

## REVIEW PAPER

## Changing Lens of Agripreneurial Opportunity by Bringing Agriculture and Nutrition Together: Review

Neelam Yadava<sup>1</sup>

1. Assistant Professor, Tata Institute of Social Sciences (TISS), Tuljapur campus, Osmanabad, Maharashtra  
Corresponding author e-mail: neelamunique@gmail.com

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### ABSTRACT

*Food and nutrition security are fundamental to the achievement of the Millennium Development Goals and to the emerging post-2015 Sustainable Development Goals agenda to reduce the burden of nutritional disorders. The 2009 World Summit on Food Security (WSFS) identified four main pillars of food security : availability, access, utilization and stability of food. On the other hand the term 'nutrition security', emerged in the mid-1990s and focused on food consumption by the household or the individual and on how that food is utilized by the body and thus in principle is more. The need for a paradigm shift in policy formulation from focusing on food security at the aggregate level to nutrition security at the level of each child and adult required. Agripreneurs operate in a complex and dynamic environment and being part of stakeholders including other farmers, suppliers, traders, transporters and processors, innovative strategies is planned. Various Ashoka fellows illustrating Nutrient Value Chains, across the world, like probing SOIL IQ (wireless soil testing) that transmits real-time data about soil conditions to a web site or cell phone, commercial farming with nutrient-dense foods, nutritional mushroom, nutrient Value Chain, Digital Green and regeneration of acres of dry, desertified, former forest lands back into an ecologically rich natural and farming landscape, restoring the water cycle, local food production, and substantial biodiversity. Innovative strategies that integrate agriculture and nutrition are essential and Farming System for Nutrition (FSN) model has been designed by Swaminathan, to improve nutritional outcomes that can be used for up scaling and wider national adoption in India.*

**Key words:** *Nutritional security; Agri-preneurship opportunity; Farming System for Nutrition (FSN);*

**F**ood security is the considered as an entry point to look at agriculture and nutrition linkages. The Dimensions of Food Security are Food availability addresses the “supply side” of food security and is determined by food production, stock levels and net trade. Economic and physical access to food are determined by incomes, expenditure, markets, mobility, and prices in achieving food security objectives. Utilization describes the way the body makes the most of various nutrients in the food. Food stability entails adequate access to food on a year-round basis. Adverse weather conditions, political instability, or economic factors (unemployment, rising food prices) may impede stability, and result in food insecurity (FAO 2008). Food and nutritional security depends on many aspects of food systems, characterized as a set of activities (producing,

processing and packaging, distributing and retailing and consuming) that result in outcomes (food and nutrition security, financial gain for actors in food systems, social welfare, environmental capital). Different elements of food systems are affected by, and affect, socio-economic, political and environmental conditions.

*Conceptualization: From food security to food and nutrition security :* The term ‘food security’ referred to overall national, regional or even global food supply and shortfalls in supply compared to requirements. Concepts of food security have evolved over time since the World War II and have changed according to the changing views expressed at the time and through a sequence of definitions and paradigm shifts responding to global historical changes and our growing understanding of the problem of food insecurity.

The earliest definition provided by the historic Hot Springs Conference held in Virginia, USA in 1943, to consider the goal of freedom from want in relation to food and agriculture merely stated, 'a secure, adequate, and suitable supply of food for everyone'. Since the 1974 World Food Conference in Rome, the whole concept of food security has 'evolved, developed, multiplied and diversified' and three main shifts were identified, i.e. (i) 'from the global and the national to the household and the individual'; (ii) 'from a food first perspective to a livelihood perspective'; and (iii) 'from objective indicators to subjective perception'. Subsequently, with the sole addition of the word 'social' to the phrase 'physical, social and economic access', the amended definition was reaffirmed officially by FAO in the 2009 Declaration of the World Summit on Food Security. As a result, safe and clean water is an essential part of food commodities.

The term 'nutrition security', on the other hand, emerged in the mid-1990s and focused on food consumption by the household or the individual and on how that food is utilized by the body and thus in principle is more than food security. The concept of nutrition security is hence broader than food security since the term utilization in nutrition also encompasses biological utilization. The recognition of this causal entity in the tropics where much of the global under-nutrition is prevalent emphasizes the crucial role of proximal determinants such as provision of safe water, toilets and waste disposal under nutrition security.

