Rosemary Moore

I am extremely concerned at the state's reliance on alternative or "sustainable" aviation fuel as a prime method of reducing the high greenhouse gas emissions produced by aviation. This will have only a very marginal effect on GHG emissions. However, our reliance on these fuels will avoid addressing how we can significantly reduce aviation emissions. Moreover, reliance on these fuels will increase emissions from the agricultural sector and threaten our forests and uncultivated areas which naturally capture carbon. I refer you to the attached paper from 350 Seattle and the sources it cites.
https://350seattle.org/wp-content/uploads/2024/08/AlternativeAviationFuels-Position-2024.pdf. I urge you to take a long hard look at SAFs and consider how we can realistically lower GHG emissions and reduce other pollution from aviation.

Alternative Aviation Fuels: A solution to aviation's climate problems or greenwashing?

Airplane flights contribute 42% of GHG pollution in Seattle[1]. Alternative aviation fuels cannot adequately reduce the growing impact of flights on the global climate crisis and human health.

Credit: Stay-Grounded.org

What are alternative and "sustainable" aviation fuels (AAFs and SAFs)?

We use the term AAFs for a class of replacement jet fuels that are derived from non-petroleum sources. AAFs can be made from plant-based feedstocks (such as purpose-grown crops like oil seeds and corn), forest and agricultural crop residues, used cooking oil, biomass, and municipal solid waste[2]. Most are mixed with conventional aviation fuels in blends that can range from 10% to 50% AAF. Currently, AAFs make up far less than 1% of the aviation fuel used to move people and cargo[3].

Why is the aviation industry pushing hard for AAFs?

Industries and governments around the world are committing to dramatic reductions in their greenhouse gas emissions. However, the aviation industry has not followed suit. Under pressure to meet climate targets, the aviation industry hopes that promoting AAFs will make us think they are doing what they need to do, when in fact they are planning for rapid growth[4]. Changing the fuels while increasing the volume of flights will not decrease the amount of greenhouse gas emissions. The aviation industry promotes AAF as "sustainable" aviation fuels or **SAF**. This is an advertising tactic called "Greenwashing" that diverts attention from more effective and equitable solutions like electrification and green hydrogen.

Do AAFs help reduce GHG and prevent global warming?

AAFs can have lower lifecycle emissions, but AAFs do NOT reduce the greenhouse gas (GHG) or carbon emissions from airplanes' use at all[5]. The lower lifecycle emissions come during production of AAFs in ways that use carbon from the biosphere, rather than from geological sources. Despite that, the fact is that planes burning AAFs emit carbon and other greenhouse gases just like planes using jet fuel[4]. Furthermore, aviation operations have a strong climate warming impact, double that of their CO_2 emissions[6], due to contrails and contribution to cirrus cloud formation, and these effects will not be eliminated by using AAFs.

Blending AAFs with fossil-based jet fuel also limits any GHG benefits. For example, here in Washington state, the Port of Seattle has a goal of using 10% AAF by 2028 to fuel outgoing flights[7]. ***Even if the industry claims that "SAF can reduce emissions by up to 80% during its full life cycle"[8] prove true, a 10% mix means there is only an 8% reduction in emissions (80% of 10% is 8%).*** In this best-case scenario, each gallon of fuel burned would still emit 92% as much GHG as compared with emissions from regular jet fuel. This Port of Seattle strategy does not reduce GHG and in fact, with their anticipated steady increases in aviation every year[9], contributes to accelerating harmful climate change. In short, increases in flights would overshadow any reductions from using AAFs. In summary, AAFs can slightly reduce aviation's overall contribution to global warming, but only if there is no increase in flying.

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What are the technical and equity issues with AAF production and use?

To scale up AAF production would require the creation of a massive new industry[10], the creation of new feedstock supply chains, and implementation of technologies that have not yet been demonstrated at scale. The aviation industry would be competing with other interests that need the crops, land, and water[11]. The expansion of agriculture for AAF feedstock would lead to deforestation and humanitarian impacts such as land conflicts, labor abuses, rising food prices, and water scarcity[12] When monocrop farming for industry replaces subsistence farming for diverse food crops, farmers are likely to be pushed off their lands and communities can experience food scarcity[13].

From an equity perspective, as elsewhere, people living near Seattle area airports and under flight paths are more likely to be people of color and have lower income[14]. AAFs do not prevent the adverse health effects of exposure to particulate matter from airplane exhaust or the noise experienced by airport impacted communities. These exposures have been linked to cancer, heart disease, lung conditions and even lower school performance among children. While some AAFs may reduce harmful particulate matter, AAFs don't eliminate the health impacts, and the overall increase in air traffic is causing more asthma and mortality[15].

350 SEATTLE'S POSITION

AAFs do not represent a credible or acceptable aviation industry climate policy solution to reducing GHG. The use of AAFs to reduce aviation emissions comes nowhere near the GHG reduction goals by 2030 and 2040 that climate science indicates is necessary.

Source: https://twitter.com/gcgatwick

350 Seattle advocates for: (1) a policy that includes the aviation industry in a declining emissions cap that brings its emissions to zero by 2040, (2) research and investments in true net GHG reduction solutions, (3) redesign of how we move people and goods, and (4) all with a focus on equity and climate justice.

We call for an end to any airport expansion and increase in flights along with a just transition for workers in the aviation industry. Instead of AAFs, we need aviation solutions that truly address the health and well-being of the people who live near airports and under flight paths.

