Effect of NOx Elimination on Electricity Price, Fish Production, GDP and Protection of Global Warming

Shoichiro Ozaki*
The Institute of Physical and Chemical Research, 2-1 Hirosawa, Wakoshi Saitama, Japan

Abstract

Much NOx is produced when fossil is burned. Many governments set up the law to eliminate NOx by the reason NOx is pollution gas and not good for health. And also Drainage NP are eliminated. Some other many governments are welcoming NOx as fertilizer for plant and encouraged the use of NOx and Drainage NP for plankton growth and getting many fish. I could find the data that how much NOx is eliminated at 11 countries. The countries who do not do NOx elimination and do not do NP elimination are getting many fish, fixing much CO2 and electricity price is low and producing many product and increasing GDP. The country who do NOx elimination is decreasing fish production and increasing CO2 emission, promoting global warming and electricity price is high and GDP growth rate is low. Therefore NOx elimination and Drainage NP elimination should be stopped for the promotion of CO2 assimilation, for the production of grain and fish, and for the elevation of GDP growth rate.

Keywords: NOx; NOx elimination; Protection of global warming; Electricity price; Fish production, GDP

Introduction

The earth is warmed by the fossil fuel burning releasing CO2 and heat. The plant is growing by CO2 assimilation absorbing CO2 producing carbohydrate and O2. To promote CO2 assimilation, supply of nutrient NP is essential. Much NOx is produced as by product of burning. NOx is a nitrogen fertilizer and promoter of CO2 assimilation. But NOx is hated as pollution gas Many governments set up law to eliminate NOx in burned gas and forced to eliminate NOx using ammonia. This reaction is the reaction of one fertilizer with other one fertilizer. This gives tremendous loss of natural resources. NP in drainage is also hated as pollution substance and NP elimination is carried out at many country. Elimination of NOx and NP are decreasing CO2 assimilation, decreasing plant growth and promoting global warming. I am insistig that NOx and NP are critically important compounds and the elimination of NOx and NP should be stopped at previous papers [1-6].

In this paper, I wish to show how much damages are given to the country who do NOx, NP elimination by comparing the effect of NOx elimination on electricity price, fish production, CO2 plankton (CO2 fixed by plankton) and GDP (Gross Domestic Product) of 11 countries.

Elimination of NOx and Elimination of Nutrient N, P

The earth is warmed by the increase of carbon dioxide. Carbon dioxide 360 billion tonne was produced in 2016. Carbon dioxide 218 billion tonne was fixed in 2016. This mean 142 billion tonne NOx increased. Paris agreement ask us to reduce carbon dioxide emission. And no increase of carbon dioxide. Same amount of CO2 must be fixed as emission.

Nature has system to change N2 to nutrient nitrogen. By high temperature at fireplace for cooking, burning of wood [1-2], thunder [4-6], NOx is produced from N2 and O2. NOx is a gift from nature [6]. We should not against nature. We should use NOx as it is. In 2016 fossil 140 billion tonne was burned and CO2 360 billion tonne and NOx 14.4 billion tonne are produced. If we use all NOx for the fixing of CO2 we can fix 14.4 × 25= 360 billion tonne CO2. As C/N ratio of plant is around 5/1-50/1 (average 25/1) and one molecule of NOx can fix 25molecule of CO2.

I wish to insist that NOx elimination should be stopped. Because toxicity of NOx is not so serious when it is released at no person district. NOx is essential for plant to grow. NOx is essential for the production of grain and fish for the promotion of health and long life.

I am now showing how NOx elimination gave significant effect on electricity price, fish production, CO2 plankton and GDP growth rate. CO2 em (CO2 emission), NOx con (NOx concentration in exhaust gas), electricity, price, fish, CO2 plankton, GDP of 11 countries are shown in Table 1.

NOx Concentration of Many Countries

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

China emitted 106.4 billion tonne CO2. The content of NOx in exhaust gas is 1.6 g/kWh electricity generation. As electricity generation of China is 154220 billion kWh. Then NOx emission of China is 2 × 1.6 × 154220 billion tonne= 984 million tonne. 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 NOx is produced at all furness. Electricity price at China is 1.6-4.5 c/kWh.

