

# CREATING SUSTAINABLE VALUE CHAINS FOR TRANSFORMING FOOD SYSTEMS

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## KEY MESSAGES

India and South Asia are food surplus but not “nutrition secure”

Food systems are at the heart of the 2030 Agenda for Sustainable Development

Food safety is critical. “If it is not safe, it is not food.”

We must reorient agriculture from producing cheap food to enabling healthy diets.

Our aim must be to deliver a healthy plate for every meal every day for everyone

Sustainable food value chains can drive the transformation from ‘calorie-rich’ to ‘nutrition-rich’ food systems whilst conserving natural resources

## Introduction

Food systems are at the nexus of food security, nutritional health, ecosystems, climate change, and prosperity. Agricultural policies in India and South Asia have, to date, focused on increasing food production but have neglected the negative externalities on nutrition, natural capital, and biodiversity. A new paradigm on food system transformation is emerging using the concept of ‘planetary boundaries’ in defining the ‘safe operating space’ for stability of the earth system and human health[1],[2].

Globally, the food system has been adapting to rapid population growth. However, more than 800 million people still have inadequate access to food – many of whom live in India. In addition, a growing share of the world population suffers from micronutrient deficiencies or is overweight or obese, leading to an increasing prevalence of non-communicable diseases. India and, indeed, most countries in South Asia are now food surplus but not “nutrition secure”. Both availability and affordability of healthy and nutritious diets pose challenges for some of the most vulnerable in society.

The International Rice Research Institute (IRRI) convened a multi-sectoral panel discussion on “Creating Sustainable Value Chains for Transforming Food Systems” on 4 February 2020, at the National Agricultural Science Complex in Delhi, India where senior representatives from agriculture, nutrition, environment, research and development, and policy met to consider how to achieve a food system transformation in India and South Asia. That is to say, what sure steps can be taken towards achieving this goal.

The panelists included: Pawan Agarwal (CEO, Food Safety and Standards Authority of India), Basanta Kar (Global ‘Transform Nutrition Champion’ Awardee and Former Country Director for Project Concern International), Supreet Kaur (Senior Technical Expert, Women and Child Development and Nutrition, Niti Aayog), Purnima Menon (Senior Research Fellow, International Food Policy Research Institute), Dinesh Kumar (Scientist ‘G’, National Institute of Nutrition), Arabinda Padhee (Director, Country Relations and Business Affairs, International Crops Research Institute for the Semi-Arid Tropics), Sheetal Sharma (Nutrient Management Specialist, IRRI South Asia), Alok Sikka (India Representative, International Water Management Institute), AK Singh (Deputy Director General-Agricultural Extension, Indian Council of Agricultural Research) and Shariqua Yunus (Head of Nutrition, World Food Program). The panel discussions, moderated by Nafees Meah, Regional Representative for IRRI South Asia, emphasized the complex nature of the challenges that face us and the need for effective convergence between different policy domains.

## Food systems at the heart of 2030 UN Agenda for Sustainable Development

The recent Eat-Lancet Commission report called for urgent transformation of food systems to deliver healthier diets and keep within planetary boundaries. The Commission stated that this would need international and national commitment as it requires reorienting agricultural priorities from producing cheap food to producing healthier foods for balanced diets. Previously, the High-Level Panel of Experts on Food and Nutrition (HLPE) had placed the food environment at the core of the food system and outlined the various social, political, physical and demographic drivers that will have to be influenced to deliver the system transformation[3]. A key point from the HLPE analysis is that food systems are at the heart of the 2030 UN Agenda for Sustainable Development.

