AGRA
Growing Africa's Agriculture

Independent Review of the African Seed Investment Fund (ASIF)

February 2018

steward redqueen

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EXECUTIVE SUMMARY

This report provides an independent performance review of the Africa Seed Investment Fund ("ASIF" or "the Fund"). Established in 2009, ASIF is an US $12m investment fund providing flexible and patient capital to locally owned SME seed businesses in East Africa. ASIF's sole capital provider is the Alliance for a Green Revolution in Africa ("AGRA") and the Fund is managed by Pearl Capital Partners ("Pearl" or "the Manager"), a specialised agricultural fund management company with offices in Uganda and Kenya.

The Fund was characterised by having a bold ambition, highly relevant and impactful investment focus and a tailored investment strategy. Given its pioneering characteristics, the experience gained by ASIF over the past eight years holds many valuable lessons for AGRA, for Pearl as well as the other stakeholders in the agricultural sector in Africa. Based on intensive research and consultations with relevant stakeholders, the following key conclusions can be drawn:

1. **ASIF addresses a key constraint to improved agricultural production in Africa**. The key factor in lagging agricultural productivity in Africa is the lack of access to higher-yielding seed for farmers. Locally owned and managed private sector seed companies can play a fundamental role in this process. However, Africa's commercial banks are wary to lend to seed companies due to high perceived risks, lack of collateral, and a mismatch with traditional risk models. ASIF was established to bridge this gap.

2. **ASIF had a pioneering strategy focused on social and development impact.** ASIF was established to offer flexible and patient capital to seed companies at better terms than commercial banks. This was a well thought-through and pioneering investment strategy. It was however also high risk due to the untested proposition and limited diversification. ASIF's formal financial targets were therefore conservative. The Fund's focus was on achieving impact, and can indeed be considered an innovative approach to contribute to various Sustainable Development Goals (SDGs), notably SDG 2 (end hunger).

3. **The Fund's targets are ill-defined and not sufficiently agreed upon between investor and Manager**. Despite the focus on social and development impact (which was emphasised by an innovative impact-based financial incentive for the Manager), ASIF lacked a clear Theory of Change, while output KPIs and impact targets were not formally agreed upon. In addition, the Fund lacked an impact measurement methodology that was mutually accepted. This created constraints in the cooperation between investor and Fund manager.

4. **Pearl was a logical choice as Manager but holds room for improvement in execution.** Taking into account Pearl's agricultural investment experience at the time, it can be considered a suited party and logical choice as a Manager. However, the relatively young team took on a precarious challenge by investing with a pioneering approach, in an unproven business case in partly unchartered geographic territory. In managing ASIF, Pearl holds room for improvement in several key operational aspects, notably due diligence, portfolio management and financial reporting.

5. **The governance model was conducive to conflicts of interest**. The Fund's governing bodies contained strong sectoral expertise, but the GP-LP relationship was informal and the governance structure was unorthodox (as AGRA held seats on the Investment Committee), creating an environment that provided room for conflicts of interest. In the past two years, improvements have been made in this field.

6. **Investment analysis and decision-making was executed at a high pace with subpar due diligence.** The investment pace was high: all investments were made in just three years, despite the six years' investment period. ASIF tried to invest in all targeted countries, which resulted in several questionable deals in Ethiopia, Rwanda and Mozambique. The quality of due diligence can be considered subpar, with the Manager (and the IC) failing to identify a number of red flags in appraisals.

7. **The expected financial return is below expectations**. The Fund is currently expected to deliver a gross IRR of -1.91% (0.89x money multiple) and net IRR of -8.32% (0.45x). This is below expectations, which

already were conservative. Only two companies can be considered success cases. At present, three businesses have severe challenges, for another three formal recoveries are in process, and five investment are written-off. Returns are likely to further deteriorate rather than improve over the remaining four years as a result of anticipated challenges in recovering funds at several investments.

8. **Management quality and external challenges are key drivers of company performances**. The main reason for the disappointing performance of most portfolio companies is the quality of company management and governance isses, which caused fundamental problems at several of the invested businesses. In addition, companies were plagued by external challenges, such as droughts, diseases, unstable government policies and payments as well as currency depreciations.

9. **ASIF's small scale results in high costs and lower fund returns**. The large gross to net return gap can be attributed to the relatively high management fees and operational costs. These in fact are in line with other impact-focused investment funds, but disproportionally high due to ASIF's small fund size and individual ticket size. Compared to grants, ASIF's investment model still arguably has a better double return, but there is untapped opportunity in cost-efficiency.

10. **Pearl was an active and valued investor in most cases**. Pearl had a value adding role in enhancing corporate governance practices, advising on business strategy and professionalising administrative systems. As a result, 80% of companies perceive this advice to have positively influenced their financial performance. Pearl however has had a less active role than anticipated in formulating 100-day Action Plans right after investment or in helping companies to raise other sources of finance, which could both have improved the sustainability of companies.

11. **ASIF's output indicators show positive results on aggregate level, but mixed results individually**. As targeted, ASIF's capital as well as its financing terms were perceived as additional by investees. On output level, aggregate growth of approximately 45%-95% was realised on nearly all indicators. However, in the absence of quantitative targets, it is not possible to appraise results and formally assess how ASIF lived up to expectations. When analysing results on an individual company level, it is striking to note that just half of invested businesses show improved development results, and the two Ugandan companies (FICA and NASECO) take care of the bulk of increases in outputs such as seed production, sales and outgrower engagement.

12. **Impacts have been realised but not in all geographic areas**. Whereas ASIF contributed positively to increased supply of more diverse and higher quality seed as well as smallholder incomes (thereby contributing to improved food security and increased household incomes), these effects are largely confined to Uganda, Kenya and Malawi. And whereas ASIF helped several seed companies to stabilise and grow (thereby strengthening the local seed sector), the objective of establishing a new group of stable local commercial seed companies is not yet met.

Due to its weak financial performance, ASIF does not present a compelling case for commercial investment in seed companies. This is a missed opportunity, as the indirect impacts deriving from this potential demonstration could have been more far-reaching than the actual direct impacts of ASIF. At the same time, ASIF did provide inspiration to several new interventions in the seed sector, notably the establishment of investment vehicles Injaro and AgDevCo as well as the inspiration of success cases NASECO and FICA. Moreover, learning lessons from successes and failures holds value, and there are a wide range of lessons that can be learned from ASIF.

All lessons and corresponding recommendation are provided in Chapter 9. The tables on the next page provide the key metrics for fund financials, company financials and company outputs.

FUND FINANCIALS	Country	Year	Investment (US $ m)	Cash Returned (US $ m)	Current valuation (US $ m)	Money Multiple	Current IRR (%)
Western Seed	Kenya	2010	2.07	0.38	1.4	0.86	-2.4%
FICA	Uganda	2010	2.11	0.77	2.2	1.40	5.3%
NASECO	Uganda	2010	0.80	1.08	0.0	1.35	11.1%
CAII	Uganda	2010	0.08	0.02	0.0	0.29	-99.6%
Seed-Tech	Malawi	2010	0.31	0.01	0.1	0.35	-14.3%
Dryland Seed	Kenya	2011	0.69	0.43	0.6	1.47	9.7%
Funwe	Malawi	2011	0.70	0.06	0.2	0.37	-15.2%
Highland Seed	Tanzania	2012	1.25	0.10	1.1	0.96	-0.6%
Mimea	Kenya	2012	0.30	-	0.4	1.40	5.8%
Dengo	Mozambique	2012	0.40	0.02	0.0	0.05	-81.5%
Alemayehu	Ethiopia	2012	1.00	-	0.0	0.00	-100%
FAIM	Rwanda	2012	0.49	-	0.0	0.00	-100%
Freshco	Kenya	2013	0.59	0.20	0.5	1.27	5.7%
TOTAL			**10.8**	**3.1**	**6.6**	**0.89**	**-1.9%**

COMPANY FINANCIALS	Turnover (US $ m)		Net profits (US $ m)		Assets (US $ m)		Capital raised (US $ m)
	YOI	2016	YOI	2016	YOI	2016	
Western Seed	2.09	4.14	0.14	-0.12	5.66	7.56	5.00
FICA	0.80	4.47	0.09	0.66	3.57	2.47	0.30
NASECO	2.03	3.83	0.07	0.25	1.15	1.72	0.06
CAII	0.34	-	0.03	-	0.17	-	-
Seed-Tech	0.32	0.17	0.02	0.01	0.25	0.07	0.13
Dryland Seed	0.42	0.45	0.00	-0.01	0.24	0.94	0.59
Funwe	0.36	0.88	-0.07	-0.53	1.00	1.54	0.48
Highland Seed	1.06	0.71	-0.12	0.08	1.00	1.15	-
Mimea	0.02	0.03	-0.07	-0.02	-0.04	-0.05	-
Dengo	1.66	NA	0.39	NA	0.73	NA	-
Alemayehu	-	-	-	-	-	-	-
FAIM	0.04	0.37	-0.52	-0.36	0.51	0.28	0.50
Freshco	0.94	0.51	-0.10	-0.15	1.53	1.14	0.10
TOTAL	**10.10**	**15.55**	**-0.13**	**-0.11**	**15.77**	**17.17**	**7.15**

COMPANY OUTPUTS	Seed (mt)/ plant production		Seed (mt)/ Plant sales		Outgrowers employed		New varieties
	YOI	2016	YOI	2016	YOI	2016	
Western Seed	1,082	1,422	1,082	1,422	5	140	5
FICA	1,764	4,139	1,464	4,852	140	770	5
NASECO	2,043	3,501	2,043	3,318	450	700	6
CAII	-	-	-	-	-	-	-
Seed-Tech	178	79	120	112	160	8	7
Dryland Seed	450	511	301	345	50	150	4
Funwe	153	1,218	155	980	15	20	3
Highland Seed	843	322	835	322	19	16	3
Mimea	42,500	62,660	56,255	62,660	10	0	8
Dengo	NA	NA	NA	NA	NA	NA	0
Alemayehu	-	-	-	-	-	-	0
FAIM	663,074	115,143	99,960	323,228	-	-	2
Freshco	1,196	170	711	367	180	203	4
TOTAL	**7,708 / 705,574**	**11,362 / 177,803**	**6,711 / 156,215**	**11,717 / 385,888**	**1,029**	**2,077**	**47**

INTRODUCTION

This report provides an independent assessment of the Africa Seed Investment Fund (ASIF). The evaluation is commissioned by ASIF's sole shareholder, the Alliance for a Green Revolution in Africa (AGRA). ASIF was established in 2009, and is expected to be fully liquidated in 2021 at the latest. It should therefore be noted that although at this point a clear picture of the performance and results can be drawn, some results may alter in the last remaining years.

Objective

The main purpose of the evaluation is to assess the social, developmental and financial returns achieved by ASIF, as a result of the Fund's investment in its portfolio companies. The evaluation results enable AGRA to objectively determine the achievements realised from the investment and draw lessons for future interventions.

Sources

The evaluation uses a mix of five main input sources:

1. *Documents*: includes e.g. the PPM, strategy, contracts, quarterly and annual reports, IC minutes;
2. *Data*: collection and analysis of performance data on company performance and impact data;
3. *Surveys*: input from 3 tailored online surveys for AGRA stakeholders, PCP and investees[1];
4. *Interviews*: in-depth conversations with (former) AGRA and PCP staff, Board members, IC members, senior management of companies, independent experts and peer funds;
5. *Field visits*: visits to four companies that received an investment (NASECO, FICA, Dryland Seed, and Western Seed).

These different sources enable the team to test assumptions and triangulate and verify findings. The evaluation draws upon the input of 27 different involved individuals. An overview of all interviewees and survey respondents is provided in Annex 1. All provided clear and frank insights from their own unique viewpoints. This report is the result of the collective effort of this core group of stakeholders.

Reporting structure

A tailor-made reporting structure was designed for this evaluation. It is influenced by the DAC Criteria, but structured in a way that guides the reader through the story of ASIF. In nine chapters, this report provides a focused assessment of:

1. *Rationale*: why was ASIF set-up and what problem did it aim to address?
2. *Strategy & targets*: what was the Fund's investment approach and were targets adequately set?
3. *Fund management & governance*: why was Pearl selected and was the governance appropriate?
4. *Investment selection*: to what extent did it invest in line with strategy and objectives?
5. *Financial performance*: to what extent did companies grow and/or become more stable?
6. *Development impact:* how did ASIF contribute to the growth of seed businesses sector?
7. *Advisory role:* to what extent did Pearl provide advice and assistance beyond the capital?
8. *Influencing factors:* which external challenges influenced performance?
9. *Lessons & recommendations:* what are lessons learned and what could change going forward?

[1] It should be noted that the company survey had a 77% response rate, with three companies not having provided their input. These three companies concern CAII, Alemayehu and FAIM, and all concern failed investments and/or hardly operational entities, where neither Pearl nor AGRA is in regular contact with anymore.

Process

The evaluation process consisted of four phases: a joint scoping, quantitative and qualitative data collection (including a field visit to AGRA, PCP and four companies), analysis and reporting. All activities were carried out between November 2017 and February 2018.

Terminology

In this report either "ASIF" or "the Fund" is used when describing the activities or results of the Africa Seed Investment Fund. When describing the activities of ASIF's fund manager Pearl Capital Partners "Pearl", "PCP", "the Manager", or "GP" is used. When describing the activities of the Alliance for a Green Revolution in Africa "AGRA", "Limited Partner", "LP" or "the sole shareholder" is used. When the term 'last year' is used, reference is made to the last calendar year for which data or financial results was available, which concerns full year 2016. This is the financial year ending at 30 June 2017 for most companies.

About Steward Redqueen

Steward Redqueen is a specialized consultancy that works across the globe advising organizations on impact and sustainability. Over the past decade, the evaluators executed around 50 evaluations of themed impact investment funds, fund-of-fund vehicles and whole investment portfolios of development finance institutions, including different agricultural investment funds and companies in East and Southern Africa. The evaluation was led and mainly executed by Matthijs de Bruijn, with support from Willem Vosmer and Anne van Drunen Littel.

1 RATIONALE

- *The main limiting factor in lagging agricultural productivity in Africa is the lack of access to higher-yielding seed for farmers*
- *Locally owned and managed private sector seed companies can play a fundamental role in this process*
- *However, Africa's commercial banks are wary to lend to seed businesses due to high perceived risks*
- *ASIF was therefore established to address the lack of financing for local commercial seed companies.*

1.1 Rationale: the need for local private producers of high-quality seed

The problem: lagging agricultural production in Africa

The populations of most African countries have more than quadrupled over the past five decades. This trend will continue: according to the United Nations the total African population in 2050 will have doubled from its current 1.2 to 2.4 billion people. As a result of this population growth, there is major pressure on African farmers to meet the nutritional needs of their families and demand from local markets. However, farmers have not been able to keep up with growing demand. This has led to high grain import levels, hunger and poverty.

The main limiting factor in agricultural productivity growth in Africa is the lack of access to higher-yielding seed for African farmers. Throughout history and around the world, the intensification of local farms national food supply systems has always been catalysed by the introduction and distribution of seed of improved, higher-yielding crop varieties. It therefore is a priority for African agriculture to ensure that farmers have access to locally developed seed that can enable them to be the efficient, productive suppliers of food that they have the potential to be.

The key to a better offering of high quality seed is the development or strengthening of locally owned and managed private sector seed companies. These companies were considered a fundamental addition to the existing presence of large international, regional and national government seed producers (e.g. Monsanto, Bayer, SeedCo, Pannar, Kenya Seed). Local private seed businesses are able to research, multiply and commercialise seed and tissue culture varieties that are more affordable than the offering by multinationals, and are perceived by many as more reliable and sustainable than public seed companies.

The answer: a targeted organisation (AGRA) and program (PASS)

Against this background, the Rockefeller Foundation and the Bill & Melinda Gates Foundation established the Alliance for a Green Revolution in Africa (AGRA) in 2006. AGRA was inspired by former United Nations Secretary-General Kofi Annan's call for a uniquely African "green revolution", and founded on the belief that investing in agriculture is the surest path to reducing poverty and hunger in Africa.

AGRA began its work in 2007 with the Program for Africa's Seed Systems (PASS), which addresses farmers' lack of access to high-quality seeds. The program focused on four main consequential themes: i) educating a new generation of African crop breeders; ii) breeding and releasing new crop varieties; iii) helping local seed entrepreneurs establish companies; and iv) building agrodealer networks. The diagram below depicts the structure of the PASS program.

The centrepiece of the PASS program was the third 'production' pillar. It consisted of a continual search process to identify interested groups and individuals to establish and manage local seed companies. To these start-up and early stage seed companies, the PASS program provided support packages consisting of a US $150,000 grant combined with training and access to AGRA's network partners (e.g. experienced seed executives, agrodealers). Over the past decade, 112 private seed companies received this support through the PASS program.