*Nutrition lens in Agriculture: Address food and nutrition security* : Since agriculture is the primary source of livelihoods in much of Asia's population, agriculture has the potential to be a strong driver of nutritional improvement. Accelerating food and nutrition security has to occur through a combination of direct nutritional interventions and indirect nutrition sensitive interventions. Nutrition sensitive programmes can also be leveraged to serve as delivery platforms for nutrition-specific interventions by increasing their effectiveness, coverage and scale and thus help accelerate progress towards improving the nutrition of the community. Several research and development programmes in the Asian region are active in promoting better nutritional outcomes by nutrition-specific and nutrition-sensitive interventions. Supported by the Department for International Development (DFID), i.e. UK AID, MSSRF a renowned institution in Chennai, India set up

by M. S. Swaminathan with his World Food Prize over 25 years ago, is leading a research consortium Leveraging Agriculture for Nutrition in South Asia (LANSA). The core question that the LANSA programme attempts to address is: 'How can South Asian agriculture and related food policies and interventions be designed and implemented to increase their impacts on nutrition, especially the nutritional status of children and adolescent girls?'

Regarding nutrients intake, a multicentric study conducted in India on the use of carotene-rich food to combat vitamin A deficiency revealed that the main factor behind this was low level of consumption of Green Leafy Vegetables (GLVs). The GLVs were not available during summer season and are reported to be of poor quality in monsoons as well as economic affordability was found important factor influencing the consumption of GLVs and other carotene-rich foods. The implication is that strengthening the policies of diversification of agriculture into animal husbandry and vegetable growing, particularly for the low income households would help them in not only improving their nutritional standards but also providing them with sufficient income to purchase needed high-value food other than the home-produced. Nutritional status is determined by three broad factors (*Spring; 2014*) food, health and care. However, only having plenty of healthy food available, accessible and utilized, is not enough. The capacity to efficiently metabolize nutrient-rich foods is also important and this depends on: the health environment (in terms of pathogens and environmental contaminants); water quality; and accessible sanitation and health facilities. The third factor refers to care practices and child feeding practices at home. In reference to the malnutrition status, number of underweight children in under-five years age group is rising in the developing countries. The major nutritional deficiencies in the developing world are: protein-energy malnutrition (PEM), iron-deficiency anemia, iodine-deficiency disorders (IDD), and vitamin A deficiency (*Latham 1987*). Three of these represent a more serious problem for females in South Asia (where almost half the world's undernourished people live); and both iron-deficiency anemia and goiter are more prevalent among adult women than in men, while vitamin A deficiency is more among boys than girls.

*Renewed focus on nutrition: IFAD- "Farming at any scale is a business, and smallholders and producers must be treated as entrepreneurs."* Kanayo Nwanze,

*President, International Fund for Agricultural Development (IFAD)*

At IFAD, nutrition has always been a concern. The 1977 Agreement Establishing IFAD called for improving the nutritional status of the poorest populations, and IFAD's lending policy underscores improved nutrition as a key principle of poverty reduction. With the recent emergence of nutrition-focused initiatives such as the UN Scaling Up Nutrition Movement (SUN) and the commitments resulting from the 2013 Nutrition for Growth meeting, nutrition has become a prominent global development issue. Nutrition is also a highlight of discussions around the post-2015 development agenda, to which IFAD has provided important input on issues that matter to smallholders and other rural people.

*Nutrition-Specific and Nutrition-Sensitive Interventions: scaling up:* Under nutrition during early childhood affects the entire life of an individual, leads to poorer cognitive development and educational outcomes, and thus seriously hampers the human capital formation, productivity, and economic growth of a country. Scale up nutrition services and nutrition education, Improve domestic water supply, sanitation, and hygiene, Expand fortification of food with micro-nutrients are important. Increase the availability and appropriate use of nutritious food at household level through food based nutrition approaches—raise awareness on nutritional values of local agricultural products and mainstream nutrition, scale up programs promoting diversified food production, storage and processing, develop and reinforce implementation of laws and regulations to promote agricultural production and nutrition for better health and environment, and improved food safety. Community based nutrition program—specifically developed for rural areas with high incidence of malnutrition and also for specific urban locations.