At the present time in India, the total value of the food sector is estimated to be \$550 billion USD[4]. However, because of distortions in the supply chain through agricultural practices, markets and subsidies etc. the relative cost of foods necessary for a healthy diet can vary hugely across the country. If we want people to have access to healthy diets at affordable prices then these distortions will have to be addressed. We will also need to marry food science with gastronomy and create demand for healthy food if we want to change dietary habits, because even the poorest consumers maximize pleasure from food, over nutrition.[5]

[1] EAT-Lancet Commission (2019) The EAT-Lancet Commission on Food, Planet, Health. <https://eatforum.org/eat-lancet-commission/>

[2] Meah N, Hellin J & Balie J (2019) Agriculture, Nutrition and Environment Nexus in South Asia. *Geography & You*, 19(4), 6–11

[3] HLPE 2017 Nutrition and Food Systems. A report by the High-Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome

[4] Confederation of Indian Industry, 2019, Indian Food Processing Sector: Trends & Opportunities

[5] Cuevas, R.P., Custodio, M.C., Ynion, J., Samaddar, A. & Demont, M. 2020. Gastronomic systems research. *Gastronomy and Food Science*. Galanakis, C.M. & Wang, E., eds., Amsterdam, The Netherlands: Elsevier, in press.

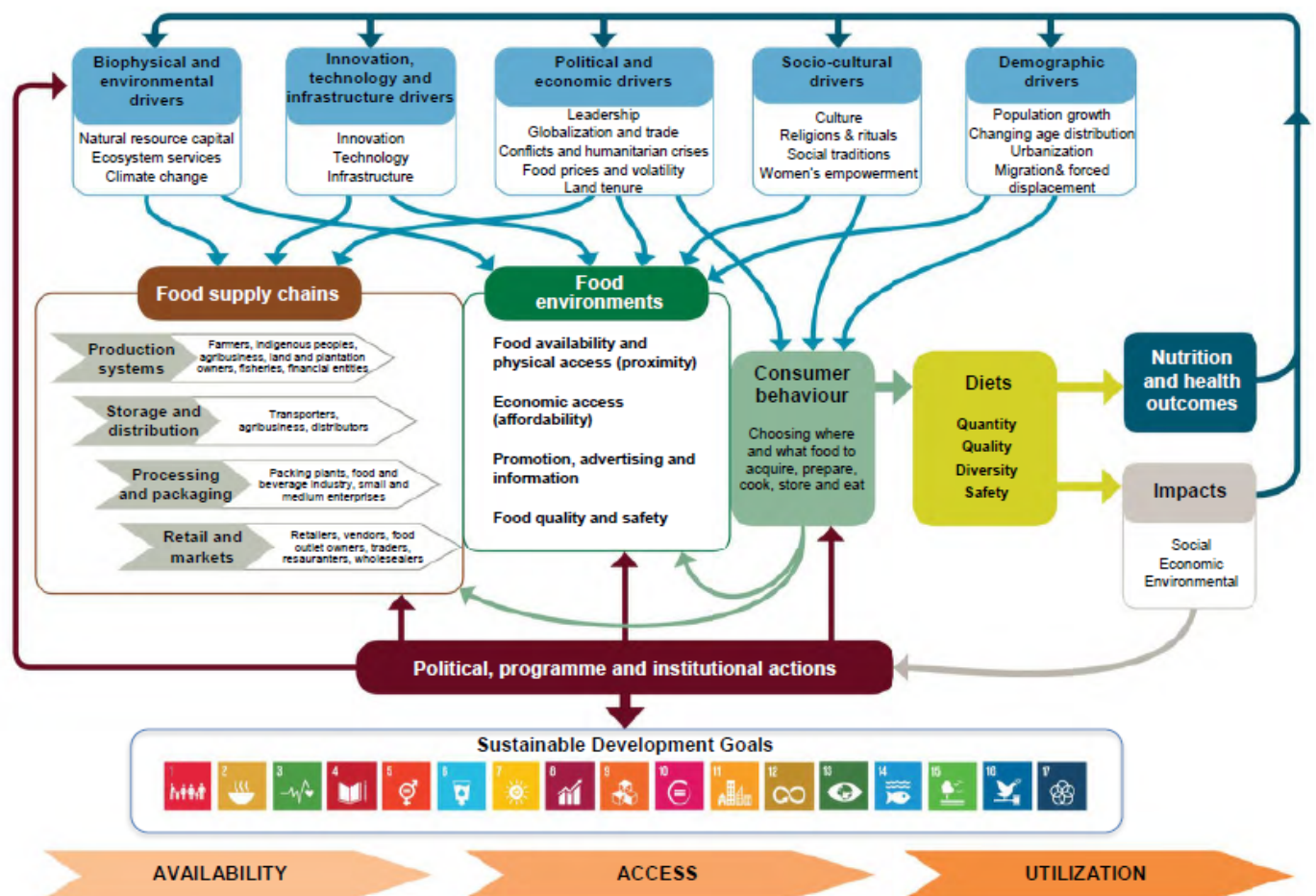


Figure 1 : The Food System [Source: High Level Panel of Experts for Food Security and Nutrition (HLPE), 2017]

## Addressing food safety is critical for achieving nutritional outcomes

If we are concerned about health outcomes, then food safety is critical not least because foodborne illness affects the uptake of nutrients from the diet. The narrative around food and nutrition first emerged in the developed world, where food safety issues have been largely addressed. In the developing countries of the global south, however, there are serious challenges arising from food safety and hygiene which should be at the center of our overall food and nutrition strategy. A recently concluded study by (FSSAI) showed that 8.5% of fruits and vegetables contained heavy metal residue traces – mainly lead and cadmium – particularly in Eastern India[6]. Another FSSAI study found that 5.7% of milk was contaminated with Aflatoxin M1[7]. Without improving food safety, the targets set out in flagship government programs are unlikely to be met. If it is not safe, it is not food.

