



# 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 CO<sub>2</sub> and heat. Released CO<sub>2</sub> is fixed by plant by CO<sub>2</sub> assimilation reaction absorbing heat. Burning reaction is reverse reaction of CO<sub>2</sub> assimilation. If we can compensate the generation of CO<sub>2</sub> and heat of burning with the absorption of CO<sub>2</sub> and heat by CO<sub>2</sub> assimilation, global warming will be protected.

**Keywords:** NO<sub>x</sub>; CO<sub>2</sub>; CO<sub>2</sub> assimilation; Global warming; Paris agreement; Plankton

## Mini Review

CO<sub>2</sub> is increasing 2.0ppm annually. Total amount of CO<sub>2</sub> in the world is 2.83x 10<sup>12</sup> tone. Total emission of CO<sub>2</sub> in one year is 3.6x10<sup>10</sup> tone. Almost all CO<sub>2</sub> is used for CO<sub>2</sub> assimilation of plant. This means that all CO<sub>2</sub> in the world is replaced by new CO<sub>2</sub> in 7.8 years. Increase of CO<sub>2</sub> 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 CO<sub>2</sub> is fixed in one year. If we can increase the fix of CO<sub>2</sub> 1.41 x 10<sup>10</sup> tone in year we can protect global warming. When fossil is burned, NO<sub>x</sub> is produced about 1/25 of produced CO<sub>2</sub>. The ratio C/N=25/1 is same as plant composition ratio C/N=25/1. Plant eat CO<sub>2</sub> and nutrient N by the ratio C/N=25/1. 14.4 billion tones NO<sub>x</sub> is estimated to be produced when 360 billion tone CO<sub>2</sub> is produced.

Many governments consider NO<sub>x</sub> as pollution gas and eliminating NO<sub>x</sub> by the reaction with ammonia. Amount of NO<sub>x</sub> is so much, CO<sub>2</sub> assimilation is retarded very much. CO<sub>2</sub> fixing is retarded very much. And global warming is accelerated very much. For the production of ammonia, much fossil is used and much CO<sub>2</sub> is produced and global warming is accelerated so fast. 70 % of earth is covered by sea. 70% of CO<sub>2</sub> 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 CO<sub>2</sub> fixing changed very much since 1980 by the supply of NO<sub>x</sub> 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<sub>x</sub> and do not do drainage treatment. They use NO<sub>x</sub> 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<sub>x</sub>. This NO<sub>x</sub> 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<sub>x</sub> became enough fertilizer for the production of 4.4 billion tone grain. And also this 4 billion tone NO<sub>x</sub> contributed for the growth of tree and grass. These three CO<sub>2</sub> assimilation action, plankton formation, grain production tree and grass growth, fixed 100 billion tones CO<sub>2</sub>. The amount of NO<sub>x</sub> produced is around 14.4 billion tone in whole world.

## Conclusion

To eliminate NO<sub>x</sub> 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 CO<sub>2</sub> is released. If NO<sub>x</sub> elimination is stopped, 25.3 billion tone CO<sub>2</sub> release can be stopped and  $14.4 \times 25 = 360$  billion tone CO<sub>2</sub> can be fixed. Therefore if we stop the elimination of NO<sub>x</sub>, and stop the elimination of N,P in drain, we can stop the global warming.



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