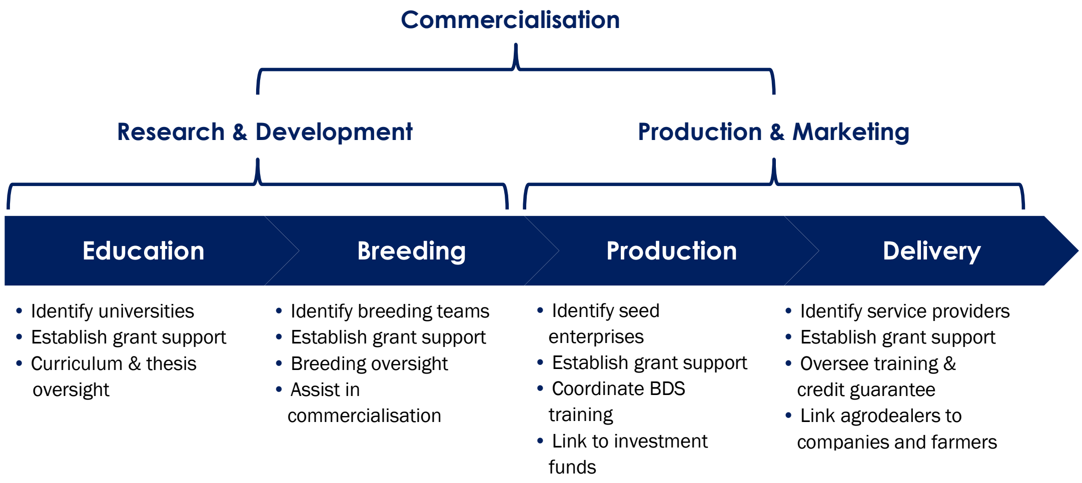


Exhibit 1 Structure of PASS initiative

The complication: lack of commercial financing

Although one-off grants are an important instrument for greenfield and early stage seed businesses to commence operations, the sustainable growth of these companies is dependent upon adequate access to finance. This posed a problem, as Africa's commercial banks are wary to lend to agricultural enterprises due to high perceived risks. Despite the high economic importance of the agricultural sector, as a key source of employment as well as strong contributor to GDP, the amount of credit extended to producers in the sector is low (see Table 1 below). When banks do lend, they charge high interest rates and require large amounts of collateral, which most young seed companies do not have. [2]

Table 1 The value of the agricultural sector

	Employment in Agriculture (%)	GDP contribution Agriculture (%)	Agriculture value added per worker (in USD)	Credit flow to Agriculture (% of total credit)[3]
Ethiopia	71%	37%	485	7%
Kenya	62%	36%	841	4%
Malawi	70%	28%	390	20%
Mozambique	75%	25%	331	4%
Rwanda	75%	32%	423	2%
Tanzania	67%	32%	559	8%
Uganda	73%	26%	469	10%

In addition, there are a number of specific operational characteristics and risks of seed businesses that do not fit the traditional risk model of commercial banks. These include, but are not limited to:

- *Long business cycles*: seed companies have longer business cycles than other enterprises, as it may take up to two years to convert breeder foundation seed into certified seed, to sell this product, and to finally record proceeds in accounts;
- *Cash flow needs*: seed companies require high levels of working capital due to cash flow needs that follow seasonal patterns, as they need to pay outgrowers at harvest time;

[2] International Finance Corporation, *Access to Finance for Smallholder Farmers* (2014) iii.

[3] The credit flow to agriculture shows the amount of loans provided by the private banking sector to producers in the agriculture, forestry and fisheries sector.

- *Sales and costs fluctuations*: as in most East African countries there is only one harvesting season (two in Uganda), there are high fluctuations in sales and costs made throughout the year for seed companies;
- *Climate conditions*: company performance is to a large extent dependent upon conditions that are outside of their control, as crop growth may be affected by droughts, diseases, pests or other extreme weather events;
- *Government role*: the seed sector is highly regulated, while governments in several East African countries have major influence through public seed companies and/or subsidy schemes.

The solution: a tailored investment fund

To research the opportunities for financing local seed businesses, the Rockefeller Foundation and the Bill & Melinda Gates Foundation commissioned several studies into the financing of African seed companies.[4] These studies identified a market of over 100,000 metric tonnes (MT) above what already was being served by the existing seed operations, and recommended the creation of a US $20 million investment fund focused on Eastern and Southern Africa.

These studies contributed to the establishment in 2004 of African Agricultural Capital ('AAC'), a Uganda-based investment company and predecessor of Pearl.[5] AAC was invested with a total of US $9 million committed by the Rockefeller Foundation and Gatsby Foundation as well as Belgian investment firm Volksvermogen. Between 2006 and 2010, AAC invested in 16 East African agriculture-related businesses across the value chain, including four seed companies in Kenya and Uganda. AAC's model proved an interesting proposition to AGRA, as a tailored investment fund structure dedicated to the seed sector could provide the hard-needed access to finance for early stage companies that had outgrown grant financing.

Spurred by exploratory talks with AGRA in 2009, Pearl decided to develop and establish such a focused investment vehicle: the African Seed Investment Fund (ASIF). The targeted fund size was US $20 million, and AGRA committed US $12 million capital as a first investor. This amount was considered the minimal viable investment size for a first close, and enabled Pearl to be able to start investing. Pearl hoped to attract other third-party investors for ASIF, and initiated talks with several development finance institutions (DFIs), including CDC Group, the African Development Bank and Norfund. However, these potential Limited Partners (LPs) refrained from committing to the Fund mainly due to the low financial return expectations as well as the fund's governance structure (more on both aspects below).

[4] Studies by Dr. Rob Tripp and Farid Mohammed, Cornell University, and Cambridge Economic Policy Associates (CEPA).

[5] When ASIF was set up, African Agricultural Capital (AAC) and its management team formed Pearl Capital Partners, a separate company incorporated in Mauritius. With this new structure and new name, Pearl was able to manage two funds: AAC and ASIF.

2 STRATEGY & TARGETS

- *ASIF's mandate is to provide flexible and patient capital at better terms than commercial banks*
- *This was a pioneering but high risk proposition*
- *Financial targets were conservative and the focus was on expected social and development impact*
- *ASIF lacked a Theory of Change, clear impact targets and a measurement methodology*

2.1 Strategy: a pioneering approach

ASIF set out with the aim to address the lack of risk capital available to small and medium-sized (SME) seed businesses that serve Africa's large agricultural community. The Fund's mandate was to provide capital to seed companies at better terms than commercial banks. With this mandate, ASIF was pioneering: although there already were some agriculture-focused investment funds (e.g. AAC itself and funds managed by Actis and Phatisa), ASIF was the first investment fund specifically dedicated to the seed sector in Africa. The key projected figures (and actual performance) for ASIF are provided in the table below.

Table 2 Key strategy aspects

	Expected	Actual
Fund size (in USD)	20m	12m
Total number of deals	22	13
Loan/equity ratio	67%/33%	72%/28%
Number of focus countries	8	7
Average investment size (in USD)	600K	817K

Target institutions: young and early stage local seed businesses

ASIF's mandate was to invest in 20-22 sustainable seed and seed-related businesses in eight countries (Kenya, Tanzania, Uganda, Rwanda, Ethiopia, Mozambique, Malawi and Zambia) throughout Eastern and Southern Africa. ASIF targeted promising early stage growth companies which require risk capital to scale up or introduce new seed varieties or production/marketing systems. The companies were still expected to be relatively small, i.e. have an annual turnover of less than US $5 million turnover and below 100 employees.

Ticket size: focused on the 'missing middle'

ASIF was able to invest between US $50,000 and US $1.8m in an individual company. A maximum of 10% of the fund's total capital was allowed to be invested in smaller deals sizes of between US $50,000 and US $200,000, while the remaining 90% was envisaged to be invested in larger deals.

This meant that ASIF targeted the so-called 'missing middle', a gap left by the financial sector in Eastern and Southern Africa. One the one end of the spectrum there are microfinance institutions, but these focus mostly on individual loans of less than US $1,000, backed by the group guarantee system. On the other end of the spectrum there are the relatively large-scale commercial banks and private equity investors, but these rarely consider individual deals below US $2 million. With its targeted ticket size, ASIF thus focused on this 'missing middle' of companies that are too large for microfinance and too small for commercial bank financing or private equity.

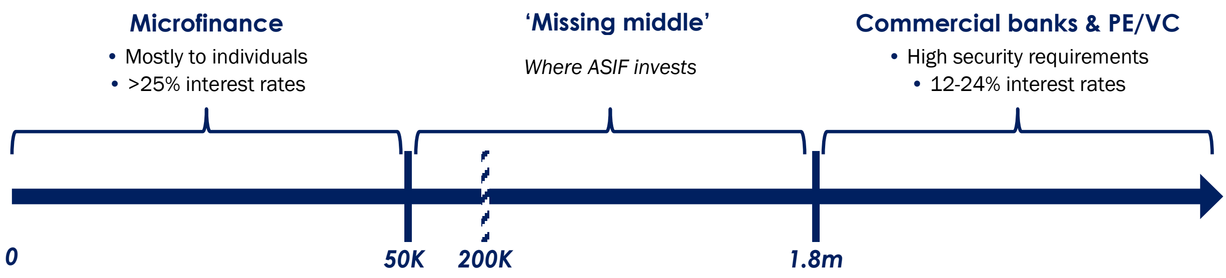


Exhibit 2 ASIF's focus on the 'missing middle'[6]

Financial offering: better than the banks

ASIF's main objective was providing access to affordable and flexible capital to companies that traditionally could not access financing from commercial lenders, either because of their start-up/early stage nature or sector associated risks. This reflects the critical importance of investing in the "missing middle", using investment instruments which do not overburden businesses with expensive short term debt finance. In practice, this meant that ASIF was able to offer:

- *Flexible instruments*: a financing package tailor-made to the needs of potential investees, as it was allowed to invest in the form of equity, quasi-equity, and debt (or a mix of those);
- *Below market rates*: ASIF made debt investments under concessionary terms, offering below market interest rates: ASIF targeted a minimum expected US dollar return of 15% for equity and 8% for debt.
- *Longer investment horizon*: the Fund's 10-12 years' life enables it to offer loans with a 5-7 years term;
- *Collateral*: the mandate to provide loans with limited or even no collateral;
- *Advise*: the Fund committed to being an active partner, negotiating Board seats and providing portfolio companies with access to AGRA's Technical Assistance opportunities, such as training and mentoring.

Table 3 ASIF proposition vs. commercial bank offering

	Commercial lenders	ASIF proposition
Instrument	Debt	Debt, (quasi)-equity or mix
Interest rate	12%-24%[7]	6-10%
Investment horizon	±3-4 years	±5-7 years
Collateral	Heavy requirements	Limited and negotiable
Advise	Limited to no advice	Board advice and access to TA

ASIF's approach to exits: a cautionary tale

As there were no cases of a successful exit from an investment in an African seed company yet, ASIF did have to be careful with exits as not to jeopardise returns. To facilitate exits, ASIF targeted deals mainly through medium-term debt and quasi-equity instruments (i.e. structured as loans but incorporating equity upside through kickers, conversion rights or warrants), while ensuring that investment structures are appropriate for the individual Investee needs. Only in the case of a credible exit strategy did it plan to consider the provision of ordinary equity to investees.

[6] Figures are in US Dollars.
[7] Varied strongly per country in ASIF investment geography.

2.2 Targets: focus on developmental rather than financial return

As a mission-driven investment fund, ASIF had a dual focus of achieving development impact and an acceptable financial return. The main quantitative targets set are provided in the table below.

Table 4 Key quantitative targets

	Expected	Actual
Gross IRR	10.0%	-1.9%[8]
Net IRR to investors	3.0%	-8.3%
Number of households impacted	1,00,000[9]	Unknown
Mobilised investment capital	US $ 10m	US $ 7.15m

Financial return: low target as an enabling and hampering factor

It was AGRA's aim to create a vehicle that could invest sustainably, which meant achieving acceptable returns while not compromising access to capital for the targeted institutions. ASIF's beneficial proposition to seed companies combined with its single-sector investment focus meant that the Fund took a high risk appetite; higher than commercial banks but also higher than most development-focused private equity funds operating in the region.

Based on Pearl's financial projections in the Private Placement Memo (PPM), ASIF was expected to yield a minimum blended gross Internal Rate of Return (IRR) of 10% from its investment portfolio[10], resulting in a net IRR of 3% to investors.[11] However, in interviews the main involved AGRA stakeholders indicated that their expectation was not to lose money over the fund, rather than making a profit. As a financial incentive for the Manager, Pearl was entitled to carried interest of 10% of total positive cash returns (in US$)[12], which essentially meant there was a hurdle rate of 0%.

The high risk appetite and corresponding low financial return expectations had their pros and cons. The main advantage obviously was that it enabled the Fund to provide the flexible type of financing AGRA thought would be best fit for early stage seed companies. On the other hand, there were apparent disadvantages, of which two can be considered missed opportunities. First, the low return target diluted the potentially impactful demonstration effect of showing that investing in local African seed companies could yield an acceptable return to commercial investors. And second, it deterred any third-party investors from investing in the Fund, as the financial return expectations were too low, even for the IFIs and DFIs investing in the region.

Development impact: fundamental but not adequately determined for the Fund

More important than the financial return was ASIF's expected social and developmental impact. To embed this as a primary focus for the Manager, AGRA and Pearl agreed on an annual incentive fee based on the social and developmental returns achieved.[13] However, the development impacts objectives were formulated in fairly generic terms, while a methodology for calculating the annual fee (including systematic impact measurement and reporting requirements) was never worked out.

ASIF's original investment memorandum mentioned three main objectives:

[8] The gross and net IRR figures are envisaged IRRs as per the end of the Fund's life, based on the Manager's financial projections. It should be the noted that, taking into account the performance of the Fund so far, an optimistic scenario. See chapter 5 for an extensive analysis.
[9] AAC, *African Seed Investment Fund Private Placement Memorandum* p. 6 and p. 24.
[10] Idem p. 24.
[11] Idem p. 10.
[12] Clause 7.1 of the *Shareholder's Agreement* p. 25
[13] An annual incentive fee calculated at fifty basis points (0.5%) of invested capital per year included in clause 7.2 of the *Shareholder's Agreement* p. 26.

1. make a substantial, measurable and sustainable impact on the lives of at least one million (1,000,000) households over the life of the Fund;
2. encourage the growth of the agricultural business sector;
3. mobilize additional investment capital of at least an additional US $10 million into the East and Southern-African seed sector through partnerships with other investors.[14]

The original fund documents did not mention a logical framework or Theory of Change for the intervention to reach these targets. Neither the impact objectives nor any output or outcome targets were included in the Shareholders' Agreement between AGRA and Pearl. In the original investment memo for ASIF (and more recently in its proposal for ASIF's extension)[15] Pearl did indicate it would measure its social and developmental impact at an individual investment level by tracking the following metrics:

- the number of smallholders purchasing seed products from the enterprise/investee;
- the number of farmers supplying seed to the enterprise for processing and distribution;
- the indicative increase in household incomes and welfare arising from the above; and
- the impact of the investment on the long term sustainability of the agricultural system.

Whereas the first two are outputs that can be quantifiably tracked, the latter two are outcome or impacts for which a theoretical pathway, measurement approach (including substantiated assumptions) and systematic measurement should be developed.

Lack of methodology: no AC established and no social audits

The methodology for effectively tracking and valuing social and development achievements was planned to be determined by the Advisory Committee (AC). The AC was supposed to be formed by representatives of Class A Shareholders, which in practice concerned only AGRA. However, the AC was never formally established. This was mainly because both parties saw no direct need, given the fact that AGRA was already present on the Investment Committee (IC), while there generally also were close, informal ties. As a result, the methodology was never developed.

It was initially envisaged that a social impact audit would be conducted by an external consultant biennially to measure progress towards macro level poverty alleviation and sector growth,[16] but this also never happened. In Pearl's proposal for the restructuring and additional capital for ASIF, it suggests the appointment of an independent M&E consultant to review the performance of the Fund.[17]

Pearl's own approach: different from initial targets

In the absence of a mutually acknowledged methodology, Pearl adopted a new impact thesis over the life of the Fund, namely to: "*improve private sector seed commercialisation, production and distribution across the fund's target geographic areas, thereby increasing smallholder access to improved seed varieties*". In line with this thesis, it started tracking the following three main achievements:

1. *Adoption and commercialisation*: the increased adoption and commercialisation of new, higher yielding varieties (OPV, hybrids and legumes) – measured by the number of new varieties introduced;
2. *Food security*: the access to improved seed – measured by (i) growth of seed accessed by smallholders; (ii) translation of increased volume of seed to grain produced; and (iii) household access to food;
3. *Strengthening and de-risking businesses in the seed sector*: making investments that otherwise would not have been made by existing and conventional financing tools – measured by (i) the risk profile of

[14] This target was part of the financial objectives, but should be seen as part of the development objectives.
[15] *ASIF Restructuring and Additional Capital Proposal* p. 3.
[16] *African Seed Investment Fund Private Placement Memorandum* p. 35.
[17] *ASIF Restructuring and Additional Capital Proposal* p. 33.

companies; (ii) follow-on capital catalysed; (iii) revenue generated; (iv) direct employment and outgrower engagement; and (v) strengthened institutional capacity.

Consequence: stalemate situation

The absence of a formal methodology, and a lack of formal discussion and acceptance of Pearl's new thesis has led to a complicated stalemate situation. Since 2015, Pearl started reporting on achievements along these lines to AGRA, requesting AGRA to pay the annual performance fee. AGRA has so far refrained from any payment, as it never formally accepted Pearl's impact thesis and metrics, and also because these new impact metrics were not accompanied by any formal targets.

In Chapter 6 the Fund's development impact achievements are provided and analysed in-depth, guided by a Theory of Change designed by the evaluator that combines the original objectives with Pearl's approach.

3 FUND MANAGEMENT & GOVERNANCE

- *Pearl Capital Partners was a suited and logical choice as Fund manager*
- *The relatively young team took on a precarious challenge by investing with a pioneering approach, in an unproven business case in partly unchartered geographic territory*
- *The Fund's governing bodies contain strong technical and sectoral expertise*
- *The governance structure provided room for (potential) conflicts of interest*

3.1 Manager: local team with dedicated focus on agricultural SMEs

The choice to develop ASIF with Pearl Capital Partners was a logical one. There were close ties between AGRA and Pearl: AGRA's Joe DeVries had advised in the establishment of AAC, while AGRA and AAC were formed almost at the same time. Since 2006, Pearl had gained important experience managing AAC, including investments in seed companies. The only other major investment firms with agricultural investment experience at that time were pan-African CDC-spin out Actis, and South Africa-based Phatisa. Both Actis and Phatisa however focused on investments with larger ticket sizes.

Pearl was willing to establish an investment fund that was tailored to AGRA's needs: investing for the sole purpose of establishing commercially viable private seed businesses. This was a quite unusual situation, as it essentially meant that an investor came up with the investment thesis. It also was a dicey venture for Pearl, as it knew that investing in one single type of business presents high risks, and makes it challenging to generate a good financial performance. Moreover, the targeted investment geography meant that Pearl had to start investing in a number of countries where it did not yet have any experience.

