

Method to Protect Global Warming and to Get Long Life

Shoichiro Ozaki*

Professor Emeritus, Ehime University, Ehime, Japan

***Corresponding author:** Professor Emeritus, Ehime University, Ehime, Japan. Tel and Fax +81 0467670991, E-mail ozaki-0991@jcom.zaq.ne.jp

Received: January 14, 2021

Published: January 25, 2021

Abstract

Burning of fossil is increasing. Production of CO₂ and NO_x is increasing. Increased CO₂ and NO_x promoted the CO₂ assimilation. Developing countries like China, India, Indonesia, Vietnam are using NO_x, NP as fertilizer for plant and plankton growth and getting many grain and fish. These countries electricity price is low and GDP increase rate is high and increasing national wealth. Produced CO₂ is fixed by CO₂ assimilation at his countries. But developed countries considered NO_x and NP as pollution substances and started elimination of NO_x and NP at around 1980. 6 billion tone NO_x and 2 billion tone NP are eliminated. Then CO₂ assimilation is retarded. CO₂ fix is retarded. CO₂ is increasing. Food like grain, fish production is retarded. DGP increase rate decreased. Japan is eliminating NO_x and NP almost completely using much fossil and producing much CO₂ for the elimination of NO_x, NP. GWPR (CO₂ emission/CO₂ fix) of Japan is 3.3 highest in the world and national wealth is decreasing. If developed countries stop NO_x, NP elimination, global warming will stop and national wealth will increase. Stopping of NO_x, NP elimination increase fish production. Eating of fish is effective to get long life.

Keywords: Recycle of carbon; NO_x elimination; CO₂ assimilation; Protection of global warming NP in waste water; Anti-aging reagent

Introduction

Fossil fuel burn releasing 36 billion tone CO₂ and heat. Almost all CO₂ is used for CO₂ assimilation. 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. [1-46]. Paris agreement asking us CO₂ emission must be equal with CO₂ fix by 2050.

The author found the way to protect global warming [46-55].

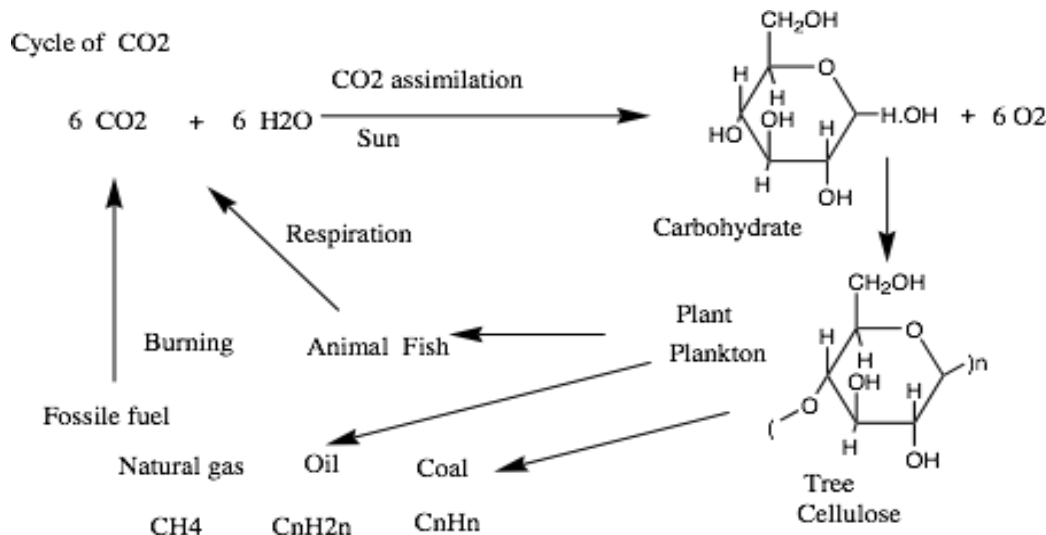
The author found that global warming is caused by the lack of nutritious nitrogen and phosphorous. Lack of NP is caused by elimination of NO_x and NP. Therefore, if developed countries stop the elimination of NO_x and NP. Global warming will not happen.

I was born in 1930 at Tanokuchi, Kojima, Kurashiki in Japan. After getting Ph D majoring organic chemistry Author joined fertilizer company named Toyo Koatus (orient high pressure) making urea and studied on slow releasing fertilizer from urea. The author become professor at Department of Resource Chemistry, Ehime University The author lectured about fossil fuel and cycle of CO₂.

The author watched the change of Seto inland sea for 80 year, and investigated the reason why global warming is progressing. He investigated the increase of CO₂, fix of CO₂, how CO₂

is fixed and what kinds of fixed products. How much NO_x is produced how NO_x is eliminated, compared the countries who eliminate NO_x, NP and countries who use NO_x, NP. Compared GWPR (Global Warming Protection Ratio), GDP Seto inland sea was filled with fish before 1980. Sea was turbid by plankton. Bottom of the sea was filled with sea weed, eel grass. At around 1980 red tide happened at Kagawa prefecture Japan. Japan government set up rule to eliminate NP and eliminate NO_x completely. Then Seto inland sea changed dramatically. Plankton does not grow. Fish disappeared. By the lack of nutritious nitrogen and phosphorous, agriculture and fish industry suffered critical damage. Fish production of Japan decreased 90 %. DGP of Japan does not increase since 1980. The author investigated the anti-aging compounds. He found hyaluronic acid, glu-cosamine in fish is effective for anti-aging. He found NO_x, NP elimination retarded fish production, CO₂ assimilation, CO₂ fix. and promoting global warming. [48-55].

The author found that Global warming is caused by lack of nitrogen and phosphorous. Lack of nitrogen and phosphorous come from the elimination of NO_x NP at 7 developed countries. The plant makes amino acid, chlorophyll and nucleic acid. Plant take CO₂ and nitrogen and phosphorous. The plant takes CO₂ and N and P by same composition as plant itself (Ref 56-58). C:N:P = 25:1:0.06. Plankton take C,N,P by the ratio C:N:P= 6.6:1:0.06. Large amounts of N P are necessary for planting plankton growth. 1/25 N of CO₂ and 1/416 P of CO₂ are necessary for plant growth. 1/6 N of CO₂ and 1/110 P of



CO₂ are necessary for plankton growth. Nature set up system to provide nutrient N. When some-thing is burned, or by sunder NO_x is produce by the oxidation of N in compound and by the reaction of and O₂ to pro-duce NO_x. NO_x is gift from nature.

Many persons including W. Nordhaus (won Nobel economic Science prize) [59-62]. Say global warming come from the increase of CO₂. But many reports [63-87]. Tell us that increase of CO₂ give good effect for climate control.

Global warming is caused by lack of nitrogen and phosphorous by the elimination of NO_x and NP.

Global warming is caused by the retardation of CO₂ assimilation by elimination of NO_x NP which do assimilation re-action with CO₂.

Global warming can be protected if enough nitrogen and phosphorous are supplied.

Most easily available substances are NO_x and NP in waste water.

If developed countries stop the elimination of NO_x NP, CO₂ assimilation is activated, global warming will stop and grain and fish production increase and GDP will increase. Paris agreement, CO₂ zero and growth can be accomplished sooner than 2050.

The author found anti-aging reagent [26,27,47-55]. Sulfa disaccharides which co-working with Klotho. The disaccharides have glucosamine structure and similar structure with hyaluronic acid and chondroitin. Relations of the disaccharide, Klotho, hyaluronic acid, chondroitin, glucosamine with health and anti-aging were studied. Klotho makes disaccharide from glucosamine and glucuronic acid and co-works on site with produced disaccharide and gives stable Ca homeostasis and consequent health, anti-aging and long life.

The author found the reason way glucosamine, hyaluronic acid is used so much as health food. The author found anti-aging reagent: sulfo disaccharides which co-working with Klotho. The disaccharide s has glucosamine structure and similar structure with hyaluronic acid and chondroitin. Relations of the disaccharide, Klotho, hyaluronic acid, chon-droitin, glucosamine with health and anti-aging were studied. Klotho makes disaccharide from glucosamine and glucu-ronic acid and co-works on site with produced disaccharide and gives stable Ca homeostasis and consequent health, anti-aging and long life.

The author wrote 54 papers [1-54]. Best 14 papers [5, 7, 16, 19, 27, 29, 32, 33, 37, 38, 39,40,46,49] are picked up and key points of these papers are explained in this paper.

1. Promotion of plankton CO₂ assimilation is most important [5]. 70% of CO₂ assimilation is said to be car-ried out at sea. Assimilation is carried out by sea weed and plankton. Sea weed and plankton are growing under ice at arctic and ant-arctic ocean, eating much CO₂, absorbing much heat and giving much food for whales, penguin and ear-less seals. When we consider the fact that oil is fossil of plankton and coal is a fossil of tree. We astonish the magni-tude, greatness and contribution of plankton assimilation.

The reason why earth is warmed up is due to the heart evolved by the burning of fossil fuels. CO₂ assimilation is a re-verse re-action. By absorption of heat by CO₂ assimilation, earth can be cooled down. Fossil fuel 1.4×10^{10} t was burned at whole world in 2018 and about 4.4×10^{10} t CO₂ was produced and 2.5×10^{15} kcal is produced. By doing reverse reac-tion, CO₂ assimilation, and by absorption of same amount of CO₂ and heart, the equilibrium of CO₂ and heart will be possible.

2. NO_x is best compound to reduce CO₂. [7].

The earth was boon and plant appeared. and plant eat CO₂, H₂O and Nutritious N, P. Plant is burned then NO_x is produced to recover lost plant. When no burning material present, like sea district, thunder storms make NO_x. NO_x is a gift from nature. We should not against nature. We should use NO_x as it is. In 2018 fossil 1.4×10^{10} tone was burned and CO₂ 4.4×10^{10} tone and NO_x 2.4×10^9 tone are produced. If we use all NO_x for the fixing of CO₂, we can fix $2.5 \times 25 \times 10^9 = 5 \times 10^{10}$ tone CO₂. As C/N ratio of plant is around 5/1-50/1 (average 25/1). But NO_x is hated as pollution gas causing illness. Many governments set up very strict law to eliminate all NO_x in burned gas and forced to eliminate NO_x using ammonia. The author wish to insist that NO_x elimination should be stopped. Because toxicity of NO_x is not so serious compared with significant merit of NO_x. NO_x is essential for plant to grow and produce food. NO_x is essen-tial for the promotion of CO₂ assimilation and essential for the production of foods for the promotion of health and long life for the protection of global warming Toxicity of NO_x. No report as to the serious sick and dead person caused by NO_x is reported.

NO_x is released at no person district such as sea side far from

house. NOx does not give serious damage to persons. NOx is essential for the growth of plant and essential for the production of food and essential for all living biology. Therefore, NOx elimination procedure and NOx elimination law should be eliminated.

Paris agreement ask us to reduce CO2. To reduce CO2, we can do by reducing the emission of CO2 and by increase of CO2 fixing Ozaki wish to explained the utility of NOx.

Thunder produce NOx, yellowtail, crab and delicious rice. Thunder produce NOx from N2 and O2. About 4 million thunder in one day and about 30 x 106 t NOx is produced by thunder in one year and about 20-80% of NOx is produced by thunder in the world. At Japan sea coastal area, many snow falls. This district is highest snow fall district in the world and snow pile up to 2-3 m. At this district, thunder happen very often with snow. Ishikawa prefecture 42. 4-day, Fukui prefecture 35.0day, Niigata prefecture 34.8day, Toyama prefecture 32.2day, Akita prefecture 21.4 day in a year are top 5 prefectures in 47 prefectures in Japan. Thunder at winter time has several hundred times stronger energy than summer time thunder and happening day and night very frequently producing much NOx. At the near sea, Gulf Toyama (Toyamawan)and surrounding sea are rich in nutritious N from thunder produced NOx and filled with plank-ton producing many Yellowtail (Buri) and Crab (Kani) Therefore thunder is called as Brookshire (yellowtail producer).

These 5 prefectures produce very much delicious rice for thousand years when no synthetic fertilizer is produced. There are proverbs, many thunder years produce good harvest, one thunder lightning give one-inch growth of rice. Thunder lightning is written as Inazuma (rice wife). Kaminari (thunder) in Japanese character is written Ame(rain) on the top of Ta(field). Most snow falling (3 meter) district Minami Uonuma is famous for the production of most delicious rice Minamiuonuma koshihikari.

On the contrary, at Seto inland sea (sea between Shikoku and Chugoku in Japan) district, especially middle part of Seto inland sea between Okayama and Kagawa Prefecture, thunder is very rare, once in 5 years. Therefore, no NOx is produced by thunder at this district. Fish industry of this district was destroyed almost completely since the supply of NOx was stopped by NOx elimination law. These facts indicate that NOx is playing very important role for the protection of global warming and production of foods.

