



Progress
Report and
Implementation
Plan

Promoting Rural Income through Support for Markets in Agriculture

August 2016 (Public version)



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List of Abbreviations

AEC	ASEAN Economic Community
AIP-Rural	Australian-Indonesia Partnership for Rural Economic Development
ARISA	Applied Research and Innovation Systems in Agriculture
AUD	Australian dollar
BAPPEDA	Badan Perencanaan Pembangunan Daerah – Regional Development Planning Agency
BAPPENAS	Badan Perencanaan Pembangunan Nasional – National Development Planning Agency
BULOG	Badan Urusan Logistik (Indonesia's national logistics agency)
CMT	Core management team
DCED	Donor Committee for Enterprise Development
DFAT	(Australian) Department of Foreign Affairs and Trade
EMS	Environmental Management System
EJ	East Java
EWINDO	East West Indonesia Ltd (company)
GAP	Good agricultural practices
Gol	Government of Indonesia
HH	Household
IP	Intervention plan
ISD	Intervention steering document
KPI	Key performance indicator
M4P	Making markets work for the poor
MIS	Management information system
NAIC	Net attributable income change
NTB	Nusa Tenggara Barat – West Nusa Tenggara province
NTT	Nusa Tenggara Timur – East Nusa Tenggara province
P2B	Program Penghidupan Berkelanjutan – Sustainable Livelihoods Program
PPI	Progress out of poverty index
PPP	Purchasing power parity
PRISMA	Promoting Rural Income through Support for Markets in Agriculture
PRIP	Progress Report and Implementation Plan
PT	Perseroan Terbatas - Limited Liability Company
RML	Results measurement and learning
SAFIRA	Strengthening Access to Finance in Rural Agriculture
TIRTA	Tertiary Irrigation Technical Assistance
TTS	Timur Tengah Selatan

Executive Summary

BACKGROUND

The objective of Promoting Rural Income through Support for Markets in Agriculture (PRISMA) is to increase the competitiveness of 300,000 poor female and male farmers in Eastern Indonesia, resulting in a net attributable income increase of at least thirty per cent by the end of 2018. PRISMA is the largest program under the Australia-Indonesia Partnership for Rural Economic Development (AIP-Rural), a partnership between the Governments of Australia and Indonesia to address the most significant constraints to rural income growth and boost farmer incomes in five provinces in Eastern Indonesia.

PRISMA has continued to focus on active portfolio management, quality assurance of the program's interventions, auditing of its results measurement system, and the induction of sixteen new staff. The regular portfolio review conducted in May and June 2016 used the quality monitoring tool (QMT) for the second time and clearly confirmed its benefits for quality assurance. The DCED audit in June revealed that the program has a robust results measurement system but also identified several areas that need improvement. The development of provincial scorecards for the Progress out of Poverty Index (PPI) was finalised, with all provinces completed. Despite good progress, the development of some modules of the Management Information System (MIS) could not yet be finalised.

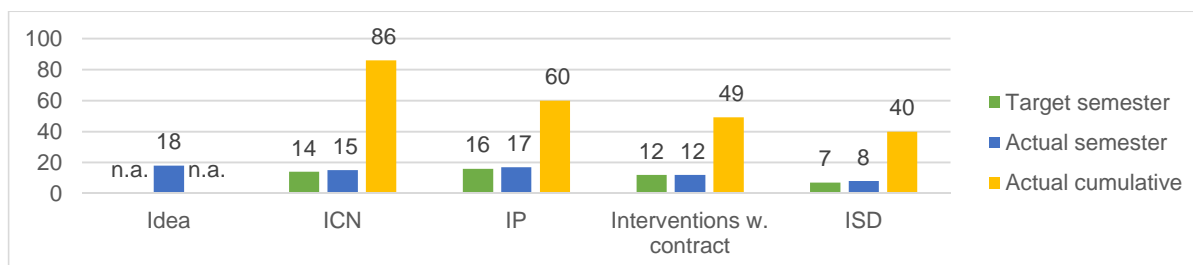
To address the market constraints caused by the seed subsidy policy, PRISMA began working on policy advocacy at the national level and joint interventions on the district level. Moving forward PRISMA will continue to engage other key stakeholders such as the Coordinating Ministry of Economic Affairs, Ministry of Finance, the Partnership for Indonesia Sustainable Agriculture (PISAgro) and other private sector associations on a national level; and public extension services on a district level.

On January 1st, 2016, Indonesia entered the ASEAN Economic Community (AEC), which unifies 10 member countries of ASEAN as an economic region. Most members contribute significantly to the agriculture sector, but Indonesia is also an attractive market for agriculture products. In order to compete in the AEC, Indonesia will have to increase its competitiveness significantly. How farmers, particularly smallholder farmers, can continue to increase their income while still selling their products at a competitive price is an open question. PRISMA alone cannot overcome this challenge, but its strategy to strive for higher farm competitiveness is certainly the right one at the right time.

PROGRESS

- PRISMA exceeded its planned targets for intervention development.** Fifteen Intervention Concept Notes (ICN) were developed against a target of 14, 17 Intervention Plans (IP) were developed against 16, partner contracts were at the target of 12, and 8 Intervention Steering Documents (ISD) were developed against a target of 7. Overall, the new interventions developed this semester strive to reach 84,441 farm households (HH) by the end of 2018 (41,090 of which are below the USD 2 purchasing power parity poverty line, (<\$2PPP). Eighteen new intervention ideas were also developed this semester, which shows that the portfolio will continue to grow significantly (see below Figure 1).

FIGURE 1: INTERVENTION DEVELOPMENT



2. Through its existing and new interventions, PRISMA benefited 9,196 HH (2,812<\$2PPP) against a semester target of 9,430, and in total 22,174 HH since the inception of the program, 20% above the target trajectory. Contributions above expectations came mainly from the mango, cashew, and soybeans sectors. PRISMA would have overachieved outreach targets but there were drawbacks due to El Niño which delayed the harvest season, resulting in postponed impact assessments in maize East Java (EJ) and Nusa Tenggara Timur (NTT), and unquantified harvest losses in seaweed NTT, maize NTT, soybeans EJ and other sub-sectors. Coconut EJ fell short due to a lack of fulfilment of organic certification criteria.
3. The expected outreach for existing and new interventions is 54,917 HH (27,449<\$2PPP) by the end of 2016 and 221,742 HH (105,481<\$2PPP) by end of 2018. The latter corresponds to an increase of almost 70% compared to the projections made at the end of 2015. The main reason for this strong increase is that many of the new interventions are a scale-up of earlier ones.
4. With 372,465 HH (169,830<\$2PPP) by end of 2018, the total projected outreach for existing, new and pipeline interventions is clearly above PRISMA's first phase target. The total projection for the mid of 2017 is 78,194 HH (39,174<\$2PPP) and 372,465 HH (169,830<\$2PPP) by end of 2018. For the first time in this PRIP, PRISMA reports both the realistic and optimistic projections for all existing, new and pipeline interventions. Both are calculated with adjustments for overlap and success rate and shown below in Figure 2.

FIGURE 2: ACTUALS AND OUTREACH PROJECTIONS



5. The total net attributable income change (NAIC) was IDR11,158,389,614 (~AUD1.2m) for 9,196 HH, leading to a lower average (since program inception) NAIC per crop cycle of IDR1,487,567 (~AUD148) compared to IDR2,368,298 (~AUD236) at the end of the last semester. IDR1,487,567 equals approximately the costs of the average monthly consumption of a family of five living at the national poverty line.
6. Several key performance indicators (KPI) reflect significant increasing levels of sustainability. The most important areas of progress have been the average turnover per intermediate service provider (+116% compared to the end of the 2015) and the investment per partner (+41%).

TABLE 1: KEY PERFORMANCE INDICATORS

	KPI tracking	Actual cumulative Y16S1	Actual Y16S1
1	# Intervention partner public and private	51	4
2	Partner co-investment	12,985,422,705	4,484,067,596
3	# Innovations by private sector	39	5
4	# Initiatives by government to improve BEE	6	3
5	# ISPs	513	153
6	Increased turnover ISPs	6,142,894,940	4,147,557,288
7	# Outreach (All farmers)	22,174	9,196
8	Net Income impact (All farmers)	41,894,601,089	11,158,389,614
9	# Outreach (<\$2 PPP)	9,865	2,812
10	Net income impact (<\$2 PPP)	26,284,341,489	10,412,208,850

- 7. The Making Markets Work for the Poor (M4P) training for local governments started in all 5 provinces.** The training is designed to be directly applicable, and is expected to result in new local government driven interventions to create a more enabling business environment.

MANAGEMENT RESPONSE FOR THE NEXT TWELVE MONTHS

- 9. With most systems in place at PRISMA, the Mid Term Review (MTR) and the achievement of its outreach targets during the crucial second semester in 2016 will determine the direction of PRISMA's short and long-term strategy.**
- 10. The MTR comes at the right time as the preparatory activities are fully in line with what PRISMA would be addressing regardless of the MTR.** This includes the follow-up to feedback from the DCED audit.
- 11. Strategic coherence and systemic change will be dominant topics for PRISMA during the coming twelve months.** Where the program sees signs of systemic change, PRISMA will refine its strategy and broaden the basis of partner intervention activities, and observe changes in interrelated markets that we can support. Where intervention activities are still at an early stage, PRISMA aims to find a break through and identify stronger partners in the next twelve months.
- 12. In line with the above and together with the Secretariat, PRISMA will develop a set of indicators to set targets that focus on systemic change, rather than the number of interventions, ICNs or IPs.**
- 13. The upcoming portfolio review at the end of November 2016 will strive to make clear go/no-go decisions in order to free sufficient human resources to effectively focus on the sub-sectors that provide the best value for money.** Regarded as "value" will certainly be systemic change rather than mere outreach, but "value" can also lie in the innovation characteristics of the sub-sector strategy (e.g. IPM, new soybean varieties).
- 14. PRISMA will enhance its approach toward social inclusion beyond gender,** specifically addressing people with different abilities or disabled, youth, the elderly, indigenous peoples and ethnic minorities.
- 15. The currently planned pipeline interventions are projected to reach additional 150,723 HH.**

1 Broader Policy, Institutional and Environmental Context

On January 1st, 2016, Indonesia entered the ASEAN Economic Community (AEC), which unifies 10 member countries of ASEAN as an economic region. Goods, services, capital and labour can now move more freely among the member countries, and consequentially competitiveness has become crucial. Apart from Singapore and Brunei, all members contribute significantly to the agriculture sector, and Indonesia, being the most populous country, is an attractive market for agriculture products. In order to compete in the AEC, Indonesia needs to increase its competitiveness, which is currently below that of some other member countries. For example, the price of rice in Indonesia is currently 60-65% higher than in Thailand and Vietnam. How farmers, particularly smallholder farmers, can continue to increase their income while still selling their products at a competitive price is an open question. PRISMA alone cannot overcome this challenge, but its strategy to strive for higher farm competitiveness is certainly the right one at the right time.

Another issue related to the AEC is the new government import policy. Indonesia's import restrictions on several commodities, such as rice and maize, continue in 2016. To stabilise prices, the Government of Indonesia (GoI) issued a new regulation defining BULOG (the state-owned logistics agency) as the sole importer for maize, particularly maize consumed as feedstock. The role of BULOG will extend to other food products such as shallots, chilli and beef. With this policy, the GoI expects to obtain more accurate production and demand data. The effectiveness of this new regulation in light of the ASEAN free trade zone remains to be seen.

In response to the low impact of the subsidy programs and limited pro poor targeting, the GoI is considering changing the agriculture producer (fertilizer and seed) subsidy into a direct farmer subsidy. The fertiliser subsidy will be given directly to farmers as a cash (or voucher) payment as opposed to subsidising fertiliser producers based on the target selling price. This will allow the fertiliser price to increase to market level, thereby encouraging the most effective use of fertiliser. A seed subsidy may also be provided directly to farmers. This may give PRISMA's interventions in heavily subsidised commodities (like maize and soybean) a better chance to succeed, as it is less disruptive and farmers will have more quality seed options.

To address the market constraints caused by the seed subsidy policy, PRISMA began working on policy advocacy at the national level and joint interventions at the district level. Initial activities included a coordination meeting with the Directorate of Agriculture and Food Security and BAPPENAS, followed by a discussion with the Ministry of Agriculture to raise awareness on the negative implications of the subsidy, e.g. on how the policy creates disincentives for local smallholder seed producers, and how PRISMA might contribute to improving the policy. In maize in Madura and in Timur Tengah Selatan (TTS), PRISMA started interventions with the local government extension services to better target the poor and to increase the sales (by introducing extension workers as sales agents) and use of quality seeds respectively.

Moving forward PRISMA will continue to engage with other key stakeholders such as the Coordinating Ministry of Economic Affairs, the Ministry of Finance, PISAgro and other private sector associations. PRISMA will prepare the advocacy material (infographics, papers, etc.) and commission a political economy assessment to identify champions/blocks and momentum for policy reform.

Two other external factors which continue to present challenges for PRISMA are Indonesia's slow economic growth rate and El Niño. The growth of the Indonesian economy remains at relatively low levels. This reduces appetite of some partner companies for co-investing in new technologies and innovations promoted by PRISMA.

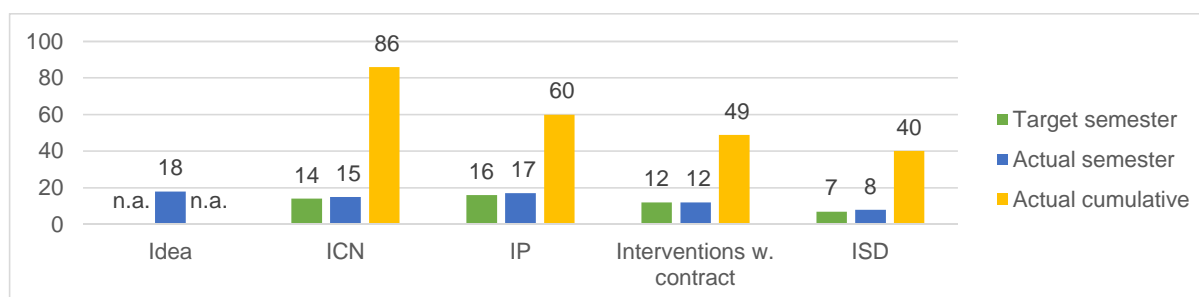
A strong El Niño effect has delayed planting and harvesting seasons, which pushed back planned results measurement activities in some sectors, and caused losses in others. This will be followed by La Niña, bringing high rainfall levels with implications related to pests, diseases and cropping patterns.

2 Portfolio Management and Monitoring

2.1 Portfolio Development Progress

PRISMA exceeded its targets for intervention development. Fifteen Intervention Concept Notes (ICN) were developed against a target of fourteen and seventeen Intervention Plans (IP) compared to a target of sixteen, partner contracts were at the target of twelve, and eight Intervention Steering Documents (ISD) were developed against a target of seven. Overall, the new interventions developed this semester strive to reach 84,441 HH by the end of 2018 (41,090 <\$2PPP). Eighteen new intervention ideas were also developed this semester, which shows that the portfolio will continue to grow significantly.

FIGURE 3: INTERVENTION DEVELOPMENT



With the growing pace of intervention development, securing management time from at least the required two assessors for two assessment panel meetings per intervention has become a challenge. PRISMA will address this through better planning and by permitting delegation. Travelling Heads of Portfolio (HoPs) may delegate to Senior or Principle Business consultants to attend sector review meetings if the Team Leader is also present in the assessment panel. This will save Core Management Team (CMT) management time, increase the speed of the intervention development process and additionally build the capacity of PRISMA's future local M4p management capacity.

PRISMA proposes to move away from the purely output oriented setting of interventions development targets to a more qualitative approach that would better take into account progress towards systemic change. In the past, the intervention pipeline was important to ensure that the program was on track. As PRISMA is developing to a more mature stage, the pipeline is shrinking in importance, and progress towards systemic change becomes more revealing when determining if the program is on track. PRISMA management therefore proposes to develop a simple system to assess the progress of the portfolio against defined systemic change targets.

2.2 Key Performance Indicators and Projections

OUTREACH

Through its existing and new interventions, PRISMA benefited 9,196 HH (2,812<\$2PPP), slightly less than the semester target of 9,430 HH as defined by the target outreach trajectory. More interesting, some of the results exceeded expectations by far and others clearly failed to meet them:

- J Cashew NTB +1,087 HH (+362%); we had expected impact only from the combined use of pesticides and good agriculture practices (GAP), but even farmers only participating in GAP training but did not buy pesticides had benefited.
- J Mango NTB and EJ +3,465 HH (+116%); our assumptions regarding the number of farmers that would actually benefit were too conservative because at the time (2014) we did not have enough experience regarding the main determinants such as the number of trees or the access to use ratio,
- J Soybeans EJ +2,889 HH (+289%); the team made very conservative assumptions and had to make the projections without any experience in the sector, thus the impact was higher than expected.

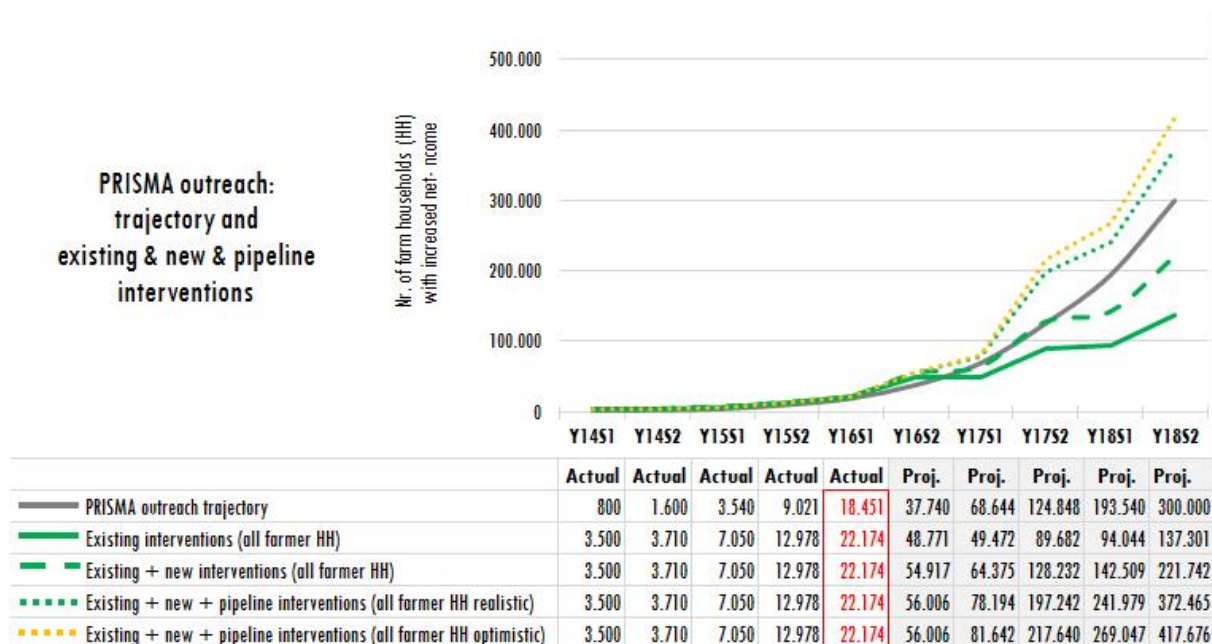
- J Coconut EJ -829 HH (-788%); unfortunately, the training for organic production of coconut sugar was not sufficiently put in to practice by farmers. Most of them still used inorganic inputs and therefore did not qualify for the premium price paid for certified sugar.
- J Maize NTT -6,778 HH; due to El Niño, the harvest season was delayed and we had to postpone our impact assessment.

The expected cumulative outreach for existing and new interventions is 54,917 HH (27,449<\$2PPP) by the end of 2016 and 221,742 (105,481<\$2PPP) HH by end of 2018. The latter corresponds to an increase of almost 70% compared to the projections made at the end of 2015 for these interventions. The main reason for this strong increase is that many of the new interventions are designed to scale-up earlier ones. The main contributing sub-sectors to this increase are soybeans EJ with an expected outreach of 27,909 HH, pigs NTT at 16,522 HH and cassava EJ at 14,406. Maize EJ is expected to impact 37,534 HH and is a scale-up intervention in that PRISMA will apply the strategy tested with PT ASHTI with additional partners including Syngenta and DuPont.

Last semester PRISMA identified cases of overlaps between interventions for the first time, which are now taken into account in all actual and projected numbers. Where PRISMA has results measurement data for overlaps between interventions, we use these numbers for actuals as well as projections. Where there is no measured data yet, an assumption of 20% overlap is used. In addition, an 80% success rate assumption is applied to existing and new interventions, and a 60% success rate assumption for future interventions and ideas.

Based on this, the total projected realistic outreach for existing, new and pipeline interventions is 20% (3,723 HH) above PRISMA's target trajectory. The total realistic projection to the end of the first semester of 2017 is 78,194 HH (39,174<\$2PPP) and 372,465 HH (169,830<\$2PPP) by end of 2018. For the first time in this PRIP, PRISMA is also reporting an optimistic outreach projection for all existing, new and pipeline interventions as in figure 3 below. The optimistic projection works with a success rate of 90% for existing and new interventions and 70% for future interventions and ideas and is shown in Figure 4 below.

FIGURE 4: ACTUALS AND OUTREACH PROJECTIONS



INCOME

The outreach weighted average (since program inception) NAIC of PRISMA is now at 40% compared to a target of 30%. The total NAIC this semester was IDR11,158,389,613 (~AUD1.2m) for 9,196 HH, leading

to a lower average income change per HH per crop cycle at IDR1,487,567 (~AUD148) this semester compared to IDR2,368,298 (~AUD236) at the end of the last semester. The drop in average income change stems mainly from two relatively large beneficiary groups in each of the mango and soybeans sub-sectors with very low income increases; this was mainly because these two groups were already users of early flowering technology or quality seeds before the PRISMA interventions, and only small increases in income resulting from the interventions' GAP trainings could be counted. Across the 15 sub-sectors in which PRISMA is already measuring income increases, the NAIC ranges from 6% (soybeans) to 1,310% (fish).

TABLE 2: KEY PERFORMANCE INDICATORS

	KPI tracking	Actual cumulative Y16S1	Actual Y16S1
1	# Intervention partner public and private	51	4
2	Partner co-investment	12,985,422,705	4,484,067,596
3	# Innovations by private sector	39	5
4	# Initiatives by government to improve BEE	6	3
5	# ISPs	513	153
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The absolute value of NAIC is more important than relative change for PRISMA as the absolute value should reach a certain level to provide a sufficient incentive for farmers to sustainably change their behaviour. PRISMA currently has five sub-sectors which have a NAIC below IDR1,000,000 (~AUD100) and five slightly above. The remaining are approximately IDR2,000,000 (~AUD200) and above or have not yet had an impact assessment. This will need closer attention moving forward from the HoPs and the Task Managers responsible for the interventions.

OTHER KPIS

The average turnover of intermediate service providers (ISP) more than doubled and reached IDR11,974,454 (~AUD1,190), which indicates that there should be a fair level of ISP commitment to interventions. The main drivers behind this were the mango EJ/NTB and the pig NTT sub-sectors.

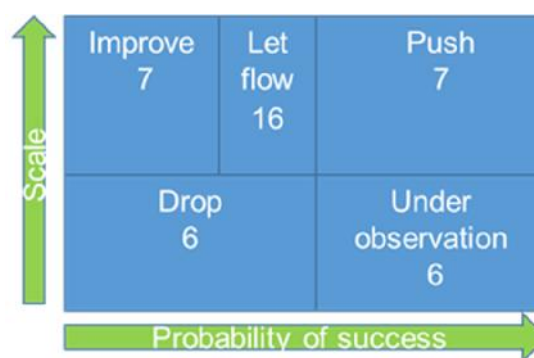
Partner investments grew significantly by 60% (IDR4,484,067,596 or ~AUD448,000). The total cumulative amount of partner investment since the beginning of the program is now at IDR12,985,422,705 (~AUD1,295,000). This means that the program has reached an investment of IDR1,121,016,899 (~AUD112,000) per new partner during this reporting period, and much of this investment is reflected by the major players PRISMA has been able to recently attract. Private sector partners are discussed in more detail in section 4.2.

2.3 Portfolio Analysis

With 36 existing and new interventions in 26 subsectors, PRISMA's portfolio is strongly diversified and likely to require a more focused approach in 2017. PRISMA has limited human resources and a strong mandate to achieve value for money. During the first half of this program phase, a broad diversification of its portfolio was justified by the initial limited experience of which interventions work and which do not work. The goal of this strategy was defined by reducing the risk of not being able to identify enough winning sub-sectors, partners and intervention strategies, and by the need to gain field experience. In some sectors, we are now relatively sure that we can create the kind of impact the market development approach strives to achieve (e.g. maize, pigs and mango). Other sectors appear to be potentially successful but cannot yet be confirmed (e.g. soybeans, cassava, coffee, ICT and extension services). Some sectors are still too new to be assessed (e.g. ICT, extension services, mung beans, feed) and some are technically difficult or very small (e.g. beef, seaweed and peanuts). The next twelve months will bring more clarity in determining the future winning sectors.

The quality monitoring tool (QMT) developed at the end of 2015 was further refined and used for the assessment of all pipeline (approval process) as well as existing and new interventions. During this semester's strategic portfolio review, PRISMA split the "Change/Improve" category into two parts: "Improve" and "Let flow". This semester, 7 interventions were placed into the "Push" category, 7 should be improved, 16 are in the "Let Flow" category and 6 are under observation. PRISMA is dropping 6 interventions during the next semester, mainly due to a lack of partner commitment or low capacity, and in one case due to a competing subsidy program.

FIGURE 5: PORTFOLIO QUALITY MATRIX



The geographic distribution of the current portfolio is 13 in EJ, 6 in NTB, 14 in NTT, 1 in Papua and 2 in West Papua.

This semester, PRISMA was also able to intensify its collaboration with government, doubling the number of partnerships (see section 4.1)¹

2.4 Challenges and Lessons Learned

Over the past six months, it became clear that the current strongest potential for synergies stem from working with the same partner in different sectors. For instance, the collaboration with EWINDO started early during the launch of PRISMA in 2013 in the shallots sector. Based on the growing trust between EWINDO and PRISMA and visible intervention success, PRISMA is now working with the company also in ICT, soybeans EJ, mung beans EJ, vegetables NTT, West Papua and hopefully Papua soon. Moreover, EWINDO recently requested our support in the potato sector². Other examples of partner synergies are Syngenta (in mango, recently in PISA agro maize and potentially other sectors) and Charoen Pokphand (pigs and ongoing discussions regarding beef). As a result of these synergies, partner relationship management was identified during PRISMA's last strategy retreat as a significant means to increase systemic change: if the partner begins to change its business practices, this in turn makes other partners more confident to work with PRISMA and change their way of doing business. PRISMA can improve partnerships not only through successful collaboration but also through dedicated partner events and networking.

Strategic coherence can also arise from working along value chains (vertical integration), and these synergies might have the most potential in the maize, cassava, beef and pig sectors. For example, PRISMA is now working along various areas of the pig value chain, from pig feeding to rearing, and now with pig feed production. PRISMA will observe the effects on systemic change in the sub-sector using this approach.

PRISMA also identified sub-sectors that do not have any apparent links to other sub-sectors, and this is an area to critically review in the future, e.g. seaweed and cashew nuts.

There is some potential to create synergies by treating Extension Services and ICT as cross-sectors, as the activities, services and products are similar across sub-sectors. Agricultural inputs and seed have also been considered as cross sectors, but these areas are too crop and partner specific to reap any benefits of synergy. Accordingly, PRISMA might explore a potential collaboration with a well-respected international specialist in ICT in Agriculture.

Overall, the QMT has proven to be a good starting point for portfolio review discussions and final decision making. The lessons learned while using the QMT this semester are: the standardised criteria are helpful in more objective decision making on interventions; the QMT reduces subjectivity on the part of

¹ There are no hard geographic targets but the program aims to attain geographic balance.

² PRISMA is still assessing this option

program management; and the decisions made are thus more transparent and sellable due to the QMT rating system. However, some of the qualitative criteria in the scoring is still too subjective, and requires more in-depth discussion during portfolio review meetings to agree on a score. Finally, the weighting of “outreach” to the overall score is very strong, and the QMT may need to be rebalanced in the future to better reflect systemic change.

2.5 Management Response

With most management systems now in place at PRISMA, the Mid Term Review (MTR) and the achievement of PRISMA’s outreach targets during the crucial second semester of 2016 will determine the direction of PRISMA’s short and long-term strategy. However, for the time being, management assumes that there will be some broad areas that can reasonably be seen as potential focal areas for the program during the next year.

The MTR comes at the right time in September 2016, as the preparatory activities for the MTR are fully in line with what PRISMA would have to address regardless of the MTR. This includes following up on the feedback from the DCED audit (see below 3.1) enhancing strategic coherence, and finalising impact assessments in several sectors.

Strategic coherence and systemic change will be dominating topics for PRISMA during the next twelve months. The different sub-sectors are in very distinct stages of progress. In some sub-sectors, strategic coherence and good progress towards systemic change are visible (e.g. maize, pigs and mango). In these sub-sectors, PRISMA will refine its sub-sector strategies and broaden the basis of collaboration with partners, observe changes in interrelated markets that the program can support, and think about links and synergies with other sub-sectors. In some sub-sectors, the teams are still at a stage of formulating the right strategy to address the sub-sector constraints (e.g. coconut) or the challenges related to changing farmer behaviour (e.g. beef). This implies that there are some sub-sectors in which our current strategy is still focused on learning and understanding. Regarding sub-sectors in this early stage, PRISMA tends to have a broader range of interventions with the aim of finding a break-through and identifying stronger partners in the next twelve months.

Together with the AIP-RURAL Secretariat, PRISMA will begin developing a set of indicators to set outcome targets that focus on systemic change, rather than the number of interventions, ICNs and IPs. This set of indicators should not be based on the same set of criteria as in the QMT, as this would create perverse incentives when using the QMT, which has a set of important qualitative indicators. Instead, this new set of indicators should be more specific and measurable. For example, these indicators should relate directly to specific sectors, and define steps to achieve targets and milestones to be reached.

The upcoming review at the end of November 2016 will strive to make clear go/no-go decisions in order to free sufficient human resources to effectively focus on the sub-sectors that provide the best value for money. Regarded as “value” will certainly be systemic change rather than mere outreach, but “value” can also lie in the innovation characteristics of the sub-sector strategy (e.g. IPM, new soybean varieties).

PRISMA currently plans additional interventions which are projected to reach 150,723 HH. Against the need to focus on winning sub-sectors, this plan may be too ambitious and can only be achieved if PRISMA increases its implementation capacity. Consequentially, PRISMA will have to be careful in which sub-sectors to launch additional interventions and scrutinise intervention planning, better identifying plans that will focus on the winning sub-sectors. The details of the portfolio development plans are shown in Annex 3. Portfolio Development Plan.

3 Cross Cutting Issues

3.1 Results Measurement

in June 2016 PRISMA received a DCED audit of its results measurement system, which found that the program “has a strong results measurement system”. This audit is a check of the program results measurement processes and assesses if the program has a system to generate credible results. PRISMA is 89% compliant with the mandatory requirements of the DCED Standard. Preceding the audit, PRISMA conducted a pre-audit and implemented some of the changes suggested. These included setting up a peer review system within the results measurement team, revising the roles and responsibilities of the portfolio and results measurement team, and documenting its process for assessing systemic change. The main areas of improvement were measuring systemic change, attribution and research methodologies. PRISMA will follow up on this over the next six months, with trainings in these areas already set for August and a planned retreat for intensive capacity building for the results measurement team.

PRISMA completed all five PPI questionnaires specific to the provinces of EJ, NTB, NTT, Papua and West Paua and they are already being used for surveys. The consultant responsible for developing provincial PPI tested the PPI questionnaires and found that province-specific questionnaires and scorecards do indeed increase the accuracy of poverty assessment. The program will continue to use these PPI questionnaires in assessing the poverty rates among its target groups, with the aim of achieving more accurate results.

Between January and June 2016, the program completed three intervention baseline studies and three impact assessments. The former are two for beef in EJ and one for maize in NTT, while the latter are for fish EJ, cashew NTT and cassava EJ sectors. For the next semester, 19 impact assessments are planned. Due to seasonality, this number is higher in the second semester than the first 6 months of the year.

PRISMA finalised almost all livelihood reports, and the design and baseline report of a longitudinal income study. Five out of six livelihood reports were ready by the end of July 2016 (deadline for semester output targets), and the sixth will be completed by the end of August. The longitudinal study will track income allocation of farmers in three subsectors. The program finalised the longitudinal baseline report in January and made arrangements for data collection for the second year during the remaining months of the semester. The next data collection phase will take place in October 2016 and final reports of the second year results will be available in the first semester of 2017. The findings of both studies were used to improve the teams’ understanding of the target groups, and will be integrated into the intervention steering documents during the second semester of 2016.

3.2 Gender and Social Inclusion

This semester, PRISMA has conducted gender analyses in six subsectors, two more than the semester target. The analyses mainly focus on the division of roles between men and women, and the dimensions of women’s economic empowerment in each subsector:

- J Maize in Sumba, NTT (as an initial part of a new intervention) (February 2016);
- J Shallots in EJ (March 2016);
- J Mango in NTB (Sumbawa, East Lombok and North Lombok) (March 2016);
- J Beef EJ and Beef NTB (both are existing interventions) (April 2016), and
- J Cassava in Sumba, NTT (conducted for a new cassava for feed intervention) (May 2016)

Through these assessments and the more quantitative impact assessments, PRISMA learned that women’s participation in its sectors, even those presumed to be male dominated such as beef and shallots, is much richer than initially assumed. In total, 51,085 individuals were involved in the agriculture activities supported by PRISMA³, and 18,627 or 36% were women. The gender assessment revealed that the

³ PRISMA started measuring this at the end of 2015; earlier data is based on findings from women’s focus group discussions.

role women play almost always includes making financial decisions in agriculture. PRISMA is using this data to communicate to partners the need to work with and encourage female farmer participation in partner activities. In areas with lower female participation, such as in the NTB beef subsector, PRISMA is advocating the women's economic empowerment process with partners, and through its interventions actively encouraging women to participate in information and knowledge sharing.

PRISMA revised its gender inclusion strategy and developed gender mainstreaming operational guidelines in April 2016. Gender training for sector and results measurement teams was conducted in April 2016 during the visit of an international consultant to better integrate gender mainstreaming into PRISMA's interventions.

PRISMA further supported TIRTA and SAFIRA to develop a gender equality strategy and operational guidelines. PRISMA specifically supported SAFIRA in conducting a gender analysis on the roles of women and men in the financial sector.

Despite the progress in gender sensitive impact measurement and intervention design, it remains a challenging task to better anchor gender knowledge and gender concerns in the PRISMA teams. To address this challenge, PRISMA management will increase its efforts to create a better understanding of the importance of gender sensitive strategies for our private sector partners. The program was also able to ensure the support of international consultant Linda Jones as gender expert for four weeks per year to coach staff, including management.

During the next semester, PRISMA will continue to conduct gender impact assessments, most likely in the coconut and maize NTT subsectors. The full time Gender and Social Inclusion Specialist will also be providing support in overseeing shallot EJ partners in order to encourage women's involvement in its solar panel insect light trap and pheromone trap intervention.⁴

PRISMA will also enhance its approach toward social inclusion beyond gender, especially for those with different abilities or the disabled, youth, the elderly, indigenous peoples and ethnic minorities. A working document will be provided as the guideline for PRISMA in approaching these groups. A consultant will be hired to develop a comprehensive social inclusion strategy/guideline for all four AIP-Rural programs, including PRISMA. The consultant will review PRISMA subsectors to determine the inclusion scope of different minority groups, provide guidelines on how the program can include them in intervention designs, and how to capture the impact on social inclusion with the current measurement system.