The team

AAC was established in 2004 by Tom Adlam, who had been the Chief Financial Officer of CDC's African agro-industries investment portfolio. Tom was joined by Edward Insingoma in 2006 and Wanjohi Ndagu in 2007 (Pearl's current managing partners), Patrick Oketa in 2008, and Christine Karingithi in 2009. Before joining AAC, Edward had been Chief Accountant of a Ugandan soap company for five years. Wanjohi had two years' experience at JP Morgan Chase in the US, while Patrick had gained experience at the East African Development Bank, Actis (part of the Actis Agribusiness Fund team), and GroFin. Christine had four years' experience at CARE Enterprises. Although it means that only Tom and Patrick had experience with agricultural investment before joining the team, it did gain experience by managing AAC. At the time of ASIF's inception the five core team members involved with ASIF had a combined 27 years' experience with private equity investing, and a combined 22 years' experience investing in agricultural businesses.

Table 5 Key Pearl team members involved with ASIF[18]

Name	Position	Years	Working Experience	Private equity experience	Location
Tom Adlam	Managing Director	2010-2015	15	10	Kampala
Patrick Oketa	CIO	2010-2012	9	9	Kampala
Edward Insingoma	Managing Partner	2010-2017	8	4	Kampala
Wanjohi Ndagu	Managing Partner	2010-2017	6	3	Nairobi
Christine Karingithi	Investment Manager	2009-2013	5	1	Kampala
David Wangolo	Investment Manager	2012-2017	6	0	Nairobi
Anne Ngugi	Investment Manager	2013-2017	8	5	Nairobi
Diana Njuguna	Investment Analyst	2015-2017	0	0	Kampala

[18] There have been other Pearl staff involved with AGRA but these seven staff members were most involved.

Over the life of ASIF the Pearl team went through several changes. Patrick Oketa left in 2012 for the Ugandan Development Bank, Christine fell ill in 2013 (and sadly passed away), while Tom Adlam left Pearl in 2015 to join AgDevCo. These three Pearl team member had been responsible for most of the due diligence and investment recommendations for ASIF. With their departure, a lot of knowledge and investment experience left the firm. Nevertheless, the departure of Patrick, Christine and Tom did not trigger a Key-man event and the corresponding provisions (i.e. suspension of investments), as at the time of their departure more than 75% of commitments had been drawn down.

The gap left by Patrick and Tom was filled with three new staff members focusing on ASIF. David Wangolo joined in 2012, Anne Ngugi in 2013 and Diana Njuguna in 2015. David had four years' experience as an analyst at First Renaissance Securities, Anne joined Pearl after four years at private equity firm AfricInvest, while Diana joined Pearl as an intern after university. This means that the current core team of five Pearl team members that are primarily involved with ASIF as per 2017 have a combined 37 years' experience with private equity investing, and a combined 32 years' experience investing in agricultural businesses.

Other funds

Over the life of ASIF, Pearl established and raised funds for two additional investment vehicles. In September 2011, Pearl established the African Agricultural Capital Fund (AACF), a US$ 25 million closed-end fund which essentially was AAC's successor. It was invested by Gatsby, Rockefeller, the Bill & Melinda Gates Foundations and JP Morgan Social Finance (backed by a 50% guarantee from USAID). In January 2017 Pearl was appointed Manager of Yield Uganda Investment Fund, a EUR 25 million closed-end fund domiciled in Uganda and focusing on Uganda agribusiness. It is currently in the fundraising process, and received EUR 12m investments from the European Union (EU) Delegation to Uganda, the International Fund for Agricultural Development (IFAD), and the National Social Security Fund (NSSF) Uganda.

3.2 Governance: strong synergies but conducive to conflicts of interest

ASIF was set up along the lines of a traditional private equity fund governance model. ASIF had a Manager (Pearl) that was supervised by a Board, and an Investment Committee (IC). See the exhibit below for a schematic overview of the structure around ASIF.

No conventional fund

At the same time, ASIF was no conventional private equity fund. In practice, it essentially functioned as the investment arm of AGRA. Ties between the Manager and investor were close and informal, as AGRA had advised in the establishment of AAC, had initiated and supported establishment of ASIF, and was the Fund's only Limited Partner. In addition, most of the pipeline for ASIF was delivered by AGRA, as it already had provided grants and/or other forms of technical assistance to a large number of potential investments as part of the PASS programme.

Synergies between AGRA and Pearl

Both parties were complimentary to each other, as Pearl brought in the investment expertise that AGRA lacked, while AGRA brought in the technical and regulatory knowledge on seed operations, network in the sector and active pipeline of potential investee companies that Pearl lacked.

Given these factors, it was considered logical that AGRA would take a major role in the Fund's governing bodies. AGRA also was legally entitled to it, as the Shareholders' Agreement provided AGRA the right to appoint and remove one director in the Board and nominate two members of the IC.[19] Consequently, AGRA's COO, Kwame Akuffo-Akoto, took a seat on the Board as well as the IC, while AGRA's Vice President for Program Development, Joe DeVries, and Regional Head, Dr. George Bigirwa, joined the IC as observers.

[19] *African Seed Investment Fund Private Placement Memorandum* p. 37-38 and *Shareholder's Agreement* clause 5.5.2.2. on p. 21-22.

This meant that the IC contained strong technical knowledge and expertise in the seed sector, and AGRA was directly involved in investment decision-making.

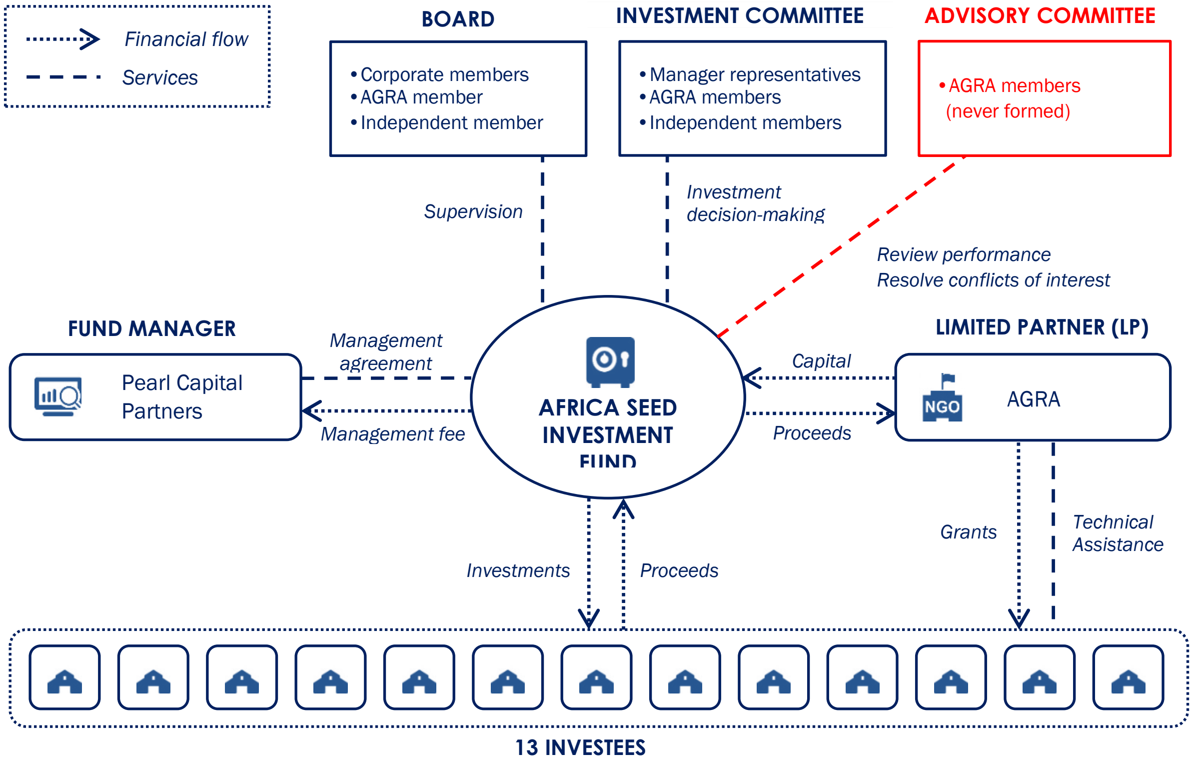


Exhibit 3 ASIF structure[20]

(Potential) conflicts of interest

However, having LPs on the IC is not in line with international best practices as it hampers the independent role a fund manager should play. As a result, it may also present (potential) conflicts of interest. This was the case for ASIF. Although AGRA and Pearl had a common objective, in practice both parties' interests were not 100% aligned. AGRA tended to look at prospective investment opportunities from the non-profit perspective and the fit with the PASS programme, whereas Pearl was expected to focus on the company's business performance and financial viability.[21] This was conducive to (potential) conflicts of interest:

- *Investment analysis*: IC members are expected to challenge the potential investment proposals, notably on 'hard' business elements such as the company's past performance, management quality, organisational structure and the viability of financial projections. The AGRA representatives on the IC were highly skilled and experienced agricultural specialists, but did not have extensive business analysis or hands-on investment experience. Moreover, the AGRA representatives in some cases held personal relationships with (potential) company management members. While this is understandable, given AGRA's pivotal role in the African seed sector, it may also hamper the Manager and the IC at times to adequately, independently, and objectively assess the management quality and integrity. It can therefore be questioned whether investment proposals could consistently receive the required scrutiny in the IC;
- *Investment decision-making*: although views differ, some (former) individual IC members hold the view that the Manager felt some form of pressure to execute a number of investments in a short timeframe

[20] Designed by the evaluator.
[21] In addition to AGRA and Pearl representatives, the IC was further complemented by only one independent member, Aline O'Connor, a former CEO of a US seed company. She however had no formal assigned role in addressing (potential) conflicts of interest.

that were perceived as high risk and located in countries where it held no previous investment experience;

- *Portfolio management*: as most investees already had a grant-based relationship with AGRA, some informally reached out to AGRA to intervene in order to soften repayment schemes in case of non-compliance with financial obligations.

Furthermore, AGRA's presence on the IC contributed to the fact that the Advisory Committee was never formed. The governance structure also was one of the core reasons discouraging potential third-party LPs that were approached (e.g. CDC Group, AfDB, Norfund) from committing capital to ASIF.

Over the years, the composition of the IC changed and included more independent members. In 2012 Edward Mabaya, an agricultural scientist from Cornell University, was added as an independent member. In 2016 the IC went through a revamp, as the Committee was joined by Shiru Mwangi, a non-executive bank director, and Farid Mohamed, an investment banker. In addition, Mulemia Maina, consultant at AgriExperience, took over the seat of long-serving IC member and her colleague Aline O'Connor. This has resulted in an IC composition that is more independent, balanced, and more experienced with investing.

4 INVESTMENT SELECTION

- *A total of US$ 10.8m (90% of committed capital) was invested in 13 companies*
- *ASIF invested in line with strategy, albeit in fewer companies and also in tissue culture companies*
- *The investment pace was (too) high*
- *The Fund forcibly tried to invest in all targeted countries, which resulted in several questionable deals*
- *The quality of due diligence was subpar, with the Manager (and the IC) failing to identify or address a number of red flags in company appraisals*

4.1 Sourcing: based on AAC and AGRA's pipeline

ASIF's deal sourcing was primarily based on the Manager's proprietary deal flow and existing African Agricultural Capital (AAC) investments as well as AGRA's pipeline. At the time of ASIF's establishment, AAC held investments in four seed companies: Western Seed in Kenya, NASECO and Victoria Seeds in Uganda, and FICA in Tanzania. Although the companies showed variable performances since AAC's investment, there was a case for follow-on investment through ASIF for Western Seed and NASECO. In addition to these three Pearl had identified five additional companies, of which one (Seed-Tech) ended up in portfolio.

The other major source of potential investment came from AGRA. As part of the PASS programme, AGRA had provided grants and other forms of technical assistance to 59 private seed companies in the eight countries that comprised the target investment geography.[22] These companies however largely concerned businesses that were mostly either start-ups or early stage companies, with a very limited operational track record. During the first two years Pearl also identified an opportunity in companies focusing on tissue culture for fruits and vegetables. As tissue culture propagation is comparable to seed variety development, AGRA supported the idea of including tissue culture business within the investment scope of ASIF.

4.2 Investments: characteristics of the portfolio

Since 2010, ASIF has made investments in 13 seed and tissue culture businesses across seven countries in eastern and southern Africa: Ethiopia, Kenya, Malawi, Mozambique, Rwanda, Tanzania and Uganda (see table below). ASIF invested a total of US $10.8m, representing exactly 90% of fund commitments.

Table 6 Overview of investments

	Country	Business type	Phase	Year	Investment (USD m)	Shareholding (%)
Western Seed	Kenya	Seed	Growth	2010	2.07	NA
FICA	Uganda	Seed	Turnaround	2010	2.11	34.5%
NASECO	Uganda	Seed	Growth	2010	0.80	20.0%
CAII	Uganda	Seed	Start-up/early	2010	0.08	18.0%
Seed-Tech	Malawi	Seed	Start-up/early	2010	0.31	16.7%
Dryland Seed	Kenya	Seed	Start-up/early	2011	0.69	NA
Funwe	Malawi	Seed	Start-up/early	2011	0.70	NA
Highland Seed	Tanzania	Seed	Growth	2012	1.25	NA
Mimea	Kenya	Tissue	Start-up/early	2012	0.30	NA
Dengo	Mozambique	Seed	Start-up/early	2012	0.40	NA
Alemayehu	Ethiopia	Seed	Start-up/early	2012	1.00	48.4%
FAIM	Rwanda	Tissue	Start-up/early	2012	0.49	NA
Freshco	Kenya	Seed	Growth	2013	0.59	NA
					10.8	

[22] This concerned 7 businesses in Ethiopia, 6 in Kenya, 6 in Malawi, 8 in Mozambique, 5 in Rwanda, 15 in Tanzania, 9 in Uganda and 3 in Zambia.

Main deal characteristics

ASIF's main deal characteristics are generally in line with ASIF's strategy. The Fund invested a slightly higher amount (on average US $817,000 vs. US $600,000 planned) in fewer companies than originally anticipated (13 vs. 22 initially planned). This was mainly because it was difficult to find feasible investment opportunities in the 50K to 200K ticket size space – the only company in the bracket was CAII.

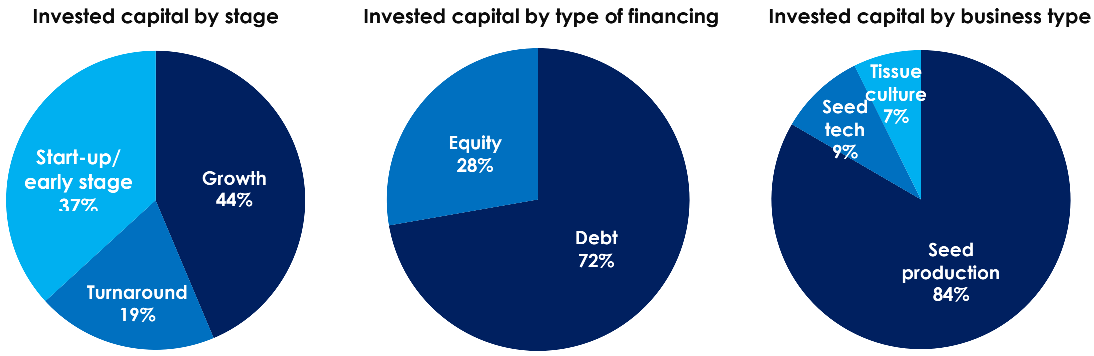


Exhibit 4 Allocation of invested capital

The charts above provide an overview of the capital allocation, and the graph below a chronological overview of the investment period. An average of US $ 1.1m of growth capital was invested in four more established companies (i.e. that had a turnover of more than US $500,000 at the time of investment), and an average of US$ 500,000 in eight companies that were either start-ups or early stage businesses. One investment concerns turnaround case, where ASIF offered Ugandan company FICA a tailored package of US $ 2.1m in debt and equity to relieve the company from a commercial bank loan that was dragging the company down (see next chapter for more). A total of US $10m (93%) was invested in seed business, and a small portion of US $ 800,000 was allocated to two tissue culture companies.

