



How to Fix Carbon Dioxide Same Amount as Emission for the Protection of Global Warming



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Abstract

Fossil fuel is burned releasing CO₂ and heat. Released CO₂ is fixed by plant by CO₂ assimilation reaction absorbing heat. Burning reaction is reverse reaction of CO₂ assimilation. If we can compensate the generation of CO₂ and heat of burning with the absorption of CO₂ and heat by CO₂ assimilation, global warming will be protected.

Keywords: NO_x; CO₂; CO₂ assimilation; Global warming; Paris agreement; Plankton

Mini Review

CO₂ is increasing 2.0ppm annually. Total amount of CO₂ in the world is 2.83x 10¹² tone. Total emission of CO₂ in one year is 3.6x10¹⁰ tone. Almost all CO₂ is used for CO₂ assimilation of plant. This means that all CO₂ in the world is replaced by new CO₂ in 7.8 years. Increase of CO₂ in one year is $2.83 \times 10^{12} \times 2/400 = 1.415 \times 10^{10}$ tone (142 billion tones). Therefore $3.6 \times 10^{10} - 1.42 \times 10^{10} = 2.18 \times 10^{10}$ tone, 218 billion tones CO₂ is fixed in one year. If we can increase the fix of CO₂ 1.41 x 10¹⁰ tone in year we can protect global warming. When fossil is burned, NO_x is produced about 1/25 of produced CO₂. The ratio C/N=25/1 is same as plant composition ratio C/N=25/1. Plant eat CO₂ and nutrient N by the ratio C/N=25/1. 14.4 billion tones NO_x is estimated to be produced when 360 billion tone CO₂ is produced.

Many governments consider NO_x as pollution gas and eliminating NO_x by the reaction with ammonia. Amount of NO_x is so much, CO₂ assimilation is retarded very much. CO₂ fixing is retarded very much. And global warming is accelerated very much. For the production of ammonia, much fossil is used and much CO₂ is produced and global warming is accelerated so fast. 70 % of earth is covered by sea. 70% of CO₂ assimilation is carried out at sea. 16 billion years ago, fish was not appeared. Plankton grow and oil is formed as fossil of plankton. Plankton grows infinitely when nutrient N and P is present at any condition.

Sea water contains much N and P. These N and P are consumed by plankton and concentration of N,P at the surface became poor. Fish appeared at around 15 billion years ago. Fish grow by eating plankton. Fish grow at plankton rich, NP rich sea. World fish industry and CO₂ fixing changed very much since 1980 by the supply of NO_x produced by burning of fossil.

World fish production in 2016 increased to 200 million tone, about double of 93 million tons in 1997. China, Indonesia, India, Vietnam do not eliminate NO_x and do not do drainage treatment. They use NO_x and excreta as it is for production of plankton and fish. Therefore fish production increased remarkably at the district where no N,P supply by counter current of nutrient rich deep sea water with nutrient poor shallow sea water. China produced 16.77 million tone fish in 2002 and 79.38 million tone fish in 2016. This is huge increase.

China produced 4 billion tones NO_x. This NO_x is released to air and dissolved in rain and give enough nutrient nitrogen to sea, lake and river to grow 16 billion tone plankton and 79.38 million tone fish. This 4 billion tone NO_x became enough fertilizer for the production of 4.4 billion tone grain. And also this 4 billion tone NO_x contributed for the growth of tree and grass. These three CO₂ assimilation action, plankton formation, grain production tree and grass growth, fixed 100 billion tones CO₂. The amount of NO_x produced is around 14.4 billion tone in whole world.

Conclusion

To eliminate NO_x 14.4 billion tone, ammonia 8.6 billion tone is used. To make ammonia 8.6 billion tone, 1.44 billion tone hydrogen gas is used. To make 1.44 billion tone hydrogen. Butan, 8.3 billion tone is used. As the result 25.3 billion tone CO₂ is released. If NO_x elimination is stopped, 25.3 billion tone CO₂ release can be stopped and $14.4 \times 25 = 360$ billion tone CO₂ can be fixed. Therefore if we stop the elimination of NO_x, and stop the elimination of N,P in drain, we can stop the global warming.



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