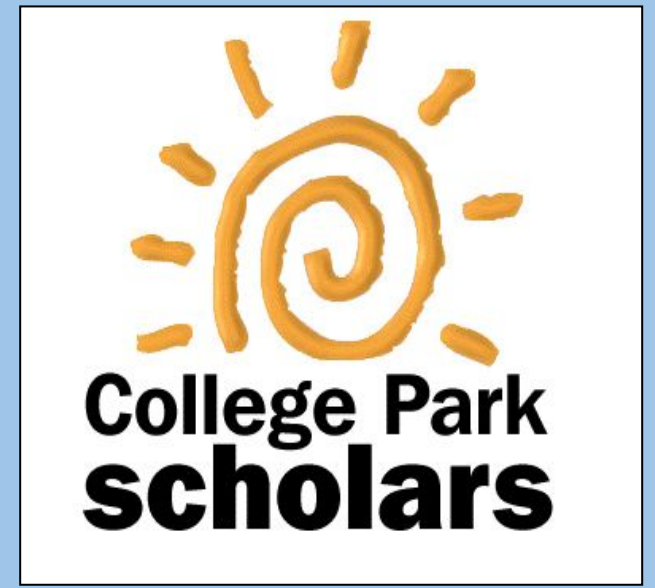




Search For Solutions: Artificial Trees

Ali Bhatti, Anita Kuang, Chris Smith, Saniya Wadhwa

CPSG200 Science & Global Change Sophomore Colloquium
November 5, 2018

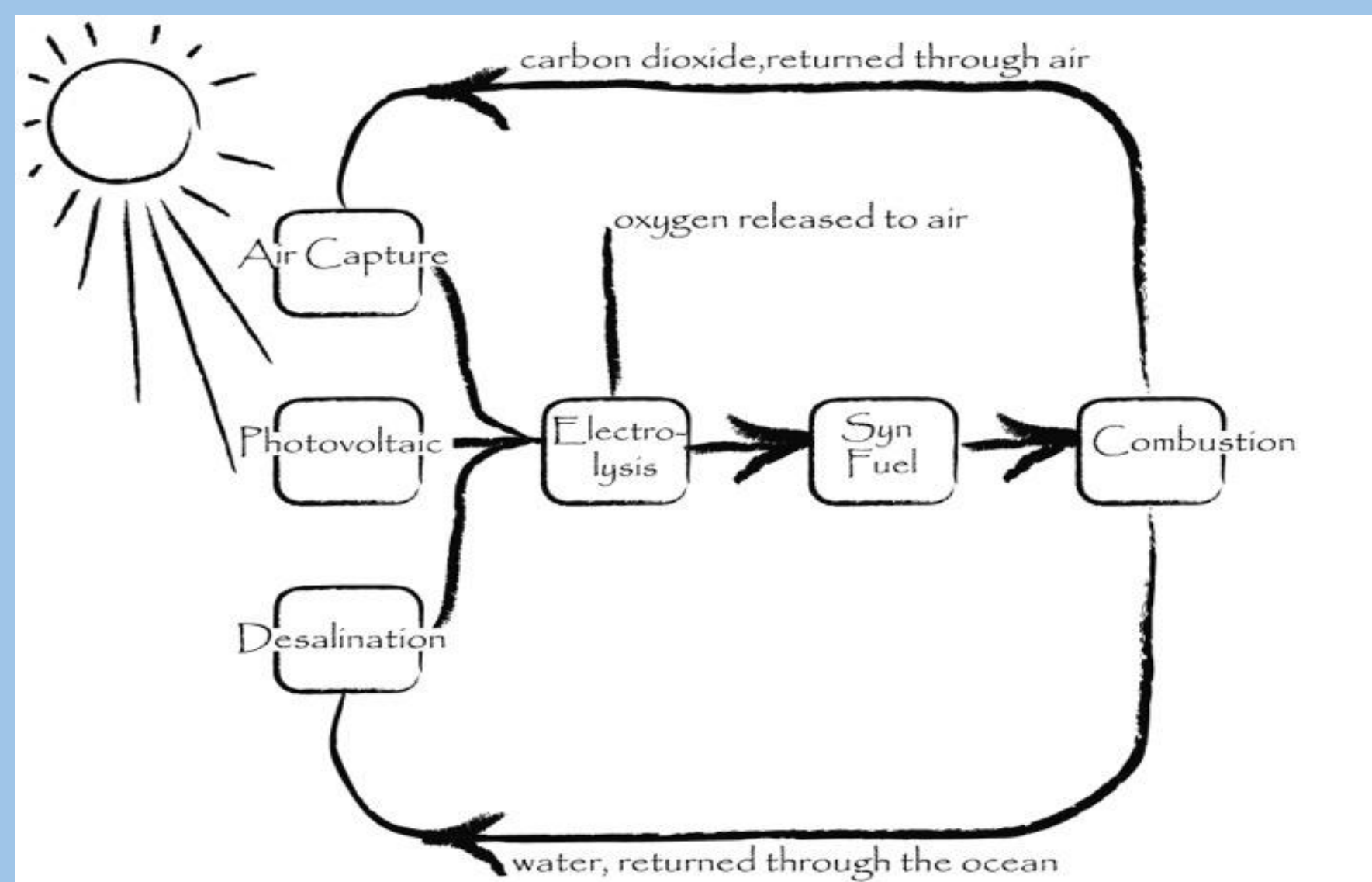


Introduction

Carbon dioxide is the primary greenhouse gas that contributes to climate change. To account for this problem, artificial trees were created to absorb CO₂ from the atmosphere one thousand times faster than real trees.

How Artificial Trees Work

Artificial trees have “leaves” that are coated with the resin sodium carbonate, which binds to carbon dioxide in the air. It is then stored as baking soda on the leaf and washed in water to then be able to be reused to soak up more carbon dioxide.



Artificial trees may close the gap in emitting carbon dioxide to the atmosphere. (1)



How Artificial Trees Reduce and Improve the Environment Around

- Up to 1000 times as efficient at taking in CO₂ as real trees.
- Estimated to be able to remove one ton of carbon dioxide a day/per tree
- Approx. one hundred million artificial trees would begin lowering CO₂ levels at a rate of 2 ppm per year.
- Some trees capture CO₂ and put it in a “sink” underground, or reuse the CO₂ for energy (carbon neutral)

What are the Criticisms? Is it worth it? What are the costs?

- Promising since it is feasible (2), but expensive initially
- Researchers actually have to see **carbon capture and storage** to work (3), has not been mastered by anyone yet (1)

What is Required to Accomplish

