

Enabling smallholders' descendants to farm with pride

The Syngenta Foundation and sustainable agriculture

1. Introduction: a jungle and a need

In 2019, an online search for 'sustainable agriculture' typically produced about 200 million hits. However, our Foundation is one of only a few organizations that contain both words in their name. Strangely, not even the Steering Group members of the European Foundations for Sustainable Agriculture and Food do so^[i].

What does the Syngenta Foundation for Sustainable Agriculture (SFSA) mean by the second half of its title? In a jungle of 200 million mentions, the question is well asked. Internationally, the term is used in numerous different ways, and there is a wide range of related expressions. These include 'future-proof' (almost 72 million search hits), 'climate-smart' (about 38 million), 'regenerative' agriculture (8.6 million), and numerous others in English alone. Other languages and cultures use many further expressions; supposed translations often, in fact, have different nuances of meaning.

SFSA concentrates on what it has traditionally called 'pre-commercial' smallholders. These are, for example, farmers who, before working with us, have not regularly buying inputs and selling produce. Others engage more often in commercial activities, but sub-optimally. They typically lack good access to knowledge, technology and/or markets. Such smallholders earn very little from their farms.

As the term '*pre*-commercial' suggests, our aspiration is to enable them to transform their agriculture to become an important source of family income. Commercial viability forms a central part of our view of sustainable agriculture. Sections 3 and 4 below describe this and other aspects of our standpoint in more detail. Section 2 first provides some indications from other organizations.



Why do we believe this discussion is valuable? After all, the definition of 'agriculture' already includes a longer-term view, even before adding the word 'sustainable'. Agriculture is the "science, art or occupation concerned with cultivating land, raising crops, and feeding, breeding and raising livestock"^[ii]. All of these are by their nature activities for practice and repetition. They also have to continue: mankind has no alternative to being able to feed itself, for generations to come. And people neither can, nor should, all just eat wild berries and fish.

The UN's 17 Sustainable Development Goals (SDGs) provide an important backdrop to this discussion. The first three (No Poverty, Zero Hunger and Good Health & Well-being) relate directly to agriculture. Almost all the others are closely connected to aspects of the work in which we and other organizations in our field regularly engage.

Despite farming's literally vital role in ensuring food and nutrition security, however, the Syngenta Foundation hears a great diversity of views. We also see some misunderstanding, as well as disregard of agriculture's longer-term requirements. For example: Many Western consumers falsely think that organic farming does not use pesticides. Despite unclear evidence, many believe that organic food is better for their health and the environment. A strong current of opinion runs against the use of modern scientific methods of plant breeding and pest control. Some citizens of 'advanced' countries effectively want limitations on subsistence farmers in the developing world. Such smallholders, they urge, should be prevented from using modern technologies that can significantly improve their productivity and income. At the same time, many politicians view farm subsidies as essential to keep 'their' farmers happy. However, such subsidies both put smallholders elsewhere at a disadvantage, and take funds

away from agricultural education and research. Further examples of such contradictions and confusion abound.

Misconceptions or muddled thinking can hinder efficient production of abundant healthy food. They can also affect agriculture's needs and standing as a profession. Alarming, and connected to this, the world now faces an international shortage of young people keen to take over their parents' farms. Rural migration to cities continues at a high pace.

So what are the key features of an agriculture that can continue to meet increasing food demand, provide attractive employment and improve the well-being of those involved in the sector? What additional requirements must farming and associated activities fulfil in order to earn the name "sustainable"?

2. From Wikipedia to the FAO: every definition is different

According to the US Department of Agriculture (USDA), "some terms defy definition. 'Sustainable agriculture' has become one of them"^[iii]. We believe it is worth taking on the challenge. The following section presents several points of view, but lays no claim to being exhaustive.