Intra-household allocation- is the result of implicit or explicit bargaining among household members, individual bargaining positions, and various cultural norms that could affect individual preferences that shape the bargaining and allocation processes. One of the findings concerning nutrient intakes by women in this study is particularly interesting. It was found that when food prices gone up, the nutrient intakes of girls and women were adjusted downward more than those of boys and men. The 'pathways frameworks' that have emerged (Department for International Development UK, World Bank), conceptualise how interventions in agriculture

can contribute to improved nutrition security. The women's empowerment pathway consists of three interrelated components: women's use of income; women's ability to care for themselves and family members; and women's energy expenditure. Factors that influence these three components are numerous, from which social norms, knowledge, skills and decision-making power are highlighted in the explanatory briefs (*Spring, 2014*).

*Agripreneur: Entrepreneurial responses to change:* Farmer-entrepreneurs see their farms as a business. What does it take to be entrepreneurial? How can an entrepreneurial behaviour be created and sustained? How do entrepreneurial farmers respond to the changing farming environment? What strategies do they use? What actions do they take? Capturing value within the value chain- Producing for the market is the first response of farmer entrepreneurs to the opportunities found along the value chain. But like entrepreneurs, farmers will want to diversify their livelihoods to make them more sustainable and more profitable. Enhancing and managing efficiencies in production-Farmer-entrepreneurs need to be skilled at finding and using opportunities to expand their businesses. But they also need to be efficient in utilising resources, and in transporting and marketing produce.

Promotion of new technologies and innovation-Farmer entrepreneurs are not only consumers and users of these technologies but should also be active participants in designing, testing, adapting and introducing them to the farming system. Sustaining land management- The foundation of most farm-based businesses is land. While it is tempting to produce as much as possible over the short-term, a successful farmer-entrepreneur knows that the value of the land lies in its ability to continue producing profitably for generations. Broadening management skills, trustworthiness and respect in business, promoting group entrepreneurship are required. Managing farm businesses according to a long-term plan- Farmers must ensure that they are managing their farm businesses with a long term plan for the business so that it stays on course and its direction is not determined by day-to-day decisions.

*Nutrition sensitive food production: opportunities for entrepreneurs :* With the orientation of enterprises on societal issues such as food and nutrition security, the use of scenarios has the potential to create a number

of new possibilities for collaboration for entrepreneurs. Collaborative exploration of challenges to be tackled: governments, academics, civil society organizations, the media and other sectors may have insights into complex systems such as food systems that allow social entrepreneurs to better recognize gaps for action. Collaborative action: the collaborative identification of key challenges in complex systems by actors from different sectors can lead to collective action – social enterprises can benefit from the support of governments, researchers, the media and others. Gender relations in food production- Women work as unpaid family labourers; self-employed producers; on- and off-farm employees; entrepreneurs; traders and service providers; and technology researchers and developers (Hill, 2011). However, they are mostly invisible in these roles and are not recognized for how they contribute to agricultural production.

*Food security, rural livelihoods and environments :*

- *Impacts of climate change:* Climate change can affect food security and rural livelihoods in many ways, floods that destroy property and land, changes in short-term variability that affects the ability of farmers to plan their crops, shorter growing seasons, long term shifts in the suitability of crops and the reduction of pasture for livestock. Climate change can also affect many other parts of food systems, including storage, transport and diseases threatening food safety.
- *Changes in demand:* Increase in incomes in developing countries, and increasing urbanization, change demand for commodities, particularly increasing the demand for animal proteins. Enterprises can work across food systems on this trend and affect how it plays out.
- *Availability of water resources:* Enterprises working on technologies for water consumptions and agricultural water use, as well as those working on water governance can influence these futures.
- *The future of farming families, diversification, land ownership:* Urbanisation, issues with land ownership, and a desire among the youth to get out of farming all bring up the question of who are the smallholder farmers of the future. Who are the farmers of the future? How can entrepreneurs support farming families, or, if conditions become unfeasible or a change of livelihoods desirable, facilitate such transitions out of farming?