Japan emitted 12.5 billion tonne CO2. Japan did not do NOx elimination before 1970 and NOx content was 1.6 g/kWh and 2 × 1.6 × 10080=64.2 million tonne NOx was released. Since 1980, Japan

*Corresponding author: Shoichiro Ozaki, The Institute of Physical and Chemical Research, 2-1 Hirosawa, Wakoshi Saitama, Japan, Tel: +81 0467670991; E-mail: ozaki-0991@ipc.ja.jp

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government set up very strict law to eliminate NOx and Drainage NP. Then NOx concentration in exhaust gas decreased to 0.1 g/kWh and NOx emission decreased to 0.4 billion 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 NOx 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 NOx can fix 25 molecule of CO2, China can fix 984 × 25 × 44/30=360.8 billion tonne CO2. USA can fix 192 × 25 × 44/30=70.4 billion tonne CO2. India can fix 86 × 25 × 44/30=31.5 billion tone CO2. Japan can fix 0.4 × 25 × 44/30=1.47 billion tone CO2. Canada can fix 52.4 × 25 × 44/30=19.1 billion tone CO2. Germany can fix 24.4 × 25 × 44/30=8.94 billion tone CO2. France can fix 38 × 25 × 44/30=13.93 billion CO2. S.Korea can fix 34.2 × 25 × 44/30=12.5 billion tone CO2. UK can fix 18.4 × 25 × 44/30=6.74 billion tone CO2. Italy can fix 5.6 × 25 × 44/30=2.05 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 country, NOx elimination is carried out. Most severe NOx elimination country is Japan. NOx concentration is 0.1 g/kWh And electricity price is high as 20-24 c/kWh. Low electricity country: China 1.6-4.5 c/kWhD. S.Korea 8.4 c/kWh.

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

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 NOx elimination by ammonia. By elimination of this NOx elimination process, we can reduce 1 billion tone CO2 production. Japan eliminate NOx 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 country are generating electricity by importing fossil from abroad. Construction cost plus fossil cost are added for elimination of NOx.

Then electricity price increase. Many industrial company of Japan build factory at outside of Japan.

**Fish Production and CO2 Fix by Plankton**

When we look at fish production of world. China emitted 105.4 Billion tonne CO2 and 492 million tonne NOx. They do not eliminate NOx and use NOx as promotor of plankton growth. 79.38 million tone fish is produced and 19.8 billion CO2 is fixed. India produced 10.1 million tone fish. Japan produced 13 million tone fish in 1970. But since the elimination of NOx, fish production decreased to 4.64 million tone. CO2 fix by plankton 3.25 billion tone (1/3 of total CO2 emission) in 1970 decreased to 0.11 billion tone 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. NOx is a promotor of plant growth. CO2 assimilation Therefore NOx elimination give great damage on growth of plant, plankton. production of fish, grain, grass and tree. The elimination reaction of NOx is a reaction of NOx with ammonia. By this reaction, precious fertilizer is destroyed by other precious fertilizer. This is tremendous loss.

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

2. The countries who do this reaction NOx elimination like USA (NOx<0.5 g/kWh, GDP=1.38%), Japan (NOx<0.1 g/kWh, GDP=1.01%) Germany, (NOx=1.0 g/kWh, GDP=1.85%), UK (NOx<1.3 g/kWh, GDP=1.8%), Italy (NOx<0.5 g/kWh, GDP=0.88%) are consuming much fuel for elimination of NOx. 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

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**Note:**

CO2 em (CO2 emission), NOx con (NOx concentration in exhaust gas) electricity, price, fish, CO2 fix by plankton, GDP growth rate %.