Some organizations primarily emphasize the environmental aspects of sustainable agriculture. This matches a secondary dictionary definition of 'sustainable': "of, relating to, or being a method of harvesting or using a resource so that [this] is not depleted or permanently damaged". Wikipedia, for example, writes: "Sustainable agriculture can be understood as an ecosystem approach". Its article then concentrates on water, soil, and farming practices. The text barely mentions human beings except in this immediate context.

Other authors include more attention to people, but in a primarily non-economic role. In 2015, Greenpeace published "Ecological Farming: the seven principles of a food system that has people at its heart"^[iv]. Summarizing this report, Lifegate says sustainable agriculture "is based on scientific innovations through which it is possible to produce healthy foods with respect for the land, air, water and farmers' health and rights"^[v].

Other organizations look a little further. The company BASF, for example, agrees that "sustainable agriculture can protect the environment and conserves resources by using land, water and other natural resources efficiently and effectively". But it adds that "sustainable agriculture is an essential part of a stable, functioning society. We partner with farmers to help them grow crops efficiently"^[vi].

In sharp contrast to the USDA (see above), the 1990 US 'Farm Bill' laid out a lengthy definition of sustainable agriculture. This law takes the term to mean "an integrated system of plant and animal production practices having a site-specific application that will, over the long term: satisfy human food and fiber needs / enhance environmental quality and the natural resource base upon which the agricultural economy depends / make the most efficient use of non-renewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls / sustain the economic viability of farm operations; and enhance the quality of life for farmers and society as a whole"^[vii]. In short: to be sustainable, agriculture has to be viable economically, as well as socially and environmentally.

The UN Food & Agriculture Organization (FAO) essentially agrees. It describes five principles of sustainable agriculture. These are that:

- Improving efficiency in the use of resources is crucial to sustainable agriculture
- Sustainability requires direct action to conserve, protect and enhance natural resources
- Agriculture that fails to protect and improve rural livelihoods, equity and social well-being is unsustainable
- Enhanced resilience of people, communities and ecosystems is key to sustainable agriculture
- Sustainable food [*sic*] and agriculture require responsible and effective governance mechanisms.

The fifth principle is an important addition to other organizations' lists. The FAO explains: "Mainstreaming sustainability into food and agriculture systems implies adding a public good

dimension to an economic enterprise. Agriculture is and will remain an economic activity driven by the need [...] to make profit and ensure a decent living [...]. Farmers [...] need [...] incentives that support the adoption of appropriate practices on the ground. Sustainability will only be possible through effective and fair governance, including the right and enabling policy, legal and institutional environments that strike the right balance between private and public sector initiatives, and ensure accountability, equity, transparency and the rule of law^[viii].

The Declaration of the G20 Meeting of Agriculture Ministers^[ix] in July 2018 stated that for a sustainable food future, “we need to take targeted measures” in order to achieve nine objectives. These include “ensuring and promoting the safety and quality of food in line with international standards”, “strengthening access to the financial system, risk management instruments, and output markets”, and “encouraging the development of and access to a range of new research and technologies, especially those that enhance opportunities for the rural youth”.



“Quality of food” is a broad expression. It covers food’s safety for consumption, its attractiveness, and its nutritional value. Box 1 points to some nutritional aspects of sustainable agriculture).

There are implicit tensions between some of the aspects of the various theories. Sustainable agriculture involves balancing competing needs and interests and adapting to social, economic and environmental changes. For example, we all would agree with the need for the world to produce enough healthy food in a way that is increasingly good for natural resources, people and the economy. The question is how to reconcile and balance these different objectives in a given setting. How best locally to use water and land, protect crops and biodiversity, and reverse soil degradation, while ensuring that rural women, men and youth can all improve their livelihoods? There are often trade-offs between the economic, social and environmental goals of sustainability. For instance, intensification of agriculture can bring economic and social benefits, but if done inappropriately put a burden on natural resources. Measures to enhance biodiversity and soil health may reduce acreages of actively used farmland, and thus cut farmers’ income for a time. Such tensions and trade-offs remain a topic of international debate!

Box 1

A diet of sustainability?