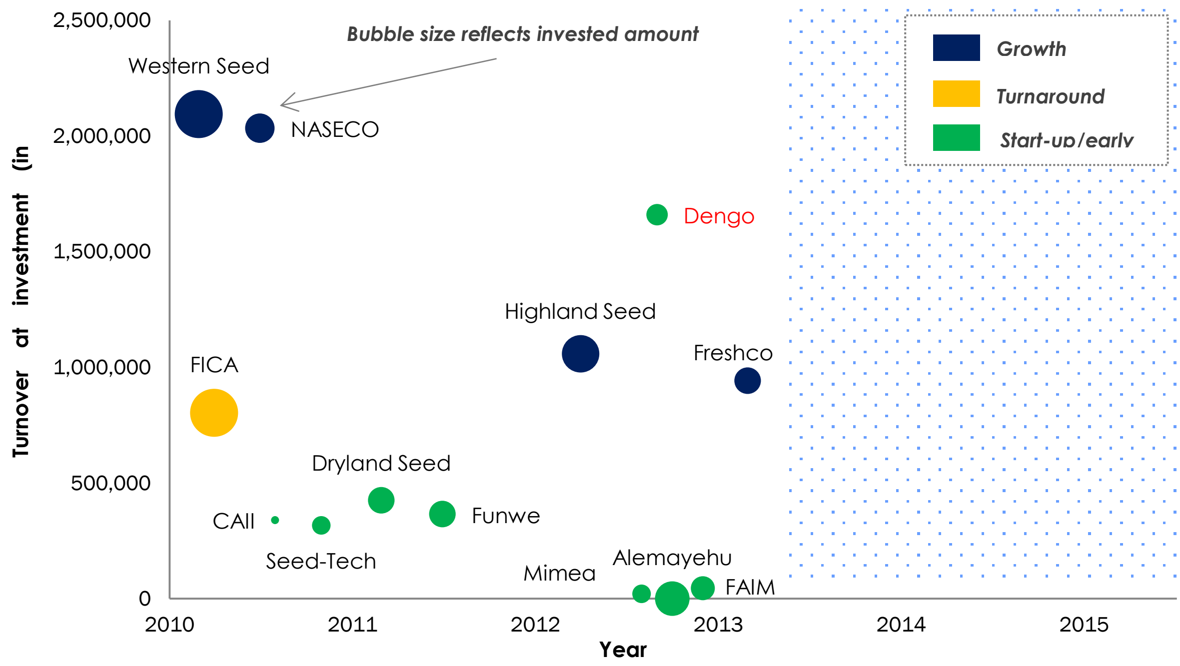


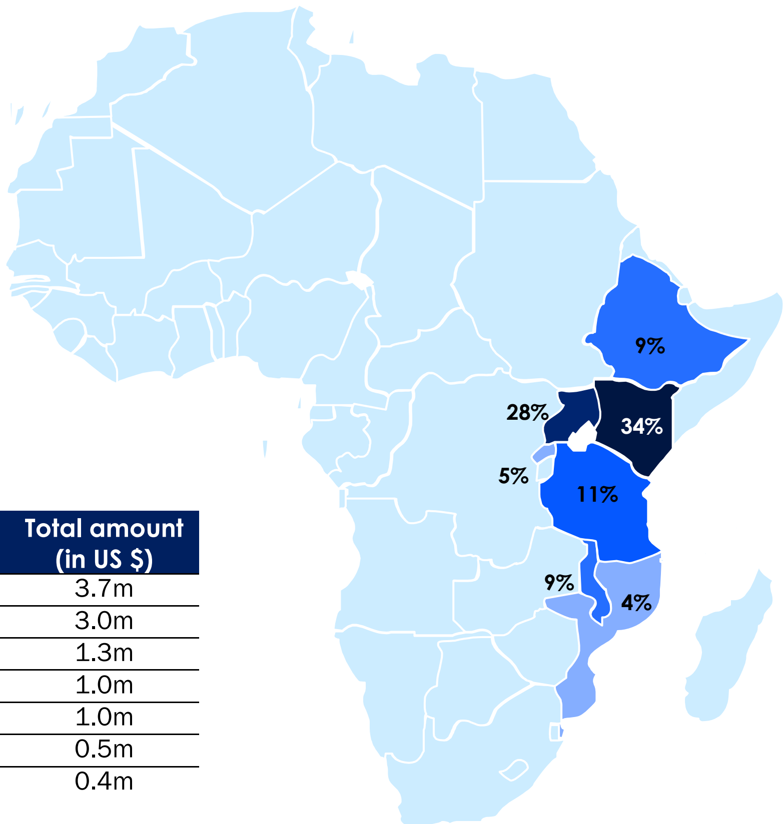
Exhibit 5 Size of companies at in investment (turnover as proxy)[23]

[23] The turnover for Dengo was reported as US $ 1.7m , but this concerned all Dengo operations and was never verified.

Looking at the investment period, it is striking to note the pace. Whereas Pearl had a timeframe of six years to invest the capital, it executed all 13 deals in just three years. This is partly due to the fact that the Fund invested a total of US $ 5m (46% of invested capital) in just four months in three companies where Pearl already had invested through AAC: Western Seed, NASECO and FICA. However, given the high risk profile of most of the companies as well as the geographies, a more cautious (and hence slower) investment pace would have been more appropriate – allowing for more intensive due diligence.

Instruments

As anticipated, the vast majority of capital (72%) was invested through tailored loans, with interest rates varying between 6% and 14%.[24] The remaining 28% was invested in equity deals, either through straight equity or preferred shares. The biggest equity investment was in FICA (US $1.5m for 34.5% shareholding), the other equity deals concerned minority stakes (15-20%) in NASECO and very early stage companies CAII and Seed-Tech. In addition, ASIF went into a joint venture (US $1m for a 48.5% stake) with an Ethiopian entrepreneur to start up a seed farm in southern Ethiopia. About half of the capital was provided in local currency, and the other half in US Dollars (sometimes mixed in the case of combined instruments).



Countries	# of investments	Total amount (in US $)
Kenya	4	3.7m
Uganda	3	3.0m
Tanzania	1	1.3m
Malawi	2	1.0m
Ethiopia	1	1.0m
Rwanda	1	0.5m
Mozambique	1	0.4m

Exhibit 6 Investments and geographical capital allocation

Geographic spread

ASIF made investments in 7 out of the 8 targeted countries. Only in Zambia did the Fund not find a suitable business to invest in. Almost three quarters of capital (74%) was invested in Uganda, Kenya and Tanzania – the three countries where Pearl already had investment experience through AAC. Spurred by AGRA as well as for reasons of geographic risk diversification, Pearl actively looked for investment opportunities in the other four countries. Apart from Malawi, this proved to be challenging, as Pearl did not have a good

[24] An exception was Western Seed, which received a loan against 0% fixed interest, but with a profit-based interest rate.

network in these countries – nor deep knowledge of the financial and agricultural regulatory environment. In the end, ASIF did find deals in Mozambique, Ethiopia and Rwanda, but these carried high risk and indeed all turned sour and had to written off (see next chapter). The physical travel distance from Pearl's offices to some companies – particularly Alemayehu in Ethiopia, Dengo in Mozambique, and Seed-Tech in Malawi – was significant, and hampered the active management of these investments.

4.3 Due diligence: room for improvement

The quality of due diligence by Pearl for ASIF holds room for improvement.[25] Although it should be recognised that the availability of market data in the sector is virtually non-existent and the quality of financial administration of most targeted companies is low, an in-depth review of the individual investment papers shows (too) limited information and analysis on several crucial aspects. Examples are:

- *Historical performance*: in several cases the financial figures included in investment memos only show the previous two years, while it often is unclear whether the figures are audited. In the case of Dengo there were no reliable financial accounts available at all. Analysis of performance often does not include an analysis of the client base (e.g. retail vs. government vs. NGOs);
- *Financial projections:* most financial projections can be considered highly ambitious[26] based on historic performance of seed companies in general and the individual performances of the companies itself, while the reasoning behind the projections is very limited or missing;
- *Management quality of the sponsor(s)*: whereas investment memos do contain a brief CV of the main sponsor(s), they lack a deeper appraisal of qualities and requirements mentioned in the Fund's investment criteria, as well as an analysis of the cooperation between key management team members;
- *Organisational gaps*: the investment analysis provides limited focus on the organisational structure, gaps in fundamental positions or workforce turnover;
- *E&S risk*: the only mention of E&S risks is that there were no environmental risks in all companies, despite the present risks in seed processing operations, mainly around working conditions and land acquisition, but also in the field of health & safety (e.g. noise protection, protective equipment);
- *Potential red flags*: in some specific cases, fundamental (potential) red flags were either not identified or ignored. An example is the case of Alemayehu, where there due diligence lacked analysis of the main asset to be acquired (the land), which turned out to be alkaline, prone to flooding and claimed by semi-nomadic farmers.

Where risks are identified, the investment memos provide limited to no mitigation measures. There were no formal Action Plans and/or 100-day plans drafted and agreed between the Manager and companies to address risks or shortcomings. The quality of due diligence, the high pace of investments and the insufficiently challenging role played by the IC can be considered one of the root causes for the disappointing financial performance of ASIF, and hence the untapped potential in terms of development impact.

[25] The analysis in this section and this qualitative judgment is based on the investment memos and IC notes. Findings were verified in interviews with relevant involved stakeholders. As the evaluator has not been present in all IC meetings, the sources for analysis cannot be considered exhaustive. The analysis and qualitative judgment in this section concerns the due diligence between 2009-2013, and does not reflect the current quality of due diligence by Pearl.

[26] Even after the conservative corrections of figures provided by Pearl.

5 FINANCIAL PERFORMANCE

- *With a current gross IRR of -1.91% (0.89x money multiple) and net IRR of -8.32% (0.45x), ASIF's financial performance is below expectations*
- *Returns will likely further deteriorate, given expected challenges recovering funds at some companies*
- *The main reason for the good or disappointing of portfolio companies is the quality of management*
- *Companies were affected by external challenges (e.g. droughts, diseases, currency depreciations)*
- *There is a strong correlation between size at investment and the performance*
- *The large gross to net gap is due to the small fund size and individual ticket sizes*
- *Compared to grants ASIF's investment model has a better double return, but there is considerate untapped opportunity in the case of ASIF*

5.1 Fund level: below expectations due to poor financial discipline and costs

It was clear from the outset that meeting the ASIF's financial targets was going to be a challenge. As mentioned in chapter 2, the proposition was pioneering and high risk, due to the single sector focus, below market rates offering, and young age of several companies. Moreover, whereas the aggregate returns in private equity investment portfolios are usually pulled up by one or two 'homeruns', this is hardly possible in the seed sector, which is characterised by gradual rather than exponential growth. However, even when taking into account these factors, the Fund's financial performance should be considered disappointing.

The chart below shows a basic overview of the main outflows (investments, management fees, and other fund administration/deal costs) and the inflows (returns from investments). It shows three important aspects. The first is that in the current most positive scenario ASIF will lose US $1.2m on the investments itself, resulting in a gross internal rate of return (IRR) of -1.91%. The second is that, due to the small size of the fund, the management fees and other costs are disproportionally high. Up to 2017, ASIF incurred a total of US $4m in costs, with another US $1.3m earmarked costs for the remaining four years. This results in a current net IRR of -8.32%. The third is that realised returns from investees are seriously lagging due to the financial performance of invested businesses.

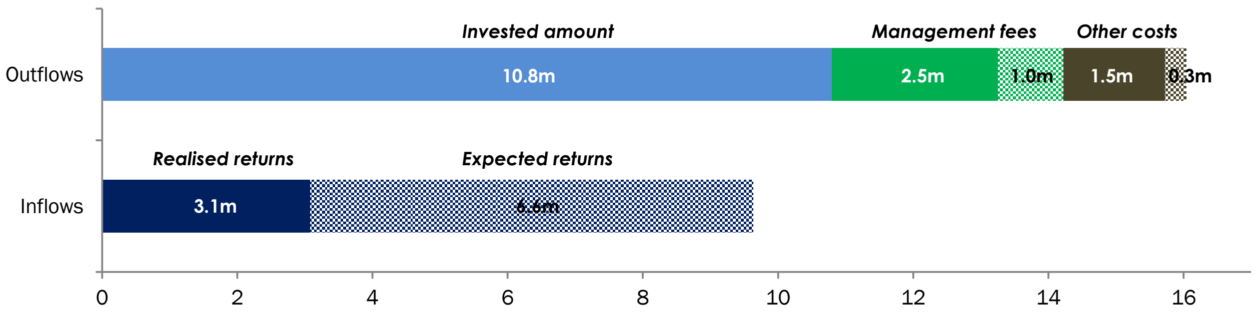


Exhibit 7 Invested amount, realised amount and valuation per investee

Returns at individual investee level

The chart below shows the invested amounts, returned amounts (as per 30 June 2017) and expected returns in the remaining four years for all 13 individual invested businesses. As the chart shows, the financial discipline of invested business has been poor. Strikingly, only one company (NASECO) has met its original financial obligations. As will be further analysed on a case-by-case basis below, the expected future returns can be considered optimistic, with returns dependent upon a successful company sale (Highland), court case (Freshco), takeover (Seed-Tech), or sale of main asset (Mimea). This means that of the currently projected further US $6.6m in returns, at least US $ 2.2m of expected returns are insecure.

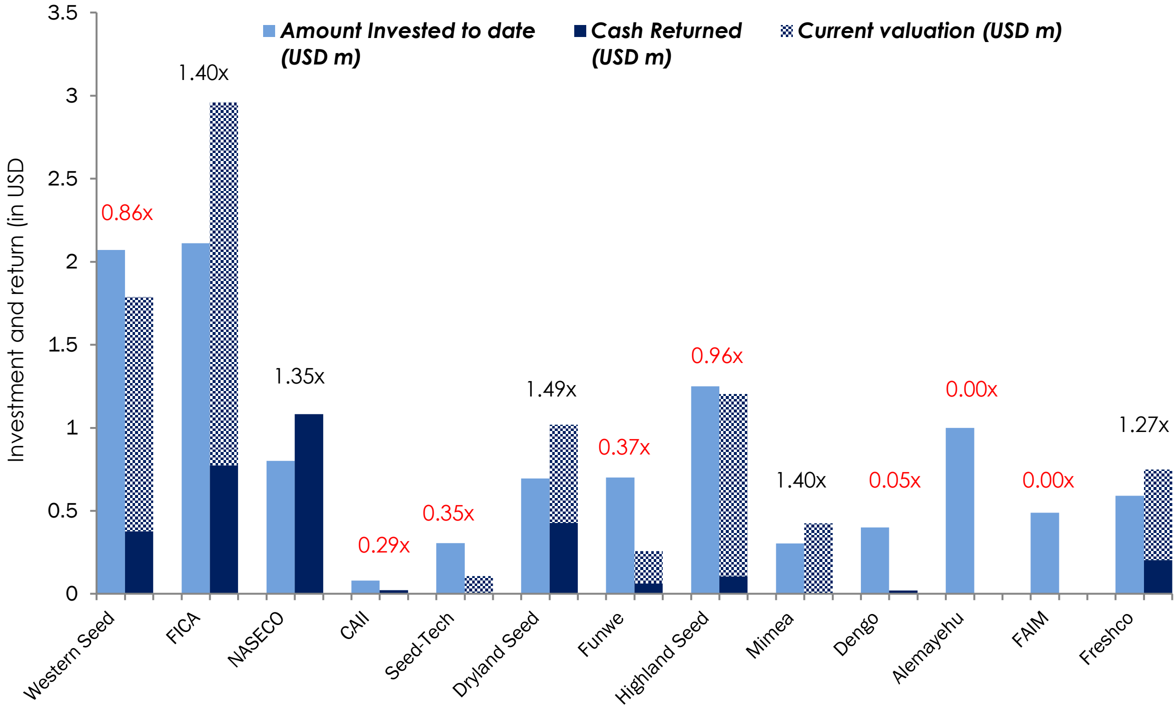


Exhibit 8 Invested amount, realised amount and valuation per investee

The bubble charts below further highlight the individual company contributions to (expected) profits and losses on investments for the fund. It shows the success of the turnaround investment in leading Ugandan seed firm FICA, but also the high cost of the seemingly rushed and risky ventures in Alemayehu, FAIM and Dengo, who collectively account for almost 70% of Fund losses.

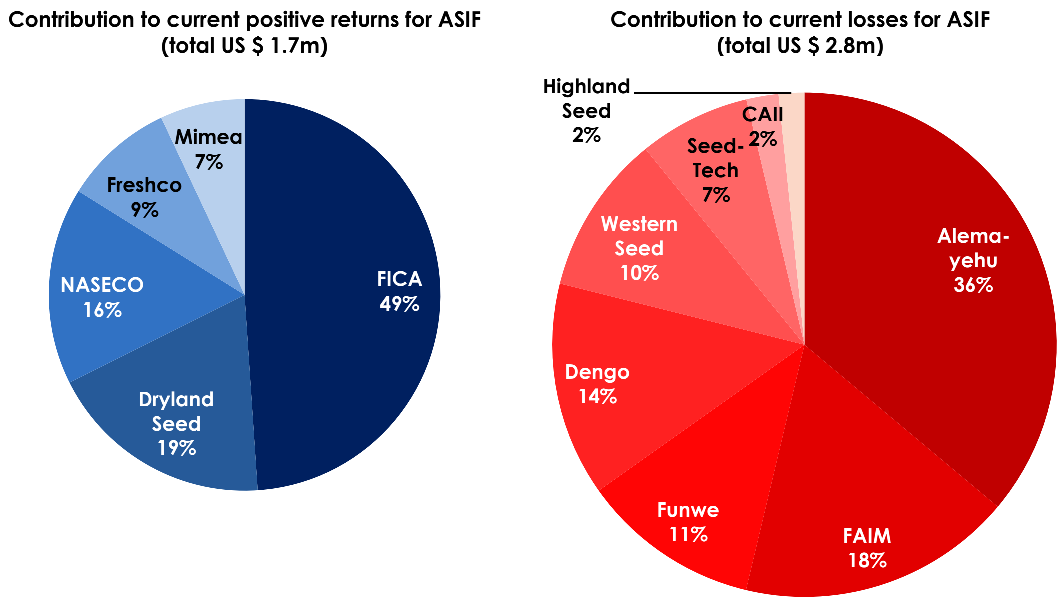


Exhibit 9 Relative contribution to (expected) ASIF positive returns and losses

Performance per company size

When analysing the performance of companies of various sizes at the time of investment, it is interesting to note the correlation between the size and performance. As the table below shows, the companies that were somewhat larger sized seed businesses at the time of investment consistently outperform the smaller and start-up companies in financial performance as well as impact results. This implies that there is a higher chance of achieving impact if a company is more established.

Table 7 Performance per company size[27]

	Larger	Smaller	Start-ups
# Investments	6	4	3
% Contribution to positive fund returns	88%	8%	4%
% Contribution to total increased seed production	72%	17%	11%[28]
% Contribution to growth in total positive turnover	89%	7%	4%
% Investees that are profitable	67%	25%	0%

Performance per country

There is a major difference in performance between investments in the three more developed markets – where Pearl already had experience – and the four additional countries. As noted by several key stakeholders, particular from the Manager, there were almost two different worlds and realities in terms of regulatory environment and agricultural market maturity. It should therefore be considered to design a tailored investment approach (and corresponding expectations and targets) for both geographic constituencies.

Table 8 Performance per country

	Kenya, Uganda & Tanzania	Malawi, Ethiopia, Rwanda & Mozambique
# Investments	8	5
% Contribution to positive fund returns	93%	7%
% Contribution to total increased seed production	65%	35%
% Contribution to growth in total positive turnover	90%	10%
% Investees that are profitable	37%	40%

5.2 Companies: two successes, six challenged cases and five failures

So far we looked at the returns to the Fund, this section will focus on the financial performance of individual investees. The table below provides an overview of the aggregate performance of all companies combined.

