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Policy Report

Climate Change & Food Policies in the age of Social Media

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About the Organisation:

LexQuest Foundation (LQF) is an independent, non-profit, research and action organisation, established in 2014, in New Delhi. We are striving to create, advocate and implement effective solutions for a diverse range of development issues.

To endorse participative governance, we engage with a broad spectrum of stakeholders, from various sections of the society, to ensure that policy-making remains a democratic process. We utilize pragmatic and futuristic research to disseminate actionable knowledge to decision-makers, experts and the general public.

Our key activities include capacity and skill-building workshops, policy advisory programs, public outreach, and stakeholder consultations. We collaborate with the government, other organizations and individuals for impactful policy formulation and execution.

By employing sustainable and equitable solutions through our multidisciplinary, intersectional initiatives and programs, we are constantly working towards creating empowered communities.



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Background

Increasing food productivity has always been considered the potential opportunity to meet the future **challenge of food, fiber and nutrition, as feeding the mouths of people has been a constant challenge for independent India**. Majority of our population's livelihood depends on rain fed agriculture where approximately 70% of cultivated land is dependent on the system of dry land farming. Under such circumstances, the impact of climate change on the future of our food policies has yet not been factored in. Drought and deforestation may increase the danger of fire, resulting in the loss of the vegetative cover needed for grazing and furrow. **Constraints on water availability is a growing concern, a problem which will be worsened due to climate change**. In India, we witness several inter and intra state cases of water dispute and because of climate change, the scarcity of water will only be magnified. All these factors will create and accentuate the problem of food availability. In view of the **increasing population, shrinking land and water resources and the advent of climate change, the only way to achieve this goal in a sustainable manner is through the scientific and need based integrated nutrient management**.

India's food policies have attained substantial goals over the past six decades. According to a Food and Agriculture Organization report, in 2015 the number of undernourished individuals in India decreased from 210 million in 1990–1992 to 194.6 million in 2019. However, there is widespread consensus among scholars, practitioners and policymakers that improvements in nutritional status have not kept pace with the country's impressive success in spurring economic growth in the past few decades. Indeed, the same report stated, 'Higher economic growth has not been fully translated into higher food consumption, let alone better diets overall, suggesting that the poor and hungry may have failed to benefit much from overall growth'.

Currently India's food policy has five aspects-

1. Measures to increase output of food grain,
2. Measures concerning Distribution of food grains,
3. Procurement of food grains and regularization of public distribution,
4. Procurement from wholesales,
5. Import of food grains

As much as the food policy gets affected by poor planning, lack of understanding and food politics, the **complex relationship between climate change and food is a driving factor which needs to be examined because our food policies thus far, have**



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not addressed this concern even at the preliminary level. Climate change affects food security in broadly three dimensions – availability, access and absorption.



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Status of Food Production & Availability

Impact of climate change on water availability severely impacts the amount of food produced. The groundwater is depleting largely in the northern parts of India, which has been the main source of irrigation in these parts. The **decline in precipitation and increased occurrences of droughts in India has led to the drying up of wetlands and severe degradation** of ecosystems. Fast paced urbanization is also contaminating the groundwater. Punjab and Haryana, which are the bulk producers of the country's wheat and rice, are extremely water-stressed. In fact, the Intergovernmental Panel on Climate Change (IPCC) report of 2007 says that a **0.5°C rise in winter temperature is likely to reduce wheat yield by 0.45 tonnes per hectare in India**. Changes in climate pattern, with the shortening of monsoon periods further adds to the problem of production as 65% of India's cropped area is rain-fed. Moreover, the two crops central to nutrition in India, have been found to be particularly sensitive to climate change. The **persistent problem of acute water shortage along with thermal stress will severely affect the food production**, therefore the shift to better techniques and ways of food production is necessary.

