

Chapter 1: India Vision 2050

This India Food Vision 2050 document submitted to Rockefeller Foundation by FSSAI as a part of their Food System Vision Prize 2050 that invites organizations from across the globe to develop a Vision of the regenerative and nourishing food system that they aspire to create by the year 2050.

FSSAI received global recognition and was declared among the top ten for the Food System Vision Prize from a pool of more than 1,300 applicants across 110 countries. The Vision was conceptualized by the Eat Right Team under the leadership of Shri Pawan Agarwal. In its communication, the Rockefeller Foundation has stated, 'Your vision inspires. If implemented, it can transform. It feels lofty yet feasible – audacious yet vital. It can reveal a path forward to a nourishing, resilient, sustainable and equitable food system for 2050, if not well before.'

We spoke to various stakeholders and partners - urban farmers, nutritionists, food experts, international agencies, design thinkers, the government and the civil society. Here's what we visioned together for the nation by 2050 - a future that's possible, sustainable, and harmonious - just as Nature intended!

How do we get to this vision of food secure, healthy and sustainable India? We took a Design Thinking approach to answer 4 key questions - What is? What if? What works? & What wows?

Here are some key highlights of the India we wish to see in 2050-

- More Indians would prefer to live or spend time on farms than ever before. As a result, produce will become those fruits and vegetables that people pull out of the ground or off a tree than buy at the store. Not only people will be more connected to where their food is coming from, they will be fundamentally more in rhythm with the natural and seasonal cycles.
- Indians are naturally blessed with traditional systems like Ayurveda and Naturopathy, which will make a huge comeback. An average person will know his or her constitutional profile and will manage their diet accordingly. More number of traditional therapists and consultants will coach people on mindful eating and sustainable lifestyles.
- The once nuclear, fragmented families of the cities will be part of active, connected, and vibrant communities back home with many cases of reverse migration.
- More number of professionals will become part-time proud 'farmers' networking with an ecosystem of responsible producers serving ever increasing and conscious consumers. Bio-dynamic and organic farming will be ubiquitous. Weekend getaways are about visiting one's farm. This growing set of farmers will also help in reviving extinct seed banks and expanding diversity of indigenous fruits and vegetables.
- Forest produce will increase the nutrition and therapeutic value of food. Indiscriminate urbanization will be halted, and nature will have its rightful claim to large parts of any city, town, and village.

- Unlike the fast food era, the cooking will be slower with emphasis on preserving the nutrition level of the food. Even the cooking technique will be shifted to more traditional ways like outdoor stone ovens, surrounded by shady herb gardens.
- There will be cafes and juice bars in every park.
- People will be encouraged to share their meals and work up a good sweat at these parks and arboretums.
- Many native species of trees will be revived and along with several species of birds, insects and animals will make a comeback. There will be robust activism in preserving natural forests and ecosystems. In cities people would grow their personal supplies of vegetables in balconies, terraces, gardens, and community farms.
- Buying local will get the citizens significant energy credit points. Treating oneself to expensive and exotic fruits or vegetables will only be an occasional indulgence. Buying local and seasonal will be the norm and very few people will see merit in doing otherwise.

What is? - A glimpse of the current trends and projections

Population

India's population is projected to be around 1.64 billion by 2050, one sixth of the world's population.

Malnutrition

Quarter of children and adolescents in the country are stunted; more than 50% of women of reproductive age group and children are anaemic; overweight and obesity has doubled over the last decade in both rural and urban areas. Further, one in ten school-age children and adolescents are pre-diabetic. The country faces huge economic loss due to food borne diseases (FBD) – going up to 0.5% of GDP. It is estimated that in a business as usual scenario, number of cases of FBDs in India would increase from 100 million (in 2011) to about 150-177 million (in 2030) with children under-5 being most vulnerable.

Poor Diet

The Indian diet is predominantly cereal based (rice and wheat), protein-deficient, lacking in fruits and vegetables and rising consumption of fats and sugars. Per capita per day consumption of calories is still lower than the global recommendations (2500 kcal/day) and is unequally distributed across regions, gender, and age-groups. Simple carbs contribute majorly to these calories while proportion of protein, fats and vegetables is minimal. Consumption of refined oils and sweeteners is disproportionate. Low ratio of price/100 kcal of cereals as compared to milk and meat is a major reason for Indians eating a cereal centric diet.