The well-known organizations quoted in Section 2 do not expressly include food’s nutritional value in their definitions of agricultural sustainability. Looking at ‘sustainable food systems’, on the other hand, the *EAT-Lancet Commission* recently combined environmental consequences of production and health consequences of consumption in a single review^x. Red meat scores badly on both. Improved nutrition means more than improving calorific intake. It includes ensuring adequate intake of necessary micro-nutrients, for example from increased consumption of fruit and vegetables. Combined assessments can, however, cloud the picture: large-scale monocropping of healthy food – plantation fruit, for example – may be nutritionally more valuable and economically beneficial than it is environmentally wise.

The importance of nutritional value is more apparent for the social and economic pillars of sustainability. Healthier food helps children to develop their human potential. It also enables their parents to live fuller lives, work more productively, and if they are farmers, command better prices. These are some of the thoughts behind programs of ‘bio-fortification’ – the breeding of crops containing more micronutrients. SFSA has contributed to several such initiatives, such as HarvestPlus and the Pan-Africa Bean Research Alliance (PABRA). Our website’s [R&D pages](#) provide further details. Production of vegetables as important sources of both vitamins and income continues to play a central role in our work with smallholders. Initiatives such as the Food and Land Use Coalition (FOLU) also emphasize a close connection between healthy food and sustainable agriculture.

3. Our theory: the Syngenta Foundation takes a broad view

Where does the Syngenta Foundation stand? Of the views expressed above, ours is closest to that of the FAO. We agree with all five principles. However, we also emphasize a number of aspects not explicitly mentioned in the FAO's explanations.

For example: with large-scale commercial agriculture in advanced countries, few people doubt the need for functioning markets and 'demand-pull'. In smallholder agriculture in developing countries, numerous organizations still prefer free hand-outs. They view the work of supporting smallholders as philanthropy, not as self-sustaining market development. Social safety nets can ease acute problems, for example after natural disasters, or in helping the poorest communities furthest from potential markets. But free inputs and services do not incentivize 'pre-commercial' farmers to step up, and can drain poor countries' treasuries. We prefer to build markets, and to provide matching incentives and support.

Unfortunately, many people in 'Western' countries believe that enabling smallholders in developing countries to buy new technology such as improved seeds is somehow 'wrong', or at least that the technology is 'unwanted'. This flies in the face of our experience in the field. We believe it is crucially important that smallholders have easy informed access to helpful and affordable technology. Smallholders are very ready to invest, if there are good prospects of using the technology to sell improved produce profitably, and if the financial risks can be mitigated, for example through weather insurance.

Economic viability is a criterion that some organizations involved in agricultural development tend to play down, or even view with suspicion. But without monetary success, smallholders cannot continue to improve their farms, or get out of poverty. We believe that any intervention that seeks to support smallholder advancement must start by addressing accessible opportunities through market systems. To improve faulty market systems, businesses and smallholders need to acquire new expertise. Any such intervention has to ensure that linkages to markets can reliably deliver profits to producers and their businesses partners. It must also mitigate exposure to market volatility.

Once such opportunities are evident, smallholders, especially younger ones, can realize benefits from digital technology, drones and other innovative inputs. For example, www.hellotractor.com allows farmers to connect with tractor owners online, and use their services efficiently and affordably. Platforms like this could transform the mechanization of African farming. Many Chinese smallholders can now have their crops sprayed by drones, which can apply minimum effective doses of treatments. This service provides significant benefits by replacing manual work and reducing wasteful input use. We believe such field initiatives need to be supported not only by policy work, but also by research and development. Both should be designed to make suitable and affordable technology more accessible for smallholders.

To optimize the use of improved technologies in market systems, smallholders also need to be able to use the tools productively. They need better business models, greater financial literacy, easier credit access, tailored risk management (for example, effective and efficiently administered crop insurance), a step-by-step path to expansion, and the skill and will to continue to shape their own futures. In short, they require and deserve all the elements of agricultural success that their large-scale commercial colleagues take for granted. We therefore engage in these areas as well.