The Food Safety and Standards Authority of India (FSSAI) is addressing food safety, nutrition and sustainable diets in a holistic manner through the Eat Right India movement [8]. To achieve safe, healthy and sustainable diets means working with stakeholders across the food value chain, setting standards, effecting changes in the food environment and addressing both the supply and demand sides. Specific interventions in microenvironments like schools, offices, universities and colleges etc. are already being rolled-out in many places to 'nudge' consumers to eat safe and healthy foods. However, the FSSAI's mandate begins only at the farmgate, therefore, to achieve success, it is imperative that there is more effective convergence between many pertinent ministries and departments involved, to mainstream the holistic concept of food safety, nutrition and hygiene for all.

## Nutritional status across India is improving but very slowly

In India now, every second woman is anaemic, every third child is stunted and every fifth child is wasted. To tackle malnutrition, a life-cycle approach focusing on the first 1,000 days, starting from early childhood, into adolescence and going onto motherhood, has been adopted and a plethora of programs and initiatives have been launched. Some of the more prominent ones being, Pradhan Mantri Matru Vandana Yojana, National Nutrition Policy, Maternity Leave Extension, POSHAN Abhiyan, and Anaemia Mukh Bharat. The recently published Comprehensive National Nutrition Survey (CNNS 2016-18) shows that there has been some reduction in stunting, wasting and underweight in recent years but progress has been slow. There are other areas of grave concern and, in particular, a continuing problem with respect to micronutrient deficiencies.

Increasing dietary diversity will help address all forms of malnutrition and reduce the increasing prevalence of non-communicable diseases such as diabetes and cardiovascular diseases. Simply put, transforming food systems must help in closing the gaps in what the most vulnerable groups are eating in India today. IFPRI recently looked at the type of food groups that children were fed in the previous 24 hours across different states in India compiled from the NHFS 4 data and created a radar chart (Figure 2). This chart shows that 'cereals' and 'dairy' are the overwhelmingly dominant food groups consumed by infants across all states. However, consumption of other food groups essential for a healthy diet is woefully inadequate.

