Section 1: Setting the Context

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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 refines 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](image-url)
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).
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](image-url)
Chapter 2: Eating Right – The Mahatma’s Way

Long before regulatory bodies were set up to monitor food quality and nutritionists advised people on what to eat, Mahatma Gandhi wrote and preached extensively on the subject. For him food and eating needed both – mindfulness and moderation – a message still relevant today. He was also a known advocate of hygiene and sanitation.

Eating safe

Mahatma Gandhi once said that it was a matter of great sorrow and shame that rampant adulteration existed in essential food stuffs such as oil and ghee in the bazaars of pre-independence India. He encouraged people to never be satisfied with whatever is available commercially and be very patient and diligent in procuring good quality food. If necessary, he even advocated the use of hand pressed oil. He also worried about the risk of infections getting passed on from diseased cattle, given that in his time such safeguards were not in place. He called for change in the status quo through appropriate legislation and education.

The Mahatma was a torch bearer for change in the sorry state of sanitation in pre-Independence India. He is known to have said, “Cleanliness is next to Godliness”. He proclaimed that unless we "rid ourselves of our dirty habits and have improved latrines, Swaraj can have no value for us." Side by side with the struggle for India’s independence, Bapu strived to improve sanitation, cleanliness and waste management. He dealt with these problems in meticulous detail and at a systemic level, including all aspects viz. social, technical and economic. He stressed on the direct link between sanitation and disease and called for people to raise their standards of hygiene.

His desire for each house, even in the villages, to have a latrine was visionary, to say the least, in a poor country saddled with multiple issues and struggling for its independence. The “Swachh Bharat Abhiyan” launched in 2014 ingrains the principles preached by the Mahatma.

Eating Healthy

“It is health that is real wealth and not pieces of gold and silver”

– Mahatma Gandhi

Gandhiji preached more than 75 years back what a modern nutritionist recommends even today. He encouraged people to consume cereals that had been hand ground without sieving to retain the nourishment and roughage provided by the husk. He placed great emphasis on the fact that polished rice or wheat flour devoid of its bran supplies only pure starch to the body and should be avoided.

Gandhiji acknowledged the role played by pulses in providing an economical source of protein to those who could not afford milk. However, he was not in favour of pulses to be consumed too frequently especially by those in a sedentary occupation on account of the fact that most pulses were difficult to digest.
He placed great importance on consumption of fresh vegetables and decried the fact that these were often unavailable at reasonable prices, especially in rural India. He prioritised green leafy vegetables and said that certain vegetables viz. cucumber, tomatoes, mustard, garden cress (Chandrashoor) and other tender leaves need not be cooked and should be washed properly and eaten raw in small quantities. He de-emphasised potatoes, sweet potatoes and yam, which he classified along with starch-supplying cereals.

On fruits, Gandhiji recommended a diet inclusive of seasonal fruits, e.g. mangoes, grapes etc. He said that the best time for taking fruits is in the morning. According to him a perfect breakfast consisted of milk and fruits, especially banana. He felt that the juice of two sour limes should be taken every day in water or with vegetables.

Gandhiji preferred the use of ghee over oil as he felt that ghee was easier to digest and nutritionally superior to oil. He lamented the undue prominence given to sugar, especially by city folk through their over-consumption of milk-based sweets and warned of the harmful effects of sugar. For both, fats and sweets he recommended moderation.

Gandhiji initially considered milk to be an animal product and felt that it had no place in a vegetarian diet. Moreover, his view was that man had no moral right to consume any other milk other than mother’s milk in infancy. However, after a severe bout of dysentery and resultant extreme loss of weight, he reluctantly accepted medical advice to take goat’s milk to overcome his malnutrition. He acknowledged the beneficial impact that it had on his recovery and revised his original opposition to milk. He also recommended milk for being a source of protein which was relatively easy to digest as compared to vegetarian sources of protein.

Gandhiji’s frequent fasting as a part of his Satyagraha movement is also well known. But for him, fasting was not only a means to rally the masses to a cause but also a path to good health. Prior to commencement of a fast he would usually fortify himself with lemon juice honey and warm water. Importantly, he also believed that fasting was the “truest prayer” and that it cleansed the soul and led to spiritual upliftment.

In fasting, Gandhiji proved his prescience. It is only recently that science has recognised the benefits of fasting in detoxification of the body and utilisation of unused fat deposits, amongst many others. The 2016 Nobel Laureate, Dr Yoshinori Ohsumi discovered the process of autophagy through which the body degrades and recycles damaged cells, proteins and toxins. Other benefits such as a decreased risk of diabetes and cardiovascular disease, protection from cancer and inflammation, balanced lipid profiles, lower blood pressure etc. are also known to be associated with fasting.

**Eating Sustainable**

Mahatma Gandhi’s principle of non-violence is very well known across the world. But not many may be aware that his principle extended beyond how we treat our fellow human beings to how we treat the denizens of the animal kingdom. Indeed, his strong espousal of vegetarianism was rooted in that thought. He famously said, “Man was not born a carnivorous animal, but born to live on fruits and herbs that the earth grows”.

Gandhiji preferred a simple diet of brown rice and seasonal, locally grown vegetables and snacks made of plantain with groundnut paste. He opted for jaggery rather than refined
sugar as a sweetener. His advocacy of a whole-food and a plant-based diet is in harmony with the latest scientific research that proclaims this as the healthiest way to eat. He was thus, in many ways, much ahead of his times as a champion for healthy and sustainable eating, decades before organic foods became the rage they are now, or the term “superfood” was even coined.

**Eating Mindfully**

Gandhiji knew of the fact that carbohydrate digestion begins in the mouth. He recommended that carbohydrate rich foods like *chapati* should not be dipped in *dals* and curries before eating. Instead they should be eaten separately - in the dry form. This way they would demand more chewing and hence greater saliva production resulting in better digestibility. He believed that good mastication helped in better digestion of food. He was also very particular about his meal timings and felt it was enough to eat three main meals. He frowned upon nibbling in between meals.

Gandhiji regarded food as a source of energy and of curative powers, rather than merely a means to satisfy one’s palate and hence encouraged moderation in eating. He opined that gastronomical pleasure should come from the satisfaction of real hunger and that relish is dependent upon hunger and not outside it. We all need to train our bodies to be self-aware of what our system really requires rather than indulge in consumption without need or thought.

Mankind would benefit greatly by paying heed to his approach and pivot its largely obsessive and hedonistic association with food and drink to one that is more sustainable and need based.

**References**

1. Eat Right India – Swasth Bharat Yatra. FSSAI publication. 2018.
Chapter 3: Eat Right India: An Overview

This chapter provides an overview of the key challenges in the food and nutrition space that the Eat Right movement seeks to address and bring out complementarity between this movement and the government’s other ongoing programmes.

In July, 2017, Food Safety and Standards Authority of India (FSSAI) under the Ministry of Health and Family Welfare, Government of India had initiated the programme, Eat Right India to transform the country’s food system in order to provide people safe food, healthy and sustainable diets. The programme is inspired by and is aligned with the Government’s vision of achieving ‘ease of living’ for all. National Health Policy, 2017 has focussed on preventive and promotive healthcare, wherein the consumption of safe and wholesome food is important.

Multiple actions, primarily on the supply-side, but also on the demand-side are needed to ensure that our food is safe and wholesome. Thus, the Eat Right India adopts a judicious mix of regulatory, capacity building, collaborative and empowerment approaches to ensure that our food is good both for the people and the planet. It takes regulatory and supportive actions and adopts “food systems approach (FSA)” to address these issues in a holistic manner.

Further, it builds on the collective action of all stakeholders - consumers, food businesses, community organizations, experts and professionals, and the government. Eat Right adopts not merely, ‘whole of government’, but 'whole of society' approach. This is a novel and innovative approach especially for a developing nation like India with its unique challenges in terms of its overall size, complexity, diversity of food, varied dietary habits and large unorganized sector.

Even though, Eat Right India movement is still in its early stages, it has managed to galvanize key stakeholders. Flywheel of support and lessons learnt so far would be useful for rapid scale up. Country’s large unorganized food sector would be reached through scalable models and innovative approach. A clearly defined blueprint, high quality content, prototypes for various initiatives and models of people’s engagement are now available. The time is therefore opportune to scale-up Eat Right India so as to make it a national movement and bring about transformational changes in the food sector.

Key challenges

Food is a fundamental need and a right. It is also a commodity, a product, a meal and source of nutrition which is deeply engraved in our culture, heritage and identity. At every stage along the food value chain – primary producers, processors, buyers, packagers, distributors, regulators and consumers play a role in shaping its safety and quality, its environmental footprint and its ability to feed citizens healthily and sustainably. Food is also a common thread linking all 17 UN Sustainable Development Goals (SDGs), given the interconnected economic, social and environmental dimensions of food systems. Thus, food has a critical role to play in shaping and determining the health and nutrition outcomes of the country.
Food safety is a critical link for good health and nutrition but is often neglected. In India, food-borne illnesses remain a threat to entire population and their consequences in terms of suffering, disability, and loss of life, or foregone incomes and wages, these personal and social costs are usually very high. Burden of foodborne illnesses is comparable to malaria, HIV/AIDS and tuberculosis. It is estimated that every year 100 million cases of foodborne diseases (FBD) are reported in India and it costs $15 billion annually to the country. Expected foodborne disease burden is set to rise from 100 up to 170 million people per year in 2030 in business as usual scenario – increasing from one out of 12 to one out of 9 people falling sick on average. Recent research has unveiled a strong interconnection between unsafe food and adverse health and nutrition outcomes. Infection by food borne pathogens results in poor absorption of nutrients from food, particularly of vitamins and minerals that impact nutritional status of an individual.