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[1] http://www.seattle.gov/Documents/Departments/OSE/ClimateDocs/2018_GHG_Inventory_Dec2020.pdf
Seattle's GHG inventory reports 24% because it does not reflect the fact that aviation emissions have three times the warming impact as on-the-ground emissions (often referred to as "radiative forcing" or "non-CO2 impacts"). Counting those effects, aviation is 42% of Seattle GHG in 2018.
[2] https://www.energy.gov/eere/bioenergy/sustainable-aviation-fuels
[3] https://www.weforum.org/reports/a356c865-311e-45ca-845d-efe5f762a820 p. 6
[4] https://www.icao.int/Meetings/FutureOfAviation/Pages/default.aspx
[5] https://www.icao.int/environmental-protection/knowledge-sharing/Docs/Sustainable%20Aviation%20Fuels%20Guide_vf.pdf p. 16
https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-Eligible-Fuels.aspx
https://www.transportenvironment.org/discover/biodiesels-impact-emissions-extra-12m-cars-our-roads-latest-figures-show/
https://theicct.org/publication/assessing-the-sustainability-implications-of-alternative-aviation-fuels/
[6] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7468346/
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[10] https://digitallibrary.un.org/record/3837917?ln=en p. 20
[11] https://op.europa.eu/en/publication-detail/-/publication/55fe3eb1-cc8a-11ea-adf7-01aa75ed71a1/language-en p. 18
[12] https://en.milieudefensie.nl/news/02097-opm-rapport-neste-21.pdf
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[15] https://ie.unc.edu/2021/10/28/new-study-finds-alternative-jet-fuels-decrease-health-impacts-near-airports-and-downwind/
https://www.sciencedaily.com/releases/2019/05/190516114627.htm

August 2024 Update

There's been more research since the 350 Seattle Aviation Team wrote the previous pages, and unfortunately, the outlook for Alternative Aviation Fuels (AAFs) has not improved. We're still facing a climate crisis, and too much flying is still causing pollution, and hurting people and the environment all over the planet.

Major institutions have tried to figure out ways to decarbonize by 2050, but their plans fall short of the reductions needed to achieve science-based climate targets[1,2]. Furthermore, there's not much evidence that these plans will actually be put into action[1,2].

The decarbonization pathways proposed by the aviation industry still rely principally on AAFs. Even though they are often marketed as "sustainable aviation fuels", AAFs are not a real solution to the climate crisis for several reasons:

- AAFs currently represent a tiny fraction of the fuel used, and significant emissions reductions would require creation of a massive new industry that currently does not exist[1,2,3,4,5].
- AAFs still add CO2 to the air when they are burned. Biofuels could only be carbon-neutral when the areas that produced them have been restored. But this is not feasible: new plants take time to grow to their original size, which can take many years[3], long after the AAFs have been burned.
- SAF costs are 120%–700% higher than fossil-based jet fuel costs[6].
- Crops such as corn that could be used in quantity for producing AAFs have been shown to produce little or no net CO2 emission reductions[1,2].
- Other ingredients, such as used cooking oil, aren't available in sufficient quantity and are already fully used elsewhere in the economy[7].
- Some suggested ingredients, like municipal trash, could be harmful. For example, turning trash that contains plastic into fuel increases cancer rates among those living near refineries[7], and the health impacts of emissions from burning these AAFs are unknown.
- The remaining raw materials and manufacturing processes have also not been shown to be practical in any meaningful quantities[1,2,3].
- In addition to limited feedstocks, producing AAFs requires other resources that are in short supply, such as clean electrical energy and money. If we rush into making AAFs, there will be fewer of these limited resources available to other industries which are attempting to decarbonize[1].

There are still a lot of unanswered questions about using AAFs:

- Could some AAFs help reduce the warming effects of planes at high altitudes by reducing climate heating from contrails, cirrus cloud formation, and other cruise altitude emissions?
- Will some AAFs be cleaner (contain fewer contaminants) than traditional fuels and help reduce pollution near airports?
- Will the emissions from other AAFs cause pollution with even worse health impacts?

For all these reasons, promoting AAFs remains a form of greenwashing[8] which prevents governments and industry from focusing on developing alternative clean methods of transportation. For now, the best way to deal with the climate crisis is to simply fly less, whether it's for people or shipping goods.

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[1] https://www.sciencedirect.com/science/article/pii/S0048969723025044
[2] https://ips-dc.org/wp-content/uploads/2023/04/Report-Greenwashing-the-Skies.pdf
[3] https://www.sciencedirect.com/science/article/pii/S1876610219303285
[4] https://www.seattletimes.com/business/boeing-aerospace/at-the-paris-air-show-aviation-grapples-with-an-uncertain-future/#comments
[5] https://pubs.rsc.org/en/content/articlehtml/2023/ea/d3ea00091e
[6] https://www.sciencedirect.com/science/article/abs/pii/S095965262400920X
[7] https://www.theguardian.com/environment/2023/feb/23/climate-friendly-us-program-plastics-fuel-cancer?CMP=share_btn_link; https://www.biofuelwatch.org.uk/2024/flying-on-garbage-fulcrum-bioenergys-trash-talkflying-on-garbage/
[8] https://www.theguardian.com/world/2024/mar/20/dutch-airline-klm-misled-customers-green-claims-court-rules