Table 9 Aggregate financial performance of investees at portfolio level

	Growth (USD m)	Multiplier	CAGR[29]	# of investees w. growth
Turnover	5.46	1.5	9%	7/13
EBITDA	1.23	4.0	32%	8/13
Net profits	0.02	n/a	4%	5/13

[27] Companies with a turnover of > US $800,000 at year of investment are categorised as 'large', between US $200,000 and 800,000 as 'smaller', and with less than US $200,000 as start-ups.
[28] Note that this only includes one of the investee companies; Mimea and FAIM are plant and not seed growers.
[29] The CAGR is based on the average 5 year holding period.

Like the generated financial returns to the fund, the financial performance per investee differed. The financial performance of the invested seed businesses can roughly be divided into four groups: two successful performers, three companies facing serious challenges, three companies that performed disappointingly and where formal recovery is initiated, and five companies that failed.

Table 10 Main performance indicators per investee

	Seed (mt)/ plant production		Seed (mt)/ plant sales		Turnover (US $ m)		Net profits (US $ m)	
	Δ	CAGR	Δ	CAGR	Δ	CAGR	Δ	CAGR
Successful performers								
FICA	+2,375	15%	+3,388	22%	+3.66	33%	+0.57	39%
NASECO	+1,459	9%	+1,275	8%	+1.79	11%	+0.19	25%
Challenged companies								
Dryland Seed	+61	3%	+44	3%	+0.03	2%	-0.01	n/a
Western Seed	+340	5%	+340	5%	+2.05	12%	-0.26	n/a
Funwe	+1,065	51%	+825	45%	+0.51	19%	-0.47	-52%
Formal recovery cases								
Highland Seed	-521	-21%	-513	-21%	-0.35	-9%	+0.20	n/a
Mimea	+20,160	10%	+6,405	3%	+0.01	13%	+0.05	-23%
Freshco	-1,026	-48%	-344	-20%	-0.43	-18%	-0.05	-14%
Failures								
Seed-Tech	-99	-15%	-8	-1%	-0.15	-12%	-0.01	-8%
FAIM	-547,931	-35%	+223,268	34%	+0.33	70%	+0.16	-9%
Alemayehu	+700	n/a	+700	n/a	n/a	n/a	n/a	n/a
Dengo[30]	+469	20%	+469	20%	-1.66	-100%	+0.31	-32%
CAII	0	n/a	0	n/a	-0.34	n/a	-0.03	n/a

Successful performers

The two successful performers arguably are FICA and NASECO. Both Ugandan firms have their headquarters in Kampala, but main production and processing facilities in the fertile districts of Masindi (FICA) and Hoima (NASECO), close to Lake Albert. The common denominator of both their success is stable and dedicated management. Both companies came from different situations: NASECO already was a stable, growing company, while FICA was nearly collapsed at the time of investment.

Farm Inputs Care Centre Ltd. (FICA Seeds) was founded in 1999 as a spin-off of agricultural trading company Afro Kai. Between 2002 and 2005 FICA gained ground, expertise and network through a local partnership with Monsanto. As part of a privatisation round in 2005, FICA was offered the opportunity to bid on several major government seed producing assets. It won the bid, but in order to finance the assets it was forced to take on a bridge loan from Barclays Bank at an interest rate of 22%, which drained the company's cash flow – despite solid underlying performance.

The US $2.1m investment from ASIF essentially meant a lifeline for the company. Whereas ASIF had expected a growth capital deal, it in fact became a turnaround effort. The investment enabled FICA to pay off Barclays and supplying farmers. Meanwhile, FICA and Pearl worked on selling part of the assets, and on improving governance structures by separating ownership and management. Narcis Tumushabe was appointed as CEO, while main shareholder Chris Kaijuka became chairman of the Board. The turnaround enabled FICA to bring back quality staff which had to be let go earlier, while management was strengthened by an experienced CFO in 2012. FICA's portfolio currently includes a diverse set of field crop and vegetable seeds, both open-pollinated varieties (OPVs) and hybrids, among them sunflower and cotton. The turnaround resulted in tripled seed sales, resulting in turnover that grew by more than five times and profits more than six times.

[30] The data for Dengo is not based on 2015 data and not verified.

Nalweyo Seed Company Ltd. (NASECO) was founded in 1996 and gradually developed to one of the larger seed companies operating in Uganda. It has been led since 1999 by its dedicated CEO, Nicolai Rodeyns. NASECO breeds, produces and sells a wide range of field crop seeds. It markets its products through numerous NGOs operating in Northern Uganda, Southern Sudan and Eastern Congo, stockists, and wholesale and retail distributors across Eastern Africa. It has an active strategy to increase retail sales, in order to ensure stable sales and decrease structural client risk. NASECO was already invested by AAC, and subsequently received growth capital by ASIF through a small equity investment and two loans. The US $ 0.8m total investment enabled NASECO to upgrade and expand its production and execute its growth plan. Since 2010, NASECO managed to almost double production and sales, and almost quadruple profits. The key factors to NASECO's success are its strong brand name resulting from consistent product quality, an innovative marketing approach, and a policy of gradual re-investment of operational profits rather than seeking too much external capital. NASECO's conscious and responsible growth path can be considered an example for other firms.

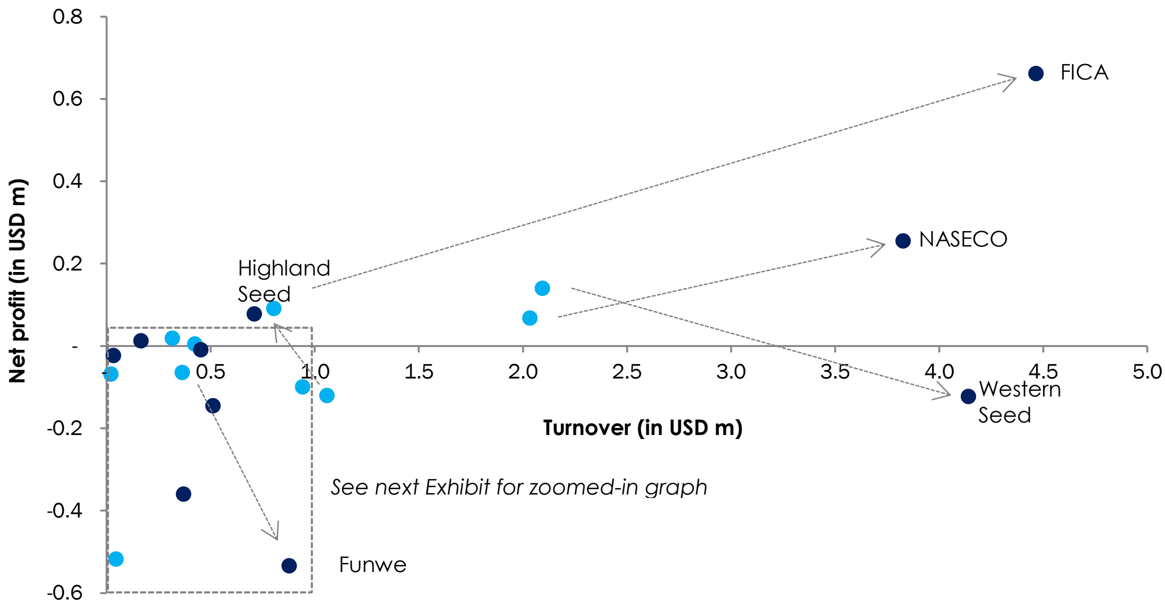


Exhibit 10 Turnover and profit development since investment (1)

Challenged companies

Three companies are established seed businesses in their countries, but face different challenges. These companies are Dryland Seed and Western Seed in Kenya, and Funwe in Malawi. The challenges they faced were partly internal, but to a large extent also concerned aspects outside of their control, such as droughts, diseases, currency depreciations, delayed payments by government and illness.

Dryland Seed Limited (DSL) is a Kenyan private seed company founded in 2004. Based in Machakos, just southeast of Nairobi, it specialises in dryland agriculture in the low and mid altitude areas of Eastern and Central Kenya. The business is owned (for 61%) and led by its founder and CEO Ngila Kimotho. DSL produces maize OPV and hybrid, beans, sorghum, cowpeas, pigeon peas and green gram seeds in partnership with the Kenya Agricultural Research Institute (KARI) through a licensing agreement issued in 2005. Since its inception DSL has rapidly grown from just 15mt in 2004 to 450mt in 2012.

To make the next step DSL started the development of a new facility that could serve both as its warehouse and office. Construction was largely financed by a grant from the Africa Enterprise Challenge Fund (AECF), but due to a change in AECF's strategy the last payments were not made to DSL, essentially leaving the company with a facility that is finished for 70%. Failure to complete the project has stalled business growth. Due to the limited capacity, further affected by severe droughts and armyworm, turnover remained stagnant and is around US $450,000, the same level as it was at the time of ASIF's investment. In addition, the company is struggling to source and retain quality staff. Further growth of DSL will depend on finding finance for the warehouse, new working capital and solving the HR issues.

Western Seed Company Limited (WSC) is a Kenyan seed company founded in 1986 but with a full focus on seed production since 1999. Its main seed processing plant is located in Kitale, Western Kenya, with a processing capacity of 5 tons an hour and sufficient warehousing to hold inventories of up to 5,000mt of packaged product. The business is both majority owned and managed by Kenyan entrepreneur Saleem Ismael. The core business is hybrid maize seed, but WSC also produces smaller quantities of rice, sorghum and other cereal seed. WSC was already invested by AAC between 2007-2010, during which performance was variable in terms of production and profitability, due to the impact economic downturn had on West Kenya's subsistence farmers, and their conservative stance towards hybrids.

Notwithstanding the conservatism among Kenyan farmers, WSC made ambitious plans to increase production capacity up to 7,000mt in the period 2010-2015, which would increase its market share from 5% to 20-25% and achieve its strategic objective of being the leading private sector seed business in Kenya. In order to finance the acquisition of land, irrigation equipment, auxiliary farm infrastructure and seed processing equipment, WSC raised approximately US $4.5m from Acumen and ASIF. Shortly after it secured additional financing from Voxtra.

However, after reaching a peak of 2,250mt sales in 2011, WSC was not able to deliver on its ambitious growth plans. Product quality concerns, distribution challenges and MLN disease led to a drop in sales to just 1,100mt in 2013. This in turn led to high carry-over stocks that had to be disposed of due to germination. Meanwhile, WSC had to service the loans. Due to the flexibility of ASIF, Acumen and Voxtra were able to exit the business in 2015-2016, leaving ASIF as the last investor. Seed production was further impacted by armyworm and droughts in 2015 and 2017. Due to a troubled relationship with the promoter, Pearl decided to step down from the Board and negotiate an exit. The agreement is that WSC will pay back the loan at a discount (US $1.4m) in 2018, although it is seems challenge for cash-strapped WSC to do so.

Funwe Seed Limited (Funwe) is a Malawian seed company founded in 2002. The business is owned and managed by Jon Lane and Carrie Osborne, two British citizens with an NGO background. The company essentially consisted of two farms, which were a personal investment. Funwe used the US$ 700,000 investment (loan and preference shares) as working capital to pay additional outgrowers. Funwe managed to increase production and sales to a peak of 1,400mt production and 1,200mt sales in 2015. However, most sales were part of the Malawian government's Farm Input Subsidy Program (FISP), which was funded by donors. After misappropriation of funds, donors cut back, and Funwe hardly received payment for its seeds sold. Problems were further exacerbated by the high expenses of running two farms, the collapse of the Malawian economy and sharp depreciation of the Kwacha (which made the ASIF loan expensive to service). As a result, Funwe had no working capital and owed debts to creditors (mainly outgrowers). Meanwhile, Carrie Osborne fell ill and had to move back to the UK. The company hired Stevin Kamwendo, a former Member of Parliament, as a general manager.

Spurred by ASIF, Funwe sold one of the two farms, guesthouses (which were company assets), as well as some equipment and animals they did not need. This allowed Funwe to clear most payments to outgrowers, but over the years it only paid back US $60,000 to ASIF. Despite this flexible stance, company management still moved around Pearl and directly asked AGRA to intervene and write down the loan. It is currently expected to pay back ASIF approximately US $195,000, but much will depend on a management buyout of the shareholders, and whether Funwe will attract additional capital. Given the challenging situation and Funwe's high losses, the future is uncertain, leading one of the other investors (Exagris) to recommended the closure of the company.

Formal recovery cases

Three companies performed disappointingly and Pearl is currently pursuing formal routes to recover investments. These companies are Highland Seed in Tanzania, and Mimea and Freshco in Kenya. The common denominator in the disappointing performances was weak management and/or governance structures and unused capital expenditures through uninstalled machinery and unfinished facilities. The anticipated returns are included in projections for ASIF, but are still dependent upon the successful sale of assets and court cases.

Highland Seed Growers Limited (HSG) is a Tanzanian seed company. HSG was founded in 2000 and has its main facility in Mbeya, Southwestern Tanzania. The business had been growing steadily from 15mt in 2004 to over 1,000mt in 2011. In 2011, the business was facing a working capital challenge that threatened its further growth plans. It therefore sought to raise up to US $1.25m from ASIF to finance its permanent working capital and expansion needs in a strategic merger of operations with FICA Tanzania (an investment of AAC), in order to further consolidate its position as one of the leading players in the seed sub-sector in Tanzania. It also enabled HSG to build a cold room, warehouses and acquire a processing line. ASIF decided to invest in 2012, despite the passing away of one of the promoters, Dr. Nick Lyimo (who was instrumental for the company's R&D) just before that time.

The absence of Dr. Lyimo had a bigger impact on the business than anticipated, Moreover, there was fraudulent behaviour from the General Manager as well as senior staff members. The acquired processing machinery was not installed, new competition emerged and working capital was constrained due to slow voucher redemption. Seed sales structurally decreased to around 300mt, rendering the business insolvent. Business managerial challenges also remain a constraint, with leadership from the new acting General Manager lacking to drive direction, strategy and growth. HSG defaulted on its loan obligation from the start, and Pearl's efforts in exploring all potential options to recover the investment without risking HSG collapse have failed. Formal recovery efforts have started, with an independent receiver manager hired to engineer self-liquidation, sale of the company or its assets.

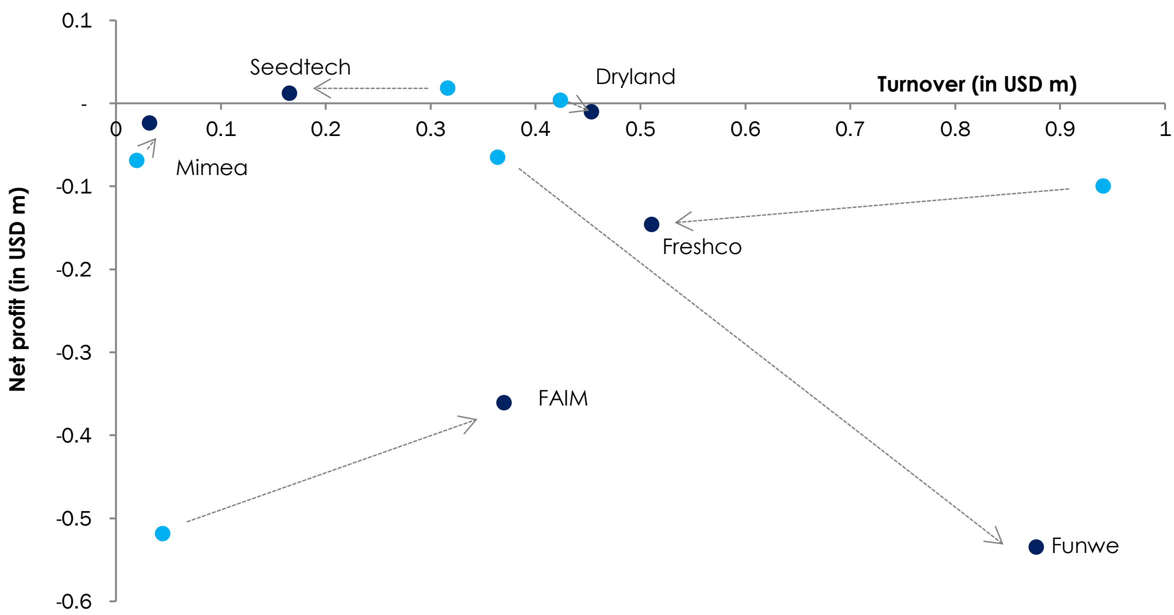


Exhibit 11 Turnover and profit development since investment (2)

Mimea International Limited (Mimea) is a Kenyan tissue culture company. Mimea was founded in 2005, and is based in Kitengela, just south of Nairobi. It produces quality planting materials mainly for banana production. Up until 2012 the business operated from a residential house. The company approached ASIF and was invested through US $350,000 of convertible debt in order to acquire land, building a bigger laboratory and buy furniture, vehicles and equipment. Although the production and sales moved up to over 100,000 plantlets in 2015, droughts and limited demand saw sales fall back to 60,000 in 2016. This meant that sales were back at 2012 levels rather than at the planned 1,000,000 plants. Meanwhile, the construction of the laboratory still is not finished. Mimea was expected to make a single bullet payment of the amount and accrued interested in August 2017, but failed to do so. Pearl is now formally engaging Mimea to recover the amount through the sale of the land.

Freshco Kenya Limited (Freshco) is a Kenyan seed company. Freshco was founded in 2000 and produces, processes and distributes high quality seeds from its principal offices located in Nairobi. The US $ 590,000 investment from ASIF was earmarked for a seed processor, but this was never installed. Freshco's production was affected by MLND, while sales to government decreased and a shift in focus towards the retail market took time. The business was backed by a Kenyan serial entrepreneur for whom Freshco was not a priority business. As the business defaulted on the loan, Pearl is currently in the process of legal recovery through bankruptcy petitions against the promoters.

Failures

Five companies have been (nearly) completely written off. These companies are Alemayehu in Ethiopia, FAIM in Rwanda, Seed-Tech in Malawi, Dengo in Mozambique, and CAII in Uganda. As in the above three cases, the common denominator was weak management and/or governance structures and unused capital expenditures.