India has persistently high prevalence of under-nutrition with rising incidence of over-nutrition and non-communicable diseases. Recent national data indicate that more than one-quarter of children and adolescents in India are stunted – 35% of pre-schoolers, 22 per cent of children in school, and 24% of adolescents¹. Micronutrient deficiencies, including anaemia (>50% women, 1/4th of adolescents, school-age children and men are anaemic), and deficiencies of vitamin A, D, B12, and folate are pervasive across age groups as seen in figure 1. The findings are significant and point to the need for urgent action across age groups. Further, India is going through an epidemiological shift from communicable to non-communicable diseases. As a result, there is rising burden of diet-related diseases such as diabetes, hypertension, and obesity.

Of 1.35 billion Indians...

| Stunted Of 116.4m children | Wasted 25m <5 years | Chronic hungry 196m | Micronutrient deficient 500m | Overweight / Obese 180m | Foodborne cases 100m |

Malnutrition in India

Figure 3. 1: Extent of malnutrition In India


In addition to high malnutrition, the country faces a myriad of other challenges, including water crisis, high food loss and waste, and rising ill effects due to climate change. Nearly 40% of the food produced in India (costing one lakh crore rupees) is wasted or lost every year. The proliferation of plastic packaging and the improper disposal of plastics negatively impact the marine environment as well as terrestrial and groundwater ecosystems.

¹ Comprehensive National Nutrition Survey (2016-18)
Further, a quarter of all greenhouse gases are released by food production. According to the Intergovernmental Panel on Climate Change (IPCC), current conventional farming practices will be unable to support “large human civilizations” in about 30 years. Unpredictable weather conditions are damaging food systems and there is less nutritious food, reduced diversity and yields in crops and poorer soil. Thus, apart from impact on health, unsafe food and poor diets have grave social, economic, trade, tourism, and environmental consequences ranging from land degradation, water and air pollution, and biodiversity loss – directly or indirectly affecting the food consumed by the citizens.

About Eat Right India movement

India’s food regulatory system has expanded its focus from merely preventing food adulteration towards a more holistic approach to ensure safe and wholesome food for all citizens. In an endeavour to transition from merely an ‘enforcer’ to also an ‘enabler’, the food regulatory body conceived ‘Eat Right India’ movement.

Further, recognizing that ‘food systems’ approach is critical to transform the ‘food environments’ in the country, the Eat Right India movement adopts a mix of regulatory, capacity building, collaborative and empowerment tools to provide safe and wholesome food to people everywhere. It complements Government policies and strategies to address malnutrition and its resulting health consequences by providing a holistic solution with primary focus on food safety. The movement has four key pillars –

I. Food safety: the focus is on ensuring personal and surrounding hygiene, maintaining hygienic and sanitary practices through the food supply chain, combating adulteration, reducing toxins and contaminants in food and controlling food hazards in processing and manufacturing processes.

II. Healthy diets: the focus is on promoting diet diversity and balanced diets, eliminating toxic industrial trans fats from food, reducing consumption of salt, sugar and saturated fats and promoting large-scale fortification of staples to address micronutrient deficiencies.

III. Sustainable food systems: actions under this pillar promote local and seasonal foods, prevent food loss and food waste, conserve water in food value chains, reduce use of chemicals in food production and presentation and use of safe and sustainable packaging.

IV. Mindful eating: this pillar promotes practices like eating less, consuming meals on time, making conscious eating decisions, identifying cues to hunger and adjusting actions accordingly.

Further, the movement targets people across ages, gender, regions, and socio-economic groups. It brings together food-related mandates of the agriculture, health, industry and environment ministries with a ‘whole of government’ approach. It has forged partnerships with not only flagship programs of the country but also with professionals and other stakeholders.

Core regulatory functions: Setting of food standards and monitoring programmes
Over the years, the Food Authority has taken informed steps to formulate new and strengthen the existing food standards in the country. The Authority keeps itself abreast with recent developments in the food sector both at national and global levels. Although food standards are revised from time to time, it is felt that there is a continuous need to monitor them and update them to meet the new challenges and to make them at par with global standards.

Poor availability and quality of data pertaining to food safety is a perpetual challenge that the Authority faces. Although the Authority has recently undertaken two large surveys in the country, there is a need to develop robust frameworks and protocols to monitor food safety more closely and regularly. As mentioned earlier, policy instruments and regulatory frameworks are largely in place for the country, there is an enhanced need to strengthen the monitoring of food safety in the country.

A glimpse of breadth of activities currently undertaken by the Food Authority in this area are given below:

**Setting food standards**

Availability of comprehensive science-based food standards is critical to ensure safe food and healthier diets for all. FSSAI, since its inception (with process accelerating in the past few years), has worked on this front on priority (please see box below). For this, the Authority has formulated 21 Scientific Panels and a Scientific Committee. Further, eight Stakeholders’ Committees (with consumer organizations and food industry representatives) have been formed to provide inputs to related Scientific Panel. Recently in 2018 and 2019 the Food Safety and Standards for Alcoholic Beverages, Irradiated Foods and Milk and Milk Products have been notified.

**Box 1: Food Standards Score Card**

1. Commodity/General Standards - 694
2. Food Additives - 4497 MLs covering 334 additives/groups of additives
3. Contaminants - 605 MLs covering 28 Contaminants
4. Pesticides Residues - 1096 maximum residue levels (MRLs) covering 213 pesticides
5. Residues of antibiotics and pharmacologically active substances - 353 Tolerance Levels covering 49 antibiotics and pharmacologically active substances
6. Regulations defining standards in specific cases - Alcoholic beverages, milk and milk products, fortified foods, organic foods, labelling, claims and advertisements, packaging and materials in contact with food, irradiated foods, food supplements and nutraceuticals.
7. Methods of Analysis - 15 Manuals for methods of analysis for various foods/ food additives / contaminants etc.

Data up to December 2019

FSSAI has also put in place a system of approval of non-specified food and food ingredients on the basis of risk assessment on case to case basis in order to encourage
innovation and enable introduction of new food products in the market. A process for approval of the same has been laid down in the Food Safety and Standards (Approval for Non-Specified Food and Food Ingredients) Regulations, 2017.

Standards promoting healthy and sustainable food

Over the years, the authority has kept itself abreast with the changing food basket and consumption patterns in the country. Various standards have been put in place to empower consumers to make healthy food choices with a special focus on children.

- In 2011, the Food Safety and Standards (Packaging and Labelling) Regulations were notified. Since then, eight amendments to these regulations have been made and a complete overhaul of these regulations is now underway.

- In 2016, FSSAI notified standards for various types of functional foods (health supplements, nutraceuticals, foods for special dietary use, foods for special medical purpose, functional foods and novel foods).

- In 2017, standards for organic food were notified, again with a focus to make safe and healthy food commodities available to the masses.

- The year 2018 saw notification of plethora of standards having direct impact on health and nutrition outcomes - standards for fortification of foods, regulations to limit trans fats in fats and oils, packaging regulations, and regulations to check misleading claims and advertisements of food products.

- In addition, new Food Safety and Standards (Labelling and Display) Regulations are in draft stage which will focus on provision of per serving information on calories (energy), saturated fat, trans-fat, added sugar and sodium as percentage of recommended dietary allowance (RDA) on the front of the pack. Further, FSSAI has made menu labelling mandatory for food service establishments with central licenses or having outlets at 10 or more locations. This would inform the consumers about calorific value and nutrient content of food and provide information on allergens. The labelling provisions for sweeteners have also been reviewed in order to provide information regarding judicious use of sweeteners to the consumers. FSSAI has also envisaged for certification and logo for whole grain to encourage whole grain consumption by Indian population.

Attractive logos and symbols have been developed and propagated to enable masses to make informed food choices. For example, ‘+F’ logo to identify fortified food products; ‘jaivik bharat’ logo for organic products; ‘trans fat free’ logo to assist consumers in making informed food choices. Further, the authority has proposed to limit trans fats to not more than 2 percent by weight in all fats and oils by January 2022 – a year ahead of the global target.
Scientific Cooperation for standards setting

Under Section 16 (3) (e) of the Food Safety and Standards Act, 2006, FSSAI has recently established a 'Network for Scientific Cooperation for Food Safety and Applied Nutrition (NetSCoFAN). This network is created with a vision to facilitate scientific cooperation through exchange of information, development and implementation of joint projects, the exchange of expertise and best practices in all fields under FSSAI’s responsibility and in particular, this would be used to provide scientific inputs for standard setting through risk assessment process. The network would also provide inputs to set science-based food standards, codes of practices and guidelines at par with global best practices and food testing methodologies and techniques.

Currently, the network comprises of eight groups (aligned to the 21 scientific panels) with 42 top science and research institutions and over 100 scientists and experts. Each group has a lead institution and multiple partner institutions. This would be strengthened and streamlined over the next five years. An online platform, namely Indian Food Verification System is also put in place to ensure linkages between food standards and licensing and compliance system.

India has been a member of Codex since 1964. After it was established, FSSAI was designated as the National Codex Contact Point (NCCP). India is currently the coordinator for the ‘Coordinating Committee for Asia’. India through FSSAI has played an active role in supporting the codex activities through participation in electronic working groups, submission of monitoring and / or occurrence data and providing inputs on standards and guidelines in various stages of development. Apart from this, India has harmonized the country’s standards with Codex.

1.4 Food testing, surveillance and monitoring

India has a large network of Laboratories for food testing. There is regulatory mechanism to recognise and notify food laboratories under the Food Safety and Standards Act, 2006. Currently, there are 261 FSSAI notified food laboratories that are reasonably well-distributed across the country. Private food laboratories are also allowed to be notified under the regulations. Currently, more than half of the FSSAI-notified laboratories are in the private sector. Fourteen National Reference Laboratories have been identified for the purpose of method development and validation, training, capacity building and R&D.

