**Climate change and food security**

Submission made to the Office of the United Nations High Commissioner for Human Rights

By Centre for Child and the Law, National Law School of India University (NLSIU)

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**1. Please describe through concrete examples and stories how climate change is affecting the full realisation of the right to adequate food in your country.**

The Global Food Policy Report 2022 has warned that climate change has the capacity to push Indians towards hunger by 2030 because of a decline in agricultural production and disruption in the food-supply chain.[[1]](#footnote-1)Climate change has impacted India’s food security on three fronts:- food availability, access to food and food absorption.[[2]](#footnote-2) Ensuring food security in the face of climate change will require the adoption of sustainable agricultural practices, greater emphasis on urban food security and public health, provision of livelihood security, and long-term relief measures for natural disasters.[[3]](#footnote-3) The full impact of climate change depends not only on the extent of the climatic shock but also the underlying vulnerabilities.[[4]](#footnote-4)

Over the years, research[[5]](#footnote-5) has indicated that the balancing impact of carbon fertilisation can negate the negative effects of global warming on agricultural output in India and that rising carbon dioxide levels can boost crop yields.[[6]](#footnote-6) Another study from the state of Karnataka[[7]](#footnote-7) has shown how extreme temperatures can majorly affect crop yield/ productivity.[[8]](#footnote-8) In 2019, The Ministry of Agriculture of India reported that climate change will have adverse effects on the production of food grains, vegetables, milk[[9]](#footnote-9) and the price of wheat could rise by almost 23%.[[10]](#footnote-10) Again in May 2022, on a particular day, the mercury level in several states of north India touched 49 degrees and the damage caused to agriculture and food security by the heat wave was multi-dimensional. It damaged the wheat crop, and affected the food supply, prompting a phenomenal rise in the price of wheat products.[[11]](#footnote-11) Rainfed agriculture in the drought prone regions on the country has particularly affected crop production owing to the shifting rain patterns in an already rain deficit region. Rural communities in these are constantly at the brink of becoming food insecure. This has particularly affected women and girls who are primarily responsible for water fetching for the household.

**2. Please share a summary of any relevant data that captures how climate change adversely affects the full realization of the right to food, taking into account discrimination, including multiple and intersecting forms of discrimination.**

**Inventiva** published an [article](https://www.inventiva.co.in/trends/impact-climate-change-indias-food/) that reported on the [2022 Global Food Policy Report](https://www.ifpri.org/publication/2022-global-food-policy-report-climate-change-and-food-systems) that found climate change may force many Indians into famine by 2030 owing to a reduction in agricultural productivity and disruption in the food supply chain. In a primarily agricultural nation like India, the impact is significantly greater, causing ripple effects across the whole food supply chain[[12]](#footnote-12). There have been reported instances of discrimination in the realisation of the right to food for the dalit communities of India because of caste prejudice.[[13]](#footnote-13) In 2014, a study was done to understand the impact of climate change on the lives of dalit communities which included its affect on their agricultural needs and practices.[[14]](#footnote-14) Case studies were conducted in several states including Assam which documented the impact of climate change induced flooding on agriculture and food security.[[15]](#footnote-15)

In 2016, there were reported cases in the Indian state of Maharashtra of men taking more than one wife so as to ensure there are enough people to carry drinking water to the villages which are severely affected by climate change.[[16]](#footnote-16) In 2019, when cyclone Fani hit the poverty stricken state of Orissa, landless dalit farmers were badly hit and their efforts to get relief from the State were documented as bearing little to no fruit.[[17]](#footnote-17) Similar patterns were observed in the coastal areas of Tamil Nadu affected by cyclone Gaja.[[18]](#footnote-18)

In 2022, a study of the tea plantations in West Bengal[[19]](#footnote-19), found that in the last few years, the excessive use of fertilisers in the production of tea (a need that arose due to climate and ecological deterioration) had severely affected female tea workers, because they constitute the cheaper source of labour in tea gardens.[[20]](#footnote-20)Women form the majority of the agricultural workforce in rural India, a field which is especially vulnerable to climate change.[[21]](#footnote-21)

**3. Please describe any specific measure, including public policies, legislation, practices or strategies that your Government has undertaken, in compliance with applicable international human rights law, to promote an approach to climate change mitigation and adaptation, as well as loss and damage, that ensures the full and effective enjoyment of the right to food. Please also note and identify any relevant mechanisms for ensuring accountability for these commitments including their means of implementation.**

In 2008, the Government of India launched the National Action Plan on Climate Change (NAPCC) which contained several missions including the National Mission for Sustainable Agriculture.[[22]](#footnote-22) The major thrust of the National Mission for Sustainable Agriculture (NMSA) is on enhancing agriculture productivity especially in rainfed areas focusing on integrated farming, soil health management, and synergizing resource conservation.[[23]](#footnote-23) NMSA as a programmatic intervention caters to Mission Deliverables that focuses mainly on conservation agriculture to make the farm sector more productive, sustainable, remunerative and climate resilient by promoting location specific integrated/composite farming systems; soil and moisture conservation measures; comprehensive soil health management and mainstreaming rainfed technologies.[[24]](#footnote-24)