- Volunteers and the general population must commit to capturing carbon dioxide waste (1)
- The right investments and innovations (1)
- Initial cost around \$20,000 (with costs dropping later because of production) -- Can fit onto trucks (2)

Instances Where It Has Been Implemented

- A similar process was used in South Africa during apartheid years when they had an embargo that prohibited access to oil (however with coal instead of renewables) (1)
- In recent years, **scrubber devices** have been used to store greenhouse gases from the atmosphere, but they're expensive (2) -- used in submarines and space shuttles (4)
- Expensive process since CO₂ is not very concentrated in air (the more air you take in, the more energy, thus the more expensive) (2)

Bibliography:

- 1) Cantieri, Janice 2015. Artificial Trees Could Offset Carbon Dioxide Emissions. Accessed 24 October 2018.
- 2) Vince, Gaia. “Future - Sucking CO₂ from the Skies with Artificial Trees.” BBC, BBC, 4 Oct. 2012, www.bbc.com/future/story/20121004-fake-trees-to-clean-the-skies.
- 3) Parsons, Sarah. “100,000 Synthetic Trees Could Help Combat Climate Change.” Inhabitat Green Design Innovation Architecture Green Building, Inhabitat, 3 Sept. 2009, inhabitat.com/100000-synthetic-trees-could-help-combat-climate-change/.
- 4) Schiffman, Richard. “‘Artificial Trees’ as a Carbon Capture Alternative to Geoengineering.” YALE Climate Connections, Earth Island Journal, 13 February 2013. <https://www.yaleclimateconnections.org/2013/02/artificial-trees-as-a-carbon-capture-alternative-to-geoengineering/>