Laboratory Information Management System (INFoLNET) has been institutionalized for the purpose of knowledge management, traceability and efficient communication across labs. To address data accuracy, validity and reliability, effective mechanisms have been put in place for method harmonization and verification for e.g., method review group, scientific panel; approval system for conventional and rapid methods; commodity specific methods manual(s); collaboration with method setting bodies like AOAC.
Box 2: Food Testing System Score Card

1. Total number of food testing laboratories 262
2. Primary food testing laboratories 243
   - State government food testing laboratories 78
   - Supported through central grants 36 in 28 States / UTs
3. Mobile food testing laboratories (Food Safety on Wheels) 46 in 31 States / UTs
4. Laboratories staff trained over past 3 years 1250
5. Food analyst / public analysts 410
6. Junior Analysts 345

Data up to December 2019

As part of Residue and Contaminant Control Programme, FSSAI is required to have monitoring, directed sampling or surveillance, compliance testing, pre-market surveys, post-market surveys and all other data gathering activities for various contaminants and toxins. Currently, only national level monitoring of pesticide residues is being done on a regular basis. In addition, one time milk safety and quality survey, survey for heavy metals in vegetables, survey of packaging materials, and safety and quality of milk products (in Delhi-NCR only), and quality and safety of edible oils (in Delhi-NCR only) have been carried out. Findings of these monitoring and surveillance activities are given in Box below.

Findings of Recent Monitoring and Surveillance Activities

1. National level monitoring of pesticide residues: 2.2% of the 23,660 had pesticide residues above the maximum residue level (MRL)
2. National milk safety and quality survey, 2018: 6432 samples - Adulterated (0.18%); Antibiotic residues (1.2%); Aflatoxin M (15.7%) and Substandard (39.0%)
3. Monitoring heavy metal contamination in vegetables (2713 Samples): samples with residues more than prescribed limit of Lead (7.0 %); Cadmium (1.1%) and Arsenic (0.07%)
4. Survey on food packaging materials (1250 samples): migration limits
5. Survey on safety and quality of 5 milk products (in Delhi-NCR only): 1040 samples: Adulteration with vegetable oil, hygiene and sanitation parameters
6. Survey of edible oil - levels of industrial trans-fats in various edible oils
7. Survey of antibiotic residue in poultry

Moving forward, along with ongoing tasks the Authority will focus on monitoring of contaminants, toxins, antibiotic and veterinary drug use in food and nurture and support NetSCoFaN. Specifically, over the next five years, there will be enhanced focus on:

- Develop/ strengthen protocols and monitoring systems to track the presence of toxins/antibiotics/veterinary drugs in food for human consumption.
• Develop/ strengthen surveillance, testing, traceability and recall mechanisms.

• Strengthen and expand accredited food testing network across the nation. This will include setting up state food laboratories, provision of mobile food testing laboratories and setting up sampling units and cold chain equipment.

• Support NetSCoFaN to provide high-quality inputs to the standard setting process.

Therefore, the activities under this action area will contribute to reducing the availability of unsafe, misbranded and non-standard foods in the market. This will help to inspire public trust in food available to people in the market and through the government programmes.

**Improve hygiene and sanitation across the value chain through a graded approach**

It is critical to understand that addressing food or nutrition security is not limited to actions addressing the shortages in food supply or availability, but also includes addressing issues of food contamination or foodborne outbreaks that indirectly contribute to food losses and adversely affect health. Food may be contaminated with variety of microorganisms at various stages of the food chain – on farm during harvesting, storing, processing or during handling operations as a result of the behaviour of farmers, processors, retailers or consumers.

To provide assurance of food safety, the Authority through its Schedule 4 of the act ensures that food businesses implement an effective Food Safety Management System (FSMS) based on Hazard Analysis and Critical Control Point (HACCP) and suitable pre-requisite programmes by actively controlling hazards throughout the food chain starting from food production till final consumption. Schedule 4 introduces the concept of FSMS based on implementation of Good Manufacturing Practices (GMP) and Good Hygiene Practices (GHP) by food businesses.

The Food Authority also acknowledges the fact that apart from large established food companies, the Indian food sector is dominated by large informal and rapidly growing small and medium enterprises catering to the majority of the population. Thus, ensuring safety of food requires both the regulatory and supportive approaches to regulate the variety of food establishments. For this the Authority has adopted a ‘graded approach’ which combines traditional enforcement and inspections with soft interventions or capacity building approaches. The section below elaborates on this graded approach adopted by FSSAI.

**For large food businesses: Traditional regulatory and enforcement approaches**

The Indian food and grocery market is the world’s sixth largest, with retail contributing 70 per cent of the sales. The Indian food processing industry accounts for 32 per cent of the country’s total food market, one of the largest industries in India and is ranked fifth in terms of production, consumption, export and expected growth. The Indian gourmet food market is currently valued at US$ 1.3 billion and is growing at a Compound Annual Growth Rate (CAGR) of 20 per cent. India’s organic food market is expected to increase by three times
by 2020\(^2\). The online food ordering business in India is in its nascent stage but witnessing exponential growth. Ensuring safety of food across this huge spectrum of business is indeed a colossal task for which the Authority has strengthened its traditional regulatory instruments and tools with focus on schemes of testing and inspections.

Moving forward, the plan is to enhance the focus on expanding the food labs owned by food businesses for self-compliance and foster third-party audits. The newly created cadre of ‘food safety mitras’ will be critical for putting stringent enforcement in place.

**For small and medium food businesses: Capacity building and implementation of hygiene rating**

The Micro, Small and Medium Enterprises (MSME) sector has emerged as a highly vibrant and dynamic sector of the Indian economy over the last five decades. The food processing industry under the SMEs flourished with the introduction of the food packaging technology and the improvement of the storage facilities in the cold storage units in the Indian market. The emergence of retail food chains, the acceptance of packaged food and the emergence of food courts in urban India has contributed greatly to the food processing unit of the SMEs. In addition to these, trend of eating outside too has accelerated the growth of the food processing industries in the Indian economy.

To cater to this sector which is not formally organized but is rapidly growing, the Authority focusses on capacity building and hygiene ratings to promote self-compliance. The purpose is to improve the hygienic conditions especially at the manufacturers level, for which the Authority has initiated two key initiatives:

**Food Safety Training and Certification (FoSTaC):** This is a competency-based training ecosystem to ensure compliance to hygiene and sanitary practices in handling of food by all food businesses. All food businesses are required to have a food safety supervisor for every 25 food handlers. The food safety supervisors are expected to train the food handlers periodically. There are 19 certification courses available under FoSTaC. The duration of a course varies from 8 to 12 hours spread over 1 to 2 days. These courses are offered at three levels: Basic, Advanced & Special. The courses cover general hygiene or manufacturing practices as detailed under Schedule 4 of FSS Regulation and are being delivered in face to face classroom training either in the premise of food businesses (in-house training) or in the premises provided by training partners (open class). Till, there were 176 Training Partners across the country, more than 1600 trainers had been trained, 7000 training programmes had been conducted and nearly 200,000 food safety supervisors had been trained under FoSTaC. Large-scale programme for training of trainers and third-party online assessment is being taken up to further strengthen the training ecosystem under FoSTaC.

**Hygiene Ratings:** Under the hygiene-rating programme, food businesses are given a rating (five to one) on the basis of the hygiene and food safety compliance. Hygiene rating is a simplified version of third-party audits and are being made mandatory for large food businesses but not for SMEs. The programme involves physical inspection by an auditor from a third-party audit agency or ‘Audit Mitra’ under the ‘Food Safety Mitra’ initiative and a

\(^2\) India Brand Equity Foundation, 2017
rating assigned to it based on a checklist. This rating is to be displayed at the food establishment. In case the rating is low, improvement notice is given to the food business. This rating enables consumers to make informed choices about the hygiene status of the food establishment and motivates businesses to improve their hygiene standards and thus reduce the incidence of food borne illness. Currently, standalone restaurants and small hotels, meat and fish shops, sweets and halwai shops, places of worship are covered under the hygiene-rating programme. Each one of them have a separate checklist and are branded for easy recall. The purpose of the rating is two-fold, (i) it enables the consumer to make informed choices about the hygiene status of the food establishment and (ii) it motivates businesses to improve their hygiene standards and thus reduce the incidence of food borne illness.

**For petty businesses: Cluster approach**

The authority adopts a ‘cluster approach’ - a systematic process of gap analysis, filling infrastructure gaps, training and capacity building and certification. This is a systematic way to ensure compliance to food safety standards and helps to organize hawkers and petty food vendors to improve food safety and hygiene. It is also an important convergence point as local municipal authorities take a lead in setting up clusters (e.g., clean street food hubs, vegetable and fruit markets, to name a few) and with other government programs like Swachh Bharat Abhiyan for special cleanliness drives and with Jal Jeevan Mission with focus on potable water supply would help. Currently, street food vendors, fruit and vegetable markets and micro-food processing businesses are covered under the cluster certification programme. Each one of them have a separate checklist and are branded for easy recall. One of the most successful initiatives is - FSSAI’s Clean Street food Hub initiative.

To keep the culture of street food alive but to make it safe, the authority is determined on making 144 street food clusters across the country that would be jointly audited with state authorities for cleanliness and hygiene. These clusters would be encouraged to comply with certain standards and those meeting the criteria would get a “clean street food hub certificate”. A successful example of this initiative is the Ahmedabad’s Kankaria Lake area. Several others are in the pipeline. Setting up of a ‘hub’ is a perfect example of on-ground convergence and coordination of various stakeholders and massive capacity building efforts by the Food Safety Officers and auditing by the Food Safety Mitras or third-party audit agencies.

