

Transforming tribal communities in Telangana, India, into strategic business enterprises — a paradigm for inclusive growth

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Global food systems are failing both people and the planet due to overarching interconnected challenges, including climate change, natural resource depletion, biodiversity loss, malnutrition, food insecurity, gender inequality and preventable ill-health, all of which are exacerbated by the fragmentation of food systems and policy incoherence. Here, we present innovative interventions that have addressed critical bottlenecks in the transformation of food systems, with a case study on linking entrepreneurship with agriculture and nutrition/health via a convergence model in a select tribal locale of India.

NFHS-5¹ data of ITDA — Bhadrachalam, Utnoor, Mannanur and Eturunagaram, Telangana State, India

	Children under 5 years who are stunted (height-for-age) (%)	Bhadrachalam: 28.4 Utnoor: 35.4 Mannanur: 35.9 Eturunagaram: 32.5
	Children under 5 years who are underweight (weight-for-age) (%)	Bhadrachalam: 25.3 Utnoor: 38.5 Mannanur: 31.7 Eturunagaram: 36.7
	Children under 5 years who are wasted (weight-for-height) (%)	Bhadrachalam: 21.8 Utnoor: 26.4 Mannanur: 21.8 Eturunagaram: 31.8
	Children age 6–59 months who are anaemic (<11.0 g/dl) (%)	Bhadrachalam: 69.3 Utnoor: 67.8 Mannanur: 75.6 Eturunagaram: 67.9
	All women age 15–49 years who are anaemic (<12.0 g/dl) (%)	Bhadrachalam: 68.7 Utnoor: 60.7 Mannanur: 55.4 Eturunagaram: 65.9

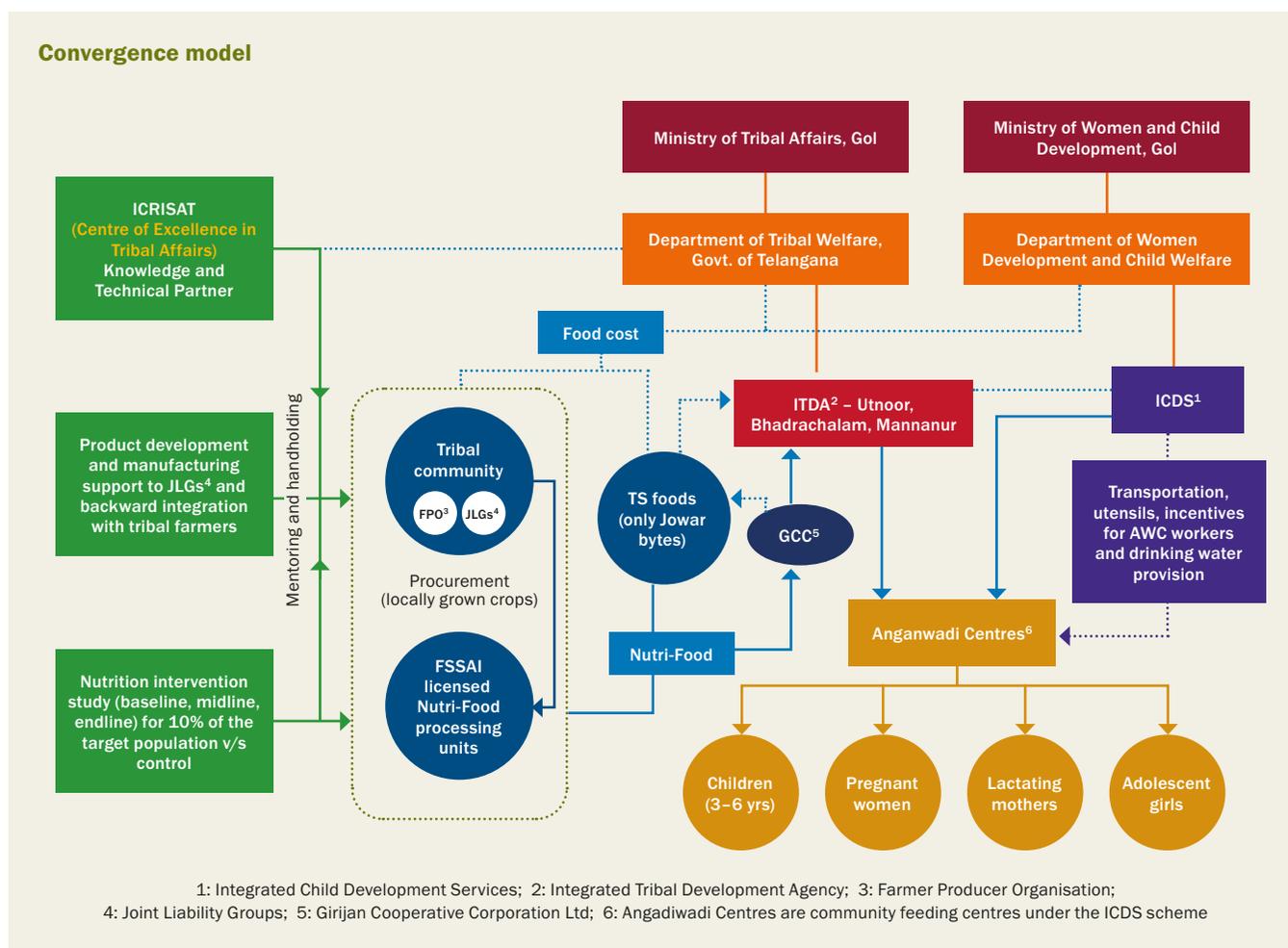
The Problem: Tribal diets have limited dietary diversity leading to malnutrition

