Innovation for Agri-business
Phase 2

Mid-Term Review

29th March 2017

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Acknowledgements

The MTR team comprised Doug Hindson, of Mesopartner, and Suse Antunes of South Research, Mozambique. The team benefitted greatly from the support of the SDC staff in Maputo and the InovAgro team in Nampula. For this support the MTR team wishes to thank Horácio Morgado, Head of Economic Development (Income & Employment), Fauna Ibramogy, Team Leader, in Maputo. Likewise, the MTR team thanks Nephas Munyeche, Managing Director, InovAgro, Jacquiline Mweli, Administration, Logistic and Human Resource Officer, Octavio Machado, Monitoring and Results Measurement Officer, Abel Lisboa, Market Systems Change Manager, Cabo Delgado, Jahamo Calima, Market Systems Change Manager Zambezia and Rogerio Semedo, driver based with the team in Nampula.

In the field, in Northern Mozambique and in Maputo, the MTR team was received with tremendous warmth and openness by InovAgro's partners and beneficiaries who willingly gave time to the MTR team and were keen to share their experiences. We express our sincere thanks all the people we interviewed and all who participated in the community workshops.

Executive summary

InovAgro is a pro-poor, private sector development project funded by Swiss Agency for Development and Cooperation (SDC) and implemented by Development Alternatives Incorporated (DAI) and COWI, both international consultancies.

Using a market systems development (MSD) approach, the project aims to increase the income and wealth of the rural population in Northern Mozambique, particularly small-holder farmers (SHFs), in the Nampula, Zambezia and Cabo Delgado.

The context is one of persistent rural poverty despite two decades of rapid growth in Mozambique following the civil conflict. Continuing high levels of poverty are due to the slow-down of growth in industry and services and low productivity in subsistence agriculture, where 80% of the economically active population are employed.

The project strategy focusses on five value chains: soya, pigeon pea, groundnuts, sesame and maize. It has six cross-cutting interventions: extension services, seed governance, finance (savings and loans schemes and bank loans), mechanisation, land security and gender, the latter a transversal intervention.

The project's approach is not to provide direct support to SHFs, but rather to form partnerships with companies who the project encourages to enter into market relations with SHFs, where market opportunities exist but where private companies hesitate due to the perceived risks. InovAgro provides support to set up networks of extension officers, input suppliers and output buyers. It seeks to trigger tipping points in which private sector suppliers and buyers crowd into these markets and SHFs are motivated to buy and use certified, adopt modern cultivation methods and increase sales to buyers supplying external markets.

After experiencing setbacks in Phase 1, Phase 2 of the project, which runs from January 2014 to December 2017, has already achieved significant successes in its core interventions. Seed distribution and agricultural extension networks have been established and supplies of certified seed are reaching into farming communities. SHF seed demand has expanded through the effects of demonstration plots, field days and village seed fairs, with SHFs in the implementation areas and beyond buying and planting certified seed and using appropriate cultivation methods. Productivity has increased substantially and with it the volume of output. The project's grain buying initiative started later and has not gone as far as the seed supply intervention, but is taking root. It is driven by dynamic local entrepreneurs who buy from SHFs and on-sell to middlemen and larger traders.

Village savings and loans groups (VSLAs) have been established with an innovative, dedicated seed fund, combined with the traditional individual and social loan funds. VSLA membership has grown rapidly in the implementation areas, and aroused interest beyond them. The seed funds have already accumulated savings and the longer-established VSLAs have used these funds to buy and plant certified seeds. There is scope to strengthen the schemes by replenishing them with revenues generated by grain sales and by opening VSLA accounts with interested micro-finance institutions. The VSLAs are led by highly committed and capable women, and it is here that the potential exists for InovAgro to help bring about change in gender

relations, particularly within production and marketing, and also in household decision taking on the use of income for family consumption and investment.

The loan finance initiative was initially a response to SHF's need for operational capital during the planting and harvesting seasons, when labour supplies become scarce and labour more costly. InovAgro pursued this initiative with the Banco Oportunidade de Mozambique (BOM), for loan finance, and the Mozambique Tax Authority, for tax registration. The initiative is currently in suspense due to restructuring within the BOM, but InovAgro is drafting a memorandum of agreement with BOM for future use.

The aim of the mechanisation service initiative is to create a market in mechanized ploughing, shelling and husking services for SHFs, in part to overcome the labour shortages experienced during peak seasons. The project has given training to lead farmers on the technical, finance and business aspects of mechanized service provision and there has been rapid growth in demand for these services amongst SHFs in some areas. To move forward with this intervention, InovAgro should develop a more targeted approach, focusing first on areas where SHFs have larger, better-prepared and more accessible land holdings, and where there are local entrepreneurs with the financial and technical capacity to supply the services.

InovAgro has run a path-breaking farmer land security-enhancing initiative focused on the creation of Land and Natural Resources (NLR) and Paralegal Committees within communities threated with removal and resettlement by large commercial agricultural investors. There is scope to take this initiative further by developing a model to promote dialogue and negotiation between threatened communities and large investors. The aim would be to establish production and marketing arrangements that are mutually beneficial to SHF communities and the investors.

At the national level, InovAgro has lead initiatives to establish a platform for dialogue between private, public and NGO actors in the seed sector, to set up a seed quality inspectorate and to create an information sharing website on seed supply and demand. The aim is to improve seed sector governance. The foundations have been laid, but further effort is needed to make the platform, inspectorate and website fully operational.

For Phase 3, InovAgro, while retaining its overall objective and strategy framework, can further strengthen its impact by: 1. Consolidating achievements in its core seed and grain market interventions, taking them through at least two or three further agricultural cycles, 2. Strengthen and expand to its new implementation areas its VSLA intervention, linking it to returns from grain sales, 3. Adapt, refocus and connect the loan finance and mechanisation initiatives, beginning with implementation areas that are most propitious, 4. Strengthen and connect more closely the project interventions within each implementation area to exploit synergies and help induce tipping points, 5. Take the farmer land security initiative the next step by developing a community-investor dialogue model to establish mutually beneficial production and marketing arrangements, and 6. Vigorously pursue the national seed sector governance initiative to create a better regulatory environment.

MID-TERM REVIEW OF INOVAGRO PHASE 2

Structure of the Report

The report is divided into two parts. Part A deals with the terms of reference, profile of the project in its context and the MTR method. Part B evaluates InovAgro's strategy, interventions and results, and draws lessons. We have placed the proceedings from the discussion on strategy at the workshops on the 6th and 7th March in Nampula in Annex 16. A score grid, provided in Annex 10, summarises the findings.

PART A. TERMS OF REFERENCE, PROFILE & APPROACH

1. Terms of Reference

The objectives of the Mid-Term Review (MTR) of the Innovation for Agri-business (InovAgro) project are two-fold (Terms of Reference, Annex 1):

1. To appraise the project's strategic orientation and results achieved
2. To identify strategic and operational recommendations for a new phase.

The terms of reference require the MTR team to pay particular attention to the following intervention areas:

1. Seed supply
2. Mechanisation services
3. Farmer economic security
4. Gender

2. Profile of the project in its context

InovAgro is a pro-poor, private sector development project funded by Swiss Agency for Development and Cooperation (SDC) and implemented by Development Alternatives Incorporated (DAI) and COWI, international consultancies.

Through agri-business development, the project aims to increase the income and wealth of the rural population in Northern Mozambique, particularly small-holder farmers (SHFs), in the provinces of Nampula, Zambezia and Cabo Delgado.

Using the market systems development (MSD), the project seeks to strengthen the commercial participation of SHFs in five agricultural value chains: soya beans, pigeon peas, groundnuts, sesame and maize. The MSD approach is to strengthen market systems and transform knowledge and practice (KAP) in agricultural production and marketing as ways of increasing SHF's productivity, incomes and wealth.

The context is one of persistent rural poverty in Northern Mozambique despite two decades of rapid growth following the end of civil conflict. The continuing high levels of poverty are due mainly to the slow-down of growth in industry and services and

continuing low levels of productivity in subsistence agriculture, where around 80% of the economically active population are still employed.[1]

Aligned with the Government of Mozambique's Strategic Plan for Agricultural Development 2010-2019, and SDC's country priorities, the project's hypothesis is that private sector-led development is the key to poverty reduction and sustainable development amongst SHF households.

During its first phase, between January 2011 and December 2013, InovAgro linked two large companies operating in the soya bean and pigeon pea industries with SHFs in out-grower schemes with embedded extension, input, mechanisation and financial services. One of the reasons for adopting this approach was the almost complete absence of commercial agriculture extension services for SHFs at that time.

The schemes resulted in significant increases in SHF profitability, but broke down due to a change in these companies' strategies, notably their reluctance to continue providing embedded services in the face of SHF's non-repayment of loans and side-selling to itinerant grain buyers.

Drawing on this experience, the project underwent a long review process that resulted in the modified strategy that underlies Phase 2. InovAgro's overall goal remained the same, but it widened its product focus and partnership base.

During Phase 2, InovAgro has focussed on five grains: soya, pigeon pea, groundnut, sesame and, more recently, maize. It has worked with a number of national and local certified seed and other input suppliers and with mechanisation and financial service providers. It has provided selected partners with time-bound, risk-reducing financial and technical support to enter input, output and service markets for SHFs where there is apparent market potential.

3. Evaluation approach

Using the Organisation for Economic Cooperation and Development Assistance Committee (DAC) evaluation principles[2] as its framework, the review team made use of the following evaluation methods:

- A documentary review, undertaken prior to the mission in Mozambique
- Meetings with the InovAgro team and some of its national partners
- Key informant interviews with some of its private sector partners
- Mini-workshops with groups of beneficiary SHFs where satisfaction and opinion surveys were conducted
- Site visits to demonstration plots, aggregation centres and buying posts
- Discussions with members of the InovAgro team
- Facilitation of the MTR presentation workshop on the 6th March

[1] Jones S and Tarp Finn, (2016) Understanding Mozambique's Growth Experience through and Employment Lens, Growth Traps and Opportunities in Six Dominant African Economies.
[2] DAC Guidelines and Reference Series (2010) Quality Standards for Development Evaluation, OECD.

- Observation of the InovAgro team's strategy workshop on the 7th March.

Details of the evaluation tools used, as well as the workshop and interview schedules are given in Annexes 2, 6, 7, 8 and 9.