Food Waste

An average of 20 percent of food being wasted in the country. Lack of warehousing, processing and cold storage facilities are the key reasons for food wastage. Fruits and vegetables (40%), milk (40%) and meat (20%) are the ones wasted the most in the sector. Given the high nutritional deficiency in India, reducing this waste needs to be addressed on priority.

Safety & Hygiene

Microbial contamination especially of milk, meat and fruits and vegetables, improper temperature control and adulteration are key issues.

Environmental Degradation

Food sector is the biggest contributor of plastics in the country. High use of pesticides and chemicals in farming, mono-cropping patterns (rice and sugarcane) contribute to depleting water tables and burning of rice stubbles as source of air pollution have already become serious challenges for the country.

Livelihood and Employment

Food sector directly and indirectly employs about 2/3rd of all Indians. Much of this workforce are migrants who have been quit farming to move to urban centres.

A mass reverse migration due to COVID-19, effecting nearly 10 million migrant workers, may throw up unique challenges.

What if? - The 'Eat Right Movement' transforms India's food environment?

Eat Right Movement has an ambitious vision of transforming India's food environment. It adopts a judicious mix of regulatory, capacity building, collaborative and empowerment tools and combines supportive actions to its primary regulatory mandate. It adopts a 'food systems approach' to address the issues in a holistic manner.

To achieve this vision, these things need to happen:

Robust food regulatory system that includes setting science-based, globally benchmarked standards, credible food testing, surveillance, and enforcement activities. Setting standards on use of excess salt, sugar and fat; use of recyclable plastics and tougher implementation of safety and health standards.

Finest hygiene and sanitation standards across the value chain through a graded approach. Capacity building through training and certification for all businesses including

unorganized micro food vendors, hygiene ratings for medium and small businesses, and organizing vendors in clean clusters and hubs.

Conscious consumption by changing food environments by taking a settings-based approach and targeting people at home, school, workplace and outside through training and capacity building and generating awareness.

Mass mobilization and behavioural shifts to nudge citizens to eat right and waste less. To initiate a people's movement to create demand side push for safe food, healthier and suitable diets is needed.

Produce enough without destroying the environment our primary farm production could be driven by small-scale farmers, connected through agri-food value chains, benefiting from economies of scale. Integration of traditional knowledge with new technologies and robust logistics would provide eco-friendly solutions. A community-driven approach could create self-sufficient local food ecosystems reducing storage and transport costs and post-harvest losses. The majority of farmers in India are engaged in organic farming using a wide variety of alternatives to chemical fertilizers to enrich soil. Drip irrigation and water harvesting could be mainstreamed and help India to achieve zero-water wastage. The production of crops could shift to millets, traditional food crops and regional grains as per local needs. The food industry would need to transform to accommodate small scale production units resulting in self-sustaining local economies with minimal environment consequences.

Ensure food security for all. Food-based schemes for the vulnerable already caters to around 230 million people covered under the National Food Security Act. However, how long would such schemes scale to feed an ever-increasing population? Encouraging people to be self-sufficient and give them access to nutritious and affordable food without increasing burden on the government, is the need to the hour.

Provide adequate and proper nutrition by scaling production of large variety of healthy foods that are also affordable. That would reduce the need for food fortification and artificial additives. Shifting the consumption behaviors toward low salt, low refined sugar with elimination of trans fats is also needed.

A shift towards personalized diets can be anticipated due to increase in purchasing power and technology-led platforms. Consumption of regional, local and seasonal produce could be the norm. A rejuvenation of traditional culture emerging from Ayurveda can be expected. A food culture of traditional, indigenous and aligned with India's ancient wisdom of Ayurveda can be mainstreamed through small-scale local entrepreneurs.

Smart packaging and labeling systems could not only deliver fresh and healthy food, it could educate people on amount of refined salt, sugar and oils. Moreover, subsidies and tax-cuts for healthier food options, particularly plant-based, local, regional and seasonable wholefoods could be provided. Unhealthy and processed food could be taxed to extinction!

Adopted sustainable diets and conscious consumption to maintain a resilient food system in the future. Its key components could include production and consumption of local and seasonal foods that not only help in reducing greenhouse gases but also encourages regional trade practices.

Our production policies can ensure judicious land and water use for agricultural production, prescribing crops by region for maximum productivity, allowing only organic farming and biological solutions to control of pesticides. Furthermore, policies could limit food loss along the food value chain. Community-level practices could greatly reduce waste and promote recycling and reuse. Policies to encourage regional trade practices could be effective.