Initiatives to deliver such opportunities can benefit from well-governed partnerships involving the private sector, development agencies and governments (see Section 4). Broad 'coalitions of the willing and able' are essential for scale-up and transformative impact. Such multi-stakeholder approaches are complex, but the only way to stimulate and maintain systemic change (see Box 5).

We continue to catalyze such initiatives and promote similar approaches through numerous channels. These include our [website](#). A page there is devoted to sustainable intensification, a core part of sustainable agriculture^[xi]. To feed a rapidly growing world population, farming must intensify – but do so sustainably. Unfortunately, not everyone involved in agricultural development agrees on the first point. There is also considerable debate about the best path to farm sustainability.

A 2017 study^[xii] by the US Government's *Global Hunger and Food Security Initiative, Feed the Future Innovation Lab for Sustainable Intensification* proposed a framework for assessing sustainable intensification in agriculture. Its five points are:

- Productivity – including crop yields, animal production and variability of production
- Economic – including profitability, variability of profits and labor requirements
- Environmental – including impact on biodiversity, and both water and soil quality
- Human – including nutrition, food security and health
- Social – including equity and gender, social cohesion and collective action.

We agree that these pillars of sustainability are all both vital and mutually dependent.

Box 2

A market for healthy soils

Healthy soils provide a number of environmental and agronomic benefits. These include physical crop support, water retention and purification, habitats for beneficial soil organisms, nutrient regulation and means for pest and disease control^[xiii]. Some of these benefits will be of great importance in dealing with climate change. However, soils' well-being has often been neglected in agriculture. A number of practices have led to the degradation of vast amounts of farmland. Examples include continuous mono-cropping, unsustainable nutrient and water management (too much use, or too little), removal of organic matter, inappropriate application of chemicals and use of heavy mechanized equipment^[xiv].

Soil health has become an increasingly important topic in recent years. Soil is now widely regarded as a living ecosystem, rather than simply a substrate for crops to grow in^[xv]. SFSA fully supports a shift to more sustainable cropping practices to benefit soil health. We see the need for smallholders to improve their soils. However, such farmers often have limited access to finance and credit. Their work therefore needs to generate direct and rapid financial benefits. We engage in market-led initiatives to diversify farming systems by adding rotation crops. We also aim to combine novel tools for affordable soil diagnostics with recommendations for use of fertilizers and other inputs, as well as ensuring that these are available to smallholders at the right time and price.

For further information, see www.syngentafoundation.org/soil-health-initiative.

Done badly, intensified agriculture can simply mean more mono-cropping, as well as degrading land and depleting other natural resources. Crop diversification plays an important role in strengthening farmers' resilience. A good combination of cereals, cash crops and other rotation options contributes to longer-term productivity gains. It also helps improve rural diets. Done well, sustainable intensification benefits farmers, for example via higher yields and incomes. It therefore enables them to raise their standard of living, enjoy better health and nutrition, and educate their children. All this improves their well-being in the long run. It also helps make their farms into the kind of enterprises that some of their children wish to inherit, rather than have to – or leave the land for a city slum.

The availability of agriculturally productive land is diminishing. There is a strong need to minimize the further loss and degradation of natural habitats such as forests, wetlands and long-term pastures. 'Growing more with less' is the guiding principle: reducing the use of water, land and chemicals per unit of output, while conserving the productive capacity of soils. Sustainable intensification of agriculture and rehabilitation of degraded land are important elements of any strategy to avoid bringing more forest land under cultivation.



Healthy soils are vital for sustainable agricultural systems (Box 2). Uncertainty about future land access and usage rights holds farmers back from investments to reduce soil erosion and degradation. Insecure land access is a major factor impeding investment by women, in particular. With limited financial means, smallholders are also understandably reluctant to engage in restorative practices which incur immediate costs but only – and if all goes well – bring longer-term returns.