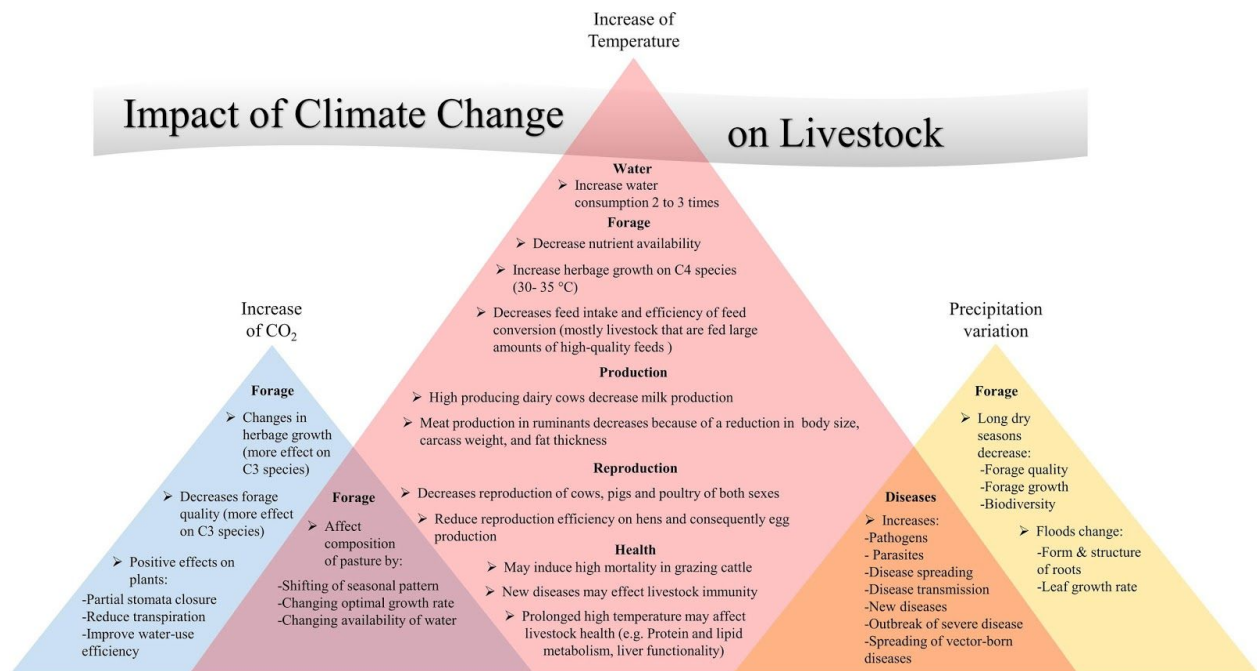
While the food production has increased manifold due to the success of Green Revolution along with technological innovations and land reforms, improvements in fertilizer and irrigation policies make it possible for the farmers to continue even amidst the challenges of low profits and debts. Climate change could however, turn our agricultural strides upside down, hence **focus needs to shift on ways to maintain our production standards and align our farming practices to suit the ever changing climatic conditions**.

Supporting landless labourers and poor farmers to take up livestock as a means of sustenance has also been a part of India's agricultural strategies for some time now. Demand for livestock products has increased substantially due to improvement in the standards of living. However, it is the smallholder livestock keepers, fisherfolks and pastoralists that are the most vulnerable to climate change. **Climate change impacts livestock directly through heat stress, increased morbidity and mortality, whereas the indirect effects of climate change are evident through the quality and availability of feed and forages along with frequent animal diseases**. At the same time, the **livestock sector contributes significantly to climate change**. In fact, according to an FAO report 2018, 14.5 percent of all human-caused greenhouse gas (GHG) emissions come from livestock supply chains i.e. consuming more meat contributes to GHG emissions.



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The treatment of animals in the dairy, meat and honey producing industries is inhuman. Animals are being crammed by the thousands into filthy, windowless sheds and stuffed into wire cages, metal crates, and other torturous devices. The factory farming industry strives to maximize output while minimizing costs. Antibiotics are used to make animals grow faster and to keep them alive in unsanitary conditions. Research shows that widespread use of antibiotics can lead to antibiotic-resistant bacteria that threaten human health. Most of these animals have been genetically manipulated to grow larger or to produce more milk or eggs than natural. Some chickens grow so unnaturally large that their legs cannot support their outsized bodies, and they suffer from starvation or dehydration. On a humanitarian level, these animals will never raise their families, root around in the soil, build nests, or do anything that is natural and important to them. Most won't even feel the warmth of the sun on their backs or breathe fresh air until the day they're loaded onto trucks headed for slaughterhouses.



