An Assessment of Food System Measures for Healthy, Inclusive and Sustainable Transformations in India

Prantika Das[1], Vartika Singh[1,2,3], Chandan Jha[1], Ranjan Kumar Ghosh[1], Miodrag Stevanovic´[4], Hermann Lotze-Campen[2,4], Alexander Popp[4]

[1]Indian Institute of Management Ahmedabad (IIMA), Ahmedabad, India

[2]Department of Agricultural Economics, Humboldt-Universität zu Berlin, Berlin, Germany [3]International Food Policy Research Institute (IFPRI), New Delhi, India

[4]Potsdam Institute for Climate Impact Research (PIK), Member of the Leibniz Association, Potsdam, Germany

ANH2023 Agriculture, Nutrition and Health Academy Week

#ANH2023

Background

Sustainable food systems require integration of and alignment between recommendations for food and land use practices, and an understanding of the political economy context and identification of entry points for change.

The agrifood system of India currently faces multiple challenges like social inequality, environmental degradation, stressed land and water resources, and persistent widespread malnutrition.

The current policy focus is to reorganize agriculture policies including subsidies and safety net programs toward more nutrition-sensitive, diversified, equitable, inclusive, and efficient agriculture systems.

Objectives

Evaluate a holistic and integrated food system development pathway (FSDP) for India's transformation towards a healthy, nature positive and inclusive food system up to 2050.

We include 25 food system measures (FSMs) and evaluate their impacts on 15 food system indicators across four dimensions

Motivation - FSEC PILLARS

Four pillars of food system transformation (Gaupp et al., 2021)-

Health, Environment, Inclusion, and Economy

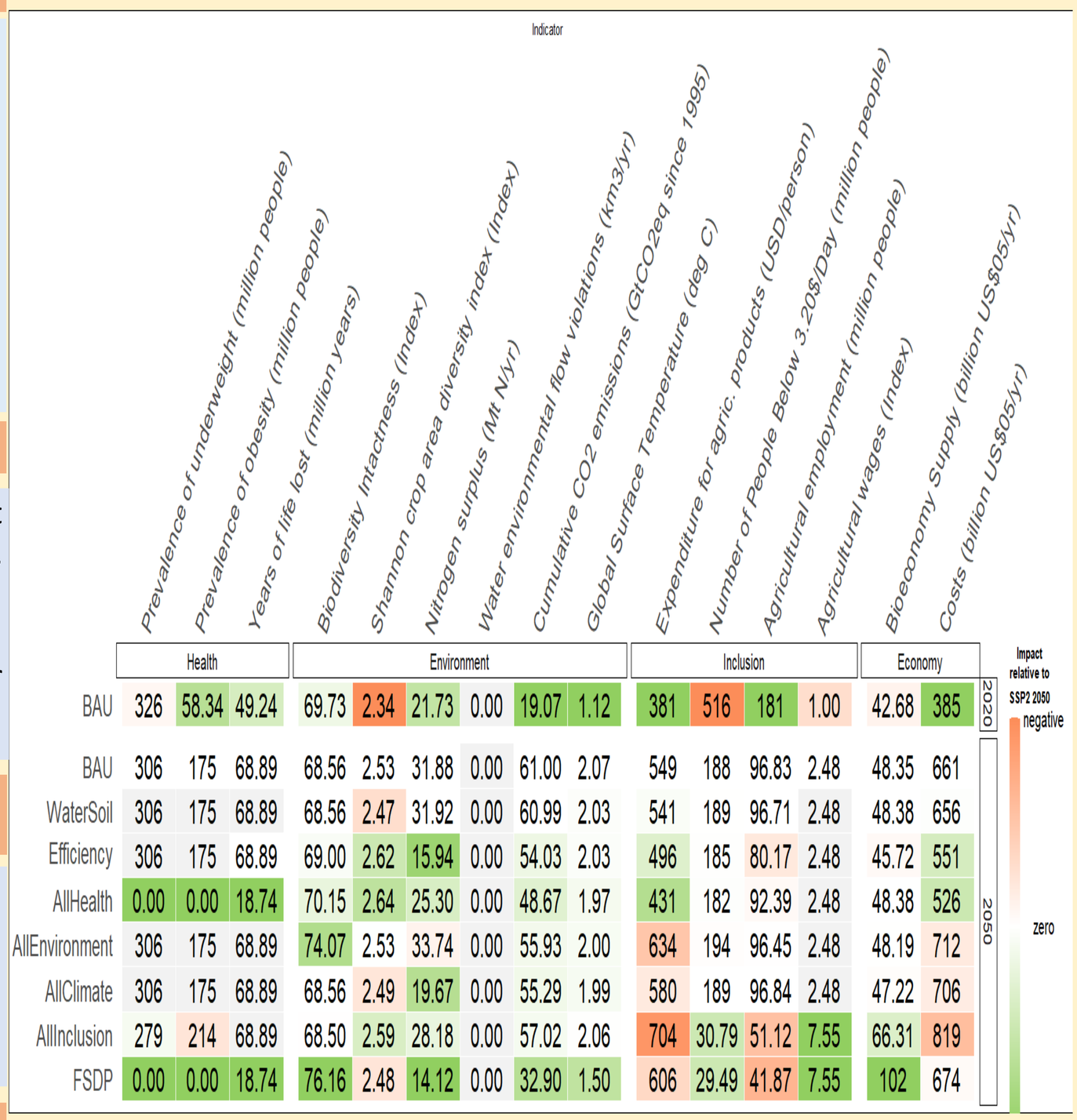
Together builds the Food system Development Pathway that aids in designing outcome-oriented policy bundles for transformations.

