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"Competing pathways for equitable food systems transformation: Trade-offs and synergies"

A healthy, inclusive and sustainable food system for India: Evaluating synergistic food system measures

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Abstract

India's food system witnessed a significant transformation with the implementation of the green revolution (GR) in the 1960s. However, in the post GR era, agriculture in India is left with increased social inequality, environmental degradation, unsustainable water uses for cereal production, and worsened nutritional outcomes. India, currently being the most populus country in the world, faces complex challenges of meeting the growing food needs of the people along with improving human health, environmental sustainability and achieving social equity. The present policy debate in India revolves around repurposing agriculture subsidies and reorganising safety net programmes toward more nutrition-sensitive, diversified, equitable, inclusive, and efficient agriculture systems. While India has separate policies on agriculture, food security, and nutrition, a coherent food system approach is needed to achieve these goals. Using a global food and land-use system modelling framework- the model for agricultural production and its impact on the environment (MAgPIE)- we attempt to evaluate the effects of 20 transformative food system measures (FSMs) discretely and in packages by 2050. We quantify the effect of these FSMs on 14 indicators representing the health, environment, inclusion, and economic dimensions. Our results indicate that in the absence of any FSMs current transitions show unsustainable trajectories. We find that concerted measures generate larger co-benefits than trade-offs as our food system development pathway (FSDP) scenario representing a package of all individual FSMs show improved performance on as many as 11 out of 14 indicators. Transformative measures in bundles like our FSDP scenario that entails shift towards healthy diets, reduced animal waste, improved agriculture and livestock management practices like nitrogen use efficiencies, land and water saving measures, biodiversity restoration, fair and competitive trading, higher minimum wages, better institutions, and governance can effectively help meet the nutritional requirement of the population, along with an improved environment and social well-being of people. Our study helps understand how collective food system measures help achieve food system transformation and identify their contribution towards the transition.

Keywords: Environment, food system, health, inclusion, policy measures, sustainable

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