In a report by Stanford researchers, **it is noted that in developing countries, such as India, large-scale industrial production of livestock has displaced many small, rural producers, who are under additional pressure from health authorities to meet the food safety standards that a globalized marketplace requires.** According to the report, too much animal-based protein is not good for human diets as it leads to heart diseases and other chronic conditions, while too little is a problem for those on



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a protein-starved diet, as happens in many developing countries. Human health also is affected by pathogens and harmful substances transmitted by livestock. **Emerging diseases, such as highly pathogenic avian influenza, are closely linked to changes in livestock production.**

In a symposium held at Stanford University, researchers including Harold A. Mooney, Professor of Biological Sciences at Stanford claimed that **there are tremendous environmental problems with the operations of livestock agriculture, from land degradation and air and water pollution to loss of biodiversity, and that the developing world is especially vulnerable to the effects of these operations.** The beef, pork and poultry industries **emit large amounts of carbon dioxide, methane and other greenhouse gases.** As per the report, because **only a third of the nutrients fed to animals are absorbed, animal waste is a leading factor in the pollution of land and water resources in countries like India.** Henning Steinfeld, co-editor of the report, added that much of the **world's pastureland has been degraded by grazing or feed production, and that many forests have been clear-cut to make way for additional farmland.** Feed production has also increased the intensive use of water, fertilizer, pesticides and fossil fuels.



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Access to Food & Prospects of Food Security

Noted experts like Nira Ramachandran have already highlighted the importance of factoring climate change in the discourse about food security and nutrition. She warns that **climate change can slow down, and even drastically reduce, the improvements in food security and nutrition that India has managed to achieve so far**. This will definitely reduce the access of good quality food as production of food grains is concentrated in one place rather than being scattered throughout the country. Transportation cost and interstate taxes will add to the problem of food security which may eventually lead to an additional burden on the economy.

Climate change is bound to amplify the economic drivers of food security. Variation in the length of the crop growing season and higher frequency of extreme events due to climate change and the **consequent reduction of output adversely affects the farmer's net income, which demotivates them to continue the agricultural practices**. Landless agricultural labourers wholly dependent on agricultural wages are at the highest risk of losing their access to food. **People depending on**

	Rice	Wheat	Coarse Cereals	Pulses	Total Foodgrains
1980-81 to 1990-91	2.7	3.4	2.6	2.0	3.0
1990-91 to 2000-01	0.9	1.7	1.3	-0.6	1.7
2000-01 to 2010-11	1.6	1.0	4.1	2.4	1.7
2010-11 to 2014-15	1.6	-1.0	3.1	1.9	1.8

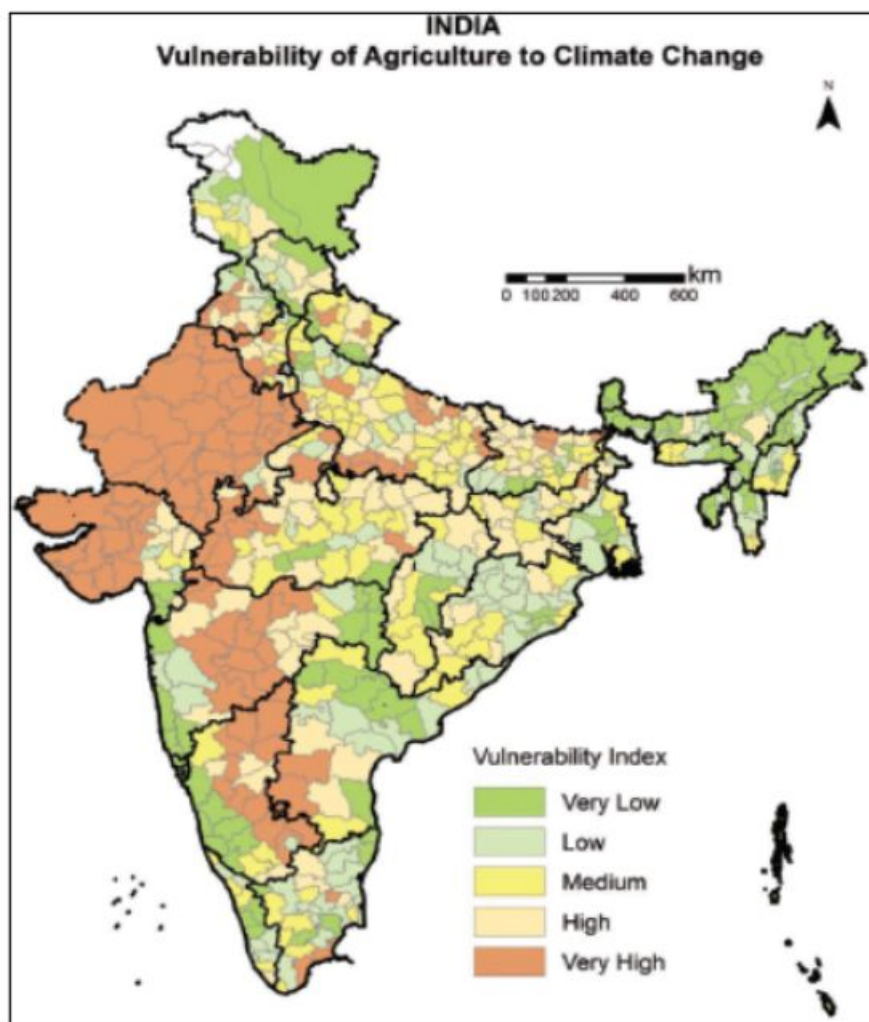
Source: [Reserve Bank of India database](#)

