

PAVE PAKISTAN
(Partnerships and Value Expansion for inclusive seed systems)
Project Business Plan

1. Executive Summary

In Pakistan, only 25% of seed requirement in the agriculture sector is met by certified and quality seed posing a huge challenge for improving agricultural productivity. The adoption of certified seed is particularly low among smallholder farmers. The current structure of seed value chains favors large landholders and seed businesses choose to work with them for seed multiplication.

Engro for its seed business, wants to diversify its supply base and include smallholders including women producers in its supply chain. PAVE Pakistan proposes a series of interventions which will put a large number of smallholders on the path of becoming part of higher value seed supply businesses. PAVE Pakistan seeks to promote use of certified seed and increase participation of male and female smallholder farmers in the seed value chain and bring about enhancements in livelihood, skill set, expertise, seed mindedness, crop yields, their crop practices and empowerment. The two-year project will target 100-200 villages in Districts of Sheikhupura/Gujranwala in Punjab to promote use of certified seed to improve yields of 4,000 farmers and improve readiness of nearly 2,000 smallholder farmers to engage with seed value chain out of which at least 10% of beneficiaries will be women farmers – a significant number when we consider that this will involve women in a new role in the seed supply chain. The project proposes adoption of certified seed, best crop management practices, and activities around aggregating smallholders to work with the Engro supply chain and form their own seed enterprise. KPIs and targets have been defined for all these activities.

The gender component will be developed based on previous experiences of MEDA and Engro in the agri-sector of Pakistan, MEDA's global experience and pre-project consultations in the targeted areas.

It is an innovative project as inclusion of smallholders in seed value chains has never been attempted by a large agri input supplier like Engro before. The shared value proposition suggests that it is highly beneficial for farmers and pays off well to investors in terms of financial and social returns. The major value comes from adoption of certified seed and best crop management practices as it improves the yields and returns for participants and improves their readiness to participate in seed supply chains. These gains are sustainable as farmers' capacities need to be built once. Supply-side gaps and low adoption of seed further provide a long-term opportunity for farmers to benefit from the project interventions.

2. Background and Purpose

a) Lead Partner Profile

Engro Corporation is one of the leading companies in Pakistan with revenues of approximately \$1.6 billion (2015) and businesses in agriculture, foods, energy and chemicals. Engro has expanded significantly over the last two decades directly employing over 3,000 personnel and indirectly benefitting thousands more. Business inclusiveness and shared value is at the heart of its social impact strategy as the company looks to integrate the underprivileged, youth and women into its value chains. It is with this philosophy of inclusive growth that Engro's investments encompass the agricultural value chain from farm inputs to the consumption table.

Engro has demonstrated its commitment as a responsible business and is one of the most respected companies in Pakistan. Formerly Exxon Chemical Pakistan, Engro is active in a number of business sectors ranging from fertilizer and dairy to energy and chemicals. In 2009 Engro created Engro Foundation, its social investment arm and has won a number of global awards such as the 2014 IFC Transformation Business Awards for “Inclusive Business Model” and the G20 World Top 15 Company Award in 2012 for its dairy business. Inclusive business is integral to its strategy and to driving its commitments towards the SDGs (Sustainable Development Goals).

Engro has a fast-growing seed business with a substantial growth of rice paddy and seed volumes. Starting from 1,000 tons of wheat seed in 2012, it has reached a level of 4,000 tons in 2016 and 6000 planned for 2017. In paddy, starting from 300 tons of Seed in 2012, the company has reached a level of 1,100 tons of rice paddy seed in 2016. In 2017, the plans are to produce 1,500+ metric tons (mt) paddy seed. Continuous growth with a substantial increase in annual seed volumes is forecasted. This growth of seed volume calls for inclusion of more seed multiplication farmers. Quality-focused, knowledgeable seed multiplication farmers will be the backbone of the company’s seed program; they will strengthen the business base and will improve competitiveness of the company in the market and profitability of the business.

b) Concept

The proposed intervention will improve the agricultural seed value chain of select crops in Pakistan by working with smallholder farmers. The two major aspects of the project will be:

Addressing low agriculture yields and Improving smallholder farmer practices: Agricultural yields in Pakistan are very low and one major reason for this is the low adoption of certified seed which currently stands at approximately 25% of the requirement. The project will aim to promote use of certified seed along with best crop management practices among smallholder farmers as a basic tool to increase yields and incomes. The objective will involve extensive capacity building of smallholder farmers to capitalize on the promise of certified seeds. This is also a prerequisite to participation in seed value chains.

Improving smallholder participation in the seed value chain: The project will aim to improve the smallholder participation in seed supply chain as seed multiplication farmers. Despite the agricultural seed business market being valued at around Rs. 124 billion or AUD \$1.5 billion (informal approximately Rs. 70 billion and formal Rs. 54 billion) smallholders and women are almost completely excluded from this market as the market is dominated by large-scale, commercial distributors who deal exclusively with large land-holding contract farmers to produce seed. The large public sector and 500+ private sector seed companies have, over decades, developed about 15,000-20,000 seed-minded farmers in Punjab. These large-scale, commercial farmers dominate the market and benefit from the premiums available from sale of high quality seed. The project aims to step away from the trend and help smallholders, including women, participate in the higher value seed value chains.

c) Objectives

Following are the objectives of the initiative and are centered around the key activities:

1. To build capacity of 4,000 smallholder farmers (including 400 women) on quality certified seed use and seed multiplication. This includes implementation of rice and wheat related BCMP (Best Crop Management Practices) Package to improve their knowledge, skill set and expertise with targeted results of improving their practices, adoption, conversion to certified seed use, yields, profitability, income, livelihood, empowerment, entrepreneurship and increased likelihood to participate in seed programs on sustainable basis

2. To improve readiness of 1,640 smallholders (including 170 women) from total 4000 beneficiaries to participate in seed multiplication process to a level that commercial companies find it technically viable to work with them
3. To convert 300 smallholder farmers (including 30 women) from total 4000 beneficiaries as registered seed suppliers for Engro's seed business, and
4. To develop approximately 60 enterprising smallholder farmers (individually or in groups from total 4,000 beneficiaries) as master trainers, including at least 6 women trainers, to produce their own quality farm-saved seed for further exchange, distribution and selling among the fellow farmers in nearby villages

[Important Background Note: Production of certified seed and its sale requires registration as a seed company, SECP registration, offices, financial worth, agri-graduate employees, seed plant infrastructure, registered farms, registered growers etc. under Pakistan Seed Act and similar laws. Therefore, the initiative will help farmers do the production and selling informally]

Out of these 4,000 smallholders, vocal, confident and enterprising farmers (men and women) will be trained as master trainers to be able to train and guide other fellow farmers on BCMP's, seed multiplication, seed production and seed sales. This will give this initiative sustainability.

Classification of PAVE Project Beneficiaries & KPI's / Targets								
	Beneficiary Group 1: Late adopters		Beneficiary Group 2: Early Adopters		Beneficiary Group 3: Engro suppliers		Beneficiary Group 4: Seed Groups	Indirect Beneficiaries (Outside PAVE) - Voluntary participants, Progressive Farmers (Medium to Big), Hosts/ Anchors
	Men	Women	Men	Women	Men	Women		
Number of smallholder farmers	1800	200	1470	170	270	30	60	300
% of Total Beneficiaries [4000 smallholders]	45%	5%	37%	4%	7%	1%	2%	
Key Performance Indices and Targets								
Knowledge Index - Level 1-10	6		8		10		10	1-5
Skill Set /Expertise in Multiplying Seeds (1-5)	Moderate/ Partial		Medium		High		High	Basic Knowledge & Understanding
Adoption of Certified Seed - H/M/L	Moderate/ Partial		High		High		High	Low to moderate
Adoption of BCMPs - H/M/L	Moderate / Partial		High		High		High	Low/ selective intervention adoption

Yield Increase	1% - 7%	10-11%	10-11%	10-11%	
Income Increase (Rs/acre; Project Life Cycle)	4,000-7,500	14,000- 16,000	16,000- 20,000	20,000 - 26,000	
Add. income from supplying seed			Rs. 2.5 M		
Add. income from village level seed processing				Rs. 2 M	
Readiness level to participate in Seed VC as Multiplication farmers (Level 1 to 3)	3	2	1	1	
Readiness level as Master Trainer (Level: 1 to 3)	3	2	1	1	

Engro aims to procure:

1. 200 to 300 tons of approved paddy seed harvest from PAVE Project smallholders after Kharif 2017 (Season 1)
2. 400 to 600 tons wheat seed harvest from PAVE Project smallholders after Rabi 2017 (Season 2)
3. 500 to 700 tons paddy seed harvests from PAVE Project smallholders in Kharif 2018 (Season 3)
4. 800 to 1200 tons wheat seed harvests from PAVE Project smallholders in Rabi 2018 (Season 4)

Engro aims to broaden its procurement base. Therefore, a good number of trained smallholders will start participating in company's procurement system, however, the commercial viability & sustainability of the Engro Seed Business and the PAVE project is not solely dependent on the volumes of the seed harvests procured from the project smallholders

Participation of smallholder farmers and their families in the seed multiplication network will bring the following benefits for Engro:

1. It will broaden the base/bank of seed multiplication farmers for Engro making it possible to go for production of higher volumes year after year
2. It will improve business and will ensure making sustainable growth in seed volumes possible for Engro.
3. It will further strengthen Engro's seed brand as an inclusive player with a proven shared-value approach to include the neglected smallholder farmers in the seed multiplication network

Improved position/competitiveness may be measured through:

1. Level of procurement,
2. Premium given to seed farmers
3. Approval & rejection seed ratio
4. Seed complaints versus no complaint ratio
5. Seed brand image
6. Seed prices compared to top companies
7. Premium profitability level/range
8. Gross profit %

Development/Social Objectives

Overarching Objective:

To make the seed value chain of rice, wheat and vegetables in Pakistan more inclusive to 4,000 smallholder farmers (including 400 women farmers) by giving them the training, supervision and market linkages to be able to produce and market high quality seeds on their land holdings.

