

# CONTRIBUTION ANALYSES FOR PUBLIC PRIVATE PARTNERSHIPS (PPPs)

N2Africa-Ethiopia



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## N2AFRICA IN BRIEF

N2AFRICA is a science-based “research-in-development” project focused on putting nitrogen fixation to work for smallholder farmers growing legume crops in Africa. It was funded by Bill and Melinda Gates Foundation and used to operate in nine countries within Africa. Ethiopia, Nigeria, Tanzania, Ghana and Nigeria are the core countries. N2Africa envisioned building sustainable, long-term partnerships to enable African smallholder farmers to benefit from symbiotic N<sub>2</sub>-fixation by grain legumes through effective production technologies, including inoculants and fertilizers. N2Africa interventions are embedded in a (farming) systems approach, guided by NUANCES (Nutrient Use in Animal and Cropping systems – Efficiencies and Scales) framework.

## N2Africa Theory of Change

N2Africa interventions are based on the proven hypothesis of successful legume yield and N<sub>2</sub>-fixation depends on the interaction (GL x GR) x E x M or (Legume x Rhizobium genotypes) x Environment x Management. Achieving the genetic potential of ‘improved’ varieties requires careful attention to crop management – and in the case of legumes this includes rhizobial inoculant and balanced fertilization. In order to realize this concept N2Africa devised its initiatives under four strategic pillars: Capacity Building, Dissemination, Input System and Market Linkage.



**Regions 4**  
**Weredas 31**  
**Direct Beneficiaries 70,100**  
**Indirect Beneficiaries 350,000**  
**23% Women Beneficiaries**

## N2Africa in Ethiopia

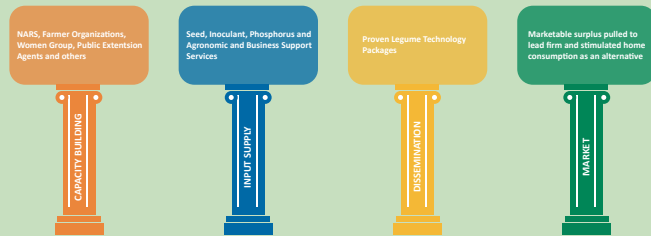
N2Africa has been operating in Ethiopia for the last five years. It was active in 31 weredas in Amhara, Oromia, SNNPR and Binishangul Gumuz regions. The priority pulses were common bean, fababean, chickpea and soybean. Within the context of these pulses the N2Africa aimed to reach 35,000 farmers directly and indirectly as its original plan. The project aimed to increase yield for pulses by 45% and that of rotational crop (principally maize) by 28% from the baseline status. This amounts to increase in return on investment of 3.5 times per USD invested. In order to achieve these results N2Africa have been working with a number of partners (see section on PPPs).

Four years down the line, N2Africa has reached over 70100 farmers. Average yield of pulses by N2Africa farmers has increased by 34%. Though data on marginal yield gain on rotational crop (maize) is not available, people estimated it to be about 20%. The market for N2Africa driver technologies-seed and inoculant have increased by seven fold. At broader level the project has achieved in bringing N2Africa technologies to the forefront to the national extension and research system. Return on investment has been over 4 times, yield gap offset by increased price of pulse crops.

	Legume yield increase (%)	Land area increase (%)	Maize yield increase (%)
<b>Soybean</b>	50	100	50
<b>Beans</b>	30	25	20
<b>Faba bean</b>	50	25	20
<b>Chickpea</b>	50	25	20

## Implementation Pillars- Strategy

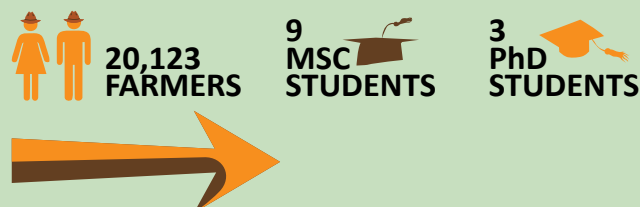
These PPPs have four critical pillars



Cross Cutting Issues, Gender, Nutrition

## Capacity Building

The capacity building pillar is seen as key success factor for to achieve and sustain continuous improvement in legume production technologies tailored to local context. There are three major capacity building initiatives within the Ethiopian program-On Job Coaching, Training of Experts and Community. N2Africa is embedded in the National Agricultural Research Systems including Ethiopian Agricultural Research Institute, Regional Agricultural Institutes and Universities. The project personnel of these institutions have gained invaluable opportunities for learning about legume technologies from doing and continuous coaching by team of local and international experts. Secondly, N2Africa has offered a number of short term trainings and coaching not only to researchers but also to farmers and extension workers. In this regard over 20,103 people have been trained about legume technology. In addition to the above two capacity interventions, N2Africa has given long term educational opportunities for 9 MSC students and 3 PHD students.



## Technology Scale-Up: Dissemination

Three stage dissemination approach was pursued: demonstration, pre-scaling and scaling-up. N2Africa technologies were demonstrated in year one and a year later pre-scaling initiatives were conducted in ten weredas. Scaling-up has been the major emphasis during most part of the project period in Ethiopia. As such over 70,100 farmers have been reached directly through scaling-up interventions. Additional 350,000 farmers are believed to be informed about the technology indirectly through information dissemination strategy. The scaling-up effort was widely conducted in partnership with the national extension system and other partners. The PPPs have been instrumental in disseminating the technologies at minimal cost. N2Africa has managed to mobilize over 30 partners to scale-up the technology packages.