climate-sensitive livelihoods and poor or marginalized groups, with limited access to resources and information sharing are also likely to be affected by climate change.



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Food insecurity is not only a rural issue as poor households will typically migrate to urban regions in search of livelihood options thus forming urban slums, as is evident in the mega cities of Mumbai and Delhi. These migrants mostly join the ranks of poorly paid workers in the urban informal sector, where there is no security of tenure and wages fall far below the legal minimum. India's urban food insecurity indicators present an alarming picture as seen in the table.



Given that **food is the single largest expenditure for poor urban households, displacement, loss of livelihood or damage to productive assets due to any such extreme weather events will have a direct impact on household food security. The urban poor has also been identified as the group most vulnerable to increases in**



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food prices following production shocks and declines that are projected under future climate change.

One of the most important achievements for food accessibility came in the form of National Food Security Act, 2013 (NFSA) which converted many existing food security programmes such as Targeted Public Distribution System (TPDS) into legal entitlements for recipients. It **entitles up to 75 % of the rural population and up to 50 % of the urban population** (thus covering two-thirds of the currently estimated population of 1.25 billion) to 5 kilograms (kg) of rice, wheat, or coarse cereals per person per month at a subsidized price of 1–3 Rupees per kg.

The Act also highlights the importance of breastfeeding of children below six months while for children between 6 months and 6 years, it provides for a free age-appropriate hot-cooked meal. And for children aged 6–14 years, the Act provides for one free mid-day meal every day (except on school holidays) in all government and government-aided schools up to the eighth grade. The Act also introduced a conditional cash transfer model by providing that households were entitled to receive food security allowance (or cash transfers) in situations when 'the entitled quantities of food grains or meals to entitled persons' are not available. **The big question here is whether this kind of model is a sustainable option given the recent studies about climate change and food production hints towards a global food shortage.**



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Analysis of Nutrients & Food Absorption

The global threat in general sense is that climate change could lead to a **reduction and consumption of certain foods that play a critical role in the diets of indigenous populations such as fish, fruits and vegetables**. Changes in climatic conditions could also lead to a **reduction in nutritional quality of foods (reduced concentration in proteins and minerals like zinc and iron) due to elevated carbon dioxide levels**. In India, where legumes (pulses) is one of the main sources of proteins, such **changes in the quality of food crops will accelerate the largely neglected epidemic known as “hidden hunger” or micronutrient deficiency**.

Such deficiency of micro-nutrients, especially in the growing years of children in both rural and urban areas put them in danger of inhibiting diseases such as diarrhea. Projections made by Moors E, Associate Editor, Environmental Science & Policy, VU University, Amsterdam along with many others in 2013 say that **climate change will lead to an average increase of about 13.1 percent in diarrhoea in the Ganga basin because of deteriorating water quality**. Ramachandran also argued back in 2014 that **climate change could lead to a reversal of India’s achievements in reducing diarrhoea-related deaths**.

Furthermore, research by the Centers for Disease Control & Prevention, USA, in 2013 concluded that the entire population of India, except those living in areas above 1700 m above sea level, are at risk of contracting malaria. Arboviral diseases chikungunya and dengue may also be influenced by climate change and pose a danger to public health. This **leads to the emergence of new patterns of pests and diseases which will affect human health and ultimately lower the capacity to utilize food effectively, thereby posing new risks to food security**. The urban poor living in informal settlements are particularly vulnerable because of the absence of piped water, sanitation, clean drinking water, drainage systems, and health facilities. **Low levels of nutrition expose them to climate related diseases which aggravates undernutrition and ill-health and prohibits developing resilience towards climate change**.

