

# Effective Uses of NO<sub>x</sub> and Drainage are Clever Way to Protect Global Warming and to Increase Fish Production



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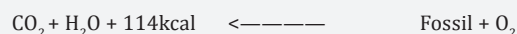
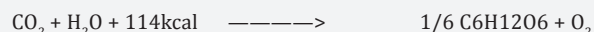
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## Abstract

The earth is warmed up by the burning of fossil releasing CO<sub>2</sub>. If we can compensate the generation of CO<sub>2</sub> by CO<sub>2</sub> assimilation, global warming can be protected. To promote CO<sub>2</sub> assimilation, supply of nutrient N and P is essential. NO<sub>x</sub> is produced when fossil is burned. NO<sub>x</sub> is critically important for plant growth. Japan government ask us to eliminated NO<sub>x</sub> in burned gas and ask us to eliminate N, P in drainage. Fish production decreased 70% in past 30 years. When we look at fish industry of many country, the country which use NO<sub>x</sub> in burned gas and N, P in the drainage are producing much fish and fixing much CO<sub>2</sub> and contributing for the protection of global warming. Effective uses of NO<sub>x</sub> and drainage are clever way to protect global warming and to get many fish.

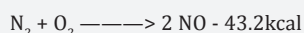
assimilation



burning

NO<sub>x</sub> is a main nutrient nitrogen sources. Plants are growing by eating CO<sub>2</sub>, water and nutrient. N.P. Plant cannot grow without nutrient N.P.

Nature look likes to set up system to make NO<sub>x</sub> to promote CO<sub>2</sub> assimilation to promote plant growth. Nature also look like to make thunder [39-41] to make NO<sub>x</sub>, by following reaction.



**Keywords:** NO<sub>x</sub>; Carbon dioxide; Carbon dioxide assimilation; Global warming; NO<sub>x</sub> elimination; Fish

## Introduction

The earth is warmed up by the heat and CO<sub>2</sub> evolved by the burning of fossil. Most (probably 95%) CO<sub>2</sub> evolved is fixed by plant by CO<sub>2</sub> assimilation. But burning of fossil is so much. CO<sub>2</sub> assimilation cannot follow.

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 (1-11). NO<sub>x</sub> is produced when fossil is burned. NO<sub>x</sub> is essential compound for plant growth. Many governments hating NO<sub>x</sub> as pollution gas and set laws to eliminate NO<sub>x</sub>. I wish to insist that NO<sub>x</sub> elimination should be stopped to increase CO<sub>2</sub> assimilation and protect global warming.

To promote CO<sub>2</sub> assimilation, the supply of nutrient nitrogen and phosphorous is essential. Many CO<sub>2</sub> assimilation studies (12-38) indicated that CO<sub>2</sub> assimilation is playing very important role for the regulation of climate and supply of nutrient N.P is important for the promotion of CO<sub>2</sub> assimilation.

NO<sub>x</sub> is a main nutrient nitrogen sources. Plants are growing by eating CO<sub>2</sub>, water and nutrient N.P. Plant cannot grow without nutrient N.P. NO<sub>x</sub> is main promotor of CO<sub>2</sub> assimilation and promotor of protection of global warming.

Nature look likes to set up system to make NO<sub>x</sub> to promote CO<sub>2</sub> assimilation to promote plant growth. Nature also looks like to make thunder (39-41) to make NO<sub>x</sub>,

**Stop NOx Elimination to Promote CO<sub>2</sub> Assimilation and to Increase Fish Production**

NOx is hated as pollution gas. Many governments set up very strict laws to eliminate NOx in burned gas and forced to eliminate all NOx using ammonia. To kill one fertilizer with other fertilizer gives tremendous loss for the growth of plant. Nutrient nitrogen and phosphorous in drainage is also hated as pollution elements and many governments set up very strict laws to eliminate all nutrient nitrogen and phosphorus and forced to eliminate these elements using much electricity.