3.3 Environment

During this reporting semester, PRISMA completed an environmental assessment of nine interventions in seven subsectors, identifying the risk level of negative impact an intervention poses to the environment, and the environmental and climatic risks facing an intervention. Following PRISMA's Environmental Management System (EMS), the assessments rate each intervention for low, moderate or high environmental risk, based on the two risk aspects mentioned above. Thirty-four ongoing interventions, and 10 closed interventions have been assessed in 29 subsectors. To date, fourteen interventions are rated as posing a moderate risk to the environment, and 22 interventions are exposed to moderate risk from environmental conditions. Three interventions are currently still in the assessment process; and 3 others will be added during the second semester of 2016. PRISMA has engaged an additional environment expert to support PRISMA in hastening the assessment process.

Aside from integrating the assessment results and the relevant management responses into the intervention steering documents, further monitoring and any relevant adjustment will be conducted for all interventions. Interventions which are facing an increased risk from the environment will be re-

⁴ This intervention has the lowest women participation rate of all interventions (5%) because men are usually deciding about issues linked to pest control. However, the burdensome work of picking the pests from the leaves is usually done by women. Therefore, future marketing activities and capacity building should involve women much stronger because they would be an ideal ally to convince men of the advantages of the pest lamps.

assessed for further action as per the EMS guideline, while those posing a moderate risk to the environment are being closely monitored, with risks investigated during intervention reviews.

Although none of PRISMA's interventions have a high risk rating (as PRISMA would in most cases not approve such interventions), some of the interventions with a moderate rating will be further evaluated with an in-depth full assessment. This is planned for selected interventions with a significant potential risk to the environment, starting in the second semester of 2016.

Despite its lessened effect, the El Niño and La Niña weather systems are still major risks for most interventions until beginning of next year. Indonesia is forecasted to be affected by La Niña during the last quarter of 2016, and droughts and drought intensity are expected to lessen in the next semester, as La Niña will most likely bring higher rain intensity, especially in the south eastern region of Indonesia. While La Niña is believed to benefit the agriculture industry in Indonesia, it may also increase the risk of floods, increased pest attacks and/or crop failure due to excessive rain. It may also heavily affect crop seasonality and farmers will most likely cultivate certain crops when water is abundant. PRISMA has assessed La Nina's potential impact on interventions and discussed it with partners.

3.4 Communications

From May 2016, the role of the Head of Communications was expanded to cover all AIP-Rural programs, and this role includes developing, implementing and maintaining the communications strategy across all projects. A strategy matrix for communications was developed and new communications targets are set for the next 6 months.

PRISMA finalised its branding guidelines and the communications strategy, and launched the AIP-RURAL website. PRISMA's communications strategy was approved by DFAT and BAPPENAS in June 2016. The new strategy will ensure the consistency of messaging throughout the lifespan of the program, and will play a critical role in strategizing how the program plans to increase the visibility of its outcomes and demonstrate the positive impact of PRISMA's work.

PRISMA has also successfully increased publications in local media in program provinces through leveraging its key activities or accomplishments, such as MoUs, intervention events and launches. A number of key communication products have been developed this semester, including infographics, videos and print publications.

Critical to the success of PRISMA's work is the confidence that key audiences have in the program. PRISMA will further enhance its presence and continue to improve the way the program communicates to create consistency in conveying its goals through various forms of communication platforms, channels, and activities such as sector stories, press releases, or field visits.

PRISMA is in the process of further developing key relationships and building trust with its key audiences. The program will take advantage of strategic events, conventions, conferences, trade shows, and workshops that are hosted by GoI or private sector counterparts.

PRISMA will continue to broaden the production of print and other marketing materials to help the program engage and interact with key audiences, and educate them about the program, its activities, how it implements interventions and why. PRISMA's presence on the internet will be strengthened to provide better information access for its key audiences.

A unified AIP-Rural strategy will update the key aspects in all AIP-Rural programs by the end of 2016. It will ensure that key messages are communicated in a consistent manner to DFAT across all programs, and that media and external events are managed more effectively for AIP-RURAL as a whole instead of separate communication in each program.

4 Stakeholder Relationship Management

4.1 Government of Indonesia National and Sub-National Agencies

The Sustainable Livelihoods Program (P2B) program, known as PPKPM and designed by BAPPENAS, was transferred to the Ministry of Villages (Kementerian Desa, Pembangunan Tertinggal dan Transmigrasi), which has not given the program sufficient attention during the last semester. Its planned integration with PRISMA is therefore on hold, and BAPPENAS will design a new livelihoods program for the P2B strategy.

As part of local government engagement, from the start of 2016 PRISMA began conducting a series of M4P training sessions for local government representatives in five provinces as targeted. The training has four stages, including classroom training, assignments and technical assistance. By the end of 2017, we expect that the local government departments involved will be able to identify their own interventions based on a market development approach. Overall, the objective of the training is 1) to socialise local government to the M4P approach; 2) to identify potential synergies or alignment between PRISMA's existing interventions and the local government identification of intervention opportunities; and 3) to identify new local government driven interventions which develop a business enabling environment.

The main challenge emerging from the trainings has been adapting the M4P approach to suit the interests and role of the local governments. PRISMA designed the trainings to focus more on the principles of market development and less on measurement. Another challenge is preserving the same participants attending the trainings throughout all stages. In order to mitigate this challenge, PRISMA will send invitations specifically to the people who attended the previous trainings, although this may not fully avoid the possibility that local governments will send new participants.

PRISMA began implementation of 3 interventions in Papua and West Papua. In addition to cocoa in Papua, two new interventions (lowland vegetables and highland vegetables in West Papua) are now in the implementation stage. PRISMA is also designing a new intervention for vegetables in Timika, Papua. The main challenges in the Papua and West Papua interventions are human resources capacity, the size of the region, and a lack of private sector presence. The collaboration with a local NGO also requires considerable guidance from the local PRISMA team.

Between January and June 2016, PRISMA has initiated several interventions involving local government entities:

-) The implementation of the Anggur Merah intervention in the pig sector in Ende is now up and running. Building on this, PRISMA started another intervention in the beef sector (with the development of Lamtoro as high quality feed) in Timor Tengah Utara province and Kupang (the capital of NTT), and next semester will expand to the maize sector in Atambua (the capital of Belu).
-) The extension services intervention in NTB is now being implemented to increase farmer access to agriculture information via a mobile phone application and provide up-to-date advice on how to deal with pests and diseases affecting rice, maize and soybean in NTB.
-) A public and private partnership intervention was signed this semester, which will involve the local government of Sumba Timur, NTT renting out a facility to a company that produces cattle feed.
-) PRISMA entered into a collaboration with the local government of Sumenep, Madura to work with maize seed producers to promote the use of hybrid seed. The promotion will also make use of seed from UPSUS (the national government program that provides free seed to farmers) and provide better allocation to farmers.

4.2 Private Sector and Civil Society Partners

PRISMA now has more experience and evidence of private sector partner success, which has given the program more leverage when negotiating with current partners, enabling us to expand collaboration with them and to continue attracting new potential partners. PRISMA's partners have also been far more responsive to the program teams' ideas and suggestions, even before reaching the partner agreement stage. The program teams are also more aware of relevant agricultural events to which they regularly invite partners and other members of the private sector. Due to better partner communication and proven success stories based on hard data, the private sector is now beginning to view PRISMA as more authoritative and listen to the program's advice. This has translated into partners' willingness to invest more funds into intervention activities and PRISMA gradually decreasing its own co-investment. Overall, compared to previous semesters, there is increasing evidence of the crowding-in of partners in intervention areas without as much effort on PRISMA's part. Furthermore, due to PRISMA's gender studies, private sector partners are beginning to see the benefits of including women in training and when marketing their products.

Despite the success with the private sector, partner buy-in of ideas and interventions can still be improved, so that the role of the partner is clearer and more defined. This can be done through team members having better negotiation and deal-making skills, and PRISMA is planning further capacity building workshops in this regard during the next semester.

PRISMA has continued to work with PisAgro in the maize sector, one of the program's largest sectors. Maize also has overlaps within the whole AIP-Rural program, from TIRTA to ARISA. PisAgro is a platform for major partners in the maize sector; some of these players, such as Syngenta, are already partners with PRISMA. DFAT is another member of PisAgro, and PRISMA is currently a member of the Corn Working Group. The chair of the Corn Working Group, from Syngenta, approached the AIP-Rural Secretariat to help with the preparation of a working group strategy to attain more scale with impact specifically on poor maize farmers. Support to the Corn Working Group was delivered through PRISMA to create better conditions for PRISMA to collaborate with multiple partners in the Madura maize, which targets an outreach of about 40,000 maize farmers. The PRISMA support team formulated the strategy this semester and presented it to the PisAgro board at the end of July.

PRISMA's plan to test ways in which to develop intervention ideas more collaboratively with interested companies had only partial success. Only one collaboration was established, against a target of three. With private sector partner EWINDO, PRISMA is following the new approach in its mung bean intervention; it remains to be seen whether the program can make this new way of engaging with the private sector into a success model. More likely is that such collaboration at the early stages of sub-sector research and intervention design will remain an option only in tested and proven partnerships. The program will continue its pilot, which has started successfully, and decide by the end of next semester whether to continue to look for opportunities beyond the mung bean sector.

PRISMA's relationship with international NGO co-facilitators has also improved this semester through strengthened relationships and by building capacity. This has resulted in better intervention understanding on the co-facilitators part and improved communication between the teams and co-facilitators.

Interventions with local NGOs as co-facilitators are not running as smoothly as expected. Despite and intensified training compared to the first batch of co-facilitators, the second batch struggles even more than the first. PRISMA will invest more resources in their capacity, but will also analyse whether other approaches are possible to more successfully ensure local capacity for market development is enhanced.

5 Operations

5.1 Operations

Improvements to the systems and processes identified last semester are now imbedded in each of the three Palladium managed programs. This includes a Deed of Standing Offer, an output based payment option for partner contracts, and a co-facilitator payment calculator for better forecasting

The systems are in place, but the teams are sometimes still struggling to use them effectively. Reasons are a lack of understanding on all levels and in some cases a lack of basic skills (e.g. insufficient knowledge of English or low writing skills). There are certainly also areas where efficiency can be improved. The operations team will organise more intensive capacity building and the CMT will engage in identifying feasible options to increase efficiency.

The last quarter has seen significant changes within Palladium as they develop and issue global systems and processes designed to increase efficiency and reduce administrative workloads, and PRISMA is working closely with Palladium to ensure minimal impact on our operations during the introduction phase. PRISMA will continue to use the existing systems and processes where it is not appropriate to switch to the modernised Palladium systems.

5.2 Personnel Management

The fifteen new staff (13 Business Consultants and 2 Senior Business Consultants) recruited last semester have undergone a detailed induction program consisting of both classroom and on-the-job training.

The new Head of Results Measurement and Learning joined the program in May with a smooth handover and no gap in management during the transition.

Advertising for Cohort 4 was held in May/June and it is expected that we will take on an additional 16 staff in October.

Staff and management capacity remains a challenge. To address this PRISMA has reviewed its salary and incentive system and developed a process for promotion of local staff. However, it is projected that international capacity will be needed beyond the planned time in June 2017. This does not affect the midterm goal to replace the two international mentors by local managers as soon as possible.

5.3 IT and MIS

ICT was set up in NTT, NTB and Papua and PRISMA is working to overcome poor internet access in Jayapura to enable staff access to MS GP.

Following a review of the program management and corporate functions, the MIS strategy was revised by the Program Director and work on this strategy began in early March.

Like any new application there are some troubleshooting issues to sort out, however most functions in MS GP are working as expected with the exception of some reporting functions in the Contracts and Grants Management System (CGMS) that are being addressed during the maintenance period.

Work on the program management functions is underway to ensure improved reporting functionality and will be ready in time for the MTR in September, in particular, the registration and updating of information on interventions and the aggregation of KPIs.

Annex 1. Subsector Profiles

Portfolio 1

1. CASHEW NTB⁵

In 2011, world demand for cashew kernels (obtained from the raw cashew nut) was around 400,000 MT; since 2008-09, this has been growing at an average of 7% every year. However, Indonesia currently contributes only 4% to the global raw cashew nut market; in 2011 it produced 114,789 MT. Although national earnings from cashew exports increased substantially between 2001 and 2012 (from USD44 million to USD97 million), more than 80% of this was raw cashew, with most value adding processes being carried out in India and Vietnam. Consumer awareness of healthy eating and concern for social issues in cashew-producing countries has fostered the growth of organic and fair trade cashew markets, which grew in Europe by around 14% between 2010 and 2011. The organic market has grown in single digit numbers in terms of volume, but at a higher level in terms of sales value. There are opportunities for key value chain actors to increase production to meet the rising demand for good quality cashew, both domestically and regionally, and internationally.

West Nusa Tenggara (Nusa Tenggara Barat, or NTB) contributes 11.29% to national cashew production; in Bima and Dompu districts, around 23,745 farmers grow the crop. Their productivity, at an average of 252 kg per ha, is relatively low compared to the national average of 367 kg per ha. PRISMA has chosen to start the pilot in these two districts because (a) of the high potential for growth in the region, and (b) the farmers in Bima and Dompu have difficulty accessing pest control and GAP services which the intervention will seek to address.

Challenge and constraints

The major challenge to the cashew sector in NTB is that:

- **Farmers lack knowledge of GAP.** Local service providers (LSPs) are not incentivised to engage with smallholders to supply information, technical assistance, services or value added processing, which leads to a reduction in GAP. This lack of provision is caused by the absence of information and commercial opportunities, resulting in limited demand for the products and services the LSPs provide.

Vision of change

PRISMA's vision of change is that by 2018, farmers in NTB will have improved the productivity and quality of their crop, resulting in the higher market value of their cashew harvest. This will attract more farmers to grow cashew, increasing production for the export market. This vision can be achieved through:

- **Either state-owned enterprises or the private sector** providing farmers with better access to information on better farming practices and technical assistance to enable their implementation.

The PRISMA approach

To achieve its vision, PRISMA will collaborate with the private sector to:

Develop pest control and GAP services for cashew farmers in Bima and Dompu

- Re-establish the state-owned enterprise's agro business unit, to provide technical assistance and mentoring to service providers at their own cost. The private sector partner will also develop a partnership with producer/s of an organic pathogen company and become their main distributor in NTB.

⁵ The intervention in this subsector is being co-managed by Mercy Corps (as PRISMA's co-facilitator).

- Promote the application of pest control and GAP to support cashew farmers to obtain higher yields.

Progress and signs of systemic change

- PRISMA has signed a contract with PT GnE, a state-owned enterprise located in NTB, to facilitate the exposure of cashew farmers to good farming practices (GFP), and their access to improved inputs and information relating to pest control. With the project's support, GnE has stated its intention to expand its business by providing pest control and GFP-related information and supplies, and by building the capacity of six service providers in the region who will supply cashew farmers with GnE products along with embedded information on GFP.
- A total of 23 demo plots have been established and more than a thousand farmers have received information on GAP and GnE's pest control products. Over a thousand farmers have applied elements of GAP (e.g. land cleaning, rafting, pruning and cutting); a few hundred have already purchased GnE's package of products and used it, and a few hundred more have placed advance orders and are on the waiting list to purchase it. Evidence suggests that a combination of GAP and the use of pest control products can more than double productivity.
- A lack of liquidity on the part of ISPs (agents) resulted in late payment to GnE. As demand is high, it is important that the ISPs have sufficient access to capital and incentivise GnE to stock more of the product supplied by fertiliser input company, PT NASA. PRISMA is therefore facilitating a linkage between the financial institution BPR Pesisir and the partner/ISPs. Bank Pesisir is currently processing the documents submitted by the partner and the ISPs to assess their credit worthiness. GnE has invited NASA to discuss the prospect of promoting the latter's product among six additional ISPs from northern areas of Lombok for various agro crops, including cashew. This indicates that GnE has ownership of the model and is autonomously engaging NASA to expand its business.
- One key challenge has been the slow response time of GnE. PRISMA is researching an alternative model and partners to complement its current work, which may entail working directly with NASA. To this end, the co-facilitator has moved out their office in the GnE complex and is discussing with NASA the possibility of direct promotion of its products in NTB.
- After a final review, PRISMA decided to phase out in this sub-sector. An initiative re-exploring this sub-sector is being conducted with East Bali Cashew, a cashew plantation and processing company.

2. CASHEW NTT⁶

In 2013, global production of raw cashew nut (RCN) was 2.60 million MT, having grown from 0.29 million MT in 1961 at a compound annual growth rate (CAGR) of 4.13%. In the same year, India led production of RCN, with 29% of the global share; global annual demand for RCN was 1.5 million MT, with over 0.4 million MT of cashew kernel being traded on international markets. Recent news states that Ivory Coast is taking the lead in global production. Demand for kernel is expected to continue to rise at an average rate of around 10% per year; the USA is the largest importer of cashew kernel, followed by China and the Netherlands. Vietnam has been the largest global kernel exporter since 2006, well ahead of India, the second largest. Vietnam and India are also the two largest importers of RCN.

In 2013, with 13% of the global cashew plantation area, Indonesia produced 5% of the world RCN. On average, more than 40% of RCN produced in Indonesia is exported directly to Vietnam and India; another 40% is processed into kernel for the domestic market, and the remaining 20% is processed into kernel and exported to the USA, Australia and other countries. Indonesia's cashew kernel export constitutes just over 1% of the world export market. The average export price of Indonesian RCN remains stable, while the kernel price experienced an approximate three-fold increase between 2009 and 2013. Since 2009, production of RCN in

⁶ Interventions in this subsector are being co-managed by WVI (Wahana Visi Indonesia) (as PRISMA's co-facilitator).

Indonesia has been decreasing gradually – the cultivated area has declined from 572,870 ha in 2009 to 554,315 ha in 2013, while during the same period production decreased from 147,000 MT to 108.000 MT.

Despite this decline in national yield, cashew production in NTT has remained relatively stable. The area under production has increased slightly over the years; Indonesia's largest plantation and highest production of cashew is in NTT. Around 99% of RCN produced in NTT is exported to other islands and countries, and the rest is processed locally to make kernel.

NTT is the third poorest province in Indonesia (20.24%) with a total population of around five million and 1.06 million households. Cashew is one of the province's major commodities. With comparatively sparse rainfall and a long dry season, NTT is one of Indonesia's most suitable cashew production zones. Around 273,000 farming households, spread across all districts of NTT, produce RCN. There is potential for growing the subsector in NTT, through interventions which will introduce improved services and products for cashew farmers via input sellers, financial institutions, and cooperatives.

Challenges and constraints

Productivity of cashew in NTT is low and in decline. The two major reasons for this are pest and disease (mainly in Sumba) and the relatively old age of the trees (especially in Flores). The specific problems and their underlying causes are summarised below:

- Plantations typically use cashew trees which are almost 30 years old and thus less productive. Farmers do not have access to seedlings, or rejuvenation and grafting techniques.
- Lack of proper agriculture practices leads to infection by pest and disease. Farmers use little or no fertiliser or pesticide, and rarely carry out pruning and sanitation. The main underlying cause for this is that no agency, either government or private, appears to have an interest in offering this information service.
- Farmers lack knowledge of better farming practices, are not business and financially literate, and cannot access market information.
- Cashew processing and value addition (the production of kernel) is extremely limited. Only a few women farmers produce kernel, with heavy support from the government and few market linkages.
- Farmers rely on the price set by the traders and have little bargaining power. Traders appear to offer a slightly higher price when cashew crops are aggregated but generally farmers sell their harvest individually. Farmer associations and cooperatives do not provide aggregation services for cashew farmers. Another reason for the relatively low price is the high costs of transportation.
- Government extension services have little interest in cashew and insufficient knowledge about cashew production practices. With limited resources, they prioritise other major crops; an exception is the occasional free distribution of seedlings to cashew farms.
- Input suppliers and financial institutions (FIs) do not target cashew farmers as their clients. They lack awareness of the market's potential and have limited capacity to expand their business in the cashew sub-sector in NTT.

Vision of change

PRISMA's vision of change is that by 2018, farmers in NTT will have increased their income from cashew by increasing a) the productivity of RCN, and b) kernel production. This vision can be achieved at the service level by farmers having:

- **Improved access** to grafting services and better farming practices;
- **Improved access** to inputs and financial services;
- Better bargaining power and improved access to market information, and
- **Improved access** to processing technology.

The PRISMA approach

To achieve this vision, PRISMA has designed five interventions. Central to its approach is the convincing of the relevant market actors to expand their business by targeting cashew farmers and promoting better inputs and practices among them:

Support the development of input supply services which provide embedded services (plant protection services, better farming practices) for cashew farmers in NTT.

- Educate input sellers on the value of extending services and products to cashew farmers as a means to expand their businesses and make them more successful.
- Advocate the use of better inputs and practices, in partnership with the input sellers, to the farmers.

Support the supply and promotion of grafting services which provide embedded services (grafting technology, total plantation management) for cashew farmers in NTT.

- Commercialise grafting services (to produce seedlings).
- In partnership with the service providers, PRISMA will advocate the use of better quality seedlings and strengthen demand through promotion of services.
- The project will also work on improving the quality of the seedlings, and their marketing and distribution.

Support financial institutions and cooperatives to design and promote loan products with embedded services (such as business analysis and financial literacy) for cashew farmers in NTT.

- Along the lines of intervention 1, PRISMA will educate the financial service providers on the value of extending services and products to cashew farmers and how this will assist in expanding their businesses.
- The project will work to develop dedicated financial products tailored towards cashew farmers.

Facilitate collective selling through those cooperatives and associations which provide market information and embedded services in NTT.

- PRISMA will work with these cooperatives and associations to diversify their services to their members.
- It will assist cooperatives which provide aggregation and bulk selling services to expand these to take in additional members.
- It will showcase the learnings gained with these cooperatives, thereby encouraging and assisting additional cooperatives to follow similar models.

Assist traders, inter-island traders, national buyers and financial institutions in the development of local kernel processing units at the farm level in NTT.

- The intervention will commercialise and expand the existing production of kernel, specifically targeting women.
- It will work with buyers and financial institutions to build on the existing skills of the small groups of women involved in processing kernel and engage additional female farmers as their suppliers by providing appropriate support and skills.

Progress and signs of systemic change

PRISMA has started to implement intervention 1: 'Support the development of input supply services that provide embedded services (plant protection services, better farming practices) for cashew farmers in NTT'.

In the first intervention, in September 2015 PRISMA began work with private sector partner, CV Peduli Kasih. The following points capture progress in the Southwest Sumba and East Sumba districts:

- PRISMA facilitated the carrying out by the partner of the identification, selection, and GAP and marketing training of total 48 intermediate service providers (ISPs), which are currently rolling out the promotion of knowledge, inputs, tools and services to cashew farmers.
- The project facilitated the training of four external services facilitators; these will be part of the partner's resources to be used to provide services to current and future ISPs.
- PRISMA identified PT Nufarm to be input supplier to the partner, which now supports the demo plot and implementation of activities as part of this intervention.
- The government Agriculture Office of Southwest Sumba and East Sumba released endorsement letters through the extension staff, recommending pruning and space thinning to farmers.

The challenges encountered during the implementation are:

- Farmers and ISPs lack working capital to buy and sell inputs and services.
- The business model introduced by the intervention is relatively new. The demand for crop protection inputs and services in the cashew sector remains low but is increasing. For the partner, there is an issue of trust in terms of potential ISPa; this remains a concern.

In the second intervention, in May 2016 PRISMA began working with an input producer, PT Novelgro. This intervention promotes quality organic inputs to cashew farmers in Sumba and Flores islands. In recent field visits, the partner identified 66 potential ISPs, set up demo plots, and conducted training with 218 farmers and 37 government extension officers. The partner also met respective local government representatives to obtain their endorsement of the intervention and define their possible involvement in it. After this visit, the partner began following up business deals with ISPs with a view to addressing the challenge of product shipping and distribution.

Contribution of public programs

In 2016, the local government crop office, southwestern Sumba, plans to improve the capacity of farmers in the SBD area in terms of pest control. Officials in most districts have invited the project to work together with the government to obtain as extensive coverage of the region as possible.

3. MANGO NTB AND EJ

Mango is the third most widely grown fruit in the tropics and sub-tropics after watermelon and banana. Global production of mango has been increasing, with growth largely driven by favourable demand conditions in producing countries. Between 2003 and 2013, global production of mango, mangosteen, and guava increased from 29.7 to 43.3 million MT and grew at a compound annual growth rate (CAGR) of 4%. While data from the FAO does not disaggregate among these commodities, the latter two crops have residual importance in terms of production. Representing over 40% of global production, India is the world's leading mango producer, followed by China and Thailand.

Mexico has been the leading mango exporter for decades while the US is the leading importer of mangoes. The EU and Gulf States are potential markets for mangoes from Indonesia. In East and Southeast Asia, five countries – Malaysia, Hong Kong, Singapore, Laos, and Japan – account for the bulk of imports. Despite strong growth in the international mango trade, over 95% of the world's harvest is still consumed within the producing country itself.

Mango season differs across countries. Based on ACIAR research on mango, it is common for countries in the southern hemisphere to harvest at the end of the year, while countries in the northern hemisphere normally harvest at the middle of the year.

Indonesia is the fourth largest mango producer globally, with approximately 2.4 million MT of mangoes in 2014; the country accounts for 3 to 5% of global production, depending on the year. Mango is Indonesia's largest fruit crop. In line with global trends, mango production in Indonesia has also been increasing at a CAGR of 4% over the past decade.

East Java province dominates the Indonesian mango sector. The province produces about 922,000 MT a year, around 38% of the national annual supply. West Nusa Tenggara (Nusa Tenggara Barat, or NTB) is one of Indonesia's smaller mango producing areas, contributing only a fraction of the amount supplied by East Java, producing about 100,000 MT per year. This amount was sufficient to rank NTB as the 5th largest producing region in national mango production. Here, mango farmers are typically poorer, and have fewer crops and fewer income options than farmers in East Java. In both provinces, farmers typically sell their mangoes from the tree either at harvest time or prior to the harvest. For example, in the North Lombok district, mangoes are sold for cash, but on an ad hoc basis rather than being managed as a commercial crop.

A value chain study shows that in both East Java and NTB, the low peak-season price (IDR2,000-2,500/kg) is a major disincentive for smallholder mango farmers to consider investing in the new technology which would make their business more productive at other times of the year. Instead, they leave their mango trees to bear fruit naturally or rent them out to collectors to manage.

In the off-season however, the average on-farm price of mangoes can be more than 5 times higher than the price stated above. This means that if half their crop can be sold during the off-season months, the farmer's income from mango will increase by more than 80%. The crop treatment technology, which is designed to help deliver an early harvest and thus obtain higher prices, is intended to be accessible by 700,000 farmers in East Java and around 45,000 farmers in NTB. There is clearly an opportunity for PRISMA to tap into the possibility of shifting about 50% of the total mango production to an earlier harvest time, enabling smallholder farmers to get a better price for their produce during the months which are currently off-season.

Challenges and constraints

The three key problems currently constraining smallholder mango farmers in East Java and NTB from taking advantage of this market opportunity are:

- **Lack of access to early flowering technology and alternative end markets.** Chemical companies see mango farming as a market with low potential, and so do not actively promote the use of the right combination of chemicals for off-season mango production, or provide embedded services to assist farmers with successful application of such technologies. The export sector is largely underdeveloped; the processing industry is also in its early infancy.
- **Farmers are reluctant to invest in the mango crop** because of the low prices they currently get in the peak season; they are generally smallholders, their production is low, and they generally follow a low investment, low return model.
- **Farmers also experience low productivity when they manage their own trees** because they lack access to GAP, particularly in terms of pest and disease management. Losses from pest and disease attacks can be significant, making mango farming even less attractive.

The PRISMA approach

To achieve its vision, PRISMA is collaborating with the private sector company PT Syngenta Indonesia (Syngenta) to:

Promote early flowering technology. PRISMA and Syngenta are working to identify collectors and lead farmers who would:

- Promote early flowering agrochemicals (marketed by Syngenta as Cultar, Amistar Top and Actara);
- Collaborate to promote Saung Learning Centres (or SLCs) for demonstration purposes and to provide information;
- Demonstrate the application and impacts of the agrochemicals through key events (such as expos and farmers' field days or field trips), and

- Learn more about early flowering technology in order to disseminate the knowledge and skill to the farmers within their network to ensure the use of the technology.

Identify and invite mango farmers to attend early flowering technology training and promotional activities. Since many mango farmers have never heard of the technology, or have prior misconceptions, attending a training will give them a clear idea of early flowering and its benefit.

Identify locations suitable for demo plots so that more farmers can understand the benefit of the technology. This is built upon the success of the pilot program which showed that demonstrations increased the sales of the chemicals.

Prepare a database of category C collectors to enable Syngenta to identify which collector to target for each demonstration. Mango collectors usually collect from around 15 farmers each, thus by increasing an outreach for collectors will help increase the outreach to farmers.

Train Syngenta staff to enhance their capacity to prepare and run the mango demonstration plots. The need for training will be assessed based on the experience of the pilot demonstrations.

Progress and signs of systemic change

- Since beginning work with PRISMA, Syngenta has started to re-import Cultar and has steadily increased its import volume from one MT in 2014 to two MT in 2015.
- Syngenta has included Cultar in “must-win” project and endorsed the introduction of sales targets to its field teams in both provinces.
- Syngenta has also started to promote the application of early flowering technology for other fruit crops. In 2015 it organised an expo in Banyuwangi, East Java to promote the technology for dragon fruit. The company invited two hundred farmers, and managed and funded the event independently.
- In order to reach smallholder farmers, Syngenta is assessing the feasibility for introducing smaller packages of Cultar.
- Competitor product Getwell has introduced the technology through provision of a product loan (with payment due after harvest) to mango collectors.
- In late November and early December 2015, NTB’s government agriculture office held two training events for mango farmers in Lombok and Sumbawa, inviting a Syngenta representative to attend as the expert resource. On 16 January 2016, the district government of North Lombok held a similar activity, inviting around 50 participants.
- On May 2016, the agriculture office of the NTB government held a training event inviting representatives from the agriculture offices of each district in NTB, as well as farmers from each district.
- Government officials and related departments (such as the Agriculture Office) at the district and provincial levels (e.g. in Lamongan, Lombok, and Sumbawa) have expressed an interest in being involved in the promotion of the technology.
- SMKN 1 Kayangan, an agriculture vocational high school in North Lombok, is preparing a local-content subject on early flowering technology which it has started to teach and will embed in their curriculum.

Contribution of public programs

There has been no significant contribution by public programs. Nonetheless, provincial and district level governments in East Java and NTB have been showing interest in being involved in promoting the early flowering technology.

4. MARINE FISHERIES EJ⁷

Global fisheries production continues to increase dramatically (more than sevenfold in the last 60 years, from 19.3 million MT in 1950 to 163 million MT in 2009). In terms of marine fishing, although growth is declining at a rate of -9.4% per annum due to overfishing, it remains the largest sector globally. Marine and inland aquaculture is expected to overtake marine fishery production in the next few years. Meanwhile, in Southeast Asian (ASEAN) countries, demand has increased faster than the global trend. Here the sector is expected to experience the largest increase in consumption outside China, projected to reach 27 million MT by 2030 (an increase from around 19 million MT in 2010). Indonesia, the largest archipelago country in the world, is the biggest producer of fish, accounting for 35% of Southeast Asia's fish production and with high potential to expand marine culture. Encouraged by the Indonesian government and by shifting customer preference, domestic fish consumption is also increasing by 6% per year and has reached an annual average of 30.4 kg per capita. Demand for Indonesian live kerapu (grouper) fish for export has been increasing in recent years, and production has reached over 100,000 MT annually since 2004 to fulfil Asian market demand, especially from Singapore, China, and Hong Kong. There is a clear opportunity for the fishing community to meet the rising global and domestic demand for fish while avoiding overfishing by increasing productivity through marine and inland aquaculture (that is, cage farming).

Indonesia is exceeding sustainable levels of fish production, prompting the government to address the issue through the designation of nine fisheries management zones. East Java is the largest fish-producing area in Indonesia, as well as being a centre for the fish processing industries. The target district – Situbondo, located in Fishing Zone No 3 (Java Sea and Sunda Strait) – is an area where, although considered overfished, fish production can be increased through marine culture. Traders buy live kerapu from Situbondo and other districts of Java for export to Hong Kong, and there is an opportunity for smallholders to meet the rising local demand for fish in Situbondo through engaging in cage culture fish farming, a viable alternative to marine fishing. Large areas (some 461,600 has) have been identified by the Ministry of Marine Affairs and Fisheries as suitable for the culture of grouper.

PRISMA has chosen Situbondo as the location for its intervention because (1) the development of a more environmentally sustainable fishing method is critically needed, and (2) this will address the key constraints of the local context.

Challenges and constraints

The major reasons fish farmers in the Situbondo area do not engage in marine aquaculture are:

- **Lack of access to high quality inputs** (feed for fish fingerlings and good quality fingerling supply). This is compounded by poor fish cultivation practices.
- **Lack of access to technical support/facilities.** These are required to engage successfully in alternative production or alternative production strategies during the closed season⁸. Local fisherfolk have neither the sufficient knowledge and skills nor access to support services needed to successfully engage in alternative production strategies. Their access to financial services, for example, is limited.

Vision of change

PRISMA's vision of change is that by 2018, farmers have increased their productivity through marine aquaculture. This will attract more fisherfolk to follow the cage farming method, thus reducing the burden on marine and coastal fishing and making the fishing industry more sustainable. This vision can be achieved through:

- Grouper exporters providing technical knowhow and a market for smallholder fish farmers;
- Banks providing loans to grouper producers, and

⁷ The intervention in this subsector is being co-managed by ICCO (as PRISMA's co-facilitator).

⁸ A closed season is when fishing is prohibited at certain times of the year.

- Financial institutions offering innovative financial products to interested farmers, enabling them to engage in fish cage farming.

The PRISMA approach

To achieve this vision, PRISMA will support and collaborate with the private sector to:

Develop cage farming

- Build up a business model through the development of grouper production units by an ISP (in this case, the Grouper Producers' Association) to promote cage culture, the identification of the producers' financial needs, and loan brokering.
- Provide technical capacity building to the ISP and selected members of the Association in order to ensure a steady supply of quality grouper for export.

Develop innovative financial products for fish cage farming

- Develop an appropriate financing product for the newly-established Grouper Production Unit (KPU) through a bank partner (guaranteed by the Fish Fund), and provide capacity building for farmers in financial literacy and financial management skills.
- The ISP (in this case, the Grouper Producer Association) to promote financial models to the KPU.
- Establish an agreed payment system among bank partners, private sector partners, the ISP and the KPU.

Progress status

- Due to the challenging nature of the business model and the difficulty of working in the fish sector, a senior level management meeting between PRISMA and ICCO was organised to discuss the prospects of the intervention. It will now be continued as a pilot case, and PRISMA will carry out detailed analysis of its progress to feed into the design of future interventions in this area.
- During the sector review discussion, it was decided to phase out this sector. To this end, PRISMA's Head of Portfolio and SAFIRA's Team Leader have visited the field to evaluate future prospects, learning opportunities and potential for different interventions in the sector.
- PRISMA is re-exploring this sector with HIVOS.

Contribution of public programs

The government Local Marine and Fishery Agency distribute free fish cage packages (cages, feed and fingerlings) to fisherfolk groups on an ad hoc basis.

5. SEAWEED NTT⁹

Since 2006 the world seaweed market has grown by over 7% annually, with East and Southeast Asia currently dominating seaweed production, and Indonesia accounting for 13.7 percent of the total. The country benefits from a favourable environment for tropical seaweed cultivation and is experiencing sustained growth in the sector; between 2000 and 2007, its annual seaweed production rose from under 40,000 MTs to over 100,000 MTs and has continued to increase steadily since then. In 2007, Indonesia replaced the Philippines as the world's second-largest seaweed producer; in particular it serves the Chinese market, which for dried seaweed products is growing at over 10 percent annually. If all its underperforming regions are developed to their maximum capacity, Indonesia has a clear potential to increase its seaweed production further and continue to meet rising global demand.

