

Purification of Water and Air is Promoting Global Warming and Country Decline

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Abstract

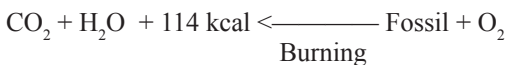
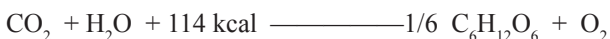
Burning of fossil is increasing. Production of CO₂ and NO_x is increasing. Increased CO₂ and NO_x promoted the CO₂ assimilation. Most produced CO₂ is fixed by CO₂ assimilation. But developed countries started purification of water and air by elimination of NO_x and NP at around 1980. 6 billion tone NO_x and 2 billion tone NP are eliminated. NO_x is main nitrogen fertilizer and NP is main nitrogen and phosphorous fertilizer. Therefore plant growth is retarded. CO₂ fix is retarded. CO₂ is increasing. Food like grain, fish, and meat production is retarded. DGP increase rate decreased. Global warming and country decline are progressing. If developed countries stop NO_x elimination by ammonia and close waste water purification station, global warming will stop and country decline will stop.

Keywords: Purification of water, purification of air, GWPR, global warming protection ratio, plankton, NO_x elimination, NP elimination, CO₂ assimilation

Introduction

The earth is warmed by the fossil fuel burning releasing CO₂ and heat. The plant is growing by CO₂ assimilation absorbing CO₂ and heat producing carbohydrate and oxygen.

CO₂ assimilation



GWPR (Global warming protection ratio) = Produced CO₂/Fixed CO₂

If we can compensate the generation of CO₂ and heat with the generation of CO₂ and heat with the absorption of CO₂ and heat by CO₂ assimilation, GWPR (global warming protection ratio) become 1, and global warming can be protected.

About 510 billion tone CO₂ is produced by burning of fossil and respiration of animals. About 30% of produced CO₂ is fixed by land plant CO₂ assimilation at land. About 70 % of produced CO₂ is fixed by plankton CO₂ assimilation at sea.

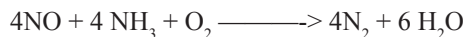
CO₂ concentration is increasing 2ppm every year. 140 billion tone CO₂ is increasing every year. Fixed CO₂ is 370 billion tone. Therefore global warming protection ratio is 510/370 = 1.38 we must decrease produced CO₂ and increase fixed CO₂ to lower GWPR. To increase

fix of CO₂, we must increase CO₂ assimilation. To increase CO₂ assimilation, we must increase the supply of NP. We must increase NP concentration of sea.

CO₂ assimilation by plankton is most important reaction to control climate. Plankton grow by eating CO₂, H₂O, nitrogen and phosphorous by Redfield ratio C: N: P 105.4: 16: 1 or 6.6: 1: 0.06. Plankton asks more N and P than normal plant. Ratio C: N: P 25: 1: 0.06. Officials of 7 developed countries consider NP as pollution substances and started NO_x, NP elimination at around 1980. Then CO₂ assimilation is retarded. Food like grain, fish production is retarded. CO₂ fix is retarded. I am insisting NO_x NP elimination should be stopped many times. In this paper, I wish to tell NO_x, NP elimination is giving very bad effect for the economy, global warming [19].

Effect of NO_x, NP Elimination on GWPR (Global Warming Protection Ratio) and GDP

When 140 billion tone fossils is burned 420 billion tone CO₂ and 16.8 billion tone NO_x are produced [7,13, 16, 19, 30, 33]. About 380 billion tone CO₂ is fixed by CO₂ assimilation. About 140 billion tone CO₂ must to reduced. Most of CO₂ can be reduced by CO₂ assimilation. We must promote CO₂ assimilation. We must provide enough NP fertilizer. NO_x and NP in waste water are best sources of NP fertilizer. Officials of developed countries put emphasis of toxicity than utility of NO_x, NP. They started elimination of NO_x by ammonia.



Amount of NO_x 16.8 billion tone is so much. 7 times of synthetic nitrogen fertilizer 2 billion tone of the world. To destroy one nitrogen fertilizer with one other nitrogen fertilizer is giving tremendous loss.

NOx is very effective promotor of CO₂ assimilation. Therefore the production of grain and fish increased proportionally by the increase of CO₂ and NOx. In 1900 20 billion tone CO₂ is emitted and 20 billion tone CO₂ is fixed. In 1960 100 billion tone CO₂ is emitted and 100 billion tone CO₂ is emitted and 100 billion tone CO₂ is fixed. In 1980 200 billion tone CO₂ is emitted and 180 billion tone CO₂ is fixed. In 2016 360 billion tone CO₂ is emitted and 220 billion tone CO₂ is fixed. Amount of CO₂ fix is 140 billion tone less than emission. This is caused by the elimination of NOx and NP.

By the elimination of NOx, CO₂ assimilation is retarded. Agriculture and fish industry of developed countries are declining.