<table>
<thead>
<tr>
<th>Country</th>
<th>CO2 em (billion tone)</th>
<th>NOx concentration (g/kWh)</th>
<th>Fish production (million)</th>
<th>CO2 fix by plankton (billion tonne)</th>
<th>GDP growth rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>106.4</td>
<td>1.6</td>
<td>984</td>
<td>1.6</td>
<td>79.38</td>
</tr>
<tr>
<td>India</td>
<td>24.5</td>
<td>1.6</td>
<td>86</td>
<td>13920</td>
<td>19.8</td>
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<tr>
<td>S Korea</td>
<td>5.8</td>
<td>1.6</td>
<td>34.2</td>
<td>5380</td>
<td>8.1</td>
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<td>51.7</td>
<td>0.5</td>
<td>192</td>
<td>43670</td>
<td>12</td>
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<tr>
<td>Japan</td>
<td>12.5</td>
<td>0.1</td>
<td>10080</td>
<td>4.64(2016)</td>
<td>0.11(2016)</td>
</tr>
<tr>
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<td>5.5</td>
<td>1.3</td>
<td>52.4</td>
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<tr>
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<td>1.9</td>
<td>3.8</td>
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<tr>
<td>UK</td>
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<td>1.3</td>
<td>18.4</td>
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<tr>
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<td>0.5</td>
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<td>2880</td>
<td>28</td>
</tr>
<tr>
<td>Russia</td>
<td>17.6</td>
<td></td>
<td></td>
<td>17</td>
<td>4.61</td>
</tr>
</tbody>
</table>

**Table 1:** CO2 em (CO2 emission), NOx con (NOx concentration in exhaust gas), electricity, price, fish, CO2 fix by plankton, GDP growth rate %.
fisherman lost job. As fish price is 3000 dollar /t. Then 3000x13 million dollar= 390 billion dollar were lost. Fish price increased 5 times. Average life in Japan : male is 80.50 (third), female is 86.83 (top in the world). The author believe that long life of Japanese come from the habit to eat fish containing glucosamine, hyaluronic acid and chondroitin as a main protein source. Japanese cannot eat fish as before. Fish/Meat ratio of Japanese changed from 99/1 in 1945 to 30/70 in 2017. Therefore Japanese may lose long life record soon.

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 do not do NOx elimination. 1. Need not fossil to eliminate NOx. 2. Can have enough NOx and can promote CO2 assimilation. 3. Electricity price is low. 4. Can produce much fish and grain. 5. Can get high GDP growth rate. China 6.92%, India 7.10%. The country do NOx elimination show low GDP: USA 1.48%, Germany 1.85%, UK 1.8%, Japan 1.03%, Italy 0.88%.

Protection of Burn Out of Fossil Fuel

Since industrial revolution, mankind is using large amount of fossil fuel for manufacturing of good, iron, aluminum, plastic, fertilizer and for transportation. Global warming comes from over burning of fossil. Fossil fuel is fossil of plants, oil is fossil of plankton, coal is fossil of tree, made by CO2 assimilation from CO2 and water in 45 billion years. Mankind is now using up these fossil fuel in 500 years. Around half of produced fossil fuel is already used. And remaining estimated amount of buried fossil fuel: oil is 1730 billion tone, 42 years, natural gas is 2760 billion tone, 60 years, coal is 9090 billion tone, 132 years, buried uranium is 124 years. It is said that oil production reaches maximum in 2037 (earlier in 2026, latest in 2047 and decrease quickly). When fossil is burned out after 500 years, in 2518, no global warming will happen. We must consider how can we live civilized life without fossil. How can we warm up or cool down the room, drive car, air plane, agriculture machine, fishing boat. How can we generate electricity. From what can we make plastic and solar cell module. Fossil fuel is limited very very precious treasure for our mankind. We must consider how to save the limited precious fossil fuel. We should not use precious fossil fuel for the elimination of NOx, N,P.

Conclusion

CO2 assimilation is promoted by NOx and NP. Those country who use NOx and NP effectively can produce electricity with low price and can get priority at manufacturing industry and can produce much food and high GDP growth rate. We should stop NOx and NP elimination.

References