NFHS-5 is the National Family Health Survey-5 (2019–21). ITDA Bhadrachalam (data of Bhadradi-kothagudem district); ITDA Utnoor (average data of Adilabad, Asifabad, Nirmal & Mancherial districts); ITDA Mannanur (average data of Mahabubnagar, Nagarkurnool, Nalgonda, Rangareddy & Vikarabad districts); ITDA Eturunagaram (data of Jayashankar Bhupalapally district)

Based on the convergence model, the resilience of vulnerable tribal community groups is built through the introduction of strategic business enterprises for enhancing inclusive growth among target tribal populations of India. Due to outdated indigenous agricultural practices, poverty, illiteracy and poor hygienic practices, India's tribal population is at a high risk of malnutrition. Further, tribal diets across India have limited dietary diversity^{2,3} and hence high prevalence of malnutrition/anaemia among the tribal population, including those in Telangana State, India. To address this and related health challenges, the Agribusiness and Innovation Platform (AIP) of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in collaboration with the Government of Telangana, India launched the "Giri Poshana Nutri-Food Basket", ICRISAT's branded "Smart Food" intervention project with the aim of supplementing diets of target tribal populations to address malnutrition among 3–6 year-old children, adolescent girls, pregnant women and lactating mothers in the Integrated Tribal Development Agency (ITDA) areas of Utnoor, Bhadrachalam, Eturunagaram and Mannanur, located in the Telangana State of India.

The project was implemented in three phases. Phase I, titled Nutri-Food Basket, was initiated in 2017 as a 9-month pilot with the aim of providing nutritional support to 5,500 beneficiaries in ITDA Utnoor⁴. The pilot positively impacted and improved nutrition and health outcomes of the target beneficiaries. Enthused by the positive outcomes observed from Phase I, Phase II titled Giri Poshana, was initiated in 2019 involving 13,000 beneficiaries in ITDA areas of Utnoor, Bhadrachalam and Eturunagaram, through the convergence model involving multiple stakeholders⁵. Phase III, titled Giri Poshana for Particularly Vulnerable Tribal Groups (PVTGs), involved 16,500 beneficiaries, covering additional areas in the ITDAs of Utnoor, Bhadrachalam and Mannanur⁶. From the project's inception in 2017, as many as 35,000 beneficiaries have been sensitized to the initiative and were provided with nutritious millet-pulse-groundnut-based food formulations.