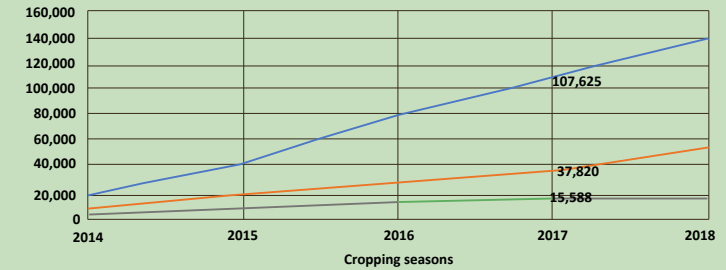
## Input System

N2Africa interventions are based on the proven hypothesis that successful legume yield and N<sub>2</sub>-fixation depends on the interaction (GL x GR) x E x M or (Legume x Rhizobium) x Environment x Management. Having the right seed, inoculant strain with the best management practice is seen as vital for the success. N2Africa has been actively strengthening the input system through different interventions- facilitating access through PPPs, proving market information about demand and supply and working with relevant bodies for system changes. Four of the five public-private partnerships N2Africa has been pursuing through its initiatives were on inputs, namely seed and rhizobia. Through this a total of 142, 486 kg seed and 17,162 rhizobia has been distributed. N2Africa conducted a comprehensive input demand and supply analyses to guide national strategies for legume inputs. This document is also deployed as a basis for initiating private investment in the sector. The major system change N2Africa have achieved in relation to input were (1) bringing the national extension system to pay serious attention

to pulse technologies-namely rhizobia (2) the approach of PPP to resolve the bottlenecks (3) the integrated pulse package that combines seed, inoculant and agronomic practices with linkage to the market.

## Cumulative Figures (Amount of Inputs Disseminated)

Amount of Inputs Disseminated (2014-2018)



Seed (kg) Fertilizer (kg) Inoculant (pkt)



## Market Linkage

It is apparent that access to better market is a principal driver for any agricultural technologies. Facilitating access to market for both inputs and grain has been key points of emphasis for N2Africa. Over the years a total of 19,000 MT of grain has been supplied from N2Africa farmers and the farmers have generated ETB 380 million. The Public-Private partnerships have been instrumental to cater for better market access. Of the four value chain there was notable achievement in the soybean and chickpea where over 35,000 farmers benefited from the linkage. In addition to creating access, a number of targeted interventions to enhance the negotiation power of smallholders and improve quality of grain has been done. N2Africa variety selection from the beginning is based on market demand.

## Implementation Approach

### The Public Private Partnerships (PPPs)

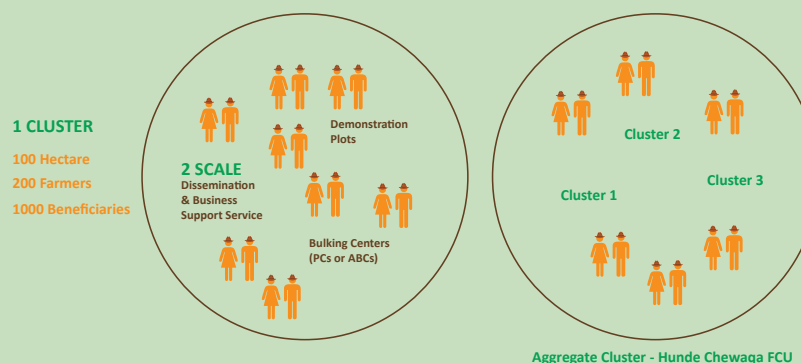
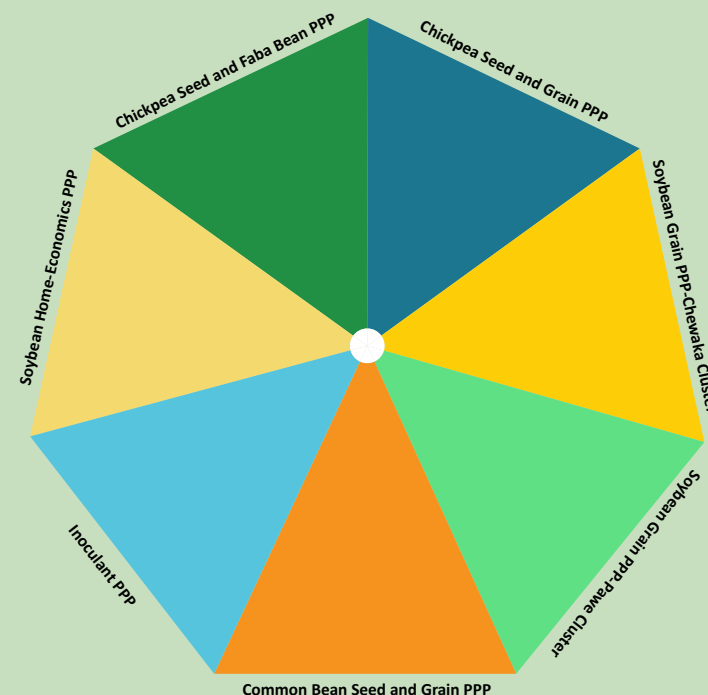
#### Rationale for the PPPs

Implementing inclusive projects that extends from grassroots to the upper end of the value chain requires strong collaboration among different partners. Public Private Partnerships (PPPs) are multi-stakeholder groups with clearly defined roles and responsibilities operating with formal agreements. The PPP approach of N2Africa have been introduced as crucial step to gauge sustainable and impactful intervention. Three distinctive benefits can be noted about the PPP approach. First the PPPs are set on going concern i.e. the partnerships will continue even if N2Africa participation ceases. Second the PPPs are instrumental to bridge the differences in information among actors in the value chain and create space for direct market link. Third the PPPs create opportunity for raising resources from multiple interest groups which is important for inclusive business model.

## Description of the PPPs

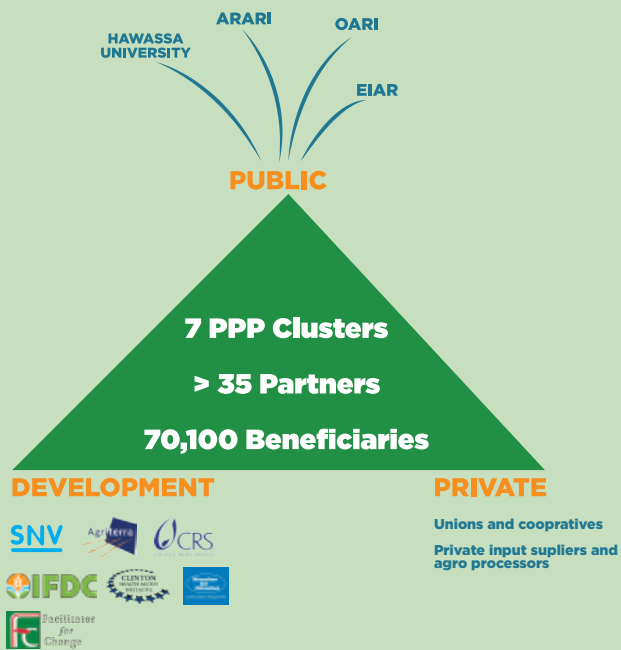
There were six PPPs initiated by N2Africa with the lead of the private sector.

