SYNGENTA FOUNDATION FOR SUSTAINABLE AGRICULTURE

Going for Impact at Scale: Strategy Statement of Syngenta Foundation India

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Executive summary

The Syngenta Foundation India (SFI) was established in October 2005 as an independent not-for-profit organization with the support of Syngenta India Limited (SIL) and the Syngenta Foundation for Sustainable Agriculture, Basel (SFSA). SFI's mission was to have small and marginal farmers participate in agricultural development by facilitating access to improved seeds, other inputs and knowledge of agronomic practices. The main objective was to educate small and marginal farmers on the latest developments suited to their local needs, and ultimately improve their income.

During Phase I (2005-2009), SFI launched three extension-driven projects in disadvantaged regions and introduced high-performing seeds, improved agronomic practices, and new technologies for control of pests, diseases and weeds. New departures included special techniques such as SRI (system of rice intensification), mechanization in rice, and raising seedlings in poly-houses. With improved yields, farmers started to trust SFI and the technologies it introduced.

SFI embarked on Phase II (2009-2013) with 'market-led extension', where the emphasis was to 'produce together and sell together'. Essential features of this approach included linking vegetable producers' groups with markets through fewer intermediaries. Phase II also witnessed substantial contributions to policy, notably in a research project on transforming agriculture to support overall economic growth. This work led to a major book, "India 2040 -Transforming Indian Agriculture: Productivity, Markets and Institutions".

Buoyed by the success and strong foundation laid over the last ten years, SFI is now shifting gears rapidly. Phase III (2014 onwards) is going for impact at scale. The core task remains unchanged: create value for farmers, help modernize agriculture and the food system, and be an intelligent catalyst. The approach for Phase III is to develop 'enablers' which can be replicated in different locations. SFI will introduce enablers in domains such as financial solutions (including insurance), ICT and mobile computing, agro-processing and farm machinery. The Foundation proposes to build on its experience in agricultural insurance in Africa and adapt certain solutions to India. In the domain of policy, SFI proposes to evaluate the effectiveness of certain public schemes in delivering promised benefits to small and marginal farmers. SFI also intends to launch an Agriculture Challenge Prize to encourage crop improvement breakthroughs in public research and their greater adoption by farmers. SFI will position itself for thought leadership, and invest in carefully chosen research and dissemination endeavors with strategic partners. Phase-III will also witness SFI exiting from some existing projects by creating handover conditions that will lead to viable businesses and producer organizations.

This strategy paper has been prepared with a vision of anchoring Phase III initiatives over the next three years. It articulates guiding principles for roll-out, presents seven schedules of deliverables, and describes the required resources.

Contents

List of abbreviations

AC	Advisory Committee
AITA	Anandwan Institute for Transfer of Agricultural Technology
BAIF	Bharatiya Agroindustries Foundation
CSR	Corporate Social Responsibility
DG	Director General
FICCI	Federation of Indian Industries and Chambers of Commerce
FPO	Farmer Producer Organisation
ICAR	Indian Council for Agricultural Research
ICT	Information and Communications Technology
MLE	Market-led Extension
MoU	Memorandum of Understanding
MSS	Maharogi Sewa Samiti (Community in Chandrapur)
NARS	National Agricultural Research Systems
OPV	Open-pollinated Variety
PPP	Public-Private Partnership
RML	Reuters Market Light
SC	Steering Committee
SFAC	Small Farmers Agribusiness Consortium
SFSA	Syngenta Foundation for Sustainable Agriculture
SFI	Syngenta Foundation India
SIL	Syngenta India Limited
SOP	Standard Operating Procedure
SRI	System of Rice Intensification

1. The Syngenta Foundation India

The Syngenta Foundation India (SFI) was established in October 2005 as an independent not-for-profit organization with the support of Syngenta India Limited (SIL) and the Syngenta Foundation for Sustainable Agriculture, Basel (SFSA). SFI's mission was to have small and marginal farmers participate in agricultural development by facilitating access to improved seeds, inputs and knowledge of appropriate agronomic practices. The main objective was to educate small and marginal farmers on the latest developments suited to their local needs and ultimately improve their income.

2. Phase I: 2005 - 2009

Syngenta Foundation's first initiative in India was a partnership initiated in mid-2004 with the community of Maharogi Sewa Samiti (MSS) in Chandrapur. A small team worked with cured leprosy patients to cultivate vegetables using good agricultural practices. The farmers were able to supply the MSS kitchens and generate a surplus that earned them incomes. After the formation of SFI, this project expanded. After three years it not only provided food to over 5000 people in MSS communes but also raised funds for welfare programs. SFI also encouraged MSS to share the lessons with nearby smallholders.

Encouraged by this success, SFI launched three agriculture extension-driven projects in disadvantaged regions. New technologies propagated by SFI included high-performing seeds, improved agronomic practices, and control of pests, diseases and weeds. Special techniques such as SRI (system of rice intensification), mechanization in rice, and raising seedlings in poly-houses were introduced. SFI also put an emphasis on networking with research institutions to access the latest technology.

Phase I provided SFI with valuable opportunities to try out new ideas and achieve first successes. In mid-2008, the Foundation commissioned an external review of activities. The report made a number of recommendations, including the formation of farmers' groups to improve marketing of their produce. Better productivity alone does not necessarily translate into increased incomes for farmers. Good links to markets are needed, too. Moving into Phase II, it was clear that SFI would need to address this dimension explicitly while at the same time increasing both the scale of its operations and their sustainability in institutional terms.

3. Phase II: 2009 - 2013

The beginning of Phase II formed part of a period of budgetary and programmatic growth across SFSA. In India, market-oriented extension in vegetables was the flagship theme. This went hand in hand with the introduction of seed production initiatives and tie-ups with off-takers such as FieldFresh Foods Pvt Ltd, Pepsico and others. In addition, SFI:

- Increased its contacts with the Indian agri-business sector and liaised with organizations such as the Federation of Indian Industries and Chambers of Commerce (FICCI), the Delhi offices of multilateral organizations such as the International Finance Corporation and the International Food Policy Research Institute, and government agencies, including in particular the Indian Council for Agricultural Research (ICAR), the Ministry of Agriculture, the Indian Agricultural Research Institute, and a number of State Agricultural Universities and State Agriculture Secretariats,

- Studied agricultural extension in India, co-hosted the National Seminar on Agriculture Extension with the Ministry of Agriculture in 2009, and then co-organized a conference on agricultural extension with the Chinese Academy of Agricultural Research in Beijing in 2012 which compared extension systems and challenges in China, India, Indonesia and Vietnam,

- Continued to participate in official working groups at the invitation of government agencies, made many conference presentations and became even better known for its knowledge and expertise in agricultural R&D, extension, the design of value chain and agri-finance solutions benefiting small farmers, and public-private cooperation in agriculture to improve services for farmers, activate supply chains and accelerate the dissemination of new technology,

- As discussed with MSS in Phase I, established the Anandwan Agri–Tech School in 2010 (now a full polytechnic and part of AITA, the Anandwan Institute for Transfer of Agriculture Technology),

- Carried out an inventory of mobile applications in Indian agriculture, which (together with other data and considerations) led to the development of SFSA's *Farmforce* platform to manage outgrower schemes,

- And initiated, shaped and supported a major project of agricultural policy analysis in preparation for the Twelfth Plan in partnership with the Centennial Group in New Delhi and Washington DC, the Planning Commission, and the Ministry of Agriculture.