(1) NOx elimination should be stopped. Large amount of NOx is produced when large amount of fossil fuel is burned. The amount of NOx produced is around 2.5x 10⁹ tone in whole world. To eliminate NOx 2.5x 10⁹

(2) Tone, equimolar ammonia 1.13 billion ton is used. To make ammonia 1,13 billion tone, 0.2 billion tone hydrogen gas is used. To make 0.2 billion tone hydrogen, butane 0.6 billion tone is used. As the result, 1.76 billion tone CO2 is released. If NOx elimination is stopped, 1,76 billion tone CO2 release can be stopped. and 1.76 x 25=44 billion tone CO2 can be fixed.

(3) Stopping of drainage treatment Drainage contain nutrient N and P. To treat drainage, huge electricity is used. To make this electricity, 0.60 million fossil fuel are used in Japan. If we stop the drainage treatment, we can save the release of CO2 one million tone. Each house need not to pay drainage treatment fee 20 \$ per month. Ocean, field and wood dumping of drainage are encouraged.

By stopping of drainage treatment and NOx elimination at

burned gas, and by releasing of NOx 2 million tone and nutrient P 0.5 million tone, CO2 2x 25 = 50 million tone can be fixed and fish 20 million tone can be produced in Japan. By insufficient supply of nutrient N caused by NOx elimination law, fish industry suffered critical damage at Kuroshio (poor nutrient N. P) running sea especially at Seto inland Sea. district where no thunder and no supply of NOx Tuna (maguro), Bonito (katsuo), Sardine (iwashi), Bream(tai), Mackerel (saba), Octopus (tako), Sea eel (anago), Oys-ter(kaki), decreased. to 20 %. Sea weed(nori) decreased to 0 %. Many fishermen lost job. Fish price increased five times and fish became much expensive than meat now. We Japanese can alive longest by eating fish as main protein source. Because fish contain hyaluronic acid, glucosamine and chondroitin which precursor of anti-aging reagents.

We Japanese may lose long life record. (Men 80.50 (third),

Country	CO ₂ em	Nox	Fish	CO ₂ f	Grain	CO ₂ g	CO ₂ t	Popula- tion	CO ₂ inc
	Bill t	hm t	m t	hm t	hm t	hm t	hm ² l	hm	hm t
World	51	14.4	160	188	33	66	256	76	180
China	1.96	4.25	81.5	16.3	5.57	11.2	100	13.5	0
United S	5.1	2	5.5	1.1	4.4	9	51	3.1	0
India	2.46	1	10.5	2	2.95	6	28	13	-9
Russia	1.96	0.63	4.9	0.98	0.92	0.9	32	1.43	-12
Japan 2019	1.25	0	4.54	0.92	0.04	0.08	3	1.27	8
Japan 1980	0.8	0.5	12	2.4	0.08	0.16	3	1.27	2.6
Germany	0.78	0	2.7	0.05	0.47	0.9	3.5	0.83	5
Iran	0.96	0.25	0.7	0.14	0.18	0.36		0.8	
Canada	0.56	0.22	8.7	0.17	0.51	1.02	94	0.37	-88
Indonesia	0.5	1.97	23.2	4.6	0.44	0.89	14	2.39	-9
Mexico	0.47	0.2	1.5	0.3			1.9	1.23	
U. K	0.4	0.16	0.04	0.08	0.33	0.66	7	0.8	
S Africa	0.4	0.17	0.6	0.12	0.12	0.24	1.2	0.33	
Italy	0.35	0.14	0.2	0.04	0.16	0.3	3	0.6	0.5
France	0.33	0.0013	0.6	0.12	0.52	1	8	0.67	-5
Poland	0.3	0.9			0.32	0.64	5	0.38	-2
Thailand	0.28	0.11	15	0.38	0.38	0.76	0.5	0.63	2.2
Spain	0.26	0.1	1.3	0.26	0.21	0.42	2.6	0.46	0
Egypt	0.23	0.7	3.3	0.66	0.03	0.6		0.94	
Vietnam	0.21	0.7	6.4	1.2	0.5	1	3	0.86	-1
Argentin	0.19	0.01	1.8	0.36	1.02	2.8	2	0.25	
Pakistan	0.17	0.67	0.3	0.06	0.38	0.7	7.9	1.98	-5
Australia	0.13	0.025	0.2	0.04	0.7	0.65	3	0.25	-1.6
Philippin	0.11	0.045	0.9	0.27	0.54	0.1	3	0.92	-1.9
Nigeria	0.09		0.7	0.013	0.26	0.5		1.94	
Columbia	0.08	0.003	0.6	0.12	0.08	1.1		0.5	
Malaysia	0.028	0.11	1.6	0.32	0.02	0.4	0.28		
Netherland	0.01	0.16	0.3	0.06	0.08	0.018	0.17		

women 86.63 (top)) from the fact that fish production was reduced remarkably by NOx elimination law.

NOx produced by burning increase CO2 assimilation, food production [7]. Ozaki demonstrated how fish production changed

how grain production changed, how CO2 fix changed, how GDP changed, how GWPR (CO2emission/ CO2 fix) changed.

(4) Method to fit Paris agreement for protection of global warming [16]

CO2 emission), NOx (NOx emission), fish production, CO2 f (CO2 fixing by plankton used for fish production), Grain, CO2 g (CO2 fixing used for grain production), CO2t (CO2 used for Tree Grass production), population, CO2 increase, of 28 countries. The results are shown in (Table 1) [16]

CO2: emission; 360 hm tone CO2 was produced in the world
 Table 1: CO2em, NOx, Fish, CO2f, Grain, CO2g, CO2t, Population, CO2inc of countries

Country	CO ₂ em	Nox	Fish	CO ₂ f	Grain	CO ₂ g	CO ₂ t	Popula- tion	CO ₂ inc
	Bill t	hm t	m t	hm t	hm t	hm t	hm t	hm	hm t
World	51	14.4	160	188	33	66	256	76	180
China	1.96	4.25	81.5	16.3	5.57	11.2	100	13.5	0
United S	5.1	2	5.5	1.1	4.4	9	51	3.1	0
India	2.46	1	10.5	2	2.95	6	28	13	-9
Russia	1.96	0.63	4.9	0.98	0.92	0.9	32	1.43	-12
Japan 2019	1.25	0	4.54	0.92	0.04	0.08	3	1.27	8
Japan 1980	0.8	0.5	12	2.4	0.08	0.16	3	1.27	2.6
Germany	0.78	0	2.7	0.05	0.47	0.9	3.5	0.83	5
Iran	0.96	0.25	0.7	0.14	0.18	0.36			0.8
Canada	0.56	0.22	8.7	0.17	0.51	1.02	94	0.37	-88
Indonesia	0.5	1.97	23.2	4.6	0.44	0.89	14	2.39	-9
Mexico	0.47	0.2	1.5	0.3			1.9	1.23	
U. K	0.4	0.16	0.04	0.08	0.33	0.66	7	0.8	
S Africa	0.4	0.17	0.6	0.12	0.12	0.24	1.2	0.33	
Italy	0.35	0.14	0.2	0.04	0.16	0.3	3	0.6	0.5
France	0.33	0.0013	0.6	0.12	0.52	1	8	0.67	-5
Poland	0.3	0.9			0.32	0.64	5	0.38	-2
Thailand	0.28	0.11	15	0.38	0.38	0.76	0.5	0.63	2.2
Spain	0.26	0.1	1.3	0.26	0.21	0.42	2.6	0.46	0
Egypt	0.23	0.7	3.3	0.66	0.03	0.6		0.94	
Vietnam	0.21	0.7	6.4	1.2	0.5	1	3	0.86	-1
Argentina	0.19	0.01	1.8	0.36	1.02	2.8	2	0.25	
Pakistan	0.17	0.67	0.3	0.06	0.38	0.7	7.9	1.98	-5
Australia	0.13	0.025	0.2	0.04	0.7	0.65	3	0.25	-1.6
Philippin	0.11	0.045	0.9	0.27	0.54	0.1	3	0.92	-1.9
Nigeria	0.09		0.7	0.013	0.26	0.5		1.94	
Columbia	0.08	0.003	0.6	0.12	0.08	1.1		0.5	
Malaysia	0.028	0.11	1.6	0.32	0.02	0.4	0.28		
Netherland	0.01	0.16	0.3	0.06	0.08	0.018	0.17		

in 2016 by the burning of 140 hm tone fossil. CO2 emission of many countries are obtained from statistic.

To protect global warming, we must fix CO2 same amount CO2 as emission. We are emitting 360 hm tone CO2. We are fixing 283hm tone. Therefore 142 hm tone CO2 is increasing. We must fix 142hm tone CO2 by proportion of emission of each country. Responsible amount of each country is calculated Responsible amount can calculated as Emission amount x 142/360(0.397).

Each country must clear target their CO2 res by either decrease of CO2 emission or increase of CO2 fixing.

NOx: Amount of NOx is estimated from the fact that NOx is produced about 1/25 of produced CO2. When 1 tone CO2 is produced 1/25 tone NOx is produced in the burning process, 14.4 hm tone NOx is estimated to be produced when 36 billion tone CO2 is produced. Many governments such as United State, Japan, Germany, United Kingdom, France consider NOx as pollution gas and eliminating NOx by the reaction with ammonia. Therefore, CO2 assimilation is retarded very much. CO2 fixing is retarded very much. And global warming is accelerated very much. Amount of NOx is so much and global warming progress so fast. For the production of ammonia, much fossil is used and much CO2 is produced.

Fish: Fish eat about 20 times plankton of his weight. CO2p: Same weight of CO2 is fixed in the growth of plankton. Therefore 20 times of fish weight CO2 is estimated to be fixed.

Grain: 33 hm tone grain is produced

CO2g: 2 times weight of CO2 is fixed in the production of

grain

Tree grass: From 225 million tone CO2, 225 billion tone tree and grass are estimate to be produced. Fish: From 40 billion tone plankton, 2 billion tone fish are produced. 1/3 tone fossil give 1 tone CO2. 1 tone CO2 produce 1/25 tone NOx in the burning process,

In the CO2 assimilation process, 1 tone CO2 react with 18/44 tone H2O using 1/25 tone NOx

CO2, Grain and Fish production are obtained from statistic.

Plankton weight is estimated from the fact that sardine eat 10 times plankton of his weight. And Tuna (maguro) eat 10 times sardine of his weight. Then we estimated that fish eat 20 times plankton of his weight. In average.

Grain: From 66 hm tone CO2, 33 hm tone grain are produced. CO2 fixed in the production of grain is thought to be double of grain.

CO2 t (CO2 used for the production of tree, grass). is obtained from CO2 weight minus plankton and Grain weight.

CO2, Grain and Fish productions are obtained from statistic.

China emitted 106.4 hm tone CO2. CO2 rest is 41.92 hm tone.

And emitted 4.26 hm tone NOx. China produced 0.794 hm tone fish. China fixed 15.88 hm tone CO2 by plankton growth. China produced grain 5.57 hm tone. And fixed 11.2 hm tone CO2.

China has possibility to fix 100 hm tone CO2 by tree grass CO2 assimilation at 9.98 m km2 area. United Sate emitted 51.0 hm CO2. CO2 res is 20.0 billion tone and emitted 2 hm tone NOx .and produced 0.055 hm tone fish and fixed 0.1 hm tone CO2 by plankton growth. United states produced grain 4.4hm tone grain and fixed 9 hm tone CO2 United states can fix 51 hm tone CO2 by tree grass CO2 assimilation at 5.172 m km2 area.

India emitted 24 hm CO2. India fixed 2 hm tone CO2 by plankton growth for the production of 0.105 hm tone fish. India produced grain 2.96 hm tone. India can fix 32 hm tone CO2 by tree grass CO2 assimilation at 3.287 m km2 area. Japan produced 12.5 hm CO2. CO2 res is 4.92 tone and emitted 0.5 hm tone NOx. Japan produced 0,047 hm tone fish.and fixed 0.94 hm tone CO2 by plankton growth. Japan produced 0.1 hm grain and fixed 0.24 hm CO2. Japan can fix 3.3 hm tone CO2 by tree grass assimilation at 0.378 m Km2 area.

Total 0.94+ 0.24 + 3.3= 4.48 hm tone CO2 can be fixed. But Japan cannot fix 12.5-4.48= 8.02 hm tone CO2 at his own land. Because area is narrow Japan increasing 8.02 hm tone CO2. Japan must fix CO2 at surrounding sea by plankton CO2 assimilation.

United Kingdom produced 4 hm t CO2. United Kingdom can fix 0.1 hm tone CO2 by plankton, 0.4 hm tone CO2 by grain production, and 2.4hm tone CO2 by grass tree production. Total 2.9 hm tone CO2can be fixed. United Kingdom increasing 1.1 hm tone CO2

Italy produced 3.5 hm CO2. Italy can fix 0.7hm tone CO2 by plankton, 0.3 bil tone CO2 by grain production, and 0.3hm tone CO2 by tree grass production. Total 1.3 billion tone CO2 can be fixed. Italy increasing 2.2 hm tone CO2 Ja-pan, United Kingdom and Italy cannot fix CO2 at his country Because areas are narrow. Japan emitted 1.2x 10⁹ k tone CO2 in 2015. Japan has area 3.8 x 10⁸ Km2. Fixable CO2 is 3.3 x 10⁸k tones. Japan increasing 9x 10⁸ k tone CO2. Ja-pan, United Kingdom and Italy are increasing CO2. These 3 countries are surrounded by sea. These countries must decrease CO2 by Plankton CO2 assimilation at sea. Total CO2 emission of the world is 3.6 x 10¹⁰kt. We must decrease CO2 emission by the promotion of plankton CO2 assimilation by using NOx given by nature.