- **Chickpea Seed and Faba Bean PPP:** Developed around a lead firm BSGD (Balegreen Spice and Grain Development PLC) seed multiplication and supply. Also supports dissemination activities in Ginir woreda via its out grower smallholder farmers
- **Chickpea Seed and Grain PPP:** Developed with Tsehay Union in Gondar with over 81 member coops. Some of the Coops are already engaged in seed production (Seed Sources) and it has good linkages with the international market (Grain bulking & Sourcing)
- **Soybean Grain PPP-Chewaka Cluster:** Developed around a lead soybean processing firm, GAI (Guts Agro Industry PLC) with annual demand of over 2000MT
- **Soybean Grain PPP-Pawe Cluster:** Led by Alema Koudjits, the biggest animal feed processor in Ethiopia
- **Common Bean Seed and Grain PPP:** Developed around ACOS Ethiopia for southern cluster Sidama Elto FPCUs and Aje Seed Producers- (seed sources and bulking Centers)
- **Inoculant PPP:** Led by MBI (Menagesha Biotech Industry PLC) inoculant supplier for all disseminations cross-cutting all target legumes.
- **Soybean Home-Economics PPP:** Targeted at the Nutrition and Gender component of N2Africa (against poor utilization of soybean in Ethiopia). To be led by GAI (GAIN) is interested to promote its Soybean products)



1 CLUSTER  
100 Hectare  
200 Farmers  
1000 Beneficiaries

Aggregate Cluster - Hunde Chewaqa FCU



## HIGHLIGHTS OF THE CA Contribution Analyses

Contribution analyses refers to review of key contribution of an intervention. This contribution could be in the form of results, outcomes and impacts as highlighted in M & E documents. It can also be in the form of change in thinking and systems. Contribution analyses are carried for three major reasons (1) to highlights the major achievements (qualitative and quantitative) (2) to extract learnings from the process (3) develop possible scale-up scenarios based on the learning. Generally, contribution analyses doesnt not completely replace Monitoring and Evaluation. But often Monitoring and Evaluation runs after quantitative results but not all program or project contributions are easy to quantify. Contribution analyses enables to capture the qualitative achievements like change in systems and thinking. In addition, M& E documents are usually intended for internal purpose whereas CA could be used to communicate to external parties.

## Purpose and Objectives

The purpose of this report is to shed light to the key contributions of n2Africa PPP interventions in the national legume sector. The primary objectives of the analyses are (1) capture the key achievements of the PPPs (2) profile the key systemic changes the PPPs have contributed (3) analyze success and learning stories of the PPPs.

## Scope and Methodology

The analyses will be carried using two PPPs, namely North and Bako PPPs. The Noth PPP (Gondar) has been implemented under the lead of Tsehay Union whereas as the Bako PPP was championed by the Bore Bako Union. The former was on chickpea seed multiplication and dissemination whereas the latter case was about soybean bulking and trading with central buyers. The report is primarily base on secondary sources of data and information. In particular reference was made to N2Africa Podcasts, agronomy Data, Previous annual reports and other relevant documents. In addition, a short discussion was held with experts from the two areas. It should be noted that this contribution analyses don't replace the M & E report.

## Lead Crop Profiles

### Tsehay Union Chickpea

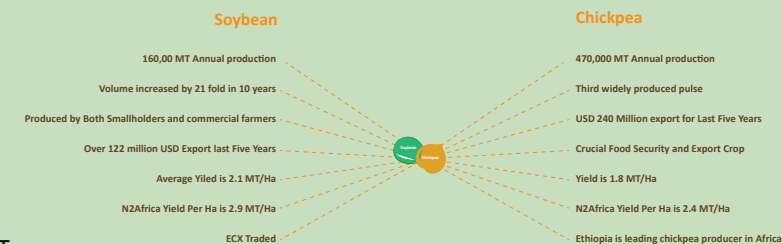
As stated above this PPP was implemented under the championship of Tsehay Union. The prime objective of the PPP was to multiply and distribute high yielding chickpea seed and related technology packages introduced by N2Africa.

Chickpea is the third widely produced legume in Ethiopia after faba bean and haricot bean. Ethiopia produces over 470,000 MT of chickpea that makes it the fifth leading producer in the world. The country is also the leading producer in Africa, accounting for close to 40% of total production of the continent. Chickpea is an important consumption as well as cash crop for smallholder farmers. The grain is consumed in green, dry roasted and powder (shiro). It is a key source of high-quality protein, with a wide range of essential amino acids. Over the last 5 years Ethiopia has exported over US \$ 197 million worth of chickpea. By championing a high yielding and more demanded chickpea variety Tsehay union and its PPP partners.

### Bore Bako Soybean Grain

Bore Bako Union has been the lead implementer of the Soybean grain trading PPP. N2africa has been actively operating in the area for the last four years. At the start there were hardly any farmers growing soybean. However, with the N2Africa package farmers started growing the crop but soon it was realized that market for grain is a major barrier. In order to resolve the market access challenges, the Soybean PPP under the championship of Bore Bako union was introduced.