⁹ The intervention in this subsector is being co-managed by Mercy Corps (as PRISMA's co-facilitator).

The district of East Flores is an established area for seaweed production. In 2010, it produced 27,500 MTs – approximately one fifth of the national (and around 60 percent of NTT province's) total. The district offers high potential for development due to its good local growing conditions; it has however fallen below the national average in recent years (-3 percent growth in 2007-11), and the government is currently providing financial support to increase seaweed production. Logistics and transportation services are functioning well in the sector, but farmers lack access to market information, and suppliers of quality inputs are limited. Local farmers do not employ improved technologies or cultivation techniques, and often engage in unsustainable practices (despite regulations which prohibit the use of certain chemicals and growth enhancers), which reduce product quality and degrade the marine environment. Technology transfer services are performing poorly, and farmers lack the techniques and technologies needed to improve productivity. Although financial services exist, there are no products specifically suitable for seaweed farmers. Government-supported programs do not seem to be working (activities conducted in general).

After a mentor visit in August 2015, PRISMA decided to expand the target location to cover Timor and Rote Islands because (1) large numbers of seaweed farmers are present here, and (2) many areas with high potential are underdeveloped, proving an opportunity to increase both the production and productivity of seaweed farmers.

Challenges and constraints

The major reasons seaweed farmers in the NTT region experience low production and productivity can be attributed to:

- **Insufficient knowledge.** There is a need to identify and utilise good quality agro inputs and improved cultivation and postharvest practices.
- **Limited private sector investment** in improving production standards.
- Lack of innovation, access to markets and finance, and sustainability of the coastal environment. This causes prices to fluctuate despite the market continuing to grow.

Vision of Change

PRISMA's vision of change is that by 2018, seaweed farmers in NTT will increase their productivity of quality seaweed. This means producing export-quality seaweed which attracts a high market value, encouraging other smallholder farmers to start quality seaweed production, and increasing national production to meet global demand.

The PRISMA approach

To achieve this vision, PRISMA will support and collaborate with the private and public sector to:

Develop seaweed agents and a seaweed support centre

- Farmer groups or village collectors become seaweed agents and their capacity is strengthened through technical assistance and capacity building provided by xxx. The function of the agents is to provide quality seedlings to farmers, collect and dry the seaweed, and deliver it to the private sector partners. They will also provide technical assistance in the form of GAP knowledge. A seaweed support centre contains facilities such as nursery postharvest facilities (e.g. a packing machine, drying equipment) and a logistic facility (a warehouse) and supports the agents' roles and functions.

Establish a public-private partnership for local seaweed sector development

- There is a lack of coordination among market actors in the seaweed market system, as there is no representative body operating to improve the sector. Such a representative body would have the mandate to find solutions to sustainability problems in the sector locally, and also represent the sector to central government and other interests (such as exporter associations). The public-private partnership will improve coordination between commercial and public interests and

support better use of resources in strengthening the sector. Such a partnership would be crucial for supporting the first intervention.

Progress and signs of systemic change

Partnership with CV Evadian, a private company working in sustainable aquaculture, was not fruitful. As a mitigating strategy the project started to work with UD Alga, a large seaweed agent in Rote, as private sector partner, for the provision of capacity building to farmers in Rote Island. UD Alga will significantly expand its current purchase volume, provide GAP to farmers via ISPs, and gradually establish a processing facility. It is envisaged that with this partner, the project has the potential to reach around 2,000 farmers by the end of next semester (December 2016). To further develop engagement with and involvement of local Rote government and stakeholders, a workshop was conducted in June 2016 to identify a clearer vision and mission of the seaweed sector in this island. After that, the continuation of this intervention will be discussed between PRISMA and Mercy Corps.

Contribution of public programs

The government and ILO have invested in infrastructure and basic training in the seaweed sector; the project supports seaweed farmers in selected locations in the NTT region.

6. SHALLOT EJ

In Indonesia, domestic consumption of shallot outstrips production by about 100,000 MTs each year, and imports are needed to close the gap. This creates a clear business opportunity to substitute imports by increasing national production. PRISMA's market analysis revealed a number of barriers preventing Indonesia's shallot farmers from taking advantage of this market opportunity, and identified the optimum measures needed to address them. Its pilot intervention has started to show positive results.

East Java province is the second largest shallot producer in Indonesia, contributing 24% of national production in 2013. Around 65% (5.3 million) of farmers in East Java are poor; around 11 per cent of the aforementioned total are shallot farmers. Imports of shallot usually peak between January and May, suggesting a shortage of local produce at that time of year.

Nganjuk and Probolinggo are the main areas in East Java where shallot is produced, with around 25,000 farmers involved in the production process. Here, issues around low income mainly relate to a) high production costs resulting from pest and disease attack, b) lack of access to good storage facilities during the peak season; and c) low productivity.

Challenges and constraints

The key challenge which prevents smallholder shallot farmers taking advantage of this market opportunity is high crop failure and losses due to pest and disease attacks. The main reasons for this are:

- **Lack of knowledge of pest and disease management.** Farmers are unaware of the technologies available to combat disease and pest attacks. Crop losses from fungi disease attack (*Fusarium Oxysporum*) and pest (in particular *Spodoptera exigua* caterpillars) can range from 10 to 90% of the entire crop and have a significant impact on the volume of shallot available for sale.
- **Large amount spent on chemical inputs** by farmers to combat the high incidence of pest and disease. This further reduces their income by keeping average production costs high.

Vision of change

PRISMA's vision of change at the sector level is that by 2018, smallholder farmers will have increased their productivity and production particularly during the rainy season, and that farmers will have improved their market performance, realising higher prices through greater flexibility when they sell shallots. At the service level, farmers will have improved access to a) pest and disease control technology and information services, b) nursery and planting bulb services, and c) storage services. This vision can be achieved by:

- **Agricultural equipment companies and nethouse manufacturer/service providers** providing pest and disease control technology and information service, with possible collaboration with BPTP, and
- **Promote technologies to counter pest and disease problems.** Provide and disseminate information of pest and disease management technologies.
- **Promote higher quality, more productive varieties of planting materials.** Work with private companies who provide a better quality planting materials and improve farmer's GAP to be able to use better quality planting materials.
- **Storage services** involving government, cooperatives and traders.
- **Improve market access** for shallot farmers by creating opportunities for them to sell their crops through an alternative simplified distribution chain.

The PRISMA approach

PRISMA develop two interventions to counter pest and disease and also improve access to pest and disease control technology and information services and products.

Intervention 1: Introducing Solar Panel Insect Light Traps, PRISMA will collaborate with private sector partners and support them to:

- Provide alternative technologies to overcome pests¹⁰.
 - Establish demonstration plots to test and promote the lamp and pheromone trap;
 - Assist the lamp and pheromone supplier to establish a market for it.

Intervention 2: Integrated Pest and Disease Management, PRISMA and ARISA will collaborate with private sector partners and support them to:

- Provide information on integrated pest and disease management through capacity building and consulting from pest experts and disease experts
- Provide demonstrations in the field to display integrated pest and disease management effectiveness
- Disseminate integrated pest and disease management technology through social marketing campaigns

Progress status and signs of systemic change

- Intervention 1: Introducing Solar Panel Insect Light Traps
- In October 2015, partner PT Solusi Bioteknologi Indonesia conducted a workshop with 11 (Eleven) lead farmers in Nganjuk. It invited a pest expert from the Indonesian Agency for Agricultural Research and Development under the Ministry of Agriculture in Bogor to demonstrate the solar panel insect light trap and pheromone trap. The event captured what the farmers need and their problems in the field.
- PT Solusi Bioteknologi Indonesia has drawn up an agreement with local pest lamp producer in Nganjuk to develop the solar panel insect light trap, including sales and pricing. The producer already has credibility in the farmer's community nearby, through the PRISMA intervention, it will gain more sales and disseminate to broader area.

¹⁰ These are: 1) a low cost, solar powered, commercially available insect light trap, 2) a pheromone trap, and 3) integrated pest and disease management. By using a single, environmentally friendly solar panel or pheromone trap, farmers' spending on pesticide can be reduced by up to 50%.

- PT Solusi Bioteknologi Indonesia has an agreement with PT Sanitas as the sole distributor for a pheromone product to distribute in the Nganjuk area.
- Through its local field staff, PT Solusi Bioteknologi Indonesia has prepared several demo plot areas in Nganjuk. These are planned to run in early February, but due to the effect of El-Nino, the planting season for shallot crops in Indonesia was delayed until May-June. The demo plot will start effectively during these months.
- Intervention 2: Integrated Pest and Disease Management
- In April 2016, PRISMA team reviewed 3 business pitches for social marketing from three marketing companies in Surabaya. The purpose of these pitches was to get insight in to how social marketing works, and explore the opportunities to work with a marketing company to develop social marketing campaigns for the intervention.
- In May 2016, PRISMA and ARISA approached the University of Gajah Mada, PT Nufarm Indonesia, and PT Natural Nusantara to collaborate on this intervention. Feedback was positive; the work plan is now under development.
- PRISMA and ARISA hired consultants to monitor demo plots, provide training of trainers and develop social marketing content. International and local consultants were hired from IPM Technologies Pty Ltd, as pest experts for integrated pest management, as shallot demo plot coordinator, shallot expert and shallot expert in disease management.

Contribution of public programs

By the end of 2015, Bank of Indonesia had developed a project through its CSR program to provide subsidised wired insect light traps to several districts in Nganjuk. This is in line with PRISMA's intervention, supporting farmers to use alternative technology to overcome the problem of pest in an environment friendly manner. However, the outreach of this government project is very small (one farmer group in one sub district), and it will not affect much to PRISMA's outreach.

7. SHALLOT NTB

Between 2008 and 2014, national consumption of shallot including for local industries averaged 1.09 million MT per year. Indonesia is the world's second largest shallots and onion importer. Although Java (Central, East and West Java) are the highest shallot producers in Indonesia, making up about 77% of national production, production still could not meet national demand. Imports of shallots have increased sharply over the past decade, with most imported bulbs being consumed as food. In 2014, India, Thailand, Vietnam, and the Philippines were the main sources of Indonesia's imported shallots. Between 2002 and 2014, imports increased from 33,000 MT to 74,903 MT, with the highest import volume reaching 160,467 MT in 2011. Between 2008 and 2014, imports averaged 102,500 MT per annum, despite significant inter-annual fluctuations. Imports accounted for 6 to 15% of domestic shallot consumption each year. Exports are negligible – less than 1.5% of total production. Shallots are mainly exported in September and October, with Thailand and Malaysia the two main destination markets, followed by Singapore and Vietnam. Since 2007, imports of shallot have peaked around March, suggesting a local shortage around this time of the year. There is a clear business opportunity to substitute imports by increasing the production volume of shallots during the rainy season.

In terms of total production, NTB is the fourth largest shallot producer in Indonesia – after Central Java, East Java, and West Java provinces – with 117,513 MT of shallots or approximately 10% of national production in 2014. The district of Bima and Sumbawa Besar in Sumbawa Island and Lombok Timur constitute NTB's production area, despite the province's relatively low productivity compared to Java. Generally, shallots farmers employ traditional cultivation methods, using low-quality inputs. Both of these contribute to sub-optimal yields.

PRISMA has identified a possibility for local farmers in NTB to increase productivity through the availability and use of higher quality planting materials with embedded GAP services and quality assurance. This may involve: (1) supporting the production, promotion and distribution of new True Shallot Seeds (TSS) varieties (such as the Tuktuk and Sanren varieties), (2) developing linkages between traders in NTB and suppliers of certified or good quality Super-Philip planting bulbs from Java, and/or (3) supporting the development of certified producers of Super-Philip planting bulbs in NTB.

In order to promote higher quality planting materials in NTB, PRISMA has been working with EWINDO to promote the use of true shallot seed and to develop a market for TSS derivative products such as early generation bulbs (G0)¹¹ and seedlings grown from all varieties of TSS. The decision to work on increasing productivity is due to the following reasons: first, the intervention offers the potential for a quick win for farmers by buying TSS seed, seedlings and good quality bulbs which are labelled and branded and the company will eventually gain more profits from large use of the seed in the targeted area; Secondly, through branding and promotion activities, traders will support more nurseries and can sell more good quality branded bulbs and seedlings to an increased number of both male and female farmers. Finally, the success of the previous program of establishing nurseries using TSS and the improved bulbs from EWINDO need to be strengthened and scaled out to benefit more male and female smallholder farmers in NTB.

Challenges and constraints

The major challenges to the shallot sector in NTB are:

- Farmer productivity is low because of their use of poor quality planting materials. Almost all smallholder farmers use retained bulbs sourced from their own farms, neighbouring farms or shallot traders. Access to good quality planting materials is limited; there is no system to differentiate between good and poor quality bulbs.
- Production costs, crop failure and losses are high because of pest and disease. Farmers lack knowledge of GAP and are unaware of more affordable technologies (including those suitable for rainy season production) to combat disease and pest. Crop losses from *Fusarium* and pest attack (in particular the *Spodoptera exigua* caterpillar) range from 10-90%. Farmers spend large amounts on chemical inputs, further reducing income by keeping average production costs high.
- Farmers are unable to benefit from higher prices during the off-season. They tend to sell their entire crop immediately after harvest (when prices are low) because of lack of access to storage facilities. While farmers need sufficient cash flow for household needs and inputs for the next planting season, this can usually be fulfilled by selling part of the harvest; the remainder of the crop could be stored and sold when price conditions are more favourable. Traditional storage practices are not suitable for extended periods of time. The lack of mechanisms to control humidity and to ensure that the shallot harvest stays dry can result in a significant deterioration in quality.

Vision of change

PRISMA's vision of change is that by 2018, at the sector level (1) smallholders will have increased their productivity and production, both during the rainy season and in the early months of the dry season, and (2) farmer will have improved their market performance by increasing their flexibility about when they sell shallots, enabling them to realise higher prices. At the service level, farmers will have improved access to (1) nursery and planting material services (TSS, Seedlings and G0 Bulbs), (2) pest and disease control technology and information services, and (3) storage services. This vision can be achieved through:

- Involving seed companies, nurseries, traders, input retailers and potentially universities to provide nursery and planting bulb services;

¹¹ G0 bulbs are planting bulbs which have higher productivity and are more pest-resistant than the retained bulbs commonly used by farmers.

- Agriculture equipment companies and net house manufacturers/service providers providing pest and disease control technology, with possible collaboration with BPTP, and
- Government, cooperatives and traders providing storage services.

The PRISMA approach

To achieve its vision, PRISMA has already begun collaboration with the private sector (partnership with EWINDO started at the pilot intervention stage in 2014). The aims are:

Nursery development

- Newly-established and existing nurseries will buy EWINDO-supplied seed to produce higher quality planting bulbs and seedlings sell them to shallot farmers, either directly or through traders. The incentives for nurseries include improved skills and knowledge, and the assurance and certainty of income. These will increase sales of EWINDO's true shallot seed (TSS), as well as the sale of TSS through input retailers.

Promote branded bulbs to traders and retailers.

Demonstrate the profitability of the business to traders and retailers, to encourage them to buy better quality planting bulbs and sell them to shallot farmers. Work has already started on this:

- PRISMA supports studies to identify key areas in which to work to develop certified G0 bulbs.
- It has selected certain traders and linked them with EWINDO and the nurseries. EWINDO collaborates with these traders and retailers on branding and promotion, which will help increase sales.
- Traders are incentivised by the potential of increased income to be obtained by selling improved quality planting bulbs at a higher price, creating a price differentiation for good quality planting bulbs.

Last year, the number of interested traders was low; PRISMA now plans to work with EWINDO to get more traders into the system.

Develop a partnership model.

- Support EWINDO to find a system which works with its distribution channel to sell the planting bulb and seedlings obtained from the company's seed. This could be a franchise model, a trader system, a nursery model or a model otherwise appropriate to the needs of EWINDO.
- Support EWINDO to develop a branded bulb franchise, trader system, and/or another partnership scheme, by providing consultants a) on post-harvest handling, and b) to carry out a trader study to find potential traders.

Progress and signs of systemic change

- At the company level, EWINDO has changed its approach to shallot, from one of non-focus to making it a priority product.
- The director for business development has been assigned to design a business plan for a number of products, including shallots.
- It has appointed a product specialist to manage the development of the shallot sector.
- Production of a new variety of true shallot seed (TSS) has been planned; 200kg of other TSS variety is going to be produced in 2016.
- Sample of shallot bulb will be provided in 2016 for use for promotional purposes.
- EWINDO copied the private shallot nursery model to produce derivative product of TSS in other areas such as in Central Java, Lampung and Kalimantan.

Contribution to public program¹²

A GoI program covers several areas of the country including NTB, aimed at fulfilling Indonesia's shallot demand gap. In the short term, this will provide planting bulbs for the farmers, and the government is encouraging production of good quality planting material to buy back for the program. In the long term, if the area of land dedicated to production is increased, so too will the demand for quality planting bulbs.

8. VEGETABLE EJ, NTB AND NTT

Indonesia's market for vegetable, potato and fruit products grew by 25% compound annual growth rate (CAGR) from 2007 to 2012, mainly because of business demand. Despite being the 14th largest vegetable producer in the world (2012) and the largest in Southeast Asia, Indonesia's vegetable imports continue to grow faster than its exports; during the last ten years the country's trade balance of vegetable commodities ran at a deficit. This is partly due to Indonesia's upper middle class (141 million people by 2020) contributing to new trend of increased awareness of health and the nutritional benefits of fresh vegetables. The market is therefore highly promising for both local and foreign producers; however, the country's reliance on imports highlights the declining competitiveness of Indonesia's domestic horticulture sector as well as the government's moves towards more protectionist and restrictive trade policies.

Thirty-three of Indonesia's provinces produce over 20 types of vegetable; however, 85% of all vegetables grown in the country are on the islands of Java and Sumatra. Here, the major vegetable-producing provinces are West Java (35.6%), Central Java (13.3%), East Java (11.9%) and North Sumatra (10.3%), accounting for over 70% of the country's total vegetable production. NTT is one of the lowest vegetable-producing provinces, contributing only 0.43% of Indonesia's total vegetable production¹³. It is a net importer of vegetables (with the exception of garlic and spinach), with supply coming mainly from Java (ACIAR 2007). This suggests an opportunity to stimulate production in less developed regions.

NTT is one of the poorest and least developed of Indonesia's provinces with a poverty rate of 25.7% (not taking into account regional differences), significantly higher than the 16% national poverty rate, and relies on agricultural production as its primary source of income. Vegetable productivity in the province is considered to be low, which is reflected by a negative productivity index with just 2.9 MT per ha, less than 30% of the national average (10.32 MT per ha) in 2013.

With an average of eight months per year with no rainfall, Timor Island is one of Indonesia's driest regions. During this time the farmer's lands dry up, limiting production and income generation opportunities. The focus remains on subsistence agriculture, with little awareness of diversified vegetable consumption. A PRISMA study into PPI, in August 2015, indicates that 88% of sample households on Timor Island earn less than USD2.5 per day and that food insecurity here is high.

Challenges and constraints

The major challenges to the vegetable sector are:

- Farmer productivity is low due to unfavourable environmental and climatic factors, limited practices of land and water management, poor farming practices, and a lack of application of quality inputs and integrated pest management techniques.
- Farmers have limited access to information on vegetable markets, prices and weather conditions. On the ground, actors who channel the information are also limited, with constraints to their knowledge sharing and transfer to the farmers.

¹² <http://www.bimakab.go.id/article-mentan-benahi-tata-niaga-bawang-merah.html>;
http://www.pertanian.go.id/ap_posts/detil/381/2015/06/22/09/34/44/Tambah%20Pasokan-%20Mentan%20Gelontorkan%20Bawang%20Merah%20Bima

¹³ "Final Report AIPD Rural Vegetables NTB & NTT 2013"; Ignatius Khomasurya and Phillip Morey, 10th October 2013

- The product selling price is low as a result of oversupply of vegetables at certain times of the year, frequent poor quality and wastage due to limited post-harvest practice knowledge and techniques, and the weak bargaining power of farmers and their inability to access modern markets.

The PRISMA approach

To achieve its vision, PRISMA will collaborate with the private sector to:

Develop integrated approaches to climate-smart vegetable farming

- This intervention will increase the productivity and efficiency of vegetable farming by improving farmer's capacity in terms of good agriculture practices and integrated climate-smart vegetable farming (particularly in areas with unfavourable environmental and climatic conditions). Local retailers will be capacitated and supported in providing on-farm and off-farm information and extension services to farmers.

Strengthen dissemination of knowledge on farming practices and crop planning.

- This intervention focuses on utilising a mobile application to strengthen dissemination of farming-related and pest management knowledge (including information on markets, weather and planting patterns) to smallholder farmers through a broad range of market actors, including agro-input sellers, nurseries, lead farmers, extension staff and vegetable traders. The intervention also provides farmers with increased access to information on quality inputs.

Improve access to financial services for smallholder farmers

- Local financial institutions will be supported to expand their services to smallholder vegetable farmers. This includes financial institutions for providing affordable irrigation services and hydrology information as an embedded service to farmers.

Progress and signs of systemic change

While the first intervention is now at the intervention plan stage and will be implemented by Karina Indonesia upon panel approval, the second intervention has made more progress. In this intervention, East West Seed Indonesia is the private partner and they have demonstrated a strong willingness to invest and roll out the initiative in East Java, NTB, and NTT. In addition, PT Natural Nusantara has shown interest in developing a similar intervention with PRISMA to educate its networks and utilise the mobile application as a promotion tool to reach out to a large number of wholesalers and distributors.

Contribution of public programs

- PRISMA is exploring the potential for cooperation and involvement from several government departments (Agriculture, Food Security, Environment, Metrology, Water Catchment Management, Disaster Management, Development Planning, Industry, Trade and Cooperative and Forestry)
- The Inflation Monitor and Control Team (or TPID, comprising the Coordinating Minister for Economics, and representatives from the Bank of Indonesia and Ministry of Home Affairs) has been established to monitor, evaluate, and coordinate programs to maintain price stability throughout Indonesia. The TPID also educates and socialises inflation-related issues, including providing information about the market price of strategic commodities. The Bank of Indonesia has developed a mobile phone application which provides easy access to information on the market price of strategic commodities in Bali and North Sumatra. In addition, the local government also aims to establish an e-commerce platform for facilitating the distribution and market transaction of agriculture products.

Portfolio 2

9. COCOA PAPUA¹⁴

Global demand for cocoa is rising, and traditional cocoa-producing countries are trailing behind in their ability to meet this. Indonesia is the third largest cocoa-producing country and can benefit from this unmet demand. Cocoa has been one of main sources of income and employment for Indonesians; it is also the country's third major export earning product. In 2013, approximately 1.5 million households produced 0.72 million MTs of cocoa on around 1.74 million ha of land. A recent change in regulations created an immense opportunity for value addition locally; fourteen new cocoa processing companies have been established in the last five years, with giving rise to demand for dry cocoa. South Sulawesi (70-80%) is Indonesia's major cocoa-producing region; here, production has almost reached saturation point.

In Papua, cocoa is an important cash crop, with around 26,000 households involved in cocoa farming on approximately 32,000 ha of land. However, the province contributes only 1.4% to total national production (BPS, 2012). Jayapura and Keerom are Papua's major cocoa producing districts, with 74% of the province's total cocoa farmers. Most of the cocoa farmers in Papua are subsistence farmers, and women are involved in almost all of the tasks in the production cycle. There is currently very little reinvestment in the commercialisation of cocoa farming to use fertiliser and quality seedlings; productivity is thus less than 200 kg per ha compared to the national average of 500-600 kg per ha. A few large local traders dominate the market. In the recent past Mondelez in collaboration with Armajaro introduced a 'cocoa doctor' concept where interested parties (collectors or others) were trained to provide technical services to farmers. This input was however temporary and currently none of the big processors have a direct involvement in Papua.

Challenges and constraints

The challenges that the cocoa farmers in Papua face are:

Low Productivity and Low Production. The underlying causes of this are:

- **Farmers do not apply Good Agricultural Practices.** Cocoa trees are starved of proper nutrients and frequently infested with pest and disease, caused mainly by inappropriate farm maintenance practices. Farmers tend to have little knowledge on how to grow cocoa better.
- **Cocoa plants are old, low density, and unproductive.** The average of age of cocoa trees in Papua are more than 10 years.
- **Input markets and information channel related to cultivation techniques** are largely dominated by public agencies; farmers' incentives are driven by subsidies.
- **Absence of strong traders and a direct procurement channel** of the large processing companies. This has further weakened incentives and ability to invest in more intense cocoa farming.

Low Selling Price. The underlying causes of this are:

- **Farmers prefer to sell cocoa wet beans than dry beans.** Many Farmers sold their cocoa in the form of fresh cocoa beans without drying (drying time varied between 2-3 days).
- **Farmers sell fresh cocoa beans to collectors who can pay quick cash even with lower prices.** Farmers are constantly in need for quick cash, but the traders who are willing to pay higher price does not come frequently to the villages.

Vision of change

¹⁴ Intervention with CV Kakao Kita in this subsector are being co-managed by YPPWP (Yayasan Pengembangan Prakarsa Wirausaha Papua) (as PRISMA's co-facilitator).

The vision of change at the sector level is to increase the income of Papuan cocoa farmers and fulfil market demand by increasing production and quality of the tree. At the service level, it is envisaged that farmers will have a) sustainable access to knowledge and information on appropriate farm management and cultivation practices; they can apply that knowledge by using good quality inputs (fertiliser, seed and seedlings) with sustainable access to those inputs; and farmers have? b) Functional access to suitable financial products, and c) sustainable access to market information of cocoa beans.

The PRISMA approach

To achieve this is, PRISMA is considering collaborating with public and private sector partners to implement the following interventions:

Support revitalisation of the existing and development of new ISPs (in this case, the cocoa collectors) by cocoa traders to increase productivity of cocoa farmers

- Leverage the resources and actors currently available in Papua. PRISMA will partner with at least two cocoa traders in Papua interested in expanding their business and taking up the task of revitalizing the capacity of ISPs (in this case, cocoa collectors/ cocoa doctors) in the local cocoa trade.
 - J One potential partner is cocoa trader ECOM, the second biggest cocoa trader in Papua. The trading volume is around 200MT per year, supplied by 3,000 cocoa farmers.
 - J The other is CV Kakao Kita, a small company which trades mainly in speciality cocoa, Kakao Kita is willing to increase its buying volume from 15 to 30 MT per year and to expand its area of operation. It is currently working with seven collectors and around 600 cocoa farmers in 15 villages.
- PRISMA through YPPWP has signed MoU with CV Kakao Kita to revitalise and build the capacity of existing collectors, thereby increasing the production and productivity of the farmers.

Promote two types of fertiliser alongside information on better cultivation practices.

PRISMA and its partners will promote homemade compost for those farmers who have fewer resources. Impact will be limited but better than that currently obtained by farmers using traditional practices. Those farmers who can afford more will be encouraged to apply the optimal level of fertiliser, which provides all the required nutrients.

- Fertiliser is available through the regular input-distribution channels; farmers can buy it at agro input shops at sub-district level. To encourage farmers to use fertiliser, the intervention will develop a contract system or saving mobilisation scheme, whereby ECOM and KK (as partners) will provide a guarantee to the fertiliser suppliers or financial institutions. ISPs and collectors interested in expanding their business can also supply fertiliser to the farmers.

Support the development and implementation of integrated cocoa development centre by big processor/trader in Jayapura and Keerom

- Support private businesses in partnership with a large processor or traders to set up seedling nurseries. The large processors will provide quality seedlings to the nursery owner and train them on the various aspects of cocoa farming.
- Support the promotion of the use of quality seedlings. The nursery owner is expected to provide knowledge and information to the farmers to enable demand creation. The cocoa the farmers produce will be bought by the large processors. This intervention, in conjunction with intervention 1, will somewhat enhance organised farming to provide market linkage and access to quality input and information.

Support the piloting of existing financing modalities into cocoa sectors in the district of Jayapura and Keerom

- The organization providing microcredit will train farmers in better cultivation techniques and provide market information, thereby aiming to reduce crop failure rates. This builds on the existing microfinance model of making collateral free credit available to cocoa farmers, and provides them with much needed credit and access to information.

Support financial institutions and provincial government to develop appropriate risk sharing and financing products targeting cocoa farmers

- Support financial institutions to develop more inclusive financial products targeting the cocoa farmers, by linking them with the government initiated credit guarantee fund. This fund shares partial risk of failure with the financial institutions, creating an incentive for the banks to reach a risky and excluded segment of the population

Facilitate modification of government seed certification process to include and promote locally suitable varieties among nursery owners.

- Link the local government laboratory in Besum, Jayapura regency, with the central laboratory in Jember, East Java, and create a protocol for testing seed varieties in Papua. This will allow the district laboratory to trial different seed varieties and identify which is most suitable for the local agro-climatic conditions. The laboratory will then multiply the identified variety and distribute it among farmers via private seedling companies.

Progress status and signs of systemic change

PRISMA has started to implement a version of intervention 1

- An MoU was signed with partner CV Kakao Kita on November 18, 2015 and the main highlights and achievements since then are:
 - PRISMA developed ISP identification and selection criteria in collaboration with Kakao Kita
 - 25 ISPs have been identified and received information in GAP and Side Grafting/ Top Budding Techniques to revitalize the cocoa trees.
 - 25 ISPs will establish demo plots in their area for promoting GAP and Side Grafting techniques to Farmers in the next semester.
- PRISMA has talked to ECOM who has expressed great interest in the project's proposed interventions and we continue to observe the market for signs of systemic change.

Contribution of public programs

The Provincial Government of Papua has a subsidy program on 2016 to revitalize 200 farmers cocoa farms with side grafting, they also provide the fertiliser and pesticides to farmers.

10. EXTENSION SERVICES EJ & NTB

In Indonesia, extension services are acknowledged as an important component of achieving food security. National legislation (UU No. 16 Tahun 2006) stipulates three types of extension workers: public, private, and self-help/voluntary. However, most extension services are conducted by public workers, as they are the only actors with a clear mandate to do so. Private workers are usually employed by input suppliers and, despite the 2006 regulation, they are not registered with nor regulated by the government. The last category – voluntary or self-help workers – are lead farmers, whom the government trains and provides with a certificate of competency.

According to data from 2015, there are 32,299 public extension workers for 71,470 farming villages throughout Indonesia. Government legislation (UU No. 19 Tahun 2013) states that the ideal is to have one worker for every farming village, which means there is a gap of about 39,190 workers. The situation is made worse by the fact that the bulk of the extension workers were recruited in the early 1980s: the majority are thus due for retirement within the next five years. The government is well aware that it would be difficult to add 39,000

workers to its payroll. As a solution to close the gap, the Government plans to recruit and train voluntary extension workers instead.

Subsector overview: East Java

East Java is one of the most important agricultural provinces in Indonesia. Based on 2011 official statistics, East Java's contribution towards national production is 16.08% for rice, 30.85% for maize, and 43.11% for soybean. There are 2.1 million ha of crop area in East Java, with an average land ownership of less than 0.5 ha. There are at least 4.2 million farming households in East Java.

East Java farmers are frequently regarded as the most advanced nationally. This is probably due to the fact that some district governments – such as Malang or Banyuwangi – are open to innovation and have actively supported their farmers. Farmers in East Java also benefit from the presence of strong government research bodies that focus on high yield seed and agriculture technologies. In the majority of districts, private agronomists have a significant presence and are also a source of information for farmers.

However, there are only 4,812 public extension workers in the whole province, which means that a single worker has to cover 873 farmer households. Assuming 260 working days per year, and a single worker able to serve 3.35 households per day, each farmer household will only see a public extension worker once a year.

Subsector overview: NTB

Like East Java, NTB is one of Indonesia's most important agricultural provinces, especially for main food crops such as soybean and maize. It is one of the country's epicentres of soybean production, accounting for 9% of national production and with a harvested area amounting to 10% (62,900 ha) of Indonesia's total soybean area harvested in 2012. At the same time, maize has expanded rapidly in NTB. Based on 2012 official statistics, NTB accounted for 3.3% of Indonesia's maize production, compared to 2007 when it contributed only 0.9%. The harvested maize area has grown rapidly; in 2012 it reached 116,817 ha, with productivity of 5.4 MT/ha (higher than the national average of 4.7 MT/ha).

Post-harvest expertise, and pest and disease management are key areas of concern for NTB farmers, who lack access to reliable sources of information. The majority rely other farmers for advice; some get information from kiosks. This limited access to information also affects public extension service workers, who lack up-to-date, relevant knowledge about pest and disease. Average loss due to pest attack can be as high as 30% per harvest.

In NTB, there are 1,785 public extension workers with a routine schedule for field visits from Monday to Thursday each week. A public extension worker provides technical assistance to a handful of farmer groups, where one group may have more than 200 members. The limited number of public extension workers combined with remote and hard-to-reach areas means that many farmers receive no benefit from the public extension service.

Challenges and constraints

The major challenges faced by the extension services sector in East Java and NTB are:

- **Limited provision of information.** Farmers have insufficient knowledge of modern, appropriate and efficient farming techniques and practices, which results in low productivity compared to the potential. This is caused by a) a lack of public extension workers, b) general government neglect of non-priority crop farmers, and c) limited reach of private extension services.
- **Limited capacity of public extension workers.** Minimum upfront training combined with very limited opportunities for continuous learning compromises the quality of the government extension service. It is common to find experienced or progressive farmers who understand agriculture better than public extension workers. Some farmers have understandably become sceptical of public extension workers and are beginning to disregard their advice completely.
- **Poor agricultural kiosk extension services.** Kiosk owners usually direct farmers to purchase products that bring them the highest margins, with little regard to product quality or the farmer's

actual needs. This is a serious challenge because collectively these kiosks reach practically all farmers, who are dependent on them for both input availability and advice.

Vision of change

PRISMA'S vision is one of systemic change, where more extension service or information providers enter the market for commercial reasons. Input suppliers will increase and improve the embedded service that they provide and telecommunication or start-up companies will enter the market by providing agriculture supporting services.

The PRISMA approach

To achieve its vision of change, PRISMA will collaborate with the private sector to:

Develop a crop protection call centre

- Work with a pesticide producer to pilot a call centre to provide consultation service on pest and disease in East Java.
- Provide access for farmers (via the call centre) to private agronomists, who can provide advice and appropriate product recommendations.
- Develop a marketing and promotion strategy and activity plan to help pesticide producers promote their free extension service via the call centre and encourage farmers to make use of it.

Increase the capacity of government extension service workers through a smartphone application

- Support a private application development company to form partnership with the NTB provincial government extension service office, with a focus on tackling pest and disease.
- The private sector partner will build a smartphone application to help public extension workers identify pest and disease and get up-to-date, relevant advice on how to tackle it. The extension workers will then deliver this technical advice to their farmers.
- The private sector partner has a long-term plan regarding the partnership; it intends to sell the data collected from the application usage as market intelligence data.

Develop a business model for agriculture Start-up

- Support a selected start-up and/or venture capital company to develop sustainable and pro-poor business model.
- There is a lot of interest in the agriculture sector recently from technology start-ups, venture capitalists, and also the government. However, in reality there is still very little impact on the ground and most of the solutions that the industry has come out with are unlikely to be scaled up.
- PRISMA intends to take part in this emerging trend and steer its development towards a more sustainable and scalable model. Our first activity is to conduct Focus Group Discussions with industry players to build a common understanding of the challenges and opportunities that smallholder farmers in Indonesia are facing.

Develop an agriculture helpline

- Promote a partnership between a telecommunication company, a call centre provider and an agriculture content provider company to create a general agriculture helpline for farmers.
- The telecommunication company provides the network and below-the-line marketing method to reach farmers; the call centre provider trains their operators to understand farmers' queries and answer them based on the database created by the agriculture content provider.

- Farmers pay to use the helpline service. The fee will be split among the private companies involved in providing the service. Through this service, farmers will benefit from the availability of timely information regarding weather, pest and disease issues, as well as other generic agriculture information.

