

Short Research Article

Planet Mayday: COVID-19 and Global Warming

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Abstract

Has COVID-19 changed the world forever? Is it the signal to treat Nature differently and mobilise effective policies against global warming? Well-known commentators on climate change argue thus, but this argument is wrong. COVID-19 is entirely different from global warming. And COVID-19 will ruin the states: How to pay for both lockdown and energy transformation?

Keywords

COVID-19, global warming, abrupt climate change, CO2 emissions, essence of international accords, ocean PD game, herd immunity

1. Introduction

Now several governments in well-ordered societies emerge themselves into debt supporting in various ways firms and employees in various ways. The rationale is to halt the spread of the virus as well as to avoid further even larger costs when the economies begin operating .

There are two problems involved, as in all public programme implementation:

- (1) adverse selection - ex ante: who really needs government money?
- (2) moral hazard - ex post: how will these enormous sums of money be spent?

Like what happened in the great financial crisis, it is not certain that governments can manage the huge sums properly.

Yet, COVID-19 and climate change are very different as threats to mankind, and the government responses have a different logic.

2. Game against Nature

Governments all over the planet employ different strategies in the combat against the spread of the Corona virus. The challenge is to devise a strategy that minimizes the number of casualties while simultaneously minimizing the economic impact of lockdown. There seems to be three different strategies with varying tradeoffs:

a) Swedish model: Weak lockdown for only specific sectors;
 b) Spanish model: Heavy lockdown of all sectors;
 c) New Zealand model: Elimination of the virus by combining testing, contact chasing and quarantine.

It has been much debated whether the Swedish strategy is more effective than the practice in Italy, Spain, France the UK and the USA, but it is obvious that the New Zealand strategy works excellently for islands (e.g., Australia) and peninsulas (e.g., South Korea). When will the virus vanish? There has to be either herd immunity or access to a vaccine. Government are prepared to spend incredible amounts for both protecting their populations and stopping an economic meltdown. A total lockdown is only feasible for a shorter period of time, or governments will run out of resources and incur risks for hyper inflation.

3. Ocean PD Game

At the same time as the Corona crisis unfolds, the governments of the nations of the world must recognize that climate change is becoming Hawking irreversible. It draws the attention that the Keeling measure of CO₂ concentration in the atmosphere has reached its highest point ever recorded on May 1, 2020, at 4:17 pm. The United Nations approach with huge global meetings seem to result merely in transaction costs. The major polluters use public international law to engage in opportunistic behavior with guile. Table 1 shows that the biggest countries are also the biggest consumers of energy and coal power in particular.

Table 1. 20 Leading Polluters of the World

Top 20 Energy Consuming Countries 2018	Top 20 CO₂ Emitting Countries 2018	Top 20 Producers of Coal Energy 2019
China	China	China
United States	United States	United States
India	India	India
Russia	Russia	Russia
Japan	Japan	Japan
South Korea	Germany	Germany
Germany	Iran	South Africa
Canada	South Korea	South Korea
Brazil	Saudi Arabia	Indonesia
Iran	Canada	Poland
Indonesia	Indonesia	Australia
France	Brazil	Ukraine
Saudi Arabia	Mexico	Turkey
Mexico	South Africa	Vietnam

United Kingdom	Turkey	Taiwan
Nigeria	Australia	Malaysia
Italy	United Kingdom	Kazakhstan
Turkey	Italy	Spain
Thailand	Poland	United Kingdom
South Africa	France	Philippines
Share of World: 75.2 %	Share of World: 78.5 %	Share of World: 93,8 %

3. Climate Change: Not Abrupt, but Slow

By 2030, the Earth will experience temperature increases between 1.5 and 2 degrees Celsius, somehow considered as magical breaking points by experts like Nordhaus and Stern, who argue that the cost of global warming will become too high when these limits are exceeded (Stern, 2006; Nordhaus, 2013). In reality, the social and economic effects of global warming would be very much exacerbated when the rise is greater than 2 degrees Celsius (Stern, 2006).

The global energy / environment problematic contains three factors:

- Energy Consumption (unit: billion tonnes of oil equivalent)
- CO₂ Atmospheric Concentration (unit: ppm)
- Global Temperature Anomaly (unit: Degrees Centigrade)

At present, we stand at almost 16 billion tonnes of oil equivalent in annual world production, which has led to a near one degree rise in global temperatures. The future holds the scenarios presented in Table 2.

Table 2. Regression Estimates for Temperature Rise Based on Energy Consumption

Global Energy / btoe	CO ₂ concentration / PPM	Temperature rise / degrees C
16	430	1.1
18	450	1.3
20	470	1.5
22	490	1.7
24	510	2.0

In Table 2 the relationship between energy consumption and temperature rise is modelled. Energy consumption is near 16 billion with + 1 degree. Looking at stylised projections, we will move towards 24 billion with + 2 degrees. That would create lots of difficult problems for mankind.

It has recently been suggested that the greenhouse gases (GHG) have increased so much that the world should consider carbon sequestration and/or capture. This technology is only known on a micro scale, and it is probably very expensive, but this has not stopped the California from endorsing it in its plan for carbon neutrality by 2045. However, when looking at the numbers, carbon capture simply does not hold the solution to the global warming of rising CO₂ emissions.

We should target coal-fired plants as well as the omni-present usage of charcoal in poor countries. The consumption of coal leads to the worst record of CO₂ emissions of all fossil fuels, and it can be replaced by other fossil sources, renewables or nuclear power.

4. Phasing out Coal Power

Below we make an attempt to calculate how much solar energy would be required to replace coal power. As benchmark the Bhadla Solar Park in India is used, projected to deliver 2255 MW once construction is ready from December 2019. In all, 900 such plants would be necessary to completely eliminate all coal power generated in 2018. Table 3 illustrates how many solar plants of this size each of the ten biggest coal producing nations would need to install to replace their entire coal power production.

Table 3. Number of Bhadla Solar Park Plants Required to Replace Coal Power by Country (Global Energy Monitor)

Country	Number of plants
China	475
India	100
Japan	28
South Korea	18
Turkey	9
Americas	
United States	106
Colombia	1
Europe:	
Germany	32
Russia	30
Africa:	
South Africa	14

It is less expensive to start closing down dirty coal fired power plants then to build up lots of expensive carbon capture plants.

5. Conclusion

It is obvious that developing countries raise demands on developed countries to assist them with energy transformation. They have been pledged huge economic support in the Paris Agreement, and the industrialised world has shown in the fight against COVID-19 that they are capable of raising enormous amounts of money when needed to fight against internal costs caused by the spread of lethal

viruses. The only way to combat the external costs of CO₂ emissions is to start NOW the phasing out of coal power, and not build new such plants. Surely, the rich countries can afford to help the developing world to move away from coal power. The major polluters have until now not lived up to their responsibility, as the UN IPCC process merely adds transaction costs. The big difference between COVID-19 and global warming is that governments behave opportunistically in relation to CO₂ emissions: myopia, delay, cheating, and climate denial. Such a strategy would be revealed as catastrophic in relationship to COVID-19, but concealed with regards to global warming because of the long time frame.

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