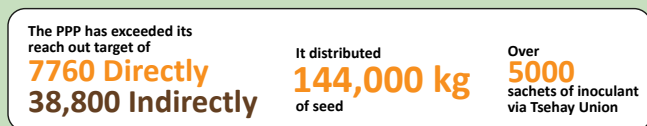
Soybean production in Ethiopia has grown rapidly over the last years, doubling every year since 2010. Ethiopia produced estimated volume of 812.35 Thousand MT in 2016/17, combined production by smallholders and commercial farmers. The growth in production is attributed mainly to the increase in area covered and productivity. The total hectare of land under soya bean production during the last 10 years has increased by 10 folds; while the total volume of production during the same period increased by 21 folds. Productivity level of soy bean is 2.22 MT/ha and this level is very low compared to its potential which could go up to 4 MT/ha if improved varieties are used.



## ANALYSES OF GONDAR PPP

### Profile of the PPP

The Gondar PPP is aimed at increasing production and productivity of Chickpea. The PPP focused on facilitating access to seed to 16,270 smallholder farmers. It was implemented in four weredas in North Gondar. Tsehay Multi purpose union was the champion. There were four important pillar activities under this PPP; Dissemination, Input Supply, Market Linkage and Capacity Building. The target for this PPP was to reach to 10,000 farmers with the N2Africa technology packages. As can be seen from the graph the PPP has exceeded its reach out target of 7760 (directly) and 38,800 indirectly, it distributed 144,000 kg of seed, and over 5000 sachets of inoculant via Tsehay Union. Over the last three years, the partners have met four times and sound institutional embedment has been made.



### Partners Profiling

#### Core Partners

##### Tsehay Union

The Union has over 63,000 member farmers organized into 81 primary cooperatives operating in 10 Woredas. Chickpea, Teff, Sesame, Barley and spices are the principal agricultural commodities in Tsehay Union's operating areas. The union is engaged in four businesses-manufacturing, input distribution, grain trading and capacity building to members. The union has over 80 staff. Over the last five years its portfolios have increased from ETB 800 million/annum to ETB 1.5 billion/annum. As stated above Tsehay union has been the lead firm in this PPP. In this partnership Tsehay Union was engaged in scaling-up N2Africa technology packages; seed, inoculant and best practices. The union has managed to directly reach 10,000 farmers through this partnership. It has distributed 5000 sachets of inoculants and 144,000 kg seed to its members.

##### SNV/Agritererra-Cooperative for Change (C4C)

The C4C has been engaged in facilitating market access for smallholder farmers' products by enhancing business relationship between cooperatives and buyers, facilitating seed and other technologies and developing products and services that enhance gender inclusiveness. It invests in corporative capacity building through training, coaching and experience sharing. C4C interventions focus on scaling up and on products that have strong commercial viability. With Tsehay Union the program was working on Chickpea, Sesame and Barley value chains. Specifically, C4C has been involved in professionalizing and assisting the union for market linkage.

##### N2Africa

N2Africa and its NARS partners, namely Amhara Agricultural Research Institute's Gondar Agricultural Research Center, has been promoting high yielding and high value legume technologies. In this specific partnership the technologies offered by N2Africa were (1) Arerti Variety (2) Inoculant (3) best agricultural practices. Besides providing the technology, N2Africa has been playing a lead role in process facilitation in this partnership.

##### Menagesha Biotech

Menagesha Biotech Industry (MBI), is a private inoculant producer. It supplies range of strains for different legumes. In this partnership MBI was the principal supplier of chickpea inoculant strains which were distributed through the union. In addition to supplying the strains MBI through its partners like N2Africa builds awareness about the use and application of inoculants. A total of 5,000 sachets of chickpea inoculant has been supplied by MBI through this partnership. The overall trend shows strong increase over the last three years.

##### Support Partners

A number of other support partners have been involved in this partnership. Notably, the Bureau of Agriculture led extension of the technologies to wider smallholders. ATA was involved in international market linkage.

## Theory of Change Analyses

### Activity/Output Level

Four major pillar activity level intervention were initiated: Participatory Variety Selection, Multiplication of Foundation Seed, Facilitating Access to Chickpea Seed and Inoculants and Public Private Partnership. In the participatory variety selection, three varieties and strains were tested on 230 farmers plot. These farmers were requested to choose the best variety based on sets of criteria that include (1) yield (2) cost of production (3) resistance to disease and drought (4) seed size (5) seed color and (6) seed taste at green and dry levels. Also farmers were exposed to demo plots with and without inoculation as well as on the application of rhizobia. Accordingly, Arerti Variety with xxx strain came strong in North Gondar area. Among others the farmers liked this variety because of the high yielding, disease and drought resistance and importantly the seed size and color.

Once participatory technology was selected multiplication of foundation seed was the next level. Gondar Agricultural Research was responsible to breed the initial seed stock. This seed stock was produced in 144,000 kg and delivered to Tsehay Union for multiplication. A total of 300kg foundation seed with the full technology package was delivered to Tsehay union. The next level of activity was creating access to the tested seed together with the full technology package. Accordingly, a Tsehay Union has supplied over 144,000 kg of improved chickpea variety and 5000 sachets of inoculants. This has reached over 7160 smallholder farmers of which 20% were women.

The PPP development and execution is another important activity pillar of this partnership. A formal PPP document has been signed and executed during the last three years. Details of the results and outcomes of the PPP have been discussed already. This has been an important organization platform for dialogue and pushing the activities in the other three pillars.