The institutional challenge can be put in a nutshell: How do we deliver a healthy plate for every meal every day for everyone? This objective is much easier to visualize than a more abstract one like, shifting the distribution of the height of children to the right. Many institutions in India are responsible for delivering a healthy

[6] Pawan Agarwal (CEO FSSAI) keynote presentation

[7] National Milk Safety and Quality Survey 2018, FSSAI

[8] The Eat Right India Handbook, 2018, FSSAI, NHSC

plate to an individual. However currently, the national conversation on nutrition is highly fragmented. For instance, the POSHAN Abhiyan deals almost exclusively with undernutrition - as does the National Nutrition Policy of India. The conversation needs to be more holistic, in order for it to more effectively address multiple forms of malnutrition simultaneously. Whether you are concerned about micronutrient deficiencies, undernutrition, overweight and obesity, at the end of the day, it is what is on our plates that matters.

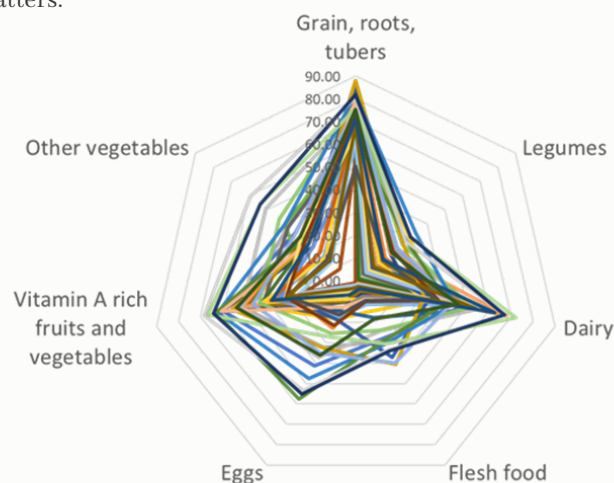


Figure 2 : IFPRI estimates of consumption of foods from different food groups by infants 6-24 months across India 2015-16 (courtesy of Purnima Menon)

Much has been written about 'convergence' per se, but the focus must be on achieving outcomes and not just on the process of institutional convergence. The IFPRI radar chart presents a direct way of visualizing what needs to be delivered by the many institutions working together in the food system i.e. deliver a healthy plate for every meal every day for everyone. This means creating demand for healthy diets through education and then ensuring access and availability of foods needed for having a healthy diet at affordable prices. Since this is focusing on what a healthy plate looks like, this kind of approach will avoid the risk of looking at the problem from the perspective of undernutrition alone but should also address the triple-burden' by addressing undernutrition, over nutrition and micronutrient deficiencies.

### Fortification of staples to address micronutrient deficiencies is not a panacea, but biofortification will help

Salt is a product that is consumed by everyone and iodized salt is often presented as a successful example of a fortification program in India. However, it is often assumed that because iodization of salt has been successful, then fortification of other foods, especially staples will be equally efficacious. Fortification of staples, however, is not a panacea. This is because, to have a therapeutic benefit, a particular fortified micronutrient has to be 'bioavailable' and this is not known a priori. Currently, some food companies are making claims about the efficacy of fortified food products. Institutions such as the National Institute of Nutrition (NIN) working with the FSSAI must thus ensure that fortification of staples is, indeed, efficacious through a program of testing and labelling. In the meantime, developing new varieties of staples, particularly rice, wheat, sorghum and millet, rich in micronutrients and proteins – essentially biofortified crops – can be a useful approach.

### Greater societal awareness of sustainable food systems is needed

Until recently, the conversation in the research and policy communities centred on sustainable agriculture. This has now undergone a welcome transition to working towards '

'Sustainable Food Systems'. However, the conversation needs to be further broadened to reach all stakeholders and the general public if we want to see real changes in behaviour in society as a whole. In particular, there needs to be a better appreciation of the agriculture-nutrition-environment nexus amongst the wider public. If we want to make our food systems more sustainable and our diets more nutritious, then the demand for it has to stem from the consumer. Only then will farmers overcome the pernicious effects of the subsidy schemes for cereals and change what is being grown in India's fields.