Alemayehu Makonnen Farm PLC (Alemayehu) is an Ethiopian farm and seed company. Founded in 2007, the business produces maize, wheat, haricot beans, pepper and teff crops. The company operated under sole proprietorship of seasoned Ethiopian business man Alemayehu Makonnen. ASIF decided to invest US $1 million through quasi-equity in exchange for a 48.5% stake in the business. The capital injection was aimed to be used for setting up seed production and processing operations at a farm located in Hlaba, 239km south of Addis Ababa, on land leased to the promoter by the Regional government. The investment was troubled from the start, as the promoter did not have a dedicated farm manager, and did not manage to get power to the site. Moreover, the soil proved to be alkaline, while maize harvests were hit with MLND. In 2015, Mr. Alemayehu fell ill and sadly passed away. Issues over land and insurgency against the government consequently led villagers to invade the land and damage the farm. Pearl is working with the family to dispose the farm, although the disposal of an asset in Ethiopia is wrought with challenges.

Forestry and Agricultural Investment Management (FAIM) is a tissue culture agribusiness company based in Kigali, Rwanda. FAIM was a start-up that aimed to is build the first commercial plant propagation nursery and tissue culture laboratory in Rwanda, with the aim of enhancing banana production as a key staple food in the country. FAIM Africa is incorporated in Rwanda with majority US shareholders and a parent company is based in Delaware, USA. ASIF invested US $375,000 convertible debt in the company, alongside US development bank OPIC and several of the founding shareholders. There were structural flaws, as the company was largely run by expensive expats, and the Rwandan market was not ready to absorb the high production. FAIM's product reputation was further damaged by contaminated plants, and the marketing strategy was still evolving. Pearl and FAIM USA forced the departure of the company's CEO, Steve Jones, who did not execute a smooth handover to the new CEO, Jeanette Mukabalisa, who was initially hired as COO. After a peak of 300,000 plantlets sold in 2015, the business sold just 80,000 last year. Given the remaining weak cash flow and high operational costs, ASIF never received any payments, and the investment is completely written off.

Seed-Tech Company Limited (Seed-Tech) is a Malawian seed company. Located in Blantyre, Seed-Tech was founded as a partnership in 2004 and become an LLC in 2010. ASIF invested US $300,000 through a loan and US $5,000 in exchange for a 16.7% equity stake. The business initially had three main promoters, but they fell apart, and the main shareholder and technical expert, Frank Samidu, left Seed-Tech to establish his own company (who in turn got a start-up grant from AGRA). On top of that, and like Funwe, the business' cash flow was badly hit as a result of the lack of payments through FISP, currency depreciation and the overall collapsing Malawian economy. The business de facto closed shop in 2015, when it could not afford the rent of the property anymore. Due to the interest of a potential investor, the investment is valued US $100,000, although any recovery remains uncertain.

Dengo Commercial LDA (Dengo) is an agricultural input supply business in Chimoio, Mozambique. The company operates under sole proprietor of Mozambican business man Mauricio Dengo, who operates a number of businesses. In 2012 ASIF invested US $400,000 through a loan that was earmarked for a warehouse and equipment. The warehouse was never finished, while the processing equipment was acquired but not installed. Dengo defaulted on the loan, and a restructuring agreement was not honoured. Further efforts to reach the promoter have been futile and the lawyer who has been hired is unlikely to do any recoveries.

Centre for Agricultural Inputs International Limited (CAII) was formed in 2000 as a farmer group and in July 2008 was transformed into a seed company led by three young entrepreneurs. Their main office is in Iganga, Eastern Uganda. CAII had received grant funding from AGRA, and ASIF was suggested to follow-up with a loan. In 2010, the Fund made a US $80,000 investment through a loan and equity. The capital was earmarked for basic equipment, enabling CAII to do their own processing. However, CAII struggled with performance and was not able to service the loan after the first year. The investment was written off two years after investment.

5.3 Fund costs: relatively high due to the small fund and ticket size

The costs of managing ASIF consisted of two main elements: the management fee for Pearl and the other fund administration and deal costs. ASIF had a rather complicated management fee structure with different fees in four different periods.[31] The table below provides an overview of actual costs made (until '17) and expected remaining costs. The total costs sum up to 43.8% of AGRA's committed capital. This seems – and is – a high amount and implies that ASIF was an expensive intervention model.

Table 11 Management fees and other costs for ASIF[32]

	'11	'12	'13	'14	'15	'16	'17	'18	'19	'20	'21	Total (USD m)
Management fees	288	340	380	380	380	380	316	241	241	241	241	3.43
Other costs	420	217	233	201	193	109	134	79	79	79	79	1.82
												5.25

However, when calculating the management fee per annum as a percentage of committed fund capital (using an 11-year fund life), this comes down to a management fee of 2.6% per annum. This is higher than the private equity industry traditional standard of 2%, but a normal fee for impact-oriented fund managers, whose annual management fees vary between 2.5-3%. Moreover, given the highly risky investment strategy, it was not likely that the Manager would generate any carry (despite the 0% hurdle rate), which will indeed most likely not happen.

The other costs fund administration and deal costs were necessary to make. They include fund administration fees, directors' fees, domiciliation and compliance fees, travelling expenses, insurance, accounting fees, audit fees, bank charges, tax fees and sundry expenses.

The main problem of the high costs is in fact caused by three main reasons. The first is the small fund size, which meant that the portion of fixed costs that has to made for the fund are relatively high. The second is the fact that AGRA was the single investor in the fund. This meant that AGRA was not able to split costs with other co-investors, whereby it could have 'leveraged' its own capital. The third is the small individual ticket size, which drives up deal and portfolio management costs (e.g. due diligence-related fees, legal fees, travel expenses, director fees). It is therefore advisable to consider future interventions of more scale, or in cooperation with other co-investors.

31 The four periods and corresponding fees were: (i) establishment until first closing ("Initial Period"): management fee of US $320,000 per year; end of "Initial Period" until 10th quarter after first closing ("Second Period"): management fee of US $340,000 per year; End of "Second Period" until close of Investment Period: management fee of 0.9% of outstanding costs of investments, but at a minimum management fee of US $380,000 per year; End of Investment Period until winding up of Fund: management fee of 0.9% of outstanding costs of investments at the beginning of each quarter, but at a minimum management fee of US $120,000 per year (with an increase of 3% per year). See *Shareholders' Agreement* 25.

32 Costs included in this table until end of 2017 concern real costs, the last four remaining years concerns estimations. '11' means costs per end of full year 2010/2011, ending at 30 June 2011.

5.4 Financial reporting: room for improvement

Based on an in-depth review of the periodic reporting to the Investment Committee by Pearl to AGRA, it has to be concluded that the quality of financial reporting holds room for improvement, and can currently not be considered in line with best practices in the for private equity industry. The key elements that Pearl's reporting on ASIF lacks include:

- *Portfolio summary data*: reporting does not contain key performance data such as a summarised table of individual company invested amounts, proceeds, valuations and IRRs, making it difficult for the IC to get an understanding of the Fund's actual performance;
- *Manager's update*: reporting provides neither a summarising narrative of the key developments over the past period (on either macro-economic, fund, or portfolio company level) nor any visualisations of performance that would facilitate understanding and analysis by the IC;
- *Consistent reporting cycles*: reporting for some companies is for a full year and for some on a 6-month period, and reporting is mostly in different formats, complicating comparison and analysis by the IC;
- *Actions and progress*: reporting does not include a clear overview of past and future actions (including timelines) by the company and the Manager, to which the company and/or the Manager can be held accountable by the IC.

It is advisable that AGRA recommends the Manager to include at least the abovementioned elements in future reporting.

6 DEVELOPMENT RESULTS

- *As targeted, ASIF's capital as well as its financing terms were perceived as additional by investees*
- *On output level, growth of approximately 45%-95% was realised on nearly all indicators, but just half of invested businesses show improvements while two companies drive most development results*
- *As no quantitative targets were set, it is not possible assess how ASIF lived up to expectations*
- *ASIF contributed positively to increased supply of more diverse and higher quality seed as well as smallholder incomes (contributing to improved food security and increased household incomes)*
- *However, effects are largely confined to Uganda, Kenya and Malawi*
- *Whereas ASIF helped some companies to stabilise and grow (strengthening the local seed sector), the objective of establishing a new group of stable local commercial seed companies seems hardly met*

6.1 Theory of Change: pathway to impact for ASIF

As mentioned in section 2.2, there were no development objectives and qualitative targets formally agreed between AGRA and Pearl. Moreover, in the development objective set by Pearl in the PPM as well as the reported development results in 2015 and 2016, the results contain a mix of indicators on output, outcome and impact level. To structure the initial targets, actual reported results and the main expectations discussed in interviews with key stakeholders, the evaluator designed a Theory of Change for ASIF that is provided in the exhibit below.

Exhibit 12 Theory of Change for ASIF[33]

[33] Developed by Steward Redqueen based on original PPM, performance documents and interviews with key stakeholders.

In this chapter, development results will be provided and analysed along the lines of this Theory of Change.

6.2 Inputs: confirmation of ASIF's additionality

As the Theory of Change shows, ASIF's capital was aimed to be perceived as additional to the market. In addition, it was expected to support invested companies through advice and assistance, and link businesses to AGRA's TA. These inputs would support companies to develop, commercialise and certify new seed varieties, improve production capacity and strengthen their institutional capacity.

Additionality

It can be concluded that ASIF's capital was additional to the market. As the exhibit below shows, only one invested company stated that it would probably have been able to raise the capital from a different source. Approximately 55% of companies expect it would not have been able to execute its growth plans, while one-third expects it would have been able to grow, but encounter severe challenges and slower growth without ASIF.

What would have happened if your company had not received the investment from ASIF?

Exhibit 12 Perceived additionality of ASIF's intervention

Key to ASIF's proposition was to present more flexible and patient financial terms compared to the market, while being an active and value adding partner. It can also be concluded that this was the case. As the exhibit below shows, ASIF was indeed largely perceived as such by invested companies. Almost 90% of surveyed companies considered the financial terms as better than the market. In addition, almost 80% recognised Pearl as a more active investor, while the neutral response of the remaining companies indicates that Pearl played an equally active role. Just over 60% of companies perceive ASIF's capital to be more patient, while another 22% considered it equally patient.

Do you agree with the following statements on ASIF's financial offering?

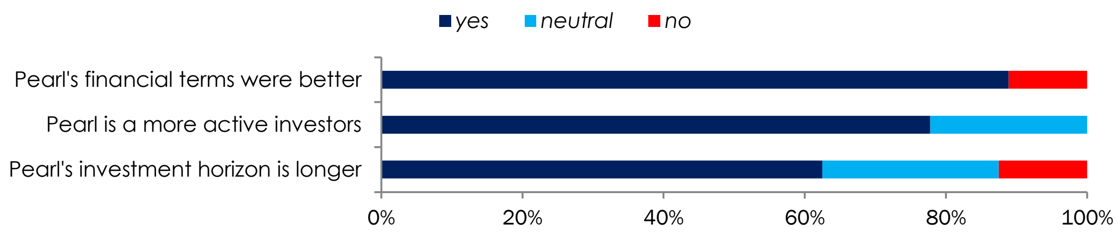


Exhibit 13 Perceived additionality of ASIF's financial offering

ASIF was also committed to be an active investor. Despite the fact that ASIF held shares in only five businesses, it negotiated Board seats in all 13 companies. As this role is such a fundamental part of the intervention, it is analysed in-depth in the next chapter.

6.3 Outputs: aggregate increases but mixed individual company outputs

On output level, the invested companies' activities were expected to result in increased procurement from smallholders, volume of seed production, smallholder clients, and new varieties introduced. This would in turn result in increased revenues, create new jobs, and fresh additional capital to invest and grow further.

Aggregate fund level

On an aggregate fund level, ASIF's development indicators show positive results across the board. The table below provides the performance of all companies to which the indicator applies, and for which comparable and reliable was data was available at the year of investment (YOI) and the full year 2016. As the table shows, on nearly all outputs indicators growth was achieved of 47% to 95%. Only the number of plants produced dropped significantly, which can be explained by the overproduction by tissue culture company FAIM combined with insufficient market demand in Rwanda.

These results show that ASIF has had clear added value and has helped the seed sector move forward. However, as no quantitative targets were set, it is not possible to appraise results and formally assess whether, and to what extent, ASIF lived up to expectations.

Table 12 Aggregate outputs[34]

	YOI	2016	Δ	%	Results per US$ 1m	# with growth
Outgrowers employed[35]	1,029	2,007	+978	+95%	+82	6/10
Seed production (MT)	7,708	11,362	+3,654	+47%	+304	5/8
Seed sold (MT)	6,711	11,717	+5,006	+75%	+417	5/8
Varieties offered	97	144	+47	+48%	+4	10/10
Plants produced	705,574	177,803	-527,771	-75%	-	1/2
Plants sold	156,215	385,888	+229,673	+147%	+19,139	2/2
Employment (# jobs)	182	334	+152	+84%	+13	8/10
Revenues (in USD)	10.1	15.6	+5.5	+54%	+0.5m	7/10
Mobilised capital (in USD)	NA	NA	+7.15m	NA	+0.6m	8/13

In addition, in line with the financial performance, performance on development indicators varies in the portfolio. The contributors to positive performance were often just half of the companies. This is shown in the exhibit below, where outputs are further analysed per company.

Seed production and sales

The chart below visualises the growth in total seed production of all ASIF seed businesses in 2016 (upper bar) and at investment (lower bar). It shows the major portion of seed production came from Ugandan businesses FICA and NASECO at investment (49%) and in 2016 (72%).

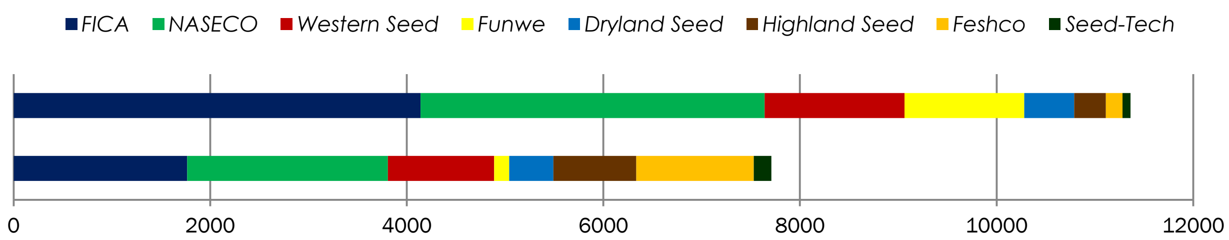


Exhibit 14 Aggregate seed production at investment and in FY 2016

[34] Outputs exclude CAII, Dengo and Alemayehu for which no (reliable and consistent) data was available.
[35] Proxy indicator for increased procurement from smallholders.

The charts below further visualise the changes in production. It is particularly striking to see the increase at Funwe, which has increased production by around 68% per year. It also shows the disappointing drops in production at Highland Seed and Freshco due to the management challenges, and the sharp drop in plant production at FAIM, reflecting the lacking market demand as well as the governance challenges.

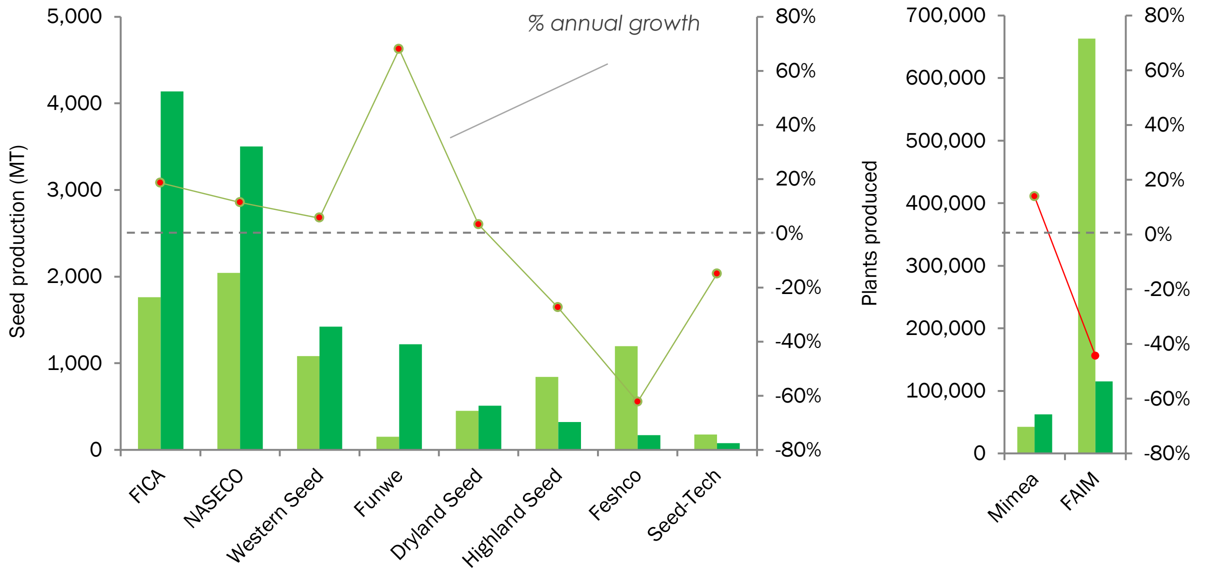


Exhibit 15 Seed and plant production at investment and in 2016

New varieties introduced

The investment by ASIF supported the development, adoption, certification and commercialisation of new seed and tissue culture varieties. The table below provides an overview of the new varieties introduced since ASIF's investment. Out of the total 47 new varieties introduced, most concerned hybrid maize seed varieties. These new varieties often are either resistant to specific diseases or adapted to specific ecological zones, such as higher altitudes or in dry areas.