### Immediate Outcome

There are three crucial Immediate Outcomes in this PPP intervention: Adaptation of high yield and resistant varieties with full technology, better access to basic seed and an inclusive business model that reaches the ground level. The demand shown to

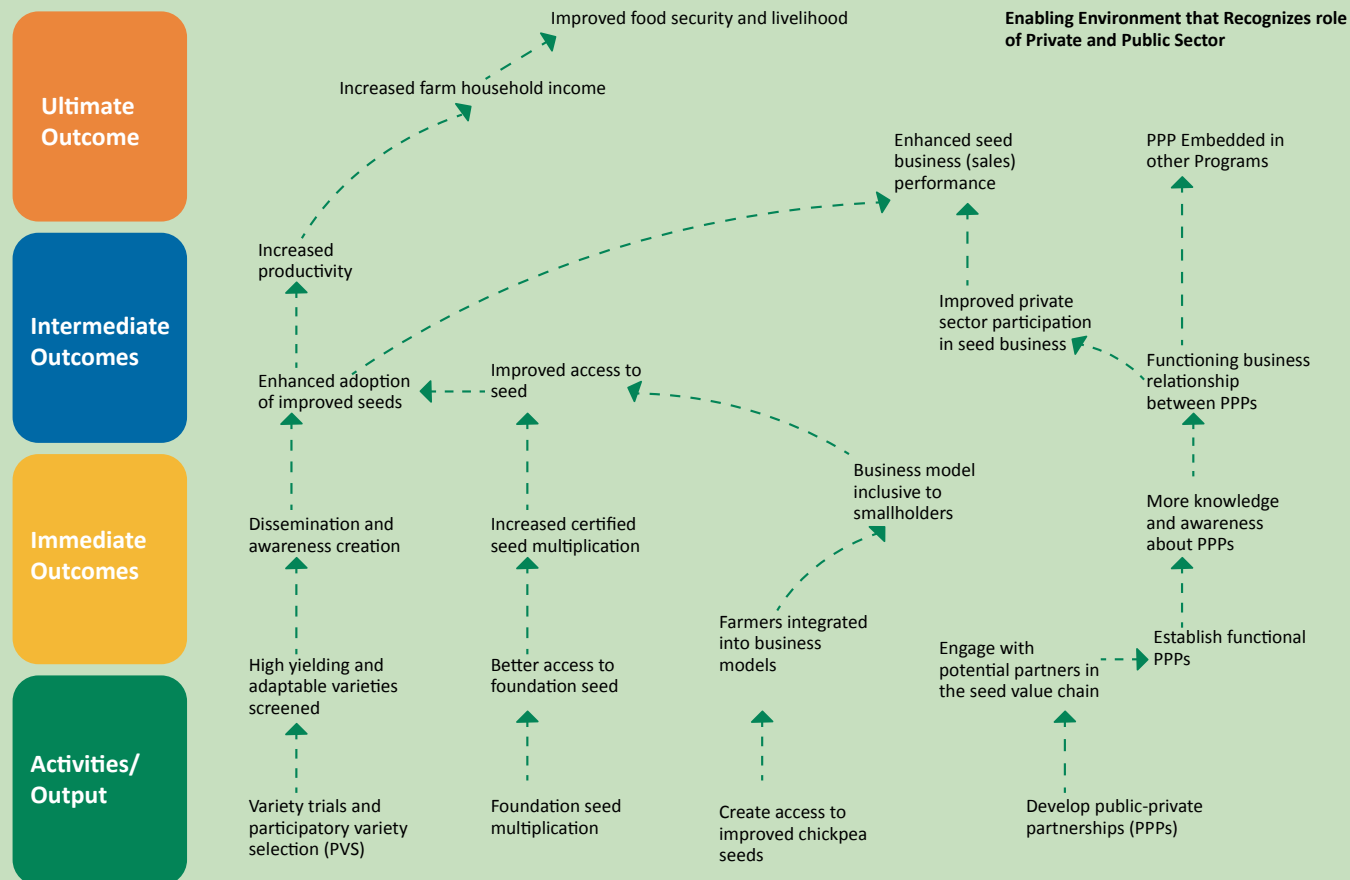
these varieties is not fully served-estimated supply gap of 40%. In the past farmers were struggling to get access to seed and related technologies. Often the research center brings varieties from other centers like DARC. With the adoption of this business model, tsehay Union has increase its chickpea seed and related technology supply by 15%. It can be noted the quick win from the technology is spurring further adoption and dissemination as more and more people are being exposed and demanding. The third intermediate outcome of this PPP, inclusive business model, has played an instrumental role in two ways. On the one hand it laid the foundation for sustainable business model which is led by private organizations. This will sustain the partnership beyond the intervention period as a sound business case has been create for the lead firm. One the other hand the business model itself has paved opportunities for new way of working between the public and private sector actors which is instrumental to reach out smallholders at grass root level.

## Intermediate Outcome Level

Four intermediate outcomes have been achieved from this PPP (1) Increased Production and Productivity (2) Increased Access to affordable technologies (3) functioning business partnership among actors (4) Increased private sector participation. The adoption of the yielding varieties with the full technology package results an average yield increment from 1.4 MT/ha to 2.1 MT/ha i.e. 50% yield increase. This accounts for only the direct increment. When chickpea is planted with inoculation and rotated with other crops often cereals there is an estimated yield increase of 20% on the second crop due to improved soil fertility. The increased productivity of N2Africa farmers have led to increased demand for seed and other similar technologies, positive transformation by farmers. The has two major benefits-change in farmers' attitude towards adoption of new technology i.e. increased risk taking behavior and business opportunity for Tsehay Union and other private companies to fill the demand. The third intermediate outcome of functioning business partnership among actors is an outcome substantiated by successful product package that defies the business case. The partnership is built on sound business cases with private drive and hence can sustain beyond project period.

## Ultimate Outcome

Increased household income, improved food and nutrition security and sound enabling environment that recognizes role of private sector are the key ultimate outcomes that have been achieved through this partnership. On average farmers have gained an increased income of 12500/ha from adopting the packages in this partnership. The income gain doesn't account for the extra income from increased yield and value from rotational crops. The high yielding package implies that farmers have got increased availability of food from producing additional crop per ha. Generally, chickpea is an important protein source for people in Ethiopia in general and around Gondar in particular. The fact that animal protein is expensive and the majority of the population is fasting for over 200 days in a year means that pulses are crucial protein sources. In this particular intervention, the packages promoted have even higher protein content compared to the normal ones.





## Learnings and Lessons

### Right Approach

This business model adopted public-private partnership as a key approach. This has laid sound foundation for further scale-up and embedment of the interventions. Three lessons can be extracted from this approach. First the fact that the partnership was drawn in a formal arrangement with well defined roles and responsibilities of each partners. This has enabled a relatively more stable and cohesive partnership. Second, the business model is based on credible products engraved with services of different partners that strengthens the portfolio and reduce risk. Third with this business model there is reasonable level of risk sharing and distribution among parties. Besides the high cost of serving from limited economies of scale (high transaction cost) has been minimized.