Water resources, above all for irrigation, are essential for farmers to increase global food supply sustainably. However, many parts of the developing world face increasing water stress. Climate change aggravates the situation (see Box 3). Integrated water management, tailored incentive policies, and innovation in plant breeding, irrigation technologies and risk management are all required to address the challenges.

There are still some aspects of sustainable agricultural development to which our Foundation has so far not devoted much attention. Arguably the most important is gender equity. Inequity between the sexes considerably slows social and economic development. UNDP's 2016 Africa Human Development Report^[xvi] estimated that it costs Sub-Saharan Africa \$95bn per year, some 6% of the region's GDP. Agricultural intensification projects must not only increase yields and enhance water quality. They must also help to close gender gaps in health, nutrition, education and employment. In alignment with

Box 3: Keeping farming flowing

Adequate water supplies are vital to sustainable agricultural systems. Agricultural irrigation uses about 70% of the world's freshwater withdrawals. Accounting for about 18% of the cultivated area in developing countries, irrigated crops represent some 40% of agricultural output value^[xvii].

In many river basins, freshwater supplies are already fully used. Water use often exceeds minimum recharge levels. At present, an estimated 3.6 billion people live in areas that are potentially water-scarce at least one month per year. This number could increase to some 4.8-5.7 billion by 2050^[xviii]. Since the 1990s, pollution has worsened in almost all rivers in Africa, Asia and Latin America. Over-extraction of groundwater is also a serious problem, particularly in areas heavily dependent on well irrigation. Water tables have therefore fallen.

Physical scarcity of water is aggravated by policies that induce greater use. In parts of India, subsidies for canal irrigation, power and fertilizers, along with state procurement of output at guaranteed prices, have led farmers to over-produce grains, use water-intensive cultivation and make excessive withdrawals of groundwater^[xix]. Among the negative consequences of over-extraction from aquifers is 'saline intrusion'. Saltiness has led to losses of huge agricultural areas, especially in coastal regions.

Climate change will affect the availability and use of water, and locally increase the competition for access. In irrigated areas, worsening water scarcity poses several challenges. Farmers need to use water more efficiently, stop unsustainable extraction of groundwater and prevent degradation of irrigated land through waterlogging, salinization and nutrient depletion.

SFSA helps smallholders to address their water challenges. We introduce drought-tolerant crop varieties, help build check dams and rainwater harvesting facilities, support farmers with more efficient technologies such as sprinkler and drip irrigation. We also facilitate access to risk management tools such as weather index insurance. We support conservation tillage, crop rotation, agroforestry, balanced use of fertilizers, responsive use of agrochemicals, and effective manure management. Such measures further improve water use efficiency, reduce pollution, and mitigate climate change risks.

partners, SFSA is now working on gender commitments. We have also made broader Diversity & Inclusion a major priority.

As the following section shows, our existing activities already fit closely with the aim of ensuring a long-term future for smallholder agriculture, environmentally, socially and economically.

4. Our practice: the Syngenta Foundation is widely engaged

Over the years, SFSA has addressed all three pillars of sustainable agriculture. Our activities continue to evolve. Extensive information is available on our [website](#). The following section provides some examples.

In the **environmental area**, for example, our work has included initiatives in Payment for Ecosystem Services, and support for the World Bank's BioCarbon Fund. We are now advancing the topic of Soil Health in new ways. Our newest partnerships here, with The Nature Conservancy and Syngenta, as well as the One Acre Fund and other partners in Kenya and China, are already active. SFSA also continues internationally to devote attention to the better use of other resources, such as water. These efforts cover aspects as varied as stimulating extension advice, supporting construction of check dams, delivering drought-tolerant 'AAA' corn (see Box 5), and publishing policy research on smarter subsidies.