Sustainable economic costs and pricing models could improve wages thereby improving purchasing power and reducing rural distress. With more rural money, growth of local economies that are majorly driven by female workforce, could result in community level development, bridge the gender gap and promote equitable economic growth. Additionally, with efficient agricultural operations and with the use of technology, a substantial section of the labour force could move up the ladder and be employed in allied activities, logistics, supply chain and food processing.

Eliminated Food Borne Diseases (FBD) through stringent laws and robust recall mechanisms and consumer awareness eliminate FBD. This could reduce an economic burden of more than 0.1% of the GDP.

Technology made possible like big data, Internet of Things, block-chain, agricultural biotechnology, and artificial intelligence & Machine Learning became mainstream and affordable.

The data gathered from farms and food distribution networks could enable better traceability of food, quantification of the impact on the ecosystem and helped eliminate food wastage and over-production. Such technology could be used by resource-poor small and marginal producers. A rental market for farm machinery with women's self-help groups (SHGs) jointly owning and leasing out machines. Additionally, more organizations like Gold Farm would be set up that use Farming as a Service (FaaS) model where farm equipment can be hired through cell phones or call centers.

Smartphones and body wearable devices could provide personalized information to monitor diet-linked health parameters.

Micro-irrigation technologies and Community irrigation facilities such as water user groups for farmers could help judicious use of water resources.

To enable the current workforce to effectively transition to the envisioned technological changes in the future food system we'd need an enabling environment for entrepreneurial ventures and create data repositories on all aspects food, encompassing traditional recipes, taste/flavour, nutrition, and health.

Big Data networks could be used to build Dynamic Pricing Models. Rich algorithms that allow equitable 'Return on Investment' on any crop. This would greatly encourage all kinds of farmers (big/small) in growing diverse crops and crop species.

'Whole of the Government' to 'whole of society approach'. Government policies are critical to creating an enabling environment to ensure safe, healthy and sustainable diets. Currently, the Food Safety and Standards Authority of India (FSSAI) is India's apex food body with a mandate to ensure safe and wholesome food to all citizens at all times. Its mandate is gradually being expanded for improved multi-sectoral and multi-issue

coordination. This could be renamed as the 'Food Authority of India' and take not only 'whole of the Government', but 'whole of society approach' in dealing with issue of food in a holistic and integrative manner for inclusive, equitable and sustainable food system to achieve the Sustainable Development Goals (SDGs).

Built strong networks and partnerships. Eat Right movement is one such programme that requires convergent action in order to overcome all the barriers to improve health of the citizens.

It's numerous platforms could scale to engage a larger diversity of stakeholders and benefit from their technical expertise. It must continue to grow its various platforms like network of professionals in food and nutrition (NetProFaN) to leverage the expertise of professionals in reaching out to consumers with scientifically sound messages; its network of scientific organizations (NetScOFaN) to participate in standard-setting processes; and a consumer organization network (NetCOFaN) to communicate consumers' concerns to the food authority and vice versa (Figure 1).



Figure 1.1: The Whole of Society Approach

What works? - This is how people are making it happen!

Here are 2 short case studies to show how our Systems Approach has worked in the real world.

Eat Right follows a graded approach to working with industry that focuses on promoting a culture of self-regulation among businesses, working with the informal food sector, and developing and harnessing a private sector food ecosystem. Along with this, large-scale capacity building through private players is an effective strategy to improve the quality of food served by these businesses.

'Kalpavriksha' programme was launched by Marico Industries with a focus on enhancing farm productivity of Coconut Farmers. It resulted in 13% increase in yields. Training & Awareness programmes propagating scientific farm practices were conducted with on field support provisions. This program also promoted water conservation practices in farms.

Mondelez India's Cocoa Life program covers a wide spectrum of activities starting from supporting Cocoa agriculture research at Universities in South India, producing quality planting materials, offering free technical advice to farmers through a massive farmer-outreach program, farm-gate procurement of Cocoa beans from the farmers eliminating middlemen, promoting drip irrigation and undertaking community programs like women training, school support and tribal farmers support. Program has successfully enrolled over 3000 marginalized tribal farmers into cocoa planting creating livelihood opportunities for them. Over 5500 children in the remote cocoa communities are benefited through schooling infrastructure.