Some critics have also questioned whether the quantity of cereals as provided for in the NFSA is adequate given that distribution under NFSA is already under scanner because of lack of storage facilities and difficulties of transporting food across large parts of the country. The Right to Food Campaign, 2012 also argued that **NFSA fails to address the ‘nutritional security’ among individuals added with the fact that TPDS only caters to 75% of the total estimated population. While the beneficiaries**



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can only receive rice, wheat and coarse cereals under the provisions of the Act, experts argue that pulses rather than cereals should be provided for better nutrition. Others argue that food alone does not solve the problem of underweight children, which needs a multidimensional thrust in health, hygiene, quality of water as well as cultural practices related to accessing adequate food that typically discriminate against women.

The impacts of climate change threaten our health by affecting the food we eat, the water we drink, the air we breathe, and the weather we experience. Higher concentrations of carbon dioxide in the air can act as a "fertilizer" for some plants, but **lowers the levels of protein and essential minerals in crops such as wheat, rice, and potatoes, making these foods less nutritious.** Extreme events, such as flooding and drought, also create challenges for food distribution if roads and waterways are damaged or made inaccessible.



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Food Policies and Social Media

Empowerment of people, whatever it might mean in any particular context, becomes a crucial factor in advocating the impacts of climate change on food. Being able to adjust and change one's livelihood requires one to be able to access resources in ways appropriate to cultural values and societal constraints. Social networks on which individuals can rely in times of need or when putting forth effort to better one's own circumstances is a key aspect in achieving empowerment. **Understanding the importance of social networks to empowerment is crucial to developing effective interventions in climate change.**

With the advent of social media, constant flow of knowledge related to all aspects of life is the prevalent reality of our times. People's mindset has shifted to value the end product more than the process of it. This leads to them believing unverified facts and implausible opinions about food which tends to **build a lifestyle dependent on diverse kinds of balanced or imbalanced diets.**

Several theories have been formulated to bring out the relation between eating habits and the impact of social media. One amongst these is the theory of Social Learning, which states that people are influenced both consciously and subconsciously. For instance: When people see a photo of a food item with many likes, it automatically influences them into believing that eating that particular food, can win them admirers and followers. The behavior of other people is another important external behavioral cue, as people automatically mimic others' eating behaviors and food choices without even realizing that they are doing so.

Another theory called the Priming Theory recognizes that when it comes to food, the influence of social media, works subconsciously though in a straightforward manner. It states that **children and adults feel tempted to eat whatever they get to see frequently on social media platforms.** The more they see it, the more they change their food choices and consume a greater amount of healthy or unhealthy food, whichever happens to catch their eye through social media.

Yet another theory is closely related to attention which works differently for different people. Attentional function is the behavioral and cognitive process of selectively concentrating on a discrete aspect of an information, while ignoring other aspects of the same information. A study conducted by the University of Pittsburgh School of Medicine found that people who spend more time on social media each day, were 2.2 times more likely to report that they had issues with body image and eating. **Due to a lot of information available on the internet about the nutrition of food, people**



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tend to form different opinions which leads to different habits of food consumption. These habits may or may not lead to healthier diets or sustainable lifestyles.

Another significant theory is a reward-based psychology where people tend to anticipate reward out of food intake. An evident example of this is the habit of binge eating among people who consume large amounts of junk food without giving any thought to food's nutritional value. **Social media plays a crucial role here by endorsing unhealthy food choices which consist of mass produced and cheaply available junk food items rather than food with actual nutritional significance.** These items make people anticipate some sort of reward in exchange for consuming them.

Eating has, throughout history, been seen as a social activity. But, the rise of single households and long working hours has led to more and more people eating alone. In the era of social media, the youth of the country is being largely influenced by social media. On one hand, being healthy and fit has become a popular lifestyle choice in our society, as fitness nowadays has connotations attached to people's social status.

On the other hand, promoting food on social media regardless of its nutritional capacity is also seen as a business opportunity by some. Latest research by New University of Liverpool shows celebrity endorsement and advertising of unhealthy foods increases the intake of these foods. These are the **foods which provide huge economic benefits to the sellers therefore large chunks of money are spent to advertise them on social media** sites. Also, when companies use social media influencers to promote their products, ads are disguised as though they're a post from a friend, and people are less able to guard themselves against it.