Table 1 provides a summary of the MTR team's interactions with people in Northern Mozambique. The MTR team held 7 mini-workshops, with 244 SHF participants, and interviewed 45 people, interacting with a total of 289 people, of whom 63% were men and 38% women, over 9 working days. In addition it met with 13 people in Maputo. (See Annex 11 for details)

Table 1. Mini-workshops, Interviews and People Met in the Implementation Areas

	Number of mini-workshops held	Number of people interviewed	Participants in Mini-workshops	Total	%M	%W
Nampula	3	17	134	151		
Zambezia	2	19	83	102		
Cabo Delgado	2	9	27	36		
Total	7	45	244	289	0,63	0,38

During its 9 working days in Northern Mozambique, the team travelled over 2800 kilometres. This cut substantially into the time available to interact with people, but it gave the team a good insight into the logistical challenges facing InovAgro facilitation staff and the private sector partners attempting to implement the project.

The team did not meet the top management of all the seed supply and grain buying companies with which InovAgro has partnered, but did meet their regional representatives. The team did not meet with Banco Oportunidade de Mozambique (BOM). It sought to fill these lacunae by questioning InovAgro team members, private sector actors and service providers in the field on InovAgro's interventions.

In terms of geographical coverage, the team visited seven implementation areas, two in Nampula (Malema and Ribaué), three in Zambezi (Mocuba, Alto Molocué and Gurué) and two in Cabo Delgado (Chuire and Namuno). (See Annex 13 for maps)

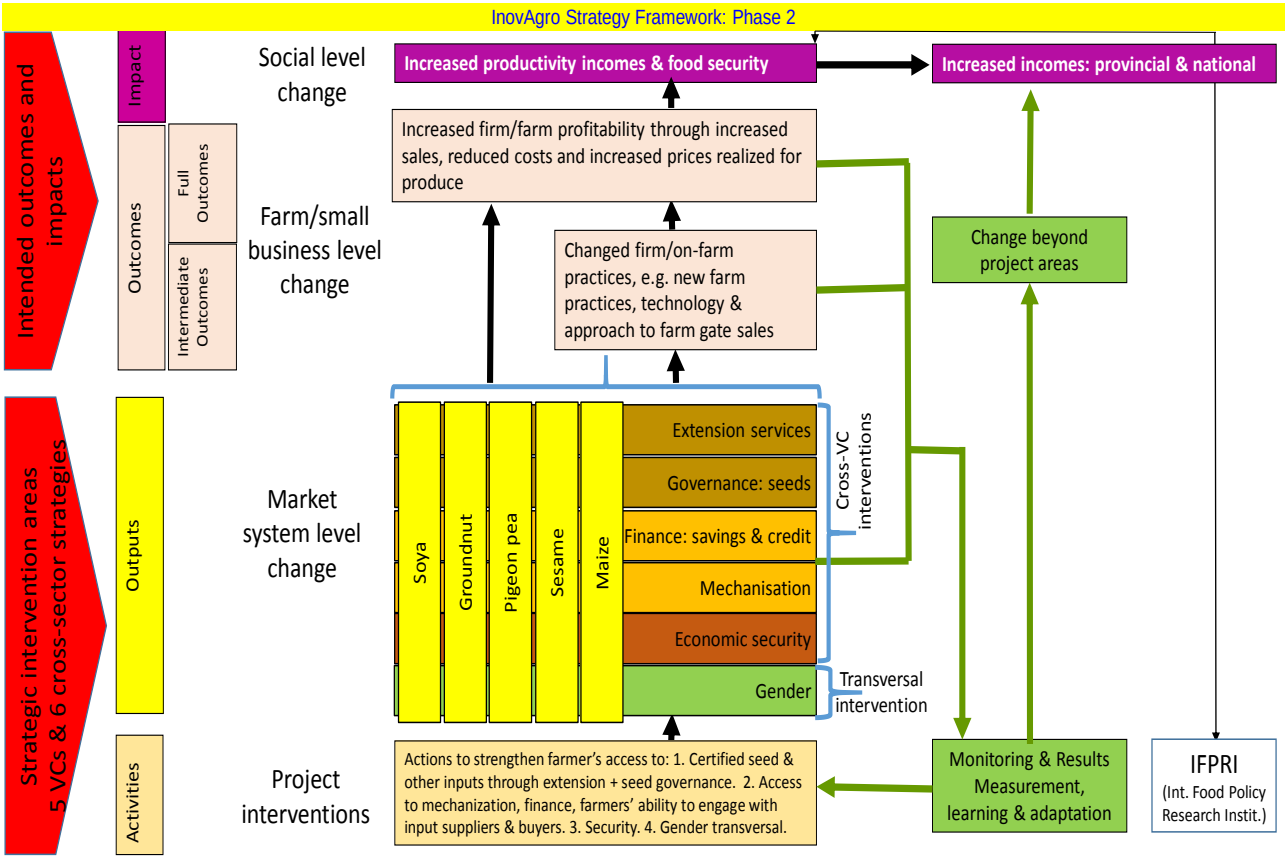
The districts in the different provinces had different intervention timelines, the duration of which the MTR team had to take into account in assessing the success or otherwise of an intervention. (See Intervention Timeline figure in Annex 14).

PART B. OVERALL STRATEGY AND INTERVENTION AREAS

1. InovAgro's Phase 2 strategy framework

The TOR call for close examination of InovAgro's Phase 2 strategy framework. InovAgro works with an overall strategy and results frameworks comprising eleven intervention areas, which is illustrated in Figure 1. Put together by the MTR team, it does not appear exactly in this form in the project's documents.

Figure 1 InovAgro's Phase 2 Strategy Framework



The overall objective of the project is to increase productivity and ultimately the incomes and wealth of 15000 SHFs in Northern Mozambique, shown in purple at the top of the central column.

The red arrows in the left column distinguish the level of strategic interventions, the activities and outputs level at the bottom, and intended outcomes and impacts at the top. Project interventions, shown in the middle column, at the bottom, are actions to strengthen SHF's access to certified seed and other inputs through extension, improved national seed sector governance, improved access to mechanisation and loan finance and strengthened ability to engage with input suppliers and output buyers. To these interventions are added improved land security for SHFs and gender equity, the latter as a transversal intervention.

The causal logic of the strategy is that project interventions lead to changes at two levels: the market systems level and the level of farms and small businesses. Market system changes give rise to intermediate and full outcomes. Intermediate outcomes are changes in the KAP of farmers in the spheres of production and markets. These changes (at the level of market systems and in KAP) give rise to full outcomes, namely reduced costs, increased sales and better prices for products, resulting in increased farm and firm profitability. At the level of social change, the impact is increased productivity and incomes for SHFs and local firms.

Each of the eleven intervention areas has its own results chain, not shown in the diagram. Five of these are sector interventions, namely value chain upgrade for soya,

groundnut, pigeon pea, sesame and maize. There are six cross-sector interventions, shown in the horizontal bars: extension services, seed governance, financial services, mechanisation, economic security and gender.

We have illustrated Monitoring and Results Measurement (MRM), learning and adaptation in the green box at the bottom right. Within the InovAgro project, the focus of MRM is on activities, outputs and outcomes. There is an agreement between InovAgro and the International Food Policy Research Institute (IPRI) for the latter organisation to measure impact as part of its work in the wider region.

In the MTR team's assessment, this strategy framework is coherent and appropriate, given the project's objectives and approach. Results chains are useful means of thinking through the causal logic of an intervention prior to implementation. They enable prior identification of indicators of project performance, and anticipation of risks to project implementation. Having a results chain worked out with indicators is important for accountability to the organisations funding a project.

Results chains are less well adapted to the learning function, the second main function of M&E systems. Markets are complex adaptive systems (CADs) whose dynamics cannot easily be captured within uni-linear causal chains. This is because interventions that seek to bring changes in CADs may, and indeed generally do, provoke unpredictable feedback effects that are not possible to anticipate or represent within results chains.[3]

It is therefore helpful to approach markets as CADs that are likely to have unpredictable responses to project interventions. Conceiving of markets as CADs sensitises the project team to "emergent trends", namely trends not originally visible and therefore not incorporated into the original project design, but which emerge as a result of the project's interventions. Project interventions may then be adapted to take advantage of positive emergent trends, those that help move the system towards the desired objectives, and to inhibit negative ones. This approach to MSD helps project management move more rapidly towards the anticipated "tipping points", namely points at which positive emergent trends become auto-generative and spread beyond the project's immediate circle of partners, beneficiaries and implantation areas.

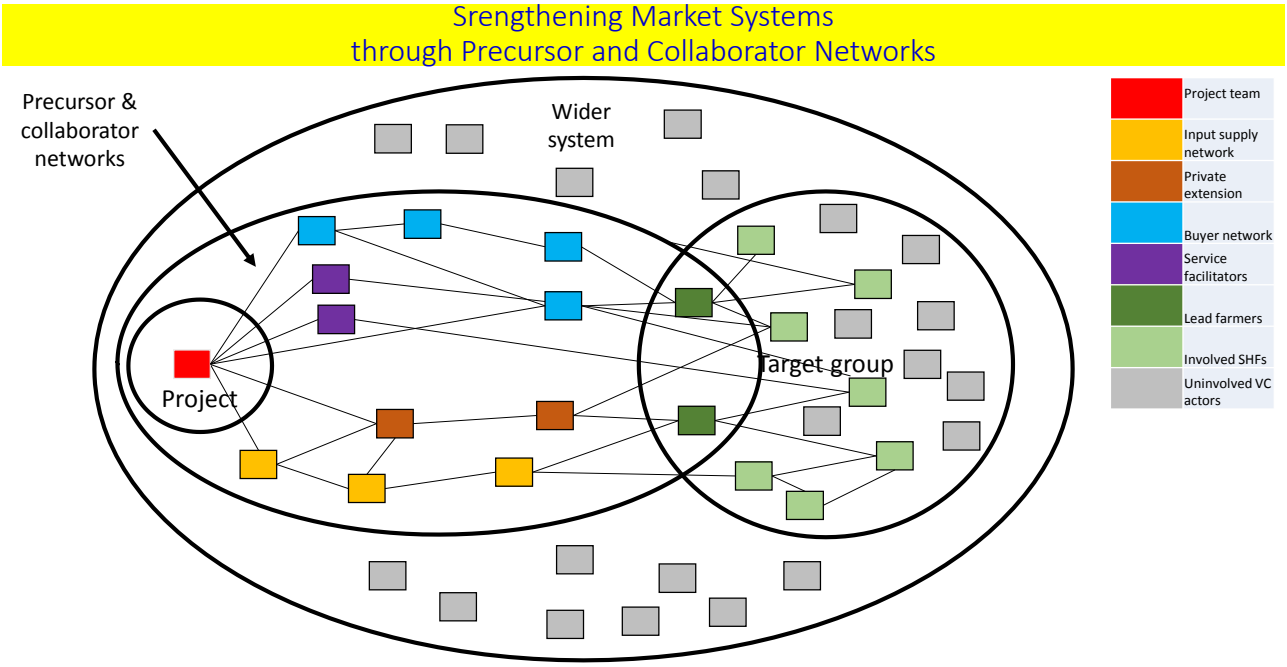
Although we did not see indications of complexity thinking in the design of the InovAgro interventions, learning and rapid adaptation to change emerged as critical features of the actual management approach being adopted by InovAgro. This, as we bring out later in the report, is one of the project's strengths and one of the main reasons it has been able to move so far towards its objectives during Phase 2.