Moving forward, along with expansion of ongoing activities as listed above, the Authority will specifically focus on:

1. **Capacity building especially for small and medium enterprises** to ensure food safety at the manufacturing level. In coordination with the line ministries/departments trainings for primary producers will also be undertaken to limit the use of chemicals/pesticides at the farm level. FSSAI will play a key role in developing high-quality resource material and state-specific action/roll-out plans for training. The implementation will be done in coordination with concerned departments/ministries.

2. **Institutionalization of hygiene rating program for small and medium enterprises.** Under hygiene rating program, food businesses will be given a rating (five to one) on
the basis of the hygiene and food safety compliance. Although this will be compulsory for the large businesses, under the project standalone restaurants and small hotels, meat and fish shops, sweets and halwai shops, places of worship will be primarily targeted. Third-party audit agencies and ‘Audit Mitras’ under the ‘Food Safety Mitra’ initiative will play a crucial role in this program and hence there will be efforts to build capacity of Food safety mitra cadre.

3. Setting up of demonstration units/prototypes with petty food businesses to be replicated at the state-level. This will include developing SOPs and guidelines for implementation of ‘clusters’ or ‘hubs’ at the state level.

Catalyze actions to improve food choices and food environments

We eat food at home, at school, at workplace, or outside. Settings in which we eat food determine our choice of food. In home setting, we have near full control of food supplies. In school and workplace environment, respective managements could exercise some control over food supplies, however, outside there is somewhat limited control.

Government policy and regulation are expected to ensure availability of only safe food. Proportion of healthy and not so healthy food in markets is largely determined by the food businesses. The businesses would obviously want to ensure supplies of food that moves fast and unfortunately some of the unhealthy food is also addictive and therefore businesses tend to supply more of it. Policy and regulation can however play a key role in changing food environments overall.

Under the Eat Right India movement, we have customised interventions for a variety of settings to ensure people have access to safe, healthy, environmentally sustainable food wherever they are. These settings are homes, schools, colleges, workplaces and campuses, railway stations, jails and tea estates.

Food @Home

Over 90 per cent of people in India eat home-cooked food, not only at home, but even at school or at work. While, home kitchen earlier occupied a central place in our homes, its role got marginalised in recent decades with changing lifestyles. In many middle class and most upper class households, home kitchens are almost entirely run by domestic help. Convenience and taste, rather than nutrition determine food choice. Tradition and conventional wisdom on food hygiene and healthy diets – passed from generation to generation, is almost entirely lost. Safety and hygiene get compromised. Home kitchen is therefore where action lies to bring about change transforming the way we eat. FSSAI has developed resource books, audio-visual material and orientation and training module for home makers and domestic helpers to engage people more deeply with home kitchens and transform it.
For engaging people with their kitchens, FSSAI has developed ‘The Pink Book’, a simple and illustrated guidebook on food and nutrition. Recognizing that concerns about adulteration of food are high on people’s mind, ‘The DART Book’ provides simple tests to check for common food adulterants in home environment. Rich repository of credible and engaging videos, training modules, and short clips from experts are housed in ‘FSSAI’s Online Video Library’. These cover a variety of topics related to food safety, nutrition, sustainable food practices, and on mindful-eating. From time to time, FSSAI releases ‘Guidance Notes’ for citizens on emerging concerns on food safety and nutrition to help people become food-smart consumers.

Households in India increasingly hire domestic help not only for cooking but a variety of chores. They are mostly from extremely poor households with low levels of literacy. FSSAI has developed simple and interactive training modules for them. Training sessions have been organised for them in partnership with Domestic Workers’ Sector Skill Council (DWSSC) under the Ministry of Skill Development, Resident Welfare Associations (RWAs) and NGOs. This package of content and activities form the FSSAI’s ‘Eat Right @Home’ initiative. Nation-wide scale up of this initiative can transform the Indian kitchen and give back the Indian Kitchen, pride of place in Indian homes.

**Food @School**

Habits are formed early in childhood and are hard to unlearn. The food habits that children form when young affect not only their cognitive growth and physical development but also their health later in life. Good nutrition, proper hygiene, physical activity and healthy habits in early life lead to better health, better performance in school, greater job productivity and earnings and an overall higher quality of life. These benefits are passed on to future generations, so society as a whole develops in a positive direction.

Typically, schoolchildren bring food from home that reflects their food culture at home. However, the influence of peers and teachers also plays a large role in what schoolchildren eat, particularly when choosing from the school canteen or vendors around the school premises. Therefore, it is important to target the school environment along with the home environment. But first and foremost, school children themselves need to be engaged because their habits shape their behaviour. Schools are well poised to influence dietary practices and promote lifelong healthy habits, as students spend an average of 7-8 hours per day in school and can be considered captive audience.

While young children are quick learners, they have to be engaged in interesting ways to be receptive to what is taught. Food is fundamental to human experience and culture and can serve as a wonderful pedagogical tool to educate children about food safety, nutrition, environmental sustainability and mindfulness.
For this, FSSAI has created credible, interactive and activity-based resources like The Yellow Book to educate schoolchildren about eating right and imbibing healthy habits in the form of ‘Food Fundas.’ These books have been widely disseminated in schools for curricular and extra-curricular activities around healthy habits. To conduct these activities, Health and Wellness Ambassadors are being created in schools through an online certification programme by FSSAI. These can be teachers, senior students or parents who would like to impart knowledge to school children. Thus, healthy habits are being inculcated in schoolchildren by creating a community of ambassadors around them.

Since superheroes often capture the imagination of children and have a huge influence on their minds, life-sized Mascots—Master and Miss Sehat have been created to impart these food fundas to children through games and skits. These mascots activations have happened in 1800 schools across 14 cities in the country reaching 10 million citizens.

Children are born scientists, researchers and explorers. To test for the unknown, discover the unexpected is a great way for them to spend time in the school laboratory. Science can be made relevant by applying it to their everyday lives. Food is an ideal springboard to bring a host of science-concepts to life in the classroom. FSSAI has tapped this by developing a ‘Food Safety Magic Box’. It has 79 super-easy tests for common food adulterants so that children can learn to check if their food is safe. These are simple but mind-blowing, hands-on science experiments that can be performed using materials in the school laboratory and those provided in the Magic Box using the manual accompanying it. This helps to not only build scientific temperament but engages school students to learn about food safety through fun experiments.

Since learning occurs best through experience, an innovative approach to bring food from textbooks to life has been adopted in the form of Eat Right Innovation Labs (ERIL). These have been envisioned as physical and intellectual state-of-the-art laboratory spaces in schools. Through activity-based tools, resources and materials they would engage young people and help imbibe right eating habits through exploration, experimentation and experience thereby promoting nutrition literacy. These labs would complement, support and reinforce the existing syllabus and theoretical aspects with carefully curated and scientifically accurate content that would be applicable to a variety of school curricula. This kind of practical training would further empower schoolchildren to influence their home environments positively towards better dietary practices.

All of these efforts would be in vain if they are not support by an enabling environment in and around schools through a regulatory framework. For this, FSSAI has drafted Food Safety and Standards (Safe Food and Healthy diets for School Children) Regulations, 2019. This is a legislative & regulatory framework to facilitate the promotion of Eat Right habits in schools by ensuring and promoting safe and healthy food in and around school premises, regulating food marketing and advertisement to school children, monitoring and surveillance and overall guidance for providing safe and wholesome food to children.

The Mid-Day Meal (MDM) Scheme serves 10.03 crore children in India providing hot cooked meals for them. Therefore, it is important to ensure the food served is prepared and served hygienically and safely. A guidance note for safe and nutritious food in the Mid-Day Meal programme has also been developed based on Schedule 4 of the FSS Act, 2006.
All of these elements have been integrated into a comprehensive structured engagement programme for schools called Eat Right School. An Eat Right School matrix has been created with parameters to be adopted by schools in three main areas - Eat Right Education, Healthy and Safe Environment and Responsible Practices. Schools would be rated based on this matrix and certified as Eat Right School if they meet the criteria. As of..., over 35,000 schools had been enrolled. In order to mobilize schools and support them to implement this programme, an SNF (Safe and Nutritious Food) Fellowship programme has been launched. Under this fellowship, college students are provided CSR funds to reach out to schools.

From time to time, FSSAI has been conducting various large-scale outreach activities to engage students. The Eat Right Creativity Challenge was launched to unleash the creativity of the Indian youth and spread awareness on eating right. It comprised a pan-India ‘On the spot Poster’, ‘Paint a Wall’, and ‘Digital Creative’ competition on the ‘Eat Right’ themes. Over 70,000 students participated in this challenge, empowering the youth to use their creativity towards a good cause.

Children can be powerful agents of change. Therefore, Eat Right India aims to scale up this initiative to reach all 1.5 million schools in the country and usher in a culture of eating safe, eating healthy, eating sustainably and eating mindfully for generations to come.

**Food @Campus**

A vast majority of people eat at least one meal outside the home on a regular basis in a campus-like setting. This includes places like colleges, workplaces, hospitals, railway stations or certain micro-ecosystems such as jails and tea estates. While we have control over the food we eat at home, when outside, we are at the mercy of what is available and accessible to us. Even when food is packed from home, there are certain constraints or additional factors that influence our choice of food. Social milieu, trends, work or college culture, group affiliations and peers, conversations, economic reasons, convenience, schedules and the overall physical environment of the campus, all influence our food choices.
Food-service establishments in campuses include in-house canteens, catering and food delivery services, restaurants and cafes and food vendors. Many people bring packed lunches from home or use home-based services like the dabba-system. There are multiple issues that need to be addressed in these settings such as ensuring food safety and hygiene standards, availability of healthy food options, environmentally sustainable food practices and empowering consumers to make right food choices.