- *Gender:* Across societal strata, gender issues are a key challenge where much improvement can be made: all the way from the participation of women in governments to improving the lives, rights and access to resources for women in rural households. Education, sensitization and legislation are among the areas where entrepreneurs work; and gender relations are connected to broader socio-economic and governance developments, playing out very differently in different governance scenarios.
- *Nutrition security and health:* Health and nutrition security policies and actions, and the links between them, are key themes in the scenarios – closely connected to education and developments across food systems, for instance in processing and distribution.
- *Information and communication:* In many future scenarios, communication and information resources are expected to become more pervasive, but much depends on governments and the private sector with regard to how useful these resources will be to vulnerable groups such as the rural poor who may be left behind as the focus may be on urban information and communication services. This is a key area for enterprises.
- *New technologies for agriculture, food systems, rural livelihoods:* More generally, many of the scenarios see new technologies appear, not just for agriculture but for other parts of food systems, as well as for mobility, energy and water infrastructure and other domains.
- *Re-organizing food systems:* Those scenarios that see transformative change feature new ways of organizing food systems – changing the sustainability of various steps but also changing power dynamics. This change is not always beneficial to rural livelihoods because farmer roles are eroded; but in other cases vulnerable groups are empowered and food systems made more fair and sustainable.
- *Land use change, emissions and sustainability:* Shifts in production responding to shifting demand, and the degrees to which this change is moderated by policies, is a main focus particularly for the simulation modelling of the scenarios. The governance of land use associated with conservation and stopping deforestation is a topic of interest to some enterprises; developing closer links to agricultural governance is key.

*Capacity and network development:*

- *Developing strategic capacity in other organizations:* For the enterprises interested in capacity development in organizations working for causes such as sustainable food systems, better rural livelihoods and/or food and nutrition security, scenario-based planning can help these organizations become more strategic. There is demand for this.
- *Developing stakeholder networks to facilitate change:* Aside from multi-actors scenarios being a tool for enterprises to build their own networks, if entrepreneurs are themselves in the business of developing action networks for others or more generally to facilitate change, scenarios are a useful tool.
- *Educating (food) systems thinkers:* educational programs recognize the need for systems thinking capacity to be developed in societies. Enterprises working on education can use scenario methodology as a systems thinking education tool.
- *Changing the type of thinking that government policy relies on:* government decision-making on complex issues like food and nutrition security can be biased toward certain domains or sources of knowledge.
- *Public/media engagement:* scenarios are stories about the future – stories, that, like plausible science fiction, can be highly engaging when they are communicated well, particularly through the use of video, animation, serious gaming and through social media. They can be used by enterprises interested in public engagement to invite interactions with key audiences.

*Strategic planning :* Despite these challenges, examples of how countries have successfully improved nutritional outcomes and health outcomes through cross-sectoral approaches exist.

- Empowering women as agents of change - Efforts to empower women by ensuring access to productive resources, income opportunities, extension services and information, credit, labour and time-saving technologies can also have an important impact on health.
- Understanding issues of agriculture, nutrition security and mobilising key stakeholders
- Promote access to high quality food to meet nutritional needs- Agricultural policies to improve

food processing, storage and preservation, can help to ensure food retains nutritional value and the availability of healthy foods can be maintained throughout different seasons. Fertilizers, blanching, canning, freezing, dehydration and pasteurization, among others, all affect nutrients. Creating markets for smallholder farmers, particularly for nutritious foods, can promote their production, thereby increasing nutrition security for the vulnerable while contributing to their gainful employment. Cash crop schemes can be more effective when accompanied by nutrition interventions programmes such as nutrition education. Facilitating product diversification can improve nutrition security by allowing for more diverse food consumptions while protecting small holder farmers against price shocks and the impact of climate change.

- Identify leadership on nutrition and include nutrition as objective in agriculture planning
- Target needy to improve equity in nutrition security

*New Vision: Rethinking Agriculture with a new lens:* Agricultural development can mitigate this trend by cultivating rural opportunity and more inclusive societal growth. The approaches of the past simply cannot meet the challenges ahead. Building on successes, we must proactively factor in the cost of natural resources, the need to boost production in developing countries and ways to provide hungry people with basic nutrition. This will be one of the greatest challenges of our generation. The time has come for a New Vision for Agriculture. Agriculture can be a positive driver of food security, environmental sustainability and economic opportunity. This involves balancing crop choices (e.g. vegetables), as well as appropriate varieties (e.g. biofortification) to meet protein, caloric and micro-nutrient requirements. Nutritious food must also be affordable to enable equitable access. This can be furthered by delivering evidence-based and locally appropriate options (e.g. supplementation, , diverse menus), raising community awareness and promoting healthy practices such as breast-feeding and proper sanitation.