Food promotion of social media has other varying implications as well. With the **consumers becoming conscious about the looks of their food**, it makes an impact on how cafes and restaurants serve the food. Taco Bell's chief innovation officer Liz Matthews said in an interview that, when considering a new menu item, the food development team now considers how the item will look in photos. In fact, the **manufacturers also put in effort into establishing social media aesthetics of their products leading to fancy packing and compromising on food quality which hinders the country's agricultural policies. For eg- promoting food on social media attracts large numbers of buyers, leading to lower prices and relatively higher consumption.** This in turn **makes foods high in nutrition, relatively expensive. Social media also leads to convergence of diets all over the world which makes up for rapid food**



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transitions and complex food chains. This makes it difficult to establish an understanding of eating patterns which is essential to develop sustainable agricultural policies. As a result, **some food choices advocated on social media might be directly in conflict with the country's food policies and hence irrespective of the scope of their sustainability, they are unaffordable or unsustainable.**

Fundamental **changes in the food quality often leads to disproportionate market prices leaving good quality food only for the privileged few.** For eg - Advocating organic food choices on social media encourages people to consume organic food. But the **production is not at par with demand and organic food is more expensive than conventional food because of greater labour inputs per unit of output and because greater diversity of enterprises means economies of scale cannot be achieved.** As per FAO, **marketing and the distribution chain for organic products is relatively inefficient and costs are higher because of relatively small volumes.** Changes in food preferences like these, which is **an outcome of the influence of social media, puts additional strain on the economy and emphasizes the need for policy shift in the agriculture sector.**

Another example is veganism, which as a food choice is steadily becoming popular on social media. Researchers at the University of Oxford found that **cutting meat and dairy products from one's diet could reduce an individual's carbon footprint from food by up to 73 per cent.** Animal husbandry is also considered to be the largest contributing factor in habitat loss and extinction of animals as industries swamp large mass of areas to set up breeding farmlands. Therefore giving up on animal products also leads to a positive environmental impact. The many vegan benefits can also lead to improved health and better functioning on a molecular level. According to Harvard T.H. Chan School of Public Health nutrition expert Walter Willett, **a plant-based diet is the optimal diet for living a long and healthy life.**

However, **India's current food policies promote dairy as a food and agricultural choice which is considered healthy and economically more viable.** It is notable that with our current agricultural policies, **plant based food products (cereals, pulses, fruits & vegetables etc.) are more expensive than animal based food products (milk, cheese, butter, eggs & meat etc.) which are way more affordable and hence a more accessible source of nutrients for most of our population.** As a result, there is a **conflict of interest between the social media's influence on resorting to non dairy substitutes as opposed to the government policies that promote dairy products,** in a country like India with our **current food policies which are yet to take into account**



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the impact of animal farming on greenhouse gas emissions and sustainable alternatives in the light of climate change.



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Concluding Remarks

India has many reasons to be worried about climate change because a majority of the people depend on climate sensitive sectors i.e. agriculture, forestry, livestock, and fishing for livelihood. If not addressed in time, the existing problem of food security in our country will become more severe due to change in the climate. The changing temperatures, rainfall patterns and increasing carbon dioxide level will definitely have significant effects on agriculture and thus on food security of India. In the likely event of enhanced adverse impacts of climate change on agriculture in developing countries like India, where poverty is also concentrated, **mitigation and adaptation strategies would demand far greater research and development effort, and financial, institutional and policy support.**

If the current policies of India are to be critically examined, the **response aims to focus on short-term and ad-hoc goals rather than long term sustainable solutions.** Current social protection programmes are deemed expensive in nature and are based on a narrow understanding of people's need. An important factor in the adaptation process is to measure the concrete effects of climate change on food production and agriculture. A deep understanding of how these effects play out on different aspects of food policy is what is essential for the country to avoid a national level food crisis.

As apparent as the problem of social media is, there is some good in the pool of bad. While the 'foodies' are rushing the Instagram with 'tasty treats' and 'cheat day' posts there are well known and established nutritionists, dieticians chefs and wellness brands who are using the social media platform to share tips, tricks and give advice on healthy eating, nutrition and other topics. In addition to receiving dietary advice, social media also brings in **diverse cultural cuisines which could be a suitable addition to our diets and may also serve as sustainable alternatives for our diet and may prove beneficial to restructure our food policies** for incorporating sustainable changes.



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