In the **social arena**, we have moved over the years from initiatives designed to strengthen selected rural communities (such as former leprosy patients in India, helping them to horticultural success) to a broader focus on opportunities for rural youth. Our Agri-Entrepreneur and Farmers' Hubs programs are rapidly-growing examples. Such initiatives are underpinned by research into the wishes of young rural residents and urban migrants. Our work on radio extension in local minority languages is designed, inter alia, to increase the languages' use and standing among the young. Meanwhile the community of young African scientists continues to benefit from our activities – earlier at BeCA, now through our Demand-Led Breeding program. Policy work on food safety, meanwhile, has the potential to benefit society as a whole.

With our strong emphasis on demand-pull and functioning markets, the **economic pillar** of sustainable agriculture is often our leading focus. Our Mission gives this special prominence: “To create value for resource-poor small farmers in developing countries through innovation in sustainable agriculture and the activation of value chains“. Our Seeds2B, Risk Management and Agriservices streams all aim to strengthen market systems – or in other words, to enable smallholders to earn more money, more reliably (see Box 4). The improvement of farm incomes is a unifying goal of most of our work.

It is, however, misleading to regard these pillars as discrete. All three hang closely together. Our earlier Payment for Ecosystem Services work, for example, addressed an environmental topic of local cultural importance with an eye to opening up new income streams for smallholders. New business opportunities for rural youth help keep local communities lively and farm fields well-tended. More efficient farming thanks to innovations reduces the pressure on resources per unit of crop – thus ideally, for example, reducing the need for further conversion of natural habitats into farmland.

We remain convinced that we are right to pursue all three pillars in an integrated manner, and to take a very broad view of sustainable agriculture. In this, we are fully aligned with Syngenta. The main difference is our focus on strengthening the entire system supporting pre-commercial smallholders, rather than serving selected needs of large-scale farm operations.

Box 4:

The business of innovation

SFSA develops and deploys scalable, market-driven interventions based on innovative technologies and service models. These are customized to match varying smallholder needs, and provided through local systems. SFSA takes products and services from innovation (mostly in research) through development (developing and proving business models for delivery) and on towards major scale-up through market mechanisms. Our experience includes building seed systems, facilitating seeds licensing and variety registration, developing financial and risk solutions, providing farmer advice, and engaging partners from the private, public and social sectors.

Better access to seed requires two elements: identifying/developing new, improved varieties, and producing and distributing them to smallholders. Our Seeds2B program builds 'South-South' links to transfer varieties with desired traits from breeders to African farmers via local seed companies. Many of the breeders are in the public sector, and often from Asia. Our model is designed as a 'one-stop shop' for seed companies and breeders looking to satisfy unmet market needs.

Farmers buying quality inputs such as seeds make considerable up-front investments and take on risk. Insurance can help smallholders reduce their risks, if it is properly designed to meet their needs. Since 2009, SFSA has spearheaded the development of affordable smallholder insurance. As well as protection, insurance can also serve as security for loans, making it easier for smallholders to get credit at low risk to themselves. SFSA continues to improve farmers' access to finance, increase their technology adoption by de-risking it at all levels, and build resilience through insurance.

Our Agriservices stream operates three main models: individual agri-entrepreneur (AE) change agents, small-scale one-stop outlet franchise businesses (Farmers' Hubs, FH), and cooperative-based businesses that provide a range of other farm mechanization services. Here we develop business cases for local providers, including using technological and digital innovations. Key features of the AE model are professional demand-driven video content and business empowerment support (e.g. through training and subsequent mentoring), as well as links to markets and finance. Further prototyping and improvement includes the development of integrated platforms for scaling up innovations around 'first-mile access' and 'last-mile delivery' through local service providers (i.e. AEs and FH). As of July 2019, there were some 1700 AEs across India, each reaching an average of 200 smallholders. There were about 200 FH in Bangladesh. Further scaling-up is underway, as well as expansion in other countries.