This agenda widened the Foundation's "footprint", visibility and influence in India. The sections below review SFI's Phase II field activities and the policy analysis thrust.

3.1 Project-based work:

As a result of growing year-on-year investments and a sustained and persistent effort, SFI reached 38,000 farm households in 950 villages across 12 locations in five states by Rabi 2010. The program thus achieved a certain size, created value for farmers, enabled learning to take place, and helped build both a reputation for the Foundation and recognition of its contribution and comparative advantage. However, part of the additive learning for SFI in this phase was the challenge of meeting its own expectations of scalability. Implicitly, the approach provided for "scaling up" by replicating the same solid and perfectly defensible methodology in different locations (with local adjustments as called for, of course). It became clear over time that constraints of budget and manpower, although slackening compared with the more limited resource envelope available during Phase I, would ultimately prevent this model from achieving its full potential.

Key findings of the early attempts (2009-11) with "market-led extension" (MLE) were that a) it was not possible to engage with all farmers in chosen project areas on collective marketing because they were widely scattered and b) many of them were not good vegetable farmers. To succeed, it was felt necessary to work with more compact groups of farmers in areas that had good potential for vegetable production. This new approach was first adopted in Jawhar in Kharif 2012, where the number of project villages was reduced from over 200 to 57.

The theme of this new phase of MLE was "produce together and sell together". The essential features of this approach included linking vegetable producers' groups with markets through fewer intermediaries. Producers' groups were supported with intelligent marketing techniques, e.g. using mobile phones to track daily wholesale prices. The groups were facilitated to choose their leaders and were empowered to carry out their own business transactions profitably i.e., dispatching truckloads of produce to whichever market offered the best price on a given day.

Considerable income gains were recorded in the process. For instance, a small producer in Jawhar would previously earn Rs 10,000 net per annum from finger millet and rice. With SFI's introduction of collective

production and marketing of high-value vegetables, the same farmer could earn an additional Rs 25,000 to 30,000. Annex 1 provides data and a fuller description of the Jawhar project.

The learning process in Phase II stimulated healthy evaluative debate between all the partners. Their discussions suggest that SFI's approach has merit in farmers' eyes and that MLE as practiced in these projects produces results.

In addition to Jawhar, SFI supported field projects in Kesla (Madhya Pradesh), Kalahandi (Odisha), Bankura and Purulia (West Bengal), and Mahbubnagar (Andhra Pradesh). Annex 2 provides the full list of projects and investments as of January 1, 2014. Some of the investments are new and will be discussed in the next section as we examine Phase III. Others, such as Mahbubnagar and Purulia, will be phased out in 2014 or 2015.

In Kesla, SFI and the NGO PRADAN aim to enable tribal farmers to participate in agricultural development through improved seeds, tools, knowledge of appropriate agronomic practices and links to markets, with a focus on both field crops and high-value vegetables. In 2011, a group of thirty farmers grew vegetables on a relatively large scale for the first time, making money from sales and reporting increases in vegetable consumption at home. In 2013, some 2000 farmers were cultivating a range of vegetables (including tomatoes, chillies, okra, cowpea and cauliflower) on surfaces ranging from a quarter to half an acre per family. One of the project's hallmarks is extension delivery through lead farmers known as "barefoot extension workers" (Ajivika Mitras). Their usefulness is rated highly by farmers, who pay PRADAN Rs 200 per year. PRADAN helped form Narmada Kisan Sangh, a federation of self-help groups that bulk-buys seed and other inputs and sells them to farmers for 30% less than individual small-volume buyers would normally pay. SFI introduced high value maize hybrids in Kesla as an economically advantageous crop, with market linkages to the Kesla Poultry Society, established some years ago with the help of PRADAN. For 2014, the construction of a large poly-house is planned, where one million seedlings could be raised annually to support professional vegetable cultivation in the area.

In Kalahandi, SFI and NGO partner KARRTABYA successfully undertook seed production for hybrid rice and sunflower in 2009-10, under technical guidance from Syngenta India (SIL). The seed's genetic purity met the company's stringent standards. Activity was temporarily suspended as the company did not come up with fresh orders, but restarted in 2012-13 with hybrid rice and maize seeds. Sixteen farmers were involved in rice seed production on 33 acres in 2013, harvesting an average of 9.5 quintals per acre, on par with other areas. The income from seed sales by these farmers is calculated at Rs 23,650 per acre—almost twice what could be earned from the commercial production of paddy. The most successful farmer harvested 17.3 quintals per acre, more than yields anywhere in India, and netted Rs 48,500.

The project team organized a number of visits for farmers to raise awareness about the production of hybrid rice seed in the region. In 2013-14, at least 117 farmers from 24 villages were producing hybrid seed on 200 acres. Average yields were higher than the previous year, with average net profits per acre exceeding Rs 25,000 in a single season. The Government of Odisha is partnering with SFI in this initiative, extending incentive payments of Rs 8000 per acre to promote hybrid rice seed production in this backward region. SFI, KARRTABYA and SIL plan to expand rice seed production to 1000 acres involving 700 farmers in 2014-5. There is a market for more hybrid rice seed, and prospects for diligent farmers are favorable under schemes where buyers (including SIL) procure seed from farmers at prices announced before planting.

In Bankura, SFI and the NGO Shamayita Math launched an integrated agricultural development project in 2006. For the last eight years, the lives of several thousand farmers have been changed by the uptake of modern practices and ensuing improvements in income. A program of varietal trials and research on topics such as agronomic practices is underway. In 2010, SFI and a private company introduced hybrid tomato seed production

on a small scale. This was new to Bankura and indeed the whole of West Bengal. SFI trained leaders in the demanding technical aspects of tomato hybridization and seed production, while Shamayita Math helped farmers obtain credit locally for the construction of shade nets, drip irrigation equipment and other tools. In 2012, 300 kilograms of high-quality hybrid tomato seed were sold to SIL through a buy-back agreement. Smallholders' net income from this activity was unprecedented: One farmer reaped a profit of Rs 138,000 from 890 square meters; average net income from this surface was Rs 70,000. Farmers in the project area view hybrid tomato seed production as their most profitable operation. Repaying loans is not difficult under these circumstances, and the number of farmers interested in the production of hybrid tomato seed for off-takers under contract is growing.

In Purulia, SFI and the NGO Nanritam are partnering to introduce new technologies into farming, with a focus on paddy. Nanritam works on health issues in very poor communities and has sought support from SFI to improve the resilience and productivity of farming so that levels of subsistence consumption can be improved.

In Mahbubnagar, SFI and BAIF practice "market-led extension" with a focus on vegetables in particular. Major aspects include supplying seeds of high quality as well as inputs and drip irrigation solutions in the context of collective marketing arrangements. In 2012 a line of maize seed production was introduced under a buy-back agreement with SIL. The project is being implemented in 24 villages with 600 participating farmers. SFI and BAIF help the farmers to access government support schemes and subsidies.

SFI faces particular difficulties in recruiting appropriately qualified personnel in Purulia and Mahbubnagar. The need for consolidation means that projects at these locations will end in 2014 or 2015, as mentioned. In the case of Purulia, however, periodic further professional support is planned.

3.2 Policy analysis:

The research project "India 2040"—about transforming Indian agriculture to support overall economic growth aspirations while providing employment in rural areas and strong poverty-reduction effects—was launched in January 2010 in partnership with the Centennial Group, a Washington DC-based think tank. The Planning Commission also made significant contributions.