Progress and signs of systemic change

In this semester, two contracts were signed to mark the start of two interventions, namely the Crop Protection Call Center and the Pest & Disease Smartphone Application. Promotion for the Crop Protection Call Center has just started so we will only know the result by next semester.

The Pest & Disease Smartphone Application intervention has released an application on the Google Play Store titled “Dokter Tanaman” (Plant Doctor) for Android smartphones. Three Training of Trainers for Government Extension Workers were conducted in June 2016. In total around 100 extension workers have attended the training and they in turn will train their peers to use the application accordingly. Feedback from the ground is still scarce as most farmers in the districts have just started the planting season. Overall there is strong interest in the application both from extension workers who attended the training and also from other districts in West Nusa Tenggara.

Contribution of public programs

Although no longer a top priority for the government, a few programs remain focused on extension services. The government’s current main program is to identify, recruit and train independent extension service workers to bolster the dwindling amount of public extension workers. PRISMA has not observed any direct contribution from this program, as the majority of these independent extension workers are lead farmers who are already providing extension services in their respective communities. The government’s plan to train and certify these independent workers remains sporadic; of concern is the lack of proper incentives in place for these workers. PRISMA is continuing its observations and will report any significant change as it occurs.

11. SOYBEAN EJ & NTB

The national demand for soybean in Indonesia is estimated to be 2.9 million MT and is growing at an average of 6.4% annually. However, a sharp decrease after 1998 in the country’s national soybean production triggered a significant increase in soybean imports. Average annual production is currently 0.9 million MT; Indonesia also imports 1.9 million MT every year to meet domestic consumption, making it one of the world’s major soybean importers. Although productivity is increasing, the country’s total harvested acreage has been experiencing (particularly after 2009) a downward trend of -7.7% per year. A clear opportunity exists to increase production which will help reduce imports.

Soybean farmers in PRISMA provinces (numbering almost 810,000) can tap into this opportunity. East Java and NTB are among the country’s largest soybean producing regions, contributing an estimated 48% to national production. In East Java, around 30% of soybean farmers are poor or near-poor; the province has the highest productivity per ha in Indonesia (1.6 MT per ha) but not all of its districts are able to reach this level. The scenario in NTB is similar. Compared to the average national productivity rate of 1.5 MT per ha, some soybean farmers in NTB experience relatively low productivity (an average of 1.1 MT per ha or less).¹⁵

Challenges and constraints

The inability of farmers in EJ and NTB to increase production can mainly be attributed to:

- **Low productivity of soybean.** Farmers use poor quality seed and apply poor agriculture practices which results in lower productivity. This is caused by a) the limited availability of good quality seed, b) a lack of access to information on GAP, c) improper use of agro-chemical inputs

¹⁵ BPS, 2013; BPS, 2012; PRISMA calculations, 2014.

- **Lack of new and highly productive soybean seed varieties.** Even though there is a market for hybrid seed, companies have not seriously addressed this market.
- **Loss of soybean in the post-harvest process.** Soybean farmers lose about 5% of their harvest because of their reliance on inefficient traditional harvesting methods and lack of post-harvest knowhow and technology.

Vision of change

PRISMA's vision of change is that by 2018 soybean farmers will improve their productivity and quality, resulting in a higher market value for their harvest. This will attract more farmers to go into soybean production, which will increase domestic production. This vision can be achieved through:

- Soybean seed nurseries expanding their market and reaching beyond traditional customers;
- Input suppliers such as pesticide companies provide knowledge on the better use of pesticide as well as information of Good Agriculture Practices for soybean cultivation to increase yield;
- Companies produce new and high yield seed varieties to increase production of soybean;
- Input suppliers and technology companies provide knowledge on improved post-harvest techniques and technologies.

The PRISMA approach

To achieve its vision, PRISMA will collaborate with the private sector and government to:

- **Promote certified seed through seed retailers.** Although farmers are aware that certified seed is better than retained seed, certified seed is not available in the market as nurseries find it easier to sell to the government in bulk. A need exists therefore to initiate the development of a commercial market for certified seed.
- **Promote certified seed through nurseries by the government.** While the commercial market is being established, it is also important to let the government train up more nurseries and certify the seed from these nurseries. This way there will be more nurseries being able to produce certified seed.
- **Promote Good Agriculture Practices through companies.** The use of quality seed necessitates the use of proper and selective agro-inputs and better farmer practices. As part of good agricultural practice, it is thus essential to promote these to farmers combined with certified seed.
- **Promote new and high productivity seed varieties from seed production companies.** There is an absence of new and high yield seed varieties, and while nurseries produce seed which could yield nearly 1.5 to two MT/ha, newer varieties have the potential to achieve four MT/ha. The above intervention will have a longer term impact. In the interim, we intend to promote nursery seed, as the testing of new varieties will require a minimum of two years.

Progress and signs of systemic change

During the reporting period, PRISMA worked with the East Java provincial government to achieve the following:

- The Trenggalek nursery is planting soybean for seed in 5-hectare land in April 2016 and this year the District Agricultural Unit in Trenggalek has a plan to create another nursery farm, and they have identified a potential nursery farmer.
- PT BASF Indonesia is promoting GAP in soybean cultivation through soy doctor program, addressing challenges in low productivity. BASF trained 35 soy doctors in NTB and 11 soy doctors in East Java.
- PT East West Seeds (EWINDO) has conducted seed trial of BATAN variety in its own land and will continue with production trial in June.

- Syngenta Foundation is planning to support PT EWINDO by providing new soybean germ plasm and technical expert.

Contribution of public programs

Varieties of soybean seed are mainly produced by various government research agencies (Balitkabi, Balai Benih Indonesia and BPTP); no private sector organisations are involved in developing seed. Seed distribution is currently carried out through a government subsidy program.

Soybean is one of the three crops subsidized by GoI, which it does through a seed subsidy program and the Upsus program (Upaya Khusus or 'Special Efforts'). The total budget for the seed subsidy program (which includes rice, maize and soybean) will increase slightly in 2016 (to IDR1.06 trillion, from IDR0.960 trillion in 2015). The program leads some farmers will rely on subsidized seed and creates barriers for private sector actors to enter the soybean seed business. At the same time, it does not provide enough soybean seed to fulfil demand.

12. VEGETABLE WEST PAPUA

Horticulture farming dominates the agriculture business in West Papua. In 2013, 47,940 (or 68% of the total) farmer households work as horticulture farmers. Greater Manokwari urban area is one of the main producers of vegetables in West Papua, along with the province of Sorong.

In general, vegetable farming in West Papua is based on two categories: lowland farming and upland farming. Lowland farming is mostly done by transmigrants and indigenous farmers; upland farming is only done by indigenous farmers. Aside from some green leafy vegetables, many vegetables in Manokwari are still imported from outside West Papua due to low production and low productivity, resulting from lack of cultivation skills, lack of good quality seed use, and low application of good agricultural practices. The vegetables are imported from Surabaya, Makassar and Manado and include potatoes, carrots, shallots, tomatoes and chilli; these can reach an average of 130% of the total of locally produced vegetables. For upland vegetables, the additional factors of infrastructure and transportation are the major issues, leading to high transportation costs which increase the price of goods, including agriculture products.

Challenges and constraints

The major challenges faced by the vegetable sector in West Papua are:

- **Farmers experience low productivity because they do not use good quality seed.** In general, farmers in West Papua, and especially in Greater Manokwari, have been using seed bought from seed kiosks. However, most farmers still do not use good quality seed. There are different types and brands of seed in the market. There is, however, little or no information for farmers on how to use good quality seed so as to increase crop yields.
- **Farmers have a lack of knowledge of supply management, contributing high vegetable distribution costs.** Farmers have no access to information about demand for different types of vegetable. Instead, the majority take their harvest directly to the market place and sell it to big collectors. Indigenous farmers sell directly to the consumers in the market place, it can take up to three days for them to sell their produce.
- For upland farmers, transportation matters; high transportation costs render their vegetable prices uncompetitive, particularly in comparison to similar, imported vegetables.
- **Farmers lack information and knowledge of harvest and post-harvest handling services.** Most farmers use traditional farming techniques. The lack of up-to-date harvest and post-harvest know-how leads to many putting minimal effort into maintaining their vegetable crops, resulting in low quality of produce.
- Insufficient post-harvest handling practice of harvested vegetables is one of the constraints to obtaining a better selling price in the modern market. Farmers usually do not pre-sort or package the

harvested crop due to limited awareness, knowledge or skills, or the resources needed to invest in these activities.

Vision of Change

The vision of change at the sector level is to: (1) increase production and productivity to substitute some vegetable imports, and (2) improve market performance for farmers by establishing an effective supply management system. At the service level, it is envisaged that farmers will have improved access to: (1) good quality seed, (2) information and extension services, (3) post-harvest information and technology, and (4) transportation services.

PRISMA envisions that traders, collectors, distributors, transporters and government will be involved in providing a range of these services, enabling them to implement good agricultural practices including post-harvest and access more effective distribution services. Seed and information services would also involve input suppliers (seed or fertiliser companies) and agro-input retailers. Finally, financial services tailored to the differing regional needs of the vegetable farmers will involve credit unions and agricultural equipment companies.

The PRISMA approach

To achieve its vision, PRISMA will collaborate with the private sector and government to:

- **Promote the provision of knowledge and the use of good quality seed.** This will boost the productivity of vegetables. AIP-PRISMA will work with seed or input dealers and local government representatives to promote knowledge of cultivation techniques. Vegetable farming practices to be introduced may include the use of good seed, good land preparation, sowing and transplanting, and maintenance of crops (fertilisation and crop protection). Activities aimed at increasing productivity may involve: (1) supporting promotion of suitable, good quality vegetable seed, (2) supporting information provision to farmers through extension services and involvement of seed retailers, and (3) supporting farmer capacity building to encourage good vegetable farming cultivation practices.
- **Create a vegetable supply management system.** Introduction to better planting schedules and availability of information about estimated harvest times will help provide farmers with some certainty about which vegetables can be sold when. Similarly, an improved vegetable collection system, accompanied by improved transportation and distribution services will assist farmers in reducing costs, with a resultant increase in income.
- **To create this system, AIP-PRISMA will work with farmers and input dealers,** as these are the principal market actors. Farmers thus will be introduced to a new supply management system which is in line with improvements to the production side.
- **Promote the provision of harvest and post-harvest handling information services.** The ability to harvest their vegetable crops appropriately can give farmers greater chances of having good quality produce; at the same time, better post-harvest practices, equipment and technologies can reduce or prevent deterioration in the quality of vegetable. Meanwhile, appropriate post-harvest handling is important for reducing impurities as well as for minimising losses during transportation. The use of quality seed necessitates the use of specific agro-inputs; these will be promoted to the farmers along with certified seed use, as part of good agricultural practice.

Progress and signs of systemic change

- PRISMA has signed contracts with a seed dealer and a seed producer-owned foundation, and drawn up an agreement with local government to contribute some facilities.
- The project has facilitated training for extension workers, lead farmers and seed kiosk owners. As part of this, three demo plots have already been set up.
- Local government will assign public extension workers to be trained by PRISMA's private partner to enable them to deliver improved extension services to farmers.

Contribution of public programs

In the upland area of Pegunungan Arfak, local government is involved in the facilitation of transportation and a dormitory for private extension workers who will provide initial extension services to farmers as well as assistance to public extension workers. The public extension service workers of Pegunungan Arfak will also participate in the training activities because it is expected that their provision of extension services to farmers will continue.

Portfolio 3

13. COFFEE EJ AND NTT

Coffee is an important global traded commodity with export potential for producing countries. World coffee consumption has increased by 2.4% per year between 2011 and 2014¹⁶; it is estimated that by 2020 this will be 165-173 million bags per year. Globally, production growth has been 1.6% since 2012 and 0.8% slower than the increase in consumption¹⁷, creating an estimated annual deficit of 30-37 million bags.

Indonesia is the world's fourth largest coffee producer and exporter (Figure 5) and the region's speciality coffee producer. It produces approximately 11 million bags of green beans annually (the equivalent of 685,000 MT of coffee) from about 1.2M ha farms¹⁸. At the same time, domestic consumption is low in Indonesia, about 200,000 MT per year. A clear opportunity exists to increase production volume and quality to meet the international demand for coffee.

There are five coffee production areas in Indonesia: Sumatera Area, Java Area, Eastern Nusa Tenggara Area and Bali, Kalimantan Area, and Sulawesi Area where 96% of it are smallholder's owned farmers¹⁹. Sumatera is the highest area, accounting for 793.654 ha dedicated to coffee, producing 493.2002 MT every year²⁰. In the Java Area, East Java accounts for half of the total area, with an estimated 146,378 coffee farmers²¹ and a coffee production area equivalent to 8.1% of the national total. It has an international reputation as the best quality producer of Robusta WIB coffee (in particular, Java Robusta AP from Dampit district, south of Malang). Coffee farmers in Malang experience relatively high productivity (an average 683 kg green bean equivalent (GBE) of coffee per ha, compared to the national average of 723 kg GBE per ha). Other areas however (Bondowoso, Mojokerto, Tulungagung, and Pacitan) who have approximately 22,000 farmers, still experience lower productivity (500 GBE) than the national average for Robusta Coffee. The average productivity of East Java Arabica coffee is also lower than the national rate (674 GBE per ha compared to national 780 GBE per ha)²².

Another area producing coffee (and where it is one of the region's main crops) is Eastern Nusa Tenggara. There are an estimated 51,752 coffee farmers in NTT province, and its coffee production area comprises 57% of the national total. Here, the island of Flores produces high quality Arabica coffee; its *kopi flores* has a successful international market reputation. Its main production areas are Ngada, and neighbouring districts such as Manggarai, East Manggarai and Ende, which together produce about 32% of NTT's coffee. Productivity of Flores Island coffee farmers is relatively low (an average of 500 kg GBE per ha compared to the national productivity rate of 723 kg GBE per ha for Robusta coffee and an average 653 GBE per hectare

¹⁶ (International Coffee Organization, 2016)

¹⁷ (International Coffee Organization, 2016)

¹⁸ (Directorate General of Estate Crop, 2014)

¹⁹ (Directorate General of Estate Crop, 2014)

²⁰ (Directorate General of Estate Crop, 2014)

²¹ (Directorate General of Estate Crop, 2014)

²² (Directorate General of Estate Crop, 2014)

compared to the national productivity rate of 780 GBE per ha for Arabica coffee²³). Most farmer in Flores are not formed into groups but sell their coffee as individual farmers²⁴.

PRISMA has chosen NTT to start the pilot because (a) there is high growth potential here, (b) farmers in the region experience difficulty accessing training and information on good farming and processing practices, and (c) these areas produce speciality coffee with a high market value. Another area that PRISMA will assess is East Java.

Challenges and constraints

The major challenges faced by the coffee sector in East Java and Flores Island, NTT are:

- **Inadequate farming extension services.** Low proficiency in coffee farming knowledge and technology (that is, GAP) and post-harvest (GPP) handling are resulting in an inability to achieve high productivity and premium quality of speciality green coffee. This is caused by the limited access of farmers to training and information on GAP and GPP.
- **Low productivity of Flores Island coffee.** Farmers have no choice but to follow traditional methods of cultivation, resulting in lower yields for their crops. This is caused by limited access to training and information on good farming practices.
- **No added value for Flores Island coffee.** Limited access to financial institutions gives farmers and cooperatives limited working capital to produce good quality coffee and a continuous supply to markets, resulting in loss of potential income from processed coffee.

Vision of Change

PRISMA's vision of change is that by 2018, coffee farmers in Flores (NTT) and East Java Island will be able to improve their productivity and quality to supply the potential export market, and be engaged in more efficient marketing resulting in obtaining a higher market value for their harvest. This will attract more farmers to go into coffee production, which will increase domestic production of good quality coffee for export. This vision can be achieved through:

- Cooperatives/company through their local processing unit providing farmers with access to information on GAP, post-harvest skills and technology, and
- Financial institutions providing loans to cooperatives and individual farmers to improve the production of good quality coffee.

The PRISMA approach

To achieve its vision, PRISMA will support the private sector and collaborate with it to:

Promote the use of better agricultural practices and good post-harvest processing techniques in coffee production. Partnering with the Indonesian Coffee and Cocoa Research Institute (ICCRI) and cooperatives to disseminate knowledge on GAP and GPP.

- Develop a knowledge franchising model for GAP dissemination. Local cooperatives, business units and civil society organisations will act as franchisees (under a contract system with ICCRI), disseminating GAP from ICCRI to small-holder coffee growers in the pilot area.
- ICCRI as a private sector partner will deliver services in the form of ToT, mentoring and technical assistance to each franchisee. Technical assistance will comprise (1) GAP related to coffee bean quality issues (red cherries), (2) development of learning centres for coffee growers and coffee clinics (addressing, for example, research, trialing, clone propagation), and (3) development of skills in establishing business partnerships.

²³ (Directorate General of Estate Crop, 2014)

²⁴ PRISMA and its partners encourage farmers to be a group farmer and not individual farmers to get a better benefit in price, knowledge, and certification.

Develop decentralised processing facilities for speciality coffee through cooperatives (in Ngada, Manggarai and Lumajang). Partnering with cooperatives, banks and exporters to get a better price, and access to finance and resources.

- Facilities will be developed through cooperatives/coffee cooperative processing units (CCPUs). The buyer(s) as private sector partner will provide technical assistance to the cooperatives/CCPUs to enable them to operate the facilities.
- Develop technical assistance to support CCPUs to achieve certification and produce speciality coffee. The private sector partner will (a) provide technical assistance to obtain certification and ensure the standard operating procedure for certification implementation is met, (b) provide training and mentoring to CCPUs to ensure coffee quality, and (b) cover the cost of certification of all cooperatives.
- Develop an appropriate credit scheme for coffee processing units. The private sector partner will provide loans to the units based on a buying contract with the coffee buyer. The cooperatives/CCPUs need working capital to grow the business more rapidly, and for this will take loans from local banks, using the buying contract as collateral. The buyers will facilitate the CCPUs' negotiation of the loans with selected local banks in Flores, Lumajang and Malang.

Progress and signs of systemic change

- The intervention pilot phase shows signs of success. PRISMA has signed contracts with six cooperatives as their partner in Manggarai and Bajawa and will expand to the Ende area during the second semester of 2016.
- Six cooperatives in Ngada and Manggarai who manage CPUs have received loan approval from Bank NTT for IDR3 billion (IDR500.000 each). Four cooperatives have already used a total of IDR970 million to purchase coffee from farmers.
- Cooperatives, through their cadres, disseminate knowledge on good agricultural practices and good processing practices to enable farmers to produce good quality coffee cherries and speciality coffee beans.

Contribution of public programs

Local government is involved in the development of seedlings in areas where PRISMA, in partnership with VECO, is also working. In Manggarai, the government is supporting the project by purchasing the input Hypotan (which will help farmers increase productivity) and also use cadres in the cooperatives to disseminate GAP and GPP knowledge to farmers in other villages

14. MAIZE DRYING AND STORAGE NTT²⁵

Indonesia is the largest maize producer in Southeast Asia and the sixth largest globally; increased demand has resulted in maize prices increasing over the past seven years. At the same time however, Indonesia is a net importer of maize. Maize production in Indonesia is highly seasonal, typically concentrated within three months of the year. To tackle this seasonal variation and meet demand, particularly that of the country's feed mills, Indonesia imports maize.

NTT ranks seventh out of the 10 largest maize-producing provinces in Indonesia. Most of NTT's poor farmers grow maize following traditional, minimalistic cultivation techniques, and perceive it to be a crop with low commercial value. In 2012, the province produced approximately 626,000 million MT of maize, and over the last few years has experienced an average annual growth rate of 5%. Almost 99% of total production is absorbed by the local market and is mainly used for human consumption. Only a few farmers have started to grow industrial varieties of maize to supply the small local feed mills. Overall, the productivity and production

²⁵ Interventions in this subsector are being co-managed by YIPD (Yayasan Inovasi Pemerintahan Daerah) as PRISMA's co-facilitator.

capacity of maize farmers in NTT is very low, and to meet local demand, NTT imports maize from NTB and South Sulawesi provinces.

Maize farmers in NTT use traditional post-harvest drying techniques – using smoke, and in the sun – for both the grain and the cob. Their storage techniques also tend to be highly traditional, involving hanging the cobs above the kitchen fireplace, storing grain inside airtight bags, jerry cans, plastic bottles and water tanks.

Challenges and constraints

The main challenge to NTT's maize farmers is a loss of 30-50% of their harvest, which is due to:

- **Traditional storage practices.** These lead to the grain being damaged after being stored for more than four months
- Lack of awareness of alternative ways of drying and storing grain. Farmers are continuing to use traditional practices.
- **Limited or non-existent information on alternatives to traditional practices.** Farmers remain unaware of the options available to them to improve their practices.
- **Lack of involvement of the private sector**, which has not yet entered this market segment.
- **Lack of involvement of local government extension services**, despite the fact that maize is has been identified by government as a priority commodity in NTT.

Vision of change

PRISMA's vision of change is that by 2018, maize farmers will have increased their through reducing post-harvest loss and improving the quality of maize during the drying and storing processes. This will be achieved by:

- Improved drying and storage practices at the service level, at various stages of the value chain, primarily at the farmer level, and
- Improved local government capacity is needed to support drying and storage facilities; operational public drying and storage facilities may contribute to the vision in the long run, when more maize is produced in NTT.

The PRISMA approach

PRISMA's field assessment showed that given the low volume of production in NTT, there is not a strong business case for investment in creating large drying and storage facilities, which will not immediately improve the current drying and storage practices of the farmers. Rather, promoting the availability and usage of appropriate storage products and materials at the household level, in addition to improving the knowledge and capacity of farmers for proper drying and storage techniques, seemed to be viable and immediate solutions to the problem.

The provincial government of NTT has placed a strong emphasis on the promotion of maize as a major crop; to support this policy position it has established large-scale commercial drying and storage facilities in five districts in NTT. The subsector assessment conducted by YIPD and PRISMA showed that none of the facilities are operational. This is as a result of insufficient supply of maize in the facilities, as there is hardly any surplus maize (both for human consumption and industrial use). Improving sector competitiveness through better functioning of commercial drying and storage facilities is therefore entirely predicated on the improvement in production and productivity of maize in NTT. However, in future the scope of assessment of the drying and storage market system may include drying and storing facilities which can process multiple crops in NTT. A further assessment therefore may be conducted, to analyse the drying and storage services for multiple crops in NTT with a view to identify solutions which will improve the support market functioning of drying and storage.

Based on the analysis, the focus of the intervention is on improving the drying and storage practices among the NTT's maize farmers at the household level.

PRISMA is collaborating with the private sector partners to:

Support the promotion of improved technology and appropriate tools & materials for good postharvest (drying & storing) practices for maize farmers in NTT.

- Promote and develop appropriate storage facilities in partnership with private tool and materials producers. Knowledge and information about good post-harvesting techniques will be also communicated to farmers as embedded information. PRISMA has considered the following opportunities:
 -)] There is a need to improve drying and storage practices at the household level.
 -)] The intervention can be initiated as a small pilot in areas with maize surplus to test and prove the concept.
 -)] The intervention is relatively simple and does not require significant resources.
 -)] Success in pilot area will trigger replications by other households.
 -)] The design of the intervention is to reach farmers at the household level.

However, in further developing and implementing the intervention, the following risks were identified:

- Appropriate technology comes with associated costs as opposed to the often simpler and cost-free traditional methods;
- Additional investment for improved drying and storage may not be considered necessary by the farmers due to their subsistence orientation;
- Farmers with large volume of production prefer to sell their produce instead of investing in storage;
- Drying and storage is a function naturally served by collectors and traders - there is a risk of increased competition, and
- The business model relies on the sale of non-consumables (non-repetitive business may limit motivation of potential traders)

Progress and signs of systemic change

PRISMA has started implementing the intervention: 'Support the promotion of improved technology and appropriate tools & materials for good postharvest (drying & storing) practices for maize farmers in NTT'.

- An MoU was signed with PT Buana Ika Syahputera (BIS) on August 14, 2015, and the main highlights and achievements since then are:
 - A maize expert and a marketing consultant have been contracted to provide knowledge to BIS on maize and the market situation in NTT;
 - BIS contributed to the identification and selection of ISPs;
 - 46 ISPS were selected and have signed business agreements with BIS;
 - Two ToT sessions were conducted for the ISPs on drying and storage technology; 171 members of staff participated;
 - Three ISPs have socialised the drying and storage technology; 955 maize farmers have been informed about the use and benefit of jerry cans;
 - BIS has invested in the design of the new jerry can moulds, as per the demand of the farmers, and
 - BIS is producing the new jerry can and two containers (approx. 1,500 jerry cans) are due to be delivered in June 2016.

- The challenges encountered during the first few months of implementation are:
 - A jerry can sample has not yet been supplied. This creates a challenge when explaining to the ISPs and maize farmers interested in buying improved products, and
 - High investment is one of the barriers to entry for the market, although the potential huge demand may attract other plastic companies to produce and sell the new jerry can.
- Early signs of systemic change are:
 - The partner has adopted the business model; it has engaged ISPs in the promotion and sale of the new jerry cans, and trains the ISPs on promoting jerry-cans and the new D&S technology;
 - The partner has modified the design of jerry-cans to make it more appropriate for maize storage;

Contribution of public programs

A local government program has started to encourage maize farmers to utilise used drums as containers to store maize. One other PRISMA program in Timor Island promotes the use of composite seed. Some other development agencies like FAO had activities on promoting jerry cans for storage of maize

15. MAIZE: EJ

Maize is one of Indonesia's primary food crops. Across the country, almost 20 million MT are grown each year on three to four million ha of farmland; more than half is used to cater to the ever-increasing demand for animal feed. It is a seasonal crop, with a surplus during peak harvest months and a severe undersupply the rest of the year. PRISMA has identified a clear opportunity to increase maize production, productivity and quality as part of Indonesia's drive towards import substitution.

East Java province is the largest producer of maize in Indonesia; however, its growth is slight growth, at only 0.49% per year (2014 figures). Productivity is in line with the national average (4.82 MT per ha) but this is below that of NTB. PRISMA is focusing on the island of Madura, where farmers cultivate maize as a subsistence crop and where productivity is less than a quarter (1.7 MT per ha) of that on mainland East Java. Traditional cultivation methods, used of local seed varieties and the lack of knowledge of and access to irrigation and post-harvest management services are the main reasons for this.

PRISMA has chosen to focus on the three Madura districts of Sampang, Sumenep and Pamekasan because (a) productivity here is low while the potential exists to significantly increase yields, (b) there is a substantial business opportunity for input suppliers to provide improved quality hybrid, as current usage is low, and (c) the intervention will support local government's plan to make Madura self-sufficient in maize by 2018.

Challenges and constraints

Farmers in Madura are unable to increase their maize production and productivity for three main reasons:

- **Lack of understanding of GAP.** Many maize farmers are unaware of the benefits of using improved seed and continue to rely on local seed varieties which provide lower yields.
- **Availability of more lucrative commodities.** Many farmers here have chosen to plant tobacco. The pull towards this is increased by two local cigarette companies which have provided storage facilities for the crop.
- **Lacklustre government subsidies which provide no incentives.** Farmers get free or subsidised hybrid seed and fertiliser from the government. Not only is this unsustainable, it provides no incentives for the private sector to get involved in supplying these inputs.

Vision of change

PRISMA's vision of change is that by 2018 maize farmers on Madura Island will have increased their production and productivity of maize. Their maize will be of a better quality and they will be getting better

incomes as a result. This will attract more farmers in East Java to go into maize cultivation, increasing domestic production and helping Indonesia to fill the import gap. This can be achieved in the following ways:

- **Seed companies** starting to supply hybrid seed in the areas where farmers have limited or no access to hybrid seed;
- **Seed companies** providing information on GAP as an embedded service to Madura maize farmers through their distribution network, and
- **Feed millers and/or traders** promoting appropriate post-harvest practices and maize quality standards.

The PRISMA approach

To achieve this, PRISMA is collaborating with the private sector to:

Promote hybrid seed

- PT AHSTI as partner already applied business model, recruited staffs, and allocated seeds to be sold at Madura since September 2014.
- Private seed company PT AHSTI is PRISMA's partner and has been promoting the use of hybrid seed in Madura (Sumenep and Pamekasan), despite progress being hindered by El Nino and government subsidised seed. In 2016, the focus is on incorporating more market actors (e.g. maize buyers, seed retailers) into the business model.
- PT AHSTI uses promotional activities to disseminate information about GAP and its application specifically in terms of hybrid maize cultivation. When put into practice, GAP contributes to higher yields.
- Other interested hybrid seed companies are expected to participate in the initiative. DuPont, with its influential 'Pioneer' brand, has shown an active interest in the business model and plans to join in 2016. It had earlier decided to withdraw from Madura but now plans to collaborate with PRISMA.

Promote appropriate post-harvest services

- PRISMA is identifying suitable partners to assist farmers to improve their post-harvest practices (e.g. more effective drying and storing techniques) in order to standardise the quality of maize.

Promote the use of improved seed suitable for dry season farming in non-irrigated drylands

- PRISMA is identifying potential partners and plans to conduct further assessments in non-irrigated areas where maize is planted.

Contribution of other publicly funded programs

The government is providing extension services and is involved in the distribution of OPV (Open Pollinated Variety) or composite seed and hybrid maize seed to farmers, which may affect the impact of PRISMA's intervention despite being on a very limited scale. Nevertheless, PRISMA's impact assessment will ensure that the actual impact of the intervention is calculated, and not overlapped with any impact attributable to the government initiative.

16. MAIZE, NTB

Maize is one of Indonesia's primary food crops. Across the country almost 20 million MT are grown each year on three to four million ha of farmland; more than half is used to cater to the ever-increasing demand for animal feed. It is a seasonal crop, with a surplus during peak harvest months and a severe undersupply the rest of the year. PRISMA has identified a clear opportunity to increase maize production, productivity and quality as part of Indonesia's drive towards import substitution.

At national level the price of maize has been increasing steadily over recent years. However, the province of NTB has experienced no growth in its maize production, despite productivity being above the national average at 5.8 MT per ha. Most farmers here plant their crop during the wet season on dry farmland, with only a small number having the capacity to irrigate their land during the dry season. Poor post-harvest handling and lack of storage facilities add to the problem of inconsistent supply.

Around 127,000 ha of land in NTB is given over to maize farming, with approximately 87,700 maize farming households living below the poverty line. Just over half of these (43,900) are in PRISMA's four target districts: Bima, Dompu, West Lombok and North Lombok. PRISMA has chosen these districts because of there are huge harvested area of maize cultivation but in another hand some farmers in some area still have lower productivity compared to the potential yield.

Challenges and constraints

Maize farmers in NTB find it difficult to increase their income because of five major reasons:

- **Limited provision of information and extension services because of weak public provision and lack of private alternatives.** There are few reliable sources of information for maize farmers. Government extension services are not able to satisfy the need for technical information, and it is rare for input suppliers and traders to provide embedded information on maize cultivation. When input suppliers do provide information services, these are geared towards promoting their own products.
- Few commercial providers of fertiliser, post-harvest equipment, and irrigation services, particularly given the strong government presence in these areas. Farmers rely mainly on subsidised fertiliser, but the government fertiliser distribution program is unable to supply it in sufficient quantities. In addition, the distribution of subsidised inputs from the government creates disincentives for private sector input supply companies to invest in new products and distribution channels or to provide training and information to farmers about such products. Input supply retailers have noted a decreasing volume of sales since the introduction of the government fertiliser subsidy program. Similarly, government involvement in the distribution of subsidised post-harvest equipment and the provision of irrigation has meant that few private actors have entered these markets. Outreach as part of both government programs has been limited, and in the case of irrigation, these services are usually only available for rice cultivation.
- **Limited affordable options for finance, particularly given the difficulties in accessing bank loans.** The use of hybrid seed requires a sufficient supply of other inputs such as fertiliser, agro chemicals (e.g. herbicide, pesticide) and labour, as well as careful and informed treatment and maintenance. Poor farmers have little money to support these, and no access to external financial resources. Some farmers rely on moneylenders who provide loans at exorbitant rates of interest.

Vision of change

PRISMA's vision of change is that by 2018, maize farmers in NTB will increase the volume and quality of their maize production, in ways which are sustainable and income increasing. This will attract other maize farmers to adopt GAP and start producing high quality hybrid maize. Domestic production will increase, contributing towards filling the export gap. This will be achieved through:

- **Input companies** providing GAP knowledge as an embedded service. This will address hybrid maize cultivation, informing farmers on the use and benefits of non-subsidised fertiliser, post-harvest handling, and effective drying and storage services;
- **Private fertiliser companies** carrying out the promotion and distribution of non-subsidised fertiliser in areas where subsidised fertiliser is not available, either in the right quantity or at the right time;
- **Financial institutions** providing accessible and affordable in-kind loans to poor maize farmers, therefore they are able to have the adequate capital to obtain best quality inputs and access to post-harvesting services; and

- **The private sector** improving irrigation facilities and management.

The PRISMA approach

To achieve its vision, PRISMA collaborated with private sector partner PT Sarottama and supported it to:

- Improve access to GAP and promote its use. This includes the use of appropriate quality seed, maintenance and technology.
- Improve access to fertiliser and promote its use by strengthening distribution of non-subsidised fertiliser.
- Promote low cost, household-level storage techniques among the target farmers, raising awareness of the benefit of selling the maize over a longer period of time.
- Develop improved access for maize farmers to a proper irrigation system and the technology needed for dryland cultivation to give the farmers the ability to plant maize in the dry season.

Progress status

PT Sarottama and PRISMA agreed to establish farmer resource centres (FRCs) as a sustainable mechanism to provide the market with the required access to inputs and information. The model was designed to develop an incentive structure to enable the FRCs to achieve self-sufficiency and ensure continuity of service delivery. However, Sarottama backed out of its own deliverables, resulting in only one of the four proposed FRCs being established. This hindered the lone FRC's ability to generate enough revenue to self-sustain during the start-up period. With service provision limited to around 500 farmers in NTB, it was not possible to assess the value addition of the promoted GAP and access to fertiliser provided by the business model. This fact, alongside a lack of cooperation from Sarottama, resulted in the termination of the agreement. PRISMA plans to develop interventions with other potential partners to address the issues in 2016.

As of now, PRISMA is planning to collaborate with a hybrid seed and agro-chemical company, PT. Syngenta, a local maize trader, PT. Citra Megah Manunggal, and a local financial institution. This collaboration is set to achieve better access to quality seeds, herbicides, and pesticides, as well as an end market for the farmers. This intervention will also improve access to an in-kind loan to farmers, to increase financial inclusion as well as financial literacy for farmers.

17. MAIZE, NTT

Maize is one of Indonesia's primary food crops. Across the country, almost 20 million MT are grown each year on three to four million ha of farmland; almost half is used to cater to the ever-increasing demand for animal feed. It is a seasonal crop, with a surplus during peak harvest months and a severe undersupply the rest of the year. PRISMA has identified a clear opportunity to increase maize production, productivity and quality as part of Indonesia's drive towards import substitution.

In NTT province, maize is the staple food of the majority of the population, and one of the local farmers' most popular crops. Despite its importance however, maize cultivation is characterized by low input, low output subsistence farming practices. This low productivity, which consistently fails to meet mainly for local consumption, is largely caused by the limited access to improved seeds as well as use of extension services, which are insufficiently technically equipped to assist farmers. Most farmers in NTT plant their crop during the wet season on dry farmland; only a small number have the capacity to irrigate their land during the dry season. Poor post-harvest handling and lack of storage facilities adds to the problem of production loss.

PRISMA, through the Australia-Indonesia Partnership for Rural Economic Development (AIP-Rural) saw an opportunity to improve maize productivity at farm level by encouraging the use of GAP. Since 2011, AIP-Rural has supported food security in NTT by boosting the productivity of maize; by the end of 2011 it had increased by more than 35%. AIP-Rural had achieved this by increasing farmer access to an improved variety of maize seed and technical knowhow. There is thus a clear opportunity to promote the viability of maize cultivation as

a business for farmers through increasing the demand for quality seed, alongside embedded services that promotes GAP.

