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Climate Change Management-Some Insights from a Recent Debate

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Abstract
Climate change management is a challenge as well as an opportunity at national and global levels. When climate change has adverse consequences on physical environment, increase in income inequality has huge adverse consequences on economic, political and social systems at all levels. In this context the concept of Green New Deal (GND) emerged. Many prominent members of the democratic party in the USA compare GND with the celebrated New Deal Policy of American President Roosevelt in significance and impact.Social scientists, environmentalists and social activists have joined in this debate.The present paper attemptsto draw some insights from this debate and get some inferences for policy framing. In the first part of the paper the GND is explained in the context of adverse climate changes and the effects of increasing income inequalities. The GND is interrogated in terms of both the mainstream liberal economics and Marxian analysis in the second and third parts respectively.In the final part inferences and conclusions are given along with suggestions for further reference in this exiting area of study.

Keywords*: Climate change, Green New Deal, income inequalities*

I. Introduction

The world faces two main challenges, namely climate change which leads to global warming with all the adverse environmental consequences and increasing income inequalities which undermine both capitalist system and democracy. Social scientists, environmentalists, and activists try to explain the issues and find solutions with

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limited success. In this context, the concept of Green New Deal (GND) has emerged. A set of proposals championed by Alexandria Ocasio–Cortez, an American politician and activist, and many prominent members of the Democratic Party is compared with the New Deal Policy of American President Roosevelt during the Great depression period (Carlock, Greg and Sean McElwee 2018). In the first part, the GND is explained in the context of adverse climate changes and income inequalities in the recent times. The GND is interrogated in terms of both the mainstream liberal economics and Marxian analysis in the second and third parts respectively. In the final part inferences and conclusions are given along with suggestions for further research in this exciting area of study.

II. GND in the context of Fourth Industrial Revolution and the Great Decoupling:

Franklin Roosevelt's New Deal Policy based on Keynesian Macroeconomic theory was successful in pulling out American economy and consequently the world economy from the consequences of the perils of the Great Depression of 1930s. Public expenditure funded by deficit financing was the key instrument. According to John Maynard Keynes, the famous British economist, fall in effective demand caused the depression in the economy, which had resulted in decrease in investment, output, employment on income. The rise of effective demand depends on expenditure on consumption, private investment and Government activities in the economy. Expenditure on consumption and private investment cannot be increased in a short period. Hence the only alternative is increasing the public expenditure through deficit financing, which means Government's expenditure is more than income (Keynes, 1997). This type of Government intervention in the economy happened during the first New Deal Programme (1933 -1934) and subsequently on a larger scale during the second New Deal Programme (1935 -1938) in the American economy and the positive dramatic changes brought about by these policies are elaborately described in the textbooks of modern macroeconomics.

Neo-liberal mainstream economics has space for explaining rational behavior of economic agents. Supply demand approach to efficient resource allocation and market clearing price in commodity and factor markets is the hallmark of this intellectual exercise. States are also economic agents and like all other economic agents (firms, industries, communities, consumers etc) strive to maximize benefits. This maximizing behavior assumption is carried to logical extremes in game theory and rational choice theory, for example. The application of theoretical and methodological insights of this approach in international relations got reflected in strategic military and non-military state actions during cold war period. Now the phrases, 'US China trade war' and 'climate war' are in the news and debates. In this scenario emergence of a single comprehensive climate change regime with an objective of global environmental prosperity is not very great (Keohane, 2005). Countries maximize their national economic welfare and ignore global environmental (and economic) prosperity.

Posner and Weisbach (2010) give an interesting account of manipulation of the so called justice approach to climate change. The states are selfish and redefine concepts like climate justice to their convenience. These authors say, "Suppose, for example, that American citizens were persuaded that the US has a moral obligation to bear the bulk of the climate burden because the US is wealthier than most other states, and because the US is responsible for a large portion of Green House Gases (GHGs) in the atmosphere." The persuasion may not convince the audience because of the self-interest argument. The citizens would say that states should mainly work toward providing wealth and security to their citizens (Posner and Weisbach, 2010). This argument is taken forward

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by other writers also. For example, Amadae (2016) says that states act like agents in a game theory construct, each putting best efforts to maximize economic returns ignoring global environmental cost and impact (Amadae, 2016). In this scenario, the altruistic GND and other similar welfare oriented attempts may have huge challenges at the implementation stage, even though the rhetoric may be persuasive.