These food products were made available in the form of ready-to-cook (RTC) and ready-to-eat (RTE) formats developed by ICRISAT. The project proved to be a critical boon in



terms of resilience during the peak of the COVID-19 pandemic in 2020–2021, when food was delivered to beneficiaries' doorsteps. Reduction in stunting, wasting and underweightness in children as well as an increase in haemoglobin levels in women and children were observed after a 12-month feeding period. By the beginning of Phase III, the project, which now involved a 16,500 PVTG population, had converged with local Food Safety and Standards Authority of India (FSSAI)-licensed Micro-Small and Medium Enterprise (MSME) units established by ICRISAT and operated by women-led joint liability groups (JLGs), to produce and source nutritious millet-pulse-groundnut based food products required for the intervention.

The ICRISAT approach entails a ground-breaking transformative Convergence Model, which is an innovative approach for improved nutrition, linking Agriculture-Nutrition-Entrepreneurship with the goal of fostering sustainable food and nutritional security among tribals, through various interventions as follows:

1: Convergence of ministries

The following official bodies converged to work together in putting various activities into practice related to the intervention: Ministry of Tribal Affairs (MoTA), Ministry of Women and Child Development (WCD), Government of India; Department of Tribal Welfare (TWD), Department of Women Development and Child Welfare (WDCW), Scheduled

Tribes Cooperative Finance Corporation Limited (TRICOR), Integrated Child Development Services (ICDS) scheme, Integrated Tribal Development Agency (ITDA), Telangana Foods (for production of sorghum bytes), Girijan Cooperative Corporation (GCC), Government of Telangana.