Challenges and constraints

Maize farmers in NTT find it difficult to increase their income for two following reasons:

- **Limited knowledge of GAP.** Farmers practice subsistence farming on a small amount of land (usually half a ha or less). This produces insufficient maize to feed the household, partly because of low yielding variety crop management practices and substantial post-harvest loss due to pest attack.
- **Recycling of seed from the previous harvest.** Most farmers in NTT do this, a practice which eventually reduces yields.

Vision of change

PRISMA's vision of change is that by 2018, maize farmers in NTT will be using an improved variety of maize which will increase their production volume and productivity, enabling them to supply their consumption needs as well as the local market. Moving out of subsistence farming means they will receive a higher market price for their crop, attracting more farmers to use better inputs and GAP. Domestic production will have increased. This vision is being achieved by:

- **Input suppliers** increasing their supply of improved quality seed available in more consumer-friendly packaging, and retailers advertising and distributing it at a fair, affordable price.

The PRISMA approach

To achieve its vision, PRISMA is collaborating with the private sector to:

Promote the use of improved seed (composite or open pollinated varieties, as well as hybrid seed)

- Work with local seed producers to improve the sustainability and outreach of the business model. This will include building the management capacity of seed producers, conducting an area mapping, establishing a "Champion Jagung" club, and developing an effective marketing program.
- Continue support to existing partners (e.g. expanding their private distribution network to Flores); consider the potential to support additional intervention partners, particularly in Sumba and Flores.

Introduce affordable commercial fertilisers

- The ultimate goal is to ensure the availability and use of fertiliser, which is essential for maximizing yields from hybrid seed and can also improve yields from composite seed. There is potential to work with fertiliser companies and agro-input dealers to develop fertiliser products and private distribution channels to target smallholder farmers.
- The supply of subsidized fertiliser is insufficient, and delays in the government distribution scheme often mean that it arrives at the wrong time, providing opportunities for private sector involvement.

Introduce more effective, affordable farm-level storage solutions

- This will help reduce losses once farmers have increased productivity and are growing more composite and hybrid seed. PRISMA is working through YIPD as a co-facilitator to develop this strategy.
- Work with manufacturers, distributors, and traders of storage equipment to develop alternative, cost-effective storage solutions. In 2016, this will involve the commercialisation of airtight containers based on market incentives.

Progress status

- PRISMA has signed a contract with four seed producers in West Timor.
- Partner adapted the business model to produce, and promote maize seeds via their distributors, retailers, and Champion Jagung; and hire agronomist to ensure production of quality seeds.
- Outside the business model, partner is also producing more seeds, investing more in promoting OPV maize seeds, and hiring agronomist.
- Over 21 MT of OPV seed were sold last season, including Lamuru (the most suitable), Srikandi Putih and Srikandi Kuning. Some additional seed has also been sold in Flores.
- In 2015-16, the region is witnessing the most severe case of El Nino for 23 years. This has negatively affected seed sales, and delays to the rains have led to a shift in the planting season and farmers' choice of crop. This delay has also been favourable to the distribution of government subsidized seed (the delivery of which is frequently delayed in NTT), which has also negatively impacted the market development progress of PRISMA's partners.
- Despite roadblocks such as these, the business model has been deemed plausible by partners and there are interested parties in West Timor, Flores and Sumba who wish to expand their markets.

Contributions of other publicly funded programs/private contributions

The Gol is providing extension services and is involved in the distribution of OPV of composite maize seed to farmers, which may affect the impact of PRISMA's intervention despite being on a very limited scale. Nevertheless, PRISMA's impact assessment will ensure that the actual impact of the intervention is calculated, and not overlapped with any impact attributable to the government initiative.

18. MUNG BEAN EJ²⁶

Mung bean is grown mainly in South and Southeast Asia; its cultivation has also expanded into Australia, USA, Canada and Ethiopia. In Asia, its production increased from 2.3 million MT in 1985 to 3.1 million MTs in 2000. China is the largest exporter of mung bean in the world, followed by Myanmar, while India is the largest importer. Global demand for mung bean remains consistently high and stable.

Demand for mung bean in Indonesia is largely met by domestic production, and although it experienced a dramatic decline in 2012, the production level recovered in 2014. This results in persistent increase in imports in 2013 to cater for the food processing industry which dominates domestic demand, and a slight drop in imports in the following year. Availability of mung bean-based food products has increased significantly in recent years and its market price in Indonesia has remained relatively stable.

East Java is Indonesia's second largest producer of mung bean; together with the largest producer, Central Java, the province accounted for 61% of Indonesia's total production of mung bean in 2015. East Java has around 200,000 mung bean farmers, roughly half of whom are in Madura, while the rest are spread throughout 30 or more districts. Since 2005, mung bean production and its cultivation area has decreased in East Java, although productivity has increased.

Mung bean is rich in easily digestible protein and other nutrients. It adds nitrogen to the soil, requires less water and has a short crop duration, and is therefore widely used in crop rotation. It remains particularly relevant to the poor in terms of both income and nutrition. It is cultivated as an attainable interval cash crop in the dry season due to its low maintenance and production costs. Poor farmers in EJ have the potential to increase mung bean productivity without significantly raising production costs. There is viable scope for import substitution, due to escalating domestic and international demand coupled with the rising sale prices witnessed over the last years.

Challenges and constraints

²⁶ Interventions in this subsector are being managed by UPUK-Surabaya (Perkumpulan Untuk Peningkatan Usaha Kecil) (as PRISMA's co-facilitator).

The major challenge to mung bean farmers in East Java is low productivity, and the underlying causes for this are:

- **Lack of use of appropriate quality and quantity of inputs.** Minimising cost and effort dominates the farmers' cultivation methods.
- **Lack of commercial production and distribution of quality mung bean seed.** Seed producers are reluctant to instigate production as they are not assured of demand and profit.
- **Farmer reliance on residual fertiliser present in the soil** from previous crops. Fungicide, herbicide and pesticide are widely available in the market, but are not targeted to mung bean production.
- Lack of information about better cultivation practices, improved seed and inputs, and the overall potential of mung bean as a more profitable cash crop. No information is actively supplied by any actor in the market.
- Limited or non-existent post-harvest and storage services for mung bean.
- **Mung bean is not considered a nationally important crop by government development strategy.** As a result, extension services – which are functioning with limited knowledge and resources – do not focus on mung bean.

Vision of change

PRISMA's vision of change is to increase the income of mung bean farmers in East Java by improving the quality and productivity of their crop. It is essential to ensure the availability and usage of appropriate inputs and proper cultivation techniques, which can be achieved by, at the service level:

- **Seed industry actors** supplying quality mung bean seed and embedded services, to educate farmers about better cultivation practices;
- **Fertiliser and pesticide companies** promoting better cultivation practices and proper usage of their inputs to farmers;
- **Agro tool companies** promoting the appropriate tools (e.g. for planting, threshing) and providing embedded information about better practices and application of the tools, and
- **Government** improving its support for mung bean farmers.

The PRISMA approach

To achieve this vision, PRISMA plans to collaborate with public and private sector partners to:

Assist seed producers and suppliers to produce, distribute, and promote quality mung bean seed in East Java

- Assist local seed producers to assess the untapped market potential of mung bean seed.
- Assist them to expand their existing seed production.
- Facilitate the distribution and promotion of mung bean seed through input retailers and suitable distribution agents.
- Promote embedded information services alongside the sale of seed.
- At a later stage, replicate this model with other seed producers and retailers.
- Start negotiating with large seed companies for future scale-up of the model.

Assist fertiliser and pesticide companies to promote the application of fertiliser (particularly micronutrients and compost), appropriate pest control solutions and better farming practices

- Work with fertiliser and pesticide companies to develop a business model targeting mung bean farmers, who are large in number but yet to be considered as clients of the companies.

- Pilot the model with at least one company, stimulating the use of micronutrient fertiliser, compost and pest control solutions appropriate for mung bean.
- The partner will disseminate knowledge on better cultivation practices to mung bean farmers through distribution agents and demonstrations.
- Scale up the intervention by expanding to work with additional partners.

Assist local agro-tool producers to promote sowing tools appropriate for mung bean

- Promoting improved cultivation practices, including facilitating the production and promotion of sowing tools for mung bean with local agro-tool producers. Such basic tools, along with simple changes in cultivation practices, can make significant improvements in yield.
- Scale up the intervention by working with additional agro-tool producers.

Assist public extension agencies to promote existing, successful extension model to other districts

- Work with provincial and district level public agencies to replicate the existing public extension service model, which successfully targets mung bean farmers in the Sidoarjo district, East Java.
- Try to facilitate a system where provincial government funds and guides district agencies to replicate the model.
- Assist district agencies to implement the model better.

Assist local agro-tool producers/agents to promote a commercial model of threshing services

- Promote better post-harvest practices and increase the quality of mung bean prior to sale, resulting in better returns for the farmers.
- Work with local agro-tool producers and potential providers of commercial threshing services to conduct a pilot.
- Scale up the intervention by gradually increasing the number of service providers and agro-tool producers.

Progress status and signs of systemic change

- PRISMA has started implementing interventions 1 and 2, with activities designed for the promotion and usage of quality inputs (seed and fertiliser) among mung bean farms, with PUPUK as the co-facilitator. The main highlights and achievements since then are:
 - A contract has been drawn up with an expert from local university Trunojoyo, Madura to set up a research plot.
 - Four research plots have been set up in all districts of Madura.
 - Intervention partner PT Indo Acidatama Tbk has contributed to research plot activities, providing fertiliser and a researcher, and promoting and socializing the research results
 - As part of the research plot activities, around 500 mung bean farmers received information about the use and benefits of fertiliser and good quality seed
 - PUPUK had signed a Mou with UD. Sumber Rejeki, a Gresik-based nursery as certified mung bean seed producer
 - PUPUK had signed a MoU with PT. Indo Acidatama, Tbk., a Solo-based agro-chemical company as the fertiliser producer.
 - Four potential distributors in Madura have been identified as ISPs for the certified seed and fertiliser.
- The challenges encountered during the first few months of implementation are:

- The demo plots set up as one of the promotional tools of the intervention experienced some delays due to the prolonged rainy season. However, the distribution activities by the ISPs is expected to start in July 2016.

Contribution of public programs

None; mung bean is not a prioritized commodity.

19. PEANUT, NTT²⁷

Between 2009 and 2013 annual global consumption of peanuts increased from 31.03 million MT to 35.99 million MT (by 15.98%). Global annual peanut production ranged between 30.76 and 39.83 million MT during 2004-2014. China is the leading peanut producer, contributing 37%% of world supply; India contributed 14%; and USA, Nigeria, and Indonesia collectively contributed 18% in 2014. World export of peanuts, on average, was around 4.48% of the total global production during 2004-2013.

Indonesia is currently ranked fifth among global peanut producers. However, the country's productivity remains consistently low compared to other peanut producing nations, and between 2009-13 acreage and yields have shown a downward trend. With a generally consistent increase in national demand and availability of cheap imported peanuts, Indonesia remains the largest importer of peanuts in the world, due to the highest growth of import in the world from 2004-2013. Unmet domestic demand, expected growth in future demand, coupled with rising prices for local peanuts, create strong growth potential for the peanut sub-sector.

Although NTT is the sixth largest peanut producing province in Indonesia, it lags far behind the top four provinces which are all in Java. Here, productivity, at 1.06 MT per ha, is below the national average of 1.28 MT per ha; peanut production and acreage however have steadily increased, contrary to the national trend of decreasing production and area cultivated, regardless of the significance decrease in terms of acreage and yield of peanut production in 2014. In 2013, NTT produced 20,000 MT of peanut, of which 2,000 MT were exported to other islands in the archipelago.

NTT's peanut is produced in Flores, Sumba and Timor. Timor has the largest production base spread over four districts. Significant imports have occurred during periods of lean production, such as 2011 when up to 8,000 MTs were imported into the province.

Many poor farmers are involved in peanut cultivation in NTT. Climatic conditions here makes peanut a suitable crop. There is immense scope for improving productivity and quality by introducing quality seed, improving production and post-harvest practices, and increasing the number of buyers. Peanut in NTT thus has potential to reduce poverty, substitute imports, and increase exports to other provinces and countries.

Challenges and constraints

The overarching problem with the peanut sub-sector in NTT is its low competitiveness. This stems from the fact that productivity and production is relatively low, which does not attract traders prepared to pay a good price. The specific problems and their underlying causes are summarised below.

- Farmers do not apply good farming practices (in terms of seed selection, land preparation, planting and maintenance); in general, farmers lack access to information on better farming practises.
- Farmers use retained seed, as there is no commercial business to multiply and distribute good quality seed in NTT. Seed producers in other provinces have no established networks or knowledge of NTT to motivate them to promote peanut seed.
- Farmers do not apply good post-harvest technology (especially drying technology) and this restricts them from improving the quality of their produce and storing them for long periods. As peanut is not yet a highly commercial crop, no commercial provider has been motivated to address this information

²⁷ Interventions in this subsector are being co-managed by YMTM (Yayasan Mitra Tani Mandiri) as PRISMA's co-facilitator.

and service gap. The collectors and inter-island traders lack capacity to provide information about post-harvest techniques and drying. Inferior quality pulls down the price further. As well as dry processing, the traditional threshing methodology also adversely affects the harvesting time; due to lack of labour, farmers often leave their crop too long and allow the peanuts to sprout in the ground. This reduces yields and contributes to a decrease in the farmer' income.

- Farmers also obtain a low price for their crop because, owing to financial need, they frequently sell their product immediately after harvest when the price is normally low.
- Farmers have no option but to sell their crop at local markets or to small traders. Limited presence of direct sourcing networks of large traders or processors, and low number of inter-island traders in NTT, make the market less competitive and less profitable.
- Farmers often do not have enough capital to buy and use better inputs and tools. Their financial literacy is often limited, meaning they are unable to make use of the financial services available.
- The government extension service has limited resources and capacity; it therefore tends to focus on other priority sectors and is unable to meet the needs of the peanut farmers.
- Private input companies do not see peanut farmers as major clients, and lack the capacity and vision to expand their client base.

Vision of change

PRISMA's vision of change is that by 2018, peanut farmers in NTT will have increased income; this will be achieved through increased production, productivity and market access. At the service level, this can be achieved by ensuring:

- Availability of quality seed and other inputs;
- Functional provision of appropriate agricultural and handling practices, and
- Consistent access to competitive markets.

The PRISMA approach

To achieve this vision, PRISMA is considering collaborating with private sector partners to implement the following:

Facilitate availability and usage of good quality seed through provincial seed producers in NTT

- Work with the existing breeders (and following a successful trial introduce new seed breeders) to start producing and promoting peanut seed, while at the same time introducing better varieties.
- Seed breeders provide farmers with information on more efficient production techniques.
- Seed breeders cooperate with agro-input dealers in the market and agents in the villages to ensure effective distribution to farmers.
- Input dealers stimulate farmer demand by providing knowledge about the benefits of using quality seed and improved technology and cultivation techniques.

Support national seed companies to establish a distribution and marketing channel for making quality peanut seed available in NTT

- Work with national seed companies to facilitate the setting up of a peanut seed production and distribution system.
- National companies integrate existing breeders in NTT into their production system, along with seed suppliers currently without a presence in NTT.

- Seed companies work with dealers to promote the seed and give embedded information to farmers.

Facilitate direct linkage between large traders and farmers for better market linkage and better flow of information on post-harvesting processes and quality requirements

- Motivate large-scale traders and buyers to make direct investment in NTT (for example, opening a branch, having representatives in NTT).
- Buyers provide support to farmers to enable better post-harvest practices.
- Large-scale traders cooperate with district wholesalers and traders, creating an incentive for them to provide services to the farmers.

Progress status and signs of systemic change

PRISMA has started to implement intervention 1: 'Facilitate availability and usage of good quality seed through provincial seed producers in NTT'. The following points capture the progress status of the intervention.

- The main highlights and achievements since then are:
 - Private partner TPM developed a demo/production plot; along with improved local seed, as part of the demo plot. The first harvest of seed was in November 2015; productivity was around 2.5 MT per ha. Around 380 farmers attended the harvesting event and received information about the benefits of quality seed.
 - Peanut experts trained a primary service provider and 30 farmers in better seed cultivation.
 - TPM sold the first batch of packaged Hypoma 2 seed in mid-December 2015.
 - As of December 1, 2015, TPM had allocated IDR48.3 million to implementation of the intervention.
 - More promotional activities have been developed, with around 40 demo plots established as part of Farmer Field Day harvesting events in three districts (TTU, Belu, and Malaka), TPM's target market areas. Around 2,100 farmers attended the events where information about the benefits of quality seed was disseminated and a simple harvesting technique was presented. The technique was first introduced by Agustina, the peanut expert hired by YMTM. It is expected by using this technique the post-harvesting process will be more efficient through reductions in time and cost of labour.
- Challenges encountered during the first few months of implementation are:
 - Harvesting costs turned out to be somewhat high due to the higher than predicted cost of labour; this had increased exponentially because of the strong demand for labour for planting other crops (i.e. maize). This challenge has been addressed by the introduction of simple harvesting technique introduced by the peanut expert, Agustina. Farmers now have the knowledge of a more efficient peanut threshing process, using only a banana trunk.
 - The certification process needs to wait until after the peanut harvest, when BPSB NTT will take a sample for testing. This could affect the timely delivery of seed to retailers and farmers.
 - A long period of drought caused by El Nino adversely affected peanut production, harming the yield in several demo/production plots.
- Early signs of progress towards systemic change are:
 - TPM has demonstrated its commitment and buy-in to continuing with the seed production business by recruiting a new member of staff (an agronomist), solely responsible for the company's peanut seed production. It has increased the amount of land allocated to demo/production plots in the next planting session and provided additional funds to speed up the harvesting process in the demo plot area.

- The first harvesting event conducted by TPM raised interest in buying and using good quality seed. Around 1,200 kg of the Hypoma 2 peanut seed has been ordered from the company by farmers for use in the next planting season (Dec 2015-Feb 2016).
- TPM has implemented seed certification independently without support from YMTM. The Director of TPM has established communication with Balitkabi in Java for updated information about opportunity in peanut business.
- 17 ISPs are involved in a peanut market network.
- A new partner for TTS and Kupang has been identified: CV Sinar Tunbeis Makmur (CV STM). The contract will be finalised by the end of July 2016 and production will start soon after.
- Most of the farmers involved in the intervention are very excited about the prospect of planting high quality peanut seed after witnessing the potential increase of yield in the demo plots.

Contribution of public programs

The NTT provincial government independently of the project plans to buy good quality seed and distribute it to farmers. PRISMA is mindful of the potential distorting impact of this, and will take it into consideration in future assessments.

20. PEANUT, EJ

Indonesia is the fifth largest peanut producing country in the world. Its population, however, consumes more than it can produce, leaving a shortfall of around seven hundred thousand MTs every year. Indonesia is the largest importer of Peanut. From 2012 to 2013, peanut imports into Indonesia increased by 30%. Its usefulness is very diverse, led to the demand of peanuts continues to increase each year. A clear business opportunity exists therefore, to increase the production volume and the quality of the peanut crop, thus helping to reduce imports. Indonesia produces around 650,000 MTs of peanuts every year. Java Island is the centre of production and East Java the highest contributing province, supplying 30% of total national production. Despite this, local producers are still unable to meet the needs of domestic households (10%), home industry (80%) and large-scale food manufactures (10%).

East Java is home to around 420,000 peanut farmers. Bangkalan, Sampang, Sumenep, Tuban, Pamekasan, Pacitan, Magetan, Bojonegoro, Ngawi and Ponorogo are the ten highest concentration. Here, the farmers use a impure local seed variety or retained seed or mixed them which produces a poor yield and lower quality; at the same time they have little access to information on quality seed. On average, the farmers use seeds from the rest of previous harvest, both from inventory kept themselves or purchased from local collectors (traders). Although Balitkabi (the Indonesian Legumes and Tuber Crop Research Center) has developed and released some varieties of better quality peanut seed, there are few nurseries able to produce it in quantities large enough to be commercially accessible. The nurseries which do, do so to provide a small quantity for free distribution by the government. The excellence of peanut seeds produced by certified nursery is that the certified quality seeds has been tested by certification bodies who monitoring the quality of seed, where the use of these good seeds will increase the productivity of farmers.

PRISMA has chosen Magetan and Ponorogo as target areas because of (1) the large numbers of peanut farmers in the two districts, (2) the high growth potential here, (3) There is a certified nursery who has a willingness to produce the good quality seed, and (4) Ponorogo and Magetan near to Trenggalek as one of the PRISMA program's focus area

Challenges and constraints

Peanut farmers in East Java are currently unable to increase production for the following reasons:

- **Low quality and low productivity.** East Java's peanut farmers are unable to access high quality or improved varieties of seed. Instead they are dependent on local, retained and impure seed which

produces suboptimal yields. The low quality and quantity of their crop hinders them from selling their harvest to the big buyers.

- **Lack of continuity of production.** Peanut farmers only cultivate in the rainy season. Lack of irrigation, good storage facilities, and access to peanut varieties resistant to fungi, hinder them from building the capability to supply big buyers.
- **Lack of knowledge on how to sort retained seed.** The farmers have a lack of knowledge on how to handle, sort and select the previous seed to be used during the next planting session.
- **Limited number of nursery who able to produce certified quality seed.** The demand for certified peanut seed from farmers is much lower than demand for other seed. The certification expiry date is too short to give farmers enough of an opportunity to sell the seed. At the same time, Garuda, a producer of peanuts for consumption, already owns a patent for its peanut seed implemented by its captive farmers. These constraints have led to a reluctance by nurseries to develop a peanut seed business.
- **Limited practice of GAP.** If well-managed, peanut productivity can reach two to three MT per hectare of dry peanuts. One of the constraints leading to optimal results not being achieved by farmers is that they frequently tend not to fully adopt improved cultivation techniques.
- **Lack of knowledge about market standards.** Most farmers in East Java do not know about the standard preferred by the market, particularly industrial markets.
- **Limited knowledge of good post-harvest handling practices.** Peanut traders have to ship their crop to food processing companies within forty-eight hours of harvest to avoid the risk of spoilage by Aflatoxin (a naturally-occurring carcinogenic toxin which can develop in warm, damp storage conditions).

To overcome these challenges and constraints, PRISMA has cooperated with private partner Trubus Gumelar, a peanut seed nursery located in Ponorogo, to develop a peanut seed business in Ponorogo and the surrounding area, including Magetan. At the implementation stage, however, Trubus Gumelar served the needs of the government project rather than the demand for commercial seed or for farmers. As a result, PRISMA decided to suspend cooperation with Trubus Gumelar and look for a new partner with the ability and commitment to supply new areas with a greater number of farmers (such as Tuban and Lamongan, Bangkalan and Sampang, and Pacitan).

Vision of change

PRISMA's vision of change is that by 2018, farmers in East Java will have improved their productivity and be producing higher quality peanut to supply the domestic home industry, households, food processing companies, and the export market. They will get a better return for their crop as a result of this increase in quality, and this will attract more farmers to start peanut cultivation. Domestic production will increase, helping Indonesia to reduce its dependency on imports. This vision can be achieved in a number of ways:

- **Peanut seed nurseries** expanding their market beyond their traditional customers via distribution channels which enable them to sell good quality seed to farmers;
- **Nurseries** providing embedded services aimed at improving farmers' understanding of the need for GAP and GHP quality control, and
- **Nurseries and agro input companies or young generation group** collaborating to provide access, marketing and selling activities to promote good quality seed (for example, through the setting up of a demo plot) aimed at convincing peanut farmers to adopt good quality seed and improving their understanding of the need for GAP and GHP quality control, and
- **Nurseries and collectors** working together to establish good, reliable distribution channels, providing farmers with access to good quality seed and information on market standards.

The PRISMA approach

To achieve this vision, PRISMA will collaborate with private sector partners to:

Promote good quality seed

- Private sector partner replicates the new improved variety of peanut for commercial use.
- Expand the distribution channel to reach a great number of farmers.
- In line with introducing good quality seed, private sector partner should also promote the other input supplies.

Improve GAP and GHP among farmers

- Develop a marketing and promotional strategy for use by agro input companies.
- Develop a set of activity plans to educate peanut farmers about GAP and promote its use.
- Input companies provide these embedded services along with the products they sell.

Improve access to big buyers

- Develop a competition among the buyers to increase the attractiveness of nurseries for developing business on peanut seeds, and to control the competition and price of peanut in the market.

Contributions of other publicly funded programs

The Gol has a free seed distribution program; these are given out in small quantities but nevertheless may affect the impact of PRISMA's interventions.

Portfolio 4

21. BEEF EJ

Indonesia is the largest beef producer in Southeast Asia. Nevertheless, the country is experiencing a shortfall in production as domestic consumption outstrips supply. At the same time, national demand cannot depend on imports. Since 2010, the government has been tightening import quotas with the aim of creating 90% self-sufficiency in beef. These two factors together have significantly increased the demand for locally sourced beef. PRISMA's research indicates that increasing the availability of feed and artificial insemination services will enable cattle farmers to meet local export standards and increase their volume of cattle production.

East Java is Indonesia's biggest cattle producing province. According to BPS 2015 data, East Java accounted for 19% of national beef production and 28% of national beef cattle population. It is also the largest exporter of live cattle between provinces. Local consumption is a significant driver of East Java's cattle and beef sector.

The number of poor people in East Java is slightly higher than the national average. Most farmers in East Java raise cattle as family asset and source of ready cash. They do not see cattle rearing as a business or livelihood, and do not make conscious decision to participate in national cattle and beef production.

Cattle productivity in East Java is low, particularly during the dry season (May to November). This is caused by (a) lack of supplementary feedstock, and (b) limited awareness of the benefit of supplementary feeding. Farmers' reliance on native grass to feed their cattle results in a fattening period of 11 to 12 months. The fattening period is halved on a feedlot, where the use of concentrate or supplementary feed means only three to four months is needed before slaughter. The low cattle productivity is also due to poor breeding practices where natural mating results in poor genetics of calves and lower conception rate, and the provision of artificial insemination services has not been effective.

PRISMA has chosen to work with cattle farmers in East Java because of the potential to achieve change on a large scale. There is a clear market opportunity to expand East Java's potential to supply local beef demand in the province and to fulfil national beef demand through increased inter-regional exports.

Challenges and constraints

There are two main reasons for the low income of East Java's cattle farmers:

- **Inability to increase production.** Inefficient artificial insemination (AI) practices are a result of farmers having a) a lack of information on proper AI practices and b) a lack of access to timely AI services; and
- **Low productivity.** Slow weight gain in calves and cattle is due to lack of farmers' awareness of and access to quality and quantity of feed and proper feed practices that are needed to accelerate cattle weight gain.

Vision of change

PRISMA's vision of change is that by 2018 East Java's cattle farmers have increased their productivity and volume of production, while at the same time meeting regional export standards and obtaining higher market value of their livestock. This attracts more farmers to go into cattle production, increasing domestic production and ultimately achieving import substitution. Progress can be made towards this by:

- **Cattle feed companies** providing affordable, nutritious feed and making sure it is commercially available, appropriate and affordable; and
- **Breeding companies** promoting professional AI services and providing embedded services to cattle farmers on good AI practices.

The PRISMA approach

To achieve this vision, PRISMA will collaborate with the private sector and support it to:

- Promote commercially available, appropriate and affordable feed for cattle fattening to facilitate accelerated weight gain. PRISMA has signed contracts with two potential partners to raise awareness among farmers of the benefits of investing in cattle feed products.
- Promote professional AI services, which should include information about good AI practices. The aim is to increase the supply of good quality calves through achieving higher AI success rate.
- Promote appropriate financial products for cattle fattening. The aim is to provide farmers, especially poor farmers, with the financial means to enter into the cattle fattening business. PRISMA will work with SAFIRA on this.
- In the first phase, PRISMA focuses on promoting the use of commercial feed as, with around 4 months of fattening period, this provides a quick win for the farmers. The area of focus for the interventions is the Tuban District, which has the second largest cattle population in East Java, and its proximity to Surabaya, the second largest city in Indonesia, makes Tuban a very strategic cattle producer.

Progress and signs of systemic change

Contracts have been drawn up with two private sector partners in the Tuban District: (1) Wahyu Utama (to promote supplementary feedstuffs for cattle fattening) and (2) PKM/Holcim (to promote concentrate feed for cattle fattening).

Wahyu Utama

- Training for lead farmers has taken place. Wahyu Utama also gave training to farmers from other districts.

- Demonstration plots have been developed and are promoting the use of supplementary feedstuffs (e.g. palm residue, rice bran, molasses, bio-energy) for cattle fattening to the farmers in the area around the plots. The plots are managed by the lead farmers who took part in the training.
- Wahyu Utama has sold supplementary feedstuffs to the lead farmers as well as its contract farmers and other farmers, with increasing sales month after month.
- The lead farmers became the contract farmers of Wahyu Utama. Wahyu Utama has more contract farmers and more supply of cattle for its cattle trading business.
- Wahyu Utama started to invest in concentrate feed production; currently, the concentrate feed is produced mainly for internal use.
- Wahyu Utama obtained the right to operate a new government slaughterhouse, which would also support its upstream to downstream cattle business. Wahyu Utama received this right to operate partly because of its role in promoting cattle rearing among farmers, which also got its Director an award from the President of the Republic of Indonesia for his role in food security development in 2015.

PKM with the assistance of Holcim

- Training for lead farmers has taken place. PKM also provided additional training for other farmers.
- Demonstration plots have been developed and are promoting the use of concentrate feed for cattle fattening to the farmers in the area around the plots. The plots are managed by the lead farmers who took part in the training PKM added more lead farmers and demonstration plots on its own initiative.
- Increasing amount of concentrate feed were sold to the lead farmers and other farmers who attended the demonstration events.
- Sales of concentrates extended to areas beyond intervention area.
- This positive market demand response to the promotion of concentrate feed has motivated PKM to source additional raw materials to keep up the continuity of feed production. PKM is also in the process of procuring a new hammer mill to increase production.
- Initially, the plan was to have retailers in the scale-up phase. However, the promising sales of the concentrates resulted in interest of retailers to sell PKM feed. There are now retailers of PKM feed in and outside of the intervention area.
- Government-initiated Farmers' Learning Centres (SPR) sought to work with PKM with SPR providing raw materials to PKM and in return receive concentrate feeds from PKM.
- PKM provided training on feed to women's groups as an effort to inform more women on concentrate feed and good rearing practices among females.

In addition, Bank Sinarmas with the assistance of SAFIRA has created a new financial product for cattle farmers with Wahyu Utama and PKM. This financial product will allow cattle farmers to obtain loans to purchase cattle and feed.

The success of the pilot phase of both interventions suggest that farmers started to have an interest in developing a cattle fattening business by using concentrate feed or supplementary feedstuffs. To that end, the cooperation with PKM and Wahyu Utama shall be continued for the second year with expansion to other sub-districts in Tuban and to new districts in East Java.

Contribution of other programs

The government through the Department of Livestock distributed free concentrate feed to the farmers. The government procured the concentrates from several feed companies, one of which is PKM. In 2015, the programme lasted for around three months in the last quarter and only to selected farmers' groups in a number of villages and sub-districts. Although this may affect the intervention, this programme also provides an opportunity for PKM to market itself so that when the programme ends, farmers can buy the concentrate feed from PKM. It is expected that the government will have a similar programme in the last quarter of 2016, with the concentrates procured from PKM.

22. BEEF NTB²⁸

Indonesia is the largest beef producer in Southeast Asia. Nevertheless, the country is experiencing a shortfall in production as domestic consumption outstrips supply. At the same time, national demand cannot depend on imports. Since 2010, the government has been tightening import quotas with the aim of creating 90% self-sufficiency in beef. These two factors together have significantly increased the demand for locally sourced beef. PRISMA's research indicates that increasing the availability of feed and artificial insemination services will enable cattle farmers to meet local export standards and increase their volume of cattle production.

NTB plays an important role in beef production, by providing live cattle and supplying breeder animals for other provinces. The province plays a major role in national cattle development and in meeting national beef demand. Demand for NTB cattle and beef is rapidly increasing in DKI Jakarta, West Java, Kalimantan, Sumatera, Maluku, and Papua regions. There are, however, some inconsistencies in the available statistics and it is very hard to comprehend whether NTB's cattle and beef sector is responding to increasing demand by producing more in the years when production and export decreased.

NTB has the potential to produce an additional two million heads of cattle, which would drive future poverty reduction in the province. It is one of Indonesia's key cattle producing regions; the cattle grazing land can be expanded by more than 50% in 10 cities of Lombok and Sumbawa. The natural conditions in NTB are suitable not only for producing beef cattle, but also cattle for other purpose, especially the purification of the Bali cow and other varieties for rearing in other districts. There are thus several ways that NTB can become a major supplier of beef and feedlot for the country as a whole and become a key inter-island exporter.

Two different cattle rearing techniques were observed in NTB, with a spatial pattern to each. Farmers in the Sumbawa area raise cattle following the ranch system – an extensive farming practice relying on pastures and open water sources. In Lombok on the other hand, an enclosed system is the most common; here, cattle rearing practices are intense. The enclosed system is more investment intensive and allows greater control over breeder selection, feed management and disease control.

PRISMA has chosen to work with cattle farmers in NTB because of (1) the potential to achieve change on a large scale, and (2) the province will be able to fill the national demand gap currently being supplied by imports.

Challenges and constraints

The main reason for the low income of NTB's cattle farmers is the low weight of their cattle, which results in it fetching a low price. There are two main reasons for the low cattle weight in NTB:

- **Limited availability of good quality calves, particularly among ranch beef cattle in Sumbawa Island.** For cattle reared in a ranch, calves are of low quality, largely as a result of inbreeding due to the farmer's limited knowledge of animal and breeding management. Even in enclosed system, production of calves has not been optimal because farmers have (a) inadequate knowledge of the proper timing of artificial insemination (AI) and (b) limited access to effective and quality AI service.
- **Poor nutritional intake for the cattle.** Good quality fodder is lacking during the dry season, as farmers depend on natural production and do not have knowledge of quality fodder production or understand the need for fodder cultivation. There is a lack of water resources for cattle due to poor

²⁸ Interventions in this subsector are being co-managed by LP2DER (Lembaga Pengembangan Partisipasi Demokrasi dan Ekonomi Rakyat) (as PRISMA's co-facilitator).

water infrastructure. In addition, there is low use of supplementary feed because farmers are unaware of its benefits. They do not know how to produce supplementary feed, and ready-to-use supplementary feed is unavailable.

Vision of change

PRISMA's vision of change is that by 2018, NTB's cattle farmers have improved the quality of their cattle (in terms of weight) in both the ranch and enclosed systems. Ranch cattle farmers have improved access to better ranch management services (including ranch breeding); enclosed system cattle farmers have better access and services to good quality AI, and the information and knowledge needed to produce and apply supplementary feed. This attracts more farmers to go into cattle production, increasing domestic production and ultimately achieving import substitution. Progress can be made towards this by:

- **Public extension service providers** and breeding **companies / bull owners** supporting the development of improved ranch management services;
- **Public extension service** and **feed companies** (ingredient suppliers) promoting supplementary feed application and production; and
- **Breeding inputs** companies supporting the government capacity to solve the bottleneck for efficient service delivery of AI (e.g. nitrogen supply).

The PRISMA approach

To achieve this vision, PRISMA will collaborate with the private sector and support it to:

- Support the development of improved ranch management services by public extension service providers and bull owners.
- Support the public extension service / ingredient suppliers / feed companies to promote the application and production of supplementary feed application.
- Support government capacity to solve bottlenecks in efficient AI service delivery (e.g. nitrogen supply).

In the first phase, PRISMA focuses on promoting the use of commercial feed as, with around 4 months of fattening period, this provides a quick win for the farmers. The focus of the intervention is in Lombok Island because with its enclosed system, it provides the best environment for the success of the intervention with commercial feed.