The period between 1945 (the end of World War II) and 1973 (the year first Oil Shock took place) is often called "The Golden Age of Capitalism". Then there was a decline in Keynesian interventionist macroeconomic policy and rise of Neo-Liberal pro-market macroeconomics advocated by American economist Milton Freidman since 1980s. The euphoria of Neo-Liberals ended with the 2008 international financial crisis which began with the bankruptcy of the US investment banks, Bear Sterns and Lehman Brothers and impacted the global economy subsequently (Stiglitz Joseph, 2015). Major financial institutions and industrial firms were bailed out with public money and the revival of Keynesian policies was reported. Soon, however Neo-Liberals came back and gained power and influence with BREXIT and election of the US president Mr. Donald Trump.

Protectionist policies of the Trump regime and the trade war between US and China make the observers to use the term "Deglobalisation" to describe the current scenario. Climate change and increasing income inequalities have been described as major global challenges. In this context a debate on GND has emerged. It is necessary to explain briefly the global transformation happening under the Fourth Industrial Revolution and its consequences on the Great Decoupling phenomenon.

The term 'Fourth Industrial Revolution' is important in understanding the major trends shaping the world. It helps us in analyzing the broad historic changes and provides with powerful insights which enables us to navigate the way to better future at national and global levels (Schwab Klaus, 2017). The First Industrial Revolution happened during the period between 1760's and 1840's. The key aspects were invention of steam engine and construction of rail roads. The Second Industrial Revolution took place during the period between late 19th Century and early 20th Century. Electricity and mass production through assembly line process were the key factors. The Third Industrial Revolution happened between 1960's and the end of 20th Century. Computers and Internet were the defining features of this period. The Fourth Industrial Revolution is the 21st Century phenomenon. Cloud Computing, Artificial Intelligence (AI), Internet of Things (IOT) are the major features of ongoing transformations in the economy and the society.

The phenomenon of the Great Decoupling is being discussed widely in the recent times (Brynjolfsson, Erik and Andrew McAfee 2014). There are a few mismatches among the four key indicators of progress of an economy namely per capita GDP, labour productivity, number of good jobs and median household income. During the three decades after the end of World War II, all the four indicators of progress mentioned above increased more or less in a similar way in the US and the other developed countries. However, since 1980s the median household income slows either stagnation or slight fall and the growth of good jobs slows down while per capita GDP and labour productivity show decent rates of growth. This phenomenon is described as the Great Decoupling. Experts say that they have not come across anything quite similar to this trend (Reich, Robert, 2015). This is reflected in the fall in labour's share of GDP in most of the countries. Corporates are shifting investment away from labour and towards capital. A large part of investment goes towards R&D efforts to develop technologies which are replacing labour.

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Machines are increasingly taking away even the decision making tasks from the humans. Automation is getting into knowledge work through Artificial Intelligence (AI) and many of the tasks that executives do well will be automated.

Augmentation strategy is also emerging. This means that knowledge workers will consider smart machines as partners and not competitors for creative problem solving at workplaces. Workers seem to have become more efficient with the technology. However, technology and economics do not make the workers more prosperous as the economy progresses. In the 'winner-takes-all' world, capital and highly skilled labour join hands at the top (Stiglitz Joseph, 2015). On one side industrialization, urbanization and consumerism are making negative impacts on physical environment which gets reflected in the climate change. On the other side the Fourth Industrial Revolution and The Great Decoupling phenomenon undermine the bargaining power of the workers and lead to increasing income inequalities. This is the crux of the problem.