Table 13 New seed varieties introduced

	Total varieties		**New varieties introduced**				
	YOI	**2016**	**Total new**	*Hybrid*	*OPV*	*Legumes*	*Plants*
Western Seed	1	6	5	0	4	0	0
FICA	27	32	5	1	4	0	0
NASECO	26	32	6	1	3	2	0
Funwe	8	11	3	0	1	2	0
Seed-Tech	0	7	7	0	0	0	0
Highland Seed	2	5	3	0	3	0	0
Dryland Seed	8	12	4	2	1	0	0
FAIM Africa	19	21	2	0	0	0	2
Mimea	1	8	8	0	0	0	8
Feshco	6	10	4	2	2	0	0
	97	**144**	**47**	*18*	*6*	*4*	*10*

However, several of the company CEOs questioned whether the introduction of new varieties should be such an important objective in itself. They emphasised that it is more important to build on and improve a successful type of hybrid than introducing a new one. This is because the development, certification and marketing of a new variety is time-consuming and costly, especially for companies with cash flow distress.

In addition, farmers are rather conservative, and often prefer to stick to a trusted variety 'brand'. An example is NASECO's AB Longe 10H hybrid, which it has been consistently improved by the company, and now accounts for around 60% of NASECO's production and sales (2,000 mt). In an ideal situation, the main indicator for improved quality of seed should be the yield improvements resulting from the use of a particular variety, although measuring this consistently is a challenge in practice.

Employment effects

ASIF has helped to both sustain and create direct and indirect jobs in the seed sector. As the table below shows, ASIF's investments helped to sustain 182 jobs and create 152 new jobs at invested seed businesses (although it can be questioned how sustainable the new jobs at FAIM and Freshco are). ASIF also indirectly stimulated employment, as the invested seed companies procured seed from an additional 728 smallholder farmers. Again FICA and NASECO were responsible for a large part of job effects, representing 40% of new jobs created and no less than 78% of additional procurement from smallholders. It should hence be noted that positive effects stemming from increased procurement from smallholders is largely limited to Uganda.

Table 14 New seed varieties introduced

	Direct jobs				Outgrowers employed			
	YOI	**2016**	**Δ**	**%**	**YOI**	**2016**	**Δ**	**%**
Western Seed	30	46	16	53%	5	140	135	2700%
FICA	32	54	22	69%	140	770	630	450%
NASECO	20	65	45	225%	450	700	250	56%
Funwe	35	28	-7	-20%	15	20	5	33%
Seed-Tech	7	4	-3	-43%	160	8	-152	-95%
Highland Seed	24	38	14	58%	19	16	-3	-16%
Dryland Seed	11	24	13	118%	50	150	-100	200%
FAIM Africa	0	29	29	NA	0	0	0	NA
Mimea	5	8	3	60%	10	0	-10	-100%
Freshco	18	38	20	111%	180	203	23	13%
	182	**334**	**152**	**84%**	**1,029**	**2,007**	**988**	**97%**

Capital catalysed

One of the few formal quantitative targets was to mobilise increased investment capital of US $ 10m. The rationale behind the target and indicator was to improve the financial sustainability of invested businesses, as ASIF capital was expected to provide a catalytic 'seal of approval' to commercial financiers.

The table below provides an overview of the additional capital mobilised since ASIF's investment. It shows that 8 out of the 13 companies mobilised a total of US $7.1m additional capital, of which US $6.5m concerned commercial (non-grant) financing. In three cases this concerned the opening of an overdraft facility with a commercial bank, allowing the companies more flexibility in cash flows. The only commercial bank loan was generated by FICA, albeit at a small amount. Chapter 7 further describes the extent to which role Pearl played a role in attracting the additional capital.

Table 15 Additional finance generated since ASIF investment

	Amount (in USD m)	Type
Western Seed	5.0	Equity capital from Acumen and Voxtra
FICA	0.3	Loan from Stanbic Bank
NASECO	0.1	Overdraft facility
Funwe	0.5	Overdraft facility from CDH Bank and investment from Exagris

Seed-Tech	0.1	Overdraft facility from National Bank of Malawi
Highland Seed	-	
Dengo	-	
Alemayehu	-	
Dryland Seed	0.6	Grant from the Africa Enterprise Challenge Fund (AECF)
FAIM	0.5	Investment from one of main shareholders (FAIM USA)
Mimea	-	
Freshco	0.1	Unknown
CAII	-	
	7.1	

While the ability to generate a loan or overdraft facility from commercial financiers can indeed be an indicator for the maturity or even the financial sustainability of a company, it should not be regarded as such in splendid isolation. The case of Western Seed is a clear example here.

Western Seed represents 70% of all mobilised third-party financing, as it attracted investments in a short period of time from Acumen and Voxtra alongside ASIF. However, it was not able to effectively absorb this relatively large amount of capital and translate it into increased production and sales. The company had trouble servicing these investments, which further affected the business. Of the three investors ASIF took most of the hit, as it agreed to issue a loan at 0% interest to enable Western Seed to pay back AAC, Acumen and Voxtra, while it recently also had to accept a discount on repayment on the principal sum.

Rather than targeting external investment acquired, it seems more appropriate to look at the percentage of operational profits that are reinvested in the business as an indicator for financial sustainability. NASECO provides an interesting example here, as it reinvests approximately 85% of its own operational profits back into the businesses, and is very careful with external financing. The amounts mobilised from external investors could still be used as an indicator for financial stability, but then rather to check whether external investment does not concern a sustainability risk for a company.

6.4 Outcomes: increased access to seed and improved incomes

On outcome level, the improved outputs were expected to lead to a new group of stable, local commercial seed producers that were able to offer smallholder farmers increased access to affordable high-quality seed, enabling smallholder farmers to improve yields and hence increase incomes.

New group of stable, local commercial seed producers

Taking into account all performance factors, the conclusion has to be drawn that the fundamental targeted outcome of creating a new group of stable, local commercial seed producers in Eastern and Southern Africa has not (yet) been met. However, the outcome was achieved in Uganda, where ASIF was a key factor in the solidification and growth of two successful and stable producers with NASECO and FICA. Moreover, the strong demonstration and spill-over effect that these successful cases have is significant, as particularly NASECO forms an example for the start-up of seed businesses in Eastern DRC and Burundi, where NASECO is advising on development.

In Kenya the outcome still holds potential, if Western Seed can solve its challenges and remain focused on its core business, and if Dryland Seed is able to attract the right additional staff and finish its new central production and warehousing location. The same holds true, albeit with somewhat more trickier circumstances, in Tanzania and Malawi. Results in Tanzania depend on the turnaround of Highland Seeds, while results in Malawi depend on whether Funwe will receive amounts payable from the government and will be able to source additional working capital. In Ethiopia, Rwanda, and Mozambique the targeted outcome was not realised.

Increased access to affordable high-quality seed

Given the increase in seed production and sales, the continuous improvement existing varieties as well as the introduction of new varieties, it can be concluded that ASIF contributed to increased access to affordable, high-quality seed. As there was no further target attached to this outcome, it is difficult to formally assess whether this outcome has met expectations. And in line with the explanation on national differences above, it should be noted that this outcome varies substantially per country.

Improved incomes for smallholder farmers

ASIF contributed in two ways to improved incomes for smallholder farmers. Firstly, through increased procurement from outgrowers, and secondly through enabling smallholder farmers that buy the seed to improve yields.

Since investment, the invested companies have procured seeds from an additional 728 outgrowers. Based on feedback that the companies received from outgrowers, it is estimated that four additional seasonal labourers are involved in this process. This means that an estimated 2,912 seasonal labourers benefit from the increased procurement due to ASIF's intervention. Pearl did not track to what extent companies increased their procurement from existing outgrowers. Pearl also did not collect data or calculate how this additional engagement resulted in improved incomes for outgrowers and affiliated seasonal labourers.

As mentioned earlier, yield improvement through improved seed quality is notoriously difficult to track and monitor.[36] The use of certified seed has resulted into yield improvements as high as 50%, although this differs per type of crop and variety, and is affected by soil quality, climate, weather, disease and irrigation practices. Pearl did use a methodology to estimate the number of smallholder farmers purchasing the seed, it did however not attempt to actively measure the associated income effects.

6.5 Impacts: contribution to improved food security

The outcomes were expected to ultimately lead to structural improvements, which were a strengthened seed sector, improved food security and increased household incomes.

Strengthened seed sector

In line with the analysis on the outcome of a new group of local seed companies, it can be concluded that the seed sector was significantly strengthened in Uganda, somewhat strengthened in Kenya, potentially strengthened in Malawi and Tanzania, and not strengthened in Ethiopia, Rwanda, and Mozambique. In addition, it should be mentioned that NASECO is supporting start-ups in Western DRC and Burundi. The seed sector can further be strengthened by the lessons of the successful cases FICA and NASECO. The financial performance of ASIF across the board so far does not deliver a compelling case for commercial investment in seed companies, although the well-performing companies show that it can be done.

Improved food security

The table below provides an estimation of the effects on food security of ASIF's investments, based on assumptions made by Pearl. For ease of calculation, all seeds are assumed to be maize seed, which make up the bulk of all seeds sold by companies.

Based on an assumed 40kg seed required for one hectare,[37] and an average land size of 1.1 hectare per smallholder farmer,[38] combined with the increase of 5,007 metric tonnes of seed sold by invested companies, it is estimated that an additional 113,790 farmers bought the seed. And based on an average yield of 2.5 metric tonnes of grain per hectare[39] and an average consumption of 50kg maize per year,[40] it is estimated that the increase in seeds sold was able to feed an additional 6.2 million people.

36 Root Capital is an example of an organisation that does some quasi-experimental measurement of improved yield effects. It should however be noted that it has a larger budget for this type of research.

37 Based on interviews by Pearl with seed companies.

38 When weighting the average farm size (based on a FAOstat aggregation of national statistics, of Kenya, Ethiopia, Malawi, Tanzania, and Uganda, we find that the average farm size is 1.37 ha, which is a close enough figure to PCP's estimation (1.1 ha).

39 Based on estimated future yields from certified seed in Kenya. Source: Dr. Joseph Kariuki and Noel Anyuka Templer, *Food Security & Crop Seed in Kenya* (2016) 8.

Table 17 Estimation of improved food security

Aspects	YOI	2016	Improvement
Seed sold (MT)	6,711	11,717	5,007
Seed required for grain production per HA	0.04	0.04	-
HA utilised for grain production	167,766	292,935	125,169
Farmers purchasing seed for grain production	152,515	266,305	113,790
Yield per HA (MT)	2.5	2.5	-
Total grain production (MT)	419,415	732,338	312,923
Number of persons impacted	8,317,009.47	14,522,289.48	6,205,280

Although the above figures are based on assumptions backed by academic sources, it should be noted that it is a theoretical estimation. In practice, there are a few nuances and practical realities of which two are most influential:

- The number of farmers purchasing seed is overstated, as for nearly all companies the vast majority of seed sales are to governments (particularly in Kenya, Malawi and Uganda) and non-governmental organisations (NGOs) rather than smallholders farmers directly (or indirectly through agrodealers);
- The methodology assumes every single seed is planted and does not take into account:
    - external negative influences affecting harvests such as droughts, diseases, and other climate and weather-related factors;
    - the loss of seed through inadequate warehousing;
    - the effects of maize prices;
    - the growth in supply by other actors in the countries, hence it is not possible to contextualise and assess the relative contribution to enhanced availability of grain in the geographies.

At the same time, there was an additional positive impact hat was not mentioned in fund documents or officially targeted. This unexpected positive impact is that the success of the Ugandan businesses helped support food security in several conflict affected areas, notably South Sudan but also the DRC, as they were able to provide NGOs active in the areas with locally produced, stable, high-quality seed.

Improved household incomes

Following the increase in incomes for smallholder farmers discussed under the outcomes, there is a positive impact on household incomes. The newly created jobs support 152 additional families, while the increased engagement from outgrowers and their affiliated labourers strengthen the incomes of an additional 3,612 families. As mentioned, Pearl did not collect data or calculate how this additional engagement resulted in improved household incomes.

It remains unclear whether ASIF has made a '*substantial, measurable, and sustainable impact on the lives of at least one million households over the life if the Fund*', as targeted in the PPM. As this target and the underlying assumptions were not further worked out, it is not possible to assess this. However, taking into account all other results provided in this chapter, it seems unlikely that this objective was met.

6.6 Impact measurement: solid data collection but improvised methodology

Pearl put in a serious effort to track key outputs, which was more limited in the earlier years but became more consistent over time. Pearl now traces the volumes produced and sold of all different seed and plant varieties, employment numbers (direct jobs, casuals, and outgrowers) and the additional capital generated.

[40] Pearl uses an average maize consumption per person based on Ranum, Peter a.o., 'Global Maize Production , Utilization, and Consumption' in *Annals of the New York Academy of Sciences* issue 1312 page 105–112 (2014) 110.

Despite some differences in data collection templates, this provides several key data for impact measurement.

Despite this reasonably solid basis, consistent impact measurement and reporting against set targets has not taken place. Only in 2015 did Pearl publish a narrative and corresponding video with impact results. However, in the absence of agreed formal targets and in the absence of a Theory of Change, this was a reading by Pearl of impact achievements, which did correspond with some initial objectives, but left out others.

In sum, as there is a solid basis of collected data, it is advisable that Pearl reports structurally along the lines of the proposed Theory of Change, and further calibrates the model to estimate effects on food security and increased household incomes. The assumptions in the enhanced methodology should be backed up by solid scientific sources, and agreed upon by AGRA experts.

Finally, a small note on benchmarking. Pearl indicated in the original PPM that it would adopt the Impact Reporting and Investment Standards (IRIS) reporting system designed by the Global Impact Investor Network (GIIN), with the aim of enabling comparison of the Fund's performance against other "double bottom line" investment vehicles. This did not happen, but this is because of the fact that the entire impact investment industry is still protective of both financial and impact data. Only in 2015 has a first benchmarking effort on the financial performance of an unspecified sample been published by the GIIN.[41]

6.7 Demonstration effect: no compelling case, but inspiration for others

Due to its performance, ASIF does not present a compelling case for commercial investment in seed companies. This is a missed opportunity, as the indirect impacts deriving from this potential demonstration could have been more far-reaching than the actual direct impacts of ASIF.

At the same time, ASIF did provide inspiration to several new interventions in the seed sector, notably the establishment of agricultural investment vehicles Injaro and AgDevCo. Especially West Africa-focused investment fund Injaro benefited from ASIF's approach, as its CEO Jerry Parkes moved in with Pearl for almost a month to gain insight into ASIF's operations. Although Injaro took a broader investment scope, its portfolio does contain a number of seed businesses. Due to the moves of Tom Adlam to AgDevCo, and Patrick Oketa to Acumen, these fund managers essentially also gained expertise from ASIF.

Whereas the financial performance of ASIF across the board so far does not deliver a compelling case for commercial investment in seed companies, the two well-performing companies show that it can be done. NASECO and FICA in itself also provide valuable lessons where the seed sector at large can draw lessons from. In addition, it should be mentioned that NASECO is actively sharing its expertise and experience by supporting start-ups in Western DRC and Burundi.

In sum, despite the disappointing performance, a great number of lessons can be drawn from ASIF. These lessons are based on the successes, but perhaps more importantly on the failures. These lessons and their corresponding recommendation hold value. The lessons and recommendation are provided in the final chapter.

41 See for instance GIIN and Cambridge Associates, *Introducing the Impact Investing Benchmark* (2015).

7 ADVISORY ROLE

- *Pearl advised companies mainly through the Board seat that it negotiated as part of the investment*
- *It mostly advised on governance, business strategy and professionalising administrative systems*
- *80% of companies perceived the advice to have had positively influence the financial performance*
- *Pearl had a less active role than anticipated in helping companies to raise other sources of finance*

7.1 Advice and assistance: focus on governance, strategy and systems

Providing advice and assistance to companies is an integral part of Pearl's mandate in managing ASIF. As a measure of success, Pearl's own investment policies (included in the Shareholders' Agreement) stipulate that ASIF's success depended on the "*successful deployment of business development services to complement and add value to the portfolio and underlying businesses*"[42]. Indeed, supporting companies beyond the capital provided is an important element of the private equity investment model and an important way to strengthen the company's performance (and the returns for the manager and investors).

Forms of advice and assistance

Although not common for a debt provider, Pearl negotiated Board a seat on the Board of all 13 companies. From this position, individual Pearl investment staff members were able to provide advice and assistance to the seed businesses. This was often done over the phone, but sometimes also by being physically present at these meetings. Taking into account the travel distance to some investees, this was quite an effort. The graph below provides an overview of the perceived types of advice by invested companies.

As the graph shows, Pearl's advice and assistance predominantly concerned typical areas an investor is primarily focused on: governance and organisational issues, business strategy, and professionalising business administration and systems. According to the CEOs of several invested companies, Pearl staff played a value adding role by challenging companies during Board meetings. Moreover, the administrative discipline that Pearl's reporting requirements asked from the companies, and where Pearl provided feedback and advice on, helped several companies to make steps in professionalising business administration systems. This is essential for the sustainability of growing companies. Pearl also increased the quality of audits, as it introduced 'Big Four' accounting firms by some of the companies.

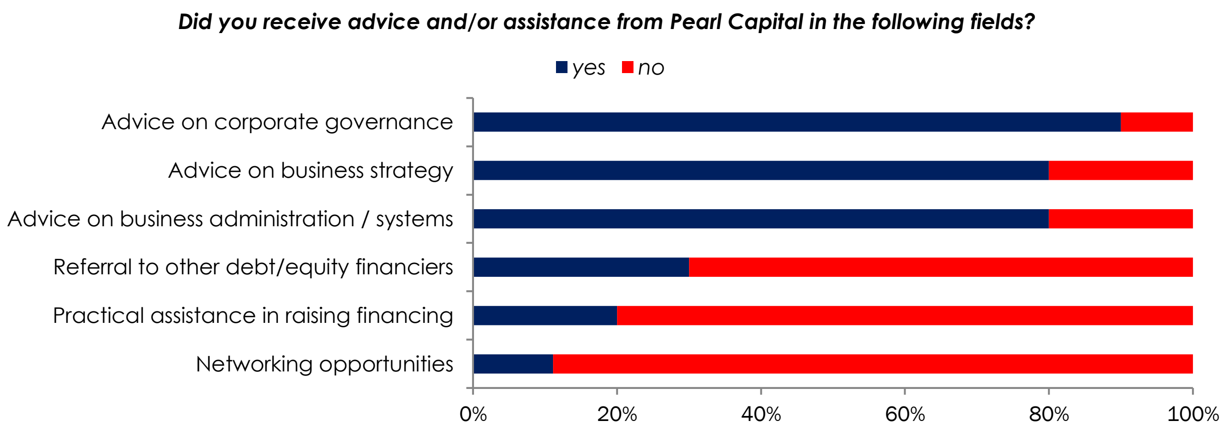


Exhibit 16 Types of advice provided by Pearl

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[42] *Shareholders' Agreement* 54.