The following are expected social outcomes:

1. Introduction and integration of 4,000 smallholders in the seed value chain (out of which a minimum of 400 direct clients will be women). This will improve their social status as trained seed multiplication farmers in progressive grower's club
2. Significant increase in knowledge base and expertise of seed cultivation, management and marketing. This will empower smallholders, make them more confident farmers with a better say in the farming communities
3. Increase in production of seeds for personal use and for sale in the market, leading to increase in income through higher yields, greater household food security, and profit from sale of seed.
4. Empowerment for women through improved technical knowledge base and alternate means of livelihood through seed production and sale
5. Empower smallholders to negotiate rate of the certified seed crop harvests to the buyers which will improve prices of their harvests
6. Enterprising people will start their own seed business at the rural level

There is a strong case for smallholder participation. Smallholders can gain a competitive advantage over large-scale producers through the following ways:

1. Maintenance of purity, isolation, separation of seed to avoid adulteration
2. Hand cut and therefore lower moisture and trash in harvests (as compared to combine harvester cut). This translates into lower cost for the processor
3. Farmer-supervised harvesting, filling, loading and stacking (as compared to agent based/unsupervised)
4. One Grower/One group variety protocol will be possible at smallholders' end offering scalability
5. Smallholders manage their own farms and if their expertise is improved, they can be more vested as quality suppliers than big farms handled by absentee landlords. Self-monitoring and self-supervision and hand cut paddy provide quality and low moisture benefits for the companies and can enable smallholders to earn premiums.
6. Large scale producers of certified seed sell their seeds through a channel of dealers in the market while smallholders, in case of their own managed seed enterprise, will be well situated to exchange, distribute and sell farm-saved quality seeds at the village level (without a dealer's channel, without tags, without branding) but with accurate labelling. They can thrive without inviting direct competition from bigger players while offering a cost-effective service to 1000s of indirect beneficiaries
7. On the whole, smallholders producing their seeds will face less challenges and issues of consistency, isolation, purity and quality because of their scale, personal monitoring, manual or supervised combine based harvesting.

The project promotes women's economic empowerment in a rural context. Improved practices and participation in seed supply chains will help women farmers fetch better yields and rates. MEDA and Engro have witnessed in their previous collaboration that economic empowerment is the quickest, most durable and sustainable way to achieve gender-related developmental objectives. The impact studies have shown a direct impact in women's increased agency (confidence, decision-making), improved social standing and better nutrition with increased economic empowerment (income, financial autonomy). The project plans to achieve these impacts through participation of women in seed supply chains. The

proposed activities are in line with the current roles women play in the rural context and therefore no social issues are envisaged to hinder project activities. Similarly, the project activities are not expected to impact women negatively in any sense. Our pre-project consultations have shown a good deal of enthusiasm from women farmers.

Planned Activities

1. Reconceiving and redesigning the role of male and female smallholder farmers
2. Baseline survey to benchmark the knowledge level, skill sets, expertise of women and men
3. Orientation, aggregation and clustering of the smallholder farmers for developing Seed Multiplication Groups (SMGs)
4. Decreasing cost of production at smallholder farms through conservation agriculture techniques
5. Training of the Seed Producer/Seed Multiplication Groups through a team of seed experts
6. Seed multiplication at smallholder farms by the Lead Partner training and supervising them throughout the life cycle of the crops
7. Procurement of seed crop harvests and uplifting by the company on a premium price
8. Developing Seed multiplication anchors and trainers from within the farming communities for bringing continuity and sustainability in the system
9. Developing small Seed Business Marketing Entrepreneurs (SBMEs) in the areas for sustainability of the system
10. Midline, end line and impact surveys to gauge the impact, inclusivity and scalability
11. Ensuring that the above are delivered in gender appropriate ways (e.g., women's groups may be separate from men's, training of women may be done by female trainers or in family groups, timing of training will be considered etc.). Women will also be encouraged to take leadership roles in the project, such as "Seed Experts", "Lead Partners" and "SBMEs".

Below are some examples of indicators to measure achievement of objectives, where appropriate data will be gender-disaggregated in order to maintain a clear indications of womens' roles witin the project as it develops:

- Number of smallholder farmers registered into program
- Number of women farmers registered into program
- Number of Seed Multiplication Groups formed
- Number of group trainings conducted
- Number of individual trainings - farm visits, group discussions and briefings at the farms
- Number of farmers cultivating certified seed
- Number of hectares under cultivation
- Improved knowledge index from level 1-3 (beginner knowledge about certified seed production) to level 7-9 (expert in seed multiplication and can train fellow farmers)

Baseline data (gender-disaggregated) benchmarks) on the following aspects will be collected/gathered and recorded during orientation, initial concept spread, registration and mobilization meetings well before the start of the Project interventions;

1. Crop economics,
2. Wheat & Rice sowing acreages, Varieties, inputs use
3. Agri practices
4. Adoption and conversion to BCMP's and seeds
5. Quality seeds Use level
6. Profitability in last two years – Income
7. Yields in last two years
8. Harvests sales rates
9. Village level Seed sales,
10. Engagement level in seed programs

11. knowledge index (Rank 1-10)
12. Skill set and expertise level (1-5)
13. Readiness Level as Seed suppliers (1-3)

Calculations on Change in income: Change in Income will easily be calculated after collecting data on yields, sales rates of the harvests in comparison with the yields and sales rates in the benchmark/baseline data. Income increase after adoption/conversion will be calculated along with VCR (Value Cost ratio). Calculations will be gender-disaggregated to ensure that the project understands its impact on women and if that differs from the impact on men.

Partnership Objectives

Between 2010-2014 MEDA and Engro worked on large-scale dairy development initiatives (Khushaal Livestock Project and Women Empowerment through Livestock Development) in conjunction with USAID. With the success of those projects, the two organizations have stayed closely in touch on further collaboration and have explored various options. The Seed business and inclusion of male and female smallholders in the seed value chain has emerged as an extremely compelling concept which we would like to collaborate and test. The BPP provides an opportunity to implement an inclusive pilot that we believe will have the potential to go to scale once proven.

Engro as the Lead Partner will ultimately take ownership of the initiative and ensure its sustainability once the BPP initiative has closed. Engro will also be responsible for the technical implementation and commercial activities associated with the project. The nature of the project will involve a significant amount of operational activity and field management, like setting up of an office, recruitment of the field team, baseline activities, data collection, scoping and registration of farmer clients, designing of trainings, delivery of trainings, oversight and supervision of seed production and setting up market linkages. Engro will be responsible for the technical implementation of all of these activities.

For over 60 years, Mennonite Economic Development Associates (MEDA) has been implementing innovative and effective market driven initiatives around the world. Founded by a small group of business people who believed in the power of investment and technical support, MEDA is now recognized as a leader in pro-poor economic development. With a focus on sustainable systems change, MEDA works in inclusive financial services, value chain and market systems development, and investment led programming. Since its inception, MEDA has contributed to the economic advancement of millions of people living in poverty including smallholder farmers, women and youth, and marginalized communities. MEDA will be responsible for day-to-day activities and ensuring the theory of change is followed in project activities, advising on outreach to bottom of the pyramid farmers and particularly the inclusion of women, and reporting back to DFAT on financial and development outcomes. MEDA will ensure that the objectives of the partnership are met through close monitoring of work-plan activities and troubleshooting any issues that might arise. MEDA will also be responsible for coordination between partners and reporting back to the co-financiers of the project.

Joint objectives of the partnership are:

- Effective execution and monitoring of PAVE Project to make it successful
- To develop and demonstrate a sustainable business model with inclusion of smallholders, making modifications for women as needed
- To test and scale the innovative idea of training smallholder men and women on seed production and including them as seed suppliers.

DFAT's funding will play the crucial role of financing experimentation for proof of concept of smallholder inclusion. The traditional markets take longer than just a two-year small to medium sized project to establish a case like this. DFAT can look into increasing the scale of this pilot through financing and documentation and conducting primary research on success and failures of the attempt. This is a longer-term agenda and therefore it provides an opportunity to collaborate beyond the life of this project as well to all partners depending on their levels of interest. In addition to financing, DFAT's vast global experience in implementing agricultural, women's empowerment and value chain initiatives will be crucial in steering the project in the right direction as the monitoring, evaluation and reporting (MER) cycle begins on the project.

The focus of the intervention is based on a sustainable business model for partners since the key beneficiaries, smallholder farmers, are willing and able participants in a growing and underdeveloped market. Capacity building of dynamic smallholders, a one-time exchange, will provide the fundamental building block to improve farmer innovation, while making seed markets and value chains accessible to smallholders thus setting into motion a sustainable outcome and dynamic system for beneficiaries.

Safeguards and cross-cutting issues

Both Engro and MEDA share a common commitment towards a 'do no harm' approach, protecting women and girls, people with disabilities and children, while minimizing fiduciary risk. MEDA with decades of expertise on gender equality, women's empowerment and governance, especially in Pakistan, would take a lead role on women's integration and gender equality for PAVE. MEDA's programs integrate women's priorities and needs through mainstreaming women into initiatives, targeting women-focused programs, or a combination of the two. MEDA's standard approach includes undertaking a Gender Analysis that delves into opportunities for and challenges to women's economic empowerment in the mainstream of the economy developing a comprehensive Gender Strategy and providing Gender Training/Women's Economic Empowerment for partners. Gender analyses are conducted to identify key gender issues and to inform gender-sensitive strategies – with an emphasis on women's economic empowerment outcomes. Building on the gender analysis, a gender strategy outlines strategic goals, recommendations for gender-sensitive and women's empowerment programming opportunities and potential unanticipated risks. MEDA also conducts workshop training on gender equality for all partners to build gender awareness where required and will be working alongside Engro to identify key areas where gender sensitization is needed. The training emphasizes the development of gender strategies and appropriate products, services and technologies in private sector development that meet the needs of both women and men.