### Product-Place Combination

The product-place combination seem sound in this intervention. As stated above the average income and food security impact of the products advocated by the intervention is significantly higher than from the next best available options. The Geographic area where this intervention was carried is highly suitable for chickpea as well as could provide profound business case use of rhizobia. As stated in the result section, the up take of the technology package has increased by over 15-20% since this intervention begins.

### Scaling-up to Scale

The PPP has managed to reach 7160 farmers over a period of three years. This is considerable number. However, one can note that the package could have been scaled-up further. Three important remarks can be noted about the scale of intervention. First compared to the potential, the number of people reached as well as the amount of outcome is not significant. Second, though the ingredients for scaling-up are there the miles achieved don't look significant. Third the intervention didn't make a final exit plan for some partners and business continuity for others.

## Scaling-Up Scenarios

### Horizontal

Horizontal scale-up implies reaching more and more farmers by increasing the supply of the input packages offered through this partnership. In north Gondar and surrounding zones, there are over 138,000 growers of chickpea. This implies that the intervention currently has reached less than 12% of the potential. Even within the scope of Tsehay union operating weredas there are 50,000 farmers growing chickpea, implying over 30% potential for scale-up. Despite the potential developing appropriate scaling up strategies is crucial. Often farmers adopt these kind of technology packages from solicited or unsolicited source. The likelihood of adoption via unsolicited channel is high. When that occurs there is a risk of technology misuse. This is particularly important for components that should be disseminated with awareness on how to use, example inoculants. Possible solution for this could be using community radios and strengthening further embedment in the extension system. .

### Vertical

The vertical scale-up includes opportunities that can stimulate further uptake. There are two major rooms for vertical scale-up. First is to strengthen the market linkage for the grain products produced by the smallholder farmers via the union-example processing, export to high value market. When the comparative economics of chickpea gets higher than competing crops farmers will have more interest to adopt the technology packages.

### Parallel

This implies a scenario in which current farmers allocating more land for chickpea. As it stands now the average acreage allocated for chickpea is 0.1 ha/household. Compared to other crops, maize, teff and sorghum, this is a small proportion. The fact that this technology package can improve the yield and economic return from growing chickpea means that there is a room for increased allocation of land for chickpea by current adopters. Considering an average land holding of 0.9, there is potential to increase coverage by xx% even within the same farmers.

## Profile of the PPP

The Bako-Chewaka PPP aimed at facilitating access to better market for over 32, 500 soybean farmers in East Welaga, Illu Aba Bora and West Shewa. The PPP was implemented in 7 weredas in the three zones. Guts Agro Industry was the champion. There were two sub PPPs-Bako and Chewaqa. The major pillar activities in this PPP were; Dissemination, Input Supply, Market Linkage and Capacity Building. The Bako Tibe sub PPP was implemented by Bore Bako Union in the lead. . As can be seen from the graph the sub PPP has exceeded its reach out target of 2500 farmers, volume of seed distributed, and amount of inoculant distributed. In addition, at total of 7500 farmers have been reached through the intervention through information dissemination. Over the last three years, the partners have met three and sound institutional embedment has been made.

The PPP has exceeded its reach out target of  
**2500 Farmers**

**7500 Farmers**  
have been reached through the intervention through information dissemination

## Partners Profiling

### Core Partners

#### Bore Bako Union

Bore Bako union is established in 2010. The union has 14488 members and 28 primary cooperatives. Bore Bako union operates in Bako-Tibe wereda in West Shewa. In the partnership, it was engaged in purchasing and bulking soybean grain from smallholder farmers for market linkage, distribution of seed and inoculant as well as facilitating access to knowledge to farmers. Over the last three years of this partnership period, Bore Bako Union ha managed to collect and sell 1000 MT of soybean grain. During the same period the union stablished market linkage with three high end byers namely, Guts, FAFFA and Alemkodijs. On the other hand it also distributed 87 kg of seed and 347 sachets of inoculant.

## Guts Agro Industry

Guts Agro Industry GUTS Agro industry is a private limited company founded by two Ethiopian entrepreneurs with an initial capital of 500,000 Euros as a partnership business in November 2006. GUTS Agro Industry is ISO 22000 certified, employs 94 permanent staff and is specialized in nutritional food processing such as supplementary and therapeutic foods, baby foods, snacks, iodized table salt and non-iodized industrial salt products. It has processing capacity of 40,000 MT of maize and soybean and 30,000 MT of chickpea. In this partnership guts agro industry has been sourcing soybean for its processing facility in Hawassa. The company has purchased over 3000 MT of soybean over the last three years.

## IFDC-2SCALE

IFDC-2SCALE The 2SCALE is agricultural development program funded by the Netherlands DGIS. It focuses on 8 countries in Africa with which the Netherlands has a multi-year bilateral development relationship i.e., (1) Benin, (2) Ghana, (3) Mali, (4) Ethiopia, (5) South Sudan, (6) Kenya, (7) Uganda and (8) Mozambique. The overall objective of 2SCALE is 'to improve rural livelihoods and food nutrition security in Africa by creating 'viable Agri-Business Clusters (ABCs) effectively linked to (BoP) markets'. In this partnership 2SCALE was providing capacity building to the agribusiness cluster organized around the lead firm, Guts Agro Industry.

## Menschen für Menschen

Menschen für Menschen (MfM) is a Non-Profit Organization founded by Karlheinz Böhm in 1981. Agriculture, as existential need, is one of the development projects targeted by MfM where farmers are supported to implement simple, effective solutions which protect the land, produce better crops and secure income and food which leads to independence from assistance. One of such agricultural development efforts by MfM is the dissemination of Soybean technologies in cereal dominated (maize belt) areas of West Shoa and East Wollega Zones to improve soil fertility, crop productivity, income and nutrition of smallholder farmers. Under this partnership, MfM was involved in strengthening and sustaining the partnership via integration of knowledge, input supply chain and market access to the target soybean producing smallholder farmers.

