

# Likely Concomitance of Projections of Future Climate Change and Status of the Paris Agreement: A Perception



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## Abstract

In this document, comprehension of prospective association of projections of future climate change and uncertainties in the status of the Paris agreement is presented. A need to address interrelated uncertainty arising from different potential sources is explored. Apart from that, other potential challenges and high-end uncertainties which been further adding to the path of the Paris agreement are discussed. It has been examined that some of the revealed features like regional differences in the projections of future climate change may meddle in regulating the spatial allocation of natural resources. Recall here, natural resources are of vital importance to the formulation and implementation of policies to tackle climate change. We emphasized the relevance of these attributes, i.e., regional differences in the projections of climate change, in the successful implementation of the Paris agreement. We proposed that because of these aforementioned attributes, dissent in the world's countries to unite for Paris agreement is likely. Countries getting benefited by rising temperatures may not encourage immediate efforts to impede rising temperature by curbing CO<sub>2</sub> emission, if they choose to be prejudiced by favoring Gross Domestic Product (GDP) growth or by reluctantly refraining from the Paris agreement's success. A take on this is that it may lead us towards the doldrums, i.e., a roadblock or uncertainty of the Paris climate agreement's success and future climate projection assertion. In terse it simply implies that we are still a good way off meeting the goals of the Paris Agreement. Additionally, the roadblocks in the Paris agreement leading to uncertainties in future climate predictions will also be notified in the future. We feel that a novel robust pragmatic framework is needed to keep all decision-makers under one umbrella of hope and spirit which can essentially enable us to safeguard the climate system from meddling with disastrous carbon emissions.

**Keywords:** Global average temperature; Climate change; Carbon dioxide (CO<sub>2</sub>) emission; Paris agreement; Projections of future climate; Uncertainties; Gross domestic product (GDP)

## Introduction

Climate change, including global warming, are some of the biggest challenges facing humankind today and the most surprising part is that human activities are mostly responsible for it because of their role in increasing greenhouse gases (carbon dioxide, methane, nitrous oxide, and fluorocarbons), a heat trapper in the atmosphere [1-5]. Among the mentioned gases, carbon dioxide's attributes like its staying time in the atmosphere makes it more problematic for the Global average temperature.

Notably, due to its meddling with the earth system, the global average temperature has warmed about 0.7 degrees Celsius in the last century and there is no credible hypothesis for this, other than the net effect of the carbon dioxide [3-9]. Surprisingly, averaged earth surface temperature is still showing an increasing trend and is a matter of potential concern because the increase in the global average temperature exhibits roadblocks to safe living on

the earth system [10-12]. Particularly, it (the increase) been found to results in severe floods and droughts, increasing prevalence of insects, sea levels rise triggering broad-scale coastal risk and vulnerability (for example sea level can increase the salinity of fresh water throughout the world, and cause coastal lands to be washed under the ocean), redistribution of Earth's precipitation, major consequences on marine ecosystems, and also expected to cause catastrophic impacts on the society by lower health and decreasing socio-economic development, natural ecosystems, agriculture, and coastal communities, etc. [13-15]. Besides, it is apparent from the general consensus that we have begun facing varying Earth's climate as a whole: increased water vapor in the atmosphere, glaciers and polar ice caps appear to be melting, floods and droughts are becoming more severe, warmer water and increased humidity encouraging cyclones [16-21], and wave patterns associated to changing sea levels are leading to strong

beach erosion on the coasts [22]. Realizing it as a top concern, leaders over the world started coming up with their idea and plans for how to impede the rate of greenhouse gases. They understood a strong requirement of weaning off fossil fuels, revamping food production, etc. to curb greenhouse gases.

### Discussion

Eventually, it became the focus of international efforts. The notion first crystallized in the Copenhagen climate change conference (2009) and thereafter several discussions (for example: at Cancun during 2009, at Durban during 2011, at Doha during 2012, at Warsaw during 2013, at Lima during 2014) were taken place to tackle the climate change issue by promoting dialogue on policies and strategies regarding adaptation, mitigation, and sustainable growth. Latterly, these efforts fortunately got materialized in Paris during 2015 with 195 nation adopting the Paris agreement [23]. It was decided in order to stop the climate threat, need to restrict the average rise in global temperature below 2°C (whereas concentration level carbon dioxide lower than 550ppm) above pre-industrial levels and well-planned systematic determinations to limit temperature increases to 1.5°C above pre-industrial levels are required. Notably, this agreement entered into force less than a year later: 04 Nov. 2016.

Following this, to provide an essential road map for the human response to reduce emissions and to build further climate resilience, an intended nationally determined contribution (INDCs) was initiated [24]. The agreement also aims to further support the ability of countries to deal with the impacts of climate change [25]. It has been realized that sustained reductions in emissions are required to stabilize global warming and it is only achievable if the world's countries show their capabilities and collective readiness to accept International Climate Agreements so-called "Paris Climate Agreement".

