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The Essential Role of Photosynthesis in Defining Net Zero Carbon Dioxide Emissions for Equilibrium Calculations**Dave White***Chemical Engineer Climate Change Truth Inc., United States*

In this research manuscript, the authors seek to answer four essential questions relative to the current climate change conversation now underway globally: (Q1) What is the numerically defined goal for annual Net Zero Carbon Dioxide Emissions in gigatonnes essential for global atmospheric homeostasis? (Q2) Why is atmospheric CO₂ rising even though recent data support that CO₂ emissions have the rate of rise lowered by 50% since 2014 globally? (Q3) Are CO₂ cap and trade policies the best immediate intervention, or does globally increasing photosynthesis offer a more rapid and better long-term solution to climate change? (Q4) 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 CO₂yr⁻¹ due to photosynthesis. And the fast-growing Empress Tree (*Paulownia tomentosa*) not only grows ten to twenty feet tall in its first year, but a single hectare of these trees can sequester up to 103 tons of CO₂yr⁻¹ due to photosynthesis (Emily Chasan 2019). Prior to the Industrial Revolution and long before global deforestation devastated Earth's delicate atmospheric ecosystem, forests around the world are estimated to have consumed up to 400 billion tons of CO₂yr⁻¹. As of 2019, that has been reduced dramatically as global forests consume less than 10 billion tons of CO₂yr⁻¹ with photosynthesis (Max Roser 2015).