To explain more fully what the MTR has in mind in raising the issue of complexity, we refer to the illustration in Figure 2, which we use to interpret the InovAgro's approach in the context of complexity. InovAgro project's approach is indirect. It works through what may be called precursors and networks, rather than providing direct support to SHFs, which is the traditional approach to development promotion.

[3] Osorio-Cortes L and Jenal M (2013) Monitoring and measuring change in market systems – rethinking the current paradigm–, Synthesis, Mafi.

The project is illustrated in the oval on the left, the red box. It sets up partnerships with precursors, shown in the inner oval, and provides support to these precursors to encourage them to set up supply and demand networks that link them to SHFs, in this way removing some of the risk to the partners and demonstrating the opportunities that lie in connecting with SHFs.

Figure 2. Market System Development through Support for Precursors and Collaborator Networks



Source: Osario-Cortes and Marcus Jenal (2013) Monitoring and Measuring Change in Market Systems, Rethinking the Current Paradigm, MAFI.

In the circle on the right are the SHFs, the end beneficiaries of the project, some of whom are connected to the project though the precursors, those shown in green, and some of whom are not connected, shown in grey. Outside this system are actors who, at the outset, are not connected to the project, either directly or indirectly.

Within the precursor oval there are three kinds of networks: input supply networks, shown in light brown, output purchase networks, shown in blue, private sector extension service providers, shown in brown, and national organisations providing facilitation services, shown in dark blue. The precursors shown in dark green within the beneficiary circle are local entrepreneurs, key intermediaries within the supply and output chains. Through providing financial and technical support to the precursors, the project seeks to set in motion a process that strengthens the market linkages between input suppliers and SHFs on the one hand and output buyers and SHFs on the other.

The hypothesis underlying this approach is that strengthening the productive activities and market engagement of SHF in this indirect way, namely through the precursors, will trigger a tipping point. A tipping point occurs when an intervention triggers a change within the markets that takes them across a threshold after which they gain sufficient momentum to become self-sustaining. For the SHFs, the tipping point is reached when those within the immediate orbit of the project, within the

intervention areas, start joining in in large numbers, for example by buying certified seed and adopting new cultivation techniques. The momentum generated by the tipping point within the intervention areas then starts drawing in SHFs from neighbouring areas.

For the precursor networks, the tipping point is reached when there is a crowding in effect, for example when new companies are drawn into the supply system, and when those already involved decide to continue without the project's support, or when they decide to move to new geographical areas and set up networks on their own. Once the tipping points and their effects begin to impact beyond the project's implementation areas and partnership base, the processes become auto-generative and the project is able to withdraw.

It is important to note, however, that the results of interventions into complex adaptive systems are inherently unpredictable – and this is crucial for evaluation of the project's performance. Unlike projects delivering physical outputs like bridges and roads, the relationship between inputs and outputs cannot be predicted with certainty prior to the intervention. What matters is not only how far the project has done in achieving pre-conceived measurable results, but also how skilfully the project management responds to unforeseen developments, taking advantage of those that are favourable and inhibiting those that are unfavourable in terms of the overall goal. This MTR looks closely at this aspect of the project management's approach.

1.2 Farmers' Satisfaction and Opinion Survey

The results of the farmer satisfaction and opinion survey are shown in Table 2. A total of 244 SHF farmers participated in the mini-workshops. At the beginning of each workshop, the farmers were asked to identify the interventions with which they had experience. Not all groups had experience of all interventions, as Table 2 shows. Using the descriptions by which the interventions are known within the communities, each intervention area was listed on a flip chart, then discussed and scored by the groups. (See Annex 2 for details on the method and how it had to be adapted)

Demonstration plots and field days

The scores for the demonstration plots established by the InovAgro private sector extension officers ranged from 4-5, namely very good to excellent. The reasons given by the groups were that the plots showed them which seeds performed best and the field days showed them how to use better cultivation methods. The demonstration plots visited by the MTR team were located in sites along or near to main roads, where passers-by could observe the growth performance of different varieties of certified and "local" seed (retained seed from prior harvests). Great appreciation was expressed by the workshop participants for the demonstration plots. As reported later, these plots and the field days have had a major impact on SHF's choice of seeds and cultivation methods, within a very short space of time.

Certified seeds

Certified seeds are brought closer to SHFs though networks of agro-dealers and village based agents (VBAs), as well as through seed fairs at local markets that are

organised by the private sector extension officers. The intervention to make certified seeds more accessible was highly appreciated by SHFs because, in the words of the SHFs present at the mini-workshops, it has resulted in the high quality seeds becoming more accessible at reasonable prices. Some groups in the mini-workshops did, however, indicate that the prices of these seeds were above their expectations. The score of 2 in Iapala was due to reported late delivery and poor quality of the seed during one of the seasons, a result of poor organisation by one of the seed suppliers.

Table 2. Farmers' Satisfaction and Opinion Survey

Farmer Satisfaction & Opinion Survey							
Community	Matharya	Iapala	Gurue	Mugeba	Pulupo	Namuno	Malopa
M&W	M=63,W=28	M=1,W=25	M=20,W+12	M=12,W=13	M=7, W=3	M=8,W=9	M=22,W=5
Participants	91	26	32	25	10	17	27
Intervention areas							
1. Demonstration plots and field days	4	4	5	5	5	5	
2. Certified seed supplies	4	2	5	5	5	5	
3. Output buying	3		5	5			
4. Seed fairs		5	5	4			
5. Village savings groups	3	5		5			
6. Mechanisation services			5	5			
7. Land security	4						Very high

Seed fairs

The scores from the mini-workshops in Iapala, Gurué and Mugeba for the seed fairs also show very high levels of satisfaction. The main reason given by the participants was that the fairs made the seeds accessible. The score of 4 (rather than 5) reflects a degree of dissatisfaction over the seed prices, which a few of the respondents felt were too high.

Output buying

Within the mini-workshops for SHFs held by the MTR team, there were fewer groups with experience of output buying than with purchase of certified seed. The reason is that the output buying initiative is more recent and less developed than interventions on the seed input side.

Two groups expressed a very high degree of satisfaction with the output buying intervention. The workshop in Matharya had an average score of 3. Here it was reported that the prices obtained through the buyer scheme were lower than prices obtained from itinerant buyers, known locally as "Bangladeshis". Bangladeshis are buyers who come in from outside the farming areas, who have good knowledge of

international prices and, when the markets make this possible, offer higher prices to SHFs than those offered by the InovAgro-supported local buyers. The MTR team pursued this issue with the InovAgro Managing Director who produced detailed information, for September 2016, on the prices paid by the project supported aggregators and by other buyers, notably the Bangladeshis. (See Annex 17) For that season there was no difference between these prices. On the basis of this information it appears that the issues raised by some participants at the mini-workshops are not representative of the aggregators, taken as a whole.

Village Savings and Loans Groups (VSLAs)

The scores obtained on the village savings and loans intervention in Iapala and Mugeba revealed a very high level of satisfaction with this initiative. The score of 3 for VSLAs, obtained in Matharya turned out to be based on a misunderstanding on the part of the participants. There is another project facilitating savings and credit groups in the area and the score of 3 is for their work, not that of InovAgro.

The MTR team witnessed a high level of enthusiasm for the VSLAs at the mini-workshops in Iapala and Mugeba. There was unanimity this intervention deserved a score 5 out of 5. The atmosphere at these two meetings was joyous and celebratory and when the participants broke up into groups to analyse and score the intervention they become highly concentrated and intense. With the exception of one man at one workshop, all the participants were women.

It turned out that these VSLAs are not just savings and loans organisations, they are also playing an important role as women's solidarity and mutual aid groups. The MTR team asked questions about the influence of the VSLAs on gender roles. From the responses obtained, it appears that men are not threatened by these organisations and are, rather, showing growing interest in the seed fund as a source of loan capital for seed purchase. We return to this issue later in the report.

Mechanisation

Only two sets of workshop participants reported on mechanisation. The meeting in Matharya did not take up this issue due to the absence of a question in the questionnaire administered there, an omission on the part of the MTR team that was corrected at subsequent meetings.

The scores from Gurué and Mugeba express high appreciation for the mechanisation initiative, but our later fieldwork raised questions as to viability of this initiative, as currently conceived, especially in the areas with very small land holdings. We return to this issue later in the report.

Land security

In only two of the workshops did the issue of land security come up. In Matharya, an average score of 4 was given, but it is not clear that this really reflects knowledge of the InovAgro land security initiative or a more general concern about conflicts over land use in this community. In Malopa, land security is the community's major preoccupation and has been for many years.

Malopa is one of two communities in which InovAgro's is promoting farmer's land security, through an affiliate of InovAgro's partner Centro Terra Vivo (CTV), called Terra Amiga. In Malopa, the team held a workshop with community representatives, but did not administer the rest of the survey because land security is the only initiative that InovAgro has been pursuing there, thus far. From the proceedings at the workshop, which focussed exclusively on land security, it emerged that the community is highly appreciative of the work that Terra Amiga's has been doing there. The case of land security is examined in more detail later in the report.

1.3 Intervention results

We now turn to InovAgro's individual interventions.