For this, a comprehensive checklist has been developed by FSSAI along with a resource book on best practices called ‘The Orange Book’. Any campus that meets the threshold criteria mentioned in the checklist, after evaluation by a third-party audit agency, is declared as an ‘Eat Right Campus’. This certification recognizes the efforts of the campus, adds prestige and brand value to its name and enables it to inspire others to adopt these best practices.

A six-step general procedure has been set up to certify campuses. It begins with self-assessment or pre-audit of the campus based on the checklist. This is followed by gap analysis, training, capacity building and taking other measures to address gaps. Next, a third-party audit takes place based on which a rating is awarded. Campuses with a 3-star rating and above are awarded certificates. Sustenance of the campus is ensured by appointing a nodal person to continue these efforts. Regular inspections by the Food Safety Department or audit agencies take place for monitoring.

The campus initiative covers almost half a billion of workers in India in offices, institutes, organizations, hospitals and 37 million students and teachers in colleges. Scaling-up this initiative nationally would enable almost half of the population to eat right and stay healthy. For those who are already suffering from medical conditions such as diabetes, hypertension, stomach disorders, a resource book on general guidelines for diets for these medical conditions has been created by FSSAI, called ‘The Purple Book’.

In special environments such as tea-estates that employ a large number of people, particularly those from the vulnerable sections of the society, this initiative would improve the overall nutrition profile of people and their future generations.

This approach to preventive and promotive healthcare along with disease management through diets, would significantly boost productivity, reduce absenteeism and the burden of healthcare costs and ultimately lead to the economic growth of the country.

Railway stations, particularly the 200 large junctions in the Indian Railway network, see a huge influx of passengers numbering over 8 billion every year. The certification of these stations would assure passengers of safe and healthy food even while traveling. This would further boost tourism and bring in revenue.

Last but not the least, over 4 lakh inmates in over 1400 jails would also benefit from this initiative and contribute to their rehabilitation, thus improving the social environment of the country as well.

After its launch, 7 Eat Right Campuses were recognized on 7th June 2019, World Food Safety Day and 7 more campuses have been added to the list with several in the pipeline.
IIT Gandhinagar awarded as ‘Eat Right Campus’ by Hon’ble Health Minister, Dr. Harsh Vardhan on 7th June 2019.

**Food @Places of Worship**

India is a country of many religions. Religious practices, particularly visiting places of worship, are deeply ingrained in the Indian psyche. While some people visit places of worship only during festivals or special occasions, for others it is a daily ritual.

Many temples, Gurudwaras and monasteries regularly provide ‘prasad’ or ‘holy food’ to devotees. Even around the temple or mosque premises, there are vendors and food service establishments, which devotees frequently visit. The roads to pilgrimage spots are lined with shops, restaurants, vendors that see a vast number of visitors particularly during special occasions or seasons.

To ensure safety and hygiene standards of food in this setting is critical since visitors come from around the country and even the world to visit places of worship on a daily basis. There are challenges around addressing issues of food waste, plastic use given the huge volume of food served.

Therefore, FSSAI has developed a Guidance Document on ensuring safe, healthy and sustainable food in places of worship. A system of third-party audits based on a pre-defined checklist has been created to evaluate and certify places of worship based on ratings. Training of Food Safety Supervisors for these places of worship is done to ensure that good hygiene and sanitary practices are adopted and implemented. All of these steps are packaged under the ‘BHOG’ initiative of FSSAI- Blissful Hygienic Offering to God.

**Food@Anganwadi Centres**

The Integrated Child Development Services (ICDS), as one of the flagship programmes of the Government of India, represents one of the world’s largest and unique programmes for early childhood care and development. It provides a range of services to 9.83 crore mothers and children and 10.03 crore children that includes providing hot-cooked meals and take-home rations.
These Anganwadi centres are mini environments, where mothers and children from vulnerable sections, from largely rural backgrounds are served. They are counseled about nutrition and need to learn about safe food practices. Anganwadi workers are the frontline health-workers, who educate and engage these women and children. FSSAI has created the ‘Eat Right Toolkit’ to train these Anganwadi workers. This toolkit is an interactive training module on safe food practices, personal and surrounding hygiene, combating food adulteration, healthy eating habits, food fortification and healthy diets. An online course on the same has also been developed. By embedding this module into the regular training module for Anganwadi workers, they can reach out to the community at the grass roots level and enable them to adopt healthy practices.

Food @Government Settings

Government premises, offices, canteens and programmes are also unique settings in which food is prepared and served regularly. FSSAI has come out with procurement guidelines for safe and healthy food in Government departments.

A guidance note for safe and nutritious food in the Mid-Day Meal programme has been developed. Similarly, a guidance manual for ICDS includes good hygienic and sanitary practices to be followed based on Schedule 4 of the FSS Act, 2006.

Influencing food choices: People’s movement or Jan Andolan through ‘whole-of-government’ and ‘whole-of-society’ approach

Food choices are influenced by a variety of factors. These include individual factors, which are a product of tastes, preferences, values, beliefs, ingrained habits, emotions and heuristics (mental shortcuts) and cognitive biases, social factors such as cultural norms and narratives, influence of peers and social identity and finally, physical and economic environments, advertising, mass and social media, pricing, accessibility, availability and convenience.

Eat Right India is geared towards shifting these food choices towards healthier alternatives. Campaigns for citizens and food businesses have been launched under various initiatives of Eat Right India. These campaigns are designed to bring about large-scale behaviour change among consumers using the ‘EAST’ approach. i.e. making desired behaviours Easy, Attractive, Social and Timely around each of the key messages of Eating Right. These messages include reducing salt, sugar and fat, promoting fortified foods and organic food, following safe and healthy cooking practices, minimizing food waste and eliminating plastic waste. Nudges have been introduced to make right food choices more attractive to citizens by simple changes in choice architecture such as prominent displays of healthier food options. Incentives to food businesses have been provided in the form of Eat Right Awards for following best practices.
Reducing the consumption of fat, particularly saturated fat, sugar and salt in the daily diet is critical to reducing the risk of non-communicable diseases such as obesity, diabetes, hypertension and heart disease. To nudge citizens to eat less salt, sugar and fat, engagement materials such as a TVC starring Rajkummar Rao, posters, videos from experts and other materials have been created and widely disseminated. These are being disseminated through various channels such as television, social media and outreach events to educate citizens on behaviour change strategies to enable them to make informed food choices. These activities fall under the ‘Aaj Se Thoda Kam’ campaign that outlines various strategies for behaviour change to reduce the intake of salt, fat and sugar. These strategies, follow the EAST approach and include easy, attractive, social and timely steps such as eating healthy alternatives such as lemon instead of salt for flavouring, whole fruits instead of fruit juice or desserts etc.

Trans-fat free India

Elimination of industrial trans-fats that are harmful to health is the goal for 2022, a year ahead of WHO’s goal by 2023. While regulatory actions are being taken for food businesses, campaigns to educate citizens to eliminate trans-fat have been launched under ‘Trans-fat Free India’. A public service announcement on the ill-effects of trans-fats has been created and disseminated. Engagement material such as posters and videos have been created with steps to eliminate trans-fat in the diet by following healthy frying practices, avoiding commercially fried foods, reading labels on trans-fat content on food packages and so on.
Food Fortification

While eating a healthy, varied and balanced diet is the ideal way to get all the nutrients people need, it is often not practical. The variety of food is not always available, accessible and affordable to everyone. Similarly, taking nutrient supplements is also not always feasible and is often expensive and requires the supervision of a medical doctor. Eating fortified foods is a simple, inexpensive and easy way to get the required key vitamins and minerals for good health. FSSAI has already notified standards for five fortified food staples namely, wheat flour, rice, oil, milk and salt. The Food Fortification Resource Centre (FFRC) has been specifically set up at FSSAI to promote large-scale food fortification in collaboration with development partners. However, public awareness campaigns are necessary to create demand for these fortified foods.

For this, the +F logo has been created to help citizens to identify and choose fortified foods. TVCs with celebrities starring Virat Kohli and Sakshi Tanwar, social media campaigns and outreach events such as the Swasth Bharat Yatra, a pan India cyclothon led by FSSAI in 2018 and Eat Right Melas. These campaigns serve to market fortified foods as value-added products to make them more attractive to citizens.
Promoting Organic food

An important part of eating healthy is eating local and seasonal food. Many people prefer to take organic food as it is free from pesticides and other chemicals. Since it does not use preservatives, it has to be consumed locally and seasonally. The public is often unaware about authentic organic foods. For this, FSSAI has created a logo to mark organic food creating an identity for them. Moreover, a directory of organic food producers has also been created and uploaded on FSSAI’s website for ready reference. All these steps have been taken under the Jaivik Bharat initiative which certifies authentic organic food to empower consumers to make informed choices.

