



Clean Energy
Transition 



Climate Solutions.

Future of Sustainable Aviation Biofuels

Ross Macfarlane
July 19, 2017

It's More Urgent Than You Think

The Uninhabitable Earth

Famine, economic collapse, a sun that cooks us: What climate change could wreak — sooner than you think.

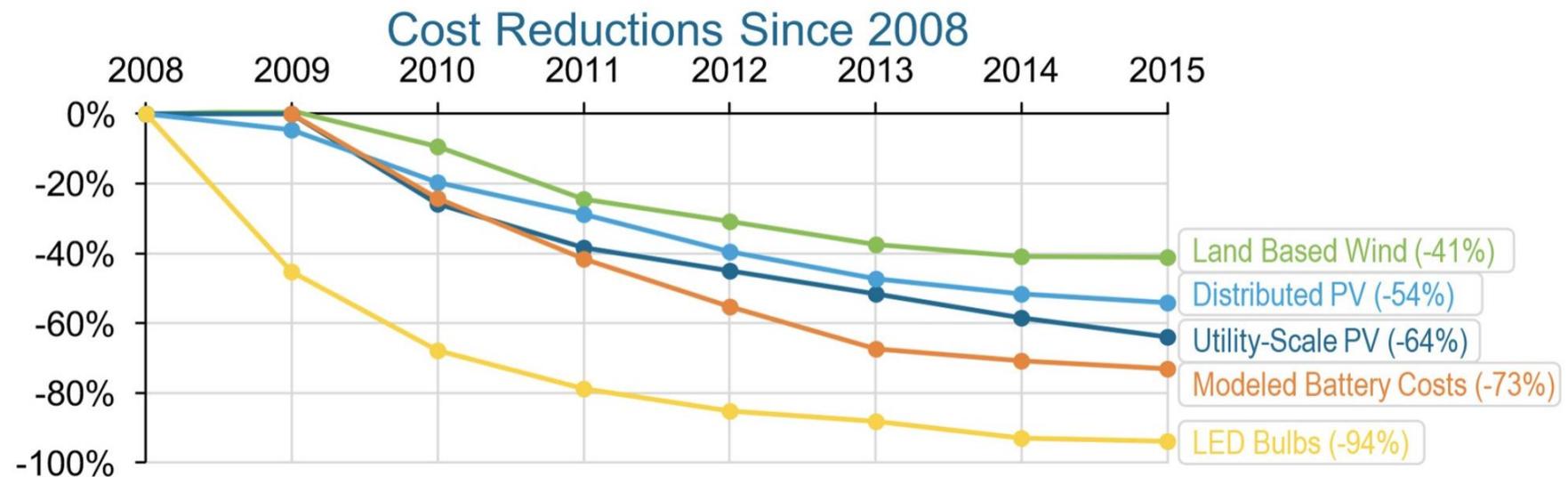
By David Wallace-Wells



New York Magazine, July 9, 2017

<http://nymag.com/daily/intelligencer/2017/07/climate-change-earth-to-o-hot-for-humans.html>