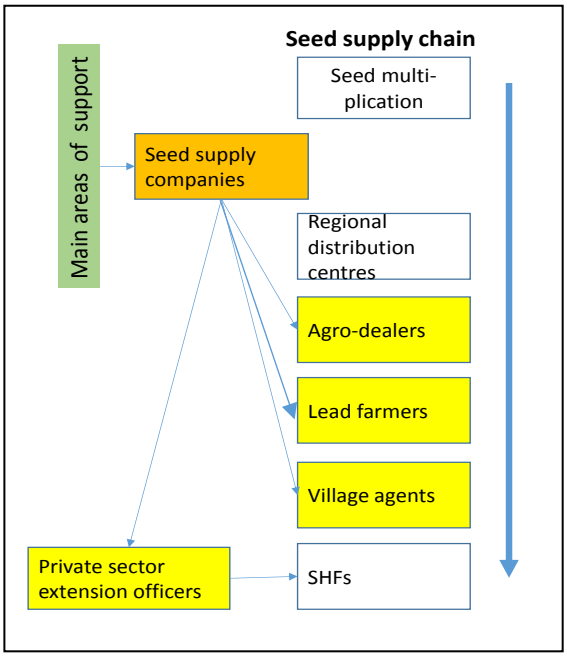
1.3.1 Certified Seed Market

On the seed supply side

InovAgro's aim with respect to the seed market is to improve the efficiency and quality of seed supply, strengthen the demand for certified seed and the SHFs' capacities to cultivate certified seed and market the crops.

InovAgro's approach is to increase demand for certified seed by supporting seed companies to set up networks of private sector extension worker who organise demonstration plots, field days and seed fairs.

Demonstration plots, field days and seed fairs are not new ideas in the region. What is new is that InovAgro has integrated these activities into its MSD approach, by partnering with seed companies to set up networks of extension workers who organise these activities.



InovAgro's seed supply intervention is illustrated in the box on the right. The project supports the seed companies to set up networks of private sector extension officers who organise demonstration plots and field days, on the farms of lead farmers, and seed fairs in neighbouring villages. InovAgro's main areas of direct support are through partnerships with the seed supply companies. It provides financial support to encourage these companies to set up the networks of extension officers and supply agents. The supply networks are made up of regional distribution centres (not a principal focus of the project, but an initiative taken by some of the companies themselves), local agro-dealers, lead farmers (who may service several villages) and village agents (who operate at a village level). The agro-dealers, lead farmers and village agents supply SHFs with certified seed, either through direct sales or via intermediaries further down the line.

The results to date have been very substantial. InovAgro has entered into support contracts with 9 seed companies: PANNAR Seeds, Phoenix Seeds, Sementes Nzarayapera, Oruwera, JNB, Syngenta, Klein Karoo and IKURU. The private sector extension officers have set up 94 demonstration plots and organised seed fairs that attracted, cumulatively, 2476 SHFs during 2015/15, 5260 by 2015/16 and 7610 by the 2016/17, up to February. (Annex 12)[4] The cumulative numbers of SHFs involved in field days nearly doubled from 2779 in 2014/15 to 5321 in 2015/16. The seed companies engaged 11 agro-dealers as sales promoters in 2015/16 and this number increased to 45 in 2015/16. InovAgro's partner seed companies sold a total of 111,336 kgs of seed over the two years, as a consequence of these initiatives.

It was not possible for the MTR team to judge the technical quality of the work of the private sector extension officers directly. However the MTR team met with three groups of extension workers and with three District Economic Activities Services (SDAEs), with whom it discussed the private sector extension work and its results. In all the areas the team visited it was shown demonstration plots as well as regular farm plots in which "local" seeds cultivated using traditional practices and certified seeds cultivated with new practices could be compared directly in the field. The differences in the plants, in terms of their health and vigour was evident.

On the basis of these meetings and site visits it can be concluded that the demonstration plots have had a very substantial positive impact on farming practices. They have been critical in convincing SHFs in the intervention areas, and many from neighbouring communities, to adopt the new seeds and methods, some choosing to try them out first on mini-plots and many being sufficiently convinced to apply these seeds and methods to all their land holdings.

In terms of the quality of the extension work, the SDAE directors and their extension workers, as well as the SHFs, all expressed great appreciation for the work of the private sector extension officers. The only significant problem reported by the extension officers themselves, was the lack of transport to get to, set up and oversee the plots and to extend the service more widely. The SDAEs, which are seriously understaffed and financed, expressed the strong desire to be drawn more closely into InovAgro's interventions.

The initiative was mounted against the background of the sharply declining rate of exchange between the Metical and the currencies of seed supply countries and the growing public debt in Mozambique. The former had the effect of sharply increasing prices of imported seed and encouraging a search for local seed multiplication, and the latter sharply reduced the ability of the state to purchase and distribute seed to SHFs, diminishing this market for the seed companies and predisposing them to turn to other markets. By 2014/15 and 2015/16 the volume of certified pigeon pea sold by government and donors was down to 0%. For soya beans it was 0% in 2014/15 and 3,5% in 2015/6.

[4] All data here and in rest of report are from "InovAgro Indicators 2017 draft" updated for the MTR team, unless otherwise indicated. The table appears as Annex 12 of this report.

InovAgro's certified seed intervention thus came at the right moment. It had a crowding-in effect amongst seed companies who, seeing how the system was beginning to work in practice were increasingly drawn towards InovAgro for inclusion. In this respect, it could be argued that a tipping point has already been reached in terms of private sector involvement in supplies to SHFs, but this tipping point needs to be re-enforced by matching tipping points from the side of SHF demand, if process is to become systemic and auto-generative.

Based on the evidence at its disposal, the MTR team considers that this intervention, seed input supply, which is the backbone of the InovAgro project thus far, is strongly on track.

On the seed demand side

The effect of the demonstration plots, field days and seed fairs has, firstly, resulted in very substantially increased demand for certified seed, shown above in seed sales figures, and, secondly, in a high rate of adoption of certified seeds and use of improved production techniques by SHFs involved in the intervention. The cumulative number of SHFs purchasing certified seed rose from 4124 in 2014/15 to 6508 in 2015/16 to 8633 in 2016/Feb2017, more than double. Demand for sesame increased from 1186 kgs to 11815, increasing by nearly 9 times and groundnuts from 4847 to 2220, increasing by 5 times, between 2014/15 and 2015/6. Running against these trends, the demand for soya seed fell sharply over the same period, from 30989 to 4809. There are several reasons why the demand for soya fell over this period. The first is that seed supply was limited by shortages in supplies in neighbouring countries, where the large seed companies source soya seed. This led to SHFs planting less land in soya. Secondly, soya is more sensitive to drought than the other crops and the El Niño induced drought was severe that year, and rains came late, which greatly reduced the crop. The decline in soya demand is thus not an indicator of failure of the intervention but rather of weather-induced difficulties, and a longer period is needed, comprising several agricultural cycles, to see the actual performance of this intervention for the soya crop. The number of SHFs involved in commercial value chains, planting certified and selling the crop, as a result of the intervention rose from 4723 in 2014/15 to 11940 in 2015/16, against a target of 12000.

Productivity levels rose significantly over the period, particularly for pigeon peas, which more than doubled, from 186 to 432 kgs per hectare and for groundnuts, almost doubled, from 198 to 384 kgs per hectare. Associated with increased productivity were very high increases in output for four of the targeted crops, in part because larger areas were planted. The output of pigeon pea almost quadrupled from 689 495 to 2718621 kgs, sesame more than tripled from 64099 to 192681 kgs and groundnuts almost doubled, from 126647 to 192681. Only soya went against this trend, halving from 2632533 to 1370653 kgs over the period, for the reasons given earlier.

From questions posed by the MTR during the mini-workshops and interviews with farmers, it appears that the demonstration plots, field days and seed fair are drawing interest not only from the SHFs living within the project implementation areas, but

also those from neighbouring communities, some of whom have already set up mini-demonstration plots to try out the certified seed themselves. This information is important for establishing tipping points and it would important to collect it systematically, area by area, during the next phase of the project.

A question that has to be posed about the InovAgro-supported extension work is whether it will be sustained once the project withdraws support. Following the mission, the team gathered information on this issue from the InovAgro management. PANNAR Seeds management has already taken a decision to extend the contracts of their extension officers for another year, without project support. For the smaller, locally rooted family companies, such as IKURU, JNB and Oruwera, setting up and maintaining networks of extension workers, particularly if they are contracted full time, is more difficult. However, all the companies, large and small, have demonstrated strong willingness to continue providing embedded extension services to their customers (particularly smallholder farmers) in the project locations. From the figures obtained from the InovAgro team, the proportion of support given by InovAgro varied from one company to the next, but declined between 2015/16 and 2016/17 in all cases in which companies had received support over both years. (ANNEX 18a and 8b) These are signs that a tipping point is being approached in terms of the self-sustainability of the extension services.

On the basis of the statistical data and qualitative evidence gathered by the MTR team during the field visits and after the mission, the MTR's assessment is that tipping points have been reached in terms of SHF adoption rates within the longer established project implementation areas, and there are signs that the effects are spreading beyond the project's implementation areas, into neighbouring areas. More time is needed, we believe, to build on this momentum to ensure that these trends continue, particularly within the InovAgro's newly established implementation areas.

The MTR was not asked to assess the InovAgro project at the impact level, a task that IFPRI is undertaking for InovAgro. Nevertheless, the team did ask interviewees in the implementation areas to report on their impressions of the impact of the increased income generated by the intervention on household expenditure. The responses to the questions were similar across all the areas visited. There have been significant increases in investment expenditure by SHF households, for example in farm equipment and motor bikes. There have also been increases in household consumption expenditure on food, clothes, education, and health. Some households have used their increased income to repair and improve their homes for example by replacing thatch with corrugated iron roofs.

There are some outstanding issues for project attention that came up during the fieldwork. SHFs in some workshops reported late delivery and poor quality of some certified seed. The late delivery may reflect reluctance on the part of seed companies to deliver early, due to poor storage conditions in the implementation areas, which can adversely affect germination rates. The private sector extension workers all referred to the lack of transport as their single greatest obstacle to widening and deepening the scope of their work.

In most of the districts where the team met with the SDAE, the district extension services office, considerable appreciation was expressed for the work of the private sector extension officers and a modus vivendi has been established enabling them to share resources such as transport, but the SDAE's are woefully understaffed. This raised the question of how to involve the public sector agricultural extension service more fully in the initiative, for example by formalising the relationship between the private and public sector officers, who are already working well together in some of the areas, and by finding ways of linking the SDAEs in an advisory capacity to the input supply companies around extension work.