After a slow-down in total factor productivity growth in the late 1980s and 1990s, agriculture's recent performance has been more favorable. Still, there is widespread consensus that, relative to the rest of the economy, the sector is lagging, and that it must and can do much better to support India's overall economic growth and dynamism. As economic growth unfolds, India faces a rapid expansion of food demand and major shifts in its composition for decades to come. These changes require an acceleration of agricultural growth rates beyond the current target rate of four percent, or a rise in imports. With limited land and water resources, raising agricultural growth requires a significant acceleration of productivity growth, and much higher water and nutrient use efficiency. Sustainable intensification, modern science, engineering and technology-based farming methods, precision agriculture and continued irrigation growth all play vital roles. Institutions, markets and productivity—the research project's themes—will have to adapt. Rapid agricultural and rural non-farm growth will shape India's overall growth and development experience; they will be driven by a combination of investment in agriculture and spillovers from the urban economy. Subsidies will need to be reformed to be more efficient, and will be limited by the available government funds. India's numerous agricultural and rural development programs will need to be streamlined and reformed to deliver higher impact. This will challenge both the central government and the states, which are mainly responsible for implementing these programs. Effective implementation will overshadow new policies as the decisive factor.

The research project addressed these challenges in detail through more than a dozen substantive background papers by renowned specialists, a multi-sectorial, dynamic programming model that projected issues of food security, productivity and trade over thirty years, numerous discussions between researchers and government agencies, and a major conference in New Delhi in April 2011.

The study's vision of Indian agriculture by 2040 was that of a more efficient sector supplying the food needs of an affluent, highly urban India. Under the vision, India would remain a top world producer in most agricultural products, strengthening its export performance in some of them. The study made clear that the vision can only be achieved with bold institutional, policy and program changes encapsulated by four necessary, inter-dependent and simultaneous sub-transformations: (i) from traditional grains to high-value crops and livestock products, (ii) from production based on low labor costs and widespread subsidies to efficient, sustainable and productivity-driven growth, (iii) from wasteful to wise water, nutrient and, generally, natural resource use, and (iv) from public support and protection to ever-greater involvement of the private sector throughout the value chain.

The study—summarized in a December 2012 book by Sage Publications edited by SFSA's Executive Director—made recommendations in five areas: the performance of public policies and programs, water as a critical, long-term constraint, the effectiveness of agricultural R&D, extension and service delivery to farmers, improvements in marketing, the farm-to-fork value chain, post-harvest technology and spoilage, and improvements in markets, farmer organization and incentives related to agriculture through reforms of prices, trade and subsidies.

The study benefited from the agricultural expertise and sector knowledge of senior SFI/SFSA staff, as well as lessons derived from the project-related work described above. The study helped validate thinking in the Planning Commission, the Ministry of Agriculture and ICAR, and is receiving good reviews, feedback and press. Its tenets and recommendations match many of the policy directives announced in the Agriculture Chapter of the Twelfth Plan, published in early 2013. The research project helped establish the Foundation as an acknowledged agricultural expert organization in India and prepare the ground for some of the new proposals to be discussed below.

4. Phase III: 2014 onwards

The background against which the Foundation's engagement in India will take shape in the coming years will be affected by the policies and programs of the new government elected in May 2014. Growth and policies to address the needs of the millions of young unemployed will top the agenda. Success will depend in part on innovative and inclusive progress in agriculture and related activities that add value.

Whatever the changes, the food and agriculture system will also continue to be characterized by three familiar factors:

- High demand growth for food, agricultural commodities and processed products (India's high retail price inflation in excess of 10% annually in recent years is symptomatic of this).

- Numerous bottlenecks hampering production and trade, and affecting farmers' business interactions with input and output markets. (These bottlenecks may be physical or social in nature or linked to water and land degradation and rising rural labor costs; they may also arise from information asymmetries, policy shortcomings, and aggregation and logistics challenges such as those responsible for the considerable post-harvest food wastage.)

- A unique "eco-system" of innovation in agriculture and agri-business development that draws on the country's vast pool of talent and entrepreneurship. This force for innovation delivers solutions that would have been difficult to imagine ten years ago. (These solutions encompass a wide range of sectors, including information technology, engineering, financial services, precision agriculture, and new value chain models and logistics.)

The Foundation's task during Phase III is to connect with this "eco-system", support it creatively, and make original and measurable contributions to the sustainable modernization of agriculture and the food system.

The task includes the design and delivery of services for farmers. These services improve incomes and livelihoods through market-based innovations that create shared value in wholesale and retail supply chains.

As it pursues this task, SFI will build on its past achievements and experience. Some of the guiding principles are as follows:

- Create value for farmers: Empowering smallholders as entrepreneurs to help them become commercial growers with control over their food security and household expenditures is central to SFI's value proposition. In regard to primary production, SFI will support farmers through retail and delivery arrangements with partners. These will foster intensification and the diversification of cropping patterns in accordance with market opportunities and tenets of sustainable resource use. SFI will train its staff and partners in agronomy, natural resource management, arrangements with off-takers, and monitoring and evaluation. A staff training program initiated in cooperation with the Earth Watch Institute in 2014 on "eco-systems and biodiversity in the context of sustainable agriculture" illustrates the plan.

- Experiment with scale: The scalability of investments in agriculture to maximize impact has long been a high priority for SFI. Scaling up is multi-dimensional and can be difficult, but the Foundation has incubated methods and products in recent years that offer new opportunities in this space. "Enablers" such as the *Farmforce* platform reduce the cost of linking small growers to buyers, and are thus expected to facilitate going to scale. SFI will adapt and introduce enablers in such domains as financial solutions (including insurance) and mobile computing. Within projects it will dissect the various aspects of improving production, breaking the process down into its elements and developing standard operating procedures (SOPs) where feasible to foster comparability, reduce unit costs and expand reach. SOPs can be envisaged for agronomic support ("agronomy in a box"), institution-building ("FPOs in a box") and the management of compliance with quality standards. They will also be valuable for procurement and the installation and management of shared capital equipment such as poly-houses, nurseries, collection and storage centers, check dams and other resources. Cluster-based approaches and collective marketing are key drivers of scalability and will continue to be promoted.

- Professionalize project management: SFI will (re-)design its projects and manage them with the support of data-intensive information systems. This will give managers a closer daily picture of activities, including costs, results achieved and any corrections required. Project design and management will explicitly include the requirements for making projects viable as business propositions. This should enable hand-over and successful operation by entities such as producer organizations after the Foundation exits and moves on to other endeavors.

- Position SFI for thought leadership roles: SFI will position itself for thought leadership (as in the past) by generally "doing its homework". In addition it will invest in carefully chosen research and dissemination

endeavors with strategic partners. The topics will include selected areas of agricultural policy, the design and management of delivery-oriented agricultural research, and scalable approaches to farmer empowerment through technology and service provisioning, organization and aggregation, and links to markets. Outreach activities including some workshops and conferences will complement research by fostering debate and in due course seeking policy change and improvements on the ground.

- Share insight, methods, know-how: SFI will seek to magnify its impact cost-efficiently by networking with organizations with similar objectives and sharing knowledge and information, both to learn and help others. At the global level, SFI will work with SFSA to bring innovations to India and share experience and advances from India with other countries. Thanks to the "eco-system" of innovation referred to above, India is a laboratory of experimentation from which others may be able to learn. Given its global presence, SFSA is well-placed to help with knowledge transfer.

These principles provide the backdrop to review the investments and deliverables currently on the books or in the pipeline, with particular reference to the period 2014-2016.