Progress status and signs of systemic change

- A contract has been signed with private sector company PT Bintang Pribumi Tulen (PT BPT).
- PT BPT has developed the feed composition formula to produce concentrate feed.
- PT BPT has purchased the machines and raw materials to produce the concentrate feed.
- PT BPT has produced concentrate feed, and its production is increasing from month to month. However, the production is currently limited to feeding cattle in its cooperative.
- PT BPT has mapped the potential ISPs and developed a Standard Operating Procedure for the ISP mapping process. However, currently only one ISP is active, which is its own cooperative, Koperasi Sejahtera.
- PT BPT has recruited new staff specifically for the feed business and restructured its organisation to adjust to the feed business. Training in feed production and product knowledge has been provided to the staff.
- PT BPT is currently in the process of forming a partnership with the University of NTB and Ministry of Villages to produce crop residue feed.
- UD Imama, miller of PT BPT started producing cattle feed and going into the cattle feed business.

- Nutrifeed, a feed company from East Java, has shown interest in the Lombok feed market by sending its staff to Lombok to assess the market, meet with local government, and send samples to Lombok for testing. Nutrifeed has sent its marketing staff to survey the Lombok market and has sent feed samples to Lombok for trial with farmers.

Contributions of private and publicly funded programs

Several programs have been established by local government (e.g. Ministry of Research and Technology) and other donors to train farmers to produce their own cattle feed. The NTB provincial government has two programmes related to cattle: (1) Bumi Sejuta Sapi, which is a provincial programme since 2008 for the provision of calves and support systems (e.g. pens, feed including forage such as lamtoro and elephant grass seeds), and (2) Pijar, which is a provincial programme for districts that are producers of cows, corn, and seaweed. The Lombok District government has programmes on provision of calves, provision of cattle for fattening, and capacity building for farmers (i.e. training on cattle breeding).

23. BEEF NTT

Indonesia is the largest beef producer in Southeast Asia; nevertheless, there is a shortfall in production. At the same time, national demand cannot depend on imports; since 2010 the government has been tightening import quotas with the aim of creating 90 percent self-sufficiency in beef. These two factors together have significantly increased the demand for locally sourced beef. PRISMA's research indicates that increasing the availability of affordable cattle fattening products and breeding services in the province, while at the same time providing access to financial products appropriate for men and women cattle farmers will lead to an increased volume of beef being produced that is suitable for export.

East Nusa Tenggara (Nusa Tenggara Timor, or NTT) has the largest number of cattle in Indonesia and exports a high volume of live cattle to other islands in the archipelago. At the same time, around 20 percent of the population is poor, almost twice the national average. Of its one and quarter million farmers, 16 percent are cattle farmers and are poor or near poor, typically raising livestock as a source of family income and selling their cattle before they reach their optimum weight.

Challenges and constraints

There are three major reasons for the low income of NTT's cattle farmers:

- **Inability to increase production of calves because of long inter-calving intervals and high rates of calf mortality.** This is due to farmers lacking access to feed, water and good rearing practices needed to reduce mortality among calves; low awareness of the benefits of quality feed and water; and lack of access to services and information on proper breeding (including on the management and selection of prime bulls and female breeders).
- **Low productivity because of slow weight gain in cattle.** This is due to farmers lacking access to nutritious feed, water and the good practices needed to accelerate weight gain; also, farmers have low awareness of the benefits to cattle productivity of quality feed and water.

Vision of Change

PRISMA's vision of change is that by 2018, beef farmers in NTT will have increased production and productivity. At the service level, it is envisaged that farmers will have improved access to: (1) feed, (2) water, (3) breeding information and prime bull rental services, and (4) information services. This can be achieved by:

- **Cattle feed companies** introducing affordable nutritious feed for calves and cattle. This can partly be achieved by establishing linkage with fattening companies and feed companies.
- **Breeding companies** introducing prime bull rental and breeding information services.
- Water or irrigation companies, fattening companies and local government promoting sustainable water services for cattle farming.

The PRISMA approach

To achieve this vision, PRISMA will collaborate with the private sector and support it to:

- **Introduce affordable nutritious feed for calves and cattle.** The goal is to ensure the availability of feed, especially in the dry season, for both calves and cattle. Proper feed is of prime importance for securing better economic returns from cattle farming. It can reduce mortality in calves while shortening the fattening period for cattle. This intervention area will involve (1) developing nutritious feed formulas with locally available raw materials (or through the production of new raw materials) that can be available year round, or (2) developing technologies to conserve feed for dry season feeding. This may include support to identify and produce better feed combinations and to increase awareness among farmers of the benefits of more nutritious feed formulas.
- **Promote sustainable water services for cattle farming.** The goal here is to improve access to water for cattle farming and ensure sufficient water intake by cattle and calves. This will influence the growth of calves and cattle and also reduce cattle mortality.
- **Intervention area 3: introduce prime bull rental, AI, and breeding information services.** The goal is to improve calf production through access to better breeding inputs and information on proper breeding practices (including management and selection of prime bulls and female breeders). This will increase the calf population via two channels: (1) increasing the number of births of better quality calves, and (2) reducing post-natal mortality.

Progress and signs of systemic change

- Prisma and PUSKUD (Pusat Koperasi Unit Desa or 'Union of Village-Level Cooperatives'), a PRISMA partner for cattle sector development in NTT, has completed a feed trial on the use of good quality fodder Leucena (Lamtoro) in cattle fattening. This trial concluded that Lamtoro is the key premium forage available year round to achieve optimum average daily gain of cattle. This trial has triggered PUSKUD to develop the feed strategy of its contract farming business and enter into the Lamtoro fodder business supporting cattle farming in Kupang regency, NTT.
- PRISMA and PUSKUD are currently working on a joint intervention plan to promote the use of Lamtoro as premium green forage for smallholder farmers engaged in cattle fattening. This intervention has been approved and a contract agreement signed. The cost of this intervention to PRISMA is currently around AUD177,000.
- PUSKUD has started the cultivation of Lamtoro Tarramba seedlings and so far has sold around 15,000 to smallholder farmers working with the company under its contract farming business partnership, and to the farmers of the Anggur Merah program (a block grant program under NTT's provincial government).
- In January 2016, DFAT representatives visited PUSKUD to discuss the condition of NTT's beef sector, including market growth, opportunities, challenges and how, through PRISMA, DFAT can support PUSKUD in cattle business development to reach out to smallholder farmers.
- Smallholder farmers have started nine demo plots cultivating Lamtoro Tarramba. Three (belonging to the Anggur Merah project) have been started by smallholder farmers and around 15,000 seedlings have been planted. These demo plots will promote the commercial benefits of Lamtoro use for fattening cattle to smallholder farmers.
- Provincial government representatives working on the Anggur Merah project invited a member of PUSKUD to be a source speaker at two workshops in Kupang and Kefa, where PUSKUD shared the result of its feed trial with PRISMA and the ongoing joint intervention plan. A local Kupang newspaper included a feature on PUSKUD's use of Lamtoro Tarramba in cattle fattening.
- ARISA's Project Director visited to PUSKUD to learn about implementation of the joint intervention plan with PUSKUD on the use of Lamtoro in cattle fattening.

- The Director of PUSKUD made an Australia Award-funded exchange visit to the University of Queensland, Australia (March to May 2016). As a result, he is increasingly confident in the use of Lamtoro for fattening cattle and is committed to the intervention.

Contribution of public programs

Local government project *Peningkatan Produktivitas Sapi* ('Increase of Cattle Productivity') introduces the use of Lamtoro feed by providing assistance, and distributing chopper machines and concentrate feed. The program works in three villages in Kupang (Bone, Amarasi and Camplong). In addition, the provincial government provides financial program support in NTT via the Anggur Merah program. PUSKUD supplies and sells Lamtoro seedlings to smallholder farmers who receive assistance from Anggur Merah revolving fund. This is the latest collaboration with the Anggur Merah program, managed by the Anggur Merah Sector in PRISMA.

24. CASSAVA EJ AND NTT²⁹

With an annual production of 25 million metric tons (MT), Indonesia is the third largest producer of cassava and the fourth biggest exporter, according to the FAO. Indonesian cassava production increased by about 3.84% yearly from 2011 to 2015, and national and international demand for cassava is also increasing. World demand for cassava imports in the form of dried cassava, cassava starch and cassava chips is estimated at 220 million MT per year. China's demand alone for cassava chips is expected to increase significantly in the next few years. Cassava is used for many purposes including human consumption, animal feed, and industrial starch. In terms of domestic consumption, national production is unable to meet the high demand. Opportunities exist therefore to increase production to meet domestic and global demand for cassava chips and to reduce imports of starch.

East Java is Indonesia's third largest cassava producer. Its domestic demand is also high, outstripping supply; the gap is currently being met with imported starch. In East Java, the largest production of cassava is in the districts of Trenggalek, Pacitan, Ponorogo and Malang, according to BPS data 2013. Many of the cassava farmers are from low-income households. In addition to growing cassava for staple food especially in dry season, there is a significant demand for cassava from local SMEs in East Java, particularly the cassava chip producers.

East Nusa Tenggara (NTT) contributes 2.92% to the national production of cassava, according to BPS data 2015. Though relatively small compared to national production, NTT is the seventh largest cassava producer in Indonesia. In NTT, cassava is the second staple crop after maize, making it very important for food security. Compared to the average national productivity rate, that of NTT cassava farmers is very low. The largest producers of cassava in NTT are the districts of TTS, TTU, Sikka, and Belu.

PRISMA has chosen East Java and NTT to start the pilot because (a) growth potential here is high, (b) farmers in the region have difficulty accessing extension services and appropriate agro inputs, and (c) farmers in the districts find it difficult to access the commercial markets which supply the large-scale cassava industries.

The pilot phase of the interventions in Trenggalek district of East Java and Belu district of NTT have concluded. For intervention in East Java, PRISMA is starting the scale-up to expand the area of intervention from Trenggalek to cover 3 more districts, which are Pacitan, Ponorogo, and Malang, and also to involve nurseries to provide good cassava stems. For intervention in NTT, the intervention in cassava will not be extended but PRISMA may focus on the feed sector in NTT, in which cassava serves as one of the raw materials to the feed production.

Challenges and constraints

The major challenges to the cassava sector in East Java and NTT are:

²⁹ Interventions in this subsector are being co-managed by SNV (as PRISMA's co-facilitator).

- **Low productivity.** Farmers have little knowledge of modern, appropriate and efficient farming techniques and practices, which results in cassava's low productivity compared to its potential. This is caused by (a) limited access to appropriate agro inputs, and (b) lack of access to extension services.
- **Substandard quality of cassava.** Inferior quality of input materials results directly in the substandard quality of the harvested crop. This is also caused by (a) limited access to appropriate agro inputs, and (b) lack of access to extension services.
- **Limited knowledge about the markets.** Farmers have little awareness of the potential economic value of cassava and this affects how they sell it, namely, in small quantities at the local market. The reason for this is the limited numbers of large or industrial-scale traders in the area.

Vision of change

PRISMA's vision of change is that by 2018, farmers in East Java and NTT will have improved their productivity, quality and consistent supply of cassava to meet the demands of processing companies. The market value of cassava will have increased, attracting more farmers to go into cassava production, which will increase national production to meet local and international demands. This vision can be achieved through:

- **Private sector partners/exporters** providing farmers with better access to extension services and appropriate agro inputs; and
- **Traders and businesses** providing better market access to farmers.

The PRISMA approach

To achieve this vision, PRISMA will collaborate with the private sector to:

Increase access to GAP and fertiliser provision

- Promote the sale and use of bio-fertiliser.
- The private sector partner will provide ToT training and information on GAP (specifically on business development) to distributors, who will then become key trainers of farmers.
- Develop a marketing and promotion strategy as well as activity plan to help ISPs educate, promote and sell fertiliser and provide extension services to the farmers.

Support access to better quality stems

- Nurseries to establish a partnership with distributors in order to distribute better quality cassava stems to farmers.
- Develop a promotion strategy (such as selling stems bundled with fertiliser) and activity plan to promote the use of better quality stems.
- Develop a model to provide knowledge and technical advice to farmers by ISP.

Previously, PRISMA also worked in developing supply of cassava for animal feed in NTT. After the end of the pilot phase of this intervention, PRISMA now considers to develop this approach in the Feed sector instead.

Progress and signs of systemic change

Cassava Sector in East Java

- PRISMA and SNV partnered with PT Natural Nusantara (PT NASA) in Trenggalek District to promote access to better quality input, which is fertiliser. Through its supply chain actors, it has provided GAP training to cassava farmers in the district, and has also started promoting its products for use with other crops in the area, such as maize and groundnut.
- PT NASA has established demo plots in the project location, as a result of which some farmers have started using NASA's products to implement GAP.

- A number of ISPs have started acting as agents for NASA's products.
- PT NASA sold the fertiliser through its network marketing channel, in addition to the distribution through agents as planned with PRISMA.
- Nurseries sold good quality cassava stems to farmers through ISPs.
- The harvest in Trenggalek was delayed due to the El Nino effect; however, sales of fertiliser have picked up.
- Pest attack resulted in poor cassava harvest among demo plots in Trenggalek. However, farmers that applied fertiliser and GAP properly reported higher yield than those that did not.
- Some farmers made repeat order for PT NASA's fertiliser.
- ISP linked farmers to output provider or processing companies (for starch and mocaf).
- In May 2016, the pilot in Trenggalek has ended. Based on impact assessment, farmers have increased productivity by 38% and income by 79%. Women participation in the intervention was around 20%.
- The results of the pilot phase in Trenggalek have led to a scale-up intervention covering 3 more districts (Pacitan, Ponorogo, Malang) and will involve nurseries to provide better quality stem in order to boost higher productivity for farmers. PRISMA has signed agreement with SNV for the scale-up in June 2016.

Cassava Sector in NTT

- PRISMA and SNV partnered with Panitia Pengembangan Sosial Ekonomi (PPSE) Keuskupan Atambua, which is the social enterprise arm of the Roman Catholic Diocese of Atambua in Belu District.
- PPSE has set up a small factory producing animal feed (mainly pig feed) using cassava as one of its source materials. The trial phase was completed in August 2015; the official product launch on 30 September 2015 in Atambua was attended by the *Bupati* (district leader) and 90 potential buyers, including senior *paroki* (parish) members and lead farmers.
- The feed has been tested for quality in the University of Nusa Cendana, a prominent public university in NTT.
- Sales of feed have gradually increased. However, from February to April 2016, there was a machine breakdown which halted the feed production. Production has started again in May 2016.
- PPSE has sold feed to a feedlot in the neighbouring TTU district, which is beyond the intervention area.
- PPSE is planning to purchase a new hammer mill machine.
- The pilot phase has ended in May 2016. PRISMA is currently assessing the continuance of this intervention under Feed or Pig sector.

Contribution to public programs

There is a government programme by the Regional Planning and Development Agency (Bappeda) of Trenggalek to provide slicer machine for cassava chips in 2016. However, since the programme relates to cassava processing, it does not affect the intervention on fertiliser.

25. COCONUT EJ³⁰

³⁰ The intervention in this subsector was co-managed by SNV (as PRISMA co-facilitator) until Jun'16. PRISMA is now reviewing and evaluating the continuity of the intervention

Coconut can be processed into a wide range of products and is experiencing growing popularity in international markets. In 2013, Europe and the USA accounted for over half (49%) of global coconut imports of desiccated coconut (156,851 MT), with the Philippines being the dominant exporter (28% of the market share) of coconut worldwide

Indonesia is the world's largest coconut producer, growing approximately 18 million MT in 2013. The major export sectors are a) coconut milk (creamed and powdered, with Indonesia having 8% and 29% shares respectively of world exports), b) coconut oil (over 500,000 MT exported annually, around 29 per cent of world trade), and c) coconut shell and copra meal for carbon production (Indonesia having 38% and 30% shares respectively of world exports). Nevertheless, Indonesia is behind its competitors in terms of exports, as the vast majority of the country's coconuts are sold in the traditional market for use in domestic cooking. This provides a clear potential for key value chain players to invest in value added coconut products for export markets.

In particular, there is also a booming international demand for coconut sugar, fueled by the rising interest in alternative sweeteners; however, quality concerns mean that this demand centres almost exclusively on sugar which has achieved organic certification.

Local Indonesian market also require substantial amount of coconut products. Demand from the local food industry for coconut sugar (a preferred ingredient in sweet soy sauce) remains unmet whilst there also significant opportunity for developing local integrated processing facilities which can triple the value of coconut.

Although East Java and NTB are major centres of production, coconut is seen as a low value supplementary crop and cultivation remains rudimentary. In NTB island, tree holdings are larger than in East Java but productivity is lower. Most farmers in NTB also do not engage in processing activities due to limited processing business in the area.

Meanwhile, there are more than 40,000 coconut farmers in the targeted East Java district Pacitan, where farming households rank among Indonesia's poorest. Some of these coconut farmers have been involved in producing coconut derivative products especially coconut sugar; however, the processing practice remains poor and unhygienic, suggesting unfeasibility to fulfil the export standard requirement.

PRISMA has chosen East Java and Lombok as target locations because (1) there is a clear market opportunity to integrate farmers in the region into the growing market for value added coconut products, and (2) the production techniques and technology of these farmers are rudimentary and productivity is low.

Challenges and constraints

The major challenges to the coconut sector in East Java and Lombok are:

- **Coconut sugar is not marketed as organic product and as a result fetches lower prices.** This is more prominent in East Java where farmers are more accustomed to making coconut sugar. Farmers lack the knowledge and capacity to obtain organic certification, a basic requirement for most exporters. As coconut is almost always a secondary crop and not regarded as a major income source, farmers have limited interest in improving their agricultural and processing practices.
- **Lack of linkages to export markets.** Small producers are not linked to exporters, meaning that the coconut sugar export market cannot be tapped. At the same time, establishing effective linkages is not currently viable, as the sugar is produced by home industries, which are numerous and mostly unorganised, meaning they have difficulty in aggregating supply.
- **The existing trade in coconut adds little value among small producers.** Small farmers also have limited access to capital, needed to buy processing equipment.
- **Farmers are poorly linked to large-scale processors or buyers** who face difficulties securing stable supplies because producers are not organised. This is predominantly occurring in Lombok due to seasonality of coconut supply.

- The coconut sector in East Java and Lombok suffers from low productivity due to lack of GAP, limited replanting agenda despite the ageing coconut trees, and decreasing number of coconut climbers. Lack of government attention to promote the coconut sector, limited market actors willing to invest in the coconut processing and in the harvesting technology, as well as poor linkages to seed suppliers, are the major causes contributing to the problem.

Vision of change

PRISMA's vision of change is that by 2018, coconut farmers in the targeted East Java district (Pacitan) and Lombok NTB will have increased productivity and have access to higher value markets. This will attract other farmers to enter the value added coconut product markets and increase production of coconut sugar, for the export market in particular and for the local market in general. This vision can be achieved through:

- **Export companies** providing organic certification to coconut farmers, improving access for producers to the export market
- **Processing companies or local buyers** establishing processing facilities and/or expanding their coconut sugar-related business in the targeted districts, which can attract farmers to increase their coconut sugar production
- **Farmer associations and/or traders** establishing coconut aggregation points which will support producers to respond better to market demand by aggregating coconut products for the benefit of traders. This will support producers and attract an increased number of traders to serve local areas, improving supply to local processing industries and export market,
- **A chemical agriculture company** providing inputs and GAP information for suppliers and farmers
- **Integrated coconut processing or manufacturing companies** acquiring improved harvesting technology such as the tree climbing tools and include in their long-term business strategy and plans
- **Seed suppliers** providing high-quality coconut seeds to enhance production and productivity.

The PRISMA approach

To achieve this vision, PRISMA will support the private sector and collaborate with it to:

Promote organic certification of coconut sugar in East Java

- Develop organic certification among coconut sugar producer groups. The private sector partner will organise and finance the certification processes. This includes building the capacity of the smallholder coconut producers through training on how to achieve organic standards.
- Develop sugar collection points and a supply system to improve the supply of processed sugar. The private sector partners will build the capacity of the collectors as the collection point contacts, and will support the development of sugar collection points under the management of producer groups. The private partner will establish supply agreements with these groups.

Establish coconut aggregation points in Lombok and facilitate market linkages with buyers

- Build up a business model by which private sector partners establish and develop commercially operated coconut aggregation points, and then organise the aggregation of coconut supplies. This aggregation will be under the management of local actors (e.g. collectors, traders and lead farmers) with whom private sector partners will establish a supply agreement.

Increase productivity through GAP training and knowledge dissemination.

- The private sector partner will develop GAP training and information materials, manage the demo plots and provide support for farmer training on GAP.

Increase production and productivity through improved harvesting technology

- Develop a business model where the private sector partner can take up the suitable climbing tool into their strategy alignment. This aims to support farmers to climb more trees in safer and quicker way so that it helps increase the production and productivity.

Promote sustainability of the coconut sector through replanting agenda

- Support market linkage to the seed suppliers who will distribute and promote high yield and high quality coconut seeds to farmers for long-term coconut supply assurance.

Progress status and signs of systemic change

- Big Tree Farms³¹, an organic, fair trade processing company organised additional socialisation meetings with prospective farmers in Pacitan, East Java, and provided GAP-related information to the first batch. Big Tree Farms has recruited local people dedicated to identifying and registering the farmers.,
- Big Tree Farms relocated the plan for producing coconut sugar in order to get closer to East Java because of this intervention.
- The company has initiated the study and socialisation process for the second batch of farmers who will be inducted in the next certification process.
- It has conducted an organic audit, resulting in 1,015 farmers obtaining an organic certificate since February 2016.
- Big Tree Farms have started purchasing coconut sugar from the certified farmers. The farmers are likely to benefit from the premium price offered by the company. An impact assessment is planned for late 2016 to verify the claim.
- PT Kai Sun has started to implement the intervention business model in Lombok, focusing on the establishment of coconut aggregation points. It has installed a white copra machine, and in October 2015 initiated the purchase of lower grade coconut (that is, C and D categories). The company has also decided to establish an additional storage facility to accommodate the increased purchases of lower grade coconut. The farmers are likely to benefit from the price paid by Kai Sun for the lower grade produce, as it is higher than that offered by the traditional market.
- A pre-impact assessment was done in December 2015 to assess the progress of the intervention. Due to drastic price increase trends throughout Lombok since November 2015 (presumably caused by local traders who retain the products) the company could not offer a competitive buying price. Added with accidental trading pattern among the farmers and collectors, such condition reveals no significant increase income at farmers. Furthermore, the seasonality of coconut demand from Lombok also aggravate the risks for the company which now have decided to withdraw their coconut processing business from the island.
- Large fertiliser company PT Arya Supra Nugraha has partnered with the project to promote its fertiliser in Lombok. This shifting intervention strategy focuses on the productivity increase which can help farmers increase their income by selling more coconuts. The company has provided fertiliser and an expert to establish the demo plots, with the aim of promoting fertiliser use among farmers and building their GAP capacity. Over 100 demo plots have already been set up to facilitate this promotion. The impact of the increase in GAP knowledge is expected to increase productivity and lead to increased sales of all grades of coconut. This will eventually provide greater income for the farmers.
- While waiting for the result of the demo plots (November 2016 at the earliest), a further study will be carried out to assess and develop market linkages with collectors, traders and coconut buyers, both

³¹ <http://bigtreefarms.com/>.

inside and outside Lombok island. This is necessary to ensure that the increased productivity caused by the application of fertiliser will be absorbed by the coconut buyers.

Contribution to public programs

N/A. Previous government programs in Pacitan promoting coconut sugar and cook stoves have ended without impacting the potential beneficiaries of PRISMA's intervention.

26. COCONUT NTT³²

Although coconut can be processed into a wide range of products, global demand for copra, copra cake, and crude coconut oil has declined. According to FAO, recently there has been significant fall on global demand for copra. Nevertheless, Indonesia's supply remains stable, primarily because of price competitiveness. Another coconut product that has significant growing demand for the past few years mainly in developed countries is organic Virgin Coconut Oil (VCO). Driven by rising consumer attention on healthier diets, VCO product has now become more known in the global market.

Domestic demand for coconut products is also increasing. Due to growing industrial use, local demand for copra and VCO has been particularly rising. The required VCO includes both VCO as final product or to be processed further into toiletries products such as shampoo and soap.

NTT produces around 2% of the total domestic supply of fresh coconut, with potential to improve the production and productivity further. The majority of the province's coconut plantations are concentrated in six districts; Malaka, Kupang, East Flores, Ende, Nagekeo and Sikka, which together account for 79% (71,000 ha) of NTT's coconut plantation area and accommodate more than 45% of the province's coconut farmers. Fresh coconut, copra and VCO are the dominant coconut products in NTT. From 110,000 coconut farming households in the six major production districts, around 32,000 households are involved in copra production and 3,300 households in VCO production. In Flores, copra farmers make on-farm copra as part of their business, while in Timor village collectors buy fresh coconut from farmers to make off-farm copra.

NTT is the third poorest province in Indonesia. Majority of farmers involved in coconut, copra and VCO production are poor. Copra and VCO are more profitable than fresh coconut. VCO, a home-based industry, is generally dominated by female entrepreneurs. Similarly, women play an important role in copra production, albeit a slightly less dominant one.

Challenges and constraints

The overarching problems encountered by the coconut, copra and VCO farmers in NTT are i) the declining productivity of coconut, ii) the low quality of copra, and iii) the low quality and inadequate production of VCO. Together, these have resulted in reduced income from coconut and coconut products. The specific problems and their underlying causes are summarised below.

- **Production of VCO is low and not known to international buyers.** Previous government programs failed to attract buyers; this has discouraged the trained women to continue producing VCO with the expected quality standard. Accordingly, the quality of VCO produced in NTT is low at the moment. Coupled with the absence of market linkage to buyers, lack of information on required standard quality and limited access to quality processing equipment, farmers suffer low competitiveness from coconut products, thus resulting in low income.
- **Decreasing productivity of coconut trees,** particularly in Sikka and Nagekeo due to poor management of aging trees. High yield coconut seedlings are produced and supplied by specific nurseries via government replenishment projects. Farmers do not have regular access to best quality seedlings and many are reluctant to plant new trees due to lack of awareness and knowledge towards its long-term benefit.

³² Interventions in this subsector are being co-managed by Oxfam Indonesia (as PRISMA's co-facilitator).

- **Low quality of copra in NTT** due to a) use of old technology, and b) low provision of information about better technologies. On-farm and off-farm copra producers operate at sub-optimal capacity as they do not have enough capital to finance expansion of production. Limited interest in and access to financial services exacerbates the problem.
- **Lack of incentives for public extension services** to provide information on coconut, copra and VCO. Government subsidies have deterred private sector actors from providing relevant information on coconut trees replenishment and quality standards for copra. Provincial traders demonstrate weak knowledge and capacity for improving existing copra drying techniques at the producer level. Financial institutions (FIs) are not motivated to invest in developing this market segment. They do not understand the need of copra and VCO markets.

Vision of change

PRISMA'S vision of change is that by 2018, coconut farmers in NTT will have increased their income by strengthening the diversified use of fresh coconut in better quality copra production and increased VCO production. This can be achieved through changes in the service markets to ensure:

- Improved availability of knowledge, tools and technology, market linkages and financial services for coconut farmers in general, VCO and copra producers in specific, and
- Improved availability of high-yield coconut seedlings for farmers.

The PRISMA approach

PRISMA aims to collaborate with private sector partners to implement the following interventions in order to realise the vision and unlock the potential of the coconut sub-sector in NTT to benefit the poor farmers.

Support industrial organic VCO consumers to develop a sourcing model from coconut farmers in Flores

- Industrial buyer provides organic certification process to coconut farmers in Flores through socialisation and information dissemination. Farmers are expected to practice organic farming on their coconut lands, resulting in high volume of high quality organic coconut supply.
- A market linkage between industrial buyer and local Intermediate Service Provider (ISP) brings to an agreement in which the ISP will build local organic VCO production house
- Aggregation of fresh organic coconuts for VCO production by ISP to achieve the minimum quantities required by industrial buyers. The establishment of VCO production house will be able to absorb the fresh coconut supply from local farmers

Build the capacity of copra producers through inter-island traders

- Develop a model to provide information on quality standards and drying techniques to copra producers and farmers in Flores and Timor.
- Improve copra producers' knowledge of quality standards (in terms of moisture content), and techniques employed to achieve the standards, enabling copra producers to increase quality and income from copra. Knowledge transfer is expected to flow from inter-islands traders who have the capacity to the copra producers.

Support financial institutions to develop an appropriate credit disbursement model targeting copra and VCO production in Timor and Flores.

- Assist copra and VCO producers to acquire more coconuts and required tools to increase their production and income.
- Link the financial institutions to inter-island traders or buyers who will channel the funds to collectors. The collectors will use the funds to buy more coconuts for the copra and VCO producers. Inter-island traders or buyers will ensure a purchase order system is followed and

as agreed with the financial institutions, inter-island traders will pay back instalments to the financial institutions.

Support capacity building of seedling producers to promote usage of certified seedlings and systematic management of replenishment plans among the coconut farmers

- Commercialise the supply of seedlings to farmers and boost coconut production. Copra or VCO collectors will act as intermediaries between the nurseries and the farmers, incentivized by the additional income they obtain as seedling sellers.
- Nurseries will be incentivised to expand their business as the demand for coconut trees expand.

Progress status and signs of systemic change

PRISMA has started implementing the first intervention 'Support industrial organic VCO consumers to develop a sourcing model from coconut farmers in Flores'.

- An MoU with the partner (CV Nusa Permai) was signed on December 7, 2015, followed with a signed MoU between the partner and the ISP (Bumi Kencana) on December 9, 2015. Nusa Permai has introduced the business model needed for organic VCO production including a work plan, information on VCO processing techniques, machinery and production standards to the ISP.
- Aside from the internal problem from the ISP side which caused delays in the establishment of VCO production house resulting in postponed certification process, challenges also occurred in implementing the intervention due to:
 - Remaining signs of mistrust among the partner, ISP and farmers,
 - Lack of financial capability of potential ISPs who are required to make big investment in constructing the VCO production house
 - Unfamiliarity of the Flores' potential for VCO production supply among the VCO buyers

Early signs of progressing towards systemic change are:

- Nusa Permai has shown initial buy-in by agreeing to procure the organic VCO supplied by the ISPs/aggregators at an agreed price. It is willing to pay the organic certification expenses in targeted areas.
- Bumi Kencana (the first ISP) has agreed to cooperate with Nusa to produce and sell organic VCO from Flores, with a minimum supply of 15 MT per order, and has understood the business model. At the same time, the level of trust between the partner and the ISP has been growing
- Without waiting for the first ISP to resolve their internal problem, the intervention team approached other potential ISPs. Several companies have shown interest to join in the project. Three new MOUs between Nusa Permai and 3 local entities have been signed in June 2016. Under these MOUs, 2 VCO production houses will be built in Maumere and another one will be built in Adonara (East Flores).

Contribution to public programs

N/A..

27. FEED NTT

Sumba Island has a high market demand for livestock feed, in particular, feed for cattle and pigs since it is considered as one of the largest pigs and cattle population in NTT province. Despite being one of the largest demand for livestock feed, Sumba still experiences a feed demand gap of more less 90,000 metric tonnes per year only for cattle and pigs. In 2013, it was estimated only around 400 metric tonnes were fulfilled by import from Java Island. This shortfall of feed supply in the market causes high feed price, and it makes high quality feed is unaffordable for smallholder farmers. Moreover, the high price is a result of the fact that most of the

feed are imported from off the island. In addition, limited transportation infrastructure and geographical constraints causes feed prices at farmer level in Sumba to be 50-60% higher than in East Java. Other than that, there are no local feed producers operate in Sumba due to their poor awareness on the feed market potential and they do not know how to source raw materials for feed production in Sumba.

One solution is to produce feed locally in Sumba by optimizing and sourcing raw material that are available in Sumba. This will not only secure the local feed supply in a sustainable way, but also offer lower prices, which will then benefit many smallholder farmers considering the poverty rate in Sumba is considered to be high, particularly within the pigs sector. Sumba has approximately 100,000 pig farmers and around 73% of them are poor.

PRISMA aims to address the issue by facilitating the private sector to develop feed production by optimizing local raw material in Sumba. As results, PT Garda Wahana Perkasa, a bio fertiliser company based in Surabaya, has expressed their interest to invest in feed production. Even more, the Local Government of East Sumba has also shown its commitment by renting government-owned land and building to be used for this feed production.

PRISMA has chosen Sumba Island as its target location because here (1) there is potential for livestock feed business development, (2) cattle and pigs rearing are common but investments are limited, (3) smallholder farmers of cattle and pigs sectors here have limited access to high quality feed, (4) high rate of poverty, and (5) high involvement of female in pig farming.

Challenges and constraints

The major challenges to the feed sector in Sumba is that farmers experience poor livestock (cattle and pig) productivity due to lack of access to feed. There is no local feed producers operate due to difficulties in sourcing raw materials for feed production and they don't see the market potential of livestock feed. Moreover, limited number and size of imported feed distributors operate in Sumba due to poor awareness of the feed market potential.

Vision of Change

PRISMA'S vision of change is that by 2018, smallholder farmers in Sumba (particularly, pig and cattle farmers) will have increased their income by increasing their productivity. This can be achieved through changes in the service markets to ensure:

- Promote locally produced good quality and affordable feed for livestock and its distribution channel in Sumba, and
- Promote commercial distribution network of imported livestock feed in Sumba.

The PRISMA approach

PRISMA aims to collaborate with private sector partners to implement the following interventions in order to realise the vision and unlock the potential of the feed sub-sector in Sumba to benefit the poor farmers.

- Promote locally produced good quality and affordable feed for livestock and its distribution channel in Sumba
 - Produce livestock feed from local raw materials to lower feed prices.
 - Support the establishment of distribution channel between feed producer and farmers through local Intermediate Service Provider (ISP).
 - Develop a model to provide information on good rearing practices and technical advices to livestock farmers by ISP in Sumba.
- Promote commercial distribution network of livestock feed in Sumba
 - Introduce market potential of livestock feed in Sumba to feed producers.
 - Develop distribution network of imported feed in Sumba.

Progress and signs of systemic change

- PRISMA and PT Garda Wahana Perkasa is currently working on a joint Intervention Plan on providing affordable feed and new market for agricultural products' in Sumba. The contract agreement of this intervention was signed on 20 June 2016. The cost of this intervention to Prisma is currently around AUD 83.6K
- Director of PT Garda Wahana Perkasa and Head of East Sumba District have signed a MOU on Utilizing idle government-owned land and building by PT Garda for feed production site. The signature was made on 10 June 2016 in Waingapu, Sumba Timur. A largest local newspaper in NTT, Pos Kupang, published the story of the event in their newspaper on 11 June 2016.
- PT Garda Wahana Perkasa has co-invested with PT Visi Utama Teknik on technical advice and providing machineries.
- Have identified 10 ISPs that will be responsible to supply raw materials for feed production and distribute the feed to farmers.
- PT Garda Wahana Perkasa has shown initial purchase of local raw materials, such as dried peanut leaves and maize, up to 12 metric tonnes within the first month of production.
- The feed mill has started to produce feed since June 2016. So far, on average, the amount of production per day is 3 tonnes. The price of the feed per sack (50kg) is IDR 325,000, and per kg is IDR 6,500. It opposes to the price of existing feed brands where same quality, but different brand) ranging from IDR 10,000 to IDR 11,000.
- PT Garda has identified potential distributors and place for demonstration plots of feed.

Contribution of public programs

PT Garda rents the idle government-owned land and building of East Sumba District to produce feed.

28. PIGS NTT³³

Global consumption of pork is rising - between 2000-2014 it increased by 30%. Although a relatively small producer on the world stage, Indonesia has experienced an increase in pork production by an average of 4.5% annually since 2000 and by 2013 produced a total of 742,500 metric tons of pork. At the same time, national per capita pork consumption increased by 50% from 2 kg/capita/year to 3 kg/capita/year by 2011. Among the non-Muslim community consumption is closer to 15-17 kg/capita/year (2011). There is a growing demand from the hotel and restaurant industry for pork, as well as from provinces with non-Muslim populations.

