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CLIMATE CHANGE AND AGRICULTURE

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CLIMATE CHANGE, AGRI-FOOD SYSTEMS AND HEALTH

Climate change is not only a major public health challenge for the world, but an existential crisis for humanity. Climate change directly and indirectly impacts our nutrition and health through many pathways including our agri food system, access to safe water, exposure to vector borne diseases and to extreme weather events. Malnutrition is one of the worst outcomes of climate change. NFHS 5 showed that the level of stunting among children under 5 years in India has marginally declined from 38 to 36% between 2015-16 and 2019-20. Stunting is higher among children in rural areas (37%) than urban areas (30%). The prevalence of anemia among all six population groups covered in the National Family Health Survey 5 was > 52%, except for men and adolescent boys where it was 25-30%. Further, both under nutrition and overweight and obesity occur within the same family, community and even in the same individual sometimes, with anemia being pervasive. All nutrition and health indicators are worse in the lower socioeconomic groups.

Lack of Access to Nutritious Food

The current contribution of food production to Green House Gas (GHG) emissions is 26% i.e., one-quarter of the world's GHG emissions of which 18% is contributed by supply chains, 31% Livestock and Fisheries, 27% Crop production and 24% Land Use.

While hunger is a global problem, exacerbated by the Covid pandemic, conflicts in different parts of the world and the climate crisis, lack of access to nutritious food is growing. According to the 2023 Lancet countdown report, around 127 million people in 122 countries were experiencing moderate to severe food insecurity due to frequent heatwaves and droughts in 2021 and this number is likely to grow.

Food insufficiency is one of the causes of malnutrition, however, nutritional deficiencies in food is also a contrib-

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utor, a large population around the world consumes low quality diet which leads to many macro and micro nutritional deficiencies. According to FAO, 74% Indians are not able to afford a healthy diet and this is true of many countries. Further, only 11% infants are getting adequate quantity and quality of complementary feeds in India. To address this complex problem, we need not only targeted nutritional interventions, but a holistic and multisectoral health centered approach. For the first time during COP28, health was brought into the center of international climate action.

Environmentally Responsible Food Production

Environmentally responsible and sustainable food production is needed. The current contribution of food production to Green House Gas (GHG) emissions is 26% i.e., one-quarter of the world's GHG emissions of which 18% is contributed by supply chains, 31% Livestock and Fisheries, 27% Crop production and 24% Land Use. Around 70% of water extracted from nature is for food systems and it causes around 60% of the biodiversity loss.

Climate change also increases some pest populations which causes increased pesticide usage and this in turn causes the pests to develop resistance. Apart from direct pesticide exposure of farmers, people living in the surroundings and those who eat the exposed food or drink contaminated water are also impacted. Exposure to pesticides for long periods has been associated with neurotoxicity, cancer, asthma, reproductive disorders, allergies and asthma, cardiac diseases, diabetes and even DNA damage leading to infertility in males. Nitrogen compounds in the pesticides have been reported to cause neurodegenerative disorders like Parkinson's disease.

The livestock industry uses antibiotics as feed additives to maintain animal health. Animal products such as meat, milk, eggs, fish and honey, etc., and crops produced using water contaminated due to inappropriate recycling processes which have antibiotic residues can predispose to anti-Microbial Resistance (AMR), a major public health threat. It is clear that increasing food production using current agricultural and industrial

Millets as Alternatives

Rice is the staple food in many Indian states and India is the largest exporter of rice. Approximately around 3,500 litres of water is needed to produce 1 Kilogram of rice and it accounts for 10% of global methane emissions. Whereas, millets such as Ragi, Sorghum, pearl millet require less than 30% of water required for rice cultivation. Therefore, millets were identified as climate smart nutri cereals under National Food Security Mission and the year 2018 was declared as National Year of Millets. Based on the proposal by Indian Government, United Nations declared 2023 as the International Year of Millets.

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processes will further contribute to the climate change burden. Sustainable agricultural practices and resilient food systems are the keys to reducing GHG emissions.

One Health Strategy

Climate smart, nutrition sensitive food production needs political will and multisector collaboration. FAO recommends a One Health strategy as part of the transformation of the agri-food system for the health of people, animals, plants, and the environment. The One Health concept emphasizes interactions between people, animals, plants, and the environment, recognizing the interconnectedness of human, animal, and ecological health. This can only be accomplished by incorporating a broad range of stakeholders and focusing on sustainable agriculture, animal, plant, forest, and aquaculture health, food safety, AMR, food security, nutrition, and livelihood security.

Under the umbrella of One Health, agro-biodiversity which includes crop and horticultural, microbial, animal and forest bio-diversities are well preserved. This is an important component of food security and also acts as a sustainable solution for climate change.

Reducing Emissions – A Collective

Effort

Therefore, a major shift in the behaviors to rebalance the food consumption to reduce emissions is the need of the hour. Changing the world's eating habits using diverse crops, sustainable agriculture and food practices, encouraging the consumption of regionally available crops (millets, legumes, and cereals), fish, and animals to build a low carbon society should be emphasized. Usage of biodegradable products, increasing greenery, rational usage of energy resources in order to preserve the biodiversity should be promoted. These collective efforts by all stakeholders contribute to reduce the ill effects of climate change and to build the health of the society.

Inclusion of Women

Finally, we have to remember that the impact of climate change is not gender neutral. The climate crisis disproportionately impacts women, who have responsibilities of securing food and water for their families and for caregiving in the household. The climate crisis is creating new threats to the health, livelihoods and human rights of women, worsening existing gender vulnerabilities. We need more women at the table – at national and international convenings - and empowerment of women in communities so that they can implement local solutions for adaptation and resilience. Tackling interdisciplinary challenges spanning nutrition, agriculture and food security, air pollution, water and sanitation and the health consequences of displaced populations need diverse and transformative leadership – both men and women!