CO₂em (CO₂ emission), NOx (NOx production), NOxc (NOx concentration at exit gas), GWPR (global warming protection ratio), GDP (GDP increase ratio) of 13 countries are shown in Table 1

Table1

Country	CO ₂ em	NOx	NOxc	Area	FixableCO ₂	GWPR	GDP
	bill t	bill t	g/kWh	1 km ²	bill t	Inc	Ratio
World	420	16.8					
China	106.4	4.25	1.6	1.0x 10 ⁷	100	1.0	6.9
USA	51.0	2	0.5	9.5x 10 ⁶	95	0.53	1.48
India	24.6	1	1.6	3.2x 10 ⁶	32	0.76	7.1
Japan	12.5	0.5	0.1(2018)	3.8x 10 ⁵	3.7	3.4	1.03
Russia	19.6	0.63	1.6(1980)	3.2x 10 ⁶	32	0.61	0.8
Germany	7.8	0.31	1.0	3.5x 10 ⁵	3.5	2.2	1.83
Iran	6.3	0.25		1.6x 10 ⁶	1.6	3.9	2.6
Canada	5.6	0.22	1,3	1.0x 10 ⁸	100	0.06	1.44
Indonesia	5.0	0.2	1.6	1.9x 10 ⁶	19	0.3	5.2
U. K	4.0	0.16	1.3	2.4 x 10 ⁴	2.4	1.7	1.8
Turkey	4.0	0.16		7.8x 10 ⁵	7.8	0.5	-2
Italy	3.5	0.14	0.5	2.0x 10 ⁵	3.0	1.2	0.88
France	3.3	0.13		6.4x 10 ⁵	8.4	0.4	1.2

1 Km² green land can fix 1000 t CO₂. Fixable CO₂ of the country can be estimated by 1000x area of the country.

Amount of NOx produced at world is 16.8 billion tone. Developed countries are eliminating about 6 billion tone NOx producing 10 billion tone CO₂. 6 billion tone NOx can fix 6x 25 = 150 billion CO₂. Therefore if developed countries stop NOx elimination, 150+10= 160 billion tone CO₂ emissions is reduced and global warming can be protected.

When we look at high GWPR countries, Japan 3.4 Germany 2.2, Iran 3.9, U.K 1.7, Italy 1.2, these countries area are narrow and they cannot fix produced CO₂ at his countries.

Growth rate of GDP of the countries who eliminate NOx are small as USA 1.46, Germany 1.83, Japan 1.03, Canada 1.44, U.K 1.6, Italy 0.88.

At China 4.25 billion tone. USA 2 billion tone, India 1 billion tone, Japan 0.5 billion tone NOx are produced. Japan eliminating this 0.5 billion tone. Butane 0.1280 billion is used for the production of H2 0.0606 billion tone and CO₂ 0.7480 billion tone is produced. If Japan stops NOx elimination, 25 times of NOx 0.5x 25= 12.5 billion tone CO₂ can be fixed. By doing plankton CO2 assimilation at 3 times area of Japan land, 3.8x 10⁵ Km² area, 11.4 billion tone CO₂ can be fixed. 0.745 billion tone CO2 by stopping of NOx elimination can be saved. 0.5 billion tone CO2 by stopping NP west water purification

can be saved. Total 11.4 + 0.745 + 0.5 = 12.645 billion tone CO₂ generations can be stopped. Japan can produce 0.3 billion fish and Japanese can enjoy anti-aging and long life. If Europa stop the elimination of 0.71 billion tone NOx and 0.2 billion tone NP, 10 billion tone CO₂ generation can be stopped. And 0.1 billion tone fish can be produced produced [26, 37-42].

China producing 106.4 billion tone CO2. Area of China is 1.0x 10⁷ km²

China can fix 100 billion tone CO2. GWPR = 106.5/ 100 = 1.0

Low area country Japan GWRP = 12.5/ 3.7 = 3.4

NOx elimination can be found by NOx concentration of exit gas. 1.6 g/kwh is no elimination. 0.1 g/kWh is complete elimination. No NOx elimination countries like China, India and Indonesia show low GWPR and high GDP growth rate. On the contrary, NOx eliminating country like Japan (3.4 1.03), Germany (2.2 1.83) UK (1.7, 1.8), Italy (1.2, 0.88) show high GRPR and low GDP growth rate.

Japan is eliminating NOx, NP most severely. NOx concentration at exit gas is 0.1 g/kWh. Then fish production decreased from 12 million tons in 1970 to 2 million tons in 1985 by NOx NP elimination policy. And DGP do not increase for 40 years from 1980.

Low doses of inhalation of nitric oxide have been reported to be clinically effective, and most current dosing recommendation does not exceed 40 ppm. At this dose, the little measurable short

term toxicity. Indeed, it is noteworthy that in the large randomized trials of inhalation of nitric oxide, major clinical toxicity (e.g. methemoglobinemia) was observed only at dose >80 ppm [43, 44]. Therefore NOx has small demerit but not significant as big merit that NOx is essential for the growth of plant for the production of food for the promotion of health and long life. The ratio of merit / demerit is 10000/1. NOx elimination at exit gas of factory and garbage incinerator should be stopped.

