



THE IMPACT OF CLIMATE CHANGE ON FOOD SECURITY IN INDIA

Gajanan Dhannu Rathod*

Department of Economics, N.L.S.College, Jaitpur –Daudpur, Saran, Bihar, India .841205

ARTICLE INFO

Article History:

Received 17th December, 2017

Received in revised form 21st

January, 2018 Accepted 05th February, 2018

Published online 28th March, 2018

Key words:

Climate Change, Food Security, Yield Growth Rate, Net Availability.

ABSTRACT

The Climate change is a major challenge for agriculture, policy maker, environment, NGO, Government, food security and rural livelihoods. Climatic change would push an additional 100 million people into poverty by 2030 in the world. It has put water security at risk, and is threatening agricultural supply chains and many coastal cities. And another most important question in the more than 815 (2016) million (India's 190.7 million) people are malnourished in the World. Food security and agriculture is the sector most vulnerable to climate change due to its high dependence on climate and weather. Food insecurity is a global problem and food security depends on agricultural productivity, per capita tea, coffee, egg, cereal, pulses and other food items. But in recent years worst impact of climate change is seen on agricultural productivity in India. The most important object of this research paper is to study the worst impact of climate change on food security.

Copyright©2018 Gajanan Dhannu Rathod. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

The Current climate change or weather extremes has already affected millions of people, putting food and water security at risk, and threatening agricultural supply chains and many coastal cities, climate change would push an additional 100 million people into poverty by 2030 in world. Sustainable development goal main objectives is to keep average temperature increase below 2°C, which in turn requires rapid global action to reach zero net emissions by the second half of the century. The world needs nutritious food for 9.3 billion people by 2050 while reducing emissions, increasing carbon sinks, and ensuring climate-resilient food security. It needs to provide affordable energy access to 1.1 billion people worldwide, who still live without electricity, while keeping emissions to a minimum and managing a transition away from fossil fuels. As a result, the absolute number of people in the world affected by chronic food deprivation began to rise in 2014 -going from 775 million people to 815 million in 2016. The situation is very dangerous in the world especially the urgent need of positive investment and mindset of people towards climate change.

Definition

World Food Summit (1996)

“Food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.”

***Corresponding author: Gajanan Dhannu Rathod**

Department of Economics, N.L.S.College, Jaitpur –Daudpur, Saran, Bihar, India .841205

FAO (2002)

“Food security exists “when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life”.

Four main dimensions of food security.

Availability

Food availability addresses the “supply side” of food security and is determined by the level of food production, stock levels and net trade.

Accessibility

An adequate supply of food at the national or international level does not in itself guarantee household level food security. Concerns about insufficient food access have resulted in a greater policy focus on incomes, expenditure, markets and prices in achieving food security objectives.

Stability

Utilization is commonly understood as the way the body makes the most of various nutrients in the food. Sufficient energy and nutrient intake by individuals is the result of good care and feeding practices, food preparation, and diversity of the diet and intra-household distribution of food.

Utilization

Even if your food intake is adequate today, you are still considered to be food insecure if you have inadequate access to food on a periodic basis, risking a deterioration of your nutritional status. Adverse weather conditions, political instability, or economic factors (unemployment, rising food

prices) may have an impact on your food security status. Currently, the climate change is a direct and indirect impact on four main dimensions of food security.

Objectives of study

- To identify the Emerging Challenges and current issues of Climate Change in India.
- To study the impact of climate change on net availability [per day per gram] in India.
- To study the agriculture productivity in India.
- Suggestions for improving climate change policy and Conclusion.

METHODOLOGY

The present paper is a descriptive study of the impact of climate change on food security, based on secondary data collected from the published reports and contributions of several institutions, organizations and individuals in India. The secondary sources include Economic Survey, journals, and website

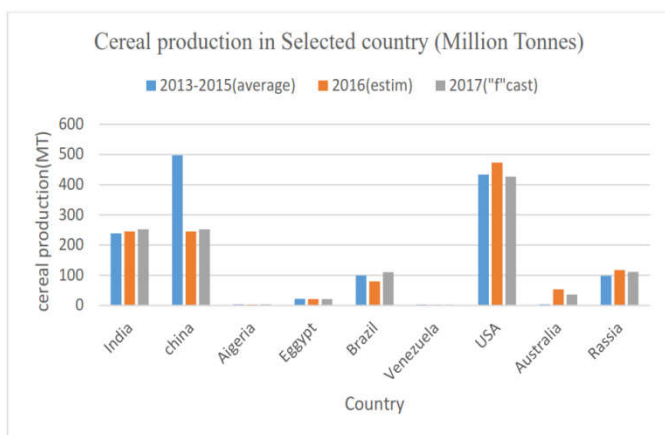
The Impact of Climate Change on Temperatures In World

