

The Essential Role of Photosynthesis in Defining Net Zero Carbon Dioxide Emissions for Equilibrium Calculations

In this research paper we, the authors, seek to answer four essential questions relative to the current Climate Change conversation now underway globally: (1) What is the numerically defined goal for annual Net Zero Carbon Dioxide Emissions in gigatonnes essential for global atmospheric homeostasis? (2) Why is atmospheric CO₂ rising even though recent data supports that CO₂ emissions have virtually leveled off globally? (3) Are CO₂ Cap & Trade policies the best immediate intervention, or does globally increasing photosynthesis offer a more rapid (and better long-term) solution to Climate Change? (4) What strategies can be employed to have the greatest positive impact over the upcoming crucial twelve-year period? Nothing absorbs carbon dioxide out of our atmosphere like photosynthesis, and therein lies the most under-discussed solution to the greatest problem of our time. A single hectare of healthy Amazon Rainforest can sequester up to 100 tons of CO₂ annually due to photosynthesis. And the fast-growing deciduous Empress Tree (*Paulownia tomentosa*), not only grows 10 to 20 feet tall in its first year, but a single hectare of these trees can sequester up to 103 tons of CO₂ annually due to photosynthesis (Emily Chasan, 2019).

Prior to the dawn of the Industrial Revolution (circa 1760) and long before global deforestation devastated Earth's delicate atmospheric ecosystem, forests

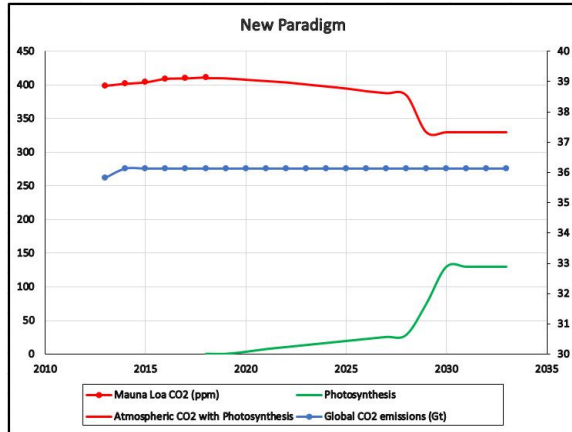
around the world have been estimated to consume 400 billion tons of carbon dioxide per annum with photosynthesis. As of 2019, that has been reduced dramatically as northern hemisphere forests are only 3.2 billion tons of carbon dioxide consumption per annum with photosynthesis (Max Roser, 2014).

As a result of the global reduction in forest size, there has been a corresponding loss in photosynthesis and the natural carbon dioxide sequestration it creates. Estimates for global carbon dioxide sequestration have fallen from a minimum of 400 gigatonnes circa 1700 to as little as 10-12 gigatonnes annually, far below what is required to maintain global atmospheric homeostasis (Christine L. Goodale, 2002). The minimum 400 gigatonnes is from healthy rain forests and other kinds of forests.

Currently, all organisms on Earth combined, along with the burning of fossil fuels and the switching of the Amazon Rainforest to an oxygen sink and a carbon dioxide producer, release approximately 53 gigatonnes of carbon dioxide each year. In order for humanity to restore the global atmospheric homeostasis essential for life, we must aggressively plant trees and regrow our beleaguered forests as the foundation of any comprehensive strategy for reversing Climate Change. Our forests are the lungs of our planet. Without them, we simply cannot breathe.

I presented at the 2018 Climate Change Conference that the fastest way to reduce atmospheric CO₂ is to plant native trees and shrubs and stop non-sustainable worldwide deforestation. This will cause the CO₂ level

to drop from its current level to 330 ppm by 2031.



After presenting, I contacted the environmental scientists at the USA Embassies in South America, India, and China. They saw the correct solution. China was planting trees. India stopped deforestation and is planting trees. Pakistan planted three billion trees so far and has plans for eight billion more in the next four years. After planting the three billion trees, the global garden greening atmospheric CO₂ minimum on October 4, 2019, was 407.51 ppm, more than 1.0 ppm lower than what Dr. Pieter Tans from Mauna Loa had predicted (see <https://earthobservatory.nasa.gov/features/GlobalGarden>). In the past seventy years, during the months when carbon dioxide usually rises, for the first time in November 2019, the rise was negative, **-0.45 ppm**. (11/1= 411.02, 11/30=410.57). November of 2017 it was a 2.7 ppm rise. November 2018, a 1.85 ppm rise.

Trees have many advantages: they shade the earth, consume CO₂, and release

terpenes, which seed clouds and cause extra rain.

We have a sponsored article in the Rio Times that people are tweeting to the leaders of the countries of the Amazon. Peru recently said they will stop deforestation in 2021. @jairbolsonaro @MartinVizcarraC @alvorada_palace, @MichelTemer @Peru @IvanDuque @evoespueblo @MashiRafael @MOTPGuyana @govsuriname @maduro_en

Stop Deforestation NOW! Two billion acres since 1950 is too much!

<https://riotimesonline.com/brazil-news/rio-politics/stop-amazon-rainforest-deforestation-sponsored/>