NP Elimination in Waste Water Should be Stopped

I investigated how much CO₂ is produced by the elimination of NOx and NP in Japan. Japan emit-ting 9.1 tone CO₂ per person [16, 19, 21, 32-36]. This value is too many in compared with France 5.6 tone, UK 5.7, Italy 5.7. I found that Japan producing 2 billion tone CO₂ for the elimination of NOx and NP in drainage and elimination of NOx at garbage incinerator exhaust gas [29].

Japan constructed 2200 waste water purification stations to eliminate NP. Much CO₂ is produced for the construction of 2200 west water purification stations.

I investigated Yamazaki waste water purification center at Yamazaki, Kamakura in Japan [31]. This center cover 96881 persons. Water 98287 m³ containing Nitrogen 40mg /l, Phosphorous 4.2mg/l is treated by activated sludge process. Air is bubbled for ten hours to give water containing Nitrogen 7.5 mg Phosphorous 2.7 31mg/l. Consuming 8841200 kWh electricity. This data showed that 7.34 Kg Nitrogen, 2.65 Kg Phosphorous is eliminated in one day at this center. This data indicate $7.34 \times 120000000 / 96881 \times 365 = 140$ million tone nitrogen, 12.8 million tone phosphorous is eliminated in Japan in one year. Population of Japan is 1.2 billion. $8841200 \times 120000000 / 96881 = 110$ billion kWh electricity is consumed in Japan for the treatment of waste water. This correspond $100880 / 110 = 1.11\%$ of total electricity consumption 100880 kWh of Japan.

If waste water purification is not done in Japan, $1.40 \times 25 = 35$ million tone CO₂ is fixed and 35 million tone plankton can grow and $35 \times 1/10 = 3.5$ million tone fish will be produced.

Bon Fire Inhibition Rule Should Be Abandoned

In Japan waste material must burn at incinerator. 0.4289 billion tone garbage (331 kg per person) is produced. Japan constructed 1243 garbage incinerator. Top number in the world. Second is USA 351 third France 181. Japan reconstructed high temperature garbage incinerator in 2002. About 2 billion CO₂ is produced for construction of these garbage incinerators.

In Japan very special law about the garbage incinerator was set up in 2002 by the reason much NOx is produced at lower temperature. By this rule, incinerator must be burned at higher temperature than 800 °C by adding excess fuel to keep higher temperature. Corrugated carton and fallen leaves must be burned at high temperature incinerator. Bon fire is inhibited by the reason bon fire produce much NOx. Burning of rice straw wheat straw at rice field is not possible. Big earth quake and tsunami happened in east Japan in 2011. Debris disposal was not allowed to burn on site. Debris disposal must transfer to far away district having high temperature incinerator consuming much fuel and money. Operation of this high temperature incinerator is using much excess fuel releasing much CO₂. There is Nagoshi clean center at Kamakura, Japan This clean center burn garbage 0.03 million tone at Kamakura producing 0.045 million

tone CO₂. Exhaust gas contain NOx. By insertion of ammonia this center used 40.94 kg ammonia in 2018. This mean $40.94 \times 30 / 17 = 72.256$ kg NO is eliminated by ammonia at Negoshi clean center [36]. Population of Kamakura is 0.172 million. This data indicate $72.256 \times 120000000 / 172000 = 50.41$ million kg NO is eliminated at burning of garbage in Japan. $40.94 \times 12000 / 17.2 = 285.64$ million kg NOx is eliminated by 255 million kg ammonia. 255 million kg ammonia is produced from 54 million kg H₂. If NOx elimination is not done 706 million kg CO₂ is not produced. 285 million kg NOx can fix $0.285 \times 25 = 7.125$ million tone CO₂.

The countries that use NOx, NP are growing and increasing population. The countries that eliminate NOx, NP are declining and decreasing population. DGP, food and population can be increased by effective use of NOx and NP [16, 19, 21, 32-36].

Summary

Complete recycle of N and P is essential for complete recycle of CO₂

1. NOx produced by burning should be released as it is. Do not eliminate NOx with ammonia.
2. Close up waste water purification center. Excreta should be released as it is. Ocean dump-ing, river dumping, field dumping, agriculture field dumping, forest dumping are recommended.
3. Garbage should be burned on site. Kitchen waste should be buried.
4. Bon fire, slash and burn agriculture should be encouraged.
5. NOx elimination law should be abandoned.
6. Waste water purification law should be abandoned.
7. Bon fir inhibition law should be abandoned.
8. Stop the unproductive spent of fossil fuel, like war, military exercise, auto race, leisure cruising and leisure trip.
9. Stop the unnecessary economy stimulus measure such as renewal of building, road.
10. Restriction rule of NOx emission of car should be loosened.

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