Safe and Healthy Cooking Oil

Using safe and healthy cooking oil is essential for good health, particularly in the light of growing incidence of diseases like cancers and heart diseases. FSSAI has launched awareness campaigns on promoting safe and healthy cooking practices among citizens to safeguard their health under the RU CO campaign. Through various engagement material such as a TVC starring Virat Kohli, posters, videos, social media posts, citizens are being educated about not using the same oil for frying repeatedly, changing cooking oils regularly, filtering harmful dark particles in oil. Citizens are also empowered to make informed decisions about eating at food establishments that follow best practices for used cooking oil.
No Food Waste

Since India is a country of contrasts with several million people going hungry every day and a large section of the food produced going waste. In order to encourage and educate citizens to reduce food waste at the household level, awareness materials and guidance documents have been created and disseminated. These include simple tips such as responsible buying of food, recycling food, reusing leftovers and sharing surplus food. To facilitate food donation, Regulations for safe storage and transport of donated food have been released. A network of food collection agencies called Indian Food Sharing Alliance (IFSA) has been created by FSSAI to distribute surplus food to those in need. A mobile app and single contact number is being provided to citizens for easy access to these agencies. Various schemes to motivate people to easily donate surplus food during weddings and social functions have also been initiated. Thus, by making food donation easy, attractive, social and timely, citizens are being nudged to share surplus food.

No Plastic Waste

Plastic waste, especially from food packaging is a hazard for the environment as well as human health, if it is consumed. This includes plastic cups and plates used for serving and packing as well as plastic packaging in processed foods etc. Therefore, various drives to promote environment-friendly materials instead of plastic and collect plastic waste are being implemented. Short videos, posters and engagement materials are also being widely disseminated. Citizens are encouraged to use cloth bags or ‘jholas’ instead of polythene bags.
Nudging the Food Industry: Eat Right Awards and Eat Right Start-Up Awards

While the above-mentioned campaigns nudge citizens to eat right, incentives have been created to nudge the food industry as well on the supply-side. These are in the form of awards based on their commitment and actions to promote safe, healthy and sustainable diets. These awards recognize food businesses, start-ups and individuals for their exemplary contribution to reformulate to produce healthier food options, promote healthier food options, provide innovative solutions to public health nutrition issues and so on. Eat Right Awards and Start-Up Awards have already been given to a number of industry players and individuals on the culmination of the Swasth Bharat Yatra and 7th June, World Food Safety Day, 2019.

Approaches for ‘Jan Andolan’

To implement Eat Right India as a true people’s movement, FSSAI has taken the Whole of Government and Whole of Society Approach to transform the food culture of the country.

Whole of Government Approach

Eat Right India requires multiple interventions targeting all parts of the food value chain that span all levels of governance and include representation from a wide range of stakeholders. Given that mandates of most of the ministries/departments relate to food in one way or another, ‘whole government approach’ is necessary. This happens through vertical and horizontal linkages with Government departments and convergence with government flagship programmes. A list of ministries / departments and their area(s) of interface is given in the annexure.

In order to limit residues of pesticides, veterinary drugs and antibiotics, heavy metals and Aflatoxin in food, intervention is required at primary production stage itself. Since, primary production is outside the remit of the Food Authority, involving the Ministry of Agriculture Cooperation and Farmer’s Welfare, and the Ministry of Animal Husbandry, Dairying and Fisheries is essential to promote good practices for agriculture, dairying, poultry and aquaculture. Animal feed industry in the country is currently not regulated. It is proposed to bring animal feed under the regulatory remit of FSSAI as is the practice in most parts of the world. With this, India too would be able to take ‘One Health’ approach for holistic and effective action against various public health threats.

Various initiatives such as food fortification and promoting safe and healthy cooking oil under RUCO require concerted efforts by line ministries such as Women and Child Development, Consumers Affairs, Food and Public Distribution and Human Resource Development, Petroleum and so on. FSSAI brings all these central ministries and state departments under a single platform so that efforts are implemented cohesively.

Along with horizontal linkages with the Government’s central ministries, FSSAI also works with Departments vertically. For instance, Clean Street Food Hubs, Clean and Fresh Fruit and Vegetable markets, outreach events such as Eat Right Melas to engage citizens require the cooperation of City Municipalities, Sanitation and Drinking Water supply departments and so on.
There are various Government programmes that already work within the domain of food and public health. Leveraging their reach and collective strength is critical for the successful implementation of these programmes. Therefore, convergence is a critical strategy of Eat Right India. For instance, special cleanliness drives in fruit and vegetable markets, street food vending areas in cities/towns are being jointly taken up under the Swachh Bharat Abhiyan. Frontline health workers are being trained on food safety and nutrition under Ayushman Bharat through the Eat Right Toolkit.

FSSAI has developed the ‘Eat Right Toolkit’ and online courses to empower frontline workforce and enable them to bring about change in the community. This could also be used for training of Anganwadi Workers under Poshan Abhiyan and complement their own training efforts. Efforts to promote food fortification have been clubbed with Anaemia Mukt Bharat and the Poshan Abhiyaan to address micronutrient malnutrition more effectively. Jal Shakti Abhiyan has been brought into special focus to ensure potable water supply in clusters of petty food vendors in places such as street food hubs, vegetable, fruit, meat markets. Thus, synergies with overlapping departments and programmes have given a boost to Eat Right India.

Whole of Society Approach

FSSAI works with stakeholders such as intergovernmental organizations and religious institutions, civil society, academia, the media, voluntary associations to bring about a change in food culture. It influences and mobilizes local and global culture and media, rural and urban communities, and all relevant policy sectors such as education system, the transport sector, the environment and even urban design. This Whole of Society Approach complements the Whole of Government approach.

Eat Right Challenge for Districts and Cities

Combining the Whole of Government and Whole of Society Approaches, FSSAI is scaling up Eat Right India by leveraging federal competitiveness. Food is a state subject and it is upto the state to adopt, fund and implement these initiatives and campaigns to reach all sections of the society. To motivate states, specifically districts and cities, that can be considered administrative and social units the ‘Eat Right Challenge’ has been conceived.

This challenge supports, acknowledges and rewards the efforts by districts and cities to adopt and scale-up initiatives under Eat Right India. This would not only create a sense of competition among districts/cities motivating better performance but also inspire others to join.

The first hundred districts/cities to register that fulfil essential pre-defined criteria would be eligible to participate. A nodal person from each participating district/city would be appointed for coordination. Each district/city would be provided with a toolkit to implement these initiatives and programmes and technical support through mentors from FSSAI, State/Govt. Officers and professional networks created by FSSAI. Financial support would also be provided as seed money to kick-start these initiatives.
Districts/cities would choose programmes/initiatives to implement from a menu. They would be evaluated based on a matrix based on the number of programmes implemented, scale of outreach, responsiveness within the given timelines and local resources mobilized. Monthly reviews would be conducted to evaluate the progress of these initiatives.

Creating an Enabling Environment

Networks of professionals in food and nutrition, higher education institutes, consumer organizations, scientific researchers and entrepreneurs have been created under Eat Right India to reach out to citizens and provide the necessary technical support and resources on a continuous basis to sustain the movement nationally.

Voluntary Consumer Organizations

NetCOFaN is a Network of Consumer Organizations in Food and Nutrition that has been created to bring these organizations on a common platform to generate awareness among consumers and empower them to make informed choices. This network would function as a dissemination vehicle for correct messaging on eating right through various chapters of these organizations across India.

Institutions of Higher Education

NetHIFaN is a framework with a four-pronged strategy for a structured, holistic engagement with higher education institutions that has been created under the Network of Higher Education Institutes in Food and Nutrition (NetHIFaN). With the help of Industry, Academia, Associations and other stakeholders, the framework offers a host of partnership opportunities for Higher Education Institutes (HEIs) to mainstream curricula and certification of food and nutrition courses, provide hands on training to the budding professionals, offer scholarship and incentives to students along with the opportunity for practical training.

Professionals in Food and Nutrition

NetProFaN: Network of Professionals in Food and Nutrition (NetProFaN) is a network that has been created to leverage their collective strength and expertise systematically to support both demand and supply side initiatives of Eat Right India. It consists of seven associations, namely Indian Medical Association, Indian Dietetic Association, Nutrition Society of India, Association of Food Scientists and Technologists of India, Association of Analytical Chemists, Indian Public Health Association and India Federation of Culinary Associations. It would function as a self-sustaining model at national, state and city levels, through its chapters, to adapt and implement activities to address the local needs and issues on safe, healthy and sustainable diets. This would ensure that Eat Right India reaches all sections of the society.
In an endeavour to make Eat Right India as a people’s movement, the authority is planning for Jan Andolan around safe and healthy diets. Over the years, large-scale citizen-centric campaigns have been launched to bring social and behavioural change. These interventions are purely demand-side and complement the supply-side interventions such as setting standards and training and capacity building of FBOs. Some of the initiatives undertaken by the authority include - ‘Aaj Se Thoda Kam’ campaign, Trans-fat free India, Food fortification, promoting organic food, reducing food waste, RUCO, reducing plastic waste, among others already discussed.

**Future Challenges and Opportunities**

Future challenges and opportunities lie in according priority to strengthen and expand the core regulatory functions of the authority, support the nation-wide rapid, time-bound scale-up of the Eat Right India movement to positively transform the ‘food environments’ in the country. A results-based approach should be taken with focus shifting from inputs to achieving outcomes and results, thus driving the achievement of planned results at national, state, district and city level in a time-bound manner.

Implementation and scale-up by states will be key to the success of Eat Right India. There are several World Bank projects that have effectively used incentives to build higher priority and commitment for project activities in States that has led to implementation scale-up and effectiveness. The concept of ‘Challenge Fund’ introduced under the Bank’s support to the Integrated Child Development Services (ICDS) and the National Nutrition Mission (NNM) has been very effective. Under this, the first three states to achieve the selected results were awarded with an additional fund of USD 250,000. This amount is treated as ‘flexible fund’ which the state can spend on State priorities as they wish to. Similar approach can be tried under this proposed project as well. Adding a ‘flexi component’ as a budget head – FSSAI can have a flexible budget component to provide flexibility to the States to spend on their needs/innovations etc. A Memorandum of Understanding (MoU) could be signed with the States wherein states agree to carry out certain tasks and activities under the project with incentives to the forerunners.