### How do we create demand from consumers for diets that are more diverse, have less sugar, less fat and less salt?

This issue boils down to how we incentivize sustainable food systems. Food behavior is deeply rooted in peoples' preferences, habits and culture. India is diverse and different areas have distinct food habits. Thus, there is no 'one-size-fits-all'. However, public awareness of the benefits of healthier diets could be raised through the increased use of food labeling or through dietary guidelines - as is being done through *Eat Right India* campaign.

However, raising public awareness is a necessary but insufficient condition for behaviour change in respect of healthier diets for many people, especially the poor. As well as issues such as access, social norms, habits, tastes, culture, lifestyle and convenience etc. that can influence behaviour, affordability of healthy foods is critical. Nutritious diets should be attractive for the consumer but if the price of a diverse and healthy diet is too high, then affordability becomes a serious challenge for the poor. Recent evidence from West Bengal confirms that the effect of behavioural change communication on diets is largely conditioned by income, again pointing towards the crucial role of the food environment in encouraging healthy eating behaviour.[9]

As there are many government programs in India directed at improving the nutritional status of the population, there are leverage points which could be used to directly link agricultural systems with the food systems to deliver the desired nutritional outcomes. An example of this is the Mid-Day Meal Scheme (MDMS). As a minimum, government food-based safety nets should diversify their food baskets. However, there is need to think more imaginatively on *how* this can be done.

### Policies and institutions are not fit for purpose and need rethinking

Access and affordability of healthy diets by poor people are crucial for better health and nutritional outcomes. The radar diagram in Figure 2 shows that the consumption of fruits and vegetables are much lower than required. This is notwithstanding India being the second-largest producer of fruits and vegetables globally after China. Much of this production goes to waste (50%) before even reaching markets so that even if they are available, in many parts of the country they are far too expensive for poor people to afford.[10]

Numerous institutions are involved in delivering fruits and vegetables to our plates (government departments of agriculture, environment, water resources, marketing, also private sector players etc.) They all need to work in alignment to be able to deliver affordable fruits and vegetables to poor consumers. However, it is clear that both institutions and public policy instruments impacting the food system currently in place are neither aligned nor working effectively and there is an urgent need to rethink them. For example, the National Nutrition Strategy 2018 makes no mention of non-communicable diseases (NCDs) despite these being of increasing concern. A part of the solution will lie in setting standards and guidelines for healthy

[9] Demont M., Custodio, M.C., Ynion, J., Samaddar, A., Cuevas, R., Ray (Chakravarti), A. & Mohanty, S.K. 2019. What affects households' food choice in West Bengal? *Geography and You*, 19(24):26–30.

[10] The New Indian Express 25th October 2017 Up to 50 percent of milk, fruits, veggies produced in India go waste

diets and engaging with stakeholders in the food system to achieve the intended outcomes. However, setting common standards and guidelines for the whole of India, given its diversity, will be extremely challenging.

### Developing sustainable food value chains can drive food system transformation

As well as ensuring food and nutrition security, we also need to ensure that our food systems are environmentally sustainable and take account of the need for adaptation to climate change. The whole region is facing major environmental challenges like changing weather patterns, water stress, soil degradation that threatens the future supply of food. Diversification of agricultural production can help address these environmental challenges and transition from 'calorie-rich' to 'nutrition-rich' food systems.

An effective food system transformation will require commitments to develop new policies and investments at national and local levels. In practical terms, this would need to address four main dimensions: (i) underpinning healthier populations by enabling access to nutritious and healthy food for all; (ii) guaranteeing sustainable food production, processing, trade, and retailing; (iii) mitigating and adapting to climate change; (iv) improving smallholder farmer livelihoods and resilience by enhancing prosperity in farming and rural communities. To drive forward the food system transformation, sustainable food value chains for appropriate cropping and mixed livestock/fish systems tailored for specific regions and agro-ecologies should be developed.