4.1 Deliverables 2014-2016

SFI's current partnerships and investments include legacy projects from Phase II that are being adjusted where needed, as well as new ventures in various fields.

Table 1 provides an overview of a first category of investments in MLE and farmer aggregation and the development of supply chains. The Jawhar, Kalahandi, Bankura and Kesla projects are listed along with their targets and deliverables for the next three years. One of their key objectives is to support production and develop supply chains by-passing traditional *mandis*. An additional objective is the promotion of functioning farmer-owned enterprises (FPOs) and "agri-entrepreneurs".

Agri-entrepreneurs are service agents who may have been associated with SFI or partner NGOs as extension workers in the past and would now be trained and supported to become small businesses serving farmers.

Conversations with certain banks (IDBI) have led to tentative agreements about credit that would be extended to farmers mentored by qualified agri-entrepreneurs. The agri-entrepreneurs would build a revenue stream for themselves as small businesses selling inputs and services to farmers. SFI and/or participating NGOs would train and supervise the agri-entrepreneurs to ensure service quality (and transparency) and support the viability of the model. The credit options discussed with the banks would use swipe cards or vouchers to ensure credit can only be spent productively, in particular on seed, fertilizer and other inputs.

The approach is being tested at this time. If the idea jells and viability is proven, a new, self-sustaining and thus scalable model for serving farmers would have been created. The agri-entrepreneurs would buy inputs in bulk from the main dealers, passing on some of the discount to farmers and keeping the margins. Tentative calculations suggest that a clientele of 300 farmers per agri-entrepreneur would be needed for business viability.

Table 1: *Schedule of deliverables for farmer aggregation and supply-chain development*

Objective: Develop support systems for scalable and sustainable patterns of market-led production			
Project	**2014-15**	**2015-16**	**2016-17**
Jawhar, Maharashtra **Market-led extension focusing on vegetables sold in whole-sale markets and through direct pick-ups by traders and links with exporters**	• 1500 farmers selling at least 2800 MT of produce annually (at least 100 MT of which to exporters) • Create at least 1 FPO (500 farmers), train and equip officers • Train and equip at least 5 agri-entrepreneurs for an input supply and marketing function • Train 30 barefoot extension workers	• 2300 farmers selling at least 4200 MT of produce (at least 150 MT of which to exporters) • Create at least 3 more FPOs, train and equip officers • Train and equip an additional 5 agri-entrepreneurs for an input supply and marketing function • Train 30 additional extension workers	• Handover in 2016, as per Annex 1
Kalahandi, Orissa **Farm support program focusing on hybrid rice seed and vegetables production**	• Produce hybrid rice seed on 800 acres (700 farmers; off-take agreements with at least two companies) • 800 farmers selling at least 1200 MT of produce through 2 permanent collection centers • Train and equip 3 agri-entrepreneurs for an input supply and marketing function • Train 30 barefoot extension workers	• Produce hybrid rice seed on 1500 acres (1100 farmers) • Expand produce sales to 2000 MT from 1000 farmers (collective marketing through 2 FPOs) • Train and equip 4 more agri-entrepreneurs and 60 extension workers	• Produce hybrid rice seed on 2000 acres, consolidate seed growing and marketing skills in project area • Expand produce sales to 3000 MT, consolidate this line of business with farmers and FPOs • Review performance of agri-entrepreneur model • Hand project over to FPOs and the NGO
Bankura, West Bengal **Farm support program focusing in particular on hybrid tomato seed and providing technical know-how, farm credit and other services**	• Produce 500 kg of hybrid tomato seed and facilitate off-take agreement(s) • Foster vegetable production (open pollinated) on 100 small farms and identify commercial channels for produce marketing and seedling supply • Establish of R&D base	• Expand production and number of participating farmers • Form FPO and provide tech support to the NGO to consolidate program	• Hand project over to FPO(s) and/or the NGO
Kesla, Madhya Pradesh **Farm support program focusing on vegetables and Rabi maize production program linked to Kesla Poultry Society**	• Grow and sell 1200 MT of vegetables from 1500 farmers • Establish FPO; build high-tech poly-house • Expand maize area to 300 acres • Train and equip 4 agri-entrepreneurs for an input supply and marketing function • Train 40 barefoot extension workers	• Expand produce to 2000 MT from 2000 farmers • Establish FPO • Expand maize area to 500 acres • Train/equip 2 more agri-preneurs • Train 60 barefoot extension agents	• Further expand produce (3000 MT, 2500 farmers) • Hive off operation of poly-house to farmer-entrepreneur • Review performance of agri-entrepreneur model • SFI leaves project area

Table 2 offers delivery targets for a credit system linked to the model of agri-entrepreneurs. It also spells out proposed deliverables for a planned agricultural (index) insurance initiative. Government-backed insurance has a long history in India, but coverage rates remain low. The Foundation proposes to build on its experience in agricultural insurance in Africa and adapt certain solutions to India. This calls for preparation and consultation, in particular with the financial and the insurance/re-insurance sector. The goal in 2014 is to identify options and partnerships that could lead to pilot activity from 2015.

Table 2: *Schedule of deliverables for credit and insurance*

Objective: Develop scalable solutions for credit and insurance sectors in India			
Project	**2014-15**	**2015-16**	**2016-17**
Credit	• Facilitate credit to 20 agri-entrepreneurs • Facilitate credit to 6000 farmers, e.g. through IDBI Bank Input Credit Card model or other channels • Study other credit options and additional deliverables for 2014-17 as feasible	• Facilitate credit to 40 agri-entrepreneurs • Facilitate credit to 18,000 farmers through IDBI Bank Input Credit Card model or other channel	• Facilitate credit to 40 agri-entrepreneurs • Facilitate credit to 30,000 farmers through appropriate channels
Insurance	• Organize seminar on innovative index insurance products; develop terms of reference for a possible thought leadership and operational role in India	• Field-test and promote index insurance products in at least 2 locations • Begin to implement role to be carved out in 2014-15 building on SFSA's knowledge and global network of contacts in agriculture insurance/re-insurance	• Field-test and promote innovative index insurance products in value chain intensification contexts in additional locations • Step up influence and impact through partnerships with government and private operators to be defined, based on progress achieved in 2014-15

ICT applications are an area of interest for SFI/SFSA, and Table 3 offers a proposed schedule of delivery in this space. SFI co-invests in the Krishidoot e-connect platform for input-output management and the delivery of price information to farmers (see Annex 3). It also intends to build partnerships with agri-businesses to introduce the *Farmforce* platform for outgrower schemes.

Table 3: *Schedule of deliverables for ICT applications in agriculture*

Objective: Support ICT applications in agriculture that will foster shared value creation and raise profits for small farmers			
Project	**2014-15**	**2015-16**	**2016-17**
Krishidoot e-connect platform	• Connect at least 50,000 farmers to Krishidoot (in cooperation with SFAC) • Monitor and evaluate Krishidoot	• Collaborate with SFAC to document the success story of Krishidoot and promote it as a "national program of the Ministry of Agriculture"	
Farmforce	• Initiate a pilot project with ADM India and potentially further partners • Use Farmforce in all SFI projects where relevant and feasible	• Scale up Farmforce in ADM India • Identify 2-3 more partners for Farmforce in India	• Promote Farmforce to at least 10 companies in India

Value-adding enterprises can help farmers and their communities mitigate risk and overcome the "shock-recovery-shock" cycles that so condition their lives. A shift from the production of commodities to local processing could help stabilize incomes and on-farm investment trends. Simple processing technologies are often available. Together with partners to be identified—and inspired by successful examples—SFI proposes to identify opportunities and test technologies and business models that can add value to farmers' produce locally as described in Table 4.

