Contributes to Climate Change. Scientific American. https://www.scientificamerican.com/article/heres-how-much-food-contributes-to-climate-change/

6 The White House Office of Domestic Climate Policy. (2021, November). U.S. Methane Emissions Reduction Action Plan, 1. https://www.whitehouse.gov/wp-content/uploads/2021/11/US-Methane-Emissions-Reduction-Action-Plan-1.pdf

7 Waterman, C. & Armus, M. (2024). Biogas or Bull****? The Deceptive Promise of Manure Biogas as a Methane Solution. Friends of the Earth, 14-16. https://foe.org/wp-content/uploads/2024/02/Factory-Farm-Gas-Brief_final-final.pdf

8 U.S. EPA. (2014, December 22). Is Anaerobic Digestion Right for Your Farm? https://www.epa.gov/agstar/anaerobic-digestion-right-your-farm

9 Aneja, Viney P., S. Pal Arya, Ian C. Rumsey, D.-S. Kim, K. Bajwa, H. L. Arkinson, H. Semunegus, et al. (2008). Characterizing Ammonia Emissions from Swine Farms in Eastern North Carolina: Part 2—Potential Environmentally Superior Technologies for Waste Treatment. Journal of the Air & Waste Management Association. https://doi.org/10.3155/1047-3289.58.9.1145

Medical Management Guidelines for Amonia. ATSDR. https://wwwn.cdc.gov/TSP/MMG/MMGDetails.aspx?mmgid=7&toxid=2

Holly, M. A., Larson, R. A., Powell, J. M., Ruark, M. D., & Aguirre-Villegas, H. (2017). Greenhouse gas and ammonia emissions from digested and separated dairy manure during storage and after land application. Agriculture, Ecosystems & Environment, 410–419. https://doi.org/10.1016/j.agee.2017.02.007

10 USDA. (2017, October). Conservation Practice Standard Anaerobic Digester (Code 366). https://www.nrcs.usda.gov/sites/default/files/2022-08/Anaerobic_Digester_366_CPS_Oct_2017.pdf

Bian, B., Wu, H. suo, & Zhou, L. jun. (2015, March 4). Contamination and risk assessment of heavy metals in soils irrigated with biogas slurry: A case study of Taihu basin. Environmental Monitoring and Assessment, 187(4), 155. https://doi.org/10.1007/s10661-015-4377-x

11 Macor, A., & Benato, A. (2020, October 11). A Human Health Toxicity Assessment of Biogas Engines Regulated and Unregulated Emissions. Applied Sciences, 10(20). https://doi.org/10.3390/app10207048

12 Waterman, C. & Armus, M. (2024). Biogas or Bull****? The Deceptive Promise of Manure Biogas as a Methane Solution. Friends of the Earth, 33-34. https://foe.org/wp-content/uploads/2024/02/Factory-Farm-Gas-Brief_final-final.pdf

13 Ibid, 38.

14 Ibid, 40–41.

15 Ibid.

16 Ibid, 40.

17 Ibid, 42.