East Nusa Tenggara (NTT) is the largest producer and consumer of pork in Indonesia where about 90% of the populations of 5 million are non-Muslim and considered as pork eaters. NTT contributes 23% to national production and 85% of households rear pigs (more than two pigs per household on average). Pigs are considered an important commodity for the people of NTT and pork is served at almost every religious and traditional event. In 2014 7.8 million pigs lived in Indonesia (*Badan Pusat Statistik Republik Indonesia, 2015a*). Pig population in NTT was 1.7 Million in 2014 and pig meat production of NTT was around 32,000 tons (*Badan Pusat Statistik Republik Indonesia, 2015b*). Timor (38%), Flores (34%) and Sumba (16%) are the main producers of pig in NTT.

Pigs are typically reared, slaughtered and marketed in a traditional way, leading to low productivity. Pigs rearing practices are still very rudimentary as indicated by low quality breeds, low quality feed, low quality sows and boars, and poor rearing/farming practices. Around 93% of pig rearers use poor quality local waste/agriculture product as feed; 91% know nothing about diseases like swine fever, and 65% have never had extension or veterinarians visit their farm.

³³ The intervention in this subsector is being co-managed by HIVOS (as PRISMA's co-facilitator).

This leads to slow Average Daily Gain (ADG), low market weight and marginal income potential. But better rearing practices are relatively straightforward and returns can be realized quickly, in addition, it is not seasonal. Therefore, there is a clear business opportunity to increase the speed and volume of pig production while at the same time shifting from traditional to modern pig breeding and fattening practices.

Women play a large role in rearing pigs. All family members are involved in pig rearing, but women play a major role with responsibilities including collecting fodder, feeding, cleaning the pen and control the health of pig. Gender focus group discussions were held in the pig sub-sector in Flores last year. The findings were used to adjust the strategy by making trainings more female inclusive through the timing and location of the trainings as well as making the training materials more “female-centric”.

PRISMA has chosen Flores Island, NTT as its target locations because here (1) there is scope for pig business development, (2) pig rearing is commonplace but investments are limited, and (3) pig farmers here have limited access to high quality feed, improved piglet, and modern pig rearing/farming practices.

There is an additional interest for PRISMA to work in NTT due to the high rate of poverty - the Gross Domestic Product (GDP per capita) of NTT is \$400 versus national average of \$3,000 and Human Development Index is ranked 31 out of 34 provinces in Indonesia; high female involvement in the pig farming where women spend hours collecting fodder, cooking fodder for pigs, and cleaning pen of pigs; and pig is considered as valuable asset for poor smallholders where 70% keep pig for extra income of household.

Challenges and constraints

The two main reasons pig farmers in Flores are not able to increase production can be attributed to:

- **Lack of access to good quality feed and breeds/piglets.** This limits pig growth. Low quality feed and breeds/piglets ultimately impact the potential productivity and profitability of pig-rearing for farmers, particularly for women farmers. As a result, the farmer is reluctant to invest in pig rearing activities. Government interventions do not take the need for this feed into account, and therefore have not been successful.
- **Traditional rearing methods.** Farmers, particularly women, lack the knowledge, skills and experience needed to breed, grow and fatten pigs commercially; the use of traditional methods means local pigs are often unhealthy, generating suboptimal weight and providing suboptimal returns.

Vision of Change

PRISMA’s vision of change is that by 2018, Flores pig farmers will be producing high quality pigs. This will attract other small farmers to scale up their production and meet the demand for pork with a larger supply of pigs, which will also be of high quality. This vision can be achieved through:

- Professional piglet companies providing quality piglets to farmers, and
- A feed company providing quality feed and embedded information on good rearing practices to farmers.

The PRISMA approach

To achieve this vision, PRISMA will collaborate with and support the private sector to:

Introduce improved breeds and the promotion of commercial pig rearing

- Develop a business model, which involves a pig industry technical service provider to provide technical services to piglet breeding companies.

Promote access to quality feed and provide information on GRP

- Enable piglet breeding companies and the feed company to provide embedded services to shops, credit unions and traders to whom they sell or distribute their piglets or feed. These

embedded services include information on good rearing practices, and the provision of good feed and medical services.

- In partnership with the feed company, train and use distribution and other channel members (e.g. traders, input sellers, credit unions) to manage demo plots in order to educate the farmers about GRP and to promote the use of quality feed.

Progress and signs of systemic change

- PRISMA conducted an impact assessment of the pig intervention in December 2015. The findings showed that:
 - Of those pig farmers surveyed who used pig feed, about 71% reported an increase in income due to its use.
 - Due to the use of quality feed and good rearing practices, pig farmers had halved the time needed to fatten their pigs; the weight of the pigs has also increased. These two changes were responsible for an average increase in income per pig farmer of about IDR13,119,966 per month.
- The DFAT Deputy Head of Mission visited PRISMA's pig intervention in Labuan Bajo, Flores in May 2016, with two representatives from Bappenas. They met with the Vice Chair of West Manggarai District, pig breeders, feed producers and agents, and women pig farmers. Positive feedback was given by all parties.
- New feed producers have crowded in:
 - Sierad and Menara (two large commercial feed companies) entered the market in Flores last semester; this semester, two other feed companies (Japfa Comfeed and PT Sama-Sama Untung) (the latter being PT Nutrindo Bogarasa's distributor) have expanded their market to Flores. Both have approached PRISMA with a request to discuss possible scope for collaboration.
 - Rambu Tedeng, a local, small-sized feed producer in Ruteng, Manggarai has produced a pig feed product for sale to pig farmers locally, at a cheaper, more affordable price than that of other feed companies (7,000/kg compared to 9,000-10,000/kg).
 - Sierad is now producing feed for local breeds of pig,³⁴ targeting the lower end of the market, where farmers do not necessarily have the money to buy improved piglets but still keep traditional pigs as part of their culture. The production of this feed is as a result of the lesson learned from PRISMA's intervention in Flores.
- More feed actors and its distribution channels:
 - The number of producers have increased from one to five, agents have increased from 13 to 21, and there are now 17 sub-agents where before there were none.
- Pig farmers have access to a credit system. So far around 85 farmers have received loans from credit unions and Bank NTT, to a total value of IDR1,195 million.
- PRISMA continued with the introduction of a technology and consulting service provider to assist with the capacity building of piglet breeder companies; so far, eight pig breeding companies and eleven individual small-scale breeders have adopted this service and invested heavily in its facilities with the aim of improving productivity and quality.

³⁴ It produces three types of feed products (Sierad Local Swine PG Starter for age 15-65 days (*Pakan Babi Kampung umur 15-65 hari*); Local Swine PG Grower for age 66-100 days (*Pakan Babi Kampung umur 66-100 hari*), and Local Swine PG Finisher for 101-harvest (*Pakan Babi Kampung umur 101-panen*). At 10 kg/sack, each sack costs IDR7,000/kg, compared to the improved (cross breed) standard brands, priced at around IDR9,000-10,000/kg.

- The project with CP and the pig breeding companies supported the implementation of nearly 335 active demo plots, and the production of learning materials to build the capacity of farmers throughout Flores Island.
- The intervention ended in May 2016; scale-up intervention will carry on where the previous intervention left off (in eight districts in Flores) and expand to Sumba Island (four districts). This intervention aims to benefit 18,500 farmers by 2018, provide an expected net attribution income (NET) annual income increase of 348% by 2018 (worth up to an estimated IDR 3,291,000 per year for those who apply improved feed products and GRPs), and work with five private feed companies, 30 feed agents/distributors, and 30 distributors in 12 districts (eight in Flores and four in Sumba) in NTT province.

Contribution of public programs

In NTT, the government provides financial program support via the Anggur Merah program (at provincial government level) and Perak (at district government level).

Annex 2. Portfolio Development Plan

Sub-Sector	Actual - cumulative				Actual - semester			Projection					
	New & existing interventions (cumulative)				Portfolio development Y16S1 (new interventions)			Portfolio development Y16S2			Portfolio development Y17S1		
	Number of ICN - actual	Number of IP finalized- actual	Number of interventions with contract - actual	Targeting - final outreach (all farmers) 2018	ICN actual	IP actual	Interventions with contract Actual	ICN	IP	Interventions with contract	ICN actual	IP actual	Interventions with contract
Anggur Merah-NTT	1	1	2	539			1						
Beef-EJ	3	2	2	5906	1			2	3	3			
Beef-NTB	2	1	1	2460				1	1	1			
Beef-NTT	1	1	1	0		1	1	1	1	1			
Cashew-NTB	1	1	1	0				1	1	1			
Cashew-NTT	5	2	2	666	1	1	1						
Cassava-EJ	3	3	3	0		1	1				1	1	1
Cassava-NTT	2	1	1	0	1								
Cassava-PA	1	0	0	0									
Cocoa-PA	4	1	1	320									
Coconut-EJ	1	1	1	809				2	1	1	1	2	2
Coconut-NTB	1	1	1	493									
Coconut-NTT	4	1	1	5971									
Coffee-EJ	2	2	0	0							1		
Coffee-NTT	2	2	2	10285				1				1	
Extension Services-EJ	1	1	1	0			1					2	1
Extension Services-NTB	1	1	1	0			1						
Extension Services-NTT				0							1	1	1
Feed-NTT	1	1	0	0	1	1			1	1			
Fish-EJ	2	2	2	0									
ICT-EJ	2	1	0	0	2	1			1	2			
Irrigation-EJ	1	1	1	0									
Maize-EJ	3	3	2	8635	2	2	1			2			
Maize-NTB	1	1	1	0									
Maize-NTT	5	4	4	23592				2	2	2			
Mango-EJ	4	3	1	16530	2	2				2			
Mango-NTB	3	3	1	3056	2	2				2			
Mungbean-EJ	3	2	2	0		1	2						
Nutmeg-P	1	0	0	0									
Peanut-EJ	3	1	1	101					1	1			
Peanut-NTT	3	1	1	10206						1			
Pig-NTT	3	2	2	0	1	1	1	1	1	1			
Seaweed-NTT	1	1	1	0				1	1				1
Shallots-EJ	2	2	1	181	1	1				1			
Shallots-NTB	1	1	1	1547				1	1				1
Soybean-EJ	6	5	4	25020	1	1		1	1	2	1	1	1
Soybean-NTB	1	1	1	7050									
Tomato-EJ	1	0	0	0									
Vanilla-PA	1	0	0	0									
Vegetable-EJ	0	0	0	0				1	1				1
Vegetable-NTT	1	1	0	0		1				1			
Vegetable-P				0				1	1	1	1	1	1
Vegetable-WP	2	2	2	0		1	2	1	1	1	1	1	1
Total	86	60	49	123.368	15	17	12	17	18	26	7	10	11

Annex 3. Projections until July 2016

Sub-sector	Number of intervention	Projection 2016 S2 (Jul-Dec 2016)						Projection 2017 S1 (Jan-Jun 2017)					
		Semester access (all farmer) Dec-16	Semester use (all farmer) Dec-16	Semester outreach (all farmer) Dec-16	Semester income (all farmer) Dec-16	Semester outreach (< \$2 PPP) Dec-16	Semester income (< \$2 PPP) Dec-16	Semester access (all farmer) Jun-17	Semester use (all farmer) Jun-17	Semester outreach (all farmer) Jun-17	Semester income (all farmer) Jun-17	Semester outreach (< \$2 PPP) Jun-17	Semester income (< \$2 PPP) Jun-17
Anggur Merah-NTT	2	3.385	1.500	-	1.094.100.000	-	798.693.000	990	-	-	-	-	-
Beef-EJ	2	7.010	3.162	1.897	5.674.262.040	654	1.866.118.970	-	-	-	-	-	-
Beef-NTB	1	3.300	1.089	381	1.454.468.400	152	581.787.360	-	-	-	-	-	-
Beef-NTT	1	1.125	25	-	15.608.250	-	9.321.401	1.680	540	-	-	-	-
Cashew-NTB	1	-	-	-	-	-	-	-	-	-	-	-	-
Cashew-NTT	2	1.440	432	-	-	-	-	750	440	176	254.905.728	118	170.786.838
Cassava-EJ	3	-	-	-	847.537.500	-	341.557.613	-	-	-	-	-	-
Cassava-NTT	1	-	-	-	-	-	-	-	-	-	-	-	-
Chili-EJ	0	-	-	-	-	-	-	-	-	-	-	-	-
Cocoa-PA	1	-	-	-	-	-	-	1.000	400	-	-	-	-
Coconut-EJ	1	-	-	-	812.592.000	-	357.540.480	-	-	-	923.400.000	-	406.296.000
Coconut-NTB	1	5.000	80	-	-	-	-	-	800	45	23.520.000	18	9.408.000
Coconut-NTT	1	743	-	-	-	-	-	-	632	480	364.800.000	192	145.920.000
Coffee-EJ	0	-	-	-	-	-	-	-	-	-	-	-	-
Coffee-NTT	2	6.080	3.786	3.263	11.593.882.812	1.632	5.796.941.406	-	-	-	-	-	-
Extension services-EJ	1	8.100	1.944	-	3.975.985.440	-	1.590.394.176	16.000	3.840	-	-	-	-
Extension services-NTB	1	8.358	-	-	-	-	-	-	5.851	-	-	-	-
Fish-EJ	2	-	-	-	-	-	-	-	-	-	-	-	-
Irrigation-EJ	1	-	-	-	-	-	-	-	-	-	-	-	-
Maize-EJ	2	7.920	2.614	1.624	3.389.245.515	698	2.292.713.171	12.900	-	-	-	-	-
Maize-NTB	1	-	-	-	-	-	-	-	-	-	-	-	-
Maize-NTT	4	19.340	7.304	7.680	3.964.042.313	5.453	2.814.009.521	6.550	-	-	-	-	-
Mango-EJ	1	6.750	6.710	2.698	29.420.473.000	545	5.942.935.546	-	-	-	-	-	-
Mango-NTB	1	2.183	746	803	5.867.594.250	249	1.818.954.218	-	-	-	-	-	-
Mungbean-EJ	2	-	-	-	-	-	-	3.700	2.000	-	-	-	-
Peanut-EJ	1	-	-	-	-	-	-	-	-	-	-	-	-
Peanut-NTT	1	9.450	2.700	2.430	1.604.529.000	1.791	1.182.537.873	4.320	-	-	-	-	-
Pig-NTT	2	1.050	1.053	-	8.570.760.363	-	6.256.655.065	1.350	-	-	8.570.760.363	-	6.256.655.065
Seaweed-NTT	1	-	-	-	-	-	-	-	-	-	-	-	-
Shallots-EJ	1	670	201	181	1.776.057.537	101	1.040.261.110	-	-	-	-	-	-
Shallots-NTB	1	750	13	12	592.403.058	5	248.809.285	-	-	-	-	-	-
Soybean-EJ	4	4.005	3.060	2.801	1.057.489.200	850	309.334.932	-	-	-	-	-	-
Soybean-NTB	1	2.220	1.728	1.382	639.705.600	635	293.624.870	-	-	-	-	-	-
Vegetable-NTT	0	-	-	-	-	-	-	-	-	-	-	-	-
Vegetable-WP	2	255	163	-	1.529.102.400	-	1.162.117.824	128	82	-	-	-	-
Grand total	49	99.134	38.310	25.152	83.879.838.678	12.765	34.704.307.821	49.368	14.585	701	10.137.386.091	327	6.989.065.903

Annex 4. Private Sector Partner Details

PRISMA Partner Details

Partners' Details		
Shallots NTB	Intervention	Promoting Quality Planting Materials
	Partners	PT East West Seed Indonesia (EWINDO)
	Description	In order to promote higher quality planting materials in NTB, PRISMA has been working with EWINDO to promote the use of true shallot seed and to develop a market for TSS derivative products such as the Improved Bulbs and Branded Seedlings. The True Shallot Seed, Bulb and Seedling can help farmers to get better yields than the low quality retained Bulb.
	Partners' Rationale	The success of the previous program establishing nurseries using the EWINDO seeds can be strengthened and up-scaled to benefit more male and female small-holder farmers in NTB, and it give more and better options for the farmers. The incentives for EWINDO are, among others, increased market share for seeds in a sustainable way, increased brand awareness (especially in NTB's shallot-producing areas of Bima and Lombok) and the potential to expand to other eastern districts.
	Partnership Roles	<p>PRISMA's roles in this intervention are:</p> <ol style="list-style-type: none"> 1. Nursery development Newly-established and existing nurseries will buy EWINDO-supplied seed to produce higher quality planting bulbs and seedlings sell them to shallot farmers, either directly or through traders. The incentives for nurseries include improved skills and knowledge, and the assurance and certainty of income. These will increase sales of EWINDO's true shallot seed (TSS), as well as the sale of TSS through input retailers. Ewindo expect through the Nurseries, more farmers will learn how to grow shallots from TSS. 2. Promote Improved bulbs and Seedlings to traders and retailers. Demonstrate the profitability of the business to traders and retailers, to encourage them to buy better quality planting bulbs and seedlings then sell them to shallot farmers. Work has already started on this: <ol style="list-style-type: none"> b. PRISMA supports studies to identify key areas in which to work to develop certified G0 bulbs. c. It has selected certain traders and linked them with EWINDO and the nurseries. EWINDO collaborates with these traders and retailers on branding and promotion, which will help increase sales. d. Traders are incentivised by the potential of increased income to be obtained by selling improved quality planting bulbs and seedlings at a higher price, creating a price differentiation for good quality planting materials. 3. Develop a partnership model.) Support EWINDO to find a system which works with its distribution channel to sell the planting bulb and seedlings obtained from the company's seed. This could be a franchise model, a trader system, a nursery model or a model otherwise appropriate to the needs of EWINDO.

		<ul style="list-style-type: none">) Support EWINDO to develop a branded bulb and a branded seedling franchise, trader system, and/or another partnership scheme, by providing consultants a) on post-harvest handling, and b) to carry out a trader study to find potential traders.
Mango EJ	Intervention	Promoting early flowering
	Partners	PT Syngenta Indonesia
	Description	Syngenta is an internationally renowned agricultural company that produces and promotes seeds, crop protection products and inclusive agricultural solutions in many countries.
	Partners' Rationale	The early flowering technology for mango requires a combination of chemicals: <i>Paclobutrazol</i> , <i>Amistartop</i> , and <i>Actara</i> . Syngenta is the sole supplier of <i>Amistartop</i> and <i>Actara</i> in Indonesia under patent. <i>Amistartop</i> is widely available, as it is used in rice production. <i>Actara</i> is used to control insects in mango crops and improve fruit quality. Although <i>Paclobutrazol</i> is available from many suppliers, Syngenta was the original patent owner and its product is proven to give the best result.
	Partnership Roles	<ul style="list-style-type: none">) Even though these products have been available in the marketplace, the combination had not been piloted in Indonesia. Syngenta took on a significant financial risk getting into this market. PRISMA supported Syngenta in piloting their products, primarily through supporting the collectors who tested the combination of chemicals in small-scale trials to see which combinations worked best. Now that the products and the business model are proven, PRISMA will support Syngenta to expand its distribution and promotion.
Shallot EJ	Intervention	Promoting solar-cell pest trap technology (planned)
	Partner	PT Solusi Bioteknologi Indonesia (Solbi)
	Description	Solbi is a business unit of the SoeGee Group which aims to be a leader in innovative solutions in organic agriculture and as a biotechnology provider. In line with their vision, Solbi is willing to promote pest control technologies to shallot farmers.
	Partners' Rationale	Solbi is willing to invest in the production of pest lamps and provide technical assistance in the form of embedded services, including lamp maintenance, through commercial distribution channels and farmer groups.
	Partnership Roles	<p>PRISMA's roles in this intervention are:</p> <ul style="list-style-type: none">) Short assessment for selection of distribution channels) Support in developing an effective business plan <p>Development of a module for distribution channel training.</p>
Soybean EJ	Intervention 1	Promoting commercially certified seed
	Partners	Mr. Sugito (UD Karya Tani)

Description	Mr Sugito currently runs a nursery business and has certificate from BLPP. He currently has 260 ha with 1,000 nursery farmers supplying seeds that he sells to government agencies and also to farmers.
Partners' Rationale	He would like to expand his nursery business to 1,000 ha with 4,000 contract nursery farmers because demand remains high. Farmers on a 0.25 ha farm can only obtain 2kg of subsidized seed compared to the 10 kg needed. Hence, there is a substantial demand for soybean seed in the commercial market. Mr. Sugito will work with farmers currently working on rice nursery cultivation. These farmers will be his marketing and distribution channels.
Partnership Roles	PRISMA will help Mr. Sugito with the marketing of non-subsidized soybeans seeds in the commercial market. PRISMA will also help create distribution channels for Mr. Sugito by identifying the ISP (nursery contract farmers) and/or seed retailers and also prepare marketing tools for the ISPs.
Intervention 2	Improve certification procedures for soybean seed
Partners	East Java Local Government Agencies
Description	The local government of East Java has a mandate to provide certified soybean seed. Several institutions are involved, such as BBI (a provincial government nursery) producing foundation seed, Balitkabi (a national agency) that produces breeder seed/ basic seeds, BPSB (a provincial agency) that issues certification, BPPP (a national agency) that trains farmers in nursery skills. The certification process needs to improve to increase efficiency and reduce waiting periods.
Partners' Rationale	Due to the lack of nursery facilities in Sampang, the Sampang Department of Agriculture (<i>Dinas Pertanian</i>) has taken the lead to establish new nurseries. The target is 6-22 nurseries, depending on the season.
Partnership Roles	PRISMA will help facilitate the Sampang Department of Agriculture to coordinate the relevant agencies and develop capacity for PPL (extension).
Intervention 3	Improve dissemination of new soybean varieties
Partners	BATAN and PT East West Indonesia (EWINDO)
Descriptions	BATAN as a government R & D agency has mandate to produce and disseminate new soybean varieties. But with limited resources and budget, only small number of farmers in Indonesia has knowledge and use new soybean varieties that can produce high yield.
Partners' rationale	There is no private sector involvement in dissemination of commercial and labelled soybean seed and government R & D has limited capacity in dissemination and production of new soybean seed varieties. BATAN has capacity to produce new and high yield soybean seed and EWINDO has capacity and network to produce/multiply new soybean seed and promote it to farmers.
Partners Roles	PRISMA's role is to identify existing and potential new soybean varieties and potential private sector partner for dissemination of new soybean varieties. PRISMA will work with BATAN in providing support to EWINDO with experts in production, promotion and storage of soybean seed.

	Intervention 4	Increase productivity by promoting GAP information through soy doctor
	Partners	PT. BASF Indonesia
	Descriptions	PT. BASF INDONESIA is a chemical company with broad portfolio including crop protection. The portfolio also includes products for turf and ornamental plants, pest control and public health. PT. BASF INDONESIA Crop Protection division is a leading innovator in partnership with farmers to protect and improve crop yields, enabling them to produce high quality food more efficiency.
	Partners' rationale	Partner saw potential market in soybean and has soybean pilot program in Banyuwangi in 2014. From these pilot, farmers are able to increase income until 45%. Meanwhile, partner has a program called MTA (Mitra Tani Agri-Aexcellent) for other crops to reach farmers through cooperation with lead farmers or head of group farmers. Partner aims to reach as much farmer as possible with minimum operational spending. MTA program did not work well due to lack of planning and management.
	Partners Roles	PRISMA support Partner to improve their program and introduce new name called "soy doctor". PRISMA support for soy doctor improvement include: <ol style="list-style-type: none"> 1. Support partner in developing better program management including soy doctor selection criteria, proper incentive and reward scheme, training plan, and monitoring plan 2. Support capacity building for soy doctor to be able to deliver GAP information to their peer farmers Support partner to identify location for intervention where there is significant number of user
Anggur Merah	Intervention 1	Synergy of Anggur Merah Program & PRISMA for Beef Sector NTT - Effective Use of Lamtoro as a Premium Forage for Cattle Fattening
	Partner	Public partner: Provincial Government of NTT through the Secretariat of Program Anggur Merah (AM). A letter of acknowledgement has been prepared by the Prov. Govt for this partnership. Private partner: PUSKUD (the partner of Sub-Sector Beef NTT, where this AM Intervention will join the partnership
	Description	This intervention will take advantage of existing AM Program being implemented by the NTT Govt. The AM program provides stimulant grants to a village that majority uses the grants for financing community's cattle fattening. Common problems faced by cattle farmers are low productivity due to feed scarcity and low skills on managing cattle fattening, which impact on low income earned by cattle farmers.
	Partners' Rationale	Prov. Govt. of NTT: to provide stimulant grants (AM funds) to each receiver village (including the location of this intervention); to hire village facilitators (PKM) who supervise the AM activities in each target villages (including the village targeted by this intervention); to establish and monitor the cooperatives at villages level (including those in the targeted villages of this intervention). PUSKUD: to do feed test; to produce and sell processed feeds through AM cooperatives; to sell input (chemical) through AM cooperatives for producing cattle feeds using local forages; to support in increasing the capacity of AM cooperatives in order to act as the ISP and a business entity.

	PRISMA's Roles	PRISMA: to support PUSKUD to provide technical assistance and capacity building to AM cooperatives; to link AM cooperatives to other market actors for cattle fattening business
	Intervention 2	Synergy of Anggur Merah Program & PRISMA for Pig Sector NTT – Support the Development and Promotion of Quality Feed Supply in NTT
	Partner	SIERAD Produce (the partner of Sub-Sector Pig NTT, where this AM intervention will join the partnership between HIVOS as co-facilitator PRISMA
	Description	This intervention will take advantage of existing AM Program being implemented by the NTT Govt. The AM program provides stimulant grants to a village that majority uses the grants for financing community's cattle fattening and pig fattening. Common problems faced by pig farmers are access information of better quality feed and lack of good feeding practice which have influenced low productivity and longer pig fattening period which have impacted on low income earned by pig farmers.
	Partner's rationale	Prov. Govt. of NTT: to provide stimulant grants (AM funds) to each receiver village (including the location of this intervention); to hire village facilitators (PKM) who supervise the AM activities in each target villages (including the village targeted by this intervention); to establish and monitor the cooperatives at villages level (including those in the targeted villages of this intervention). SIERAD: to sell pig feed through Input shops and provides technical services through agronomist related with good feeding practice; to distribute promotion tools to farmers to increase access of information related with feed product knowledge and good feeding practice; to support in increasing capacity of AM cooperatives in order to act as the ISP and a business entity
	PRISMA roles	PRISMA: to support SIERAD (including ISP – input shops) to provide technical assistance and capacity building to AM cooperatives; to link AM cooperatives to other market actors for pig fattening business; Expand target market area for SIERAD product
Vegetable West Papua	Intervention 1	Increase Productivity through Promoting the Provision of Knowledge and the Use of Good Quality Seed
	Partners	UD Konco Tani & Yayasan Bina Tani Sejahtera (YBTS)
	Description	Konco Tani established 2011 (based on trade license/SIUP). Konco Tani started its business by supplying fertilizer and chemicals to farmers. Then, Konco Tani expands to the seed supply business. Since 2014, Konco Tani formally appointed as dealer of Panah Merah seed to cover West Papua market. Panah Merah is brand of Ewindo – one of the biggest vegetable seed producer-. Bina Tani Sejahtera Foundation established 2009 (based on establishment statute) is length-arm of PT Ewindo who produces and supplies vegetable seeds. Bina Tani aims to advance farmer's prosperity by providing extension, advisory and training services to farmers. Bina Tani also acts a development agency towards markets in introducing and training of better vegetable cultivation and good agriculture practices to farmers before Ewindo enters to the market commercially.

	Partners' Rationale	Konco Tani would like to boost their business mainly towards in Oransbari. In addition to that, they would also like to introduce independent extension service in accompanying agro-inputs sales to farmers. This is kind of new initiative from them in order to reach out more farmers as well as to increase their sales.
		Bina Tani Sejahtera Foundation has capacity to undertake the tasks since Bina Tani has been doing similar activities/interventions with several international organizations.
	Partnership Roles	The role of partnership is to accelerate the provision good quality seed and its application at farmer level. Konco Tani is providing extension service through employing extension worker (EW). Meanwhile, YBTS provides support in the form of training modules development and delivery training on those modules basis to EW, seed retailers and farmers. Konco Tani sell good quality seeds through its retailers. Retailers in selling the seed are expected to embed with information which is related to the farmer's needs. EW delivers extension services to farmers through demoplot activities, visit and farmer group meeting. In order to help EW's work, YBTS equips EW with sufficient knowledge and management of extension service. In general, PRISMA's role as supporter and facilitator, among others are to support Konco Tani and EW in planning Demoplot activities, provide support in conducting trainings and provide promotion tools for Konco Tani.
Extension Services	Intervention 1	Pest and Disease Identification through Smartphone Application (NTB) 2ESA
	Partner 1	PT. 8Villages Indonesia
	Description	8Villages was founded in 2011 with the intent to change the way information flows from private and public sectors to rural populations. Today, 8Villages combines experienced marketers, agronomists as well as software and telecommunications engineers.
	Partners' Rationale	A starting point for further collaboration with Government's Agricultural Extension Department. In the future 8Villages want to collaborate with ministry of agriculture, they will show that they have good Application for farmers. Moreover 8Villages would like to Market intelligence and Brand exposure from this intervention. Gaining new extension service workers (and potentially lead farmers) customers in NTB.
	Partnership Roles	8Villages create smartphone application for identification pest and disease, conduct training of trainer for extension worker, follow up extension worker and monitoring app usage from server.
	Partner 2	Government's Agricultural Extension Department (BP4K)
	Description	BP4K is a Government's Agricultural Extension Department that conduct Extension of Agriculture, Fisheries and Forestry Effective. BP4K coordination with extension worker in level Sub district. We collaborate with BP4K in 3 district level (Lombok Timur, Sumbawa, and Bima).
	Partners' Rationale	This intervention match with Government's Agricultural Extension Department strategic plan. With this intervention BP4K have the new methodology for extension services and will increase in the level of technological innovation to extension workers.

	Partnership Roles	BP4K will identify and appoint personals to attend the training of trainer ‘Dokter Tanaman’ application, BP4K conduct training for broader extension workers (level sub district) in pest and disease identification through the ‘dokter tanaman’ application. Coordination and monitoring activities at the sub district level interventions.
	Intervention 2	Crop Protection Call Center (EJ) 1ESA
	Partner	PT. BASF Indonesia
	Description	PT. BASF INDONESIA is a chemical company with broad portfolio including crop protection. The portfolio also includes products for turf and ornamental plants, pest control and public health. PT. BASF INDONESIA Crop Protection division is a leading innovator in partnership with farmers to protect and improve crop yields, enabling them to produce high quality food more efficiency.
	Partners’ Rationale	BASF has an existing call-center to engage their lead farmers and also provide product consultation to their customers. They can expand their market share through educating farmers on proper crop-protection. PRISMA and BASF will collaborate to promote the Call center for farmers and be expected farmers will call the call center to crop consultation and BASF will Provide Crops’ Pest & Disease Consultation so they can promote their products by phone and ensure that their products are available in the intervention areas.
	Partnership Roles	BASF will be contact center / call center capacity building, promotion of the pest and disease consultation call center, Ensure the availability of the Partner products that are recommended by the call center in the retail shop near the farmer. To direct agronomist or BC (Business Consultant) to follow up escalation cases by visiting the farmer’s field. To ensure the pest and disease consultation call center provides a relevant and good quality information so that it can be a trustworthy information source for farmers.
Maize EJ	Intervention	Promoting hybrid seeds
	Partner 1	PT Asian Hybrid Seed Technologies Indonesia (PT AHSTI)
	Description	PT AHSTI has developed seed stock for dry conditions and piloted cultivation in Gunung Kidul, Yogyakarta. The company is experienced in selling hybrid seed in Sumatra and Sulawesi.
	Partners’ Rationale	The company wants to expand their seed market beyond mainland Java island to neighbouring Madura island. To realize this vision, they are willing to invest in demonstration plots and good agricultural practices (GAP) capacity building for maize farmers in Madura.
	Partnership Roles	PRISMA supports PT AHSTI develop distribution channels (sales agents/retailers) in Madura and promote and distribute their seeds among target groups.
	Partnership Roles	PRISMA supports PT AHSTI develop distribution channels (sales agents/retailers) in Madura and promote and distribute their seeds among target groups.