5. Impact and the future of smallholder agriculture

How does one best measure progress toward sustainable agriculture for smallholders? SFSA's strong emphasis on economic aspects of sustainable agriculture is reflected in our new Performance Measurement & Management System (PMS). This defines our three focus areas as Farmer Products & Services, Replicable Businesses and an Enabling Environment. In the first area, we assess our ability to enable "diverse, affordable and needs-driven innovations at farm-level". The second analyzes our success in bringing "scalable, self-sustaining business models to the market". Our contribution to the Enabling Environment, thirdly, includes "market incentives and other enablers to create inclusive markets".

Future impact assessments will show whether our focus on markets and innovation can, indeed, produce long-term large-scale benefits to human well-being and the environment. But it seems reasonable to assume that repeated economic success will be a key encouragement to smallholders to farm efficiently and productively for many generations to come, while safeguarding the natural environment. Our PMS is therefore also a measure of sustainable smallholder agriculture where we work.

We believe that there is great scope for unleashing the agricultural potential of pre-commercial smallholders and currently less productive countries. This requires technology, access to inputs and services, extension services, and remunerative links to markets. SFSA encourages the development,

Box 5

Where 1+1= 3: Partnerships

Public-private partnerships (PPPs) are essential for advancing agriculture to meet global challenges in food security. They help widen access to technology and link farmers to markets. By combining strengths, the partners can all make better progress than on their own. SFSA is involved in a wide range of such partnerships. We continue to develop new ones aimed at providing solutions along the entire agricultural value chain.

A novel PPP in R&D is our 'AAA Maize' program. Partners include the international wheat and corn improvement center (CIMMYT) and Syngenta. CIMMYT provided drought-tolerance traits from its African germplasm collection; Syngenta contributed the hybrid parents, molecular screening facilities and knowhow. Together, the partners developed several promising lines to create drought-tolerant hybrids with higher yields. With our help, the partnership also set out to make the seed readily available and affordable for smallholders. Preparations therefore included cost-efficient seed production. Several Indian seed companies have signed licensing agreements. They will ensure local production and availability in three drought-prone Indian states.

Partnerships also form the basis of SFSA's Agriservices initiatives. Our Agri-Entrepreneur (AE, see Box 4) program in India is a case in point. AEs act as change agents to improve farmers' access to information, inputs, credit and markets. We are scaling up the AE platform in partnership with the Tata Trusts, Rabobank Foundation and state governments such as those of Bihar, Andhra Pradesh and Maharashtra. When scaling up initiatives, digital innovations often play a crucial role. Our digital partners in various countries include Kuza, LightCastle Partners, Hello Tractor and Enveve.

Successful agricultural PPPs should lead to 'win-win situations' that benefit farmers. A key aspect of preparation is mutual Due Diligence to bring together the right partners. Further important pillars of success include creating both trust and complementary incentives, agreeing on terms and conditions, and laying down clear responsibilities.

To further scale up our work and impact, we need to move towards influencing and guiding system change. We can only do that through extensive partnering with like-minded organizations. To be truly transformative in our work on sustainable agriculture, we will engage leaders and investors across sectors, applying the best thinking and action from all quarters. Engaging multiple stakeholders and focusing on outcomes will help us succeed.

dissemination and adoption of agricultural technology. In collaboration with many partners, we catalyze the development of markets in the service of sustainable intensification. We aspire to scale up our innovations to help tens of millions of Asian and African smallholders run sustainably viable farms by 2030, in line with the UN Sustainable Development Goals. We are committed to improving these farmers' lives through increased incomes and resilience. If we are successful, we will see that:

- Critical innovations are adopted and delivered across the private, public and social sectors on a very large scale
- Substantial regions of developing countries are farmed commercially by younger smallholders, with reliable profits, using modern technologies, and creating good jobs on and off the farm
- Nutrition and agriculture systems are more efficient, more resilient, and can continuously improve
- Global development agencies, private companies, social enterprises, research organizations and other practitioners work through multi-stakeholder initiatives.

We cannot do it alone. This all needs concerted actions, investment, policy guidance and commitment on many fronts. We look forward to collaborating with a wide range of partners worldwide to achieve the goals of sustainable agriculture.

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