3. Market Analysis

a) Overview

The agriculture sector is a vital component of Pakistan's economy and contributes approximately 20% of the country's GDP, remaining by far the largest employer absorbing over 40% of the country's total labor force. Pakistan's agriculture mix is heavily based on a few major crops: rice and wheat are the most important crops covering 86% acreage of the grain crops, i.e. 12 Million hectares out of 14 Million hectares. The average yield of crops is 2,752 kg/ha and 2,479 kg/ha respectively, and can improve through quality seed. In Pakistan, 85%, and in Punjab, 91% of these farms are below 5 acres - *Agri Statistics of Pakistan, Economic Survey of Pakistan (2015-16)*.

Seed security is fundamental to food security and nutrition, as improved seed is a key input in crop production on which efficiency of other inputs largely depends. In Pakistan, only 25% of the total available seed in the Seed value chain (approx. 475,000 tons out of 1.89M tons) is certified while an estimated 75% of volume is uncertified. It is sold through informal channels and does not meet the criteria of purity, standards, health, and quality, resulting in poor yields and poor quality harvests.

The uncertified or informal seed segment consists of farmer-to-farmer seed exchange on a non-commercial basis, small-scale-farmer-to-farmer seed sale, farmer-saved seed for planting in subsequent years, and medium- to large-scale sale of seed in “brown bag” exchanges. Farmer-to-farmer exchange on a non-commercial basis and small-scale sales are not rare, but the volume of such exchange or sale is negligible as a proportion of Pakistan’s total seed requirement.

The adoption of ‘Certified’ seed is increasing and the sector as a whole is growing. There are approximately 500 + private sector seed companies in Punjab. These companies have developed about 15,000-20,000 seed multiplication farmers in Punjab. These are typically educated farmers with big farms. This lot does not include smallholder farmers and therefore benefits like improved skill set and expertise and ability to fetch premium prices are limited to this select group. Seed farmer base is also not growing technically or on a sustainable basis. Public sector seed corporations e.g. Punjab Seed Corporation, are also limited to these farmers with only one option for seed production.

The current estimated size of the seed industry is Rs.124 Billion (informal industry: 70 billion, own home-kept seed: Rs. 20 billion, with the remainder accounting for the sale of uncertified seed via unregistered sources). The formal seed industry is Rs. 54 billion, out of which the local certified seed industry is Rs. 28 billion - major players include the Punjab Seed Corporation, Jallundhar and 500+ other seed companies - and the imported seed industry is Rs. 26 Billion - major players include Pioneer Seeds, Monsanto, and Syngenta. The certified seed industry has shown growth of 4% per annum from 2010-15. Seed businesses are concentrated in Punjab province, with 90% of companies located there. As a result, 94% of seed production takes place in Punjab. Other provinces have small shares i.e. Sindh at 3%, KPK at 3%, and Balochistan’s share is negligible. Consequently, 75% of seed consumption is in Punjab, followed by Sindh at 14%, KPK at 8% and Balochistan at 3%. Based on growth trends in different crops, the seed industry is expected to grow at 2% per annum.

The selected project area has a rice-wheat cropping pattern, as these are the major cropping patterns of both staple food crops. Rice is an important food and cash crop in Pakistan, being the second largest staple food after wheat. It accounts for 3.1% in the value added in agriculture and 0.6% of the GDP. The area under rice cultivation decreased recently due to unfavorable economic returns to farmers, primarily caused by the decline in international and domestic prices. The rising cost of production further persuaded farmers to move towards fodder and maize as substitute crops. There is a need to improve crop economics through cost-controls and farmer productivity, to keep smallholders afloat economically.

Wheat is the most popular food crop of Pakistan and dominates all crops in both acreage and production. Wheat accounted for 9.9% of the value added in agriculture and 2.0% of Pakistan’s GDP in 2015-16. The production of wheat stood at 25.482 million tons during 2015-16, showing an increase of 1.6 percent over the previous year’s production of 25.086 million tons. Production increased as the crop was sown at the appropriate time and available moisture, particularly in the Barani (rain-fed) region. Only 23 to 25% of wheat seed is certified, calling for focused efforts to improve the situation particularly for smallholders who have a major share in crop acreage.

A few important and or major developments in the seed sector include the approval of the Seed Amendment Bill and the Development of the Plant Breeder Rights (PBR) bill, as a result of which seed companies will now be able to produce basic seed. The seed industry will consolidate as small seed

companies will be forced to either update their infrastructure or go out of business. Further, the development of hybrids is expected to open with PBR bill approval.

The legal & regulatory framework developments include the Seed (Amendment) Act, 2015, which had been approved in July, 2015. Bylaws and protocols for its infrastructure development and implementation are in the process of making. The private seed sector has been allowed to produce basic seed, as well as to establish their own accredited seed testing laboratories thereby attracting more investment and focus of the private sector on the seed industry. It is hoped that the amended act would serve as an effective deterrent against the sale of fake and substandard seeds.

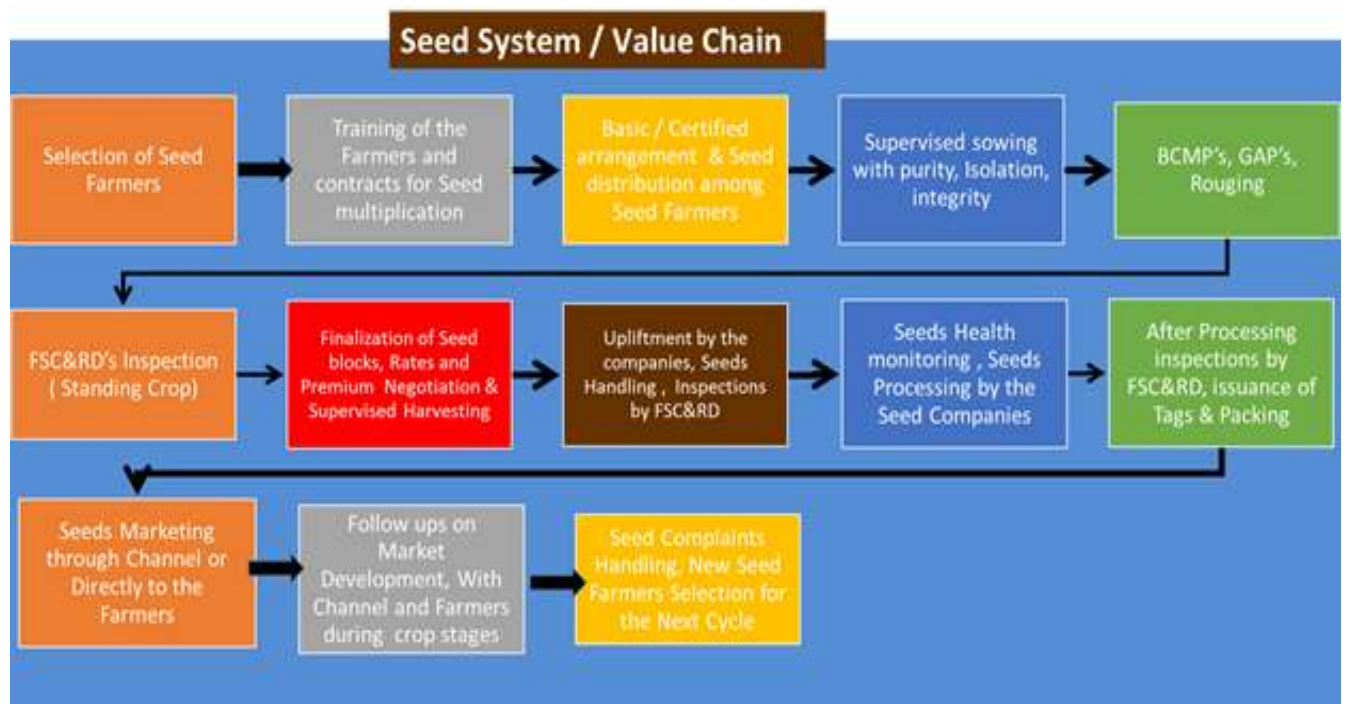
Moreover, Pakistan being a member of the World Trade Organization (WTO) has the obligation to provide rights to breeders of new plant varieties under Article 27.3(b) of Trade Related Aspects for Intellectual Property Rights (TRIP's) Agreement. According to Article 27.3b of the TRIP's Agreement, each member country has to "Provide protection of plant varieties either by patents or by an effective sui generis system or by any combination thereof". As a result, The Plant Breeders' Rights Bill, 2016, has in principle been approved in 2016 with several further developments pending. The bill will attract investment in seed research and development, and it would protect the rights of developers and breeders of new technologies and crop varieties. Pakistan's National Seed Policy is in the process of finalization.

For the seed sector development in Pakistan, FSC&RD (Federal Seed Certification and Registration Department) is in the process of international collaboration through different cooperation proposals with different countries. Cooperation with ECO, D-8 Seed Bank, SAARC Seed Bank and FAO is also in progress.