Table 4: *Schedule of deliverables for value-adding enterprises for smallholder communities*

Objective: Develop business models and processing technologies for value addition to farmers' outputs			
Project	**2014-15**	**2015-16**	**2016-17**
Add value locally	• Identify opportunities to add value from produce and field biomass • Pursue 1-2 partnerships and projects introducing technologies, business models and funding or investment solutions • Initiate project(s) to establish lab-scale feasibility of technologies	• Develop proof-of-principle of technologies and business models • Facilitate development of at least 1 farmer-owned enterprise for agro-processing	• Consolidate experiences • Prepare for handover • Prepare and implement growth plan for this line of business

In the area of policy studies, SFI proposes to evaluate certain programs and public subsidy schemes for their effectiveness in delivering promised benefits to small and marginal farmers. Price policies and input subsidies can significantly strengthen farmers' commercial position and their ability to provide livelihoods for themselves and their families. However, current programs are often delivered ineffectively or in ways that distort incentives. Many farmers do not receive or even know about the support to which they are legally entitled. For SFI this is an area of enquiry that complements and logically extends its on-farm contributions and expertise. The new government may offer fresh perspectives in this space. Proposed deliverables that should inform a thought leadership function are listed in Table 5.

Table 5: *Schedule of deliverables for policy studies*

Objective: Improve the delivery of subsidies and price support to small farmers			
Project	**2014-15**	**2015-16**	**2016-17**
Subsidies	• Publish a peer-reviewed paper to assess the performance, role and contribution of relevant public subsidies and programs	• Organize outreach events and build momentum for policy change and implementation practice in specific states/locations • Document best practices in delivery of selected government subsidy programs across different states	• Ensure that at least one best practice in delivery of subsidies is adopted in one segment of the agricultural value-chain (seed/credit/marketing/support prices) in geography to be defined

Table 6 lists deliverables for partnerships in agricultural development with a view to a) discussing analysis and experience related to scalable approaches in agriculture and b) tapping into CSR funds of agri-business companies under recent Indian legislation to help qualified partners expand their programs in agricultural development and the empowerment of rural communities. The purpose here is to leverage SFI's contacts in FICCI and the agri-business sector to help qualified NGO partners benefit farmers and the modernization of supply chains.

Table 6: *Schedule of deliverables for partnerships in agricultural development*

Objective: Offer knowledge management skills and resource mobilization for market-based agricultural development and MLE			
Project	**2014-15**	**2015-16**	**2016-17**
Knowledge Partnerships	• Develop SOPs for market-led extension in vegetables • Support selected agribusinesses in their efforts to link farmers to their supply chains • Develop a thought leadership function	• Continue engagement along these lines	• Continue engagement along these lines
FICCI-PRADAN-SFI CSR initiative	• Sign MoU with FICCI and PRADAN to create a CSR Fund for agriculture development • Organize seminars for raising awareness about FICCI CSR Fund	• Help PRADAN implement 2 CSR projects in MLE in vegetables through FICCI CSR Fund	• Help PRADAN implement 4 CSR projects in MLE in vegetables through FICCI CSR Fund

Table 7 spells out plans for an ICAR-Syngenta Foundation Agriculture Challenge Prize. Its aim is to encourage breakthroughs in crop improvement in the public research system. SFI wants to stimulate government scientists to take unconventional decisions and develop widely adoptable, market-oriented solutions that create conditions for significant change. The prize of Rs 1 Crore (currently close to USD 170,000) would be paid out after proof of the innovation's adoption. The prize is a response to "technology fatigue" in Indian agriculture and the national research system's declining ability to boost farm productivity. ICAR and SFI would not award the prize at set intervals but only to honor truly exceptional work. Annex 3 provides additional information.

Table 7: *Schedule of Deliverables for the ICAR-Syngenta Foundation Agriculture Challenge Prize*

Objective: Motivate ICAR scientists for break-through research and development of adoptable technology			
Project	**2014-15**	**2015-16**	**2016-17**
ICAR-Syngenta Foundation Challenge Prize	• Announce ICAR-Syngenta Foundation Agriculture Challenge Prize • Disseminate information to create greater awareness of the Prize	• Run conference with ICAR on "Global trends in agriculture research and extension" (2015)	• Award the first Prize

4.2 Resource requirements and organization

To adhere to the guiding principles and achieve the deliverables identified above, SFI estimates its required annual budget for the coming years at approximately Rs 90 million (about USD 1.5 million) per year.

This sum will pay for staff salaries and administrative expenses, travel, project costs, studies, publications, and outreach efforts, agri-entrepreneurship development, new initiatives and the non-annual ICAR-Syngenta Foundation Agriculture Challenge Prize. Detailed annual budgets will be prepared in December of each year and submitted to SFI's Board, SFSA and SIL for approval. In continuation of existing legal arrangements, SIL and SFSA will each contribute half of the budgets. SFI will furthermore mobilize resources to facilitate access of partner NGOs such as PRADAN (and possibly others such as BAIF) to CSR funds of private companies. Proceeds from this effort should enable these partners to defray part of the cost of agri-entrepreneurship development, thus reducing the corresponding cost borne by SFI and possibly lowering the annual totals in the coming years.

SFI's human resource needs come in two categories, internal and external. The internal group consists of employees of SIL who are assigned to SFI under SIL human resource rules and procedures. The external category includes consultants, but would also pay for staff and travel costs incurred by partner organizations at the request of SFI that cannot be charged to projects.

The internal group includes project based and subject specialist teams. For each MLE cluster of up to 3000 farmers, SFI has (or will put) in place a "referral team" consisting of five staff members including an agronomist, a crop protection specialist, a social worker, a marketing specialist and a project coordinator. To reach 30,000 farmers by 2016, up to ten referral teams will be needed, four of which are in place now whereas three will need to be hired annually in 2015 and 2016.

The referral (or field) teams will be complemented by subject specialists whose tasks include assisting the referral teams on the ground. The subject specialists will be part of the central leadership and coordination team consisting of the Executive Director and four subject matter leads in the form of the Heads of (a) Agronomy, (b) Marketing and Value Chain Development, (c) Finance and Risk Management, and (d) Agri-entrepreneurship Development.

External manpower will be commissioned on a short-term, task-related basis as needed to undertake specific assignments where the internal team lacks the required skills or cannot devote itself to the task at hand because of time constraints.

5. Concluding observation

SFI is now embarking on its third phase of operations. The national and international environment continues to change, but we believe that the organization is on a firm footing to succeed. SFI can also benefit from, as well as contribute to, the "jewels" of SFSA around the world—outstanding tools and initiatives that benefit smallholders. Despite these strengths, however, important challenges of planning, design and implementation remain.

The core task is unchanged: create value for farmers, help modernize agriculture and the food system, be an intelligent catalyst. The issue is how SFI frames and approaches this task, builds partnerships, works along with others, and leads. Particularly in interactions with other organizations, we are aware that the right "soft skills" can be as important as analytics and tactics. Over the coming years, SFI will be paying close attention to all aspects of good partnership and project management.