Method to decrease CO2 14.2 billion tone:

Paris agreement ask us no increase of CO2. We must fix CO2 same amount CO2 as emission.

World is emitting 36 billion tone CO2. World is fixing 21.6 billion

tone CO2. Therefore 14.2 billion tone CO2 is increasing. We must fix 14.2 billion tone CO2

World is emitting 1.44 billion NOx. About half of emitted NOx is eliminated by ammonia. And around half of NOx 0.72 billion tone NOx is released as it is. 1 tone NOx can fix 25 times of CO2. Therefore if 0.72 billion tone NOx is not eliminated, $0.72 \times 25 = 18.0$ billion tone CO2 can be fixed.

We must decrease 14.2 billion-ton CO2. 14.2 billion tone CO2 is assigned by proportion of emission of each country. CO2 Responsible amount of CO2) can be calculated as

Emission amount $\times 14.2/36$ (0.397) United states. Responsible CO2 is 20 billion tone. USA emitted 51.0 billion CO2. And emitted 2 billion tone NOx. To eliminate 2 billion tone NOx 1.13 billion tone ammonia is necessary. To make 1.13 billion tone ammonia, 0.2 billion tone hydrogen gas is required. To make 0.2 billion tone hydrogen, butane 0.64 billion tone is required. As the result, 1.76 billion tone CO2 is released. If NOx elimination is not done, 1.76 billion tone CO2 can be saved. And 50 billion tone CO2 will be fixed. And every plant grows well and produce grain, fish and grass well. Re-sponsible 20 billion tone COx fix will be done.

NOx concentration limit rule of exhaust gas of car determines the fuel efficiency. By loosening concentration limit, 20 % fuel efficiency elevate and 0.2 billion tone CO2 emission will be saved. By effective use of NOx and NP in the drain-age, 0.5 billion tone CO2 assimilation is accelerated and grain and fish and meat production will increase.

Japan is emitting 1.25 billion tone CO2. CO2 res is 0.495 billion tone. 0.1 billion tone CO2 is emitting for the elimination of NOx and 0.1 billion tone CO2 is emitted for the drainage treatment. If these treatments are stopped, Emission of 0.2 billion tone CO2 is saved. and concentration of N, P increased and CO2 assimilation is accelerated and 0.5 billion tone CO2 will be fixed. And $0.1+0.1+0.5=0.7$ billion-ton CO2 is decreased. 0.7 billion tone CO2 is 0.205 over the responsible 0.495. to fit Paris agreement. Japan restricting rice production. Area 11 million hectare (36% of total rice field) is inhibited to plant. If we cultivate rice in all fields, 14 million CO2 can be fixed. If we cultivate two crops. rice and wheat at the same field in a year. We can fix 30 million tone CO2. 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. Operation of this high temperature incinerator is using much excess fuel releasing much CO2. For the construction of new incinerator much CO2 are produced. For the transportation of garbage and destroyed house 0.1 billion tone CO2 is generating. Also, bonfire was inhibited by the reason bonfire produces NOx. By eliminating this law 0.1 billion tone CO2 fixing will be accomplished.

Plankton photosynthesis and fish production

70 % of earth is covered by sea. 70% of CO2 assimilation is carried out at sea. 1.5 billion years ago, fish was not appeared. Plankton grow and oil is formed as fossil of plankton. Plankton grow infinitively 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 1.5 billion years ago. Fish grow by eating plankton. Fish grow at plankton rich sea. 3 big fishing oceans were north Atlantic Ocean, north Pacific Ocean and west side sea of south America. At these sea, counter current gives rich N and P to the plankton.

World fish industry and CO2 fixing changed very much since 1980 by the supply of NOx produced by burning of fossil. World fish production in 2016 increased to 200 million tone, about double of 93 million tons in 1997. China produced 79.38 million tone, Indonesia 22.21, India 10.11, Vietnam 6.21, increasing fish production very much.

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 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 0.4 billion tone NOx. This NOx is released to air and dissolved in rain and give enough nutrient nitrogen to sea, lake and river to grow 1.6 billion tone plankton and 79.38 million tone fish. This 0.4 billion tone NOx became enough fertilizer for the production of 0.44 billion tone grain. And also, this 0.4 billion tone NOx contributed for the growth of tree and grass. These three CO2 assimilation actions, plankton formation, grain production tree and grass growth, fixed 10 billion tone CO2 and are contributing for the protection of global warming.

Japan produced 16 million tone fish, top in the world in 1960 But fish production decreased to 4.64 million tone 7th place in 2016. This is huge decrease. Japan is eliminating 3 million tone N and P since 1980. Therefore, NP concentration of sea decreased remarkably. Plankton cannot grow at this low concentration. Therefore, fish decreased. 12 million tone fish were not produced in recent years. Especially, Pacific Saury (sanma) decreased, 2006 3×10^5 t, 2014 1.5×10^5 t, Sardine (iwashi) 1988 4.81 million tons 2014 0.5 million tone These 2 fishes eat plankton. Tuna (maguro) which eat Pacific Saury and Sardine decreased 1961 0.16 million tons 2014 0.017 million tone. Bonito (katsuo), Bream (tai), Sea eel (anago) decreased, Salmon (sake), Mackerel (saba), Octopus (tako), Squid (ika), Eel (unagi), Sea eel (anago), 0.16 million tons in 1969 to 0.017 million tons in 2014. Asari 0.1 million tons in 1980 to 0.001 million tons in 2016. Sea weed (Nori) 1 billion sheet decreased to 0.01 billion sheets. 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 deepsea water with nutrient poor shallow sea water. Fish production is proportional to CO2 fixed by CO2 assimilation at sea, the country having high fish production is the country which have done high CO2 fixing. 20 times of CO2 of fish production are fixed by plankton CO2 assimilation.

China produced 79.38 million tone fish in 2016. This means that China fixed 1.6 billion tone CO2 by plankton CO2 assimilation. This is huge amount. This is 1/6 of 10 billion tone CO2 produced at China. China is biggest CO2 producing country.

This data indicates that plankton CO2 assimilation is playing

significant role for the fixing of CO₂ and protection of global warming.

Decrease of 12 million tone fish at Japan means decrease of 240 million tone CO₂ fixing. If Japan stop elimination of 3 million tone N and P, Japan can fix 60 million tone CO₂ and can produce 12 million tone fish

Decrease of half million-ton fish at Seto inland sea [2] means decrease of 10 million tone CO₂ fixing 12.4×10^8 tone CO₂ $-4.4 \times 10^8 = 8 \times 10^8$ tone CO₂ must be fixes at sea. $8 \times 10^8 / 14.2 = 5.77 \times 10^8$ km² sea area is necessary.

We must do CO₂ assimilation at 8.77×10^8 km² sea. This is 2.3 times wide area of Japan.

NOx Concentration of Many Countries

When fossil is burned, carbon dioxide is emitted and about 1/25 NO_x of produced CO₂ is also produced as by product. Concentration of NO_x in exhaust gas at the electricity plant is around 1.6 g/ 1kWh. Some country does NO_x elimination with ammonia and some country do not do NO_x elimination. Do NO_x elimination or do not do NO_x elimination give significant influence on economy, electricity price, import, export, agriculture, fish industry and GDP

China emitted 10.64 billion tone CO₂. The content of NO_x in exhaust gas is 1.6 g/kWh electricity generation. As electricity generation of China is 15422 billion kWh. Then NO_x emission of China is $2 \times 1.6 \times 15422 = 984$ million tone. About half of fossil is burned at electricity plant. Other half is burned at other Furness like iron work and chemistry works. Therefore, double of NO_x is produced at all Furness. Electricity price at China is 8 c/kWh.

Japan emitted 1.25 billion tone CO₂. Japan did not do NO_x elimination before 1970 and NO_x content was 1.6 g/kWh and $2 \times 1.6 \times 10080 = 64.2$ million tone NO_x was released. Since 1980, Japan government set up very strict law to eliminate NO_x and Drainage NP, Then NO_x concentration in exhaust gas decreased to 0.1 g/kWh and NO_x emission decreased to 0.4 million tone.

China 1.6 g/kWh, USA 0.5, India 1.6, Japan 1.6 in 1970, 0.1 in 2016, Canada 1.3, Germany 1.0, France 1.9, S Korea 1.6, UK 1.3, Italy 0.5. China produce NO_x 984 million tone, USA produce 192 million tone, India 86 million tone, Japan 0.4 million tone, Canada 52.4 million tone, Germany 24.4 million tone, France 38 million tone, S.Korea 34.2 million tone, UK 18.4 million tone, Italy 5.6 million tone.

As 1 molecule of NO_x can fix 25 molecules of CO₂. China can fix $.984 \times 25 \times 44 / 30 = 36.08$ billion tone CO₂, USA can fix $0.192 \times 25 \times 44 / 30 = 7.04$ billion tone CO₂, India can fix $0.86 \times 25 \times 44 / 30 = 3.15$ billion tone CO₂. Japan can fix $0.4 \times 25 \times 44 / 30 = 0.147$ billion tone CO₂. Canada can fix $0.524 \times 25 \times 44 / 30 = 1.91$ billion tone CO₂. Germany can fix $0.244 \times 25 \times 44 / 30 = 0.894$ billion tone CO₂

France can fix $38 \times 25 \times 44 / 30 = 1.393$ billion CO₂. S.Korea can fix $34.2 \times 25 \times 44 / 30 = 1.25$ billion CO₂. UK can fix $18.4 \times 25 \times 44 / 30 = 0.674$ billion tone CO₂. Italy can fix $5.6 \times 25 \times 44 / 30 = 0.205$ billion tone CO₂.

Electricity Price of Many Countries

When we look at electricity prices of many countries, High electricity price country: Japan 20-24 c/kWh, Germany 32 c/kWh, France 19 c/kWh, UK 15.4 c/kWh, Italy 28 c/kWh. At these countries, NO_x elimination is carried out. Most severe NO_x elimination country is Japan. NO_x con is 0.1 g/kWh and

electricity price are high as 20-24 c/kWh.

Low electricity country: China 1.6-4.5 c/kWh India 5.6c/kWh S.Korea 8.4 c/kWh,

Country who do not do NO_x elimination can provide low price electricity Low price country is increasing CO₂ assimilation, CO₂ fixing, food production. China is by far.

Low price electricity is very favorite for the production of good and can export many good to high electricity price country. For example, most electricity generation panel is produced in China and exported to all over the world. Then China is increasing GDP.

High electricity price country is doing NO_x elimination by ammonia. By elimination of this NO_x elimination process, we can reduce 0.1 billion tone CO₂ production. Japan eliminate NO_x completely. Therefore, electricity price 20-24 c/kWh is 2.5 times higher than that of S Korea 8.4 c/kWh. Even through both countries are generating electricity by importing fossil from abroad. Construction cost plus fossil cost are added for elimination of NO_x. Then electricity price increase. electricity price increase. Developed country must lower electricity price by stopping NO_x elimination.

Fish Production and CO2 Fix by Plankton [13,14,18]

When we look at fish production of world. China emitted 10.4 Billion tone CO₂ and 492 million tone NO_x. They do not eliminate NO_x and use NO_x as promotor of plankton growth. 79.38 million tone fish are produced and 1.98 billion CO₂ is fixed. India produced 10.11 million tone fish. Japan produced 13 million tone fish in 1970. But since the elimination of NO_x, fish production decreased to 4.64 million tone. CO₂ fix by plankton 250 million tons in 1970 decreased to 92.8 million tons in 2016

When we look at fish production region of Japan, west side of Kyushu, Nagasaki, Saga, Fukuoka, Kagoshima prefecture. West of these prefecture is East China sea. Large amount of nitrogen is provided by Yangtze River and concentration of East China sea is very high and large amount of plankton is growing and much fish is produced at this sea. East China sea is fishing center of the world now.

Influence of NOx Elimination on GDP Growth Rate

CO₂ assimilation is most important reaction for all biology on earth.

NO_x is a promotor of plant growth, CO₂ assimilation Therefore NO_x elimination gives great damage on growth of plant, plankton, production of fish, grain, grass and tree. The elimination reaction of NO_x is a reaction of NO_x with ammonia. By this reaction, precious fertilizer is destroyed by other precious fertilizer. This is tremendous loss.

1. The country who do not do NO_x elimination like China (NO_x c= 1.6g/kWh, GDP =6.92%), India NO_xcon=1.6 g/kWh, GDP=7.10%,) S Korea (NO_x c=1.6g/kWh, GDP= 2.8%) can boost high GDP growth rate

2. The countries who do this reaction NO_x elimination like USA (NO_xc=0.5g/hWh, GDP= 1.38%), Japan (NO_xc=0.1g/kWh. GDP= 1.01%) Germany, (NO_xc=1.0g/kWh, GDP=1.85%), UK (NO_xc=1.3g/kWh, GDP=1.8%), Italy (NO_xc=0.5g/kWh, GDP=0.88%) are consuming much fossil fuel for elimination of NO_x. Therefore, electricity price is

higher than no NOx elimination country. and CO2 assimilation is retarded. Agriculture and fish industry are retarded. Japan did no NOx elimination before 1970, GDP was 8.0 in 1970. Japan started NOx elimination in 1980, then plankton production was destroyed and 13 million tone fish was not produced. About 1 million fish-erman lost job. As fish price is 3000 dollar /t. Then 3000x 13 million dollar= 390 billion dollars were lost. DGP growth rate of Japan now is 1.01%.