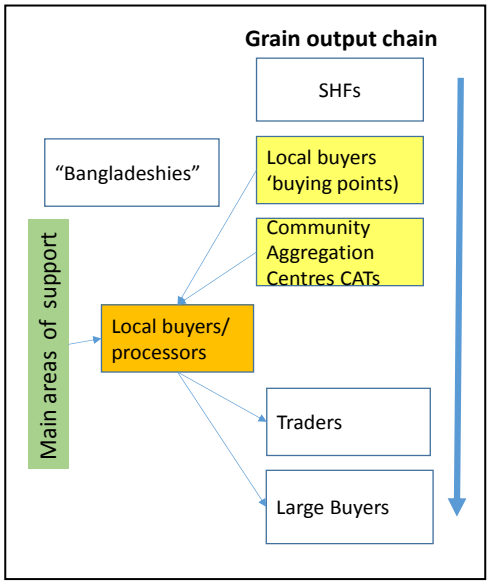
Agricultural extension work has strong positive externalities and a well-functioning public sector service would provide a pillar for the longer term evolution and sustainability of the SHF sector. This is an area for consideration for Phase 3 of the project.

1.3.2 Grain marketing

On the supply side

InovAgro seeks to support the establishment of sustainable commercial linkages between smallholder farmers and output buyers. Having started more recently, the grain market initiative is less advanced than the seed initiative.

As illustrated in the box, InovAgro's approach has been to enter into support contracts with local grain buyers who act as intermediaries between the local buying agents and community aggregators (CATs) who are supplied by SHFs involved in the scheme, on the one hand, and the traders and larger buyers, on the other hand. InovAgro's data base on grain sales is less complete than that on the seed sales side. The records do not show numbers of output buyers in 2014/15. In 2015/16 there were 12 of them in the implementation areas. The volume of output purchased by these buyers was 6021 metric tons. From InovAgro's records, the number of SHFs entering supply contracts with private sector buyers in 2014/15 was 2798 and the value of these contracts was MZN 2,79 million. There is no data yet available on the equivalent numbers for 2015/16 or 2017.



The project engages with the local buyers in their capacity as business entrepreneurs in the community who purchase output for delivery to larger buyers and, in some cases, for own processing, particularly maize into flour for sale on local markets. The MTR met with a number of these people. They are local entrepreneurs with particular, and quite diverse, characteristics. Their strategy is not to specialise. It is to take up opportunities as they arise. Some began as farmers, turned to buying, accumulated capital and used it to invest in processing. Some have mills and mill and package grain for sale on local markets and some on-sell the grain to traders and

larger buyers. Having accumulated capital in these ways, some are now turning back to farming, or considering doing so, but without giving up their other activities.

Unlike the Bangladeshi's, these local entrepreneurs are rooted in, and respected by their communities, acting as role models for aspirant entrepreneurs. The appearance of these local entrepreneurs represents an "emergent trend", to use the language of complexity theory. It is not by chance, we believe, that InovAgro has, as it were, stumbled upon this phenomenon. Although the role of local entrepreneurs was not explicitly incorporated as such within the project design, the InovAgro project's actual approach to market development, notably its ability to confront setbacks, learn and adapt rapidly has predisposed it to connecting and working with precisely this kind of local actor. These emergent entrepreneurs are drivers of market systems change at the local level. The interest they see in entering these markets and their continued engagement is critical, we believe, to precipitating local tipping points on the buying side of InovAgro's intervention. This, and the emphasis on creating and/or strengthening networks in the grain supply chain is what distinguishes InovAgro most from other projects in the region with similar aims, and is where InovAgro is leading innovation.

InovAgro shares with output buyers the salaries of buying point operators, particularly in cases where the company concerned plans to expand into new geographical locations, but this support is not provided to all output buyers. InovAgro also supports local entrepreneurs by providing funds for the purchase of scales, price boards and pallets, and pays the salaries of buying point operators. The use of scales and price boards introduces accuracy and transparency into commercial transactions where, in the past, these were often absent. Pallets are a simple means to improve grain storage by keeping bags off the ground. These measures are a part of the effort to encourage local farmers to shift towards commercial crops, in the knowledge that there are local buyers who will be ready to take their crops and respect contractual agreements for future payment for the grain delivered.

The results to date have been significant. InovAgro has formed partnerships with 12 buyers, including Winnua, Chipangue and Filhos, Ferragem Maleiro, Quedas do Rio Lurio, Pensão 12 de Junho, Lancone Comercial and AKA Commerciale. With InovAgro's support, these buyers have purchased 6,021 Metric Tons of grains from SHFs in their localities.

There have been factors external and internal to the initiative that should be taken into account in assessing project progress. The continuing conflict in Northern Mozambique resulted in the closure of some buying points and difficulties in operating others. One of the key challenges relates to the logistics of moving cash to buying posts. This was the main factor that resulted in the discontinuation of output buying by AgriValor, a company that had performed well during the 2015 / 2016 season. Further quality control measures are needed, including the introduction of humidity tests for grain stored at the buying points and the warehouses of the local entrepreneurs, and improved storage conditions where humidity levels exceed safe thresholds.

In summary, InovAgro's grain market intervention is well on course and looks highly promising, but more time is needed before it is likely to fully bear fruit. Market dynamics are inherently difficult to predict. It is not possible to say with certainty how much more time is needed before tipping points will be reached on the on the output buying side, or whether, indeed, these tipping points will be reached at all. But based on the experience gained from the seed market side there may be a need for at least two or three more agricultural cycles to reach equivalent tipping points. This should give enough time to observe how well the intervention is working, adapt and remodel in the face of difficulties such as side-selling to Bangladeshis, and take advantage of emergent trends, such the existence of community-connected emergent entrepreneurs. Something to bear in mind is that the tipping points already reached on the seed input side, once coupled with tipping points on the grain sales side are likely to have strong positive feedback effects on market development, triggering a cumulative process of self-sustaining growth.

To help move local grain markets towards these tipping point, the MTR team recommends that the InovAgro project gives further thought to the profiles and roles of local entrepreneurs to better understand their mode of operation, and their potential to link larger traders to the farming communities. It would also be helpful to try to establish how many of these entrepreneurs exist or might emerge in the target areas. This will help focus and amplify the intervention.

Thought should also be given to the role of local entrepreneurs in agro-dealing. Agro-dealers and village based buying agents (VBA) emerged as important links in InovAgro's certified seed input support strategy. In some instances the agro-dealers and VBAs being supported by InovAgro turn out to be the same people it is supporting as grain buyers. There is thus the potential to bring these two sets of functions together so that agro-dealers and VBAs supply not only inputs but also purchase outputs, either as processors or as intermediaries for on-selling. Combining these roles would mean that the agro-dealer/buyers are economically active throughout the year. Following the mission, the MTR team learned that this is already beginning to happen, for example through discussions between a local entrepreneur in Ribaué and PANNAR Seeds and Klein Karroo.

1.3.3 Seed Sector Governance – APROSE

To help improve the national environment for the seed sector, InovAgro has taken a lead role in the following three areas: establishment of the National Association for the Seed Sector (APROSE), the setting up of a Private Sector Seed Inspectorate for seed quality control and the establishment of a website at the Ministry of Agriculture to make information available to seed sector actors.

APROSE is a national dialogue platform that brings together the main seed companies, the National Directorate of Agrarian Services (DNSA), the Instituto de Investigação Agrária de Moçambique, Direcção Nacional de Agricultura e Sivicultura, Unidade de Semente Básic, União Nacional de Camponeses, donors, NGOs and projects involved in the seed sector. The association acts as a platform for dialogue to facilitate information sharing, and coordination, mainly for advocacy purposes, among seed stakeholders, with the overall aim of contributing to the development of the national seed industry.

APROSE was registered in March 2016 and is now legally recognised and can receive direct funding. Following the registration of APROSE, InovAgro supported the establishment of its management committee and a secretariat. An Executive Secretary was appointed in May 2016, with funding supplied by the United Nations Food and Agricultural Organisation. InovAgro has been active in aiding efforts to raise funding from donors for APROSE operations and has begun engaging with seed sector peers in the region, holding meetings to share experiences and draw lessons for good seed sector practice. InovAgro has established a partnership with the DNSA to pursue two key initiatives. The first is to set up and operationalise a Private Sector Seed Inspectorate for seed quality control. The second is to establish a website for information dissemination on seed supply and demand for stakeholders in the sector.

The MTR team held a meeting with members of the APROSE management committee and, separately, with representatives of DNSA, in Maputo, and was updated on its activities.

InovAgro has led a very important initiative to improve seed governance and hasten the transition to a market-driven seed sector, supported by an effective national regulatory system. The initiative has required a sustained effort by the InovAgro team thus far. Foundations have been laid for a greatly improved governance system. Further effort will be required to make APROSE, the Seed Inspectorate and website operational. Once up and running this system, particularly APROSE itself, will require durable funding sources to ensure its sustainability.

The MTR team's recommendation is that the InovAgro team should keep going with this important work, making it a pillar of its strategy in Phase 3.

1.3.4 Village Savings and Loans Groups

The aim of this initiative is to establish village savings and loans associations (VSLAs) to generate funds for SHF investment in seeds and other inputs, while also performing the more traditional VSLA functions of providing individual loans to members and social loans for particular functions, such as burials. The heart of the scheme is the seed fund, a savings fund that women contribute to and draw upon exclusively to buy certified seeds. The initiative is being pursued through partnerships with two national non-governmental organisation (NGOs) that provide facilitation services, Ophavela and NANA. Ophavela started as an offshoot of a CARE credit scheme in Mozambique and thus has long experience in this area of work. NANA has more recently entered the domain.

Although VSLAs are a well-established feature of life in many African rural areas, they have generally been used to accumulate funds for situations demanding larger than usual consumption expenditure, such as burials. Although many attempts have been made to use them to build up capital for productive expenditure, these efforts have generally met with difficulties. Part of the reason is that the communities in which VSLAs typically operate are poor and have small, oversupplied local markets. Business start-ups in such circumstances typically imitate existing economic activities and thereby add further competition in already saturated markets.

What distinguishes InovAgro's VSLA initiative is that it has introduced a seed purchasing fund which is separate from the traditional individual and social funds. This fund is used exclusively for the members to purchase certified seed. Its effect has been to draw women directly into the seed purchase side of economic activities, which complements their role on the cultivation side, where they are already the main source of labour. During the period 2014/15 1156 women were drawn into InovAgro supported VSLAs. By the end of 2015/16, the number had more than tripled to 3785.