I was born in 1930 at small town Kojima, Kurashiki, Japan. This town is located at sea beach in Setoinland sea, Japan. The bottom of the sea was filled with sea weed. This is clear from my swimming experience at swimming shore. There is swimming beach at small village, named Hikiami beach seine). When swimming at tide is down, leg touched sea weed and stone fish. Sea shore was filled with dried sea weed especially that cast ashore. The sea was filled with plankton and fish, Bream (tai), Eel (unagi), Sea eel (anago), Octopas, Sardin (iwashi), Shrimps, Ikanago. The sea was filled with fishing boat. Fish was very low price than meat. Main protein source of Japanese was fish before 1945. The ratio fish/meat was 100/1

**Table 1:**

Fish Production Million Tone				Population Billion	CO <sub>2</sub> Fixed By Plankton Million Tone
		2016	1997		
Top	China	79.38	16.29	13.5	794
2nd	Indonesia	22.21	5.55	2.39	222
3	India	10.11	3.6	12.24	101
4	Vietnam	6.21		0.86	62
5	USA	6.05	5.41	3.1	60
6	Peru	4.92	7.87	0.28	49
7	Japan	4.64	5.88	1.27	46
8	Russia	4.61	4.66	1.43	46
9	Philippine	4.5		0.92	45
10	Norway	3.52	2.87	0.48	35
11	Bangladesh	3.68		1.48	37
12	Korea	3.33		0.4	33
13	Chile	3.19	5.87	0.17	32
14	Myanmar	2.95		0.48	30
15	Tai	2.59		0.63	26
16	Malaysia	2		0.28	20

But since NOx, nutrient N, P elimination policy and elimination law were established at around 1980. Concentration of N, P of sea water decreased. Concentration of nitrogen in

rain dropped to zero. No weed, no plankton grow at Setoinland sea. Hundred thousand fisherman lost job. Most fish shops were closed. We cannot buy fish produced at Setoinland sea. At Setoinland sea, 500 thousand tone fish was produced in 1980. But it decreased to 50 thousand tone now. This indicates that CO<sub>2</sub> assimilation by plankton was lost by the NOx and nutrient N,P elimination policy. Fish production of Japan 16 million tone in 1980 was top in the world, but it decreased to 4.64 million tone 7th place in 2015 (Table 1).

Japan is eliminating 3 million tone N and P. Therefore 16 million tone fish was not produced in recent years. China, Indonesia, India, Vietnam do not eliminate NOx and do not do drainage treatment They use NOx and excreta as it is for production of plankton and fish. Therefore, fish production increased remarkably in the district where no N, P supply by counter current of nutrient rich deep sea water with nutrient poor shallow sea water.

Fish production is proportional to population, amount of excreta. Shrimp production by excreta is popular in Vietnam, India and Indonesia and 31000, 30000 and 25000 tone shrimps are exported to Japan respectively in 2015. Peru, Norway and Chile produce much fish by N, P caused by counter current of nutrient rich deep sea water with nutrient poor shallow sea water.

Fish production is proportional to CO<sub>2</sub> fixed by CO<sub>2</sub> assimilation at sea, The country having high fish production is the country which have done high CO<sub>2</sub> fixing. 10 times of CO<sub>2</sub> of fish production are fixed by plankton CO<sub>2</sub> assimilation. China produced 79.38 million tone fish in 2016. This means that China fixed 8 billion tone. CO<sub>2</sub> by plankton CO<sub>2</sub> assimilation. This is huge amount. This is 1/ 12 of 100 billion tone CO<sub>2</sub> produced at China. China is biggest CO<sub>2</sub> producing country.

This data indicates that plankton CO<sub>2</sub> assimilation is playing significant role for the fixing of CO<sub>2</sub> and protection of global warming. Decrease of 12 million tone fish at Japan means decrease of 120 million tone CO<sub>2</sub> fixing. If Japan stop elimination of 3 million tone N and P, Japan can fix 46 million tone CO<sub>2</sub> and can produce 12 million tone fish. Decrease of half million tone fish at Setoinland sea means decrease of 5 million tone CO<sub>2</sub> fixing.

Japan is most CO<sub>2</sub> increasing country, because country is narrow and cannot fix produced CO<sub>2</sub> at land [11]. Therefore Japan must fix CO<sub>2</sub> by promotion of CO<sub>2</sub> assimilation at sea. Japan is producing 10% CO<sub>2</sub> of total CO<sub>2</sub> production for the elimination of NOx and drainage treatment. Japan must diminish CO<sub>2</sub> emission by stopping NOx elimination, and promote CO<sub>2</sub> assimilation and fish production.

If governments think CO<sub>2</sub> diminish is most important subject, they should consider sea as firm of fish, firm to fix CO<sub>2</sub>. They should increase N, P concentration of sea by releasing NOx and drainage N, P as it is.

## Conclusion

Effective uses of NO<sub>x</sub> and drainage are clever way for the increase of fish production and for the protection of global warming.

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