The NMSA has been made operational from the year 2014-15, it aims at making agriculture more productive, sustainable, remunerative and climate resilient by promoting location specific integrated /composite farming systems; soil and moisture conservation measures; comprehensive soil health management; efficient water management practices and mainstreaming rain-fed technologies.[[25]](#footnote-25)The <https://nmsa.dac.gov.in/Default.aspx> provides latest data and mechanisms for implementing the NMSA.

National Food security Act 2013 is the federal legislation that aims at ensuring availability of food to everyone, although there have been many challenges in its implementation, inclu

**4. Please describe any mechanisms and tools that are in place to measure and monitor the impacts of climate change on the full realisation of the right to food.**

As mentioned above, the government launched the National Action Plan on Climate Change in 2008 which contains multiple missions, some of which are related to food security and its realisation, for instance, the National Mission for Sustainable Agriculture, National Water Mission and National Mission for a Green India.[[26]](#footnote-26) Since this is not a legislative requirement and only a policy one, different state governments have responded differently to this policy.

For instance in the State of Bihar, the technology of climate resilient agriculture (CRA) (also referred to as ‘climate smart agriculture’) has gained a lot of traction recently. The state’s government is fully funding CRA and sanctioned ₹299.13 crore for it for five years.[[27]](#footnote-27) It is also reported that The CRA has led to a significant rise in farmers’ income in the state with the reduction in the cost of cultivation and an increase in productivity and it has been shown that the cropping system productivity ranges from 97.31 to 137.62 q/ha, whereas the average cropping system productivity is only about 55 quintals per hectares.[[28]](#footnote-28)

In the state of Andhra Pradesh and Telangana, the Ministry of Rural Development (MoRD) has made efforts to protect farmers from the vagaries of climate change - schemes such as the Pradhan Mantri Fasal Yojana, easy farm credit etc have been reported to be implemented in the states and community resource persons under the National Rural Livelihood Mission are spread across vulnerable areas to help the existing agricultural machinery adapt to climate change.[[29]](#footnote-29)

At the 26th CoP in 2021, India has committed to fivefold strategy to achieve net zero emissions by 2070.[[30]](#footnote-30) These include:- India will get its non-fossil energy capacity to 500 gigawatt (GW) by 2030, India will meet 50 per cent of its energy requirements from renewable energy by 2030, India will reduce the total projected carbon emissions by one billion tonnes from now onwards till 2030, By 2030, India will reduce the carbon intensity of its economy by less than 45 per cent.[[31]](#footnote-31) However, their implementation and impact on the right to food remains to be seen as they are relatively newer commitments.

In 2022, the National Adaptation Fund for Climate Change (NAFCC) was established to support adaptation activities in the States and Union Territories of India that are vulnerable to the adverse effects of climate change. NAFCC is implemented in project mode and till date, 30 projects are sanctioned in 27 States and UTs.[[32]](#footnote-32)The NAFCC projects implemented in the states of Kerala, Tamil Nadu and Andhra Pradesh include activities relating to coastal areas and these projects are- (i) Promotion of integrated farming system of Kaipad in coastal wetlands of North Kerala (ii) Management and rehabilitation of coastal habitats and biodiversity for climate Change Adaptation and Sustainable Livelihood in Gulf of Mannar, Tamil Nadu and (iii) Climate Resilient interventions in Dairy Sector in coastal and Arid areas in Andhra Pradesh.[[33]](#footnote-33)

**5. Please identify and share examples of promising practices and challenges in the promotion, protection, and fulfilment of the full realisation of the right to food in the context of the adverse effects of climate change.**

One promising practice in this context has been ‘breeding genotypes’ in some climate risk regions. For example, in the case of wheat, there has been a reported need to shift from generalised breeding to agronomy-directed breeding in wheat to keep the growth momentum of production, matching with the demand and maintaining the food security.[[34]](#footnote-34)Conservation Agriculture (CA) adapted genotypes evolved through systematic crossing and selection could probably act as fulcrum for the adoption of the whole package of CA based precision agriculture.[[35]](#footnote-35)By exploiting vernalization response/requirement, root traits, weed competitiveness and increased biomass in the selection of wheat genotypes can increase the wheat yield under CA.[[36]](#footnote-36)Some of the steps involved are Development of high yielding genotypes having tolerance to spot blotch, leaf rust and pre-harvest sprouting (PHS), evaluation of breeding material for major biotic and abiotic stress tolerance and quality traits using physiological, phyto-pathological, biochemical and molecular tools, sharing shuttle breeding material for multi-location evaluation for identifying stable genotypes and anticipatory breeding for tackling wheat blast.[[37]](#footnote-37)