The VSLA certified seed fund established by InovAgro's partners has a different potential to the traditional VSLAs whose focus was on individual and social funds not dedicated to investment expenditure. It connects SHFs directly into commercial value chains whose end markets lie outside local economic circuits. It thus has the potential not only to help expand productivity and grain sales, but to be replenished by the returns from these sales. This opens the possibility of the seed fund contributing to an accumulation dynamic that goes beyond the limits of the local economy. It has the potential to help break the cycle of low productivity, low incomes and poverty in these communities.

The MTR team held workshops with three village savings groups. With the exception of one man, present at the meeting in Matharya, the workshop participants were all women. The MTR team was impressed with the level of solidarity, dynamism and enthusiasm in these groups. As reported to the MTR team at the VSLA workshops, the seed funds are already beginning to work. All of the groups have started accumulating funds. In Mocuba and Ribaué the groups have already used their seed funds to purchase seed and are seeing results in terms of crop yields. The team received reports that the circle of women getting involved in these groups is widening, with interest being expressed beyond the project's target areas. Here, as in the case of the seed input initiative, it would be important for InovAgro to collect information on the spread of interest and involvement in the VSLA.

In the MTR's assessment the VSLA initiative is showing signs of taking root and has the potential to evolve further in ways that could substantially strengthen seed input markets, agricultural production and grain markets in the target areas. To exploit this potential, the seed fund may need to be adapted to enable the VSLAs to tap into grain sales as a source of savings. This would mean a changed role for women on the side of grain sales, a sphere currently controlled by men.

It may also be possible to link the VSLAs to micro finance and/or other banking institutions that provide loans for productive investment, though it should be borne in mind that this is only likely to work if it emerges organically from the VSLA's themselves, and is not imposed from outside. During the workshops there were signals from women leaders that there is, indeed, interest in extending the role of the seed fund along these lines. Such an evolution would require careful thought and incremental testing. It would be essential to provide VSLA membership with the training to handle the changed scale and complexity of activity this would entail.

The VSLA intervention has succeeded in mobilising women, generating savings for seed purchase and this has resulted in increased cultivation of hybrids. It has also drawn interest from women's' groups beyond the project's implementation zones.

While these are strong and positive indicators, it is, we believe, too soon to be able to say that a tipping point has been reached in this area of the project's work, but there is undoubtedly very strong potential for this.

The MTR team recommends that InovAgro team monitors closely the evolution of the seed fund and the effects of the VSLAs on gender relations in seed purchase, farming and grain sales, with a view to identifying emergent trends and supporting those that are in line with its gender intervention.

We further recommend that InovAgro look into the possibility of establishing partnerships with micro-finance institutions interesting in supporting VSLAs by opening of bank accounts with micro-finance institutions that are committed to supporting this work.

1.3.5 Loans for Operating Capital

The original impetus for InovAgro's loan initiative came from the observation that there were labour shortages in agriculture during peak periods, notably at planting and harvesting time. The loans, it was anticipated, would provide operating capital to fund land preparation, seed purchase, planting, weeding and threshing.

InovAgro approached Banco Oportunidade de Mozambique (BOM) to establish minimum conditions for access to loans by farmers and SMMEs. It approached the Mozambican Tax Authority to establish procedures by which aspirant entrepreneurs could obtain the Unique Tax Registration Number, necessary for firms employing over 10 persons. InovAgro has provided financial literacy training for lead farmers who seek to take out these loans.

In terms of results, the initiative with BOM has not yet born fruit. At the time of the MTR it was in suspension due to bank restructuring. However, InovAgro is continuing its discussions with the bank and is formulating a memorandum of understanding which it will discuss with the bank once its restructuring is over.

Continuing with these efforts in Phase 3 makes sense, particularly if linked to the mechanisation services initiative, discussed next.

1.3.6 Mechanisation Services

The aim of this intervention is to support the emergence of a market in ploughing, threshing and shelling services for SHFs. The project has provided lead farmers and other local entrepreneurs with training in the use of tractors, threshers and shellers and in business management and marketing.

To further this intervention, InovAgro has established partnerships with UniZambezi, AKA Comercial and Agribusiness Mozambique Limitada, the latter business having already established a mechanisation service center in Ribaué. InovAgro has designed and provided a support package to stimulate demand for ploughing. Farmers hiring the service pay 50% of the cost, InovAgro contributes 40% and the ploughing service provider contributes 10%.

InovAgro supported UniZambezi to develop a curriculum for training of tractor operators on ploughing, planting, shelling and threshing. Following the development of the curriculum, training workshops were held in Mocuba and Gurué to strengthen

the capacity of the equipment operators to use the machinery correctly. Five workshops were held with up to 50 lead farmers and other aspirant entrepreneurs in each workshop. The cumulative number of SHFs using mechanisation services rose from 381 in 2014/15 to 1748 in 2015/16 to 1926 by February 2017. This is a five-fold increase over the period.

Although the numbers of farmers making use of the scheme increased rapidly over the period, there have been difficulties in getting the mechanisation initiative fully off the ground. The AKA Commercial scheme reported low response to its efforts to promote mechanization services: 125 farmers hired ploughing services against a milestone 500 in the 2015/16 season. Similarly, Agro-Moz's target of 500 SHFs served with ploughing was not met.

The MTR met with lead farmers who either have already bought tractors or hope to do so soon. It visited the Agribusiness Mozambique Limitada mechanization service center site, though it did not meet the manager, who was not available at the time. It met with the person responsible for promoting mechanization training at Unizambezi. It discussed the issue of mechanization services with SHFs at the workshops in Mugeba and Gurué.

Based on these information sources, quantitative and qualitative, there does appear to be effective demand for the hire of mechanization services, at the market rates of between MT 3500 and 4500 per hectare, particularly where the land holdings are larger than the average, but the number of SHFs able to afford these services needs to be more carefully established on the ground, area by area. Fragmented land holdings, inadequate land preparation and the distances that tractor service providers need to travel to get to some of these lands raises costs to a level that may be beyond the capacity of a substantial number of SHFs.

For the InovAgro project to be able to move forward with the mechanization intervention it will be important, firstly, to establish more accurately the effective demand for tractor services within the different target areas. InovAgro could then focus attention on those areas in which sufficient demand exists to warrant taking the mechanization service initiative further. Secondly, the project should establish the number of local entrepreneurs in the most promising target areas who have the financial capacity, technical knowledge and motivation to drive this initiative. The intervention could then be remodeled, scaled down and focused on these areas as pilots. The initiative should be linked with the facilitation of SHF access to loans, discussed in the preceding sub-section.

If the mechanization service intervention is to go ahead, it will be important for InovAgro to address the shortage of tractor maintenance services and spare parts in all the intervention areas. The team made an effort to find and interview tractor maintenance technicians, but was able to track down only one person involved in this kind of work, someone who had acquired his experience working on large commercial farms in the region. There appears to be no dedicated repair and maintenance service for the tractors currently on the market, apart from that provided by the supplier's service guarantee which is for one year following purchase of the tractor.

1.3.7 Land Security

The aim of the Land Security intervention is to help demarcate and register community and individual land holdings, and, eventually, to seek the Direito do Uso e Aproveitamento da Terra (DUAT) land use rights, as a prelude to application of InovAgro's support for SHF agri-business development.

The background to the Land Security intervention is the growing struggle of SHFs to retain their lands in the face of large-scale, foreign investment in commercial agriculture in Mozambique, in particular within the Nacala Corridor, where there are large tracts of fertile, well-watered land and comparatively good road, rail and port infrastructure.[5]

InovAgro has established a partnership with Centro Terra Verde, an NGO involved in environmental studies and advocacy for the protection and promotion of sustainable development in Mozambique. Terra Amiga, CTV's implementing partner, was engaged to facilitate the process in two community areas, Malopa and Mucuila, in Zambezia province.

The land demarcation process involves a number of steps. It begins with the establishment and empowerment of LNR committees to identify community boundaries. The community boundaries are delimited by geo-referencing. These steps are followed by establishment of a network of local paralegal experts who are trained in the land laws and in land dispute resolution.

As a result of Terra Amiga's work, the communities of Malopa and Mucuila have recently received official land certificates with boundary maps. At the time of the MTR, official ceremonies were being organized to publicly hand over the land certificates to the communities.

The MTR held a workshop with representatives of the Malopa community. Present at the meeting were members of the LNR committee and the paralegal network, whose membership overlaps in Malopa. Also present were representatives of Calope community, whose boundaries abut those of Malopa.

The MTR team's workshop with the Malopa community revealed a very high level of community mobilization and solidarity over the land issue. It emerged that, for the last ten years, the community has been in conflict with a commercial farmer of South African origin who obtained DUAT rights to cultivate land that falls within the communities traditional boundaries. The land was originally part of Malopa but was taken over and farmed commercially during the colonial period. The community representatives explained that while they accepted the DUAT rights of the South African farmer and were ready to negotiate with him over the use of the land, relations had broken down due to threats they received of being removed from their land and due to the insulting behavior of the commercial farmer towards community representatives.

[5] Grain (2015) The Land Grabbers of the Nacala Corridor, A New Era of Struggle Against Colonial Plantations in Northern Mozambique, UNAC and Grain.

When the MTR team visited the area it saw no signs that the commercial land was being cultivated. The farmer's homestead was encircled by a fence, behind which could be seen idle and rusting farming machinery and equipment, a substantial, modern processing plant and neat farm worker houses, all empty and out of use.

Aware that InovAgro's approach in its other interventions is to build market relations between the private sector and SHFs, the MTR team tried to establish why the commercial farming activities had ceased. Community members at the meeting explained to the MTR team that Terra Amiga had made efforts to include the commercial farmer in discussions over the land demarcation process but that these efforts had been rebuffed. The LNR committee's efforts to engage the commercial farmer in dialogue over the land issue had been rudely rejected, with foul language being used.

To pursue the history in greater depth, the MTR team met with a representative of CTV in Maputo, on the last day of the mission. CTV's Project Coordinator explained that CTV's approach has been to use land demarcation as a means of gaining official recognition of communal land rights, a prelude to enabling the community to engage with the potential large-scale investors, as provided for in the country's legislation. With these rights established, these communities would, according to this approach, be in a stronger position to negotiate with commercial farmers and other investors seeking to exploit the land and its natural resources.