2: Introduction of nutrient-rich food products

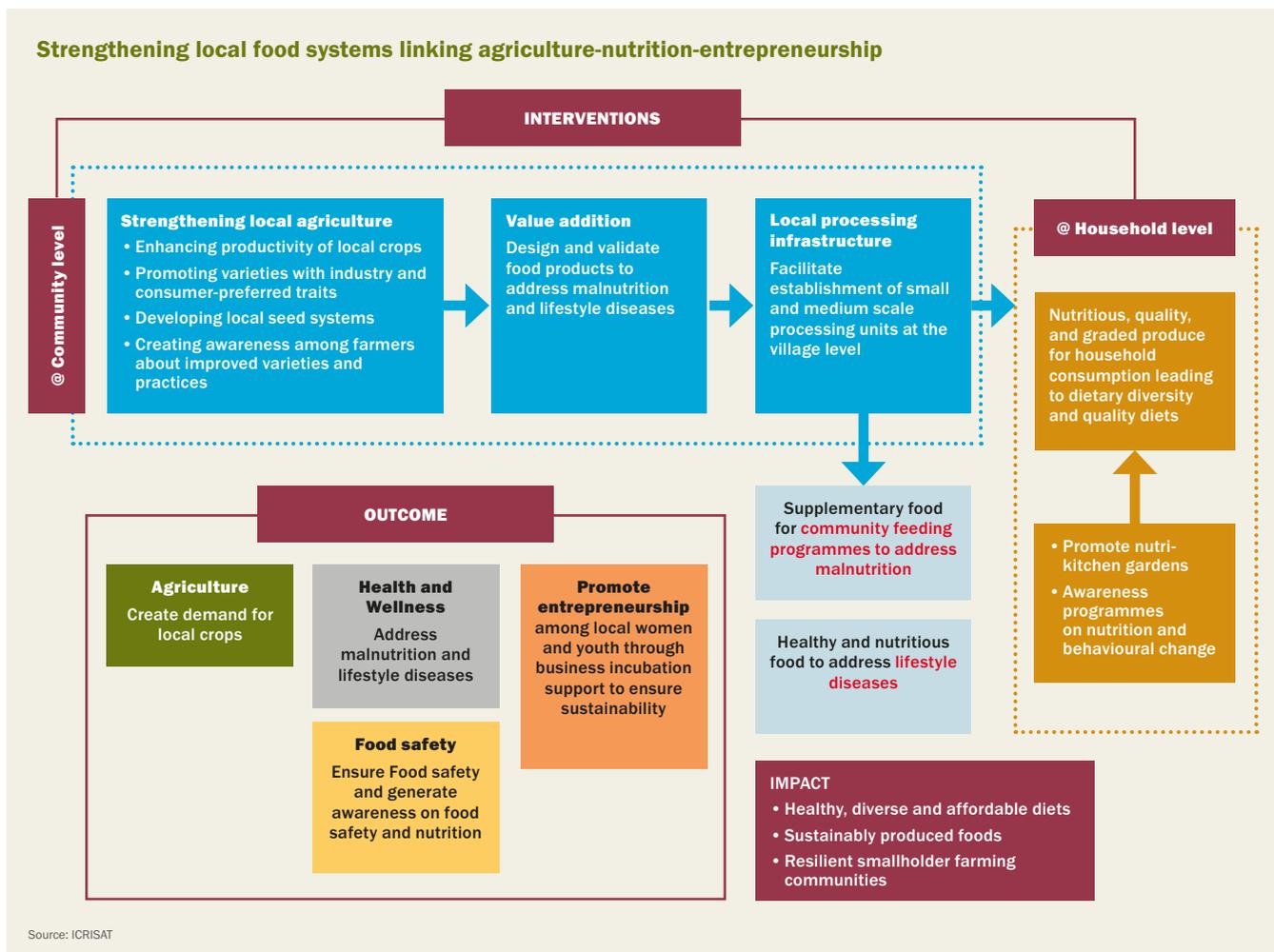
Developed from local crops such as millets, pulses and groundnuts, formulated in convenient RTC (sorghum meal, multigrain meal and multigrain sweet meal) and RTE (peanut-sesame brittle bar (chikki), peanut-friedgram brittle bar (chikki), sorghum bytes) formats, to meet the taste preferences of the local tribal population.

3: Successful promotion of local production capacities

90 local tribal women and youth were empowered to operate FSSAI-licensed food processing units. ICRISAT facilitated the setting up of 9 MSME units that processed these nutritional food products in selected ITDAs of Telangana.

4: Capacity building of tribal women

Capacity building was carried out in the areas of business management, food processing operations, food safety management systems including concepts such as Hazard Analysis Critical Control Point (HACCP), thus ensuring the sustainability of women-led MSME units.



5: Collectivization and capacity building of tribal farmers
 Organizing tribal farmers into sustainable Farmer Producer Organizations (FPOs), thus facilitating the integration of tribal farmers into the value chain and specifically with the local women-led MSME units. Further, ensuring training of tribal farmers, in the areas of pre and post harvest management, awareness on market related quality traits, business management and marketing.

The convergence model is a unique nutrition-sensitive value chain model that enables the establishment of a local ecosystem to promote local production, local processing and local consumption. The model involves key stakeholders and links farmer collectives (FPOs, JLGs), women and youth-led food processing business enterprises, by promoting backward and forward linkages, through effective integration initiatives. With inclusion and support from local government and school feeding programmes, it makes the intervention an integral part of the local food system-thus ensuring long-term sustainability and impact on food and nutritional security.

Thus, as part of the larger initiative, Giri Poshana, ICRISAT implemented a unique sustainable enterprise model to organize the tribal women into JLGs, providing self-employment to the tribal communities, enhancing their economic status and transforming them into sustainable market-oriented communities.