3. The country whose electricity price is low can produce good with low price Then producing industry progress. And DGP growth rate become higher. The country does not do NOx elimination. 1. Need not fossil to eliminate NOx 2. Can have enough NOx and can promote CO2 assimilation. 3 Electricity prices is low. 4. Can produce much fish and grain. 5. Can get high GDP growth rate. China 6.92%, India 7.10%. The country does NOx elimination show low GDP: USA 1.48 %, Germany 1.85%, UK 1.8%, Japan 1.03 %, Italy 0.88%.

4. Effect of NOx elimination on electricity price, fish production, GDP an protection of global warming [19].

Many develop country like USA, Japan, Germany, United Kingdom France set up law to inhibit the release of NOx in the air. Then CO2 assimilation is reduced remarkably CO2 fix is reduced remarkably. Plant and plankton growth are reduced remarkably. Fish production of such country reduced remarkably. Some other country welcomed NOx and excreta as promotor of CO2 assimilation. At these country plankton growths, grain growth is promoted. Fish production increased. Thousand papers are presented about toxicity of NOx and no paper indicating that NOx is fertilizer. When we look at plankton. Thousand papers including 20 nature paper teach us that plankton and supply of NP are playing significant role for the control of climate, CO2 assimilation, fish production. Plankton reduced 95 % CO2 concentration to 250ppm in 3 billion years. Ozaki is insisting NOx elimination should be stopped, NOx elimination law should be eliminated. NOx should be re-released to air as it is. Waste water should be released as it is to ocean, field and forest to promote CO2 assimilation to help fix of CO2. When we look at fish production of world [6-15]. China produced 79.38 million tonne fish and Indone-sia produced 22.21million tonne fish. India 18.11 Vietnam 6.21 million t fish. They use NOx and excreta as it is for production of plankton and fish. Therefore, fish production increased remarkably. China industry is promoted. As the result production of CO2 and NOx increased rapidly and production of fish increased rapidly.

CO2 em(CO2 emission), Nixon(NOx concentration in exhaust gas), Noxzema(NOx emission) electricity, price, fish, CO2f-plankton, GDP of 11 countries are shown at Table 2

5. The effect of NOx elimination on electricity price, fish production and GDP [29]

The effect of increase of NOx and CO2 on grain and fish production, protection of global warming and climate
CO2 emission, CO2 fix, NOx emission, Grain production, GrainJa (Grain production of Japan) GrainInd (grain production of India), Fish (fish production of the world), FishJa (fish production of Japan, GWPR and GDPgJ (GDP growth rate in Japan) are shown in Table 3

Table 2: CO2em, Noxcon, Noxem, Electricity, Price, Fish, CO2fplankton, GDP

Country	CO ₂ em hm t	No _x con g/k wh	No _x em mill t	Electricity billk wh	Price c/k wh	Fish mill t	CO ₂ f- plank- ton hmt	GDP growth rate
China	106.4	1.6	984	154220	1.6-4.5	79.38	19.8	692
India	24.5	1.6	86	13920	5.6	10.11	2	7.1
S Korea	5.8	1.6	34.2	5380	8.1	3.33	0.083	2.8
USA	51.7	0.5	192	43670	12	6.05	0.5	1.48
Japan	12.5	0.1 (2016)	0.4	10080	24	4.64 (2016)	0.11 (2016)	1.03
		1.6 (1970)	64.2			13.00 (1970)	3.25 (1970)	8
Canada	5.5	1.3	52.4	6520	8.1	1.05	0.25	1.4
Ger- many	7.7	1	24.4	6270	32	0.29	0.07	1.85
France	3.2	1.9	3.8	5570	19	0.91	0.18	1.2
UK	4	1.3	18.4	3560	15.4	0.91	0.002	1.8
Italy	3.5	0.5	5.6	2880	28	0.34	0.008	0.88
Russia	17.6				17	4.61	1.15	-0.22

Table 3:

year	CO- em hm t	CO ₂ f hm t	NO _x em hm t	Grain hm t	GrainJa m t	Grain- Ind hm t	Fish m t	FishJa m t	GWPR	GDPgJ
1900	20	20	0.8							1
1920	30	30	1.2							1
1940	50	50				2		1		
1960	100	100	4			0.7	35	3.5	1	6
1970	150	150	6	11	13			6.2		7
1975	170	170	6.8	12	10			9.5	1	6.5
1980	200	150	8	14	10	1.2	45	11	1.33	6
1985	210	140	8.4	15	9.5		105	12	1.33	1
1990	220	140	8.8	17	9	1.7	110	9	1.5	1
250	150	10	22	8.5	2.2	14	8.5	1.57		1
2005	270	160	10.8	21.5	8.2		155	5	1.68	1
2010	300	170	12	23.5	8	25	165	4	1.76	1
2017	360	220	14.4	27	7.5		200	3.2	1.63	1

Weight of vegetation of world increased about 2 times since the industrial revolution, Area of tropical rain wood area increased very much since these several 10 years.

Total weight of wood is said to be 80 billion tone. The reason is the increase of NOx

The increase of CO2 and NOx production increased the CO2 assimilation. The increase of CO2 assimilation increased the production of grain and fish. The production of grain in 1960 0.85 billion tone in 2010 2.6 billion tone 3 times. The production of grain in India increased 5 times from 1950 to 2010. In1950 0.5 billion tone, 1060 0.7 billion tone, 1970 1 billion tone, 1980 1.2 billion tone, 1990 1.7 billion tone, 2000 2.2 billion tone, 2010 2.5 billion tone, CO2 emission is now 24 billion tone. NOx emission increased to 1 billion tone. The increase of NOx contributed for the production of 2.5 billion tone grain. Population of India increased 1951 0.38 billion to 2014 1.25 billion. 3,3 times. grain production increased 5 times. Fish production of the world increased. In 1940 20 million tone, in 1960 35 mil-lion tone, in 1980 45 million tone, in 1990 80 million tone, in 2000 130 million tone, in 2010 130 million tone, in 2016 200 million tone. China increased fish production. 57 times from 1960 to 2017. In1960 1.5 million tone, 1970 2 million tone,1980 3 million tone, 1990 4 million tone, 1997 16.33 million tons 2002 16.33 million tons 2016 78.38 million tone, 2017 85.3 million tone. China produced 10.6 billion tone CO2 and 4 billion tone NOx. 4 billion tone NOx contributed for the increase of nitrogen concentration of sea, and growth of plankton, increase of fish production.

China produced 4 billion tone NOx. This NOx increased nitrogen concentration of sea. East China sea in now top fishing sea. The three big fishing sea were north Pacific Ocean, north Atlantic Ocean, west of south America. These seas were rich in nutrient NP caused by countercurrent of deep-sea water

NP rich deep sea with NP poor surface sea water. When CO₂ concentration increase, yield of grain increased about 30 %. The concentration of CO₂ at green house is kept at 1000- 1500 ppm. Normal concentration of air is 400 ppm. Therefore, the concentration at green house is 2.5-3.75 times higher than normal air CO₂.

The tree at population dense big city growth much rapidly than normal district. NO_x is very effective promotor of CO₂ assimilation. Therefore, the production of grain and fish increased proportionally to the increase of CO₂ and NO_x. In 1900 20 billion tone CO₂ is emitted and 20 billion tone CO₂ is fixed. In 1920 30 billion tone CO₂ is emitted and 30 billion tone CO₂ is fixed. In 1940 50 billion tone CO₂ is emitted and 50 billion tone CO₂ is fixed. In 1960 10 billion tone CO₂ is emitted and 10 billion tone CO₂ is emitted and 10 billion tone CO₂ is fixed. After 1980, amount of CO₂ emission and fix become different. Fix amount become smaller than emission.

In 1980 20 billion tone CO₂ is emitted and 18 billion tone CO₂ is fixed. In 1990 22 billion tone CO₂ is emitted and 14 billion tone CO₂ is fixed. In 2000 25 billion tone CO₂ is emitted and 16 billion tone CO₂ is fixed. In 2010 30 billion tone CO₂ is emitted and 16 billion tone CO₂ is fixed. In 2016 36 billion tone CO₂ is emitted and 22 billion tone CO₂ is fixed. Amount of CO₂ fix is 14 billion tone less than emission. This is caused by the elimination of NO_x and NP. CO₂ assimilation is retarded by NO_x, NP elimination.

Heat Balance of Earth

On earth 14 billion tone fossil fuel is burned and CO₂ 3.6×10^{10} t was produced. And 13.2×10^{16} kcal is produced. When we consider the heat produced by animal respiration, 7.4×10^{15} kcal $\times 4.6/3.6 = 9.45 \times 10^{15}$ kcal is produced. The earth is also warmed by the heat of atomic energy. Uranium produce 2×10^{15} kcal heat. Electricity generation capacity of the world is 16868 Tetra watt h. Electricity generation by atomic energy is 2086 Tetra watt h. Therefore $7.4 \times 10^{15} \times 2986/10868 = 2.02 \times 10^{15}$ kcal evolved by atomic energy.

The earth is also warmed by the heat evolved by animal. Human being eats 1000 kcal food every day and release heat 1000 kcal every day. Population of the world is 7.6 billion. Therefore, human being is releasing $1000 \times 365 \times 76 \times 10^{15} = 2.8 \times 10^{15}$ kcal in one year. Animal other than human being, caw, bird, whales, seal are producing heat. We can estimate as same as human being 2.8×10^{15} kcal. Therefore, total heat is: fossil burning produce 7.4×10^{15} kcal, atomic energy produces 2.02×10^{15} kcal. Human being produces 2.8×10^{15} kcal. Another animal produces 2.8×10^{15} kcal

Total heat produced is $(7.4+2.02 + 2.8+ 2.8) \times 10^{15} = 15.02 \times 10^{15}$ kcal. We must absorb 15.02×10^{15} kcal by CO₂ assimilation.

CO₂ 1 mole 44g and water 18 g absorb 114 kcal sun's heat to carbohydrate and 32 g oxygen. If 5.1 billion t, 5.1×10^{16} g CO₂ do CO₂ assimilation, $114 \times 51 \times 10^{15}/44 = 13.2 \times 10^{14}$ kcal can be absorbed.

CO₂ assimilation must be promoted by stopping of NO_x elimination and by stopping waste water purification. By stopping NO_x elimination. 1.44 billion tone NO_x can fix $1.44 \times 25 = 3.6$ billion tone CO₂. Amount of N.P in drainage is around 0.05 billion tone. By using this 0.05 billion tone N.P, we can fix $0.05 \times 25 = 1.25$ billion tone CO₂. By adding $3.6 + 1.25 = 4.85$ billion tone CO₂ can be fixed. And we can absorb 15×10^{14} kcal. And earth can be cooled down.

Electricity Generation Should be Done by Coal

IPCC (Intergovernmental Panel on Climate Change) asking electricity generation by oil and natural gas than coal, be-cause coal generate more CO₂ than oil. But I think coal is better for the generation of electricity to save the consumption of oil [29]. Global warming is not caused by CO₂. Global warming is caused by the elimination of NO_x, NP which do co-assimilation with CO₂. When we compare buried amount, coal (162 years) is 3 times as much as oil (56 years) and natural gas (81 years). We can manufacture many kinds of chemical and plastic from oil. Oil is more convenient as transportation fuels. Therefore, oil and natural gas are 3 times more precious than coal. Price of coal is 1/3 of oil. There-for we can generate electricity by coal at low price. The price of electricity is very important for the competition of productive industry. The year of oil scare is coming in 50 years. Then we must do liquefaction of coal to get liquid fuel for transportation. In this process, about half energy of coal is lost. We can enjoy our civilized life longer by saving the consumption of oil and natural gas.

Solar Electricity Generation Should Be Done at No Green Land

Construction of solar mega system by the sacrifice of wood is not clever way [29]. 1 hector 1000 m² wood can absorb heart 3.8×10^6 kcal and can fix 13.7 tone CO₂. Heart absorption efficiency of solar system cell is 1/3 of green leaf of tree. Solar system cell cannot fix CO₂. For the preparation of solar cell material, much fossil fuel is necessary generating much amount of CO₂ in compared with the generation of CO₂ and electricity by burning of fossil fuel. Therefore, construction of solar mega system by the sacrifice of wood is promoting global warming.

1000 m² cell can generate 114000 kWh and can save 7.5 t CO₂ and can absorb 1.3×10^6 kcal. For the production of 1000 m² cell 5 tone CO₂ is produced. Electricity generation should be done at no green land. The house located near wood, cooler is unnecessary. But the house located near solar mega system, cooler is necessary at summer. Japan produced 330 billion kWh solar electricity producing more CO₂ than generation of CO₂ by burning of fossil, electricity price increased 10%.