The seed system and or value chain comprises of a range of activities and steps which are as follows:

- Conceptualizing seeds, developing the seeds business, certification and services
- Selection of seed farmers by the private sector seed companies
- Orientation and training of farmers – mostly large landholders
- Arranging pure basic seed from research institutes or public sector seed company
- Providing basic seed to the farmers as an input to multiply at their farms
- Training on seed isolated nurseries raising, multiplication, rouging,
- Inspections by the Federal Seed Certification and Registration Department (Govt. Of Pakistan),
- Supervised quality harvesting
- Negotiation of rates (premium is to be given over regular crop)
- Uplifting harvests by the seed companies
- Handling of procured seeds at drying floors and warehouses
- FSC&RD's inspection before processing
- Processing of seeds
- Sampling and inspection by FSC&RD
- Issuance of the tags of certified and or approved seeds
- Packing of seeds with tags, stacking,
- Marketing of the seed through dealers and to the farmers directly
- Start of the next seed cycle

Given below is the depiction of the seed system and or value chain;



The current seed value chain identifies a major gap in the production and the needed requirement of certified seed, inclusive of significant knowledge and skills gaps in seed multiplication farmers as a result of their limited expertise. The sector of seed multiplication farmers is not growing technically and or on a sustainable basis. Some large farmers produce seed every year, the majority of whom are absentee farmers whose managers exploit their absence. This lack of diversification poses a risk for the supply chain and the seed industry as a whole.

Furthermore, the disengagement of smallholder farmers as a result of seed companies choosing to work with established large seed multiplication farmers has led to the neglect of longer term supply chain development and diversification of supply sources to include smallholders. The lack of progressive farming techniques [Best Crop Management Practices, Best Farm Management Practices, Good Agricultural Practices] in smallholder farming requires major investments in farmer capacity building. The additional costs and efforts of aggregation and or clustering of smallholders pose further challenges and makes working with smallholders unattractive. As a result, rural poor smallholder families cannot reap the benefits of improved agriculture, lack access to pre-basic and or basic seed to develop quality seed, and have weak links to seed companies and buyers of seed crop harvests.

b) Competition

There are more than 500 active registered seed companies operating in the rice and wheat seed sector of Pakistan. Most of these companies are small operators with lower quality and less reliable seeds, as evident from the overall industry coverage. The sector is dominated by public sector companies. The two largest companies are the Punjab Seed Corporation and Jallundhar Seed. There are no donor funded seed projects of any kind in Pakistan where smallholders are involved. Engro Fertilizer is a relatively new entrant in the seed market, however, Engro's brand in the agri sector is well established over the last 50 years because of its fertilizer, dairy and rice products. Engro is trying to establish its brand based on quality seeds multiplication, quality rouging, and quality processing, alongside the proliferation of good agri-service practices.

Potential competition of smallholders with larger seed suppliers

In Pakistan, the conventional trend has only been to involve big farmers/farms in the seed multiplication system for ease in monitoring, single site logistics, financial muscle, big acreages at one site etc. With the passage of time, this situation has proven to be susceptible to following challenges:

- Purity & isolation issues at big farms
- Absentee landlords and the manager's inability to supervise and monitor
- Big farms/landlords make a cartel and execute tough negotiations
- Loyalty issues

These challenges are building the case for inclusion of small holders in the seed programs.

- It is relatively easy to maintain purity, isolation, monitoring, rouging at relatively small farms
- Big farms are away and in far flung areas. But in an area with 75-80% smallholders, it is easy to find good smallholder farmers around the seed plants. This can give a competitive advantage to buyers
- Smallholders harvest with hand-cut or small quality harvesters and it has positive impact on quality of produce

c) Overview and projections

The project is based on an innovative idea of engaging 4,000 smallholder farmers including 400 women in the seed multiplication system to build their capacity via training for an output of experienced and knowledgeable seed minded farmers. Some of the challenges include mobilization, aggregation over vast geographic areas, dissemination of trainings to large numbers, clustering for learning alliances, linking small holders with seed harvest procurement, gender-based challenges, and running a procurement system of quality seeds.

Moreover, engaging smallholders for seed multiplication in the rice-wheat cropping pattern is a novel concept in Pakistan. With a long history of working with smallholders, Engro plans to add value to the seed system by enabling smallholders to participate in the seed production system. It intends to add a sizable number of smallholders ready to be registered as seed multiplication farmers by other seed companies in the years to come. This pioneering project will further pave the way for scaling up the concept and involvement of more smallholders by other seed companies and seed projects

Currently, there are limited seed producer farmers with a high level of expertise, particularly women. Companies are not investing in farmers' education especially smallholders' capacity building. This project will provide unique exposure to thousands of smallholders within a span of two years in four crop seasons, with tailored activities for women. As the industry is growing at a steady pace, smallholders trained in the project will benefit directly by becoming part of a growing segment in agriculture. Their demand is already unfulfilled in the market.

4. Product or Service Development

a) Market Research

Engro Fertilizers has conducted a detailed study on the seed sector, seed industry, crops, and players and made a strategic decision to invest in the business. An independent firm was deployed to do the baseline study. Furthermore, two seed experts and consultants (a private sector expert and Ex-Director General FSC&RD/CIMMYT) were engaged to give insight into the business. The certified seed industry has been steadily growing and awareness on the use of quality seed for rice and wheat is rising. The implementation of Seed Amendment Bill will further help the market for certified seeds grow.

Engro has ample experience of developing smallholder groups, village level learning groups, contract farming groups, seed multiplication and supplier groups in Saranwala village (a larger group of 10-13 smallholder seed producer sub-groups) and Daira Balam (90 acres amongst 12 farmers). During MEDA's representative's recent visit to Pakistan, a meeting with smallholders engaged in seed multiplication was organized for interaction. More research will be needed into women's experience and roles and this is an area where MEDA can provide input.

Engro has successfully conducted large-scale projects involving capacity building and training of 10,000+ smallholders (on best crop management practices, innovative conservation agri practices and seed management) during 2013-2015 with international donors on the SPIRiT project (Systems Productivity Innovative Rice Training). Before the start of the project a detailed survey/baseline for benchmarking will be conducted along with registrations of the smallholder groups in the villages.

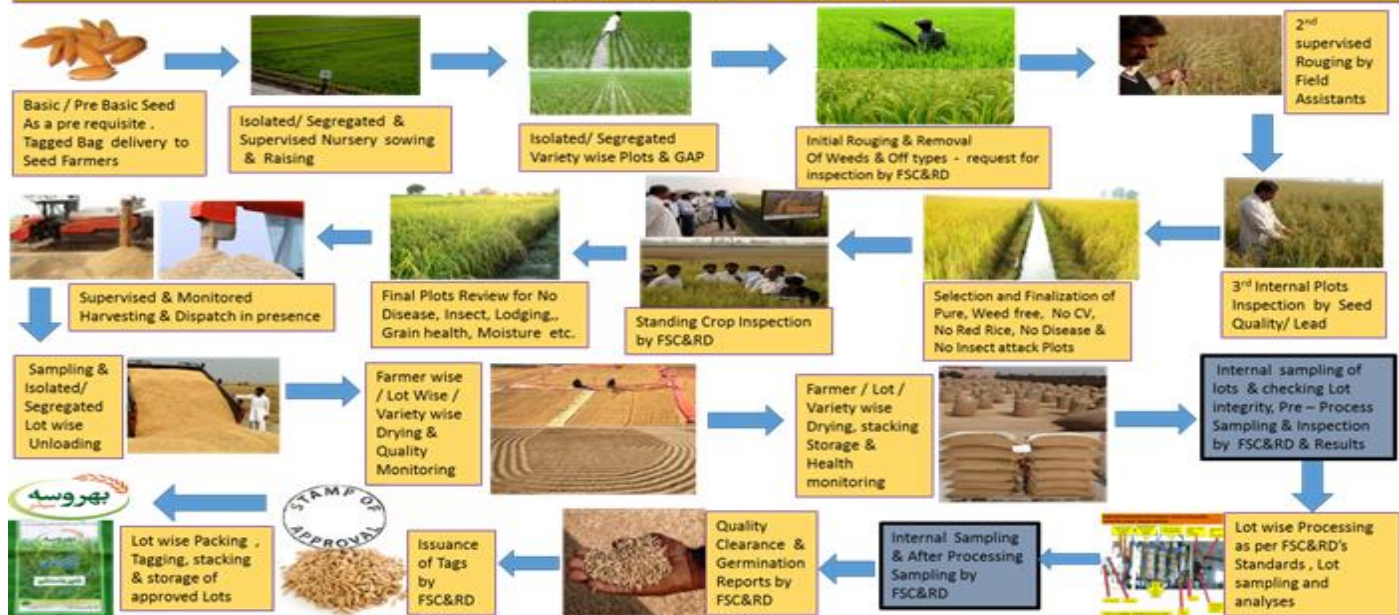
b) Research and Development

The current seed industry scenario calls for serious interventions and focused efforts to include smallholder farmers and farm families in the seed system value chain. The Research and Development aspect will be led by Engro Fertilizers with ambitious plans to grow along with the growth of the farming sector through the following steps:

- Redesigning an innovative role of smallholder farmers and farm families (including women) in the seed multiplication and production value chain
- Baseline survey to benchmark the knowledge level, skill sets, expertise, empowerment, farm productivity, farm profitability, participation level in seed system, link with seed buyers/companies, adoption of best crop management practices, employment prospects, improvement in wages of the farm workers and participation of women in the system
- Orientation, aggregation and clustering of the smallholder farmers for developing seed multiplication groups (farmers, rouging labor groups, transplanting labor, women's groups) and training on BCMP's, GAP's, seed production, selling at premium
- Decreasing cost of production at the farm level through conservation agriculture techniques & BCMP's, 4R Nutrient Management, quality seed and information on climate/weather and market
- Training of seed multiplication groups through a team of seed experts
- Seed multiplication at the farms level by training and supervisory services throughout the life cycle of the crops
- Procurement of seed crop harvest and procurement by the company on a premium price
- Developing seed multiplication anchors and trainers from within the farming communities for continuity and sustainability in the system
- Developing small seed business marketing entrepreneurs in the areas for sustainability of the system
- Midline, end-line and impact surveys to gauge the impact and scalability