## Clinton Health Access Initiative, Inc. (CHAI)

CHAI in collaboration with government of Ethiopia has developed and is implementing a comprehensive Nutrition Program entitled "Creating effective work force in the next generation through elimination of chronic malnutrition in Ethiopia". The key goal of the program is dramatically reducing the prevalence of childhood and maternal malnutrition by increasing access to affordable fortified baby food and supplementary feeding products for pregnant and lactating **women**. To achieve the goal, CHIA is currently investing in strengthening selected value chains, namely soybean and maize with ultimate objective of processing the produce in the fortified soy-maize based baby food and supplementary feeding. In order to boost production for large scale processing, CHIA is working with selected unions in East Welega and West Showa. In this partnership, CHAI has been leading the local bulking initiatives through the unions. In addition, CHIA has been supporting the local extension for increased adoption and dissemination of the technology package.

## N2Africa

N2Africa and its NARS partners, namely Oromia Agricultural Research Institute's Bako Agricultural Research Center, has been promoting high yielding and high value legume technologies. In this specific partnership the technologies offered by N2Africa were (1) Soybean seed (2) Inoculant (3) best agricultural practices. Besides providing the technology, N2Africa has been playing a lead role in process facilitation in this partnership.

## Menagesha Biotech

Menagesha Biotech Industry (MBI), is a private inoculant producer. It supplies range of strains for different legumes. In this partnership MBI was the principal supplier of soybean inoculant strains which were distributed through the union. In addition to supplying the strains MBI through its partners like N2Africa builds awareness about the use and application of inoculants. A total of xxx sachets of soybean inoculant has been supplied by MBI through this partnership. The overall trend shows strong increase over the last three years.

## Support Partners

A number of other support partners have been involved in this partnership. Notably, the Bureau of Agriculture led extension of the technologies to wider smallholders. ATA was involved in international market linkage. The other support partners in this partnership were ISSD, Anno Farms .

## Theory of Change Analyses

### Activity/Output Level

Four important activity level interventions have been conducted through this PPP (1) dissemination of high yielding seed and input packages (2) creating market linkage (3) developing PPP (3) extension of best practices. Within this partnership over 87 kg of seed, 347 sachets of inoculant has been distributed. A total of farmers have directly benefited from the process. In relation to market linkage, two level of interventions have been done. On the one hand Bore Bako Union was brought into the partnership to organize bulking and collection from the smallholder farmers. Then the union was linked with two buyers in Addis Ababa, namely, Guts Agro Industry and Alemakodijts. Through this arrangement a total of 1000 MT of grain has been traded over the last three years. This market linkage has played invaluable role in stimulating further adoption of the soybean technology packages. The PPP development and implementation is another crucial activity under taken. The formal document drawn has guided partners and increased the commitment towards the shared objectives. The last activity pillar of soybean extension, has brought bureau of agriculture on board as led extension partners. The fact that both MfM and CHIA have been active in supporting the local extension through the bureau have greatly facilitated the higher attention from the extension system.

### Immediate Outcome

Three intermediate outcomes have been achieved in this PPP-increased coverage of soybean in the areas, reduced risk for farmers to grow soybean and functioning business relationship. Soybean coverage in N2Africa intervention weredas per household has increased from 0.1 ha/year in 2016 to 0.3ha/year in 2018. This could be attributed to a combination of market pull and product push factors. With market linkage intervention, farmers have overcome the market linkage risk that has been a barrier for long for soybean adoption. On the other hand the input package offered within the partnership has increased yield per ha from

1.6 to 2.2 MT per ha. This has served as push factor for farmers to grow more soybean. The PPP as a platform with established roles and responsibilities have paved the way for long term business relationship between Bore Bako Union and Guts Agro as well as with that of Menegasha Biotech on the other end. This business relationship is expected to continue in the long term.

## Intermediate Outcome Level

The major outcomes at this level were (1) improved access to remunerative market (2) adoption of soybean in household menu (3) inclusive business model. As stated above farmers have benefited from the market linkage in two ways. First risk of market failure has been reduced and secondly they got better price due to the direct linkage with high end market. On average, farmers selling to this channel got 10% higher price compared to others. In addition to securing better price, it was also observed that soybean produced using the packages within the PPP has more demand in the market even in the regular market. The adoption of soybean in the household menu, though not significant, is an important outcome at this level. Soybean is widely grown as a cash crop and there is little utilization at household level. However, with increased awareness through the intervention as well as being more and more conversant about the crop, farmers have started using it at home. The fact that soybean has high protein means, it can greatly improve the nutritional security of the household. .