Japan is promoting global warming by solar electricity generation by the sacrifice of wood.

6. Complete use of NO_x and NP is essential for the increased production of food and protection of global warming [32]

In order to study the reason why global warming is happening. Why 14 billion tone CO₂ is remaining to give global warming. Why fish production of Japan decreased. I investigated CO₂ emission, NO_x emission, grain production, fish production, CO₂ fix and CO₂ increase of 34 countries. About 38 billion tone CO₂ is fixed by CO₂ assimilation. 14 billion tone CO₂ is remaining to give global warming. Then I found that many developed countries are eliminating NO_x. About half of produced NO_x 3.6 billion tone is eliminated. Then CO₂ assimilation is retarded. CO₂ fix is retarded. And 14 billion tone CO₂ is remaining to give global warming. Japan producing 1.25 billion tone CO₂ and 0.05 billion tone NO_x. Japan eliminating all of 0.05 billion tone NO_x Then CO₂ assimilation is retarded. Plankton production is retarded. Fish production of Japan decreased to 10 % since NO_x elimination and NP elimination of waste water. Therefore, Japan lost 0.012 billion tone fish production, 0.24 billion tone CO₂ fix by plankton CO₂ assimila-

tion. If developed countries stop elimination of NOx and NP in waste water, then 14 billion tone CO2 can be fixed. And CO2 emission produced by elimination of NOx, NP is saved. By promotion of plankton CO2 assimilation by increasing NP concentration at sea, fish production increase and global warming can be protected. Complete use of NOx and NP are essential for the in-creased production of food and protection of global warming CO2 emission, CO2 increase of many countries were in-vestigated to clear the reason why global warming is happening. why only Japan fish production decreased when other countries increased fish production two times. China increased 57 times [13]. Several countries cannot fix CO2 produced at his countries. Japan is most CO2 increasing country. Why Japan is most CO2 increasing country. Japan doing NOx elimination most severely [18]. Japan is doing NP purification most

Table4:

Country	CO ₂ em	No _x em	Fish prod	CO ₂ f	Grain	CO ₂ g	Area	CO ₂ tr	CO ₂ nc
World	360	14.4	2	32	33	66			140
China	106	4.25	0.794	15.9	5.6	11.2	1.08*10 ⁷	100	-25
USA	51	2	0.056	0.11	4.4	9	0.95*10 ⁷	70	-20
India	24.6	1	0.015	2	2.98	6	0.32*10 ⁷	30	-8
Russia	19.6	0.63	0.076	1.52	0.92	0.9	0.32*10 ⁷	25	-5
Japan	12.5	0.5	0.023	0.46	0.12	0.24	0.33*10 ⁶	3	8
Germany	7.8	0.31	0.002	0.04	0.47	0.9	0.33*10 ⁷	3	3
Iran	6.3	0.25	0.047	0.009	0.18	0.36	1.6*10 ⁶	6	0
South Korea	6.1	0.24					0.97*10 ⁵	6	0
Canada	5.6	0.22	0.01	0.25	0.51	1.02	1.02*10 ⁶	30	-23
Saudi Arabia	5	0.2					2*10 ⁶	5	0
Indonesia	5	0.22	0.2	4.4	0.51	1.02	1.9*10 ⁶	2	0
Brazil	4.8	0.19					2*10 ⁶	6	0
Mexico	4.7	0.2	0				2*10 ⁶	4	0
Australia	4.5	0.18					7.7*10 ⁶	4.5	0
South Africa	4.1	0.16	0.012	0.24	1.2	2.4	1.2*10 ⁶	3	0
UK	4	1	0.16	0.05	0.1	0.2	2.4*10 ⁵	2	2
Turkey	3.5	0.16	0.0018	0.33	0.56	1.1	2*10 ⁶	3	0
Italy	3.5	0.14	0.035	0.7	0.16	0.3	2.0*10 ⁶	0.3	3
France	3.3	0.05	0.035	0.7	0.52	1	6.4*10 ⁵	1	0
Poland	2.9	0.11					4.9*10 ⁵	3	0
Thailand	2.8	0.11					5*10 ⁵	3	
Spain	2.6	0.1					5.5*10 ⁵	2.8	0
Malaysia	2.4	0.1					3.3*10 ⁵	2.4	0
Ukraine	2.3	0.1					5.7*10 ⁵	2.3	0
Egypt	2.3	0.1					10*10 ⁵	2.3	0
Vietnam	2.1	0.08					3.3*10 ⁵	2.1	0
United Arab	2	0.08					0.8*10 ⁵	2	0
Argentina	1.9	0.08					1.2*10 ⁵	1.9	0
Venezuela	1.8	0.07					1.8*10 ⁵	1.8	0
Pakistan	1.7	0.07					7.9*10 ⁵	1.7	0
Netherlands	1.7	0.07					1.7*10 ⁵	1.7	0
Iraq	1.7	0.07					4*10 ⁵	1.7	0
Philippine	1.1	0.04					3.0*10 ⁵	1.1	0
Belgium	1	0.04					30*10 ⁵	1	0

severely. Then CO2 assimilation is retarded very much. Japan is emitting much CO2 (0.12 billion tone) for the elimination of NOx and NP. Japan decreased fish production 13 million tone to 2.30 million tone during 1970 to 2015. This indicate 2 billion tone CO2 fix decreased during 1970 to 2015.

CO2 emission, NOx emission, Fish production Grain, CO2g (CO2 used for grain production) CO2t (CO2 used for tree production) CO2 increase of 34 countries are shown in Table 4 Unit is hundred million tone [22-24,32]

7. Increase of CO2 and NOx promote CO2 assimilation, CO2 fix and food production [33]

The increase of CO2 and NOx production increased the CO2 assimilation. The increase of CO2 assimilation increased the production of grain and fish. The production of grain in 1960 0.085 billion tone in 2010 0.26 billion tone 3 times

Most emitted CO₂ is fixed by CO2 assimilation. CO₂ increase is calculated based by CO₂ emission minus fixable CO₂. CO₂ increase of 13country is shown at Table 5

10 K tone CO₂ can be fixed at 1 km² wood and 10 k tone CO₂ is fixed at 1 km² cultivated land. Then we can calculate fixable CO₂ by area Km² multiply 10 K tone.

CO₂ emission, CO₂ fix, NOx emission, Grain production, GrainJa (Grain production of Japan) GrainInd (grain production of India), Fish (fish production of the world), FishJa (fish production of Japan, Fish Chi (Fish production of China) Fishp (Fish price in Japan), GDP (GDP growth rate in Japan) are shown in Table 5 [22-24]

Table 5:

Country	CO ₂ em Bill t	No _x bill t	Area km2	FixableCO ₂ Kt	Fish hm t	CO ₂ fpla hm t	CO ₂ increase hm t
World	36	1.44					142
China	10.64	0.425	1.0*10 ¹⁰	1*10 ¹⁰	79.38	19.8	0
USA	5.1	0.2	9.5*10 ¹⁰	9.5*10 ¹⁰	6.05	1.2	0
India	2.46	0.1	3.2*10 ⁶	3.2*10 ⁹	10.11	2.2	0
Russia	1.96	0.063	3.2*10 ⁶	3.2*10 ⁹	4.61	1.1	0
Japan	1.25	0.05	3.8*10 ⁸	3.3*10 ⁸	4.6	0.92	8.7
Germany	0.78	0.031	3.5*10 ⁵	3.5*10 ⁸	0.29	0.58	4.3
Iran	0.63	0.025	1.6*10 ⁶	1.6*10 ⁶			6.3
Canada	0.56	0.022	1.0*10 ⁸	1*10 ¹⁰	1.05	0.2	0
Indonesia	0.5	0.02	1.9*10 ⁶	1.9*10 ⁶	3.7	0.7	0
U.K	0.4	0.016	2.4*10 ⁵	2.4*10 ⁸	1.6	0.3	1.6
Turkey	0.4	0.016	7.8*10 ⁵	7.8*10 ⁵	3.2	0.7	3.2
Italy	0.35	0.014	2.0*10 ⁵	3.0*10 ⁸	0.5	1	0.3
France	0.33	0.013	6.4*10 ⁵	8.4*10 ⁸	0.9	1.2	0

China can produce goods with cheapest price electricity (1.6-4.3 c/kWh) and China are winning priority of productive industry of the world. Japan is emitting 1.25 billion tone CO₂, Germany 0.76 billion tone, UK 0.4 billion tone, Italy 0.35 billion tone, Areas of these countries are narrow. They cannot fix all CO₂ produced at his country. Green wood or cultivated land 1 Km² can fix 1000 tone CO₂. Area of Japan is 3.8x 10⁸ Km². Fixable CO₂ is 3.8x 10⁸ x1000 = 3.8x 10⁸ 0.38 billion tone. Japan is increasing 1.25- 0.38 = 0.87 billion tone CO₂.

Germany is increasing 0.43 billion tone CO₂. UK 0.16 billion tone. Italy 0.03 billion tone. Amount of NOx produced at world 1.44 billion tone. At China 0.425 billion tone. USA 0.2 billion tone, India 0.1 billion tone, Japan 0.05 billion tone. Japan eliminating these 0.05 billion tones. Butane 0.01280 billion is used for the production of H₂ 0.00606 billion tone and CO₂ 0.07480 billion tone is produced. If Japan stop NOx elimination, 25 times of NOx 0.05x 25= 1.25 billion tone CO₂ can be fixed. By doing plankton CO₂ assimilation at 3 times area of Japan land, 3.8x 10⁸ Km² area, 1.14 billion tone CO₂ can be fixed. 0.0745 billion tone CO₂ by stopping of NOx elimination can be saved. 0.05 billion tone CO₂ by stopping NP waste water purification can be saved. Total 1.14 + 0.0745 + 0.05

= 1.2645 billion tone CO₂ generation can be stopped. Japan can produce 0.03 billion fish and Japanese can enjoy anti-aging and long life. (Ref 25,49-55) If Europa stop the elimination of 0.071 billion tone NO_x and 0.02 billion tone NP, 1.0 billion tone CO₂ generation can be stopped. And 0.01 billion tone fish can be produced

8. Burning of wood increase food production by NO_x [37] Slash and burn agriculture is carried out for many thousand years in the world. Wood is burned and wood turn to the field which can produce crops. Ash produced by burning is saito be effective substance. But real effective substance is NO_x. When tree 1000 tone is burned, nitrogen in tree change to NO and N₂ react with O₂ to give NO. And 1000/ 25 = 40 tone NO_x is produced. And 40 tone NO_x can grow 40 x 25 = 1000 tone plant. By burning of something, by cooking of rice, by burning of tree for worm up the room, by burning of straw, by bonfire, by mountain fire, by fire festival, something / 25 tone NO_x is produced (Ref 4,7,36). De-cay of tree and timber need many years. Tree and timber are burned, CO₂ and NO_x are produced at the same time. Recycles of carbon, nitrogen is done quickly. Forest firs of Brazil are now big topics . Brazil government are trying to convert tropical rainforest to agriculture land. 3.8 x 10⁸ Km² forest is now changing to farm yearly. This kind of action is done at Africa and at Russia at Indonesia and at Malaysia. In this process, forest is burned and agriculture land is made. By changing forest to firm, valuable crops, food are produced. In the process of burning, forest fir can happen. Many people say this process destroying forest and produce much CO₂ and progressing global warming.

But I think to convert Forrest to firm land must be evaluated by comparing the merit and demerit. Slash and burn ag-riculture have big merit. Burn of wood produce much fertilizer. When 1000kg dry timber is burned, 1000x 44/30=1470 kg CO₂ is produced and 1470x1/25 =58.8 kg NO_x is produced. 1470 kg CO₂ and 58,8 kg NO_x will produce 58.8 kg x25=1470 kg plant or grain by CO₂ assimilation.

9. Purification of water and air is promoting global warming and country decline [38]

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. 0.6 billion tone NO_x and 0.2 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,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. CO₂em (CO₂ emission), NO_x (NO_x production), NO_xc (NO_x concentration at exit gas), GWPR (global warming protection ratio), GDP (GDP increase ratio) of 13 countries are shown in Table 6

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

1000 x area of the country. Amount of NO_x produced at world is 1.68 billion tone.Developed countries are eliminating about 0.6 billion tone NO_x producing 1.0 billion tone CO₂. 0.6 bil-

Table 6:

Country	CO ₂ em hm t	No _x h t	No con g/kWh	Area km ²	FixableCO ₂ hm t	GWPR	GDP Inc ratio
World	420	16.8					
China	106.4	4.25	1.6	1.0*10 ⁷	100	1	6.9
USA	51	2	0.5	9.5*10 ⁶	95	0.53	1.48
India	2.46	1	1.6	3.2*10 ⁶	32	0.76	7.1
Japan	12.5	0.5	0.1(2018) 1.6(1980)	3.8*10 ⁵	3.7	3.4	1.03
Russia	19.6	0.63		3.2*10 ⁶	32	0.61	0.8
Germany	7.8	0.31	1	3.5*10 ⁵	3.5	2.2	1.83
Iran	6.3	0.25		1.6*10 ⁶	1.6	3.9	2.6
Canada	5.6	0.22	1.3	1.0*10 ⁸	100	0.06	1.44
Indonesia	5	0.2	1.6	1.9*10 ⁶	19	0.3	5.2
U.K	4	0.16	1.3	2.4*10 ⁴	2.4	1.7	1.8
Turkey	4	0.16		7.8*10 ⁵	7.8	0.5	-2
Italy	3.5	0.14	0.5	2.0*10 ⁵	3	1.2	0.88
France	0.33	0.13		6.4*10 ⁵	8.4	0.4	1.2

lion tone NO_x can fix 0.6x 25 = 15 billion CO₂. Ther-fore if developed countries stop NO_x elimination, 15.0+ 1.0= 16.0 billion tone CO₂ emission 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 NO_x are small as USA 1.46, Germany 1.83, Japan 1.03, Canada 1.44, U.K 1.6, Italy 0.88.