Steps of Quality Paddy Seed Production Cycle are elaborated below;

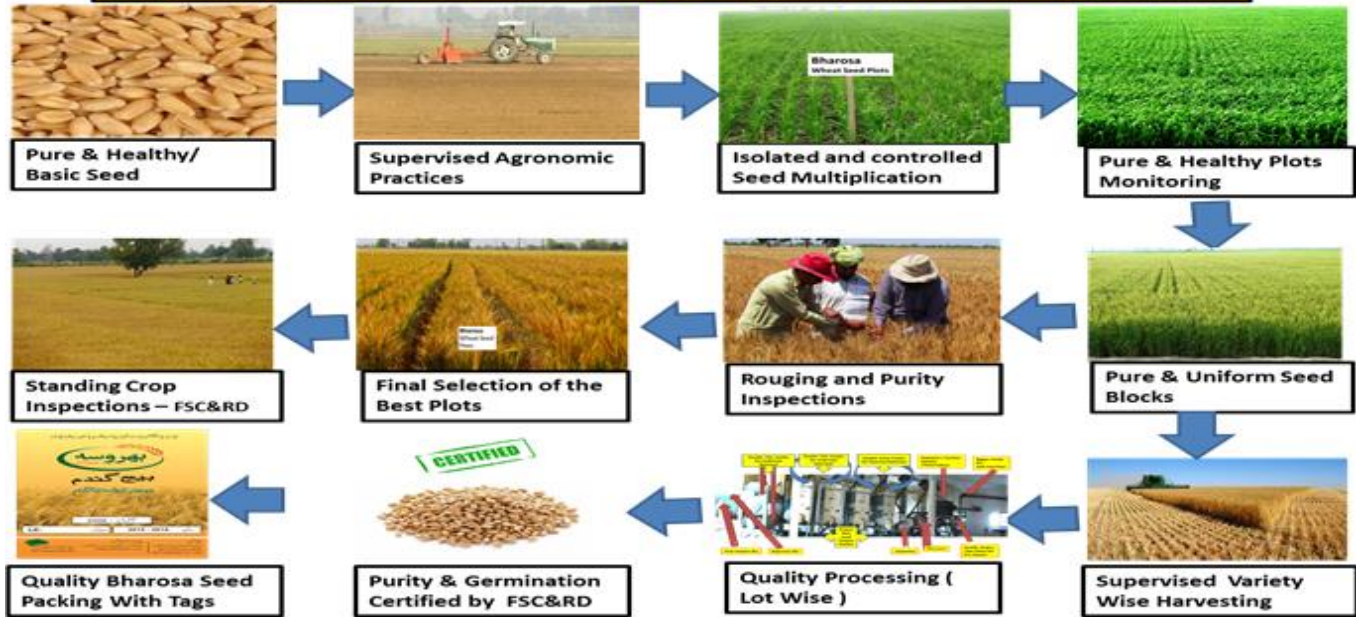
Seed Production Cycle - Purity and quality Steps with Isolation, Segregation, total traceability, Quality Monitoring and Process and Product Stewardship



The production cycle chart above shows how registered and trained farmers are involved in the process of buying certified seed and sowing under strict supervision of Seed Officers (SOs) and Seed Field Assistants (SFAs) of the company. Best crop Management Practices are ensured throughout the life cycle of the crop, paying special attention to rouging of 'off-types' and unwanted weeds. The crop is inspected by the Govt. Department (FSC&RD) and best quality plots are selected for procurement on quality. Conventionally, smallholders are not aware of best practices in seed production, quality attributes, processing for home kept and farm saved seed, harvesting and market linkages. For this reason, a Seed Production Manual will be developed for on farm training of the smallholders on the above topics. Training will be conducted on site at smallholder farms.

The Wheat Seed Production Cycle is also given below;

Bharosa Wheat Seed Production Cycle – Quality Steps from Start till End



c) **Production Requirements, Process & Intellectual Property:** Any proprietary features and protected intellectual property.

The process involved here is referred to as “Process of Seed Production” and it involves:

- The process begins with pure certified seed
- Quality land is required
- Experienced/willing and eager seed multiplication farmers
- Registration of farmers by company as seed growers
- Agricultural inputs, cultural practices
- Isolated nurseries sowing and isolated transplanting
- Supervision and monitoring at various crop stages
- Rouging of ‘off-types
- Crop inspections by farmers, experts and FSC&RD
- Variety-wise, quality harvesting at proper moisture levels
- Procurement by company and payment to the farmers,
- Drying, stacking, storage, seed processing by the company
- Seed packing, issuance of certification tags, tagging, and selling through marketing channels or directly to farmers.

Legal requirements:

1. Registered seed company. Engro is a registered seed company
2. Infrastructure and experience of seed procurement, team of agri-graduates, field teams, analysts, ability to carry out operations like drying, isolation, storage, processing, packing and marketing. Engro has its own seed processing plant and experienced and expert teams (of Agri-Graduates) to train farmers on seed multiplication. Engro has its infrastructure and set up for seed procurement (team and finances), drying (drying floors), processing (seed processing plant) and marketing (marketing teams) along with a channel (more than 3000 dealers).
3. Registered seed brand. Engro has a registered seed brand: Bharosa (literally in Urdu: Trust). Bharosa Seeds is a registered seed brand of Engro with IPO, Pakistan.
4. Further rules and bylaws from new seed amendment bill are in the process of making. Legal formalities mentioned in those (registered seed plant, registered dealers) will also be fulfilled when relevant agencies of Federal Govt. implement those in 2017-18.
5. An internal agreement of seed multiplication with process integrity is done with the seed multiplication farmers as a memorandum of understanding that farmers will abide by the advice on seed production as guided by the company representatives in the trainings/demonstrations after buying certified seeds for sowing. The standing crops fulfilling all the criteria of purity, isolation, health, inspection and approval are to be procured after agreement on procurement prices.

5. Marketing

a) **Marketing Strategy:** The approach to marketing the product/service.

Certified Seed (Paddy & Wheat) produced by the company will be marketed with structured planning and strategy. The following important points are taken care of:

- Seed is properly tagged and inspected by the FSC&RD along with the internal health monitoring system
- Marketing strategy is based on 4P’s [Product (Quality), Pricing (Premium), Placement (Spread & Channel), Promotion (ATL, BTL, Literatures, Technical services)
- Pricing is announced well in advance for advance booking of the seeds before the start of the sowing season

- Direct Sales are made to walk-in customers/farmers, institutions & NGOs
- In this project, smallholders will be trained on the following
 - Multiplication and production of seeds for the companies to be procured on premium
 - Developing expertise to develop some seed for their use – home kept, farm saved for exchange/sales
 - Training of particularly enterprising farmers and farm families to start their own seed enterprise on a small scale and provide directly to their communities

b) **Contingency Plans:** i.e. if the above approach proves unsuccessful in achieving the scale required.

The project is based on a well thought out innovation and although it is challenging, the project team (based on previous experience working with smallholders) believes that the project objectives can be achieved. However, enrolment, participation and training of women farmers and women farm support workers is particularly challenging and we hope to minimize the chance for failure by:

- Working with women farmers and women farm support workers already engaged with Engro in previous projects
- Engaging already trained farming youth/elders from within the same communities
- Engaging female seed officers/seed analysts to work with women
- Developing men and women seed expert anchors from within the village communities (under a train the trainer model)

Assumptions

- Underprivileged smallholders including women are assumed to be willing/eager happy to participate as the project is based on improving their skill set, yields, profitability and livelihood.
- Pockets, areas, villages and smallholder farmer groups will be registered after a detailed benchmarking and analysis and after detailed orientations & mobilizations for them.
- In case of lack of participation from few villages/areas, adjacent villages and areas will be available for inclusion (back up areas and farming villages will be identified in the benchmark/baseline surveys)
- Detailed risks will be identified and marked during benchmark surveys if they arise and mitigation plans will be developed accordingly.

6. Financial

a) **Summary Current Financial Position of the BPP partner/s:**

c) **Financial Projections:** Projecting 3 years.

Financial data for following years:

1. Current Financial Position (2015 & 2016)
2. Financial Projections – 3 Years (2017-2019)

Seeds Business Financials					
PKR Million	2015	2016	2017 (P)	2018 (P)	2019 (P)
Sales	103	180	382	744	1,420
COGS	(84)	(141)	(285)	(540)	(1,021)
Gross Profit	19	39	97	204	399
Gross Margin	18%	22%	25%	27%	28%

Other VC	-	(3)	(4)	(4)	(5)
Fixed Costs	(18)	(29)	(71)	(109)	(157)
EBIT	1	7	22	91	237
Finch	(0.3)	(4)	(5)	(7)	(18)
PBT / (LBT)	1	3	17	84	219
Tax	(0.3)	(1)	(6)	(30)	(78)
PAT / (LAT)	0.4	2	11	54	141

* P = Projected

b) Cost benefit analysis including Break-Even Analysis

Value Capture Analysis for Beneficiary Groups				
Season	Rice Season 1	Wheat Season 1	Rice Season 2	Wheat Season 2
Year	2017	2017	2018	2018
Beneficiary Group 1: [1800 men and 200 women farmers] - Lower Adoption of Quality Certified Seed and Best Crop Management Practices				
Yield Increase - maunds/ acre	0.90	0.93	1.05	1.09
Forecasted rates - Rs/maund	1,550	1,265	1,600	1,275
Additional cost of seed	263	769	289	788
Benefit per acre	1,133	408	1,391	596
Farmers fully converted	1,000	1,000	2,000	2,000
Av. Acres	6.25	6.25	6.25	6.25
Totals	7,078,125	2,548,125	17,390,625	7,448,438
Grand Total - PKR				34,465,313
Estimated Value Creation for Women Beneficiaries - PKR				3,829,479