Besides, it is important to add here that to achieve a setup temperature goal for the particular agreement's, a systematic readiness in the mitigation was needed. Specifically, some significant steps were expected, for example INDCs accurate monitoring and evaluation, scale-up low-carbon investments including in renewable energy, accelerate the retirement of fossil-fuel plants, energy efficiency, grid infrastructure, carbon capture and storage, as well carbon offsets. However, the effort trailed. Notably, ambiguousness in evaluating the INDCs was revealed. And it found to be not easy to reach up to the set-up mitigation ambition after looking into the status of willingness and capabilities of world's countries to accept and accomplish the Paris Climate Agreement adequately and hence the possibility to keep the global temperature below the mentioned mark is slim been speculated and notified. Consequently, the need to quantify and address the levels of uncertainty arising from different potential sources are sensed. Detailed comprehension exhibits that the probable reason behind it can be the uncertainties to be committed to

finance flow by valued signatories (for examples: financial institutions, portfolios, corporations and different governments) and other obligations to be made towards low greenhouse gas emissions pathways and climate-resilient development. Thus, these, considered as a reason for the likely change in the climate general projections which states that temperature will rise above 3 to 4°C within the 21<sup>st</sup> century.

Apart from that, we feel that the potential challenge and high-end uncertainties which have been further adding in form of roadblocks in the path of International Climate Agreements is the revelation of significant differences in future climate change projections over various regions of the world. For example, it's been pointed out that some countries and regions, such as those of northern Europe and Asian monsoon regions, will become wetter, and some countries and regions, such as those around the Mediterranean Sea, will tend to be drier (Guoyu Ren, personal communication; Guoyu & Xu [26]). Besides, the new analysis (by Oxford Economists: hotter the world will be poorer and more unequal: <https://www.oxfordeconomics.com/my-oxford/publications/570186>), reveals that 3°C of warming by 2100 has the potential to reduce the level of global Gross Domestic Product (GDP) in 2100 by 21%.

More surprisingly, a country whose average annual temperatures today are cooler than 15°C, including those in North America and Europe, stands to benefit slightly in the short term from rising temperatures is revealed. Whereas tropical and subtropical countries whose average temperatures are already warmer than 15°C today, including the entire global South, face catastrophic economic degradation. In general, some countries and regions are warming up, while other countries and regions have little temperature changes, with some even probably experiencing a cooling climate.

From the detailed interpretations, we may say that people in high northern countries may believe that global warming will bring opportunities for the development of their vast cold regions, while people in the Mediterranean region will worry that future desiccation will have an adverse effect on the development of their countries. Small island countries and low land countries in Western Europe are afraid that sea-level rise will cause disaster for them, but it does not matter to those inland countries like Mongolia and Ethiopia. In terse, we may say that the original cold area becomes warmer, or the original dry area becomes more humid, the local people will think that this is a good thing; on the contrary if the warming and humidification occurs in the originally hot and humid tropical area, or humidification occurs in the originally cold and humid area or drying trend appears in an arid or semi-arid zone, then people will undoubtedly think that this is bad news for the local area.

These outcomes apparently say that there will be significant differences in future climate change in various regions of

the world as indicated earlier. This not only implies that the emissions of greenhouse gases and aerosols may tend to different in different regions, but also that the magnitude and direction of changes in temperature, rainfall, and extreme climate events will vary from place to place. In terse, it may imply different spatial and temporal climate and associated impacts. We feel that, as mentioned previously, such attributes are of vital importance to the formulation and implementation of policies and measures to tackle climate change because regional differences in climate change will lead to changes in the spatial allocation of natural resources as mentioned formerly. In terse, this means that some countries and regions will get benefit, while others will suffer due to such vulnerability. Until now, however, many people have not realized the significance of these attributes of climate change for the implementation of the international climate change convention.

### Summary

It is speculated that the combination of advantages and disadvantages caused by climate change for specific countries will inevitably become obstacles for other countries to reach a unified agreement in the future and such differences may create unwanted trouble to the Paris climate agreement's accomplishment. This may result in environmental, social and economic disturbances around the globe. Countries which are getting benefited by rising temperatures may not encourage immediate efforts to impede rising temperature by curbing CO<sub>2</sub> emission, if they choose to be prejudiced by preferring GDP growth and refraining Paris agreement's success. Recall here, GDP growth considered as most essential for any country's overall sovereignty. There would be an apprehension that this could feasibly create dissent in the world's countries to unite for Paris agreement and this may also hinder willingness and abilities to safeguard the climate from disastrous emissions. Besides, any attention to refrain to accord Paris agreement may degrade protocol to protect the environment by means of degrading incessant monitoring and constructive needed amendments. Our take on this is that it may lead us towards doldrums, i.e., a roadblock or uncertainty of the Paris climate agreement's success and future climate projections.

We assume to deal with the aforementioned crises (i.e., a roadblock to an agreement to reduce dangerous anthropogenic (CO<sub>2</sub>) gas and hence it's meddling with the climate system), a robust pragmatic framework is needed to keep all decision-makers or governments under one umbrella of nascent hope and spirit of reduce the emissions. Such a framework can refrain from attempts to hinder the Paris deal. For example, countries which are getting favor from global warming, especially their political leaders should not attempt to take their respective country away from Paris's agreement. And, we must say, it is a need of an hour to know about the ongoing and future obstacles faced by different countries to accord Paris agreement. Nevertheless, we wish to add, let's hope that all the countries in the world remain united

forever to deal with the issues, as proposed in this document, to safeguard the climate from meddling with terrible emissions.

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