The Sustainable Development Goals for 2030 is the most important objective of Achieving food security for all people at all time in the World, but currently, Agricultural production is largely dependent on climatic conditions and is a central consideration for food availability. Human activities have resulted in large changes in Earth’s climate over the last few centuries. Much larger changes are projected for the next century if greenhouse-gas emissions (GHG) and concentrations continue to increase. Human activities have changed and will continue to change the Earth’s climate. Since 1750, atmospheric concentrations of CO2 has increased by about 40%, nitrous oxide by 20%, and methane by 150%, leading to increase in temperatures and changes in the timing and amount of precipitation in many areas.

Total Cereal production in world

Today, in world total cereals production is 2593.7 MT during period 2017.To discuss the impacts of climate change on the cereals production is mentioned in the chart no 1 below.

Chart No. 1



Source: Fao,(2017), Food Outlook,Fao ,Rome.

The above chart shows that India’s cereal production has not increased in the last few years [2013 to 2017].because, there is

a negative impact of climate change on cereal production, the government needs to change the basic policy to come out of it.

The challenges of climate change on food security in India

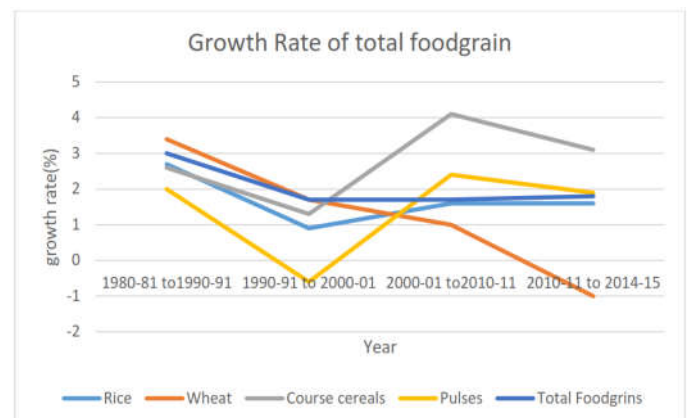
India’s only 2.3 % of world’s land and 17.5 % of world’s cattle population is in India and 80% small & marginal farmer and large farmer affected by climate change and another most important issues in currently 190.7 (14.5%) million people are malnourished during period 2014-16. Current climate change projections for India for the 2050s suggest an increase in temperature of 2-4o C for the country. Climatologists also predict an increase in the intensity and frequency of extreme events such as droughts, floods and cyclones.

Global energy demand is likely to continue grow steadily at least for the next decades. In a business as usual scenario, global primary energy demand is expected to increase by 50% between now and 2030; over 70% of this increase comes from developing countries, led by China and India. The analysis highlights some important results. Climate change will result in significant economic losses for India across sectors. Production losses in rice, wheat and maize alone could go up to 208 Billion US\$ and 366 Billion US\$ in 2050 and 2100 respectively (all prices are in 2010 US\$). Additional power generation could require incremental capital investment of 33 Billion US\$ and 123 Billion US\$ in 2050 and 2100 respectively for meeting higher cooling energy needs of India. For India, as well as for the mid-point - Loss in rice maize, wheat production (impact sensitivity) per 1 degree Celsius increase = 4% - 20%,32% - 50% , = 5% - 20% in production . It should be noted that these estimates include not just impacts due to higher temperatures, but also impacts of higher carbon dioxide concentrations in the atmosphere. Now, government need to basic climate change policy in India.

The Impact of Climate Change in Growth Rate In India

Global average yields for the four most-traded food crops (maize, rice, wheat, and soybeans) are stagnating or diminishing on 24%–39%. According to FAO, The world projected population (9.3billion)and socioeconomic growth will double current food demand by 2050 and as well as to meet this challenge, cereal yields need to increase by 40%, net irrigation water requirements by 40-50%, and 100-200 million ha of additional land may be needed wealthier, and more urban population. To discuss the impacts of climate change on the growth rate total foodgrain production in India, chart no 2 in below.