Beneficiary Group 2: [1470 men and 170 women farmers] - Higher Adoption of Quality Certified Seed and Best Crop Management Practices				
Yield Increase - maunds/ acre	3.00	3.10	3.51	3.63
Forecasted rates - Rs/maund	1,550	1,265	1,600	1,275
Additional cost of seed	350	1,025	385	1,050
Benefit per acre	4,300	2,897	5,231	3,574
Farmers fully converted	1,000	1,640	1,640	1,640
Av. Acres	6.25	6.25	6.25	6.25
Totals	26,875,000	29,689,125	53,617,750	36,637,856
Grand Total - PKR				146,819,731
Estimated Value Creation for Women Beneficiaries - PKR				16,979,153

Beneficiary Group 3: [270 men and 30 women farmers] - Supplying seed to Engro seed supply chain				
Farmers supplying Seed	25	75	150	300
Average acres	6.25	6.25	6.25	6.25
Acres - total	156	469	938	1,875
Yield per farmer (maunds/acre)	33.0	34.1	33.5	34.6
Yields - total	5,156	15,984	31,416	64,926
Premium vs. market rates (Rs./ md)	40	40	40	40
Sub-total 1	206,250	639,375	1,256,625	2,597,025
Benefit of incremental yield per acre	4,300	2,897	5,231	3,574
Sub-total 2	671,875	1,357,734	4,904,063	6,702,047
Totals	878,125	1,997,109	6,160,688	9,299,072
Grand Total - PKR				18,334,994
Estimated Value Creation for Women Beneficiaries - PKR				2,037,222

Beneficiary Group 4: [60 Smallholders] - Seed Enterprise Groups				
Smallholder farmers (No.)			20	60
Benefit of incremental yield per acre	4,300	2,897	5,231	3,574
Sub-total 1			653,875	1,340,409
Seed Harvests (maunds)			4,189	12,985
Final Seeds (maunds)			2,513	11,037
Additional Income			1,005,300	1,655,603
Sub-total 2				2,660,903
Totals			653,875	4,001,313
Grand Total - PKR				4,655,187.8

Grand Total of Additional Value Creation for All Beneficiaries (PKR. M)	204.3
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Grand Total of Additional Value Creation for Women Beneficiaries (PKR. M)**22.8****Additional Value Propositions - Not quantified at this stage**

Indirect Beneficiaries (medium to large farmers, anchors, host farmers) converting to Quality Certified Seed, improving their yields, entering into Seed Value Chain and improving profitability

Smallholders other than the fully converted ones, will partially be converted to BCMP's and quality seed keeping and Certified Seed use resulting in their yield improvement and profitability

These tables and calculations depict that;

- With just an additional cost of Rs. 85.65 Million (Project cost + Additional cost on Certified Seed), a value capture for the smallholder farmers during the project life cycle would be 178.5 Million Rupees (Two times the cost). Value capture is twice the total money spent.
- By putting in the donor's money (500000 AUD / 40.17 Million Pak Rs) in the project, a value capture (Additional profitability/ Net Take home) for the small farmers during the project life cycle would be 172.95 Million Rupees (More than 4 times the cost).
- This project reveals a fact that, the smallholders adopting the certified seed use intervention and put in just Rs. 5.27 Million additional cost on Certified Seed during two years of the project life cycle, they earn an additional net profit of Rs. 172.95 Million. This is a huge value capture with a very high value cost ratio.
- Project calculations depict that a smallholder spending Rs. 2810 (35 AUD) per acre additional on Quality Certified Seeds during four seasons of the project life cycle, He achieves a additional benefit/ net profit of Rs. 18796 (233 AUD) and the value cost ratio is 7. Benefit of additional cost is 7 times.

PAVE Project - Profit and Loss Statement					
	2017 Rice - Wheat Crop Seasons		2018 Rice - Wheat Crop Seasons		Remarks/Comments
	PKR	AUD @ 80.34	PKR	AUD @ 80.34	
Sales Revenue 1- Rice Harvests of 1000 Converted Farmers in 2017 & 2000 in 2018	319,687,500	3,979,182	670,000,000	8,339,557	1000 Farmers with 6.25 acres of land (av.) getting yields of rice crop@ 33 mds per acre & selling at Rs. 1550/ md in 2017. 2000 acres in Kharif 2 (2018)
Sales Revenue 2- Wheat Harvests of 2000 Converted Farmers in 2017 & 2018	539,206,250	6,711,554	551,867,813	6,869,154	2000 Farmers with 6.25 acres (av.) getting yields of Wheat crop@ 34.1 mds per acre & selling at Rs. 1265/ md in 2017. 2000 acres in Rabi 2 (2018)
Total Sales Revenue	858,893,750	10,690,736	1,221,867,813	15,208,711	Total Sales / Revenue of the Harvests (Kharif + Rabi)
Baseline Yields & profit (before intervention)	290,625,000	3,617,438	300,000,000	3,734,130	Benchmark/ Baseline yields taken as CoGS
Baseline Yields & profit (before intervention)	490,187,500	6,101,413	494,062,500	6,149,645	Benchmark/ Baseline yields taken as CoGS
Total CoGS	780,812,500	9,718,851	794,062,500	9,883,775	

Gross Margin - Value Creation by the Project Intervention	78,081,250	971,885	427,805,313	5,324,935	Revenue from the new improved yields minus baseline yields /revenues
Less - Additional cost of seeds per year	2,400,000	29,873	2,485,000	30,931	Additional cost of seeds per Year - 1000 acres of Rice and 2000 acres of Wheat
Net Gross Margin / Value Creation by the Project	75,681,250	942,012	425,320,313	5,294,004	Additional revenue less Additional Cost
Cost of the project during first year of its execution - Donor's amount + Contribution Partner's amount	40,170,000	500,000	40,170,000	500,000	
Other Variable Cost	3,000,000	37,341	5,000,000	62,235	
Total Fixed and variable costs	43,170,000	537,341	45,170,000	562,235	
Profit / EBIT	32,511,250	404,671	380,150,313	4,731,769	
Interest	1,506,375.0	18,750	1,506,375.0	18,750	@ 7.5% (5.5 % Kibor + 2 %)
Profit Before Tax	31,004,875	385,921	378,643,938	4,713,019	
Tax on Agri Income / Harvests	-	-	-	-	
Profit After Tax	31,004,875.0	385,921	378,643,938	4,713,019	
PAT in Millions	31.0	0.39	378.6	4.713	
Cumulative Profit in two Years in Millions			409.65	5.099	

Note:

For simplicity of the calculations and understanding the value capture, first / major proposition be considered as the major value proposition and value capture. It is the fundamental prerequisite, and most challenging job, for inclusion of smallholders in the seed value chains.

Sustainability of the Project Concepts/ Legacy:

- Trained Farmers & converted ones will further be the role models for the other fellow farmers and farming communities in the adjacent villages and areas. This project will initiate va fission reaction. Women seed farmers will be critical role models for women in communities.
- Trained Farmers will better be able to produce quality harvests and get better prices and will be able to approach other seed companies to get them included as Seed growers
- Trained Farmers will be able to produce their own Farm Saved quality Seed and some enterprising farmers will emerge as Seed businesses

d) Forecasted Capitalization

Redefining and improving productivity and sustainability of the seed system/value chain through clustering/aggregation, participation and training of smallholder farmers' and farm families in the rural areas of Punjab

						Contribution (AUD)			Total
No	Item	Unit Type	Quantity	Unit Cost (AUD)	TOTAL	DFAT	Lead Partner	Other Partner(s)	
1	PERSONNEL COSTS (SALARIES)	Head Office Personnel							
		HO Project Manager	1	27346	\$ 27,346.00	\$ 27,346.00	\$ -	\$ -	\$ 27,346.00
		Technical Director; Women's Economic Empowerment	1	13721	\$ 13,721.00	\$ 13,721.00	\$ -	\$ -	\$ 13,721.00
		M&E Advisor	1	9115	\$ 9,115.00	\$ 9,115.00	\$ -	\$ -	\$ 9,115.00
		Security Advisor	1	4558	\$ 4,558.00	\$ 4,558.00	\$ -	\$ -	\$ 4,558.00
		Financial Advisor	1	15496	\$ 15,496.00	\$ 15,496.00	\$ -	\$ -	\$ 15,496.00
		Communication Advisor	1	4558	\$ 4,558.00	\$ 4,558.00	\$ -	\$ -	\$ 4,558.00
					\$ -				\$ -
		Field Team Personnel			\$ -			\$ -	\$ -
		Project Steering Committee Lead	1	\$ 7,500.00	\$ 7,500.00	\$ -	\$ 7,500.00	\$ -	\$ 7,500.00
		Steering Committee Member 1	1	\$ 7,500.00	\$ 7,500.00	\$ -	\$ 7,500.00	\$ -	\$ 7,500.00
		Accounting Coordinator	1	\$ 2,700.00	\$ 2,700.00	\$ -	\$ 2,700.00	\$ -	\$ 2,700.00
		Steering Committee Member 2	1	\$ 8,400.00	\$ 8,400.00	\$ -	\$ 8,400.00	\$ -	\$ 8,400.00
	Should include both administrative and program personnel involved in undertaking	Project Team Lead	1	\$ 8,400.00	\$ 8,400.00	\$ 3,360.00	\$ 5,040.00	\$ -	\$ 8,400.00