What wows? – Our Vision for India in 2050

Instead of a dystopian outcome, of food being fed out of tubes in premixed nutritional format, we will move to far more natural, flavoursome, safe and healthy food for all. Closer to nature, as nature intended.

A nation where we manage to beat hunger and malnutrition forever. There will be food security for all as a fundamental right.

We will have local self-governance with community ownerships - central and state governments will help with larger logistics, health, policies, training and certification, and other facilitation like exports. Government labs will also help with Data and Analytics, crop distributions, crop health and diversity, acquiring Geographical Indicators (GIs) and adjusting Pricing Models (Figure 2).

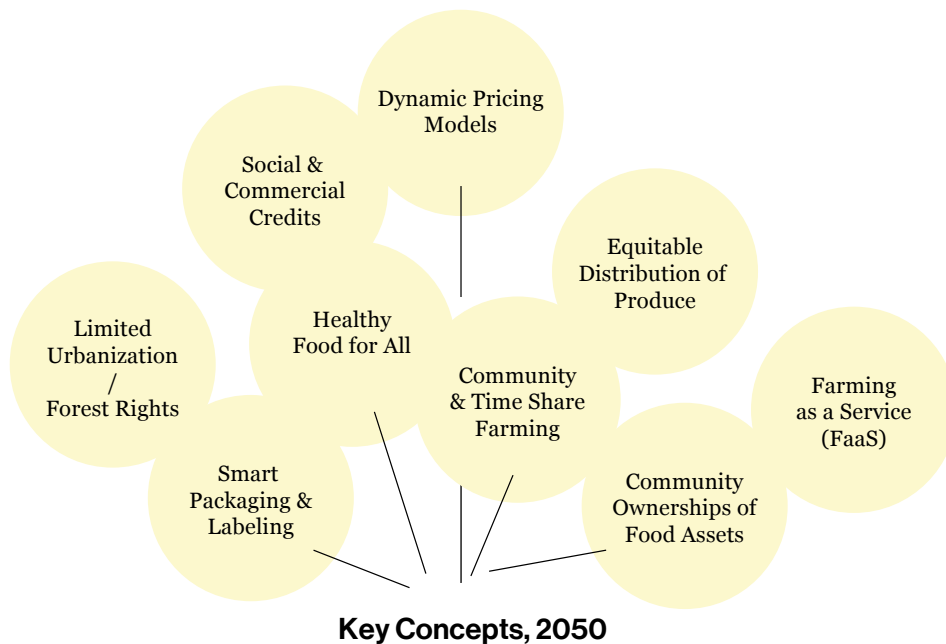


Figure 1.2: Key Concepts for Vision 2050

Even the financial models can be re-imagined and reinvented. Instead of 'money' we can have credits. All work obligatory or voluntary will earn people more credits where complex algorithms will help define credits of the work done based on many factors.

Workplaces will change significantly. Each citizen will typically have 2 jobs - primary and secondary. Where they could earn credits from your secondary role that must contribute to your local communities. People can acquire new skills by taking weekend classes and by doing voluntary works.

Pricing of a product will be affected by how far produce travels from its origin. There will be no more incentives to grow only a certain variety of a crop - special algorithms calculate credit pricing so that local varieties are as profitable as any other.

Government can suggest a percentage of the produce/crop that can be used for local needs, a certain percentage that can be shipped to nearby or needy states, and another percentage that can be exported or stored or processed for emergency use. There is also a percentage that is left for the birds and other animals.

People will be encouraged to travel to enjoy local flavours rather than import them. Imported food cost more as energy miles are added on every item shipped.

In fact we imagine the whole concept of a city been changed - it is more about history and historical artifacts rather than business. With the advent of high bandwidths, modern transportations - people can moved on from cities, being truly location independent.

Food packaging and transport will slowly become more natural, reusable and trackable. Transport modules (of varying sizes) will be powered by solar and other renewable energy sources. They will maintain natural humidity and temperature of the produce. Number of miles traveled will be constantly updated and tracked which can be collated and shared

with all communities and authorities for further improvements. Regulators can keep a strict watch on diversity and amount of food produced. Only a limited amount of excess is allowed as emergency supplies.

In this way, we want the world to move away from a producer-consumer paradigm, so everyone has a relationship (direct or indirect) with how food is grown, distributed and partaken.



Figure 1.3: Four pillars of the Eat Right India initiative