In this scenario support for Green New Deal (GND) has emerged in recent times. Supporters of GND claim that the proposed policies would ensure 100 percent clean and renewable energy within a decade, zero net emissions within three decades, America emerging as the leading exporter of clean technologies and most importantly a more equitable distribution of income (*The Economist*, 2019).These objectives seem to be idealistic but the supporters are optimistic that the objectives would be achieved. They recommend huge public investments to transform energy and transport infrastructure, massive support for green industries, large-scale efforts to provide necessary training to workers and income support to those who are unable to work. A strong and effective carbon taxation regime is one important suggestion. The revenue collected from the carbon tax would be paid as dividend to the underprivileged. The funds for these ambitious projects would be raised through borrowing. There are plans to strengthen the interest groups such as trade unions and small manufacturers to get political support for the proposals. The proposals for expanding public expenditure in a massive scale to build 'Green' infrastructure and in education and training to bring about more 'equal' income distribution are viewed with skepticism by the economists of the mainstream liberal school of thought to which we now turn.

III. Environment Degradation and income inequalities in mainstream liberal approach:

Market failure is viewed as the major reason for environmental degradation and rise in income inequalities in the neo-classical liberal economics. Negative externalities (social costs being higher than the private cost) could be discouraged through taxation and positive externalities (private benefit being lower than the social benefit) could be encouraged through subsidies. As the economy grows it will take care of its environment. A poor country cannot afford to spend time and money on environmental protection. Poverty is the worst polluter. Prosperity brings more effective environment regulations. Individuals, communities and countries begin to protect their environment when they can afford to spend money on such activities (Norberg, Johan 2005). Liberal writers mention 'California Effect' to support their argument. During 1970's the state of California in the US introduced several stringent emission regulations on the car manufacturing factories to protect the environment. Many people expected that there would be shifting of the factories to other neighborhood states. In fact, these factories did not move to the other states. Instead the other states also began introducing stringent emission regulations on their car manufacturing factories. It shows that responsible

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environmental behavior is contagious. A good example is always worth imitating.

There is no conflict between economic growth and environmental quality. This is so because there is no conflict between economic growth and income inequality. Liberal mainstream economists point out that income inequality increases with the increase in the economic growth, reaches a high point and thereafter starts to decline. This relationship is known as 'Kuznets Curve' as shown below.

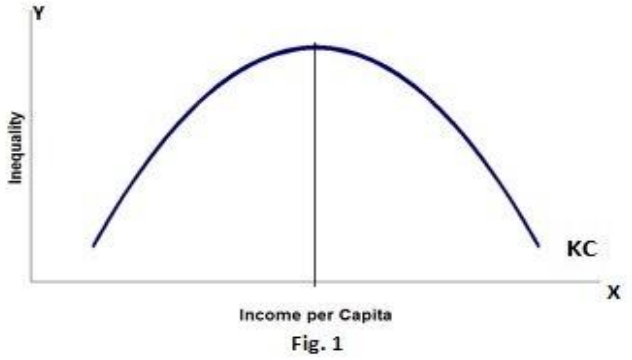


Fig. 1

In Fig 1. The inverted U shape curve is the Kuznets Curve (KC) and it shows the relationship between income inequality and economic growth represented by the level of per capita income. This relationship has established by Simon Kuznets through extensive empirical studies (Kuznets, Simon 1956). Later, many studies were made on this question and they also supported this relationship. Economic growth will ensure environmental quality when the rules of the market system are followed. Market will punish environmentally unfriendly industries and reward environmentally friendly industries. Subsequently the Environmental Kuznets Curve was established on the basis of empirical studies on data on economic growth and environmental quality. It is shown that environmental degradation will increase more as the economy grows until it reaches a particular level and thereafter it will have improvements on the environmental conditions (Norberg, Johan 2005). The relationship between economic growth and level of pollution is shown in the following diagram.