List of MSME processing units, their location and tribal communities involved

Location	Processing unit	Tribal communities involved
ITDA Uttoor	Peanut Brittle bar (Chikki)	Kolam, Naikpod, Gond, Lambada and Pradhan
	Ready-to-cook composite mixes	Pradhan
	Split pulses	Gond
ITDA Bhadrachalam	Brittle (Chikki)	Koya
	Ready-to-cook composite mixes	Koya
	Split pulses	Koya
	Moringa leaf powder	Koya
ITDA Eturnagaram	Ready-to-cook composite mixes	Koya and Naikpod
	Split pulses	Koya

This in turn helped to generate further employment within their own social system. The MSME processing units were established under a public-private partnership funding arrangement, comprising 60 per cent subsidy from the Tribal Welfare Department (TWD), 30 per cent funding through bank loans, with the remaining 10 per cent coming as contributions from the respective JLGs. Further, ICRISAT facilitated the preparation and submission of detailed project investment plan reports of all the MSME units, to enable JLGs to access the bank loan at a minimal interest rate.

These food processing units are equipped to manufacture FSSAI-licensed nutritious RTC products such as multigrain meal, multigrain sweet meal and sorghum meal along with RTE food products such as peanut-sesame brittle bars and peanut-friedgram brittle bars, made from local crops like sorghum, millets, groundnut and pulses. One of the units is also established to process dehydrated moringa leaf powder, a rich source of vitamins and minerals. To ensure sustainability of the processing units, ICRISAT handholds the enterprises through continuous capacity building of personnel as well as mentoring to empower the JLGs to independently handle the units.

ICRISAT provided a total of five technical and business training sessions to over 100 tribal women and youth in the areas of business management, quality control and food safety and financial management of the units. These formed part of skill development to create sustainable JLGs consisting of tribal women with enhanced entrepreneurial skills, in order to transform them into business leaders. The team achieved this through classroom sessions, live demonstrations at the pilot food processing facility at ICRISAT and exposure visits to similar processing units. During the COVID-19 pandemic-induced lockdown, virtual training sessions on nutritional awareness, food safety, hygiene and awareness on FSSAI regulations were provided to the members involved in management and operations of the MSME units.

These enterprises are expected to increase the value of local produce by creating local-to-local business linkages and ownership. This involves local purchase of raw materials for the units from local farmers or local FPOs and further supply of the finished products to the local community feeding centres, involved in implementing the supplementary nutrition programme under the ICDS scheme of the Government of India⁷. This approach of linking key stakeholders at the local level has enabled the creation of successful, sustainable and inclusive business enterprises.

This business model enables each member JLG involved in the processing unit to earn an average profit of US\$ 130 per month. The profits accruing from the units will be equally shared among JLG members of the respective units who otherwise either relied on agriculture or were engaged as daily wage labourers.

Outcome of the millet-pulse-groundnut-based nutritional intervention

The impact of the study was assessed through baseline, midline and endline surveys which included the collection of anthropometry measurements such as height, weight and mid-upper arm circumference (MUAC) and haemoglobin, using a non-invasive haemoglobin device. The study confirms that nutritional intervention, using foods formulated from climate-

Beneficiary Testimonial

“My expectations from this unit are high. Within the next five years, we hope to supply our food products to all the Anganwadis (community feeding centres) in the state. The training at ICRISAT is helping us achieve sustainable livelihoods and income” says Ms. Leelavathi, a women entrepreneur from Kolam tribe, Utnoor who was a daily wage worker before taking up this initiative.



Image: ICRISAT

resilient crops, not only promotes dietary diversity but also improves the nutritional and health status of children. The project enhanced the nutritional status of 35,000 tribal beneficiaries and increased the monthly income of JLG members three-fold.

The outcome assessment surveys showed an overall improvement in the nutritional status of the target beneficiaries — a 16 per cent decrease in wasting, 39 per cent reduction in stunting, 37 per cent reduction in underweightness and 41 per cent decrease in anaemia was observed among 3–6 year-old children. Also a shift in a severely/moderately anaemic population to a mildly anaemic/normal population has been observed in pregnant and lactating women⁸.