The deliverables identified for the next three years add up to a good relevant program. However, we must bear a few considerations in mind. We know that "the devil is in the detail", particularly in implementation. Some SFI deliverables are currently defined in considerably more detail than others. The likely deployment of *Farmforce*, for example, is already well charted. Our intentions in policy analysis and insurance, however, still need much sharper contours. As well as careful planning of new initiatives, we also need meticulous preparation of project hand-overs. We have ideas about how to do this best, drawn partly from SFSA examples elsewhere. These now need to be worked out in detail for each specific SFI context. A further important topic will be the best choice of interactions with the local system. Going beyond those with SIL and SFSA, these interactions can significantly widen our activities' depth and reach. However, they also need careful charting in advance and continued attention to detail throughout implementation, scale-up and hand-over.

Annex 1: Market-Led Extension in Jawhar Project

Introduction

SFI is working in the Jawhar, Vikramgad, Wada and Mokhada blocks of Thane district, Maharashtra. About 90% of the people are tribal and traditionally depend on rainfed Kharif paddy cultivation for their subsistence. Finger millet is another major crop during monsoon. Prior to the intervention of SFI, crop productivity was low, as farmers were using preserved local varieties and essentially no synthetic fertilizers or crop protection products. Many farm families were unable to feed themselves throughout the year, often migrating after the monsoon to cities like Mumbai and Thane in search of work.

SFI started a pilot project in three villages of Jawhar block with a focus on replacement of traditional rice varieties with improved certified seeds. Productivity increases of up to 20% helped build confidence among farmers and SFI's NGO partners to adopt modern agricultural practices and embark on "market-led extension" in vegetables in 2010. The vegetables program aims to take advantage of expanding markets for fresh produce to raise farmers' income.

In preparation for the program, SFI—along with NGO partners BAIF, Pragati Pratishtan and Aroehan in different sub-divisions—conducted surveys to identify villages where initial activities could be launched. The opportunity and implications of a stepped-up vegetables operation were discussed in meetings with farmers and their representatives. Informal groups of 15-20 farmers were formed to encourage peer incentives and facilitate the task of agricultural extension. SFI's NGO partners took the lead in helping to organize farmers.

Getting basics right

The basic requirement for high-value vegetable cultivation is access to quality seeds and inputs, as well as water. SFI and the NGO partners help farmers get the best varieties and other inputs based on season, cost and availability from dealers. Before SFI came to Jawhar there were no input dealers in the town itself. Today five of them are catering to the area's needs. Farmers are familiarized with seed selection and quality nursery management techniques to raise good seedlings. Some farmers then construct their own low-cost poly-houses and become micro-entrepreneurs, supplying seedlings to other farmers as well. SFI provided a revolving fund administered by the NGOs, as well as technical assistance, to build and use poly-houses and raise healthy seedlings. More than 500 thousand seedlings were raised in seven poly-houses in 2012-13. Some 15 additional poly-houses should go up in the current year to satisfy the seedling requirement of the entire area.

As the project is located in a hilly region, water for irrigation is available in the downstream areas and lasts from July up to December-January only. Water, therefore, needs to be conserved. The communities build low-cost temporary check dams using polyethylene sand/hay bags and other materials to extend the availability of water to March. Diesel- and solar-powered pumps lift water, and some farmers use drip irrigation.

Linking farmers to markets

Bringing about improvements in productivity and sustainable water management with the help of good inputs and agronomy is only one of two critical aspects of a successful vegetables operation. Very importantly, this program has also shown its ability to connect farmers to markets and ensure that their produce gets a fair price.

The process of connecting farmers to markets can be complex. It starts with market research, analysing the demand for relevant vegetables in reachable markets. SFI involves farmers directly in the research, and works with them to translate demand across time into crop plans. Harvesting schedules and crop and varietal choice are designed to produce marketable surplus when prices are attractive.

The Jawhar project's experience with "collective marketing" has been fairly positive. The SFI employee in charge of market relations tracks price movements in relevant local markets and informs farmers, who take a call on harvesting. Once decided, a group of farmers harvest their produce, perform primary sorting and grading in the field and bring the produce to the nearest collection center for final grading and packaging in plastic crates. The produce is weighed accurately using electronic scales provided by SFI, and either trucked to the market or picked up by traders. Paper records of each farmer's share of every sale are kept at the collection center. Jawhar vegetables have a reputation for quality, and wholesale traders are increasingly buying vegetables directly from SFI farmer groups.

Some volumes are sold under contract to buyers such as Fieldfresh Foods Pvt Ltd and more recently Kaybee Exports. Experiences here match the complexity of this channel. Side-selling occurs when the price offered is below open market levels. But contracts bring a degree of security, which farmers like, so the task is to craft balanced agreements that provide security of demand and supply on terms acceptable to both parties. Locking into a buy-back arrangement with a retail chain or exporter makes business more predictable for farmers. But so far, the chains' total demand for goods such as cabbages, okra and tomatoes is less than the project area's capacity to supply, so the option of dealing with traders and wholesale markets must be kept open. SFI, the partnering NGOs and the farmers themselves have learned a lot about the market during the project, and test new sales models every season. Two practices have proven their worth: the aggregation of produce and collective marketing on the one hand and, on the other, the practice of basing sales decisions on market intelligence, including reliable, real-time price information.

Results so far

The results of a project like Jawhar can be measured in a number of ways, starting with the production response. The total production of vegetables in the project area grew from 800 metric tons in Kharif 2012 to an estimated 1,600 metric tons in Rabi 2013-14. The average area under vegetable cultivation has been increasing by 30 to 40% per year. Farmer incomes have grown significantly, too, increasing by almost 70% between Kharif 2012 and 2013, for example. Prices are higher during the dry season, and income prospects are particularly good then for those with access to water. Other benefits of vegetable production are coming into view also, particularly as related to improved nutrition and children's schooling results. The evidence on both of these is anecdotal so far, and SFI plans to conduct surveys. The schooling effects derive from the fact that vegetable growing is an alternative to seasonal migration. Migrant laborers tend to take their families with them, thus removing their children from school for a while each year. Vegetable growing and school attendance appear to go hand in hand.

SFI investments and viability considerations

Table A1 summarizes the financial arrangements. The project is a partnership where everyone chips in. Credit is funded by SFI and channeled through the NGOs in the form of small revolving funds. Farmers can use this to buy seed and crop protection products, but not other consumables such as fertilizer and fuel for pumps. So far, SFI has paid for collection center equipment, including basic furniture, electronic scales and plastic crates. The cost of polyethylene sheets for poly-houses is charged to the revolving funds and paid for by SFI. Farmers have so far not been asked to help pay for this item. SFI pays its own staff costs and the demonstration plots in addition to its contributions to the participating NGOs (see below). All labor and local materials are contributed by the farmers.

Table A1: *Jawhar project - Financial arrangements*

Component	Funding	Comments
Seeds	Farmers buy directly or take credit from NGO	Repayment of credit to NGO upon harvest
Crop protection	Farmers buy directly or take credit from NGO	Repayment of credit to NGO upon harvest
Fertilizers	Paid for by farmers	
Drip irrigation equipment	Paid for by farmers	
Credit	Credit function limited to seed and crop protection	
Polyethylene seedling houses	NGOs donate polyethylene sheets (funded by SFI)	Labor and materials contributed by farmers
Collection centers	Equipped and funded by SFI	
Electronic scales	Supplied/paid for by SFI	
Transport to market	Paid for by farmers	In another SFI-supported project (Kesla), the partner NGO PRADAN subsidizes transport to market
Fuel for diesel pumps	Paid for by farmers	
Technical assistance	Supplied free of charge by SFI	In Kesla, Madhya Pradesh the partner NGO PRADAN levies a Rs 200 technology fee; so far this is not done in Jawhar
Diesel or solar pump sets	Supplied/paid for by SFI through partner NGO	Farmers pay no rent so far
Labor	Supplied by farmers	
Demonstration plots	Supplied/funded by SFI	
Training and capacity building	Supplied/funded by SFI	

Source: Jawhar project

SFI thus coordinates and provides subsidies that generate returns in the form of project results. Some of these are quantified in Table A2. The question now being asked by SFI and the NGO partners (and addressed in the next sub-section) is: How can the project become viable on its own?