At China 0.425 billion tone. USA 0.2 billion tone, India 0.1 billion tone, Japan 0.05 billion tone NO_x are produced. Ja-pan eliminating these 0.05 billion tones. Butane 0.01280 billion is used for the production of H₂ 0.00606 billion tone and CO₂ 0.7480 billion tone is produced. If Japan stop NO_x elimination, 25 times of NO_x 0.05x 25= 1.25 billion tone CO₂ can be fixed. By doing plankton CO₂ assimilation at 3 times area of Japan land, 3.8x 10⁸ Km² area, 1..14 billion tone CO₂ can be fixed. 0.0745 billion tone CO₂ by stopping of NO_x elimination can be saved. 0.5 billion tone CO₂ by stopping NP waste water purification can be saved. Total 1.14 + 0.0745 + 0.05 = 1.2645 billion tone CO₂ generation can be stopped. Japan can produce 0.03 billion fish and Japanese can enjoy anti-aging and long life. [26,49-54] If Europa stop the elimination of 0.071 billion tone NO_x and 0.02 billion tone NP, 1 billion tone CO₂ generation can be stopped. And 0.01 billion tone fish can be produced China producing 10.64 billion tone CO₂. Area of China is 1.0x 10⁷ km²

China can fix 10 billion tone CO₂. GWPR = 10.65/ 10 = 1.0

Low area country Japan GWRP = 1.25/ 0.37 = 3.4

NO_x elimination can be found by NO_x concentration of exit gas. 1.6 g/kwh is no elimination. 0.1 g/kWh is complete elimination No NO_x elimination countries like China, India, Indonesia show low GWPR and high GDP growth rate. On the contrary,

NO_x 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 NO_x, NP most severely. NO_x concentration at exit gas is 0.1 g/kWh. Then fish production de-creased from 12 million tons in 1970 to 2 million tons in 1985 by NO_x 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 do 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. methemoglo-binemia) was observed only

at dose > 80 ppm. Therefore, NO_x has small demerit but not significant as big merit that NO_x 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. NO_x elimination at exit gas of factory and garbage incinerator should be stopped.

10. Relation of London dumping convention and global warming [39]

Ocean dumping of excreta is essential to promote CO₂ assimilation

Excreta was dumped to ocean, wood, field and agriculture field before 1972. After London dump convention was established in 1972, London dump convention is convention on the prevention of marine pollution by dumping of wastes and other matter. Ocean dump of pollution matter was inhibited. Excreta contain urea and ammonia. Urea is best nitrogen fertilizer. But waste water was assigned as pollution materials. Many developed countries stopped dumping of excreta. They started purification of wastewater by activated sludge process. Typical example is Seto inland sea in Japan. Seto inland sea changed dramatically. Since 1980. Concentration of NP of sea water become very low. Plankton do not grow. Nori (Sea weed) do not grow. Kaki do not grow. Fish decreased. CO₂ assimilation decreased Seto inland sea became dead sea [19]. CO₂ fixing decreased and global warming is progressing. If we dump excreta to the ocean, plankton growth is accelerated and CO₂ fix is accelerated and 51 billion tone CO₂ will be fixed and Paris agreement will pass and global warming will stop. Ocean dumping of radioactive substance.

The London and London protocol inhibit the dumping of wastes with more than de minimis levels of radioactivity. Japan was hit by earth quake and atomic energy facility released radioactive wastewater. And also, much radioactive substance is produced by decommissioning of nuclear reactor. Dumping of radioactive waste is not possible by London dumping convention. Therefore, Japan is producing large amount of CO₂ (presume 0.3 billion tone) for the treatment and storage making trouble imposing other countries., and yet Japan cannot eliminate radioactivity at small area countries. Japan cannot export agriculture product to other countries. Because Japan keeping radioactive compound in Japan. Electricity generation by atomic energy of Japan is stopping. Japan has no way to eliminate radioactive substance. Only way is dumping of radioactive waste to sea. Sea is wide and deep and infinite dilution is possible. Japan must find method to dump radioactive substance giving no harm to other countries. Therefore, we must find the method dumping radioactive substance by no harmful method. If we can dump radioactive substance without harm, this would be better than no dumping and produce much CO₂ and activate global warming following London dumping convention.

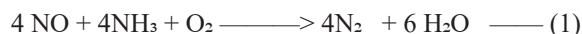
By do dumping of wastewater, we can save the emission of 10 billion tone CO₂. We can obtain 1 billion tone grain and fish. By do dumping of radioactive substance, we can save 2 billion tone CO₂ emission. Dumping of these substances is better than no dumping and producing much CO₂ and promoting global warming.

11. Global warming will stop, if developed countries stop NO_x

and NP elimination [40]

NO_x should be released as it is.

NO_x is playing very important role for CO₂ assimilation, growth of plant and plankton, climate control [2, 4, 5-7]. But developed countries are eliminating NO_x by ammonia by the reaction



The reaction (1) is elimination of one fertilizer by other one fertilizer. This is tremendous wast of precious resources. Amount of NO_x is about 5 times of synthetic nitrogen fertilizer. This reaction is causing global warming. This reaction should not be done.

Since this reaction was carried out, Seto inland sea, Japan (no thunder district) changed dramatically. Transparency of sea increased. Turbidity by plankton disappeared. Eel glass disappeared. Fish, sell and sea weed production decreased [1,2]. Fish production of the world increased at developing countries who do not do NO_x elimination like China, India and Indonesia. But fish production of developed countries decreased since NO_x NP elimination.

Waste water should be dumped as it is.

Developed countries are eliminating NP in waste water. In Japan 2200 waste water clean center were build 11.78 billion kWh electricity (1.16 % of total electricity 1008 billion kWh) were used for the operation of this center. For the production of 11.78 billion kWh electricity, 600 thousand tone fuel was burned [37]. If we stop waste water purification. 600 x 3 = 1600 thousand tone CO₂ emission is saved. By the operation of this center, Emission of 44.8 thousand tone N and 17.5 thousand tone P is lost. By the elimination of NO_x and NP, Fish production of Japan decreased from 12 million tone of 1975 to 2.5 million tone after 1980. Because of decrease of NP concentration of sea water, plankton cannot grow and fish, cell, sea weed cannot grow. Fish eat 20 times plankton. Plankton grow by eating same weight CO₂.

By elimination of NP, 12 x 20 = 240 million tone CO₂ fix is lost. If Japan stop NO_x, NP elimination and increase NP concentration increase and 0.24 billion plankton grow and 0.24 billion tone CO₂ is fixed and 12 million tons fish will be produced [13,14,21,31-39].

Bon fire should be recommended Slash and burn agriculture is carried out for many thousand years in the world

Wood is burned and wood turn to the field which can produce crops. Ash produced by burning is said to be effective substance. But main effective substance is NO_x (ref 35). When tree 1000 tone is burned, 1000/ 25 = 40 tone NO_x is produced. And 40 tone NO_x can grow 40 x 25 = 1000 tone plant [35]. In Japan, 3 billion tone garbage is collected and burned at high temperature incinerator to produce 0.012 billion tone NO_x. This NO_x is eliminated by ammonia.

In Japan very, special law about the garbage incinerator was set up in 2002 by the reason much NO_x 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 NO_x. Burning of rice straw wheat straw 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. Garbage, waste wood, fallen leave, straw should be burned on site producing much fertilizer NO_x. Bon fir inhibition rule should be abandoned.

Method to fit Paris agreement

51 billion tones CO₂ are now producing in the world. To fix so much CO₂, promote plant growth and increase of CO₂ fix are essential.

Plant has C/N = 25/1 composition in average. As one molecule N combine with 25 molecule CO₂, supply of 51/25 = 2.05 billion tone N is essential. To supply N, NO_x should be released to air as it is. NO_x is produced 1.68 billion tone. In waste water, estimated 1 billion tone NP are contained. From these NO_x, NP, 7 developed countries are eliminating 0.6 billion tone NO_x and 0.4 billion tone NP. To stop the increase of CO₂, to accelerate CO₂ assimilation, 7 developed countries should stop NO_x elimination, stop NP elimination and do bon fire. Then (0.6+0.4) x 25 = 25 billion tone CO₂ can be fixed. CO₂ emission and fix become equal and GWPR (Global Warming Protection Ratio) become 1 and fit Paris agreement [5-7,10-16, 19-22,24-29,31- 39].

Comparison of NO_x, NP elimination countries and no NO_x, NP elimination countries

Developing countries like China, India do not eliminate NO_x and NP and release as it is. Electricity price is low. CO₂ assimilation is activated. Production of agriculture and fish industry increase. GDP is increasing 6% for 40 consecutive years. China use 10.6 billion tone CO₂ and 0.4 billion tone NO_x effectively and increased fish production to 81.53 million tone.

India use 0.1 billion tone NO_x effectively and grain production increased 5 times in 1950—>2010. Population increased 0.38 billion to 1.25 billion in 1951—>2014. On the contrary, 7 developed countries are eliminating NO_x, NP. CO₂ assimilation is depressed. Production of grain and fish is depressed. GDP growth rate is low. GWPR is high. Japan is doing NO_x, NP elimination most severely. 8 million tone fish production is lost yearly. Fish price is 10 \$ /Kg. Japan is losing 0.08 billion \$. 6.7 million \$ per person. GDP growth rate increased only 1.6 % from 1985 to 2017 Japan dropped food production ability at his country from 100% in 1948 to 37% in 2018. The country who use NO_x NP are growing and increasing population. The country who eliminate NO_x, NP are declining and decreasing population.

CO₂em (CO₂ emission), CO₂ fix (fixable CO₂), CO₂em/p (CO₂ emission per person), NO_xcon (NO_x concentration at exit gas), W dump (Wastewater dumping), GWPR (Global Warming Protection Ratio), GDP (GDP increase ratio) of 11 countries are shown in Table 7

Japan is not eliminating NO_x before 1980, CO₂ emission was 0.55 billion tone, CO₂ fix was 0.55 billion tone, NO_xcon in exit gas was 1.6 g/kWh, was doing NP dumping, GWPR was 1, GDP increase rates was 7.0. In 2018, CO₂ em is 1.25 billion tone, CO₂ fix is 0.38 billion tone, NO_x con is 0.1g/Wh, not doing water dumping. GWPR is 3.3, GDP is 1.03.

Japan should stop NO_x, NP elimination and should not inhibit bon fir.

Japan is criticized as producing much CO₂. Japan producing much CO₂ for electricity generation for elimination of NO_x, NP. Japan established very severe law. Every factory must eliminate NO_x by NH₃ to less than 0.1 g/kWh. Japan eliminate NP in waste water purification center completely using much

Table 7 CO₂ em (internet), CO₂ fix [21], CO₂ em/p(internet), NO_x con (NO_x concentration of exit gas) [19], GWPR = CO₂em/CO₂ fix, GDP (internet)

Country	CO ₂ em hm t	CO ₂ fix h t	CO ₂ em/p tone	NO _x con g/kWh	W DUMP c/k Wh	Elect price	GWPR	GDP Inc ratio
World	510	370					1.38	
China	106	100	8	1.6	do	1.645	1	6.9
India	24.6	32	1.9	1.6	do	8	0.76	7.1
Indonesia	5	19	2.1	1.6	do	7	0.3	5.2
USA								
Japan(2018)	12.5	3.8	8.9	0.1	no	24	3.3	1.03
Japan(1980)	5.5	5.5	3.1	1.6	do	1	7	
Russia	19.6	32		0.61		5.8	0.61	0.8
Germany	7.8	3.5	8.9	0.31	no	32	2.2	1.83
U.K	4	2.4	5.6	1.3	no	15.4	1.7	1.8
Italy	3.5	3	5.8	0.5	no	28	1.2	0.88
France	3.3	8.4	5	17	no	19	0.4	1.2
Canada	5.6	100	18	1.3	no	8.1	0.06	1.44

electricity. Japan producing 1.25 billion tone CO₂ and criticized as most CO₂ increasing country. Wood and agriculture field can fix 1000 tone CO₂ per 1 Km². Japan land is 3.8 x 10⁵ km². Fixable CO₂ at Japan is 3.5 x 10⁵ x 1000= 0.38 billion tone. Japan increasing 1.25-0.38 =0.87 billion tone CO₂. GWPR of Japan is 12.5/3.8= 3.3. Japan is using 28 million tone NH₃ for the elimination of NO_x. 11 million tone butane is used for the preparation of NH₃ and generating 33 million tone CO₂. Japan also using 11.8 billion kWh electricity for water purification [35]. If Japan stop NO_x, NP elimination, CO₂ emission will be reduced to 1.25-0.1-0.1= 1.06 billion tone. By using 0.05 billion tone NO_x, 0.05x 25= 1.25 billion tone CO₂ can be fixed. Food production will increase. GWPR will decrease from 1.25/ 0.38= 3.3 in 2018 to 1.05/ 1.25 = 0.84. This value is fit to Paris agreement.