A value chain approach will need to engage the private sector actors and ensure that the focus is on increasing the overall productivity, aggregate profitability and environmental sustainability of food production. Policies and institutions should be designed in a way that ensures smallholder farmers are the overall beneficiaries of this process. This requires that there is both the necessary trust between the value chain actors and there is a clear market demand. Given that the vast majority of farmers in India are smallholders, this entails a high degree of horizontal coordination between producers, e.g. through Farmer Producer Organizations (FPOs). As well as this, more vertical coordination through modern food industry firms such as supermarkets, to enable disintermediation i.e. reducing the number of intermediaries in the value chain, should also be encouraged. In this regard, FSSAI is working with major food companies in India to promote sustainable value chains and building logistics around getting high quality, fresh food to consumers.

Before the Green Revolution, multiple crops were grown across the Indo-Gangetic Plains (e.g. millets, pulses, vegetables etc.) but now predominantly rice, wheat and sugarcane are found – especially in areas where irrigation is available. This has to change. The Indian Council of Agricultural Research (ICAR) through its programs such as Nutrition Sensitive Agri-Resources and Innovation (NARI), Value Addition and Technology Incubation Centers in Agriculture (VATICA) and Knowledge Systems and Homestead Agriculture Management in Tribal Areas (KSHAMTA) are following the broad philosophy that we should produce what we intend to eat and this will help deliver better nutritional outcomes. These kinds of programs need to be scaled-up and scaled-out throughout the country. A value chain approach that focuses on enhancing the quality of the produce will succeed in getting the trust of consumers and this should also address the issues of food quality and contamination. In China, in the recent past, public trust in the food system was

compromised because of widespread food adulteration and contamination. There is a real risk that trust in the food system could go the same way in many developing countries which are rapidly urbanizing. However small farmers in China have now recognized that consumer trust is hugely important for their businesses and are trying to rebuild trust through traceability systems and product standards so the consumers have confidence in the food they eat. In India a growing market is emerging in urban areas, where people will seek trust in the food supply chains and that is where value addition could come in future.

### The rice-wheat system in some parts of the Indo-Gangetic Plain is adversely affecting the environment and the natural resources base

There is serious concern about the impact of rice-wheat systems in some parts of the Indo-Gangetic Plain on the environment and the natural resources base. Unless we have a strong foundation in terms of the natural resource base, we cannot build sustainable agricultural production systems and this will affect future food security. In North West India, in particular, ground water is hugely over exploited. In Punjab about 45% of blocks were over-exploited in 1984. Today 79% are overexploited. A 'water-energy-food' nexus approach should be adopted as it is not water policies alone that cause overexploitation of water but also agriculture, food and energy policies. This is especially important in the context of climate change. The inter-connectedness of water, food and energy in the overall context of climate change, means that we need to synergize the policy instruments that are there related with all these three areas.

There is a need to transition to more water-efficient technologies (e.g. alternate wetting and drying) and cultivation of crops that are more suitable to be grown in semi-arid areas like North West India. In addition, new approaches need to be developed to incentivize water saving behaviours in farmers. For example, in one experiment in Gujarat to avoid overexploitation of water, the International Water Management Institute (IWMI) introduced solar pumps connected to the energy grid and farmers were incentivized to feed in the unutilised solar energy into the energy grid with an attractive feed-in-tariff. As a result, farmers were more economical and efficient in using the precious water resources. Imaginative policy responses such as this, which have a better understanding of how individual farmers or consumers respond to incentives, are needed now.

### Going forward

The current trajectories of food systems in India and South Asia are neither environmentally sustainable nor capable of providing nutritious diets for all. This needs to change. The Secretary General of the United Nations will be convening a Food Systems Summit in 2021 to help national and international stakeholders better understand and manage the complex choices that affect the future of food systems and to accelerate progress toward the SDGs. There is an opportunity now for India and countries in South Asia to revisit their respective frameworks to ensure that policies and institutions are changed and work differently to *deliver a healthy plate for every meal every day for everyone*.

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