3	PROGRAM COSTS	Unit Type	Quantity	Unit Cost	TOTAL	DFAT	Lead Partner	Other Partner(s)	\$
									\$
									\$
	Expenditure related to Program operational costs including per diems, accommodation, meals, meetings, printing costs			\$ -	\$ -				\$ -
		Head Office Costs							\$ -
		International Travel - Transportation	9	\$ 2,800.00	\$ 25,200.00	\$ 22,400.00	\$ 2,800.00		\$ 25,200.00
		International Travel - Per Diems	9	\$ 1,020.00	\$ 9,180.00	\$ 8,160.00	\$ 1,020.00		\$ 9,180.00
		International Travel - Accommodations	9	\$ 1,800.00	\$ 16,200.00	\$ 14,400.00	\$ 1,800.00		\$ 16,200.00
									\$ -
		Field Office Costs							\$ -
		Per diems regarding field stays	200	\$ 25.00	\$ 5,000.00	\$ 3,000.00	\$ 2,000.00	\$ -	\$ 5,000.00
		Night stays, debriefings, inspection visits	150	\$ 50.00	\$ 7,500.00	\$ 4,500.00	\$ 3,000.00	\$ -	\$ 7,500.00
		Meals	10000	\$ 1.30	\$ 13,000.00	\$ 7,800.00	\$ 5,200.00	\$ -	\$ 13,000.00
		Meetings	10	\$ 400.00	\$ 4,000.00	\$ 3,000.00	\$ 1,000.00	\$ -	\$ 4,000.00
		Farmers Sessions expense Mega	3	\$ 1,600.00	\$ 4,800.00	\$ 3,600.00	\$ 1,200.00	\$ -	\$ 4,800.00
		Printing Materials Cost (Manual, Guide, Pictorials, Banners, Posters,	1000	\$ 15.00	\$ 15,000.00	\$ 11,250.00	\$ 3,750.00	\$ -	\$ 15,000.00

		infogram, Pocket Cards							
		Quality Seed Samples	1000	\$ 1.50	\$ 1,500.00	\$ 1,500.00	\$ -	\$ -	\$ 1,500.00
		Seed Equipment	1	\$ 6,600.00	\$ 6,600.00	\$ 6,600.00	\$ -	\$ -	\$ 6,600.00
		Benchmarki ng Survey	1	\$ 4,000.00	\$ 4,000.00	\$ -	\$ 4,000.00	\$ -	\$ 4,000.00
		Midline & Enline Surveys	1	\$ 6,000.00	\$ 6,000.00	\$ 5,100.00	\$ 900.00		\$ 6,000.00
		Impact Survey	1	\$ 6,000.00	\$ 6,000.00	\$ -	\$ 6,000.00		\$ 6,000.00
		Training materials for Staff - Facilitators Guides, Flips	40	\$ 1,000.00	\$ 40,000.00	\$ -	\$ 40,000.00		\$ 40,000.00
		Seed Quality Equipments / Tools - Handheld for Facilitators	125	\$ 300.00	\$ 37,500.00	\$ -	\$ 37,500.00		\$ 37,500.00
		Seed Lab equipment	2	\$ 8,000.00	\$ 16,000.00	\$ 5,600.00	\$ 10,400.00	\$ -	\$ 16,000.00
		Sub Total		\$ 39,612.80	\$ 217,480.00	\$ 96,910.00	\$ 120,570.00	\$ -	\$ 217,480.00
4	STAFF DEVELOP MENT COSTS	Unit Type	Quant ity	Unit Cost	TOTAL	DFAT	Lead Partner	Other Partne r(s)	\$ -
	Expenditure related to staff developmen t including tuition and training costs, etc	Staff Trainings internal	30	\$ 105.00	\$ 3,150.00	\$ 1,417.50	\$ 1,732.50		\$ 3,150.00
		Staff trainings from FSC&RD	5	\$ 900.00	\$ 4,500.00	\$ 2,025.00	\$ 2,475.00	\$ -	\$ 4,500.00
		Staff Trainings from NARC	3	\$ 610.00	\$ 1,830.00	\$ 1,372.50	\$ 457.50	\$ -	\$ 1,830.00
		Staff Trainings from AARI	2	\$ 450.00	\$ 900.00	\$ 675.00	\$ 225.00	\$ -	\$ 900.00

<i>PROGRAM COSTS</i>	\$ 12,113.75	12113 .75	12113 .75	12113. 75	12113 .75	12113. 75	12113 .75	12113 .75
<i>STAFF DEVELOPMENT COSTS</i>	\$ 1,105.31	1105. 31	1105. 31	1105.3 1	1105. 31	1105.3 1	1105. 31	1105. 31
Total	62907.062 5	62907 .06	62907 .06	62907. 06	62907 .06	62907. 06	62907 .06	62907 .06
List of Milestone payments								
Milestone payment for Milestones 1 & 2	\$62,907							
Milestone payment for Milestone 3		62907 .06						
Milestone payment for Milestones 4 & 5				12581 4.12				
Milestone payment for Milestone 6						12581 4.12		
Milestone payment for Milestone 7							62907 .06	
Milestone payment for Milestones 8 & 9								62907 .06
Total	\$62,907	\$62,9 07	\$0	\$125,8 14	\$0	\$125,8 14	\$62,9 07	\$62,9 07

7. Operations and Management

a) Ownership and Business Structure

- Project governance document will be generated elaborating roles and responsibilities clearly depicting the management framework within which *project* decisions will be made
- BPP will provide a cost-share of financing, review of reporting, and oversight
- MEDA will carry out project management, monitoring, evaluation and reporting
- Engro Corporation/Foundation will execute an agreement (service level agreement) with Engro Fertilizers regarding execution of the project
- Engro Corporation/Foundation will be the project owner/sponsor being at the position to monitor the project with its involvement in policy making, project monitoring and progress
- Engro Fertilizers Limited will be the technical partner

Following members are proposed to be part of the Steering committee:

1. Dr. Linda Jones, Senior Director, MEDA
2. Majid Mirza, Senior Project Manager, MEDA
3. Aman Ul Haque; Head of Engro Foundation/CSR Manager Engro Corporation
4. Favad Soomro; Director, Engro Foundation
5. Kassim Motiwala; Head of Agribusiness Division, Engro Fertilizers Limited
6. Abid Ilyas Dar; Project Lead/ Secretary
- 7.

b) Operational Structure:

MEDA is a not-for-profit entity registered under the Canada Corporations Act and is governed by a Board of Directors with a robust management structure. The PAVE Project will fall under Senior Project Manager, Global Programs reporting to Senior Director, Global Programs who reports to the Chief Operating Officer, who reports to the Chief Executive Officer, MEDA. The Senior Project Manager will oversee a Head Office team of Operations, M&E and Finance Specialists who will work with corresponding Operations, M&E, Finance staff in the field office run and managed by the Engro Corporation. This will ensure a strong project management system.

- b) **Key Personnel:** outline the qualifications and responsibilities of the management team and other staff involved

Dr. Linda Jones, Senior Director, Global Programs, MEDA

Dr. Linda Jones is the Senior Director, Global Programs at MEDA. She is a globally recognized expert in the field of inclusive private sector development - market systems and financial sectors. As a consultant, Jones advised on a wide range of bilateral, multilateral and non-governmental development programs, and she has held senior positions at the Aga Khan Foundation in Geneva, the Coady International Institute, Mennonite Economic Development Associates, and Open Text Corporation. Jones has extensive experience conducting field research, building the capacity of program teams, and training policy makers and practitioners through recognized institutions.

Jones has contributed to building the international development field as a volunteer in key areas such as: co-founding and chairing the Canadian Forum for Impact Investment and Development; serving as a board member and chair of the SEEP Network (DC); advising the Eurasia Foundation on women's enterprise development; publishing extensively from articles in peer-reviewed journal to books and reports; and serving as editor of the Enterprise Development and Microfinance Journal, among other contributions.

Majid Mirza, Senior Project Manager, Global Programs, MEDA

Majid Mirza has been working in development and impact investing since he completed his Masters from the University of Waterloo in 2009. As Senior Project Manager, Global Programs, Majid's primary responsibility has been leading MEDA's INFRONT (Impact Investing in Frontier Markets) project since August 2016. Majid is also a member of the MEDA's Investment Technical Team and represents MEDA in CAFIID (Canadian Forum for Impact Investing and Development).

Majid has a Bachelors in Arts & Business from the University of Waterloo along with a Master in Business Entrepreneurship & Technology. Since 2009 Majid has been working with various impact investing and international development organizations including Acumen, Engro Foundation and The Aman Foundation. Through these assignments he has been exposed to various value chains related within the economic empowerment mandate including Agriculture, Healthcare, SME and Workforce Development. Through his career he has had a chance to work on projects closely with various bi-lateral and multi-lateral agencies including Global Affairs Canada, USAID, DFID, GIZ, EU, World Bank, UNDP and JICA.

Aman ul Haque, Head of Engro Foundation

Aman ul Haque heads Engro Foundation for Engro Corporation. Engro Foundation manages community and social investments for Engro Corporation and its subsidiaries. Aman has international experience in management consulting and media in Pakistan. He has done BSc Political Science and Communication Studies from Northwestern University US.

Favad Soomro, Director Engro Foundation

Favad Soomro is responsible for development and management of Foundation's programs. He is an MBA from IBA Karachi. He has been working with Engro for more than 15 years and has spent time in various functions with different Engro subsidiaries.

Leena Talpur, Business Sustainability Associate Engro Foundation

Leena has been a part of Engro Foundation for the last 3 years and has successfully designed and implemented social impact projects in the areas of vocational training, primary education, and developed several proposals concerning Pakistan's agricultural and livestock sectors. She has a B.A from York University, Toronto.

Kassim Motiwala – Head of Agribusiness Division, Engro Fertilizers Limited.