Waste water dumping should not be prohibited

Waste water contain much NP. fertilizer. About 1 billion tone NP in waste water. Developed countries define excreta as pollution substance and stopped ocean dumping following London dumping convention. And eliminating NP by activated sludge process. Developing country are releasing waste water as it is. Dumping of waste water give good effect on CO₂ assimilation. Do waste water dumping or do not do waste water dumping give big difference on CO₂ assimilation. China, India and Indonesia do waste water dumping and do not NO_x elimination Then GWPR of these countries are less than 1. And GDP increase rate are over 5. China 6.9 India 7.1. Indonesia 5.2. On the contrary, developed countries who do not dump waste water and eliminating NP show high GWPR Japan 3.3, Germany 2.2, U.K 1.7, Italy 1.2, GDP of these country is less than 1. Japan 1.03, Germany 1.83, U.K 1.8, Italy 0.88, France 1.2 1.0. Japan is not eliminating NO_x before 1980, CO₂ emission was 0.55 billion tone, CO₂ fix was 0.55 billion tone, NO_xcon in exit gas was 1.6. GWPR was 1, GDP increase rates was 7.0. In 2018, CO₂ em is 1.25 billion tone, NO_x con is 0.1g/Wh, not doing water dumping. GWPR is 3.3, GDP is 1.03.

Japan, Germany, UK and Italy are narrow and they cannot fix CO₂ produced at their countries. GWPR is over 1. These countries are surrounded by sea. They can fix CO₂ by plankton CO₂ assimilation by increase of NP concentration of sea. By not do NO_x elimination and do waste water dumping. NO_x, NP elimination should be stopped Then GWPR will be 1 and DGP growth rate will increase

12. Promotion of CO₂ assimilation by stopping of NO_x, NP elimination is easy method to protect global warming by [46]

Global warming is caused by lack of nitrogen by elimination of NO_x, NP at developed countries. If developed countries stop elimination of NO_x, NP. Global warming will not happen. Much food will be produced. GDP will increase.

We must protect burn out of fossil

Since industrial revolution, mankind is using large amount of fossil fuel for manufacturing of food, iron, aluminum, plastic and fertilizer. Global warming comes from over burning of fossil. Fossil fuel is fossil of plants made by CO₂ as-similation from CO₂ and water in 5 billion years. Mankind is now using up these fossil fuel in 500 years. Yearly use of fossil fuel is estimated to be reduced 25% by COVID-19. Oil is extended from 42 to 56 years, natural gas is extended from 60 to 81 years, coal is extended from 121 to 162 years.

Estimated amount of buried fossil;

Billion tone

Fossil	buried amount	yearly use	year
Natural gas	276.9	4.6 → 3.4	60 → 81
Oil	173	4.1 → 3.1	42 → 56
Coal	909	7.5 → 5.6	121 → 162
Uranium			124

Our human being used around half of fossil 1360 billion tone. Remaining fossil is estimated as 1360 billion tone.

When fossil is burned out, we need not worry about global warming. We must worry how can we live civilized life. How can we drive car, air plane, agriculture machine? How can we generate electricity? From what can we make plastic and solar cell module. We must save the consumption of fossil. We should not spend precious fossil for the elimination of NO_x, NP. We must protect burn out of fossil fuel as long as possible. Prediction of fossil fuel and life at 2220 (200 years after now)

Human being is using now much fossil. Natural gas 3.4 billion tone, oil 3.1 billion tone, coal 5.6 billion tone. About same amount of new fossil will be found in the future. But fossil is becoming scare. Yearly use will become smaller than now. In 2200, still 1/4 amount of fossil will remain. We must limit the use of fossil to get food like agriculture machine and fishing boat. Sailing boat will increase. Numbers of car and airplane will become much fewer. Leisure trip must be limited. Use of fossil for air conditioning must be limited. We must depend on wood. There is 80 billion tone wood in the world and increasing 1-2 % annually. Tree grow quickly if sufficient N and P are provided. We must provide enough NP for the promotion of plant growth.

13. Synthesis of Anti-aging reagents to get long life [26,27,48-55] Anti-aging and long life is dream of persons for thousand years. Average life of Japanese is men 80.50 (third), women 86.83 (top in the world).

I wonder why Japanese live longer than other country. I believe that Japanese food based on fish is fit and good for long life. Fish contain glucosamine, hyaluronic acid and chondroitin.

Glucosamine, hyaluronic acid, chondroitin is now used as health food by many persons in Japan. Suntory sold more than 20 million bottles of glucosamine and chondroitin as nutrition supporting food. Setagaya shizenshokuhin sold 200 million bags of glucosamine, hyaluronic acid and chondroitin as health food for 18 years. Taishoseiyaku are selling glucosamine and

chondroitin. Zeria Shinyaku is selling chondroitin as medicine for 60 years. Wada calcium pharmaceutical sold 10 million bags containing glucosamine, chondroitin sulfate and collagen as nutrition supporting food. About 7 million persons are drinking and eating these materials and enjoying health and long life. Japanese eat fish contains glucosamine, hyaluronic acid and chondroitin. Food will be concerned with long life.

I tried to find the reason why glucosamine, hyaluronic acid and chondroitin are so effective. By the studies of glucosamine derivatives. I found one reason why these compounds are connected with health and long life. I found anti-aging reagent [26,27,48-54].

This anti-aging reagent is produced by Klotho (anti-aging gene) from glucosamine, chondroitin.

Anti-aging reagent co-work with Klotho and contribute for anti-aging and long life. Therefore, glucosamine and chondroitin are effective food for anti-aging and long life.

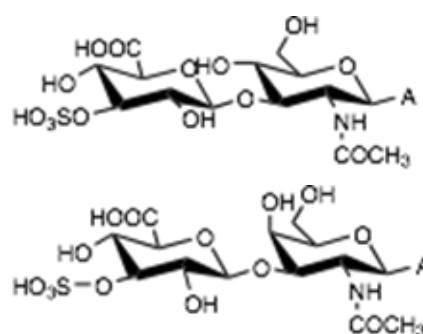
I wish to recommend to eat fish. But I found fish production of Japan decreased rapidly to 0-10 % of most fish production year 1970. I investigated the reason why fish production of Japan decreased so rapidly. I found that NO_x and NP in waste water are eliminated as pollution substance almost completely. Plankton growth is inhibited and fish and sea weed cannot grow at such NP low concentration of sea. Fish price increased 5 times and we cannot buy fish easily and we cannot live longer. Ozaki (age 91) is now testing how long can live by eating 10 kg fresh fish fatgreeling (ainame), sculpin (kajika), file fish (kawahagi), Jacopever (soi), inada amberjack, rockfish (mbaru), barracuda (kama-su), spanish mackerel (sawara), flatfish (karei), crab (kani), yellowtail (buri) every week. The fish come from Niigata Prefecture grew by NO_x from sunder.

Synthesis of Sulfo Disaccharide and Measurements of Binding Activity

Ozaki have synthesized following compounds and measured their binding activity with Klotho and FGF23 [49]

Sulfa Disaccharides

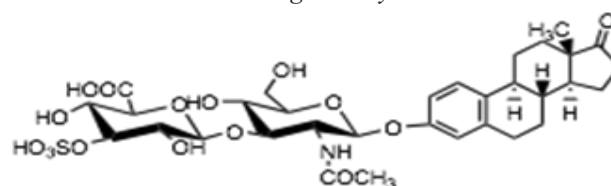
Ozaki synthesized these Sulfo disaccharides.



Sulfo-Glucuronosyl (1-3)-Glucoside Sulfo-Glucuronosyl (1-3)-Galactoside

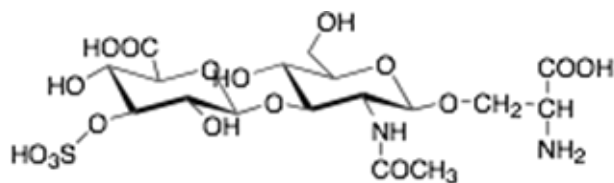
(A: attached molecule like estrone, vitamin D, amino acid, oligo peptide)

Binding Activity

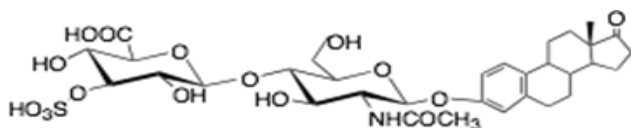


Active

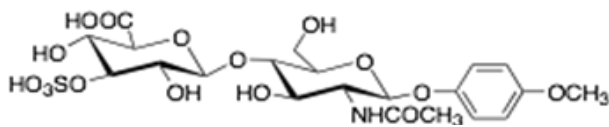
3-estrone-O-(β-D-3-sulfo-glucuronosyl)(1-3)-2-acetoamido-2-deoxy-D-glucopyranoside 9279



Active
Serine-(β -D-3-sulfo-glucuronosyl) (1-3) -2-acetoamino-2-deoxy-glucopyranoside 9244



Active
estrone-O-(β -D-3-sulfo-glucuronosyl) (1-4)-2-acetamid-2-deoxy-D-glucopyranoside 9188



Active
p-Methoxyphenyl 3-sulfo- β -D-glucuronoxylan (1-4)-2-acetoamino-2-deoxy-glucopyranoside 9294

Disaccharides, Klotho, hyaluronic acid, chondroitin, glucosamine are working closely related all together and giving us health and anti-aging. [50]

Klotho is a regulator of Calcium homeostasis working with produced disaccharide [49] Klotho makes disaccharide from glucosamine and glucuronic acid and co-works with produced disaccharide on site and gives stable Ca homeostasis and consequent health and anti-ageing.

Summary

Promotion of CO₂ assimilation by following 8 items is necessary for protection of global warming. And to get long life

1. Elimination process of NO_x by ammonia at power station, chemical station and iron work station should be stopped.
2. Elimination process of nutritious N and P in drainage should be stopped. Ocean dumping, field dumping and forest dumping of excreta are recommended.
3. Stop the unproductive uses of fossil fuel. Like war, auto race, leisure cruising, leisure trip,
4. Stop the unnecessary economic stimulus measures such as renewal of building and car and construction of unnecessary building, road and rail way.
5. Restriction rule of NO_x emission of car should be loosed putting emphasis on fuel efficiency.
6. Stop the construction of solar cell system by the sacrifice of wood.
7. Bon fire should be encouraged. Bon fire ban rule should be abandoned.
8. Encourage the use of phosphorous detergent like sodium triphosphate

References

1. Ozaki Shoichiro. Recycle of nitrogen and phosphorous for the increase of food production New Food Industry 35, No 10.1993; 33-39.
2. Ozaki Shoichiro. Methods to protect global warming. Adv Tech Biol Med. 2016; 4(181).
3. Ozaki Shoichiro. Methods to protect global warming, Food production increase way. New Food Industry No 8. 2016; 47-52.
4. Ozaki Shoichiro. Global warming can be protected by promotion of CO₂ assimilation using NO_x. Journal of Climatology & Weather Forecasting 2016; 4(2): 1000171.
5. Ozaki Shoichiro. Global warming can be protected by promotion of plankton CO₂ assimilation. Journal of Marine Science: Research & Development .2016; 6(213)
6. Ozaki Shoichiro. Method to protect global warming by promotion of CO₂ assimilation and method to reactivate fish industry. New Food Industry 59, No 3. 2017; 61-70.
7. Ozaki Shoichiro NO_x is Best Compound to Reduce CO₂. Eur J Exp Biol. 2017; 7:12.
8. Ozaki Shoichiro, Protection of global warming and burn out of fossil fuel by promotion of CO₂ assimilation. Journal of Marine Biology & Oceanography. 2017; 6(2).
9. Ozaki Shoichiro. Promotion of CO₂ assimilation supposed by NO_x is best way to protect global warming and food production. Artiv of Pet- EnvironBiotechnol 2017; 02(110)
10. Ozaki Shoichiro. Promotion of CO₂ assimilation supported by NO_x is best way to protect global warming. J Marine. Bio Aquaculture. 2017; 3(2).
11. Ozaki Shoichiro..Stopping of NO_x elimination is easy way to reduce CO₂ and protect global warming Journals of Environmental Sci& Public Health 2017; 1(1): 24-34 .
12. Ozaki Shoichiro. Stopping of NO_x elimination is clever way to reduce CO₂ and to increase fish production of Cell Biology & Immunology 2017; 1(102)
13. Ozaki Shoichiro. Effective uses of NO_x and drainage are clever way to protect global warming and to increase fish production. Oceanography & Fisheries.2017; 4(4).
14. Ozaki Shoichiro. NO_x Elimination and Drainage NP Elimination should be stopped for the production of fish and for the protection of global warming. of Fisheries and Aquaculture Development .2017; 5(125).
15. Ozaki Shoichiro. Let's enjoy civilized life using limited amount of fossil fuel. Journal of Aquaculture & Marine Biolog 2017;6(3)0600158.
16. Ozaki Shoichiro. Method to fit Paris agreement for protection of global warming. International Journal of Waste Resources 2017; 318: 7-14. DOI: 10.4172/2252-5211.1000318.
17. Ozaki Shoichiro. Method to protect global warming and to produce much fish by promotion of plankton growth New Food Industry 60, No 4. 2018; 88-94.
18. Ozaki Shoichiro. Method to protect global warming by promotion of plankton CO₂ assimilation Rikuryou Sci-ence . 2018;61(23).
19. Ozaki Shoichiro. Effect of NO_x elimination on electricity price, fish production, GDP and protection of global warming International J of Waste Resources .2018; 8(1). 1000328 doi:10.4172/2252-1000328.
20. Ozaki Shoichiro. How to fix carbon dioxide same amount as emission for the protection of global warming Re-search DevelopmentinMaterialScience.2018; 3(5).
21. Ozaki Shoichiro. Stop of NO_x elimination and stop of waste water purification are easy methods to protect global warming J of Immunology and Information Diseases Therapy .2018; 1(1). doi.org/06.2018/1.10006.
22. Ozaki Shoichiro. Climate can be regulated by effective use of NO_x and waste water NP Biomedical Research and Reviews .2018; 1(1).