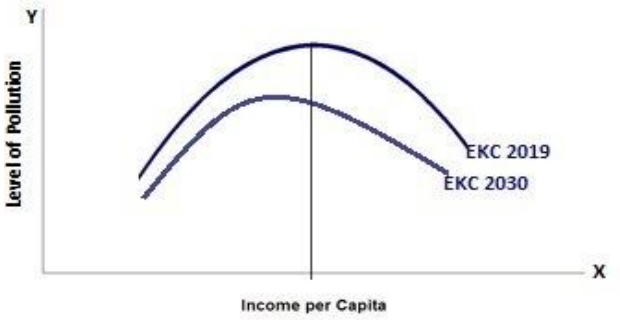


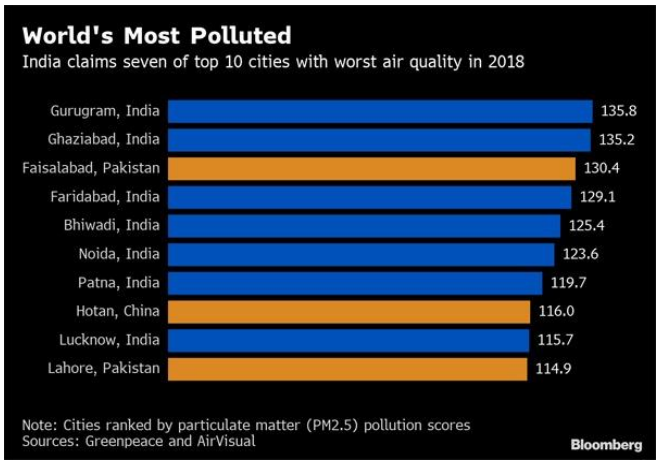
Fig. 2

In Fig. 2 above there is an inverted U-shaped curve known as "Environmental Kuznets Curve" (EKC).

The curve will shift downward when there are technological improvements, better management practices and more efficient government interventions through good governance practices.

According to the recent study, seven out of top ten most polluted cities in the world are in India (*Business Line* 2019). Gurugram is on the top of the list and the other most polluted cities and their countries are given below.

Table. 1: Top 10 polluted cities (based on the presence of the pollutant



It can be observed that the cities with major problems with pollution are found in the developing countries and not in the developed or advanced countries.As mentioned above the EKC will shift downwards when there are

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improvements in the technology, management practices and good governance and such shifts happen in developed countries through neo-liberal policies. Liberal mainstream economists point out that the supporters of GND movement advocate massive public expenditure on the infrastructure and training of the workers to address the climate change and income inequality issues because of the 'Category Error' in their analysis. Alexandria suggests that income tax rate in the US should be increased to 70 percent from 37 percent. She declares that she is a 'socialist'. Elizabeth Warren, another popular leader of Democratic Party wants a heavy wealth tax on multimillionaires (*Business Standard*, 2019). It is like trying to defeat Hitler with afascism tax (*The Economist* 2019). Climate change and income inequality issues should be addressed with economic growth achieved through the use of right technology, enlightened management practices and improved good governance outcomes. The mainstream liberal economists consider the Green New Deal proposals will undermine economic growth, encourage rent-seeking and accelerate environmental degradation. The Marxian perception of these issues is different and it is explained in next part of the paper.

IV. A Marxian Analysis of GND

Karl Marx wrote an ecological contradiction also apart from his analysis of economic contradictions in capitalism (Marx, Karl 1976). Dialectical Materialism, materialistic interpretation of history and the theory of surplus value are the three pillars of the Marxian analysis of capitalist economic contradictions which would lead to crisis and collapse of the system and emergence of socialism. Marx could foresee ecological crisis apart from economic crisis under capitalism (Foster, John Bellamy 2000). Ecological crisis is called 'The Second Contradiction of Capitalism'. Capitalist system transforms the material conditions on which all life depends. The main limitation of contemporary ecological analysis (including the GND initiatives) is its inability to relate the problem of nature to the problem of economy and the society. We shall discuss only two important aspects of the Marxian analysis of nature and society, namely 'Metabolic Rift' and the 'Lauderdale Paradox'. These concepts should be understood in the broad context of the historical materialism which includes ecological materialism also.