## Ultimate Outcome

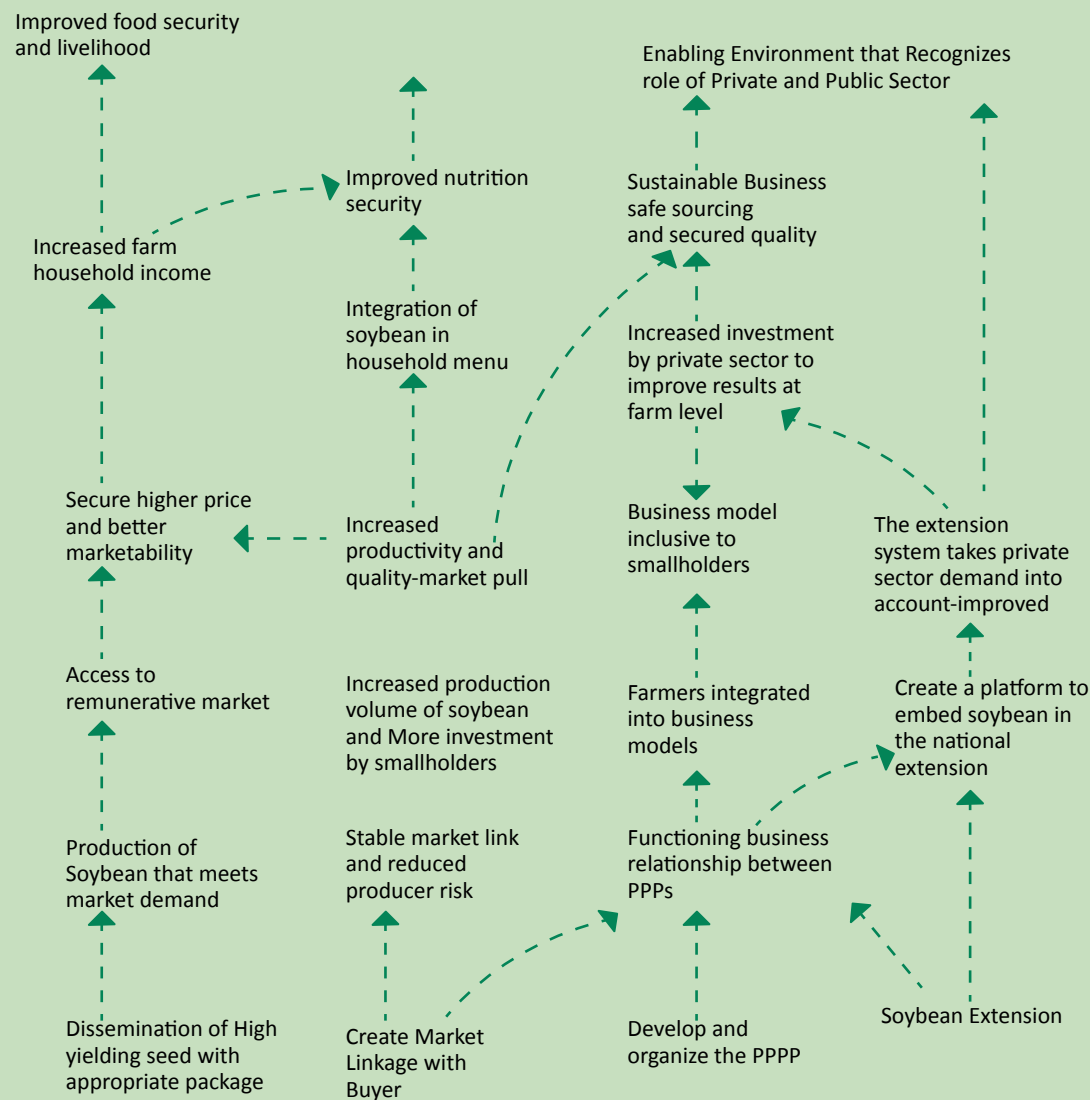
Increased household income, improved food and nutrition security and sound enabling environment that recognizes role of private sector are the key ultimate outcomes that have been achieved through this partnership. On average farmers have gained an increased income of ETB 250/ha from adopting the packages in this partnership. The income gain doesn't account for the extra income from increased yield and value from rotational crops. The high yielding package implies that farmers have got increased availability of food from producing additional crop per ha. Generally, chickpea is an important protein source for people in Ethiopia in general and around Gondar in particular. The fact that animal protein is expensive and the majority of the population is fasting for over 200 days in a year means that pulses are crucial protein sources. In this particular intervention, the packages promoted have even higher protein content compared to the normal ones.

**Ultimate Outcome**

**Intermediate Outcomes**

**Immediate Outcomes**

**Activities/ Output**



## Effect of China-US Trade war

For long the major bottleneck for soybean farmers in Ethiopia has been access to market. This was partly due to weak market linkage and partly due to the fact that Ethiopian soybean doesn't compete in the international market with soybean from the USA, Brazil and Argentina. Recently, one of the major soybean importing countries, China, has cut its soybean import from the USA and looking possibilities to bridge the demand gap by sourcing from Africa. As such Chinese importers have indicated to import upto 100,000MT per year from Ethiopia. This provides a sound boost for the current intervention. In addition, the crop has been included in ECX portfolios since Nov 2018. This has a two fold implication. On the one hand it gives farmer organizations (unions) the option to access buyers via ECX floor. On the other hand it might discourage domestic processors as the sourcing procedure via ECX gives little room for spot quality check and sometimes expensive.

## Household consumption

As stated above soybean has been produced principally for market. Household consumption of the crop is less than 5%. Limited soybean household consumption has three implications on the production side. On the one hand it increases the market risk for the smallholder farmers as they don't have alternative use when market fails. Secondly, soybean is highly valuable crop for household nutrition particularly in maize dominated farming system. As such not utilizing the crop for consumption is missing an opportunity to maximize impact. Thirdly, when consuming in house farmers often develop emotional attachment with the crop.

## Embedding soybean in national extension system

Despite the multiple significance of soybean, it is not embedded in the national extension system. N2Africa and its partners have initiated a discussion to reverse this trend. Including soybean in a national extension system could create a big leap forward; might increase national production by three to four fold. This will create big market opportunity for the technology package offered through this partnership.

## CONCLUSIONS

A total of 20,000 farmers have been reached through the two PPPs. This has resulted in 1360 MT and 8500 sachets of inoculant trading. In addition, over 9000 MT grain has been marketed through the arrangement. On average farmers have gained 34 additional marginal yield from engaging in this package.

Beyond the hard achievement, the PPPs have made four distinctive contributions. First the approach has created a formal platform to make a shared contribution by different partners. It is apparent that adoption of inclusive business models requires investment from different partners as way of risk sharing and context understanding. Secondly, the PPPs have generated sizable business opportunity for the smallholder farmers and laid the foundation for market pull to scale-up the legume technologies embedded. For instance, Tsehay union has been multiplying chickpea seed on 40 ha land using the complete N2Africa package that generates over 68MT seed for the last two years which is continuing irrespective of the project. Likewise, Bako Tibe union is currently purchasing over 250 sachets of inoculants and supplying over 200MT grain to buyers in Addis. Thirdly, the platform has served as crucial pillar to bring dialogue between private and public sectors to address issues at strategic and policy level. Lastly, the PPPs have brought additional investment from the private sector which is a stepping stone for future scale-up.





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