Chart No. 2



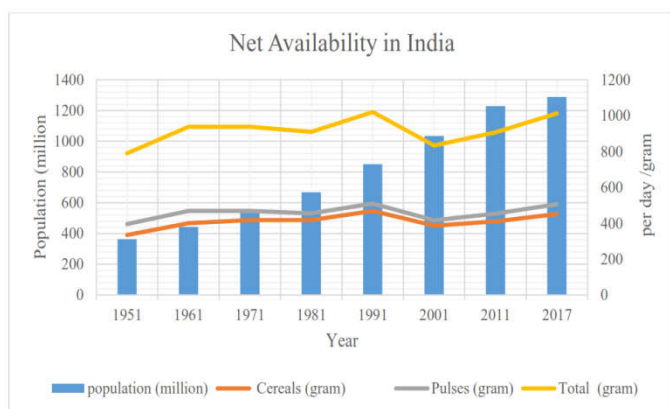
Source: www.rbi.org.in

The above chart show that negative impact of climatic change on the growth rate, except for a few years, there is a decline in all crops growth rate in the India.

The Impact of Climate Change on Net Availability in India

Today is very dangers situation because, the direct and indirect negative impact of climate change on net availability in India show that chart no 3.

Chart No. 3



Source: Economic Survey, GOI, New Delhi.

The above chart show that increase population growth rate and constant or low growth in cereals and pulses per day per gram during period 1951 to 2017 in India, Because, climate change negative impact on agricultural production. so urgent need to climate change policy in India.

CONCLUSIONS

In recent year Climate-change has adversely affected food security in the world because, today many people in the world are suffering from hunger, decreased crop productivity and increased demand of food, that is the main concern for the policy maker. India is one of the most vulnerable nations to climate change, because, in recent years food production has decreased rapidly. There have been major improvements in India's response to climate change availability, accessibility, stability, and utilization. However considerable adaptation deficit exists even under the current climate. With greater understanding of India's risk and vulnerability to climate change it is important to accelerate its efforts further. In doing so, the government of India needs to take into consideration the real costs of adaptive measures, the existence of appropriate institutions, availability of resources and access to technology and most important is the attitude of people towards climate change.

How to cite this article:

Gajanan Dhannu Rathod (2018) 'The impact of Climate Change on Food Security in India', *International Journal of Current Advanced Research*, 07(3), pp. 10698-10700. DOI: <http://dx.doi.org/10.24327/ijcar.2018.10700.1825>

Recommendations

- Improvement and changes in the basic climate and food policy in India.
- Increase of climate and agricultural expenditure in India.
- Effective regulations and control of climatic policy in India.

References

- GOI, (2018), "Economic Survey 2017-18 and 2011-12" Published by Ministry of Finance, GOI, New Delhi.
- FAO, (2017), "The State Of Food Security, Nutrition in the world," published by Food and Agricultural Organization, Rome Italy.
- WBG, (2016), "Climate Change Action Plan 2016-2020" Published by World Bank, Washington DC, USA.
- USDA, (2015), "Climate Change, Global Food Security, and the U.S. Food System" Published by U.S. Department of Agriculture, De, 2015, USA.
- FAO, (2015), "World Agriculture Towards 2050/2030 Survey Report," published by Food and Agricultural Organization, Rome Italy
- Chaturvedi Vaibhav, (2015), "The Costs Of climate Change Impacts for India," Published by EEW March 2015 New Delhi, India.
- S. Mahendra Dev (2011) Climate Change, Rural Livelihoods and Agriculture (focus on Food Security) in Asia-Pacific Region, Published by Indira Gandhi Institute of Development Research, Mumbai August 2011.
- <http://www.dailypioneer.com/columnists/oped/climate-change-and-food-security.html>
- https://ec.europa.eu/research/scar/pdf/scar_2nd-foresight_2009.pdf
- <http://www.fao.org/docrep/013/a1936e/a1936e00.pdf>
- https://en.wikipedia.org/wiki/Food_security
- <https://www.ipcc.ch>
- <https://unfccc.int/resource/docs/publications/impacts.pdf>
- www.rbi.org.in