Metabolic interaction between humans and nature arises to support life. Natural system is supported by nutrient cycle in which the metabolisms (exchange of matter and energy) happens continuously. Human survival is possible along with the survival of other organisms in the natural system. The metabolic interactions between humans and earth changed after the industrial revolution. 'Social Metabolism' (production system and production relations) is increasingly separated from 'Natural Metabolism' (exchange of matter and energy, nutrient cycle, etc) and this separation is called "The Metabolic Rift". There is an insatiable appetite for surplus value (profit) in the capitalist system and metabolic rift is one of the outcomes of this pursuit. There is widespread ecological degradation and pollution in the process. Marx developed this analysis in the context of debates of soil crisis in England during his time in the 19th Century. Food and other agricultural products cultivated for centuries without disturbing the soil nutrients because agricultural wastes returned to the soil.With the progress of industrialization and urbanization the agricultural products were transferred to the towns and cities for the purpose food for urban population and raw materials for factories located near towns and cities. The accumulated waste was not returned to the soil which resulted in the depletion of soil nutrients in farms and pollution in towns (Marx, Karl 1976). Metabolic Rift happened because nutrients were not recycled back to the land. In order to compensate this loss,

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artificial (chemical) fertilizers are made and used in the cultivation of land, which has led to a series of environment problems. The Marxian analysis of the 'Metabolic Rift' can be extended to explain the contemporary environmental issues like air pollution, water scarcity, global warming, etc. Social metabolism should go along with natural metabolism to avoid or minimize environmental crisis we face today.

Another dimension of ecological contradiction in capitalist system is explained through the 'Lauderdale Paradox'. There is a contradiction between public wealth (goods with use-value) and private riches (goods with exchange values). Private riches will increase when public wealth diminishes. They key factor in this mechanism is scarcity. For example, water is a part of public wealth. Water helps private riches to grow when it becomes scare. Water is sold in the market for a price and it adds to the private riches of the water supplier who sells it to the hotels, hostels, industries and residents in towns and cities. Thus when scarcity of water increases, private riches increase. This mechanism applies to all constituents of public wealth. Increase in private riches and indeed all riches of a country (GDP for example) happen at the cost of quality and quantity of the public wealth. Destruction of the public wealth (in a way, environment) for the sake of accumulation of capital is evident in modern times. Valorization of capital which treats nature as a free gift and as an investment to increase capital is at the core of environmental crisis and it is overlooked in most of the discussions. Man makes capital and then later capital remakes both man and nature (Luiz C Barbosa 2009). The dominating capitalist objective is to increase accumulation of capital. In the Marxian scenario, the GND programme appears politically popular but naive in terms of political economy analysis. There seems to be a leftward swing in political debates in the US and they will be settled at the 2020 Presidential elections. Democratic Party proposes massive government intervention to address climate change and income inequality issues. Democrats seem to have a more "positive view" of socialism than capitalism. On the other side there are pro-business and pro-capitalist Republicans. There seems to be a growing ideological divide between socialist Democrats and capitalist Republicans (*Business Standard,* 2019). Marxian concepts of Metabolic Rift and the Lauderdale Paradox provide valuable insights to place these contemporary political debates on climate change and income inequalities in proper perspectives.

V. Conclusion

The Green New Deal (GND) proposals which aim to address climate change and income inequality issues are increasingly engaging in the American political debates in the context of Presidential elections next year. As elaborated above, these proposals are viewed as flawed and unrealistic by mainstream liberal economists and naïve by Marxian analysis of ecology. The environmental agendas of major political parties in India are not comprehensive and implementation of the environmental programmes by the Central and State governments, in general, unsatisfactory (Guha, Asi and Elphin Tom Joe 2019). The climate change and income inequality issues cry for more attention in developing countries particularly India. The foregoing narrative on these vital issues from different theoretical perspectives emphasizes the need for further research in this exciting area of study.

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