23. Ozaki Shoichiro. Promotion of Plankton CO₂ assimilation by effective use of NO_x and NP is best method to produce much fish and protect global warming *Journals of Marine Science Research and Oceanography*.2018; 1(1) doi:10.4172/2155-9546-c1-022.
24. Ozaki Shoichiro . Promotion of plankton CO₂ assimilation by NO_x is best way to protect global warming and to get best climate” *International J of Earth and environmental Science*. 2018; 3(160).
25. Ozaki Shoichiro. Promotion of plant growth by NO_x is best method to reduce CO₂ and to protect global warm-ing *Current Trends in Oceanography and Marine Science* 2018; 01: 1-4.
26. Ozaki Shoichiro. Fish is best food to get anti-aging and long life. NO_x elimination should be stopped to produce much fish and to protect global warming *Jacobs Journal of physiology*. 2018; 4(1): 1-7.
27. Ozaki Shoichiro. Fish is Best Food to Get Anti-Aging and Long-Life *J of Aging and Neuropsychology* 2018;2 :1-6. DOI: <http://dx.doi.org/10.20431/2454-7670.0501001>
28. Ozaki Shoichiro. NO_x and NP in waste water fix CO₂ and control global warming and climate *International Journal of Biochemistry and Physiology* 2018; 3 (4) DOI: 10.23880/ijbp-16000140.
29. Ozaki Shoichiro. The effect of increase of NO_x and CO₂ on grain and fish production, protection of global warming and climate *International Journal of Earth Science and Geology*. 2019; 1(1): 6-10.
30. Ozaki Shoichiro. Complete use of NO_x and NP is essential for the increased production of food and protection of global warming *International Journal of Innovative Studies in Aquatic Biology and Fisheries* .2019; 3 (1): 1-6.
31. Ozaki Shoichiro . Why global warming is progressing. Promotion of CO₂ assimilation is best method to protect global warming *Rikuryou Science* .2019; 6(2): 16-18.
32. Ozaki Shoichiro. Complete use of NO_x and NP is essential for the increased production of food and protection of global warming. *International Journal of Innovative Studies in Aquatic Biology and Fisheries*. 2019; 3 (1) :11-15.
33. Ozaki Shoichiro. Increase of CO₂ and NO_x promote CO₂ assimilation, CO₂ fix and food production *Advances in Bioengineering & Biomedical Science Research*. 2019; 2(3): 1-6.
34. Ozaki Shoichiro: Promotion of CO₂ assimilation by effective use of NO_x and NP is best method to produce much fish and protect global warming *EC Agriculture* 2019 5: Issue 8, 492-497.
35. Ozaki Shoichiro. Why fish production of Japan decreased. Why global warming is progressing. *New food Indus-try* No 10.2019; 61; 787-793.
36. Ozaki Shoichiro. In pure water no fish can live. Water purification promote global warming, decline of coun-tries. *Rikuryou Science* .2020; 63: 24-29.
37. Ozaki Shoichiro. NO_x elimination and NP elimination are promoting global warming *EC Agriculture* 2020; 6(1): 1-8.
38. Ozaki Shoichiro. Purification of water and air is promoting global warming and country decline *Journal of Ma-rine Science and Oceanography*. 2020; 3(1): 1-4.
39. Ozaki Shoichiro. Relation of London Dumping Convention and Global Warming. If Developed Countries stop NP and NO_x Elimination, CO₂ Assimilation Increase and Global Warming Will Stop. *International J of Pollution Research*. 2020; 3: 115-119.
40. Ozaki Shoichiro. Global warming will stop, if developed countries stop NO_x and NP elimination *Journal of En-vironmental Sci. Current Research*. 2020; 3(22).
41. Ozaki Shoichiro. Stopping of NO_x, NP Elimination at developed countries is easy method to protect global warming *Journal of Bacteriology and Myology*. 2020; 7 (4): 11-37.
42. Ozaki Shoichiro. In pure water no fish can live. Water purification promote global warming and decline region and countries *New Food Industry* 2020; 62(8) :615-620.
43. Ozaki Shoichiro. Promotion of recycle of carbon, nitrogen and phosphorous is essential for protection of global warming and increase of national wealth *American Journal of humanities and Social Science*. 2020; 5: 01-13.
44. Ozaki Shoichiro. Stopping of NO_x and NP elimination at developed countries is essential for the promotion of food production and protection of global warming *J of Soil Science and Plant Physiology*. 2020; 2 (2): 1-10.
45. Ozaki Shoichiro. Promotion of CO₂ assimilation by stopping NO_x, NP elimination is best method to produce much food and to protect global warming. *American Journal of Engineering, Science and Technology*. 2020; 5: 1-15.
46. Ozaki Shoichiro. Stopping of NO_x,NP elimination is easy method to protect global warming *Journal of Re-search in Environmental and Earth Science*. 2020; 6(6): 12-21.
47. Ozaki Shoichiro. Method to protect global warming, to fit Paris agreement and to enrich the countries. *Rikuryou Science* .2021; 64: 32-38.
48. Ozaki Shoichiro. Synthesis of anti-ageing reagent: Sulfo disaccharide co-working with anti-aging gene. *Archives of Medicines* No 6. 2015;7(17).
49. Ozaki Shoichiro. Sulfo disaccharides co-working with Klotho. Studies on structure, structure activity relation and function. *World J of Pharmacy and Pharmaceutical Sciences*. 2015; 4: 152-175.
50. Ozaki Shoichiro. Glucosamine Derivatives Sulfo dissaccharides cp-working with Klotho *Journal of Nutrition and Food Sci*.2015; 5: 416.
51. Ozaki Shoichiro. Nutrition for good health, anti-aging and long life. Hyaluronic acid, glucosamine and chon-droitin. *Maternal and Paediatric Nutrition Journal* 2015; 1: 102.
52. Ozaki Shoichiro. Food containing hyaluronic acid and chondroitin is essential for anti-aging *International Journal of Aging & Clinical Research*. 2016; 1(101).
53. Ozaki Shoichiro.Toward anti-aging and long life. *Jacobs Journal of Physiology*. 2016; 2(1): 12.
54. Ozaki Shoichiro. Secret of anti-aging: Anti-aging food containing glucosamine, hyaluronic acid and chon-droitin. *Jacobs Journal of Physiology* .2016; 2(1): 13-17.
55. Ozaki Shoichiro. Chemical approach to signal transduction by inositol trisphosphate. *Bioengineering & Bio-medical Science*. 2014; 4.
56. Falkowski P, G. Rationalizing elemental ratios in unicellular algae *Journal of Phytol*, Tyrrell T. 2000 ;36(47): 3-6. The relative influences of nitrogen and phosphorus on oceanic primary production. 1999; 400:525–531.
57. Lento T, M Watson, A, J. Redfield revisited 1. Regulation of nitrate, phosphate, and oxygen in the ocean. *Glob. Biogeochem. Cycles* 2001; 14: 225–248.
58. Rhee, G,Y. Effects of NP atomic ratios and nitrate limitation on algal growth, cell composition and nitrate up-take. *Limn Oceanogr*. 1978; 23: 10–25.
59. William Nordhau, Martiny A, Pham C, T A, Primeau F.et al. The Climate Casino, Risk,Uncertainty, and Eco-nomics for a Warming World, Yale University Press . Strong latitudinal patterns in the elemental ratios of marine plankton and organic matter. *Nature Geosci*. 2013; 6: 279–283.
60. William Nordhaus. “Estimate of the social cost of carbon: Back ground and results from the RICE- model, “Cowles Foundation Discussion Paper no.1826, 2011.
61. William Nordhaus. “Designing a friendly space for technological change to slow global warming “*Energy eco-nomics* (2011); 33: 665-673.
62. Climate Change, Integrating Science, Economics, and Policy. N Nakicenovic, W Nordhaus, R Richels F. Toth, eds. IIASA, CP 1996;96-1.
63. Zaichun Zhu, Shilong Piao, Ning Zeng. Greening of the Earth and its drivers *Nature Climate Change* .2016; 6: 791–795. |
64. Ziska, L H. Rising atmospheric carbon dioxide and plant biology: the overlooked paradigm. In *Controversies in Science and Technology, From Climate to Chromosomes*. eds. Kleinman, D L. Cloud-Hansen, K A. et al. (New Rachele: Liebert, Inc. 2008; 379-400.
65. de Graaff, M A, Van Groenigen K J. et al. Interactions between plant growth and soil nutrient cycling under elevated CO₂: a meta-analysis. *Global Change Biology*. 2006; 12: 2077-2091.
66. Jablonski, L M, Wang X. et al. Plant reproduction under elevated CO₂ conditions: a meta-analysis of reports on 79 crop and wild species. *New Phytologist* 2002; 156: 9-26.
67. Reich PB, Oleksyn J. Global patterns of plant leaf N and P in relation to temperature and latitude. *Proc. Natl Acad. Sci. USA*. 2004; 101: 11001-11006.

68. Reich PB, Oleksyn J. Global patterns of plant leaf N and P in relation to temperature and latitude. *Proc. Natl Acad. Sci. USA* 2004; 101, 11001–11006.
69. Doney SC. Oceanography Plankton in a warmer world. *Nature* 2006 ; 444, 695–696.
70. Allen AP, Gillooly J F. Towards an integration of ecological stoichiometry and the metabolic theory of ecology to better understand nutrient cycling. *Ecol. Lett.* 2009; 12: 369–384.
71. Regaudie-de-Gioux A, Duarte C M. Temperature dependence of planktonic metabolism in the ocean. *Glob. Biogeochem. Cycles* 2012; 26; 1–10.
72. Boyce DG, Lewis RM, Worm B. Global phytoplankton decline over the past century. *Nature* 2010 ; 46: 591–59.
73. Thomas M, Kremer CT, Klausmeier C A. & Litchman, E. A global pattern of thermal adaptation in marine phytoplankton. *Science* 2012; 338: 1085–1088.
74. Ainsworth EA. Rice production in a changing climate: a meta-analysis of responses to elevated carbon dioxide and elevated ozone concentration. *Global Change Biology* 2008; 14: 1642-1650.
75. Ainsworth E, Rogers. The response of photosynthesis and stomatal conductance to rising (CO₂) mechanisms and environmental interactions. *Plant, Cell and Environment.* 2007; 30:258-270.
76. Leakey ADB, Ainsworth EA. et al. Elevated CO₂ effects on plant carbon, nitrogen, and water relations six important lessons from FACE. *Journal of Experimental Botany* 2009; 60: 2859-2876
77. Long S, Ainsworth, E.A. et al. Food for thought Lower-than-expected crop yield stimulation with rising CO₂ concentrations. *Science.* 2006 ; 312: 1918-1921.
78. Poorter H, Navas M L. Plant growth and competition at elevated CO₂ on winners, losers and functional groups *New Phytologist.* 2003; 157: 175-198.
79. Rogers A, Ainsworth E. et al. Will elevated carbon dioxide concentration amplify the benefits of nitrogen fixation in legumes? *Plant Physiology.* 2009; 151: 1009-1016.
80. Stiling P, Cornelissen T. How does elevated carbon dioxide (CO₂) affect plant-herbivore interactions? A field experiment and meta-analysis of CO₂-mediated changes on plant chemistry and herbivore performance. *Global Change Biology* 2007; 13: 1823-1842.
81. Taub D, Miller B. et al. Effects of elevated CO₂ on the protein concentration of food crops: a meta-analysis. *Global Change Biology* 2008; 14: 565-575.