Table A2: *Metrics for the Jawhar project (3 seasons)*

	Kharif* 2012	Rabi* 2012-13	Kharif 2013	Rabi 2013-14
Numbers of farmers	856	298	807	334
Area in acres	171	129	221	179
Area per farmer (acres)	0.2	0.43	0.27	0.5
Income from sales, all farmers (Rs)	10,100,000	13,700,000	15,700,000	pending
Farmer Investment (Rs)				
Fertilizer	427,500	516,000	552,500	
Seeds	342,000	387,000	442,000	
Crop protection	427,500	645,000	1,105,000	
Labor	1,197,000	1,032,000	1,547,000	
Total	2,394,000	2,580,000	3,646,500	
Profit (Rs)				
Net profit (all farmers)	7,706,000	11,120,000	12,053,500	
Average profit per farmer	9,002	37,315	14,936	
Average profit per acre	45,064	86,201	54,540	
Average ratio of profit to investment per farmer	3.2	4.3	3.3	
Investment by SFI (Rs)				
Salaries and NGO costs	2,500,000	2,500,000	3,000,000	
Subsidy kick-start / infrastructure	855,000	645,000	1,105,000	
Total	3,355,000	3,145,000	4,105,000	
Average SFI investment per farmer	3,919	10,554	5,087	
Average ratio of profit per farmer to investment by SFI	2.3	3.5	2.9	

Source: Jawhar project

**Kharif is a rainfed crop spanning from July to October, where number of farmers are more numerous compared to Rabi, which is mainly irrigated cropping between November and March. The number of farmers engaged in vegetable production in Rabi is low because of water scarcity.*

To develop the project metrics in Table A2, data on input investment and sales lifted from farmer cards that record agronomic schedules and financial information were perused. SFI invested Rs 3900, Rs 10,550 and Rs 5100 per farmer during Kharif 2012, Rabi 2012-2013 and Kharif 2013, respectively (see Table A2). This covered SFI salaries, NGO administrative costs (including salaries) and what SFI calls "kick-start subsidies" to develop common infrastructure such as the collection centers, sheets for poly-houses, bio-fertilizers, water pumps and plastic crates. From the cards, the calculated average net profit per farmer from vegetables was Rs 9000, Rs 37,000 and Rs 15,000 in the three seasons mentioned (see table). SFI's investment per farmer therefore translated into impact ratios of 2.3, 3.5 and 2.9 for these seasons. In other words: farm profits were twice to more than three times as high as SFI's investment.

The ratio of farmers' profit to their own investment is even more impressive: 3.2, 4.3 and 3.3 (see table). In other words, during Rabi 2012-2013, farmers earned on average 4.3 times more from sales than they invested in seed, fertilizer, crop protection products and hired labor. These are better ratios than any the region has (to our knowledge) seen in the past, so farmers are keen to be associated with the SFI initiative.

Initiating the exit process and ensuring sustainability

SFI and its partner NGOs have supported some 1200 small-scale vegetable growers annually during the last few years in Jawhar. The results suggest that vegetable growing can be profitable for farmers. It should be viable as a longer-term business proposition, provided the right hand-over measures are put in place in 2014-2015 regarding facilitation of inputs, seedling production and credit, agronomic and marketing support, and the role of partner NGOs once SFI exits. Current thinking with respect to these aspects is as follows:

- On inputs, SFI field staff and the NGOs currently help farmers procure inputs, including fertilizers, crop protection products, plastic ropes for trellises and materials for poly-houses. In 2014, SFI intends to train five agri-entrepreneurs who will supply inputs to several hundred farmers each. The agri-entrepreneurs will take a cut of about 5%, but bulk purchases should still lead to lower prices for farmers than at present. The agri-entrepreneurs would develop their own businesses and be incentivized to provide value to farmers, for example by renting out machinery, pumps and spraying equipment, or providing spraying services themselves.

- On seedling production, the plan is also to train and equip agri-entrepreneurs or farmer-entrepreneurs. They would operate up to 22 poly-houses in the project area, producing vegetable seedlings for themselves and their neighbors.

- On credit for farmers and potentially agri-entrepreneurs, SFI is negotiating with various banks at the present time. Some branch managers have taken an interest after visiting the project and learning about the potentially bankable proposition of "market-led extension". Some have indicated a willingness to extend credit to farmers without recourse to formal land records and collateral security linked to titles. In a potential tie-up with IDBI Bank, credit could be extended to farmers through a card, valid only in specific input shops or with agri-entrepreneurs. This system would help ensure that the credit really flows into farming. This would reduce the agri-entrepreneurs' cash flow risks.

- On agronomic support, currently provided by agriculture graduates and low-cost ("barefoot") extension workers, the proposal is to attach a number of the latter to each agri-entrepreneur who after a transition period would pay their salaries from business proceeds. The cost of training barefoot extension workers could be borne by SFI in 2014. A two- or three-tier structure is envisaged, in which

barefoot extension workers would provide day-to-day agronomic support under the supervision of more fully trained specialists. The details remain to be worked out.

- On produce marketing, the processes of aggregation and collective selling need to be put on a self-sustained managerial footing. Multiple exit processes may be required. One possibility is for agri-entrepreneurs to act as marketing agents for their 300 or so farmers, coordinating business processes with purchasers. Another approach would be to create one or more FPOs. The FPO would undertake the marketing on farmers' behalf. A third option would be to develop contracts with off-takers such as exporters and organized retail companies for buying vegetables from farmers. Once SFI exits, trusted agri-entrepreneurs or the FPO(s) would manage the contracts and look after the interests of farmers, possibly with the support of NGOs already engaged in the project.

On SFI's exit from the project, the role of the NGOs—if they continue being active in the project area—would gradually shift from implementation to mentoring and advisory services, as well as monitoring and evaluation. The NGOs would be entrusted with training and capacity-building of barefoot extension workers, FPO officers and other participants. The NGOs would monitor the agri-entrepreneurs and their business practices to ensure they provide real value to farmers. The NGOs might also maintain contacts with off-takers and others downstream in the value chain. The precise roles and responsibilities of different actors during the transition from project to business will need to be examined and validated in detail in the coming months.