Eat Right India presents a new approach that has great potential to inform worldwide food regulatory systems, particularly in developing countries and therefore requires high quality research to not only inform Eat Right refinements as it moves forward; it also requires to be studied by and informed by global experts, renowned global institutes.

With the overall goal of transforming the ‘food environments’ in the country to address India’s malnutrition and public health challenges, it is important to:

1. Support rapid, time-bound and quality scale-up of Eat Right India across the country;
2. Build capacities (human and institutional), especially at the state and local levels to achieve scale; and
3. Institutionalize sustainability mechanisms, within and outside the government.
While, essentially, a regulatory authority for food safety, the FSSAI has played a key role in addressing issues arising from foodborne illnesses, malnutrition in its various forms, rising incidence of NCDs and obesity and promoting sustainability. In these efforts, FSSAI is required to coordinate with multiple central ministries and agencies and the state governments. Under the Food Safety and Standards Act, 2006, States/UTs are primarily responsible for implementation of provisions of FSS Act, 2006 and Rules and Regulations made thereunder through the Food Safety Commissioners who are assisted by the Designated Officers (DOs) and Food Safety Officers (FSOs). FSSAI faces challenges both at the national level and working with the States. These are listed below -

- Institutional capacity in terms of infrastructure and facilities, staff and HR practices, financial and audit systems, digital platforms and IT support and system of monitoring and evaluation.

- While, there is strong strategic planning capacity built in the organization, however state-level implementation is weak.

- States / UTs accord low priority to food safety and eat right movement and therefore infrastructure and facilities, size and capacity of staff in the States and at local levels.

- There is inadequate support for food testing laboratories in the States with lack of infrastructure, equipment and supplies in most of them.

- There is lack of IT support system for effective surveillance and monitoring activities.

- There is lack of appreciation about close interconnection between food safety, nutrition and rise of NCDs and obesity, therefore integration of Eat Right movement with existing State health systems is poor.

- There is lack of awareness about the initiatives and programmes, and resources potentially available from FSSAI.

Government of India has increased investment on food safety and nutrition significantly in recent years. Outlay for FSSAI has increased by five-fold over the past 5 years from Rs.60 crore in 2015-16 to 300 crores in 2019-20. While, some States/UTs are providing adequate resources and giving necessary attention to food safety, many States / UTs are lagging behind. They need to catch up. An additional investment of Rs. 500 crores is estimated to strengthen food safety administration in the States/UTs, particularly weaker States / UTs over the next 5-year period. Most of the other activities would be accommodated through FSSAI’s annual grants or by a mix of innovative fund mobilization strategies. For e.g., training and certification of food safety supervisors could be managed directly by food businesses while capacity building in informal sector could be managed through CSR funding. To carry out the proposed system strengthening and scale-up activities, a budget of approx. 3000 crores is estimated over the five-year period.
Outcomes

Eat Right India would be fully scaled-up to reach all States and UTs. All food businesses (big, small or petty) would be brought under licensing and registration regime over the next five years. Most of them would also be hygiene rated. There would be increased availability of safer food to consumers: (i) Unsafe food availability reduced to <1%; (ii) Misbranded foods to <1%; (iii) Non-standard foods to <5%. Fully matured and functional IT system for effective monitoring and evaluation. Globally benchmarked food standards, codes of practices and guidelines in the country. India takes global leadership position in adopting food systems approach for healthy and sustainable solutions for our citizens.

Eat Right India would positively impact nation’s health and environment and would provide significant economic and social benefits. Private ecosystem that would develop to support food administration would create close to half a million new jobs. These would be in FSSAI-notified food laboratories, food business owned food laboratories, third party audit agencies, food safety training partners, and as ‘Food Safety Mitras’ who would facilitate food businesses in licensing and registration work. Further, new jobs would also be created in new ecosystem for collection, aggregation, cleaning and processing of used cooking oil and its conversion to biodiesel.

Systematic efforts to simplify, streamline and strengthen food safety compliance using technology would ensure transparency, replicability and predictability resulting in ease of doing business and spurring growth of the food processing sector. The cluster initiatives such as clean street food hubs; clean and fresh fruit and vegetable markets would help organize hawkers and petty businesses and improve hygiene and food safety and also increase their productivity. These certified clusters would improve the livelihoods of the most vulnerable section of our society and yield rich health and environment dividends.

A recent study suggests that prevention of foodborne illnesses due to unsafe food alone will save India $28 billion that is about 0.5% of its GDP every year. Cost of micronutrient deficiencies and non-communicable diseases is estimated in trillions of dollars. Modest investment in on what and how people eat would result in significant savings in curative healthcare. There would also be environmental benefits through waste re-cycling, plastic reduction and conversion of used cooking oil to biodiesel (RUCO- Repurpose Used Cooking Oil). Bio-diesel from used cooking oil also supports import substitution and energy security. Finally, safe food and healthy diets under this programme would contribute to ease of living overall.
Each program has a unique space to contribute to the common goal of advancing public health – Eat Right Strategy to address food system challenges to improve public health and environment.
Chapter 4: Large Scale Change and System Leadership

In designing the program, FSSAI realized that it would need to go beyond the traditional standard setting and regulatory-only approaches of many developed countries and it took a different approach. Integrating food safety, public health nutrition, and environmental sustainability, the program goes beyond preventing unsafe food to proactively promoting safe, healthy, and sustainable food; creates consumer awareness and demand; works with industry, using a mix of regulatory, enabling, and capacity-building approaches, and goes beyond traditional food safety regulatory mechanisms in an effort to tackle the informal economy.

Initiatives

Eat Right India packaged complex elements into three simple themes that are easy to understand and remember: Eat safe, Eat healthy, and Eat sustainable. It developed a wide range of initiatives to reach its multiple audiences in a variety of ways. Among its initiatives are the following:

- To disseminate its messages, it engages networks of research and academic institutions, consumer organizations, and professionals in food and nutrition.

- To enhance citizens’ knowledge of the basics of food safety and nutrition, it developed a toolkit, e-courses, an online quiz, and materials for school children.

- It builds the capacity of food handlers at places of worship to adopt and maintain food safety and hygiene; enables the collection of used cooking oil for conversion to biodiesel fuel; and reduces food waste by connecting food business operators, surplus food distribution organizations, and people who need food.

- It works with street food vendors to raise the quality, hygiene, and safety of their food; and it provides hygiene ratings to food service establishments, empowering consumers to make informed choices when they eat out.

Potential for Large-Scale Change

Over the next five years, FSSAI intends to scale up Eat Right India across the nation, involving individual states and both broadening and deepening its initiatives. Mapping the key elements of Eat Right India to the Large-Scale Change Model developed by England’s National Health Service reveals that the program is well grounded in the 10 principles that underpin large-scale change.

1. It is moving toward a new vision, one that is not incremental but transformational.

2. It has identified and communicated key themes that people can relate to and that will make a big difference: Eat safe, Eat healthy, and Eat sustainable.

3. It involves “multiples of things”—that is, multiple stakeholders, agendas, points of view, needs and wants, details, and systems that need change.
4. To distribute leadership, it has framed the issues in ways that engage and mobilize
the imagination, energy, and will of a large number of diverse stakeholders.

5. Its changes are mutually reinforcing across multiple processes and subsystems—
that is, its many activities connect with others and allow audiences to receive its
messages and participate in the movement in many ways.

6. The leaders of the program have continually refreshed the story, with constant
framing and reframing of the vision and varied means of communication, attracting
new and active supporters.

7. The program’s planning and designs has been based on monitoring progress and
have been adapted in response to feedback.

8. It has been open to the contributions of many sources of leadership.

9. It has begun transforming mind-sets, leading to inherently sustainable change.

10. As the program moves forwards, it will be important to bear in mind the need to
maintain and refresh the leaders’ energy over the long haul. Large-scale change can
take time, and it is important that the leaders not run out of steam.

**Systems Leadership**

It is well understood that leaders play a key role in conceptualizing and driving change. A
comparison of the key aspects of the leadership FSSAI has exerted in creating and
launching Eat Right India with the elements highlighted in the Harvard Kennedy School’s
Systems Leadership Model indicates that FSSAI has applied the essential skills:

- Understanding the system that shapes the challenge they seek to address;
- Catalyzing and supporting collective action among relevant stakeholders; and
- Listening, learning, and leading through coordination with and empowerment of
  others.

**Leading Systems Change**

The Systems Leadership Model further set out five key elements of the system change
process. The FSSAI leadership has shown success in implementing the first two elements,
Convene and Commit, and Look and Learn—that is, they effectively convened and
engaged with a range of stakeholders, and they draw ideas and learning from many
stakeholders and brainstorming sessions, getting perspectives from several quarters.
They have demonstrated promise in the third element, Engage and Energize, by
successfully engaging with and mobilizing a wide range of stakeholders. However, FSSAI
has some way to go to show success in the two elements of Act with Accountability and
Review and Revise: it will be crucial to establish and agree on frameworks for mutual
accountability for results in pursuit of the larger goal, and to establish systems for “review
and revision.”
Areas for Further Attention

The analyses clearly bring out that Eat Right India has made a very promising start. Although it is a relatively new initiative, its vision, design, and early implementation reflect all the elements of large-scale-change and a systems leadership approach. Thus, it has the potential to bring about sustainable change. At the same time, it has a long and challenging journey ahead. Several points will need attention as Eat Right India is scaled up. Leadership development efforts will need to be designed, implemented, and institutionalized at all levels—national, state, and local. For rapid scale-up, it will be important to get states on board and to develop systems to build their capacity and share new developments, tools, and resources.