	Partner 2	Dinas Pertanian Tanaman Pangan Kabupaten Sumenep (District Agriculture Office/DAGRIO) of Sumenep
	Description	DAGRIO is one of Sumenep District Government Agencies that have authority to plan, implement and evaluate any activities to increase agriculture production and productivity. The agency is operating based on Regional Regulation Number 16/2008 on the Establishment of Regional Agencies Organization. DAGRIO is an implementing unit of regional autonomy in the area of agriculture and staple crops within the territory of Sumenep District. The agency is led by a Head of Agency which is selected, work and responsible to Head of District (Bupati). Basically, the Head of DAGRIO receives mandate from Bupati to implement District Government's authority in the field of agriculture and staple crops through planning, implementation and evaluation activities.
	Partners' Rationale	The company has responsibility to support national government in achieving agriculture commodities production and productivity targets, including maize. However, the role of DAGRIO in poverty reduction is limited and they are willing to improve their hybrid maize promotion approach to better serve the poor farmers while strengthening hybrid maize system in Madura. On the other hand the DAGRIO also has a vision to increase the percentage of maize farmers who using the hybrid seed to 60% at least that can leverage the local economic development.
	Partnership Roles	PRISMA support DAGRIO to improve coordination with private sector to avoid negative impact of annual hybrid maize subsidy to the existing hybrid maize market system in Madura, particularly in Sumenep as well as conducting massive social media campaign to change the mindset of the farmers
Maize NTT	Intervention	Promoting composite seeds
	Partner 1	CV INTAN
	Description	CV INTAN has produced composite seed and stock for dry conditions and piloted cultivation in Kupang District, West Timor-NTT. Since 2008, CV INTAN had engaged in paddy and maize seed. Seed producing effort is made to meet the demand of local government. Since 2013, began to expand its business through the free market. Composite maize seed varieties produced are LAMURU purple and blue label.
	Partners' Rationale	The company wants to expand their seed market around NTT province. To realize this vision, they are willing to invest in promotion include demonstration plots and good agricultural practices (GAP) capacity building for maize growers in Timor island.
	Partnership Roles	PRISMA supports CV INTAN in production of composite seed and develop sales and distribution channels (sales agents/retailers) in TTS and Kupang District and promote and distribute their seeds among target groups.
	Partner 2	Kokdale
	Description	Kokdale has produced composite seed and stock for dry conditions and piloted cultivation in Kupang District, West Timor-NTT. Since 2005, Kokdale has engaged in paddy and maize seed. Seed producing effort is made to meet the demand of

		local government. Since 2014, began to expand its business through the free market. Composite maize seed varieties produced are LAMURU Purple and Blue label.
	Partners' Rationale	The company wants to expand their seed market around NTT province. To realize this vision, they are willing to invest in promotion include demonstration plots and good agricultural practices (GAP) capacity building for maize growers in Timor island.
	Partnership Roles	PRISMA supports Kokdale in production of composite seed and develop sales and distribution channels (sales agents/retailers) in TTS and Kupang District and promote and distribute their seeds among target groups.
	Partner 3	CV Tiga Putri Mandiri
	Description	CV Tiga Putri Mandiri has produced composite seed and stock for dry conditions and piloted cultivation in Kupang District, West Timor-NTT. Since 2005, CV Tiga Putri Mandiri had engaged in paddy and maize seed. Seed producing effort is made to meet the demand of local government. Start on 2015, began to expand its business through the free market. Composite maize seed varieties produced are LAMURU Purple and Blue label.
	Partners' Rationale	The company wants to expand their seed market around NTT province. To realize this vision, they are willing to invest in promotion include demonstration plots and good agricultural practices (GAP) capacity building for maize growers in Timor island.
	Partnership Roles	PRISMA supports CV Tiga Putri Mandiri in production of composite seed and develop sales and distribution channels (sales agents/retailers) in Belu and Malaka District and promote and distribute their seeds among target groups.
	Partner 4	Yayasan Mitra Tani Mandiri (YMTM)
	Description	Yayasan Mitra Tani Mandiri (The Foundation for Partnership with Independent Farmers) was found in 1997 with the aims to help communities to expand its local capacity for economic development by increasing competitiveness, farm productivity and providing alternative source of households' income on sustainable agricultural systems. It has two main activities: 1) project development/ implementer for donors or as co-facilitators, 2) business unit/partner for the intervention or market actor include service provider;
	Partners' Rationale	The business unit of YMTM wants to develop their seed market around NTT province. To realize this vision, they are willing to invest in production and promotion include demonstration plots and good agricultural practices (GAP) capacity building.
	Partnership Roles	PRISMA will support YMTM business unit to produce and distribute quality maize seeds in the region and also conduct promotional activities for the farmers so that the farmers get proper knowledge on maize cultivation. For seed production, YMTM depends on a number of seed growers who produces maize as well in addition to seed production using their retained OPV seeds. YMTM engages a number of seed distributors and retailers for distributing the seeds in those areas and utilize farmer groups for dissemination.
Mungbean EJ	Intervention 1	Production and Distribution of Certified Mung Bean Seeds

	Partner 1	PT. East West Seed Indonesia (EWINDO)
	Description	PT. EWINDO is an integrated vegetable seed company in Indonesia which produces its seeds through plant breeding, and market its products for Indonesian farmers with the brand CAP PANAHA MERAH, since more than two decades ago. PT. EWINDO is a
	Partners' Rationale	PT. EWINDO is highly interested to venture out their business to mung bean seed production and distribution. Their mission to provide better seeds for smallholder farmers and increase their income, is in line with PRISMA's goals. PT. EWINDO also has a well-established distribution channel in Indonesia, which will aid PRISMA in reaching thousands of mung bean farmers, particularly in Eastern Indonesia.
	Partnership Roles	PRISMA will support PT. EWINDO in conducting a market research in order to identify customer segmentation, area focus, and varieties to produce. PRISMA will also facilitate PT. EWINDO in meeting seed resource institutions, such as BALITKABI and BATAN, to obtain the rights to distribute the foundation seeds.
Beef EJ	Intervention 1	Promoting concentrated feed for cattle fattening
	Partner 1	Community Business Centre (Pusat Kegiatan Masyarakat)
	Description	Holcim is one of the largest international cement producers in the world and has a plant in Tuban district. As part of its commitment to CSR, Holcim along with local leaders founded a local People's Activity Centre (<i>Pusat Kegiatan Masyarakat - PKM</i>). Holcim invests in community economic development through the PKM. One of its programs supports a cooperative of producers of concentrated feed for cattle farming.
	Partners' Rationale	In order to develop the CSR program in the community, especially with cattle farmers, the PKM is willing to provide benefits to the farmers through the development of concentrated feed. In addition to supporting production, the program supports the selling of the concentrated feed, which should enable it to be sustainable in future.
	Partnership Roles	PRISMA brings a commercial orientation and a focus on sustainability to the established CSR program. The program has a built-in component and can benefit a larger population beyond the current operational area. PRISMA will support the development of a business model to promote and distribute the concentrated feed product to more farmer groups through establishing distribution channels (agents/ lead farmers/ retailers).
	Intervention 2	Promoting supplementary feed (crop residues) for cattle fattening
	Partner 1	UD Pangestune Utama or Wahyu Utama
	Description	UD Pangestune Utama or Wahyu Utama, is a Feedlotter, established in 2003 in Tuban, running business on cattle breeding, fattening, live cattle trading, and beef marketing. The company also produces and sells feed for cattle fattening (concentrate,

		crop residues, and molasses). However, the company only serves a limited number of farmers who are doing cattle fattening under a contract farming relationship model.
	Partners' Rationale	In order to expand the model and serving to a larger farmers outside current contract farming model, the Wahyu Utama is willing to provide benefits to the farmers through promoting the supplementary feed (crop residues) through development of demo plots and involving the retailers into the system to develop distribution channels.
	Partnership Roles	Prisma will support the company in: <ul style="list-style-type: none">) Mapping out local sourced feedstuffs/fodders to make a cheaper cattle feed composition • Development of cattle feed composition formula using local sourced feedstuffs/fodders • Demo plots development model at selected Lead Farmers to promote crop residues usage for cattle fattening • Bring retailers into the system so that farmers have better access: • Looking for a wide and larger cattle feed market - serving and benefiting larger cattle farmers' population beyond its current market. • Development of a hard evidence based market promotion - using the success story business of demplots that shows commercial benefit of using appropriate feed to farmers in order to change their mindset and behaviors towards such investments.
Beef NTT	Intervention	Promoting Lamtoro as a premium forage for cattle fattening
	Partner	PUSKUD
	Description	<p>A study of the feed sector done by PRISMA and PUSKUD in July – October 2015 concluded that <i>Leucaena leucocephala</i> (Lamtoro) is a 'key' forage that is available all year round that can help farmers achieve an optimum Average Daily Gain (ADG) of cattle. Lamtoro has been proven to increase growth rate of Bali cattle under prevailing feeding management from 100-200 gram/day to 400-600 gram/day. However, this study also found that farmers do not widely use Lamtoro for cattle feed and they plant Lamtoro haphazardly in their farm so it is not easy to calculate forage production and the feeding capacity of each plot for their cattle.</p> <p>In addition, it was observed that farmers did not have sufficient Lamtoro to supply to their cattle in the dry season. Consequently, it is predicted that farmers only offered one-half to two-third of the recommended Lamtoro requirement per day. Therefore, the optimum ADG is not achieved. Even worse, the farmers suffer from loss of their cattle weight in the dry season. Farmers also have poor knowledge and skills on good rearing practices, good feeding practices, and animal health control practices. These further exacerbate the low ADG of cattle.</p> <p>To address these problems, we plan to expand farmers' Lamtoro production and increase their knowledge and skills on Lamtoro cultivation (including seeds/seedlings selection, planting arrangement, cutting techniques, maintenance). Many</p>

		farmers have idle land to expand Lamtoro plantation. Through the activities in this intervention, PRISMA will support PUSKUD to increase the awareness, knowledge, and skills of farmers through training on Good Agriculture Practices of Lamtoro cultivation, Good Cattle Feeding Management and Practices, Good Rearing Practices as well as Good Cattle Health Control Practices.
	Partners' Rationale	<ul style="list-style-type: none"> • PUSKUD is one of the key and big player of cattle fattening in NTT • There are 45 Livestock Cooperatives under PUSKUD (consists of 139 farmer groups), with member around 9000 farmers • Experienced > 30 years in cattle fattening and sustain in their business ventures • Responsive and progressive to adopt innovations • Willing to share cost for intervention and invest to expand their business • Willing to invest to improve capacity of its staff <p>Have resources: 1 veterinary, 20 field staff.</p>
	Partnership Roles	PRISMA provides an expert to support PUSKUD in the capacity building (PUSKUD level, Nursery level, farmer level), demo plot design, study demand of Lamtoro, promotional & education tools, and facilitation for conduct event (training, launching, visit study)
Feed NTT	Intervention	Providing Affordable Feed & New Market for Agricultural Products
	Partners	PT Garda Wahana Perkasa
	Description	PT Garda is a bio fertilizer and probiotics producer based in Surabaya East Java. The bio fertilizer and probiotics have been produced by PT Garda since 2007. The main buyer of their fertilizer of PT Garda is a plantation companies mainly in Sumatera and Lampung. They also involves in government programs. Since 2014, they are starting to expand their market to eastern part of Indonesia such as Bali and NTT (Timor island) to Timor Leste, they also have started a pig fattening business in Bali. As for the probiotics, the main buyer is feedlots in East Java and Bali.
	Partners' Rationale	PT Garda Wahana Perkasa is now expanding their market in eastern part of Indonesia. The company commits to: <ul style="list-style-type: none">) Invest on establishment of distribution channel in Sumba Timur that does not exist before the intervention.) Invest in machineries for animal feed production.) Provide knowledge on good rearing practices (GRP) on livestock farming to farmers through distribution channels and demo farms.) Provide good agricultural practices (GAP) knowledge on crop cultivation to farmers through their supplier channels and demo plots.
	Partnership Roles	PRISMA supports PT Garda Wahana Perkasa to: <ul style="list-style-type: none">) Facilitate agreement between PT Garda Wahana Perkasa with Local government of Sumba Timur on the usage of idle asset (building) for feed mill.) Access to farmer's land for field test.

-) Provide consultant to monitor the progress of field test.
-) Cost-sharing in the following activities:
 - a. Capacity building of the suppliers, distributors and farmers
-) Promotional activities to help promote feed product.

Co-facilitators 1 – Partner Details

Partners' Details		
Cashew	Intervention 1	Development of pest control and good agriculture practices (GAP) services for cashew farmers in Bima and Dompu
	Partner	PT Gerbang NTB Emas (PT GNE)
	Description	PT GNE is a state-owned enterprise (SOE) of the West Nusa Tenggara (NTB) provincial government. The company was established on 5 April 2007 and has several business units, including construction and agriculture equipment production. The company's goal is to generate profit for the local government. As an SOE, PT GNE also has a mandate to support the economic potential of the local area and increase social welfare through productive activities.
	Partners' Rationale	PT GNE wishes to increase their business income and is planning to re-establish the currently idle agro-business unit. The unit will provide technical assistance and mentoring to service providers at PT GNE's own cost. PT. GNE will also develop partnerships with input producers and suppliers and will become their main distributor in NTB.
	Partnership Possibilities	PT GNE has a mandate to support the development of local economic potential in NTB. The cashew sector in Bima and Dompu is the target area for their products and services. PRISMA will help PT GNE develop the agro-business unit, mainly in business planning and marketing.
Seaweed	Intervention	Development of a seaweed support centre and seaweed agents in the eastern Flores Islands
	Partner 1	CV EVADIAN (IMTA MUZE Indonesia)
	Description	CV EVADIAN was established by Iain C. Neish (PhD), an international seaweed expert involved in supplying dried seaweed to export and domestic markets. The company is based in South Sulawesi.
	Partners' Rationale	CV EVADIAN is interested in establishing a Seaweed Support Centre (SSC) to work in two districts of the eastern Flores Islands, with investment in warehousing, drying and packaging facilities.
	Partnership Possibilities	Through the SSC, CV EVADIAN will provide technical assistance in the form of good agriculture practice (GAP) development, post-harvest handling, marketing, logistics and market information. PRISMA will support networking in local communities, facilitation of capacity building for SSC staff and facilitate technical know-how and capacity building by SSC staff to seaweed farmers.
Partner 2	UD. ALGA	

	Description	UD. Alga was established by Kevin Suhaili as a seaweed trading company. UD. Alga based at Jl. Raya Ba'a Basalangga, West Rote-Rote Ndao, East Nusa Tenggara. It has seaweed cultivation area in Dodaek of Southern Rote. Since February 2015 UD. Alga has initiated to develop seaweed cultivation of variety "SAKOL" together with local community.
	Partners' Rationale	UD. ALGA is interested in establishing a Seaweed Support Centre (SSC) to work in two districts of the Kupang and Rote with investment in warehousing, drying and provide the training of Good Agriculture Practice (GAP) on Seaweed.
	Partnership Possibilities	Through the SSC, UD. ALGA will provide technical assistance in the form of good agriculture practice (GAP) development, post-harvest handling, marketing, logistics and market information. PRISMA will support networking in local communities, facilitation of capacity building for SSC staff and facilitate technical know-how and capacity building by SSC staff to seaweed farmers.
Fishery	Intervention 1	Developing fish cage farming (already closed)
	Partner	PT Trimitra Anugerah Segara (TAS) (formerly CV Berill Jaya Marine)
	Description	TAS is a <i>kerapu</i> (grouper) fish exporter based in Bali.
	Partners' Rationale	The business is rapidly expanding and faces constant demand.
	Partnership Possibilities	TAS will support kerapu production units to improve their productivity and product quality in return for access to an improved and consistent supply of fish. This will be achieved through developing apprenticeships and ToT programs, with the support of the project. TAS will support the apprenticeships and technical assistance providers. TAS will facilitate farmer group directly to export the fish to abroad markets and apply commission for this new role.
	Intervention 2	Developing innovative financial products for fish cage farming (already closed)
	Partner	Bank Pembangunan Daerah Jawa Timur (Bank Jatim)
	Description	Bank Jatim, established in 1961, is a local government-owned development bank with 40 branches throughout East Java and Jakarta.
	Partners' Rationale	Bank Jatim has a loan scheme focusing on the fisheries and agriculture sectors but the financial products are not specific to fish cage farming.
Partnership Possibilities	Bank Jatim will develop financial products and promote them to kerapu production units through the Kerapu Producers' Association. Bank Jatim will provide finance and also develop a training program to improve the financial literacy and management skills of the kerapu production units and the Kerapu Producers' Association.	
Coffee	Intervention 1	Development of ICCRI franchise
	Partner	ICCRI
	Description	ICCRI was founded on the 1st January 1911 and holds a national mandate to conduct research and development activities into coffee and cocoa as well as provide data and information to smallholders, private and estate companies, national and

	regional government agencies, associations and other stakeholders. The institution supports locations for on-farm Robusta coffee experiments. Since 2011, two of ICCRI's units have been awarded accreditation - its certification body and testing laboratory. ICCRI has a library with a vast collection of reference materials. The institute has 36 researchers comprising 12 PhD holders, seven Masters graduates and 17 Bachelors holders.
Partners' Rationale	ICCRI wishes to disseminate knowledge and skills but does not have the capacity to develop branches in many areas of Indonesia. ICCRI branches enable farmers and related stakeholders to better access ICCRI products and services.
Partnership Possibilities	ICCRI support can help increase the productivity and quality of coffee. PRISMA will help ICCRI expand their services through the franchise model in project locations.
Partner 2	Cooperatives
Description	Cooperatives is one of main player in coffee sector. Farmers who are in the cooperatives can get a better price as their product will be sold as certificate product, information, and access to finance.
Partners' Rationale	Each cooperatives has at least 100 to more than 1000 coffee's farmers member. All of the member of the cooperatives will send their product through cooperatives, getting finance access recommendation, and information sources.
Partnership Possibilities	Cooperatives seek to increase their quality of coffee with certificate, coffee supply from its coffee farmer's member, and their member number but doesn't have proper knowledge and management capacity yet. PRISMA will linkage them with Bank to increase their financial capacity and ICCRI to increase their knowledge capacity.
Intervention 2	Development of decentralized processing facilities for specialty coffee through cooperatives
Partner 1	PT Indokom Citra Persada (Indokom)
Description	Indokom is a coffee exporting company founded in 1996. The company has offices in Lampung province and Sidoarjo, East Java province. In 2012, the company exported 70,000 MT to markets in the European Union, Japan, the Middle East and the USA. Most sales are done under long-term contract with an average price of around USD 4,000 per MT. While for the spot market is only 10% of total volume.
Partners' Rationale	In order to increase turnover, the company aims to increase sales of specialty coffee and for that it needs a continuous supply of quality coffee from farmers and reliable management systems.
Partnership Possibilities	Indokom are concerned to improve the welfare of coffee farmers in Indonesia through providing technical assistance at post-harvest and in processing. PRISMA will help Indokom develop a cooperation model based on harvest cooperatives for processing coffee in pilot project areas.
Partner 2	Bank NTT

	Description	Bank NTT is a development regional bank based in NTT (Eastern Nusa Tenggara). It has been established since 17 July 1962 and become limited liability company on 22 April 1999 with current IDR 9.5 Trillion. Inspired by service spirit to the society, Bank NTT does not only serve in urban area but also spread across remote area in East Nusa Tenggara Province. Within this spirit, Bank NTT has existed in 22 Municipals/Cities in East Nusa Tenggara and Surabaya – East Java area.
	Partners' Rationale	Bank NTT has an organization target to improve regional business through access to finance in all over NTT areas.
	Partnership Possibilities	Bank NTT seeks to new credit areas in NTT but doesn't yet have proper understanding on the beneficiary capacity. PRISMA will linkage them with potential cooperatives who need to improve their financial capacity. The multi-stakeholder agreement will be used as one of the guarantee for the Bank to give finance.
Cassava	Intervention 1	Promoting rewarding system and GAP to increase the quantity and regularity of fresh cassava supply for starch processing
	Partner 1	Pak Amir (Large Cassava Supplier)
	Description	Pak Amir started his business in cassava since 1998. He began as supplier of chips for local home industry in Sumenep-Madura. Currently, Mr. Amir supplies cassava to big tapioca factories in East Java * Malang, Kediri and Ponorogo. Pak Amir purchase cassava from farmers through local collectors. Pak Amir has 75 local collectors spread across Java and Madura. During the peak season Pak Amir can supply cassava to big factories between 14-25 tons per day
	Partners' Rationale	The company wishes to expand their sourcing base and consistent supply of cassava from farmers in order to meet expanding production needs.
	Partnership Possibilities	Pak Amir has some experience in purchasing cassava from Madura. PRISMA will help Pak Amir develop a cassava collection model as well as provide support in the form of technical mentoring services for good agricultural and post-harvest handling practices, which will be given to farmers through the collectors. This will ensure farmers have better market access and at the same time Pak Amir will be able to get consistent supply of quality cassava.
	Intervention 2	Increasing access to good agricultural practices (GAP) and fertilizer
	Partner 1	PT Natural Nusantara (NASA)
	Description	PT NASA is a liquid organic fertilizer company located in Yogyakarta that has much experience in researching their product. Product development activities began in 1985 and the company was formed in 2002. Many farmers in Java and Sumatra have used products from PT NASA for more than 15 years. PT NASA has a production capacity of 1 million litres per year.
	Partners' Rationale	PT NASA is eager to expand their market for liquid organic fertilizer products through cooperation with local agents and distributors in cassava-producing areas of East Java. For each additional one hectare of land, PT NASA expects additional sales of around IDR 1.2 million (for the use of three products, namely POC NASA, Supernasa and Homonik).

	Partnership Possibilities	PT NASA has the ability and experience to produce liquid organic fertilizer and to deliver technical assistance on product application in the field through their team of experts. PRISMA will help PT NASA develop the market for its products and connect the company with fertilizer distributors.
	Intervention 3	Developing a consistent supply of cassava chips for Animal Feed
	Partner	Unit Pengembangan Sosial Ekonomi (PSE) Keuskupan Atambua
	Description	PSE Keuskupan Atambua consists of 60 Pariko with around 12.000 farmers as members; substantial number of these farmers are also involved in pig rearing. PSE has several production unit including briks, tile, and paving production, furniture production, truck rent, ect,
	Partners' Rationale	PSE is interested to develop animal feed miller business because of the opportunity arising out of limited animal feed availability in the market and growing animal population in NTT especially pig. There are local raw materials available including cassava, which is a major ingredient. The local animal feed thus produced can be competitive in the market due to high transportation cost of bringing feed from outside the island.
	Partnership Possibilities	The company is quite new in this business and needs support to establish feed miller company, feed testing, marketing, and collaborating with collectors. PRISMA will help PSE develop cooperative agreements with collectors in the project area as well as deliver capacity building to PSE about developing the feed production, testing, marketing,. PSE will provide capacity building of GAP and post harvesting knowhow to farmer through the collector.
Pigs	Intervention 1	Introducing improved pig breed and promotion of commercial pig rearing
	Partner 1	Yayasan Bintang Firdaus (YBF)
	Description	YBF is a Pig Breeding Company and Key Service Provider. The company has invested in developing pig business in Ende since 2008.
	Partners' Rationale	YBF has interest to expand their piglets business in in Flores and other islands by upgrading their sows and piglet rearing management.
	Partnership Possibilities	YBF will supply piglets and knowledge on good rearing practice to farmers that are interested to improve their pig rearing. PRISMA will provide capacity building support to YBF and link YBF to other market actors to promote their piglets, and to source fodder, other necessary inputs for piglets breeding company.
	Partner 2	Kebun Misi Bhoanawa (KMB)
	Description	KMB is a Pig Breeding Company and Key Service Provider. The company has invested in developing pig business in Ende since 2010.

Partners' Rationale	KBM has interest to expand their piglets business in in Flores and other islands by upgrading their sows and piglet management.
Partnership Possibilities	KMB will supply piglets and knowledge on good rearing practice to farmers that are interested to improve their pig rearing. PRISMA will provide capacity building support to KMB and link KMB to other market actors to promote their piglets, and to source fodder, other necessary inputs for piglets breeding company.
Partner 3	Biara Bruder (BB)
Description	BB is a Pig Breeding Company and Key Service Provider. The company has invested in developing pig business in Ende since 2000.
Partners' Rationale	BB has interest to expand their piglets business in in Flores and other islands by upgrading their sows and piglet management.
Partnership Possibilities	BB will supply piglets and knowledge on good rearing practice to farmers that are interested to improve their pig rearing. PRISMA will provide capacity building support to BB and link BB to other market actors to promote their piglets, and to source fodder, other necessary inputs for piglets breeding company.
Partner 4	St Aloysiu (SA)
Description	SA is a Pig Breeding Company and Key Service Provider. The company has invested in developing pig business in Ruteng since 2012.
Partners' Rationale	SA has interest to expand their piglets business in in Flores and other islands by upgrading their sows and piglet management.
Partnership Possibilities	SA will supply piglets and knowledge on good rearing practice to farmers that are interested to improve their pig rearing. PRISMA will provide capacity building support to SA and link SA to other market actors to promote their piglets, and to source fodder, other necessary inputs for piglets breeding company.
Partner 5	Convasionis
Description	Convasionis is a Pig Breeding Company and Key Service Provider. The company has invested in developing pig business in Ruteng since 2013.
Partners' Rationale	Convasionis has interest to expand their piglet business in in Flores and other islands by upgrading their sows and piglet management.
Partnership Possibilities	CONVASIONIS will supply piglets and knowledge on good rearing practice to farmers that are interested to improve their pig rearing. PRISMA will provide capacity building support to CONVASIONIS and link CONVASIONIS to other market actors to promote their piglets, and to source fodder, other necessary inputs for piglets breeding company.

Partner 6	Ordo SVD
Description	Ordo SVD is a Pig Breeding Company and Key Service Provider. The company has invested in developing pig business in Labuan Bajo since 2005.
Partners' Rationale	Ordo SVD has interest to expand their piglet business in in Flores and other islands by upgrading their sows and piglet management.
Partnership Possibilities	ORDO SVD will supply piglets and knowledge on good rearing practice to farmers that are interested to improve their pig rearing. PRISMA will provide capacity building support to ORDO SVD and link ORDO SVD to other market actors to promote their piglets, and to source fodder, other necessary inputs for piglets breeding company.
Partner 7	Clements
Description	Clements is a Pig Breeding Company and Key Service Provider. The company has invested in developing pig business in Bajawa since 2013.
Partners' Rationale	Clements has interest to expand their piglet business in in Flores and other islands by upgrading their sows and piglet management.
Partnership Possibilities	CLEMENTS will supply piglets and knowledge on good rearing practice to farmers that are interested to improve their pig rearing. PRISMA will provide capacity building support to CLEMENTS and link CLEMENTS to other market actors to promote their piglets, and to source fodder, other necessary inputs for piglets breeding company.
Partner 8	Pati Ahu
Description	Pati Ahu is a Pig Breeding Company and Key Service Provider. The company has invested in developing pig business in Maumere since 1995.
Partners' Rationale	Pati Ahu has interest to expand their piglet business in in Flores and other islands by upgrading their sows and piglet management.
Partnership Possibilities	PATI Ahu will supply piglets and knowledge on good rearing practice to farmers that are interested to improve their pig rearing. PRISMA will provide capacity building support to PATI Ahu and link PATI Ahu to other market actors to promote their piglets, and to source fodder, other necessary inputs for piglets breeding company.
Partner 9	PT Charoen Pokphand (CP)
Description	PT Charoen Pokphand Indonesia is Indonesia's largest producer of poultry feed, Day Old Chicks and processed chickens. The Company was established in 1972 as the first high-volume feed mill in Jakarta manufacturing premium quality poultry feed.

	Partners' Rationale	PT CP already worked in Flores and marketed around 50MT pigs feed per month recently. The company aims to increase the pigs feed market in Flores but farmers have limited access to good piglets and are not knowledgeable about the benefit and use of quality feed. Given the size of the pig market in Flores, this is a very high potential area for CP feed and therefore the company is willing to invest in educating the farmers.
	Partnership Possibilities	PT CP with support from PRISMA will train and use distribution and other channel members such as traders, input sellers, credit union etc. to educate farmer by providing embedded service on GRP and promote use of quality fodder.
Coconut	Intervention 1	Promotion of organic coconut sugar certification
	Partner	PT Big Tree Farms (BTF)
	Description	BTF specialises in sourcing and marketing food products and has developed an innovative range of coconut sugar products.
	Partners' Rationale	BTF already works with 7,000 coconut sugar producers, mainly in Central Java. The company aims to establish new linkages with producers in East Java but lacks experience and have limited access in East Java market.
	Partnership Possibilities	BTF have been taking the lead in developing supply chain and covering the cost of organic certification for the first batch of farmers in Pacitan district. PRISMA have been supporting BTF for initial awareness-raising with farmers and developing the training materials. PRISMA will explore the potential market for innovative climbing tool that can increase the farmers' productivity, developing the business model in coordination with BTF. Note: with the ending cofac contract for this intervention by End Jun'16, PRISMA seek to continue the partnership directly with BTF
	Intervention 2	Establishment of aggregation point/Increasing productivity through GAP and fertilizer
	Partner	PT Kai Sun
	Description	PT Kai Sun is a locally registered company and its activities are backed by US-based company EcoEnviro Corp., which supports PT Kai Sun in marketing, technology and finance. EcoEnviro Corp is the sole distributor of all PT Kai Sun's products.
	Partners' Rationale	PT Kai Sun is looking to source sustainable exported quality coconut, which has a high demand in the exported market especially China, but has no experience in promoting good agriculture practice in their supply chain which can ensure such supply.
Partnership Possibilities	PT Kai Sun, with support from PRISMA, will establishes and develops commercially-operated coconut aggregation points. Aggregation will be under the management of local actors (such as collectors, traders and lead farmers) and PT Kai Sun will establish supply agreement.	

		PT Kai Sun will provide all supports for promoting good agriculture practice in coconut, including surveys, capacity building for farmers and collectors, for establishing and operating aggregation point. PT Kai Sun will buy all coconut produced by their supply chain at agreed premium price. Note: partnership with PT Kai Sun has ended as the intervention proves not bringing significant impact at farmers (refer to sub-sector briefs)
	Partner	PT Arya Supra Nugraha (ASN)
	Description	PT ASN, a group company of Saraswanti cooperation, specializes in agro-input trading and marketing.
	Partners' Rationale	PT ASN aims to expand its B2C market for fertilizer products but have limited access and experience in Lombok area. In particular, the company intends to broaden its palma fertilizer market.
	Partnership Possibilities	The changing direction of coconut intervention in Lombok results in the productivity increase focus. PT ASN, with support from PRISMA, has been introducing PALMO fertilizer for coconut crops. The company has been establishing 100 coconut demo plots showcasing the fertilizer's effect that aims to increase at least 30% of the coconut productivity. PRISMA will assess the market linkages among the coconut suppliers and buyers to ensure adequate market capacity that can absorb the rising coconut production from the use of fertilizer, as well as to prevent price falls with the increased of coconut supply.

Co-facilitators 2 – Partner Details

Partners' Details		
Cashew NTT	Intervention 1	To facilitate the development of plant protection services for cashew farmers (male and female) in Sumba, NTT
	Partner	CV Peduli Kasih
	Description	CV. Peduli Kasih is the major player for agri-inputs trade in Sumba that owned by Ny. Feni. The company is based in Waingapu, East Sumba, NTT.
	Partners' Rationale	CV Peduli Kasih id interested to enter the Cashew sector for selling the product as its new business line. By investing through the demoplot and promotion CV. Peduli kasih spread the market in two district initially which are East Sumba and Southwest Sumba
	Partnership Possibilities	CV Peduli Kasih, the major player for agri-inputs trade in Sumba will have an agreement to colaborate with these service providers to develop the tehncal capacity as maintenance and plant protection services provider, with providing business support via provision of promotion material and supply of input needed - as a part of the business agreement between CV Peduli Kasih and the services providers. This will open up a new market (cashew farmer) and increase turnover for CV Peduli Kasih. in the same time service provider will have a new source of income as well as increasing cashew farmers productivity and income from better yield.

Cocoa Papua	Intervention 1	Increase productivity of cocoa in Papua
	Partners	CV Kakao Kita
	Description	CV Kakao Kita is an export oriented small local company, mainly export to Japanese market and has focused on natural produced cocoa beans, adopting “People to People” trade approach.
	Partners’ Rationale	CV Kakao Kita has new increased demand therefore is willing to increase the buying volume and has plan to expand their area of operation.
	Partnership Roles	The private sector partners will be supported in developing modules (or adjusting existing modules to the local context) that can be used to train the ISPs in setting up a demo plot, provide side grafting services and introduce farmers to technical information in good agriculture practices on maintaining the farm, using or producing the fertilizer as well as post-harvest handling. Also, they will get help in selecting the right ISPs (collectors – most of them cocoa farmers themselves, and others – lead farmers) and developing modules to strengthen the business of ISP. Once this has proven to be successful, the PSP will involve in special activities for creating demand for the side grafting services. Most of the ISPs (mainly those ISPs that have an own cocoa garden) will set up a demo plot to promote and provide their services while at the same time giving information to the farmers on how to best cultivate cocoa. Depending on the demand, the ISPs will also give embedded service on the use of fertilizer - along with buying access information (incl. finance) and post-harvest handling. The PSP will ensure that the ISPs have the skill and knowledge to do so.
	Partner Contribution	CV Kakao Kita has agreed to contribute IDR 270.375.000,- in strengthen the business of ISPs while YPPWP will focus more in develop business model between CV kakao kita and ISP, hiring consultants/ expert in develop GAP material/ modules, promoting ISP’s business.
Maize NTT	Intervention 1	Good Drying & Storing Practice
	Partner	PT Buana Ika Syahputra (PT BIS)
	Description	PT BIS produces plastic products such as plastic bottles and plastic containers mostly for packaging. They have enough capacity and equipment to create and produce new product based on customer needs.
	Partners’ Rationale	PT BIS is interested to expand their market area and entering eastern Indonesia/NTT. They willing to create new product model and invest in the innovation that will be match with the farmer/customer needs.
	Partnership Roles	PRISMA supports PT BIS in identifying the distribution channels, conducting promotion activities, and supporting in product designing as well as marketing strategy to promote technology on good drying practice using jerrycan (they call “Silo Jinjing”) to farmers in Timor island, NTT.
Peanut NTT	Intervention 1	Production & Supply of Quality Seed

	Partner	CV Tiga Putri Mandiri
	Description	CV Tiga Putri Mandiri has produced high quality peanut seed, namely Hypoma 2 and Streep. In addition, improved local seed is also produced as a high quality commercial product. Peanut sector is a new business for CV Tiga Putri Mandiri as an expansion after having quite mature experience in nursery business for maize and also rice since 2005. It starts expanding to peanut business since 2015 in a partnership with YMTM. For peanut, CV Tiga Putri Mandiri has three focus area, which are TTU, Belu, and Malaka districts.
	Partners' Rationale	The company wants to expand their business portfolio by trying out another nursery development for new commodity. It has seen the potential of this market because there are still limited commercial peanut producer available. For the expansion, CV Tiga Putri Mandiri is ready to invest in promotion include demonstration plots, good agricultural practices (GAP), and harvest simple technology capacity building for peanut nursery farmers in their area of business.
	Partnership Roles	PRISMA supports CV Tiga Putri Mandiri in production of Hypoma 2, Streep, and improved local seed seed and develop sales and distribution channels (sales agents/retailers) in TTU, Belu, and Malaka districts and promote and distribute their seeds among target groups.
Mung Bean EJ	Intervention 1	Promoting Certified Seeds
	Partner	UD. Sumber Rejeki
	Description	UD. Sumber Rejeki, which is located in Gresik, East Java, has been a certified nursery of BALITKABI, and has been operating since 1987. This nursery mainly breeds seeds for paddy, peanut, and mung bean, mostly to support government's demand. Currently, mung bean varieties produced are Vima 1, Vima 3, and Walet.
	Partners' Rationale	UD. Sumber Rejeki is interested to expand their production and distribution of Vima 1 variety mung bean seeds to Madura. They are willing to produce a smaller unit packaging (5 kg) to match smallholder farmers' needs. The packaging will also be supported with an added information on the seed planting methods.
	Partnership Roles	PRISMA supports UD. Sumber Rejeki in identifying the distribution channels as well as promotional activities such as demo plots and farmers' meeting.
	Intervention 2	Promoting the Use of Organic Fertilizer for Mung Bean Fertilizer
	Partner	PT. Indo Acidatama
	Description	PT. Indo Acidatama is a company that produces agri-chemical products such as organic fertilizers. The company is located in Solo and has been operating in chemical and fertilizer industry since 1983
Partners' Rationale	PT. Indo Acidatama is interested in distributing their organic fertilizer to mung bean farmers in Madura. They agreed to provide their agronomists for research plot, demo plots, and farmers meeting in order to give capacity building on organic fertilizer usage for mung bean.	

	Partnership Roles	PRISMA facilitates PT. Indo Acidatama in identifying the distribution channels as well as promotional activities such as demo plots and farmers' meeting.
Coconut NTT	Intervention 1	Organic coconuts for Virgin Coconut Oil (VCO) production
	Partners	CV Nusa Permai
	Description	CV Nusa Permai is an exporter of virgin coconut oil sourced from organic coconut
	Partners' Rationale	Demand of VCO in the international market has been continuously increasing. As one of the major VCO exporter, CN Nusa Permai aim to expand their business in order to fulfill such market demand. They aim to strengthen the supply of VCO and to secure the supply of fresh organic coconut as the raw materials. They will do this by developing business partnership with potential local VCO producer as the Intermediate Service Provider (ISP), and by giving premium price to organic coconut farmers.
	Partnership Roles	CV Nusa Permai takes the lead in building the capacity of coconut farmers to be registered as organic coconut producers. The company will guide and finance the certification processes which aim to guarantee fresh organic coconut supply from the farmers. As part of a newly developed business, CV Nusa Permai will collaborate with two local ISPs who will establish a commercial VCO production house. The new VCO factories will be set up in Maumere and Adonara and are expected to accommodate production of VCO sourced from fresh organic coconut farmers in the surrounding areas. PRISMA have been supporting CV Nusa Permai in selecting suitable location for organic certification, disseminating the VCO production plan to farmers and facilitating both CV Nusa Permai and the ISPs in developing business partnership.
Beef NTB	Intervention 1	Production and Supply of Commercial Feed to Beef Cattle Farmers
	Partner	PT Bintang Pribumi Tulen
	Description	PT Bintang Pribumi Tulen is a maize processor, maize trader, and inter-island cattle trader in Lombok. It has been working for years in maize processing and trading business. From the maize business itself, the company has a lot of waste agriculture products and resources. The company has a little experience in cattle feed production using the waste product of maize for his own cattle. By looking at the market potential of concentrate feed business for cattle fattening, as no one sell commercial concentrate for cattle fattening, the company started new business to produce and sell concentrate feed to the market (cattle farmers).
	Partners' Rationale	In order to start the new business of producing and selling concentrate feed to cattle farmers, PT Bintang Pribumi Tulen is willing to provide benefits to the farmers through promoting concentrate feed through demo plots. And in developing a wider distribution channel, the company will work with inputs shops, cattle traders, and agriculture collectors into the system.

	Partnership Roles	PRISMA will support the company in: <ul style="list-style-type: none">) mapping potential distribution channel) developing strategic business plan and marketing plan) developing training modules and design on use, application and benefit of commercial feed) delivering training) designing promotion material and promotional activities.
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ⁱ PRISMA is still assessing this option