Annex 2: List of Projects/Initiatives of Syngenta Foundation India as of January 1, 2014

	Project/Initiative	Description	Impact 2014-15	SFI Investment in 2014-15 (tentative; Rs)
1	Jawhar, Maharashtra	Market led extension in vegetables	1,500 farmers	6.0 million
2	Kesla, Madhya Pradesh	Market led extension in vegetables	2,500 farmers	5.0 million
3	Kalahandi, Odisha	Seed production and market led extension in vegetables	1,000 farmers	3.5 million
4	Bankura, West Bengal	Seed production and marketled extension in vegetables	600 farmers	3.5 million
5	Mahbubnagar, AP	Market led extension in vegetables	600 farmers	1.5 million
6	Purulia, West Bengal	Seed production	500 farmers	1.5 million
7	Krishidoot - Pan India	SFI has partnered with SFAC, Ministry of Agriculture and Reuters Market Light (RML) to pilot test an e-connect platform for input-output management for farmers. This will lead to price reduction in cost of inputs and better price realization for outputs.	50,000 farmers	4.5 million
8	Monitoring and evaluation of Krishidoot	To monitor and evaluate, the performance of Reuters Market Light in implementing the krishidoot project.	N/A	1.0 million
9	FPO managers training	SFI has partnered with SFAC, Ministry of Agriculture to launch the first FPO managers training program in the country.	30 FPO managers, each helping 1,000 farmer FPOs	1.5 million
10	Agri-entrepreneurship as an enabler	Anchoring agri-entrepreneurs for providing inputs, services and linking farmers to markets. This is initiative is planned as an 'exit process' for current MLE projects.	20 agri entrepreneurs, each helping 300 farmers	3.0 million
11	ICAR Syngenta Foundation Agriculture Prize	SFI is institutionalizing a grand prize for recognizing outstanding research undertaken by ICAR scientists and adoption of research results by farmers.	Research should impact at least 100,000 farmers for prize to be awarded	10.0 million
12	Study on linking farmers to markets	An external study has been commissioned to document four case studies on agriculture marketing in India. PwC is undertaking this study.	Help other stakeholders understand the nuances of agri-marketing	1.5 million
13	AITA School, Anandwan	SFI jointly with MSS (maharogi sewa samiti) operates agriculture polytechnic and is also planning short term professional courses in agriculture	50 agri polytechnic students graduate	5.0 million

Annex 3: Krishidoot - ICT Solution for Managing Inputs and Outputs for FPOs

Krishidoot is an easy-to-use and universal ICT based platform that brings together farming communities and agri businesses to efficiently engage with each other. This platform aims to bring the benefits of economies of scale for all participants in the agriculture ecosystem by leveraging technology, thereby accelerating the growth in the sector. This initiative was launched jointly by Small Farmers Agri-Business Consortium (SFAC), Ministry of Agriculture, Government of India, Syngenta Foundation India (SFI) and RML Information Services Pvt. Ltd (RMLISPL).

Benefits of Krishidoot

For farming communities
- Better price realization for produce
- Reduced costs for inputs
- Higher productivity due to better information / quality / availability of inputs
- Better reach to market players

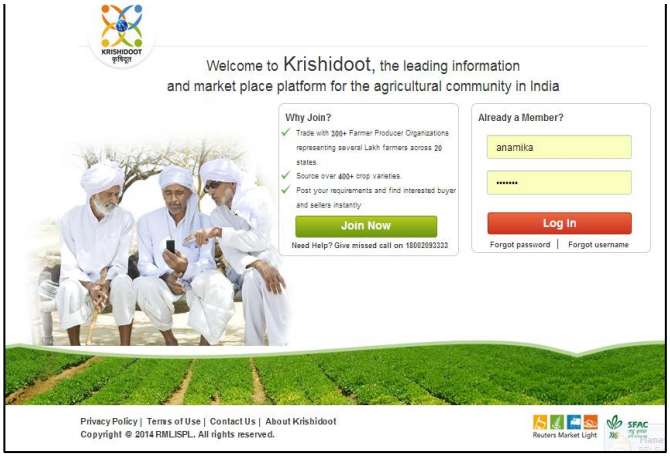
For agribusinesses
- Wider access
- Availability of aggregated quantities
- Ease of business
- Better reach to farmer groups

How to use Krishidoot

Krishidoot has a user-friendly web portal www.krishidoot.in. One can log in to this portal and directly trade with over 300+ farmer groups representing several Lakh farmers across 20 states growing over 400 crop varieties. This user friendly portal offers features such as:

- Search for input demand/ produce supply posted by farmer groups across India.
- Set preferences to indicate willingness buying or selling products.
- Make a post for what you would like to sell / buy and publish the same on the portal.
- Receive contacts of farmer groups who are interested in trading with you on SMS and Email.

Figure A1: The Krishidoot web-interface (www.krishidoot.in).



Krishidoot Progress: In the initial phase itself, Krishidoot has made significant progress and continues to do so. Today we already have a database of over 8,000 validated and live agri stakeholders which includes agri buyers, sellers, service providers and government institutions who are engaging with over 10,000 active farmer groups and 300+ FPO (farmer producer organization) setups. The Krishidoot engine has already generated 103,359 matching offers leading to a transaction value of over INR 20 CR over the last rabi and kharif season. Most farmers who have participated in the Krishidoot platform have clearly benefitted by selling their agri produce in 5-10 per cent higher range and similar benefits are expected to accrue while buying agri-inputs.

Annex 4: The ICAR – Syngenta Foundation Agriculture Challenge Prize

Technology and its transfer play a significant role in the development of agriculture and food security. The contribution of NARS, particularly ICAR, to Indian agriculture over the last five decades has been outstanding. Its role in the Green Revolution and India's food-security is recognized the world over. However, in recent years the research-driven increase in farm productivity has slowed, a trend often called "technology fatigue". Experts point to a decline in new technologies and their transfer from "lab to land". Policy makers and NARS management have sought ways to reverse this trend. The 11th Five Year Plan included some changes; the 12th plan recognizes the need for a much greater shift. What this will mean in practice remains to be seen. The Syngenta Foundation and a wide range of partners have identified several areas with potential for improvement. Our view is that research priorities should be driven more by demand than particular scientific themes: public research needs to become more delivery-oriented. In addition, agricultural research, development and delivery would benefit from many more public-private partnerships.

India's decision to give agriculture high priority and raise investment in public research is very welcome. However, still needs to be done to achieve the best results for farmers. One measure would be to promote excellence in research, targeted to creating cutting-edge innovations that farmers can and want to use. As well as crop variety improvements, these would also include, for example, breakthroughs in increasing nutrient-use and water-use efficiency, soil and crop management, farm mechanization, post-harvest technology and more profitable farm production models. The field is wide open.

There is a need to infuse fresh energy among scientists to meet the real needs of Indian farmers. Greater recognition can play an important role here. Syngenta Foundation and ICAR therefore propose to launch an "ICAR – Syngenta Foundation Agriculture Prize". There are currently no such awards available in the public sector. As well as stimulating scientists to achieve breakthroughs for farmers, we believe that our Prize will help raise the public status of agricultural research and encourage more young people to enter it as a profession.

Name of the Prize: "ICAR - Syngenta Foundation Agriculture Challenge Prize" or any name decided by the Steering Committee.

Design of Agriculture Prize: The main objective is to motivate the scientific fraternity to be involved in groundbreaking research, which will directly or indirectly benefit millions of small farmers. The prize will be awarded for recent research which has been adopted by a yet to be defined number of farmers. Specific terms of reference would be designed for each sub-category, e.g. in yield increases, which are applicable for the ICAR – Syngenta Foundation agriculture prize. For instance, minimum of 0.3 MT increase in yield in oilseed crop cultivated over 50,000 acres of land. The prize will be open for agriculture and allied sectors.

Prize Money: Indian Rupees 10 million in cash. **Awards**: A neutral panel of experts will award the prize only when they find a fitting case. Syngenta Foundation will undertake to support this initiative with prize money for ten years, but expects ICAR to bear the management costs.

Management and Administration: After ICAR and SFSA have signed the MoU, a steering committee nominated by them will be preparing the ToR. The Director General of ICAR will chair the steering committee. Once the Prize Fund is formally established, management will pass to a new organization. An Advisory Committee will determine the selection procedure and appoint the Jury. An Executive Committee will manage the Fund.