- To institutionalize the change, it will be important to give attention to establishing relevant policies (central and state), realigning organizational structures at FSSAI and its regional offices and at state health departments, and establishing accountability systems for collective action.

- FSSAI should set up platforms with defined structure, function, and resources to fulfil the national and international learning needs and the knowledge creation and exchange needs of Eat Right India. Linkages and partnerships with national and international schools and universities could add value to the research and learning from Eat Right India.

- Eat Right India needs to develop a comprehensive conceptual framework for knowledge management, including a strong monitoring and evaluation system. Specifically, a state-of-the-art management information system to meet the monitoring needs of Eat Right India and a dashboard to monitor progress and share it widely with all stakeholders will be key.

Furthermore, periodic assessments and evaluations to determine the impact of current strategies and approaches and to inform future directions and improvements is important.

To ensure that resource availability matches the program scope and scale, FSSAI should undertake a full resource mapping and planning, including at the state level, and should urge/engage with/incentivize states to commit and allocate greater resources for Eat Right India.

References


Chapter 5: Historical and Global Context

“How can you know where you are going if you don’t know where you have been”

Alfred D Chandler Jr.

Did you know that most of the food we see on the shelf of the supermarkets today, wasn’t available a 100-150 years from now? This was because there were very few techniques to preserve food. The food would spoil very fast and a lot of people suffered from food poisoning and even death. The food we eat today, is completely taken for granted because it is cheap and easily available.

The food you and I are eating today has been possible because of the efforts of a lot of scientists, researchers, engineers, food technologists and nutritionists - the food we eat is safe, nutritious and healthy. But the process of developing food was not invented overnight. In order to understand the historical and global context, it’s imperative to think like a historian and appreciate the dynamic nature of the food industry.

Preservation of food has been practised since early humans started farming. Early humans realized the fact that they could not always hunt for animals or pluck fruits from trees every day. And if they stored food commodities like meat, milk etc., they spoiled very fast. So, they had to develop some preservation techniques for consuming safe food even when they could not hunt, or when fruits and vegetables weren’t available.

Some of the earliest preservation techniques included sun-drying, smoking, freezing, salting, fermenting and pickling. The downside of the early preservation techniques was that they changed the flavour and texture of the food along with huge loss of vitamins most of the time. These techniques were not very effective for travellers and soldiers who needed a healthy diet.

In 1795, Napoleon offered 12,000 gold francs to anyone who could develop a method for preserving food for the military. The prize was won by a French confectioner named Nicolas Appert. He sealed food in a glass jar and then heated the jar, the time depending upon the type of food.

The invention of canning is considered as the major turning point in the history of food technology and food science. Nicolas Appert is also known as the ‘Father of Canning’ because of his remarkable contribution, and canning is sometimes referred to as ‘Appertization’. Although canning was successful but the science behind its success wasn’t known until 50 years later, when a French microbiologist and chemist named Louis Pasteur showed that growth of micro-organisms is responsible for the spoilage of beverages. He also invented a process where milk was heated to a specific temperature for a specified time to kill the spoilage micro-organisms.

The process he invented is still prevalent in the dairy industry and wine industry as well. In honour of Louis Pasteur, the process is known as ‘Pasteurization’. In 1895, almost 30 years later in Boston, Massachusetts, William Lyman Underwood from a canning company
worked with Samuel Prescott to develop the research which would further lead to the concept of ‘Thermal Death Time’. A lot of people don’t consider this event when it comes to the history of food technology, but this was also one of the turning points in history as their research was important to determine the time-temperature combination for a food. That means, for how long a food needs to be cooked and at what temperature.

Since then, a lot of research and discoveries were done but in the 20th century, food safety was still an issue. In 1960, the Pillsbury Company, NASA and the USA army laboratories collaborated to develop safe and healthy food for the astronauts. Eventually, they developed a systematic preventive approach to ensure food safety and that came to be known as ‘HACCP’ or Hazard Analysis Critical Control Point. HACCP is a preventive tool used in food industry to ensure safety of the food. HACCP is prevalent today in every food industry and food safety is incomplete without the implementation of the HACCP program. Since the development of HACCP, there has been rapid growth in the food technology. Industrialists have adopted newer technologies to process the food in a faster and efficient way.

Figure 1 demonstrates how the demands related to food have transitioned from staple foods to the overall wellbeing of the consumers. In the nineteenth and early part of twentieth century the consumer wanted food to simply satisfy hunger. Wars and famines plagued most parts of the world and there was a lot of food insecurity. As agriculture progressed and economies advanced in the twentieth century, the consumers now food secure, looked for variety in their food. The role of food changed from merely satisfying hunger to providing pleasure. A lot of processed, ready to eat and convenience foods made their way into the market. It was only in the twenty first century that health, wellness and nutrition gained ground as the criteria for food selection. This was also the period when people understood the relation between exponential rise in the incidence of non-communicable diseases and diet. The future demand for food is projected to be centred on wellbeing.

Figure 5. 1: Eating to Promote Wellbeing

Source: Brabeck-Letmathe, 2016
During the 1950s, India also underwent a transition in terms of technological advancements. The years from 1951 to 1964 were those of maturity and achievement. A look at landmark developments of the era would paint a picture.

A major achievement was in the field of scientific research and technological education. In 1950, CFTRI (Central Food Technological Research Institute) was set up in Mysore as a constituent laboratory of the Council of Scientific and Industrial Research, New Delhi. By 1964, the two-year M.Sc Food Technology course commenced with the establishment of International Food Technology Training Center (IFTTC).

Additionally, processed food products entered into the Indian market as the food production began shifting from home to the factory. Some of the companies set up in the late nineteenth and early twentieth century, can be considered as the torch bearers for the evolution of the food industry in India. One such example is that of Britannia which was established in 1892 in Kolkata. The first product they made was biscuits mainly for the British families. The company today is a market leader in several product categories.

Parle Products, established in 1929, started as a single confectionery brand named ‘Orange candy’. It is now a large food company dealing in a number of products like biscuits, cakes, rusks, chocolates, snacks and staples. Kissan was the first brand in vegetable and fruit processing in India which came up in 1934. It is now a market leader in jams and ketchups. In 1946, the first Dairy Cooperative – Amul was established in India. Amul spurred India’s white revolution making the country the world’s largest producer of milk and milk products. Several other companies have since come up and contributed to the growth of the food processing and manufacturing sector in the country. The Ministry of Food Processing Industries has mentored entrepreneurs and food businesses to increase production as well as innovate. The scheme of Mega Food Parks provides a mechanism to link agricultural production to the market. They typically consist of supply chain infrastructure including collection centres, primary and central processing centres, cold chain and have provisions for entrepreneurs to set up food processing units.

The Indian Standards Institution (Certification Marks) Act was legitimized in 1952. The scheme was formally launched in 1955-56 and enabled to grant licenses to manufacturers who produced goods in conformity to Indian standards. Around the same time, Fruit Products Order (1955) was promulgated under Section-3 of the Essential Commodities Act. The Prevention of Food Adulteration Act was passed in 1954 as a central legislation to address ‘food adulteration’.

Mandatory fortification of hydrogenated vegetable oil (Vanaspati) began in 1953. In the next few years, a community based controlled trial was initiated in Kangra Valley. The study period was approximately 16 years (1956-1972) and observed goitre prevalence amongst 100,000 school aged children. As a result, the National Salt Iodization programme was started in 1962. This was a classic case of research based policy planning culminating into a nationalized programme to address iodine deficiency.
Despite the existing challenges with agricultural productivity and food insecurity, India witnessed remarkable developments in allied fields of food science innovation, strengthening of academic capabilities and regulatory framework. In the 1960’s, many illustrious institutions came into existence for example, Defence Food Research Laboratory (1961); Paddy Processing Research Centre (1967) to name a few. The impetus on food exports was strengthened with the passing of Export (Quality control & Inspection) Act (1963) by Ministry of Commerce and Industry. Furthermore, India gained global recognition by becoming a member of Codex Alimentarius Commission in the year 1964. The first wave of Green Revolution began in the 1960s and was largely confined to ‘wheat’ and the northern most parts of the country. This laid the foundation of self-sufficiency in crop production many years later.

‘Necessity is the mother of all invention’ implying that the primary driving force for all inventions is a need. The next couple of decades saw an evolution of consumer needs, opening and deregulation of markets, enhanced scientific and technical understanding within the food and nutrition domains, growing regulatory complexities and challenges. During this journey, many crucible moments altered the face of regulatory ecosystem in India and paved way for the Food Safety and Standards Act of 2006. This includes (but is not limited to) the Behala oil tragedy (1988-90), Delhi epidemic dropsy disaster (1998), Pesticides in carbonated beverages and bottled water (2003).

As we reflect on the past, it dawns on us that there are many factors that go into making national food law and a food regulatory ecosystem. A sampling of these factors includes history, culture, traditions, international obligations, institutions, political commitment, resources and social norms. The triggers for any transformational change often come in the form of public health issues and related constructive activism, domestic and/or international incidents, scientific developments, innovations and collaborative problem solving.

The future presents a myriad of complex challenges to address. On one hand we are bound to experience climate change, reduced agricultural productivity, scarcity of resources, rising population and a demographic shift to an ageing cohort, improved life expectancy and associated quality of life. While on the other, we would have to stay ahead of the curve when it comes to technological advancements, their applications as well as the related misuse including economically motivated malpractices.

The bottom line however is one cannot fix the symptoms in isolation without looking at the entire food ecosystem holistically. With this philosophy at its core, the ‘Eat Right’ textbook puts a magnifying lens at the multi-faceted and inter-linked dimensions of the food ecosystem. It allows the reader to reflect on the past, deliberate on the present and build a collective future.

References