At the same time, the perceived advice and assistance in the field of helping companies to attract suitable additional capital for growth as well as the leverage of Pearl's business network is less than expected. This is a missed opportunity, as these are fundamental for the sustainability of companies. The low perceived level of assistance could be explained by the fact that several companies lacked financial discipline to ASIF, making talks about additional financing a rather premature topic.

7.2 Results: perceived improvements in business and financial performance

The advice and assistance by Pearl was generally well-appreciated by companies, and was perceived as yielded tangible results. The graph below provides an overview of the extent to which advice and assistance helped improve performance in several areas. It shows that, in line with the above, positive effects were particularly perceived around governance and businesses administration. This led 80% of companies to state that it had a direct positive effect in financial performance, of which half fully attribute this to Pearl.

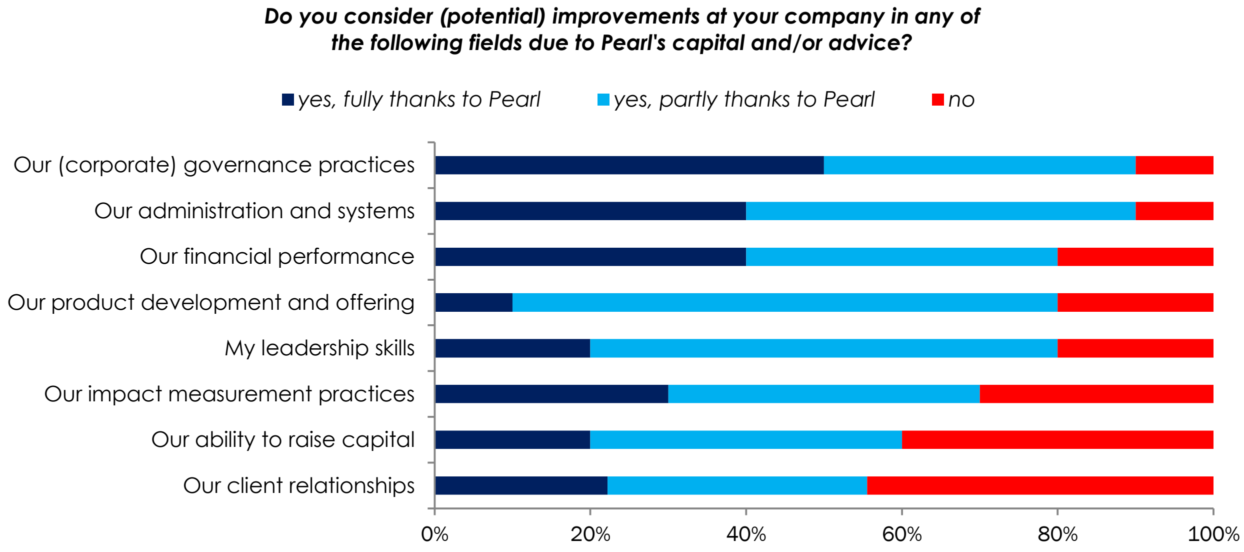

Exhibit 17 Perceived effects due to Pearl's advice and assistance

7.3 Lack of technical assistance: a missed opportunity

The ASIF intervention did not include a technical assistance (TA) or business development support (BDS) facility. This was mainly due to the fact that AGRA was already offering various types of technical assistance, such as educational courses for company staff members.

However, whereas AGRA's TA or BDS services offered were of high quality, they focused on technical agricultural expertise, and did not (sufficiently) address typical business management practices – which are crucial for growing businesses. In ASIF's portfolio nearly all companies not so much lack technical expertise, but do have serious challenges around company governance, accounting, budgeting, human resources, marketing and brand positioning; and the adoption of international product quality and safety standards. In addition, several companies had delayed or no installation of new processing equipment. Technical assistance may also have helped here.

Had ASIF had a TA facility that was able to address these issues, it could have improved performance significantly. It is therefore recommended that any future intervention aimed at financing seed businesses does include a TA/BDS facility.

8 INFLUENCING FACTORS

- *ASIF's performance was influenced by a number of external factors*
- *Top-level macro-economic figures seem good, but these provide an incomplete picture*
- *In reality, ASIF companies had to deal with heavy currency depreciations, government interference and payment arrears, diseases, as well as climate and weather-related factors such as droughts*

8.1 Macro-economic development: overall growth but currency depreciations

Over the life of ASIF, all seven countries in which the Fund invested witnessed moderately strong growth. Ethiopia enjoyed the highest average growth rate of 10%, as government policies aimed at improving productivity and large-scale public and private investments in infrastructure effected growth. Malawi has seen least growth, as its economy took severe blows and is still sluggish. Elsewhere in Sub-Saharan Africa, Tanzania, Mozambique and Rwanda generally benefitted from a strong industries sector (offshore gas development and port trading). Whilst agriculture was a key driver for growth in Kenya, contributing to more than half of GDP growth since 2010, the economies of Malawi and Uganda suffered from an overreliance on the agricultural sector and adverse weather conditions.

Despite moderately strong GDP growth in all countries, only Ethiopia enjoyed a substantial growth in GNI per capita. All countries, apart from Kenya are classified as low-income countries. The livelihoods of many people in the ASIF invested countries remain vulnerable and external shocks, particularly political instability (Kenya) and weather, can push them deeper into poverty.

Table 18: GDP and GNI per capita growth (2010 – 2016)

	Gross Domestic Product (GDP)[43]				Gross National Income (GNI) per capita[44]			
	2010 (USD Bn)	*2016 (USD Bn)*	*Multiple*	*CAGR*	*2010 (USD)*	*2016 (USD)*	*Multiple*	*CAGR*
Ethiopia	29.9	52.3	1.75	10%	1,160	1,602	1.38	7%
Kenya	40.0	55.4	1.38	6%	2,467	2,897	1.17	3%
Malawi	7.0	8.7	1.25	4%	1,017	1,048	1.03	1%
Mozambique	10.2	14.9	1.46	7%	887	1,100	1.24	4%
Rwanda	5.8	8.8	1.52	7%	1,343	1,727	1.29	4%
Tanzania	31.4	46.8	1.49	7%	2,069	2,542	1.23	3%
Uganda	20.2	27.5	1.36	5%	1,490	1,657	1.11	2%

Agriculture sector

In all countries the agricultural sector continues to play a vital role in the economy, both as a source of GDP and for employment. In all ASIF invested countries, agriculture provides employment to at least 60% of the population. Additionally, the agricultural sector contributes between 25% (Mozambique) and 37% (Ethiopia) of value added to GDP annually. Since 2015 much of East Africa has been affected by poor rainfall. Given the reliance of the countries on the agricultural sector, the drought has had a severe impact on many livelihoods and national food security in the ASIF countries. To illustrate, in Malawi, the weather continues to play a vital role in the economy: now that rainfall has improved, agricultural output and thus GDP is expected to pick up significantly.

Food security in the ASIF invested countries remains an ongoing concern. According to The Economists' Food Security Index, all ASIF countries are struggling to ensure that food is affordable, available and of a

[43] GDP data are in constant 2010 U.S. dollars. Source: World Bank.
[44] Gross national income divided by midyear population. Data are in constant 2010 U.S. dollars. Source: World Bank.

good quality. The expectation is that the continued population growth and increasingly unpredictable weather will put more pressure on an already vulnerable agricultural sector.

Table 19 Food Security Index scores (2012 – 2017)[45]

	Total 2012	Total 2017	*Affordability*	*Availability*	*Quality and Safety*	*Natural Resources*
Ethiopia	36.5	33.3	*16.9*	*47.6*	*34.9*	*61.1*
Kenya	42.2	42.1	*37.6*	*46.5*	*41.8*	*63.7*
Malawi	32.1	31.3	*15.4*	*43.4*	*37.6*	*70.1*
Mozambique	32.2	33.7	*24.3*	*48.7*	*16.0*	*54.3*
Rwanda	39.8	48.3	*29.4*	*46.2*	*48.3*	*68.4*
Tanzania	35.4	33.6	*26.4*	*44.3*	*33.6*	*67.5*
Uganda	43.3	46.3	*36.3*	*48.5*	*46.3*	*71.3*

Foreign Exchange

As the table below shows, ASIF faced high exchange rate variances of local currencies of the various investee host countries against the USD. From the date of initial investment to that of exit or the present (FY 2017), all local currencies depreciated. The Malawi Kwacha, Mozambique Metical, and Ugandan Shilling experienced significant devaluations, ranging from 40% to 80%. Many of the ASIF invested countries struggled with low commodity prices and thus lower exports, which severely impacted the demand for their currencies. As discussed in the financial performance, this has had a significant impact on the ASIF portfolio companies, as depreciations made it expensive to service US Dollar-based loans.

Table 20: Overview of exchange rate variances over the holding period

	Country	Local currency denomination	Exchange rate at inv. (FX/USD)	Exch. rate at exit or 2017 (FX/USD)	Change in value local currency	Deal currency
Western Seed	Kenya	KE Shilling	79.2	103.4	-23%	Local
FICA	Uganda	UG Shilling	2,177	3,610	-40%	Local
NASECO	Uganda	UG Shilling	2,177	3,610	-40%	Mixed
CAII	Uganda	UG Shilling	2,177	2,503	-13%	Local
Seed-Tech	Malawi	Kwacha	148.2	725.4	-80%	USD
Funwe Farms	Malawi	Kwacha	157.0	725.4	-78%	Mixed
Dryland Seed	Kenya	KE Shilling	88.8	103.4	-14%	Local
Highland Seed	Tanzania	TZ Shilling	1,584	2.236	-29%	USD
Dengo	Mozambique	Metical	28,087	64,736	-57%	USD
Alemayehu	Ethiopia	Birr	17.8	21.9	-19%	USD
FAIM	Rwanda	RW Franc	609.1	836.5	-27%	USD
Mimea	Kenya	KE Shilling	84.5	103.4	-18%	USD
Freshco	Kenya	KE Shilling	86.1	103.4	-17%	USD

8.2 Other external factors: role of government, climate and diseases

Most of the companies invested by ASIF were heavily affected by other external factors. Notably a large role of the government as well as climate and diseases.

Role of government

In all countries where ASIF invested the government plays a major role in agricultural sector, either by buying the majority of seed on the market (e.g. Malawi, Tanzania, Uganda) or acting as the main supplier

[45] Food Security Index scores are compiled by The Economist Intelligence Unit. Scores are out of 100, with 100 being most favourable.

(e.g. Kenya). Governments' sometimes erratic influence on the private seed market led to distortions in demand and supply, and affected long-term planning for seed companies. Further to that, the payment irregularity by governments continues to affect private seed business performance, as maintaining working capital cycles regularly became untenable.

An example where government most affected performance is Malawi, where seed sales are heavily reliant on the government and donor funded Farm Input Subsidy Program (FISP). FISP is responsible for 80% of all seed sales in Malawi. When donors cut their contribution to the FISP as a result of misappropriation of funds by the government, seed companies, including Seed-Tech and Funwe, were significantly affected. To cope with the budget cuts, the FISP scaled down its seed purchase volumes by as much as 25% and demanded that small scale farmers make cash contributions of 25% of the purchase seed price. These measures suppressed overall seed demand in Malawi and led to a race to the bottom as seed processors sought to offload their stocks.

Climate and diseases

Seed production was significantly affected by weather and diseases. Natural vagaries in terms of weather, such as droughts and El-Nino had a major effect on seed production, notably in Kenya. In addition, crop diseases negatively affected harvests as well as demand for seed in multiple years in Kenya, Ethiopia, Tanzania, and Uganda. A notable example was the Maize Lethal Necrosis Disease (MLND) in 2015 and 2016 which particularly affected farmer productivity in Eastern Uganda, Kenya and Tanzania. Moreover, an outbreak of the fall armyworm caused significant losses of maize crops. It surfaced in Nigeria early 2016, and has since spread out to most African maize producing countries.

9 LESSONS LEARNED AND RECOMMENDATIONS

Based on ASIF's experience and results, various lessons for investors and capacity building providers can be distilled. These lessons are summed up in the table below ("L", with a corresponding recommendation ("R").

Lessons and Recommendations
On fund strategy
L: Focusing on a single sector provides no opportunity for diversification and hence poses high risk *R: Consider including investments in value chain related to seed (e.g. fertiliser, post-harvest management infrastructure) in scope to diversify*
L: Development impact results are strongly aligned to a business' financial performance *R: Increase focus on financial viability of prospective businesses in due diligence; and pick solid rather than too ambitious entrepreneurs or seemingly high impact ventures*
L: Seed investment funds cannot have 100% winners and do not need to: you just need to have enough winners to change the dynamic *R: Continue engagement with the successful performers and try to further support the challenged ones*
L: The small fund size and low individual ticket size drive up costs and make generating positive net returns challenging *R: Consider future interventions of more scale, at larger ticket sizes and/or in cooperation with other co-investors*
On fund operations
L: Having Limited Partners on the Investment Committee hampers the independent role the fund Manager should play and can lead to (potential) conflicts of interest *R: Refrain from providing Limited Partners a seat on the Investment Committee and ensure to always speak with one voice to companies*
L: The absence of clear agreed development impact objectives hampers effective data collection, impact measurement, mutual understanding and in the end the demonstration effect *R: Design and agree on a Theory of Change with clear pathways to impact objectives, output KPIs, outcomes and impacts as well as a measurement methodology*
L: The absence of clear summarised and aggregate overview of performance in reporting leads to misunderstandings or even a lack of trust between a GP and LP *R: Include at least a summarised portfolio overview, brief narrative, consistent reporting over comparable financial periods, as well as identified actions and timelines in future reporting*
On investment analysis and decision-making
L: Seed companies often base growth plans on accessibility of funding rather than an executable and realistic business plan

R: The capability to execute on business plans should be the primary influence on the decision to make an investment; perform deep analysis of market demand, challenge entrepreneur on growth plans and his/her ability to put the capital to work

L: The seed sector is characterised by gradual growth and investments should reflect this

R: Refrain from overcapitalising a business to fund ambitious growth plans, rather provide smaller batches of financing with follow-on capital after successful repayment (e.g. lines of credit)

L: The main reason for company failure is low quality of management, weak governance structures, and the slow transition into well governed and professionally managed operations due to the enduring dependence on strong personality driven management styles

R: Conduct strong analysis of promoters as part of due diligence (including their responsiveness to advice and appetite for change), and draw up an overview of organisational weaknesses and corresponding measures at investment

L: Seed sales to governments and NGOs seem solid, but are a major structural risk to seed businesses

R: Include analysis of company sales per main categories government, NGOs and retail in due diligence and work with the company to steer towards higher retail sales

L: Having an investment in a company that appears to be going downhill cannot be justification for putting more money into the company

R: Avoid the sunk cost fallacy and approach every single (follow-on) investment as a standalone situation

On portfolio management

L: The first 100 days of an investment are critical, especially in relation to the utilisation of investment funds and compliance with contractual obligations by investees

R: Monitor companies closely right after investment, and jointly work on a 100-day Action Plan after investment as well as a long-term strategic and operational plan

L: Relatively young companies require intensive handholding and advice on standard business aspects such as administration, financial accounting and reporting

R: Have a Technical Assistance (TA) facility to help company professionalise business fundamentals such as management information systems, financial accounting and reporting. It could also be considered to establish a flexible pool of turnaround managers and/or other key functions.

L: Companies can use external factors (e.g. natural vagaries and diseases) to mask poor performance

R: Triangulate the company's owner/manager opinions with experts on the ground

L: Due to the seasonal nature of a seed business, partial reporting year figures mean little

R: Only use full year figures for monitoring and analysis

L: Additional capital mobilised is not a standalone indicator for financial sustainability of companies

R: Include '% of profit reinvested in the business' as an indicator for sustainability of the business

ANNEX 1: INTERVIEWS AND SURVEY RESPONDENTS

Name	Organization	Position	Survey	Interview
PCP				
Edward Isingoma	PCP	Managing Partner	√	√
Wanjohi Ndagu	PCP	Partner	√	√
David Wangolo	PCP	Investment Manager	√	√
Anne N'Gugi	PCP	Investment Manager	√	√
Diana Njuguna	PCP	Investment Analyst		√
Former PCP				
Tom Adlam	AgDevCo	Associate Director	√	√
Patrick Oketa	Acumen	Associate Director		
IC members				
George Bigirwa	AGRA	Regional Head, East and Southern Africa	√	√
Joe DeVries	AGRA	VP Program Dev. & Innovation	√	√
Aline O'Connor	Agri-Experience	Director	√	√
Mulemia Maina	AgriExperience	Deputy Director	√	√
Board members				
Victoria Sabula	AGRA	General Counsel	√	√
AGRA				
Daudi Sumba	AGRA	Head, Monitoring and Evaluation		√
Hedwig Siewertsen	AGRA	Head of Inclusive Finance		√
Fred Muhhuku	AGRA	Agribusiness Consultant	√	√
Zuhura Masiga	AGRA	Coordinator, Agricultural Transformation		√
Investees				
Saleem Esmail	Western Seed	CEO	√	√
Narcis Tumushabe	FICA	CEO	√	√
Dennis Serunkuma	FICA	CFO		√
Nicolai Rodeyns	NASECO	Managing Director	√	√
Ngila Kimotho	Dryland Seed	Managing Director	√	√
Stevin Kamwendo	Funwe	Managing Director	√	
Eric Phiri	Seed-Tech	Chairman & Main Shareholder	√	
Elizabeth Mallya	Highland Seed	General Manager	√	
Mauricio Dengo	Dengo	Managing Director & Owner	√	
Peter Kamau	Mimea	CEO	√	
James Karanja	Freshco	General Manager	√	

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