The technologies of CA provide opportunities to reduce the cost of production, save water and nutrients, increase yields, increase crop diversification, improve efficient use of resources, and benefit the environment.[[38]](#footnote-38) However, there are still constraints for promotion of CA technologies, such as lack of appropriate seeders especially for small and medium scale farmers, competition of crop residues between CA use and livestock feeding, burning of crop residues, availability of skilled and scientific manpower and overcoming the bias or mindset about tillage.[[39]](#footnote-39)

Some other promising practices in India have been those of crop rotation and intercropping[[40]](#footnote-40), contour farming[[41]](#footnote-41), biodynamic farming[[42]](#footnote-42) etc[[43]](#footnote-43).

**6. Please include examples and promising practices and challenges that highlight international and multilateral cooperation and approaches that promote the full realisation of the right to food.**

One example is the Odisha Integrated Irrigation Project for Climate Resilient Agriculture which is a collaboration with the World Bank.[[44]](#footnote-44)The project aims to strengthen the resilience of smallholder farmers against adverse climate by improving access to resilient seed varieties and production technologies, diversifying towards more climate-resilient crops, and improving access to better water management and irrigation services.[[45]](#footnote-45)

Another instance is of community managed sustainable agriculture (CMSA) in the state of Andhra Pradesh, which is again a collaboration between the World Bank and the state government. In 2005-06, building on successful efforts by NGOs like the Centre for Sustainable Agriculture, the Society for Elimination of Rural Poverty began supporting a program of non-pesticide agricultural management on just 162 hectares benefiting 350 farmers.[[46]](#footnote-46) Encouraging results led to a scale up of community managed sustainable agriculture with seed networks, soil management practices and ultimately conservation furrows, trenches and farm ponds to increase water for crops.[[47]](#footnote-47) Together with intercropping, multi-cropping, improved planting techniques, and increased on-farm water capture, non-pesticide management makes CMSA farms more resilient to climate shocks.[[48]](#footnote-48) As per the World Bank, CMSA farmers are growing more food, and a wider variety of food both for themselves and for sale to local markets, with positive effects on nutrition and food security.[[49]](#footnote-49)

In 2021, an MoU was signed between the United Nations WFP and non profit ICRISAT to partner on climate-resilient food security, nutrition, and livelihoods in India.[[50]](#footnote-50) It was stated that a significant part of this partnership will be focused on vulnerability analysis at the state-level in India and will be directed towards evolving a sustainable food systems approach.[[51]](#footnote-51)

In 2022, Addressing the joint India-UK meet on “Sustaining Food Production under Environmental Stress”, the Union Minister of State (Independent Charge) Science & Technology called for collaboration between the two nations on issues of mutual concern like achieving the goals of food security and zero hunger.[[52]](#footnote-52)

**7. Please provide any additional information you believe would be useful to support climate action that promotes the full realisation of the right to food.**

Rainwater harvesting, revival of traditional agriculture techniques and indigenous crops has proved to be very effective in mitigating the impact of climate change on food security. Further investments are needed to be made for supporting the farmers to in indigenous and traditional agricultural technique and preserving local varieties of crops.

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3. Ibid. [↑](#footnote-ref-3)
4. Ibid. [↑](#footnote-ref-4)
5. <https://www.jstor.org/stable/24092097?refreqid=excelsior%3A23eabc0e418a2603a2b2fa645ec570ff&ab_segments=&origin=&acceptTC=1#metadata_info_tab_contents> [↑](#footnote-ref-5)
6. <https://www.orfonline.org/expert-speak/climate-change-poses-the-biggest-risk-to-food-security-in-india/> [↑](#footnote-ref-6)
7. <https://www.researchgate.net/publication/330440396_Extreme_Temperatures_and_Crop_Yields_in_Karnataka_India> [↑](#footnote-ref-7)
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9. <https://thewire.in/agriculture/climate-change-agricultural-decline>. [↑](#footnote-ref-9)
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20. <https://www.orfonline.org/expert-speak/climate-change-and-women/>. [↑](#footnote-ref-20)
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26. Supra n24. [↑](#footnote-ref-26)
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29. <http://mksp.gov.in/images/SLACC_training_manual_English.pdf> [↑](#footnote-ref-29)
30. <https://www.downtoearth.org.in/blog/climate-change/india-s-new-climate-targets-bold-ambitious-and-a-challenge-for-the-world-80022>. [↑](#footnote-ref-30)
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32. <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1795075#:~:text=The%20National%20Adaptation%20Fund%20for,in%2027%20States%20and%20UTs>. [↑](#footnote-ref-32)
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