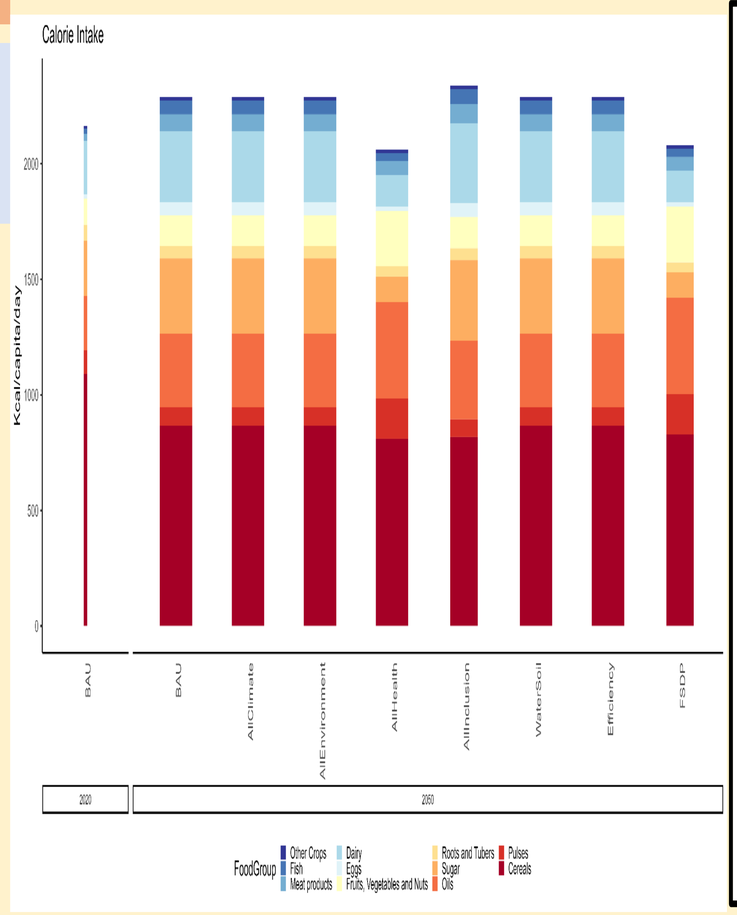
Methodology & Scenario Description

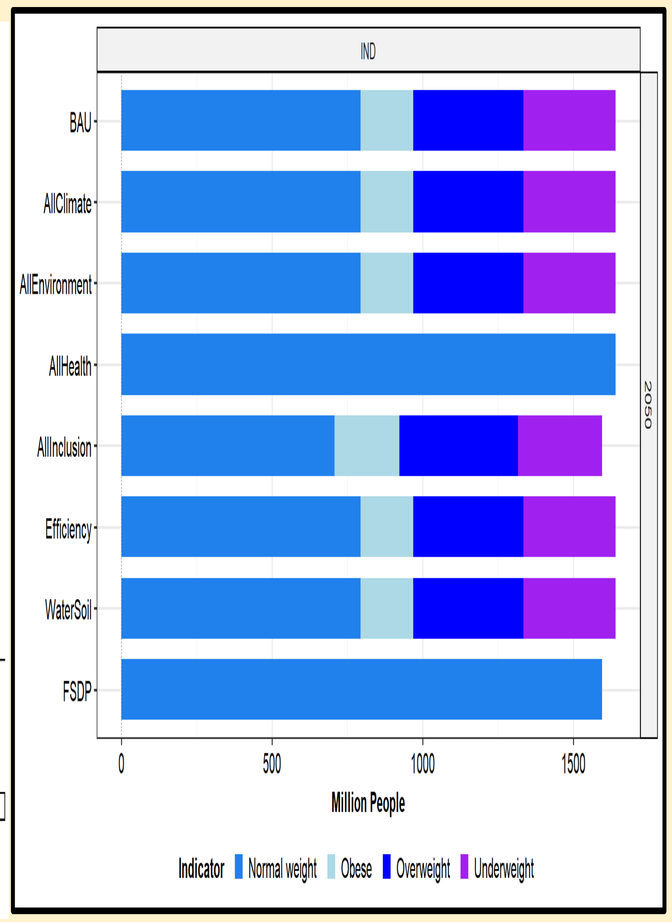
MAgPIE (Model of Agricultural Production and its Impact on the Environment) (Lotze-Campen et al. 2008; Popp et al. 2017; Dietrich et al. 2019).

BAU	No specific policy action implemented, parametrized under the SSP2 framework (middle-of-the-road)
All inclusion	policy measures seeking greater socio-economic parity by improved institutions, high minimum wages, liberal trade
All environment	Includes measures that prioritize biodiversity restoration (including reduced degradation and deforestation) and minimize pressures on land, water, soil pollution, and air pollution.
All climate	A bundled climate scenario where crop production efficiency is targeted, good practices for animal waste management are followed, and emission pricing policies are implemented.
All health	food consumption moves toward healthy diets, i.e., EAT-Lancet recommendations for legumes, sugars, fruits, vegetables, nuts, etc.
WaterSoil	measures include environmental flow policy regulations and emission pricing policies targeting soil carbon conservation
Efficiency	measures like nitrogen use efficiency in crops, animal waste management, efficient trade,
Food System Development Pathway (FSDP)	A complete food system transition scenario- combines all FSMs, including external transformation. Population and GDP growth rates are in line with SSP1 parametrization.

Results







Conclusions

Interventions consistent with our FSDP scenario can effectively help meet the nutritional requirement of the population, along with an improved environment and social well-being of people.

However, issues like agriculture employment may need to be efficiently managed outside food system for achieving an inclusive food systems.

Acknowledgement

This work has been supported by the Food System Economics Commission (FSEC), funded by the IKEA Foundation, grant agreement no. G-2009-01682. The Potsdam Institute for Climate Change Research (PIK) and the Indian Institute of Management Ahmedabad (IIMA) are jointly coordinating activities under this project for India.

The opinions, findings, and conclusions or recommendations expressed in this material are those of the author/authors and do not necessarily reflect the view of the IKEA foundation.

Gaupp, F., Ruggeri Laderchi, C., Lotze-Campen, H., DeClerck, F., Bodirsky, B. L., Lowder, S., ... & Fan, S. (2021). Food system development pathways for healthy, nature-positive and inclusive food systems. *Nature Food*, *2*(12), 928-934.

https://www.anh-academy.org/academy-week/2023