Kassim heads the Special Projects Division responsible for agri-related diversification projects. He has 10 + years of experience in relevant functions in agri industries. He is an MBA from IBA, Karachi.

Abid Ilyas Dar - Profile of the Project Lead

Currently operating as a technical lead – Seeds business with Engro Fertilizers (Senior Advisor Seeds Business). He is Postgraduate in Agriculture (1986-1992). More than 25 years of being actively involved in the areas of agricultural research & development, fertilizers sector, seeds business, agri-advisory (extension) programs, market development initiatives, sales and marketing assignments and business inclusive smallholders focused projects.

An experienced Team of Seed Officers, Field Assistants, Seed Analysts & other allied staff is already operating under the technical leadership of Abid.

- **Senior Seed Production Officer** – Agri post graduate with 10 Years of Experience in Seeds Business and interacting with FSC&RD.
- **Seed Officers** – Agri Graduates and Expert Seed multiplication since last 4-5 Years.

Farmers								
<i>Milestone 1 - Establishment of Project Office and Team</i>	X							
<i>Milestone 2 - Finalization of Geographic Area and Farmer Database</i>	X							
2) Training Development and Execution of Kharif Season (Summer Plantation)								
Purchasing of initial printing materials, Developing Presentations, Vehicles, Office Supplies, Training Plans, Training Materials and Work Plans, Activity Plans, M&E Plans, Stewardship Plans								
Development of gender- appropriate Training Manuals, Literatures, Pocket Guides, Banners, Posters, Flip Charts for Trainings, Pocket Key Cards for Crops (Technical Material: BCMP's, BFMP's, 4R), Nutrient Management, Quality Seed Production resource book.								
Plan of Trainings, Start, Execution for Kharif Season, Arrangements of Basic Seeds, Distribution of Seeds, Trainings (Paddy & Vegetables). Trainings throughout the life cycles of the Kharif Season Crops and gender-appropriate for women								
Seed Trainings, Rougings, Practicals, On Farm mock exercises, Harvesting								
Seed Crop Harvest Procurement, Purchasing & Seed Development								
<i>Milestone 3 - Finalization of Training Materials and start of training for Kharif Season</i>	X							
<i>Milestone 4 - Results and Report of training for Kharif Season</i>			X					
3) Training Development and Execution of Rabi Season (Winter Plantation)								
Rabi (Winter) Season Start Materials Development, Trainings plans, Farmers Grouping, Anchors places finalization								
Trainings on Wheat & Rabi Vegetables with Seed Distribution & Sowings, Literature Distribution, Farmers Meetings								
Rabi Crops monitoring, BCMP's, Crop Stage based trainings, Seed Rougings								
Rabi Crops Harvesting, Purchasing								
<i>Milestone 5 - Finalization of Training Materials and start of training for Rabi Season</i>			X					
<i>Milestone 6 - Results and Report of training for Rabi Season and Mid-line Report</i>					X			

4) Repeat of Trainings and Activity Deliverables								
Kharif (Summer Planting) Season 2								
<i>Milestone 7 - Results and Report of training for Kharif Season</i>							X	
Rabi (Winter planting) Season								
<i>Milestone 8 - Results and Report of training for Rabi Season</i>								X
5) Sustainability Measures and Project Closure								
Reports and activities closure, transferring responsibility on communities								
Projects Closure Meetings, Data Compilation, Debriefing								
Sustainability Drive, Feedbacks, Testimonials, Videos finalization								
End line and Impact Survey Planning (gender-disaggregated)								
<i>Milestone 9 - Final Reporting and Project Closing</i>								X

8. Risk Factors

Describe the key risks such as those presented by: Cost overruns, Seasonality & natural hazards, Problems with labour, suppliers, distributors or partners, Not meeting projections, Unforeseen market trends & competition; unforeseen economic, social, or political developments, Financial mismanagement, fraud

Seasonality

Seasonality is very critical in terms of Start of the project and project activities. Rice Crop season starts in May. Activities are to be started during early April. Otherwise, this Rice / Kharif season will not be captured.

Timeliness of Project Activities

Project activities (Training & Demonstration plans, Seed Plans, Mobilization & Registration plans are to be made well in advance before the start of the Rice (May) and Wheat Seasons (October).

Natural Hazards

Seeds multiplication is weather dependent. Low rainfall affects water avails and badly impacts crop growth & yields. Windy weather, heavy rainfall, repeated rains & overcast days cause damages to the seed crop (Disease, Discoloration, lodging). Weather advisory and risk mitigation plan will be shared with the seed farmers to reschedule their sowings, transplanting's, inputs use, irrigation, harvestings, labor management, transportation, harvest marketing and storage.

Floods

Floods can damage seed crop. Baseline survey will help avoid taking project to flood prone villages.

Problems with labor, suppliers, distributors or partners

To increase seed multiplication acreages, pure pre-basic/ basic and certified seed is required to be purchased from the nominated Research institutes. In case of lack of availability of basic seed with

institutions, back up pure seed is to be developed at company end to mitigate the risk to whole value chain. In case of labor shortages for cutting and harvesting the seed plots, quality harvesters will be involved. Regarding risk of adulteration of Seeds strict controls at all ends/steps of seed production are to be implemented.

Gender Awareness and Promotion of Women by Implementers

The project will need to ensure that Engro staff and MEDA personnel are critically aware of the need to consider gender and to promote women as seed producers. If this is not emphasized, or if capacity is not built to carry this out, then the initiative would not reach its targets. MEDA's experience will derisk this situation by providing support on the effective and efficient inclusion of women ensuring attention to business considerations and outcomes.

Unforeseen market trends & competition; unforeseen economic, social, or political developments following are the risks;

- Varietal trends change so quickly that well promoted variety seeds remain unsold. To mitigate this risk, well suited, well adapted and popular varieties are to be included in the seed products slate. No new switch overs on new emerging varieties are planned.
- Competition's policies of credit sales, flexible options of discounts/ lift back policy and incentive schemes have a probability of creating a challenging selling and marketing environment. Proper Marketing Strategy will be developed with a proper geographical spread and plans of extension and advisory services.
- Seeking participation of women farmers and women farm support workers in such programs is a challenge due to socio cultural barriers and can pose a risk of low/ lower than plan participation. Risk mitigation plans focusing on mobilization of community members will be developed to cater for this.
- Baseline survey will help us avoid areas of political interference of the politician farmers. We don't feel that the big scale political developments at provincial/ country level will pose any risk at project level.
- Crop economics/farm economics of the resource poor smallholders is affected by poor yields, poor market prices and poor procurements demand. Company will keep farmers aware of the scenario. We will get significant number of farmers registered as seed suppliers and link farmers with the buyers and seed companies.

Financial mismanagement, fraud

Engro has very well developed financial and auditing processes across all its subsidiaries. These processes are governed by Limits of Authority Manuals, Standard Operating Procedures and checks at various levels. All those processes will be implemented at three levels: Project office/team level, Engro Fertilizer (the parent company) level and Engro Corp (the holding company) level.

Risks in case of Cost overruns

Cost monitoring is the part of regular project stewardship. In addition to line management, the Steering committee will regular monitor the spending patterns and burn rates to avoid cost overruns. Despite all controls, if there's any cost overrun, Engro will bear it.

Risk in case of not meeting projections

The project design keeps the opportunity and risks aligned for all partners – Engro will stand to be the biggest loser if project fails to achieve its objectives. The project has been carefully designed keeping a right mix of innovation, stretch, and achievability. Engro intends to put all its efforts in meeting projections as the seed business will not be able to work with farmers again for long which is Engro's competitive advantage. Engro simply cannot afford to lose its rapport with the farmers and will be vigilant on this risk.

Appendices

- Field visit photos
- Existing MOUs/contracts between the partners

- **MEDA/Engro field visit to smallholders in Sheikhpura (January 2017)**



- MOU Signed between parties (October 2016)



**MEMORANDUM OF UNDERSTANDING
Between
Engro Corporation
and
Mennonite Economic Development Associates**

Engro Corporation (hereafter referred to as EC) and Mennonite Economic Development Associates (hereafter referred to as MEDA) intend to cooperate in the area of agricultural development in Pakistan, especially in the area for value chain inclusiveness for small-holders and women. This Memorandum of Understanding (MoU) reflects discussions held between the two partners and seeks to formalize working arrangements to provide the basis for further cooperation.

EC and MEDA will collaborate in the areas mentioned below

- Agricultural development (including dairy)
- Value chain inclusiveness for small-holder farmers and women
- Proliferation of technology transfer and better management practices in the agricultural space
- Promoting greater business inclusivity for MSMEs in the agricultural value chain
- Collaboration on innovation and value added models whether it is technological, geographic, business model, partnership model innovation

(b) The Parties shall enter into detailed Agreements with respect to each project

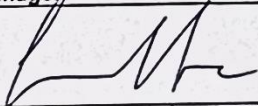
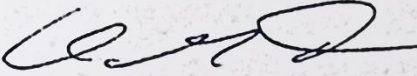
This MoU is a non-binding statement of the partners' mutual understanding of their proposed collaboration framework. The MoU is not intended to create any legally enforceable rights or obligations in respect of either partner, including any obligation on their part to enter into any supplemental agreement.

Neither partner has the authority to incur any liability or make any commitment on behalf of the other partner with respect to any third party, contractually or otherwise, without the other partner's prior written authorization.

This MoU may be amended at any time by mutual written agreement.

This MoU may be terminated by EC and/or MEDA without prior written notice.

Signed in duplicate by the duly authorized representatives of EC and MEDA on the dates indicated below:

For EC, Engro Corporation	For MEDA
Aman ul-Haque	Linda Jones
CSR Manager,	Senior Director, Global Programs
	
Date: <i>October 6 2016</i>	Date: <i>October 5 2016</i>