An emerging area of focus is the interaction between agriculture, nutrition and health. While historically managed as separate sectors, these are increasingly recognized as closely interlinked parts of a larger chain, in which agriculture serves as a driver of human health through its delivery of nutritional needs.

This requires a broader framework for managing health – including both over and under-nutrition – within the context of a sustainable food system. To help realize these aspirations, the New Vision is anchored to three core goals. These build on the foundation of the Millennium Development Goals and other international targets by coordinating and concentrating the efforts of agricultural players around the world.

*Catalyst: Mobilizing Business as an Agent of Change:* In attracting local businesses, it is critical to consider economic scale and sustainability: forward-looking business models that allow for sufficient ongoing operating profit without long-term dependence on operating subsidies. Achieving the New Vision requires the private sector to be engaged as an active partner. It also extends to more proactive roles like private extension, smallholder aggregation (e.g. nucleus farms, warehouses), nutrition education and multistakeholder coordination. In stepping up to lead the transformative process, companies can harness the power of markets to deliver enduring impact. Traditionally, agricultural interventions have focused on increasing food production and raising incomes to reduce malnutrition, hunger and

poverty. A more comprehensive approach is necessary to optimize agriculture's contribution to good nutrition and make agriculture nutrition sensitive. It explicitly takes nutrition outcomes into account in the design and implementation of agricultural interventions to ensure that impacts on nutrition are positive and significant. However, in addressing malnutrition, agriculture's essential and singular role is to ensure that diverse, nutritious foods, adequate to meet the needs of people of all ages, are available and accessible at all times, either from the market or from farmers' own production.

## CONCLUSION

We are witnessing the emergence of a new generation of agricultural initiatives, many in an early stage, which can deliver these transformations in even the most challenged geographies. Private, public and civil actors are using a range of exciting approaches to shape robust markets. Nutrition-sensitive programmes can reduce poverty and malnutrition among smallholder farmers in their roles as both producers and consumers and help them to optimize their contribution to agricultural production and to food systems as a whole.

## REFERENCES

- De wolf, P. & Schoorlemmer, H. (2007). Exploring the significance of entrepreneurship in Agriculture, Frick, Switzerland: Research Institute of Organic Agriculture.
- FAO (2008). The state of food and agriculture: biofuels, prospects, risks and opportunities. Rome, Italy: FAO.
- Hall, D. O. (1998). Food security: what sciences have to offer? A study for ICSU. International council for science (ICSU), [http://www.icsu.org/gestion/img/icsu\\_doc\\_download/221\\_dd\\_file,foof\\_security.pdf](http://www.icsu.org/gestion/img/icsu_doc_download/221_dd_file,foof_security.pdf) (accessed 18 February 2009).
- Kahan, David. (2012). Entrepreneurship in farming, food and agriculture organization of the United Nations, Rome, ISBN 978-92-5-107547-0, [www.fao.org/publications](http://www.fao.org/publications)
- Lancet (2013). Maternal and child nutrition executive summary of the lancet maternal and child nutrition series
- Noortje Verhart, Annoek Van Den Wijngaart, Mona Dhamankar, Katrine Danielsen (2012). Bringing agriculture and nutrition together using a gender lens
- Prakash Shetty (2015). From food security to food and nutrition security: Role of agriculture and farming systems for nutrition, *Current Science*, **109** (456): 3, 10 August 2015
- Sharma, M., Tiwari, R. & Sharma, J. (2010). Entrepreneurship in livestock and agriculture. New Delhi, India: CBS publishers & distributors.
- Spring (2014). Understanding the women's empowerment pathway brief. Improving nutrition through agriculture technical brief series. Arlington, Va: USAID/strengthening Partnerships, results, and innovations in nutrition globally (spring) project.
- World Bank (2007). From agriculture to nutrition: Pathways, synergies and outcomes, Washington DC, USA: World Bank.