Good News: Transition to Lower Carbon Energy Underway & Unstoppable



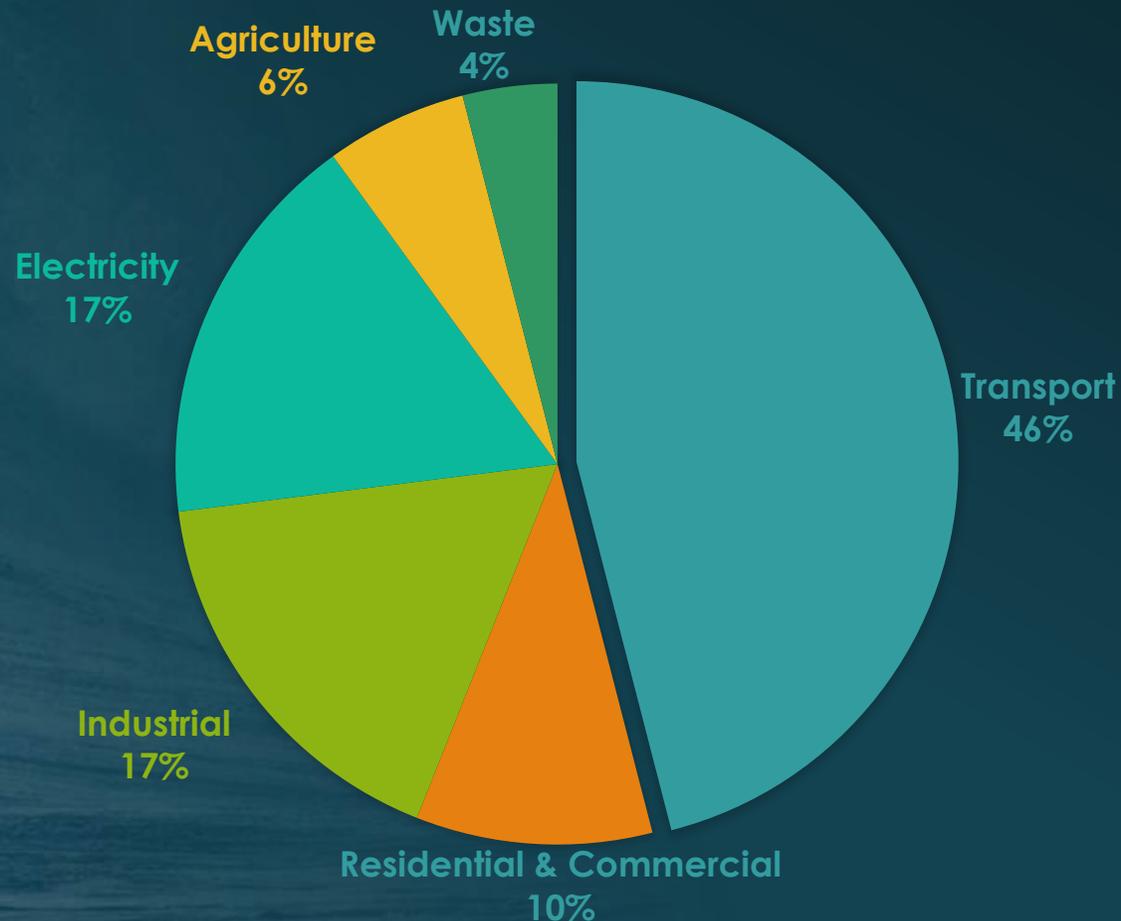
CREDIT: Department of Energy

[Think Progress, April 2017](https://thinkprogress.org/clean-energy-revolution-now-81a8e61134c7)

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Transition Not Happening Quickly Enough and Not In All Sectors – Oil Is Key

Washington(2011)



Aviation: the Toughest Nut?

- Commercial aviation=2% of global GHG; projected to grow to 3-4.4% by 2050 without action
- Industry goal to reduce sector's emissions 50% by 2050
- June 2015 EPA finding under Clean Air Act



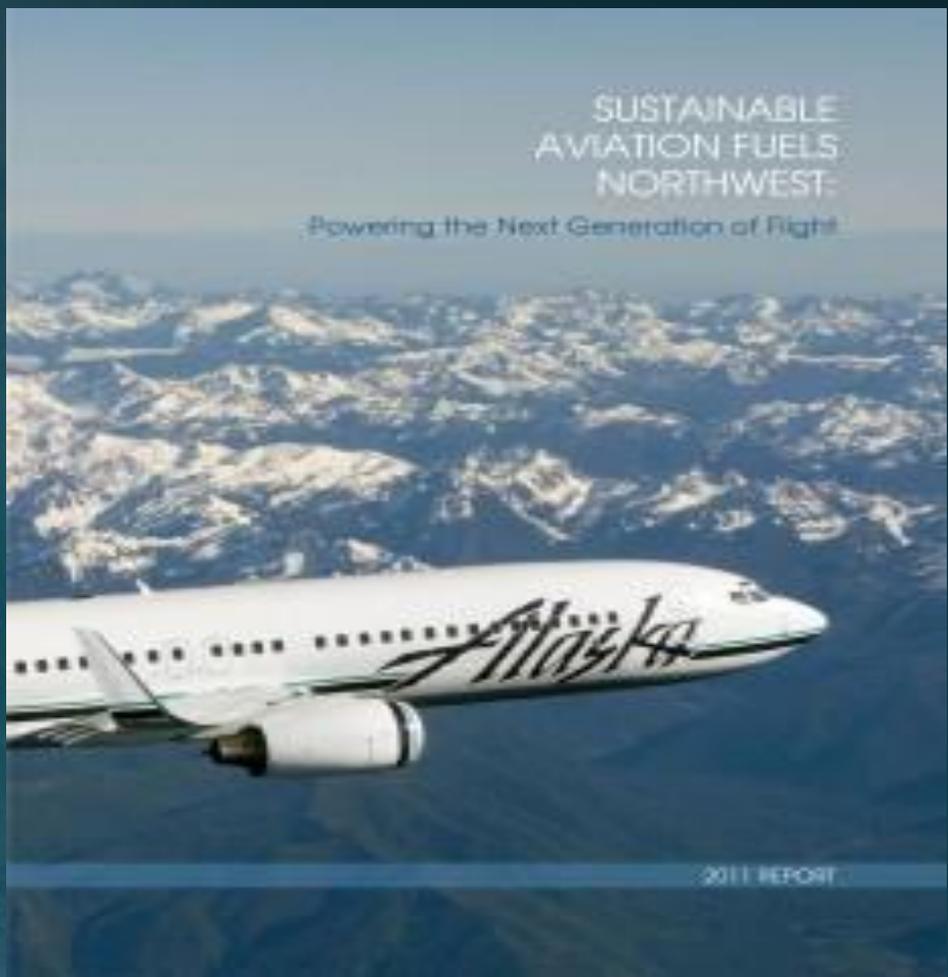
- More efficient aircraft and engine design



- Streamlined flight operations



- ?????? Sustainable Low- Carbon Biofuels



Sustainable Aviation Fuels Northwest

May 2011

Port of Seattle

Alaska

BOEING

Climate Solutions
CLIMATESOLUTIONS.ORG

PORT OF PORTLAND

Spokane International Airport

WASHINGTON STATE UNIVERSITY

Top Six SAFN Recommendations—Report Card

1. Create a **strategic focus** on sustainable fuels for aviation **B**
2. Promote **stable, long-term policy** to attract investment **D**
3. Ensure **support** for aviation fuels & promising feedstocks under **Federal RFS B+**
4. Provide **strong backing for the industry** **C-**
5. **Target R&D** on regional efforts critical to commercializing aviation fuel projects **A**
6. **Incorporate sustainability considerations** to create an advanced biofuels industry **Incomplete**

The Core Challenge: Getting to Scale

- Scale/Cost – Chicken and Egg
- Need policies and partnerships that will result in steel in ground
- Innovative financing and public/private partnerships key





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www.cleanenergytransition.net

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www.climatesolutions.org

Thank you!

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