In the MTR's assessment, InovAgro's approach to the land security issue represents an important potential alternative to the current model of large-scale, foreign commercial investment in agriculture and its corollary of removal and resettlement of SHFs. In developing an alternative model, at least two distinct steps are needed. The first, which InovAgro, has already taken, is community organization and land demarcation. The second step, not as yet conceptualized or applied by InovAgro, is to develop and test a model of dialogue between SHF communities and private companies seeking to invest within or near to the community areas concerned.

InovAgro could take its land security initiative further by choosing a situation in which there is either a commercial agricultural investor interested in acquiring DUAT rights within or close to a community of SHFs, or an investor who has such rights but is facing conflict with a neighbouring community, and yet is willing to negotiate. The intervention could then take the process beyond demarcation to dialogue and negotiation. The focus of these negotiations could be over the full range of mutually beneficial economic relationships, including, for example, outgrowing arrangements, agricultural inputs and services, credit facilities, processing and marketing of products. As with its value chain support initiative, InovAgro's approach to community-investor dialogue should be grounded in its MSD approach. Its aim should be to create sustainable, market-based, mutually beneficial, solutions for the SHFs and the large commercial investors.

In addition to taking its land security initiative further in the direction of community-investor negotiation, InovAgro there is a need for the project to search for ways of reducing the costs of land demarcation to bring it economically within reach of government and/or SHF communities. Here InovAgro will need to work with those

departments of provincial and district government responsible, or potentially responsible, for land demarcation and land dispute management.

To take the next step with the farmer land security initiative will require resources and effort, and involves a strategic decision in terms of the project's priorities for Phase 3.

1.3.8 Gender

Gender is a transversal issue within InovAgro's overall strategy. The predominance of women in agricultural activities and the tendency for men to control marketing activities means that gender issues go to the heart of the project's objectives.

The intervention in which the role of women emerged most strongly was that of the VSLAs and it is there that the MTR team believes there is the greatest scope for strengthening the position of women in production and markets. From the meetings with VSLAs held by the MTR team, there were indications that a shift in gender relations is already beginning to take place, but more time and deeper research is needed to establish the precise form, depth and degree of resilience of this change.

The MTR team recommends that InovAgro uses its VSLA intervention to probe more deeply into the potential of these groups to act as catalysts for wider transformation in gender relations within production and marketing and within household decision-taking over saving and expenditure.

2. Assessment of the Project as a Whole Using DAC Criteria

In Section 1 of Part B, we assessed InovAgro individual interventions, each in turn. In this section we assess the project taken as a whole, using the DAC evaluation criteria. (See Annex 10 for a score for each criterion)

2.1 Relevance

The question to be addressed here is whether InovAgro's focus and approach is relevant and adequate in the context of Mozambique's policy and development context, particularly the context in Northern Mozambique.

InovAgro's MSD approach was at first not readily accepted either by government or amongst donor organisation and other projects doing work with similar objectives, or, indeed, by its intended private sector partners. The re-conception of the project at the end of Phase 1 coincided with a rapidly changing market and government context. Within this changing context, the project's method and approach has become highly relevant and has succeeded in attracting a widening circle of public and private sector actors, some of whom have become project partners and co-facilitators. It has also attracted growing interest from other projects doing work with similar objectives.

Private sector seed supply companies have begun to approach InovAgro for aid in establishing themselves in Northern Mozambique in order to tap into SHF markets. A number of cooperation organisations have approached the project to gain insight into its approach and government, particularly through the APROSE initiative, is now strongly supporting the InovAgro project and advocating its approach.

An important part of the project's success has been its capacity to learn from experience and to adapt to the rapidly changing context, including from the

experience of other projects in the region doing similar work. The demonstration plots, seed fairs, SVGs, and mechanisation service initiatives are not new to Northern Mozambique. Part of InovAgro's success has been to work with other projects, integrating some of their ideas and methods of operation into the MSD approach and thereby helping them to turn what were, in many cases, donor-dependent interventions into activities that are tipping over into self-sustainability.

InovAgro has been successful at identifying partners who, with minimal financial, technical and training support from the project, are able to take over and implement activities. This is true for its private sector partners, both the large seed supply and output buyers and the local precursor entrepreneurs and its national facilitation partner organisations. Working through these partners, InovAgro has been able to minimise its direct support role, and reduce it over time, in relation to its target group, SHFs, and to build national and regional capacity for these activities to continue once the project comes to an end.

There have also been setbacks, notably with the partners it has chosen to obtain loan finance and mechanisation services for SHFs. But it is precisely through responding creatively to such set-backs that the organisation has been successful in moving forward with the MSD approach thus far, and although there are no guarantees when working with complex adaptive systems, the chances are good that it will succeed with these initiative too, given sufficient time and resources in Phase 3.

2.2 Effectiveness

The question addressed here is the extent to which results obtained have led to the specific objectives targeted by the project. This includes evaluation of project management and its monitoring qualities and an evaluation of the overall progress achieved of the current organizational structure, human resources management, and chain of responsibilities in the project.

In Section 1 of Part B, dealing with individual interventions, assessments were made on effectiveness in terms of the results achieved in the pursuit of the project's specific objectives, notably its outputs and outcomes. Here we provide an assessment taking the project's work as a whole.

Our assessment on project management during Phase 2 is that it has been outstanding. We base this on our interactions with the project managers, what we witnessed in the implementation areas and what we witnessed in the InovAgro offices. We make particular mention of the highly informed, motivated and insightful role played by the SDC Head of Economic Development (Income & Employment) and, the DAI Team Leader in Nampula, both of whom displayed a deep understanding not only of the project approach but of its activities, achievements and setbacks, but also a high level of commitment to and vigorous involvement in the project. The SDC Economic Development Manager gave the MTR team rapid and efficient support on the contracting, administrative and operational side of the mission.

Supporting the DAI InovAgro Team Leader are two Market Systems Development Managers, one of whom has responsibility for districts in Nampula and Cabo Delgado

provinces. The second Market Systems Change Manager is responsible for project interventions in Zambezia. These two managers cover implementation areas that are scattered over very large geographical areas. They are very well informed on what is going on in their areas and their relationships with geographical officers and local project partners are cordial and constructive. The MTR team was accompanied by these managers, each in his own province, during the entire fieldwork process. The MTR team was impressed at their hands-on approach and deep knowledge of the Market Systems Managers. They are doing an excellent job despite the enormous distances they have to cover and the significant infrastructural and security constraints in parts of Northern Mozambique.

The team met with the Geographical Field Officers, but did not interact with them intensely, being mainly focussed on the community workshops and interviews, at which the geographical officers tended to keep their distance, no doubt in order to give the participants the space to express themselves freely with the MTR team.

Within InovAgro's Nampula office, the MTR team received helpful support from the MRM officer, including the updating of InovAgro's indicator report, at a time when he was heavily involved in a national workshop in Maputo. In earlier sections of the report, suggestions are made for widening the scope of the M&E system to include indicators of SHFs other than the direct beneficiaries adopting certified seed, selling to local buyers and joining into VSLA.

The MTR team did not find reference in the project documents to the reasons for the project's expansion into 7 new areas in 2015. The MTR team's experience in two of these new areas in Cabo Delgado was of considerable interest. These are marginal areas in the sense that they are difficult of access from Nampula, due to distance and poor infrastructure, and have SHFs that are poor. Yet these areas have high potential for production of the five crops selected by InovAgro.

From information gathered after the mission, it appears that several factors were considered by the project when it decided to expand its geographical focus to these areas. These factors include the fact that despite their difficult access and poor infrastructure, the implementation areas in Cabo Delgado benefit from their proximity to the Nacala Corridor. Large agribusiness companies operating in those districts are based in Nampula and Nacala, both of which fall within the corridor transport system. There was interest shown by the project's private sector partners to expand their activities to locations in Cabo Delgado to increase their market share, sales and ultimately their long term commercial viability. In addition, the project also felt a need to reach out to more beneficiaries, to meet its target of 15000 by December 2017.

Despite their geographical marginality and level of poverty, the team found that the communities visited in Cabo Delgado have a long tradition of engaging in commercial, export-oriented production. The community leaders were able to give very precise information on the share of their products going to the markets and the share retained for subsistence consumption. This combination of market experience, agricultural potential and SHF poverty makes Cabo Delgado an important testing ground for the InovAgro's approach. Success in Cabo Delgade would demonstrate that InovAgro's approach can work even in some of the poorest and geographically most marginal areas.

The MTR team suggests that InovAgro vigorously pursues the full range of its interventions in the selected areas in Cabo Delgado during Phase 3. It should explicitly set out its reasons for expanding to these new areas in its reports, highlighting the particular challenges and potential benefits of expanding to these areas given the project's overall aim.

2.3 Efficiency

Efficiency is a measure of how well a project has used its resources to achieve its ends.

It was not possible for the team to measure the project's level of efficiency comparted to other projects – we had neither the time nor the information to do this. To assess efficiency the MTR team used two sources: the projects financial statements and direct observation during the mission, including observation of the conduct of InovAgro staff's in its working relationships with partners and beneficiaries and the state of project equipment and materials used. The MTR team took into account the difficulties in the working environment, including poor infrastructure and insecurity.

In considering efficiency, the MTR team had to go beyond the conventional measure of the quantity of inputs used to achieve a given level of outputs. It had to consider the question of efficiency in the light of the project's intervention logic. In assessing efficiency in the context of the MSD approach consideration has to be given to the relationship between inputs, activities, outputs and tipping points. The question is to assess how well the project's inputs have been used to move the behaviour of agents operating within market systems towards tipping points. The intervention acts as a catalyst, but it is the interaction of a whole set of variables within the system and its context that determines whether the tipping point is reached or not. It is therefore inherently difficult in complex adaptive systems to give precise attribution to an intervention and therefore difficult to measure efficiency as conventionally defined.

Table 3 assembles data from the two financial statements obtained by the MTR team. These are statements reflecting DAI's implementation mandate and are structured according to the project's logframe. They do not enable analysis down to the individual intervention level. The statements are for the years 2014 and 2016. The data obtained from InovAgro for 2016 is still provisional – it was in the process of being finalised at the time of the MTR.

The major budgeted and actual expenditures were for long-term experts (the people responsible for running the project), short terms consultants (those responsible for the project design, advice and evaluation) local support (from companies and NGOs responsible for facilitation, and the use of "administered project funds", which we presume are the funds used to finance direct support to partners and to cover project operational costs.

In 2014 and 2016, expenditure was close to that planned in the budget for these categories, though there was a reduction in actual local support expenditure in favour of short term consultants and long-term experts. This may be a carry-over of the difficulties experienced during Phase 1, during which time the project lost its

Managing Director, and had, we presume, to rely more heavily than usual on external expertise, to reset the project for Phase 2.

The MTR team witnessed the performance of the long term experts. The project is managed by a highly skilled and highly active management team. In terms of the expert support given by DAI, the MTR team witnessed the contributions of two DAI staff, one responsible for the project design and technical delivery and the other for headquarters oversight. The quality of the presentations given by the DAI consultant was outstanding. It should be noted that COWI has been providing technical support since Phase 1, notably in the areas of research, strategic advice, and networking, and had a representative who participated strongly during the two day workshop at the end of the mission in Northern Mozambique.

Table 3. InovAgro Budget and Expenditure 2014 and 2016

InovAgro: Budget and Expenditure 2014 and 2016 (USD)							
	Budget	**% Tot**	**Exp 2014**	**% Tot**	**Exp 2016**	**% Tot**	**Growth**
Services Headquarters [HQ]	410 554	5,13%	95029	4,74%	101264	5,23%	6,56%
Local Office [LO] of Contractor	50 990	0,64%	15168	0,76%	16488	0,85%	8,70%
Long-term experts	1 847 854	23,10%	420614	20,96%	467226	24,15%	11,08%
Short-term experts (Consultants)	179 403	2,24%	31226	1,56%	37596	1,94%	20,40%
Local support	1409806	17,62%	459168	22,88%	263035	13,60%	-42,71%
Administered project funds	4101393	51,27%	985610	49,11%	1049167	54,23%	6,45%
Total	**8000000**		**2006816**		**1934776**		**-3,59%**

In terms of the two Market Systems Development Managers and geographical officers, we reported on their performance in section 2.2 above. In terms of "local support", the MTR team met with InovAgro's facilitation partners, Ophavela, Nana and CTV, and in the case of the first two witnessed their interactions with Village Savings Groups. These organisations are doing outstanding work for the InovAgro project, the results of which are reported in the sections on VSLAs and Farmer security above. We also reported above on the project's partnerships with seed supply and grain output buying partners, where the project is working well, and on loan finance and mechanisation, where more needs to be done.

The decline in expenditure on "local support" between 2014 and 2016 is surprising given the geographical expansion of the project over the period. It may be that this reflects increased contributions from the partners, which would be a highly positive trend, or there may be other reasons for the decline. The MTR team has insufficient insight into the reasons for this, and recommends that it should be given attention by the InovAgro management.

Space does not allow us to go into detail on the category "Administered Project Funds", which we examine separately in Annex 15. It can be reported here that for all the outcomes, the proportions and trends in the table are consistent with the MTR team's observations in the field and confirm the MTR team's impressions that the project is being run efficiently, and flexibly, with a strong focus on driving interventions towards their tipping points.

2.4 Sustainability

In its narrow, conventional definition, sustainability refers to the susceptibility of a project's institutional results to continue to exist after the project has come to an end.

InovAgro's MSD approach seeks to promote market development through carefully targeted support to encourage private sector partners to try out new markets that they would otherwise be reluctant to enter due to the perceived risk involved. The conventional definition of sustainability is not entirely appropriate to this context. In the MSD approach, sustainability is achieved when the interventions, taking advantage of emergent trends, catalyse change that results in tipping points that produce auto-generating effects, namely markets that continue to work effectively, and to grow, after the external support comes to an end.

Has InovAgro succeeded in doing this in Phase 2? That tipping points have been reached is clear in the case of the seed supply and demand interventions. They appear to be close in the case of the output supply intervention, but less so in the VSLAs, loan finance, mechanisation and farmer land security.

The sustainability issue goes beyond the question of specific interventions and the tipping points they may or may not be approaching. What is also in play is the *combination* of interventions being pursued by InovAgro and the effect of their mutual interaction within the implementation areas and the wider Northern Mozambican region. The potential of mutually reinforcing feedback effects is clearest with respect to the seed input and grain output interventions. The tipping point on the seed input supply side creates the conditions for success on the grain output side. Once tipping points have been reached in grain output sales, this will feedback into the seed market by generating increased demand for certified seed. There are already signs that a benign circle of capital accumulation, investment and growth is starting up in some of the implementation areas, which reflects the beginnings of this interaction between interventions.

The seed governance initiative promises to establish a conducive national environment that encourages the actors to take the risks needed to exploit private markets rather than continuing to rely on the government, donor organisation and NGOs to sell their seeds. In terms of sustainability at the value chain and local territorial levels, it helps remove regulatory obstacles that stand in the way of market development and add certainty about seed quality that helps help stimulate market demand.

Finally, the land security intervention potentially underpins local accumulation by providing the security for SHFs, and, potentially, large-scale commercial companies, to work together for their mutual benefit.

It appears to the MTR team that further time is needed to bring together the potential for the interventions to re-inforce each other, particularly in the newer implementation areas. As suggested earlier in this report, two or perhaps three further agricultural cycles, with the intervention adaptations proposed, may be needed to bring together the cumulative effects of InovAgro's interventions.

3. Lessons learned

Working with complex adaptive systems

For a project that is seeking to bring about change within complex adaptive systems, it is helpful to take this dimension explicitly into account within the design of the strategy framework. In practice InovAgro is a project that has learned to adapt to setbacks, notably the serious difficulties it faced during its first phase. It is this capacity, coupled with a highly capable, committed and effective team that explains why the project has been able to go so far during the second phase towards precipitating tipping points. The lesson is that the systems the project is trying to change are complex and that the impact of interventions is inherently unpredictable. In this context, what is most likely to work is project management that is able to learn, adapt and respond quickly.

Working explicitly with hypotheses

In seeking to bring about change in complex adaptive systems, it helps to conceive of interventions in terms of hypotheses and to use the interventions to test these hypotheses, learn from them and adapt to take advantage of positive emergent trends and inhibit negative ones. The implicit hypothesis during in Phase 1 was that working with two large partners to provide embedded services within out-grower schemes would result in the desired increases in certified seed sales, productivity and grain sales increases. The hypothesis was not proven - the seed companies and SHFs did not behave as anticipated. InovAgro adapted by widening its partnership base, working with a range of seed companies and service providers.

In Phase 2 it is working with a modified hypotheses, namely that it can achieve the project goals by widening its range of partners on the seed input supply side and out the grain output purchase side, replace embedded services with seed company supplied extension services, mechanisation services by local entrepreneurs, savings by VSLA and loans by BOM. For the last three years it has been testing these hypothesis and adapting its interventions on the basis of experience on the ground.

This is the key lesson of the project. While retaining its overall goal and direction, the project should treat all interventions not just as means to achieve results but as probes into the systems it is seeking to influence, as tests of hypotheses that it has to constantly revisit and review.

4. Conclusions

The InovAgro project has a strategic framework and approach that is highly relevant in the context of Mozambique given the government's current development approach and the context in Northern Mozambique.

During Phase 2, InovAgro's advisory and management team has driven the project with great competence, applying staff and resources effectively and flexibly in response to rapidly changing conditions, opportunities and difficulties encountered on the ground.

Following the set-backs during Phase 1, there has been remarkable progress - in the short space of three years, or two- and-a-half agricultural cycles in the longest established implementation zones - in achieving project results at the output and outcome levels, particularly in terms of its core value chain upgrade interventions. The seed input supply has reach a tipping point as revealed by seed sector companies crowding in and by SHF adopting certified seed and appropriate cultivation methods. The grain output side is following rapidly behind - it started later and needs more time to come to fruition.

InovAgro's VSLA initiative is highly promising, but should be connected more closely into the value chain upgrade interventions, for example through linking the VSLA seed fund directly with grain seed sales. The basis for the loan finance scheme has been laid, but awaits BOM's restructuring before it can come into effect. Its chances of success will be increased if it can be linked more directly to the mechanisation intervention. The mechanisation initiative holds promise, but is risky. It needs to be remodelled and focussed on areas where there are local entrepreneurs capable of supplying the services and SHFs capable of generating sufficient effective demand.

The farmer land security initiative has been successful in opening the way to land demarcation for communities, but a formula is needed to bring the costs of demarcation down to an affordable level. To take on the larger challenge of developing and testing a model for dialogue and negotiation with large-scale investors in commercial agriculture within or near to community areas is a challenge that requires a strategic decision about InovAgro's priorities in Phase 3. It is an intervention that could help change the landscape of agriculture in Northern Mozambique, but also holds risks for InovAgro as foreign investment in Mozambique is a thorny issue.

In Phase 3 it will be essential to carefully consider how the tipping points within particular interventions can come together to mutually re-inforce each other. It is helpful to examine this question from two perspectives: value chains and of territories. There are obvious connections between the seed market and grain market interventions and their tipping points. Success in the one set of markets can reinforce and be reinforced by success in the others. Similarly, the VSLA, loan finance, mechanisation initiative have the potential to re-inforce the value upgrade interventions. At the local level the farm land security initiative focusses on an environmental issue that is a pre-condition for SHF investment and an important basis for stable, commercial investment. InovAgro's national governance initiative potentially secures an important element of the environment for value chain upgrade across the seed sector.

From the local territorial perspective, it is evident that the mutual interaction of the different interventions, particularly where some of them have reached or are reaching tipping points, hold the potential to create a benign circle of growth. There are already indications that this is happening in the areas in which the project has been established longest, and the dynamics in the newer areas look promising. The focus of strategy in Phase 3 should be to adapt, interconnect more deeply and drive the interventions forward more vigorously to strengthen this dynamic.

ANNEXES (See separate attachments)

1. Terms of Reference
2. Fieldwork Methods
3. Mission Calendar
4. Farmer Satisfaction-Opinion Questionnaire
5. Farmer Satisfaction-Opinion Survey
6. Interview with Five Forces
7. Interview with Transaction Matrix
8. Mini-Workshop with Five Forces
9. Mini-Workshop with Transaction Matrix
10. Assessment Grid
11. People Interviewed During Mission
12. InovAgro Indicators Draft February 2017
13. Maps of Implementation Areas Visited by MTR team
14. Project Interventions and Agriculture Cycles
15. Project Expenditure on Interventions, Monitoring and Evaluation
16. Proceedings of Strategy Workshop
17. Prices Paid by Project Supported Aggregators and Other Buyers
18. Expenditure on Extension Services
19. Acronyms
20. References